



**CITY OF FORT LAUDERDALE
ENGINEERING DIVISION
APPLICATION TO INSTALL AT GRADE
COMMUNICATIONS SERVICE FACILITIES**

**PERMIT NO. CC13-01
District 4**

Applicant Name and Job Number Crown Castle SFL 60_1

Job Address and Location 1960 SE 10th Avenue

Description of Work Installing cabinet and utility pole within right-of-way.

Anticipated start and end dates of work 11/4/13 - 45 days

- This permit application is for an exemption from the requirement to install communications service facilities below grade, in accordance with Section 25-100.1.B.3 of the City of Fort Lauderdale Code of Ordinances (Code). A letter by a qualified expert(s) is attached.
- Crown Castle is requesting the following waivers (check all applicable subsections and attach supporting documentation):

- C.1 (Size)
- C.2 (Height)
- C.3 (Front Yard)
- C.4 (Corner Yard)
- C.6 (Separation)
- C.7 (Exist. Facility)
- C.12 (Collector)

- With the exception of any waivers that may be checked above, the proposed at grade facilities conform to the requirements in Section 25-100.1 of the Code
- Notice of the pending application has been provided to all property owners abutting public rights-of-way within one hundred fifty (150) feet of the proposed site and to the relevant homeowner association, in accordance with Section 25-100.1.E.5 of the Code.
- The proposed site will be maintained by Crown Castle in accordance with the approved Graffiti Mitigation Plan dated 04/04/2013, which is on file with the City Engineer
- A landscaping maintenance commitment letter from the adjacent property owner and relevant home owner association is attached to this application.
- Crown Castle shall be responsible for maintaining landscaping
- The proposed at grade facilities depicted on the attached plans are completely located in the public rights-of-way.

As an authorized representative of Crown Castle, I certify under oath that the forgoing statements are true and correct.

Armando Hernandez
Printed Name of Authorized Crown Castle Agent

Armando Hernandez
Signature of Authorized Crown Castle Agent

Sworn to and subscribed before me this 24 day of September, 2013

Shane Hafner
Notary Public,
State of Florida

My Commission Expires 9-3-16



(Do not write below this line)

Conceptual approval date _____ by _____, Subject to the following conditions:

- 1) A detailed visual mitigation plan is required

Final Permit approval date _____ by _____

Final Inspection date _____ by _____

**Notify Engineering Permits Division 24 hours prior to starting work at (954) 828-5649

**REVIEW CHECKLIST
FOR CABINETS IN RIGHTS-OF-WAY**

Permit No. CC13 - 01

- Application Package complete – 3 sets (JJ)**
 Verified addresses of property owners and HOA to which notice was provided
 Random audit of package to property owners
 Feasibility letter, site plan, landscaping plan, aerial photo, 5 pictures
 Easement and property information provided
- CC memo provided to Commission (JJ)**
- 15-Day Call up Memo to Commission (JJ)**

Criteria for cabinets in Rights-of-Way

	Plan Review Checklist	Comments
<input type="checkbox"/>	Evaluation and approval of any waivers identified on application (size, height, corner yard, > 3 cabinets per block, modification of existing cabinet, conflict with future sidewalk)	
<input checked="" type="checkbox"/>	Sum of H + W + L not greater than 124" and H not greater than 5'-8"	
<input checked="" type="checkbox"/>	Cabinet not in front yard	
<input type="checkbox"/>	Proposed landscaping is in accordance with plan on file with City	
<input type="checkbox"/>	If landscaping is to be maintained by Property Owner, Agreement has been provided	
<input type="checkbox"/>	Landscaping plan has been checked by Dave Genarro	
<input checked="" type="checkbox"/>	New cabinet is at least 2 feet from other cabinets, poles, etc.	
<input checked="" type="checkbox"/>	Cabinet not in sight triangle (sight triangle may be reduced to 10 feet)	
<input checked="" type="checkbox"/>	ADA requirements met	
<input checked="" type="checkbox"/>	Roadside recovery setback met (per Florida Green Book)	
<input checked="" type="checkbox"/>	Cabinet/landscaping is at least one foot from sidewalk	
<input checked="" type="checkbox"/>	Cabinet would not conflict with future sidewalk	
<input checked="" type="checkbox"/>	Field face cabinet to R/W	
	Field Inspection Checklist	Comments
<input type="checkbox"/>	Type and location of topographic features shown on permit plan are consistent with field conditions	
<input type="checkbox"/>	H + W + L not greater than 124" and H not greater than 5'-8"	
<input type="checkbox"/>	There are no conflicts with existing utility lines and new cabinet location would not hinder access to utilities or be within excavation trench over the pipe	
<input type="checkbox"/>	New cabinet is at least 2 feet from other cabinets, poles, etc.	
<input type="checkbox"/>	New cabinet is not in sight triangle – visual check performed in field	
<input type="checkbox"/>	ADA requirements met – minimum clearances/slopes measured	
<input type="checkbox"/>	Roadside recovery setback measured	
<input type="checkbox"/>	Cabinet/landscaping (measured) is at least one foot from sidewalk	
<input type="checkbox"/>	Landscaping is per permit plans and effectively screens cabinet	
<input type="checkbox"/>	Cabinet would not conflict with future sidewalk	
<input type="checkbox"/>	Dimensions for cabinet location measured	
<input type="checkbox"/>	Not more than three communication cabinets per block (unless waiver approved)	
<input type="checkbox"/>	Electrical Permit – Final inspection passed	

TEMPORARY MODIFICATION OF TRAFFIC (MOT) ROUTING FORM

DATE: **9/25/13**

APPLICANT/ADDRESS/PHONE:
Crown Castle NG East, Inc.
8555 NW 64th Street
Miami, Fl. 33166
813-447-0333

PERMIT NO. _____
(PROVIDED BY CITY AT TIME OF PERMIT APPLICATION)

PROJECT NAME/ADDRESS: **SFL 60_1**

- This routing form should be completed and submitted as an attachment to the above-referenced permit (hereinafter "PERMIT").
- Obtaining signatures on this routing form does not constitute any approvals by the City. The MOT may be implemented only after issuance of the PERMIT, subject to satisfaction of all prerequisite conditions.
- This form is for MOT's within rights-of-way under City of Fort Lauderdale's jurisdiction. If the MOT or detour routes affect rights-of-way under Broward County jurisdiction, the County's form (available on the City website) should also be completed with the required signatures and attached. If the detours affect FDOT right-of-way, a permit from FDOT must be attached.
- If work is taking place in County or FDOT R/W, an MOT permit is not required from the City. However, PERMIT applicant (hereinafter APPLICANT) is asked to provide two weeks advance notice of any closures or detours to the City's Public Information Office.

Specific dates and times requested for MOT implementation:

Begin _____ End _____

Describe Work, including location of site and address, names of affected streets, why MOT is necessary, nature of the construction, deliveries, staging areas, if cranes will be used, etc. (staging and storage of materials/equipment are not permitted in the right-of-way). Please note if additional sheets have been attached for the description of work.

1960 SE 10th Ave. approximately 518' South of SE 18th Ct. . Work on shoulder and sidewalk closure. Place new telecommunications cabinet and new 40' concrete utility pole. Attach Crown Castle antenna to new 40' concrete utility pole.

Describe MOT, the number of lanes affected on each street, if metered parking spaces will be displaced, if detours are necessary, if flagmen will be provided, if MOT will be full-time (or times of day the MOT is to be in effect) and any other special considerations related to this request. Please note if additional sheets have been attached for the description of MOT.

FDOT 602 & 660 attached. Daily work hours 8am - 4pm.

Attach: MOT plan prepared by a certified worksite traffic control technician or traffic control supervisor (as appropriate for the complexity of the job), with a copy of current certification.

If implementation of an approved PERMIT is found to adversely affect public safety and/or public convenience or there is a conflict with a higher public purpose, the APPLICANT may be required to modify the MOT plan or the PERMIT may be temporarily suspended or permanently revoked at any time with reasonable notice from the City.

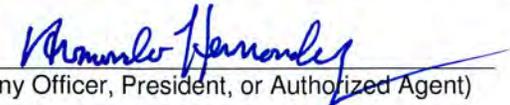
The MOT plan shall be in accordance with provisions of the latest edition of Part IV of the Manual of Uniform Traffic Control Devices for Streets and Highways and FDOT Design Standards. Compliance with the requirements of the approved plan shall be the responsibility of the APPLICANT.


(APPLICANT)

Armando Hernandez / Site Development Manager
(Print Name/Title)

As a consideration for the permission granted herein, **Armando Hernandez** (APPLICANT) agrees to indemnify and hold harmless the City of Fort Lauderdale for any damages, claims or injuries that may result from the MOT plan approved under the PERMIT.

Crown Castle NG East Inc.
(Name of Company)

By: 
(Company Officer, President, or Authorized Agent)

Project Name: _____ PERMIT NUMBER: _____

Applicant should collect the signatures in this section (if required). To expedite processing, signatures may be requested concurrently via fax or pdf and provided on separate copies of this page.

(Date)

Police Department (Patrol Secretary Office)

(Required only if MOT includes a detour for any direction of travel)
1300 West Broward Boulevard
Tel.: (954) 828-5477 (call for appointment)

(Date)

Fire-Rescue Department

(Required only if MOT includes a detour for any direction of travel)
Bill Findland, Assistant Chief
528 NW 2nd Street
Tel.: (954) 828-4351 (call for appointment); Fax: (954) 828-6843

(Date)

Maj Shakib/ Studies Section

(Required only if MOT/detour affects County road or intersection)
2300 W. Commercial Boulevard
(Please call (954) 847-2655 for appt. Walk-ins NOT accepted)

After above signatures are collected, Applicant should forward the MOT Plan and this routing form to the person listed below.

(Date)

Transportation and Mobility

Heslop Daley, Project Engineer
290 NE 3rd Avenue
Tel.: (954) 828-5734 Fax: (954) 828-3734

City Manager's signature to be requested by City Staff only (if signature is required)

(Date)

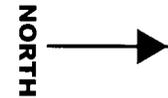
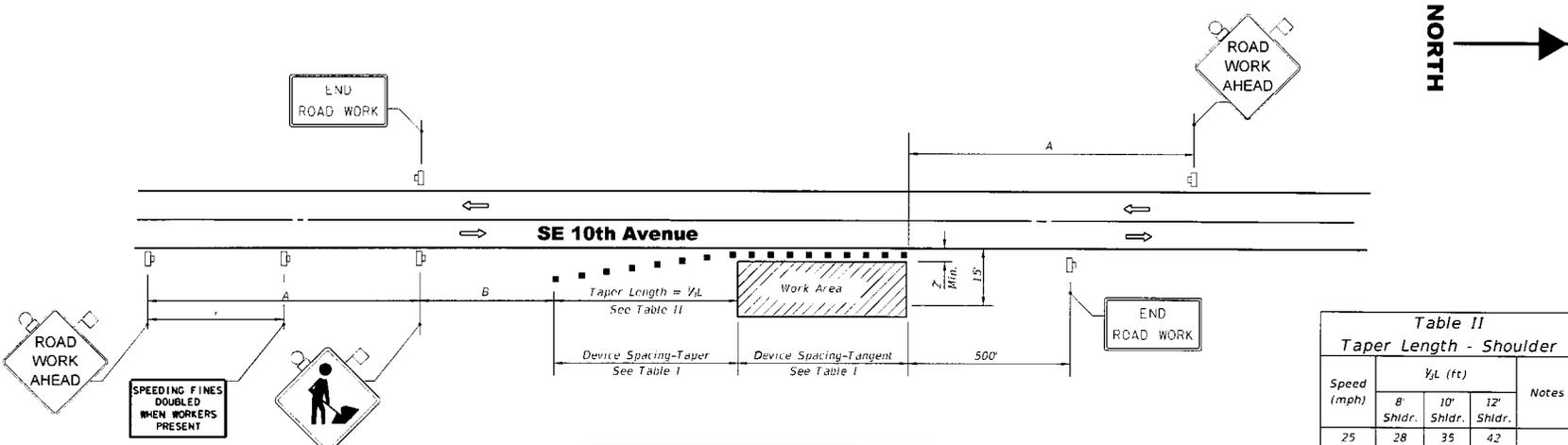
City Manager's Office

Lee R. Feldman, ICMA-CM, City Manager
100 N. Andrews Avenue, 7th Floor
Tel.: (954) 828-5013 or Fax: (954) 828-5121

A copy of the PERMIT, this routing form and MOT shall be kept on-site and made available to the City inspector at all times.

This form is for MOT plans associated with private utility projects and private development projects. MOT plans for City Capital Improvement Projects shall be coordinated through Engineering Inspection or the Project Manager. Traffic modifications required for special events shall be arranged through the City's Special Events Coordinator, Jeff Meehan at (954) 828-6705.

6/16/2012 2:54:43 PM c:\p6606h s:\c\p\04-15 Standards\Subarea_05600_s\05607_01.dwg



Speed	Spacing (ft.)	
	A	B
40 mph or less	200	200
45 mph	350	350
50 mph or greater	500	500

*Midway between signs.

Speed (mph)	Max. Distance Between Devices (ft.)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100

Speed (mph)	1/2 L (ft)			Notes
	8' Shldr.	10' Shldr.	12' Shldr.	
25	28	35	42	L = WS / 60
30	40	50	60	
35	55	68	82	
40	72	90	107	
45	120	150	180	L = WS
50	133	167	200	
55	147	183	220	
60	160	200	240	
65	173	217	260	
70	187	233	280	

8' minimum shoulder width

1/2 L = Length of shoulder taper in feet

W = Width of total shoulder in feet (combined paved and unpaved width)

S = Posted speed limit (mph)

SYMBOLS

- Work Area
- Sign With 18" x 18" (Min.) Orange Flag And Type B Light
- Channelizing Device (See Index No. 600)
- Work Zone Sign
- Lane Identification + Direction of Traffic

GENERAL NOTES

- When four or more work vehicles enter the through traffic lanes in a one hour period or less (excluding establishing and terminating the work area), the advanced FLAGGER sign shall be substituted for the WORKERS sign. For location of flaggers and FLAGGER signs, see Index No. 603.
- SHOULDER WORK sign may be used as an alternate to the WORKER symbol sign only on the side where the shoulder work is being performed.
- When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ indexes.
- For general TCZ requirements and additional information, refer to Index No. 600.

DURATION NOTES

- Signs and channelizing devices may be omitted if all of the following conditions are met:
 - Work operations are 60 minutes or less.
 - Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCR OACH THE AREA CLOSER THAN 15' BUT NOT CLOSER THAN 2' TO THE EDGE OF TRAVEL WAY.

LAST REVISION
07/01/12

DESCRIPTION:
FDOT DESIGN STANDARDS 2013



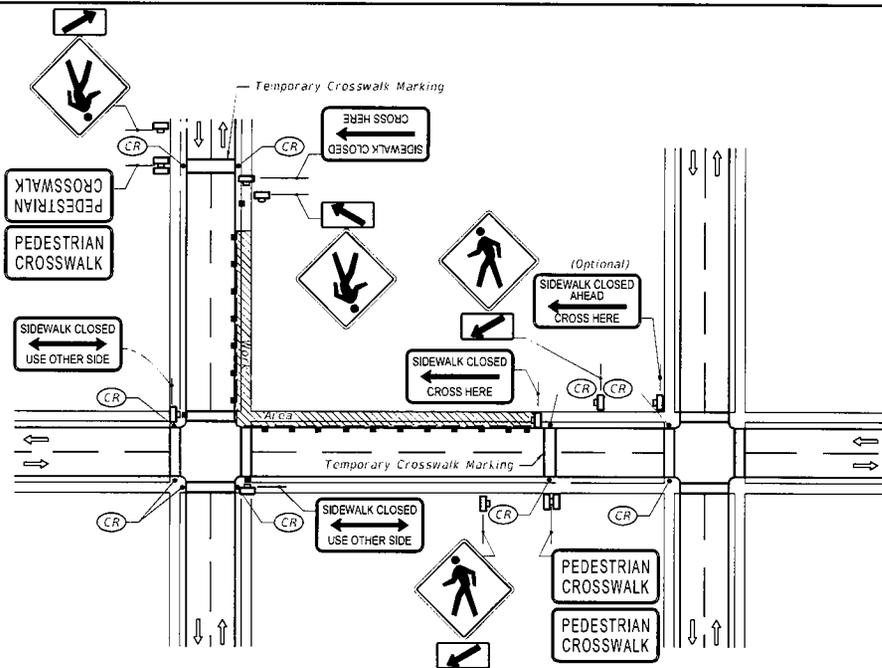
FDOT DESIGN STANDARDS
2013

TWO-LANE, TWO-WAY, WORK ON SHOULDER

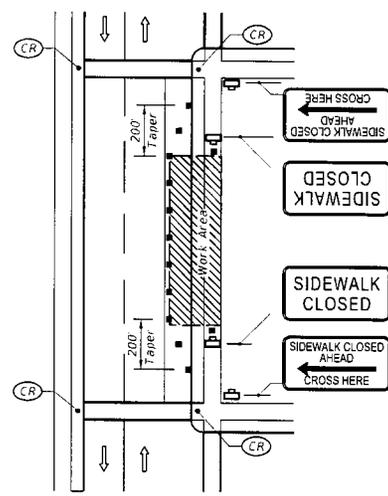
INDEX NO.
602

SHEET NO.
1

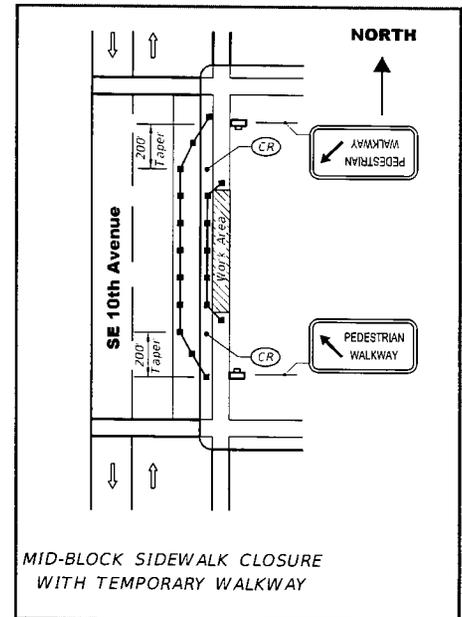
8-28(2012) 2:58:32 PM c:\p\2012\standards\update_0560_1\0560_01.dwg



CORNER SIDEWALK CLOSURE WITH TEMPORARY CROSSWALKS



MID-BLOCK SIDEWALK CLOSURE



MID-BLOCK SIDEWALK CLOSURE WITH TEMPORARY WALKWAY

GENERAL NOTES

- Only the signs controlling pedestrian flows are shown. Other work zone signs will be needed to control traffic on the streets.
- For spacing of traffic control devices and general TCZ requirements refer to Index No. 600. Maximum spacing between barricades, vertical panels, drums or tubular markers shall not be greater than 25'.
- Street lighting should be considered.
- For nighttime closures use Type A flashing warning lights on barricades supporting signs and closing sidewalks. Use Type C steady-burn lights on channelizing devices separating the work area from vehicular traffic.
- Pedestrian traffic signal display controlling closed crosswalks shall be covered or deactivated.
- Post Mounted Signs located near or adjacent to a sidewalk shall have a 7" minimum clearance from the bottom of sign to the sidewalk.
- When construction activities involve sidewalks on both sides of the street, efforts should be made to stage the construction so that both sidewalks are not out of service at the same time.
- In the event that sidewalks on both sides of the street are closed, pedestrians shall be guided around the construction zone.
- Temporary walkways shall be a minimum of 4' wide with a maximum 0.02 cross slope and a maximum 0.05 running slope between ramps. Temporary walkways less than 5' in width shall provide for a 5' x 5' passing space at intervals not to exceed 200'. Temporary ramps shall meet the requirements for curb ramps specified in Index No. 304. Temporary walkway surfaces and ramps shall be stable, firm, slip resistant, and kept free of any obstructions and hazards such as holes, debris, mud, construction equipment, stored materials, etc.
- Temporary ramps and temporary crosswalk markings shall be removed with reopening of the sidewalk, unless otherwise noted in the plans. All work and materials associated with constructing temporary curb ramps and temporary crosswalk markings, removal and disposal of temporary curb ramps and temporary crosswalk markings, and restoration to original condition shall be paid for as Maintenance of Traffic, Lump Sum.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT WORKERS OR THEIR ACTIVITIES ENCROACH ON THE SIDEWALK FOR A PERIOD OF MORE THAN 60 MINUTES.

SYMBOLS

- Work Area
- Channelizing Device (See Index No. 600)
- Work Zone Sign
- Required Locations For Either Temporary Or Permanent Curb Ramps
- Lane Identification + Direction of Traffic
- Pedestrian Longitudinal Channelizing Device

LAST REVISION	REVISION	DESCRIPTION:		FDOT DESIGN STANDARDS 2013	PEDESTRIAN CONTROL FOR CLOSURE OF SIDEWALKS	INDEX NO.	SHEET NO.
07/01/12						660	1



Crown Castle
8555 NW 64th Street
Miami, Florida 33166-2628
MelissaP.Anderson@crowncastle.com

Office 786-899-5911
Mobile 561-310-9261
Fax 305-591-1469
www.crowncastle.com

April 4, 2013

City Engineer
City of Ft. Lauderdale
100 N. Andrews Avenue
Ft. Lauderdale, Florida 33301

Re: Crown Castle NG East Inc. Application for Exemption from Below Grade Requirement

Dear City Engineer:

In accordance with Section 25-100.1(b) of the city's Communications Rights-of-Way Ordinance (the "Ordinance"), Crown Castle NG East Inc. ("Crown Castle") submits this application for an exemption from the below grade requirement. As is set forth in the attached letter from Wayne Waldron, Director of Implementation for Crown Castle in the Southeastern Region, an exemption is appropriate, as a hardship would result from the imposition of the requirement. Placing the communications service facility described in the attached right-of-way permit application ("Facility") below grade is: 1. technologically infeasible; 2. a below grade facility is not available in the marketplace; and 3. all reasonable alternatives have been exhausted.

Given that Crown Castle has shown by a preponderance of the evidence that a hardship would result if an exemption were not granted, Crown Castle requests that City Engineer grant an exemption from Section 25-100.1(b) of the city's code.

Very Truly Yours,

A handwritten signature in black ink, appearing to be 'M.A.', with a long horizontal line extending to the right.

Melissa P. Anderson
Government Relations Counsel
Southeastern Region

cc: Wayne Waldron, Director of Implementation

ATTACHMENT 1
Certification in Support of Application to City of Ft. Lauderdale for
Exemption from Below Grade Requirement

My name is Wayne W. Waldron and my title with Crown Castle is Director of Implementation for the Southeastern Region.

My background and experience in the telecommunications field is as follows: Prior to joining Crown Castle served as Division Manager of 7 state Southwest Division for utility construction (telephone, electric, water, gas, sewer, CATV) firm Henkels and McCoy, Inc. of Blue Bell PA for 10 years, Operations Controller managing Long Island Sound Crossing project for Pirelli Cable Systems of Florham Park NJ for 3 years, Vice President of Liberty General Contracting providing utility construction services in Pottstown PA for 4 years, Vice President of Construction and Engineering for RCN Corporation of Princeton NJ overseeing installation of fiber cabling for telephone, CATV and internet services for 7 years.

My education and training includes but is not limited to: Received Bachelors of Science in Business Administration with a major in Accounting from Temple University in 1980. I have taken continuing education courses in Fiber Optic Technology from Oklahoma State University, Effective Management from Harvard University, Electrical Design from University of Texas Arlington.

Given my education, background and experience, I am an expert regarding communications equipment and, in particular, regarding the communications equipment necessary for Crown Castle to pursue the current planned installation of a DAS network in Ft. Lauderdale. The communications service facility (Facility) that is described in the attached right-of-way permit application is necessary for the current DAS network. The Facility will house active electronics. Based upon my expertise, I hereby certify that placing the Facility below grade is technologically infeasible, that a below grade facility is not available in the marketplace and that all reasonable alternatives have been exhausted. Accordingly, Crown Castle requests an exemption from the below grade requirement contained in Section 25-100.1(b) of the city's code.



Wayne W. Waldron
Director of Implementation
Southeastern Region

Crown Castle NG East Inc. Graffiti Mitigation Plan

Pursuant to the City of Ft. Lauderdale's Communications Service Facility Right-of-Way Ordinance No. C-07-108, this Graffiti Mitigation Plan describes how Crown Castle NG East Inc. ("Crown Castle") will maintain communications service facilities governed by the Ordinance free from graffiti, including inspecting them no less frequently than every 90 days and removing graffiti within 7 working days from receipt of notice thereof from the City.

Crown Castle removes graffiti found on its equipment cabinets, including when graffiti is found by Crown Castle personnel or brought to Crown Castle's attention by other parties. Crown Castle removes graffiti with either mineral spirits or paint thinner. A rag is soaked with the solvent and rubbed lightly over graffiti. The solvents will remove spray paint and permanent marker, which are the most difficult forms of graffiti to remove. In cases where the graffiti cannot be cleaned or where Crown Castle determines that paint is the better option, matching paint is applied. The Crown Castle contact person for graffiti issues is Armando Hernandez. His contact information is: office: 786 899-5914 Cell: 813 447-0333.



Crown Castle Node Survey Sheet

Customer:	MetroPCS	Candidate Letters	m2
Project:	South Florida	Date	8/22/2013
Polygon:	60		
Polygon_Node:	60_1		
Latitude:	26.096838		
Longitude:	-80.132525		
Street Address:	1960 SE 10th Ave, Fort Lauderdale ,33316		
On Street:	SE 10th Ave		
Cross Street 1:	SE 20th St		
Cross Street 2:	SE 10th Ave		
City, Florida:	Fort Lauderdale		
Pole ID:	New		
Antenna Height:	34ft		
Power on Pole:		If no secondary, how far to secondary:	
Telco on Pole:		If no telco, how far to pole with telco?	
Pole Type:	Concrete	New Pole	Pole Owner: CCI
			Pole size: 40 ft
Pole Access:			
Photo of Pole:		If yes, photo #s?	
Pole marked:			
Pole Location Description:			
Equipment on Pole:			
Comments:	Equipment on ground		

Photos



September 25, 2013

**Notice of Right-of-Way Permit Application
Submitted to City of Ft. Lauderdale**

Harbordale Civic Association, Inc.

This letter is to inform you that Crown Castle NG East Inc. has submitted a right-of-way permit application to the City of Ft. Lauderdale for the placement of a communications facility in City rights-of-way adjacent to the following property address: 1960 SE 10th Avenue Ft. Lauderdale Fl., 33316

Crown Castle NG East Inc. is sending this notice to you as provided in City Ordinance No. C-07-108, which requires that notice of right-of-way permit application for the communications facility be provided to certain parties in the vicinity of the right-of-way.

A drawing showing the proposed placement and location is attached. The permit application may be reviewed at the City engineer's Office located at City Hall 100 N. Andrews Avenue.

The communications facility will enable Crown Castle NG East Inc. to offer new and enhanced communications services to customers in your neighborhood.

If you have any questions, please feel free to contact me at (305) 728-0154

Sincerely,

Armando Hernandez

Site Development Manager

Crown Castle NG East Inc.

September 25, 2013

**Notice of Right-of-Way Permit Application
Submitted to City of Ft. Lauderdale**

Harbour Park Warehouse, LLC

This letter is to inform you that Crown Castle NG East Inc. has submitted a right-of-way permit application to the City of Ft. Lauderdale for the placement of a communications facility in City rights-of-way adjacent to the following property address: 1960 SE 10th Avenue Ft. Lauderdale Fl., 33316

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If you have any questions, please feel free to contact me at (305) 728-0154

Sincerely,

Armando Hernandez

Site Development Manager

Crown Castle NG East Inc.

September 25, 2013

**Notice of Right-of-Way Permit Application
Submitted to City of Ft. Lauderdale**

Karnak-South Inc.

This letter is to inform you that Crown Castle NG East Inc. has submitted a right-of-way permit application to the City of Ft. Lauderdale for the placement of a communications facility in City rights-of-way adjacent to the following property address: 1960 SE 10th Avenue Ft. Lauderdale FL, 33316

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If you have any questions, please feel free to contact me at (305) 728-0154

Sincerely,

Armando Hernandez

Site Development Manager

Crown Castle NG East Inc.

September 25, 2013

**Notice of Right-of-Way Permit Application
Submitted to City of Ft. Lauderdale**

Mariani LLC,

This letter is to inform you that Crown Castle NG East Inc. has submitted a right-of-way permit application to the City of Ft. Lauderdale for the placement of a communications facility in City rights-of-way adjacent to the following property address: 1960 SE 10th Avenue Ft. Lauderdale FL, 33316

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If you have any questions, please feel free to contact me at (305) 728-0154

Sincerely,

Armando Hernandez

Site Development Manager

Crown Castle NG East Inc.



CROWN CASTLE SFL60_1

CLIENT :
 CLIENT SITE ID#: 1960 SE 10TH AVENUE
 ADDRESS: FORT LAUDERDALE, FL 33316
 SITE TYPE: **NEW CONCRETE POLE**

PROPERTY INFORMATION

SITE COORDINATES: 26.096838°
 -80.132525°
 JURISDICTION: CITY OF FORT LAUDERDALE

PROPERTY OWNER: CROWN CASTLE
 ADDRESS: 8555 NW 64TH STREET
 MIAMI, FL 33166

PROJECT TEAM

PROJECT MANAGEMENT FIRM: CROWN CASTLE
 ADDRESS: 8555 NW 64TH STREET
 MIAMI, FL 33166

ENGINEERING FIRM: AW SOLUTIONS, INC.
 ADDRESS: 300 CROWN OAK CENTRE DR.
 LONGWOOD, FL 32750
 CONTACT: SHANE HAFNER
 PHONE: 407.260.0231 EXT. 120
 FLORIDA COA#: 26983

DESIGN CRITERIA:

- FLORIDA BUILDING CODE 2010 AND ASCE 7-10. WIND LOAD PER ASCE 7-10.
 - A. ULTIMATE WIND SPEED: 170 MPH.
 - B. BUILDING RISK CATEGORY: II.
 - C. WIND EXPOSURE: C.
- DEAD LOAD:
 - A. EQUIPMENT WEIGHT PER MANUFACTURER DATA.
- SEISMIC LOAD DOES NOT GOVERN THIS DESIGN.

DRAWING INDEX

SHEET	SHEET DESCRIPTION	REV
T1	TITLE SHEET	2
C1	SITE PLAN	2
C2	ELEVATION	2
C3	DETAILS	2
C4	DETAILS	2
SP1	SPECIFICATIONS	2
SP2	SPECIFICATIONS	2

APPROVALS

PROJECT MANAGER: _____ DATE: _____
 CARRIER: _____
 UTILITY: _____



300 CROWN OAK CENTRE DRIVE
 LONGWOOD, FL 32750
 TEL: 407.260.0231
 FAX: 407.260.0749
 FL COA#: 26983

DRAWN BY: EW CHECKED BY: JO

REV	DATE	DESCRIPTION
2	09/11/13	REVISED POLE TYPE/LOCATION
1	05/09/13	REVISED PER COMMENTS
0	01/11/13	ISSUED FOR PERMIT

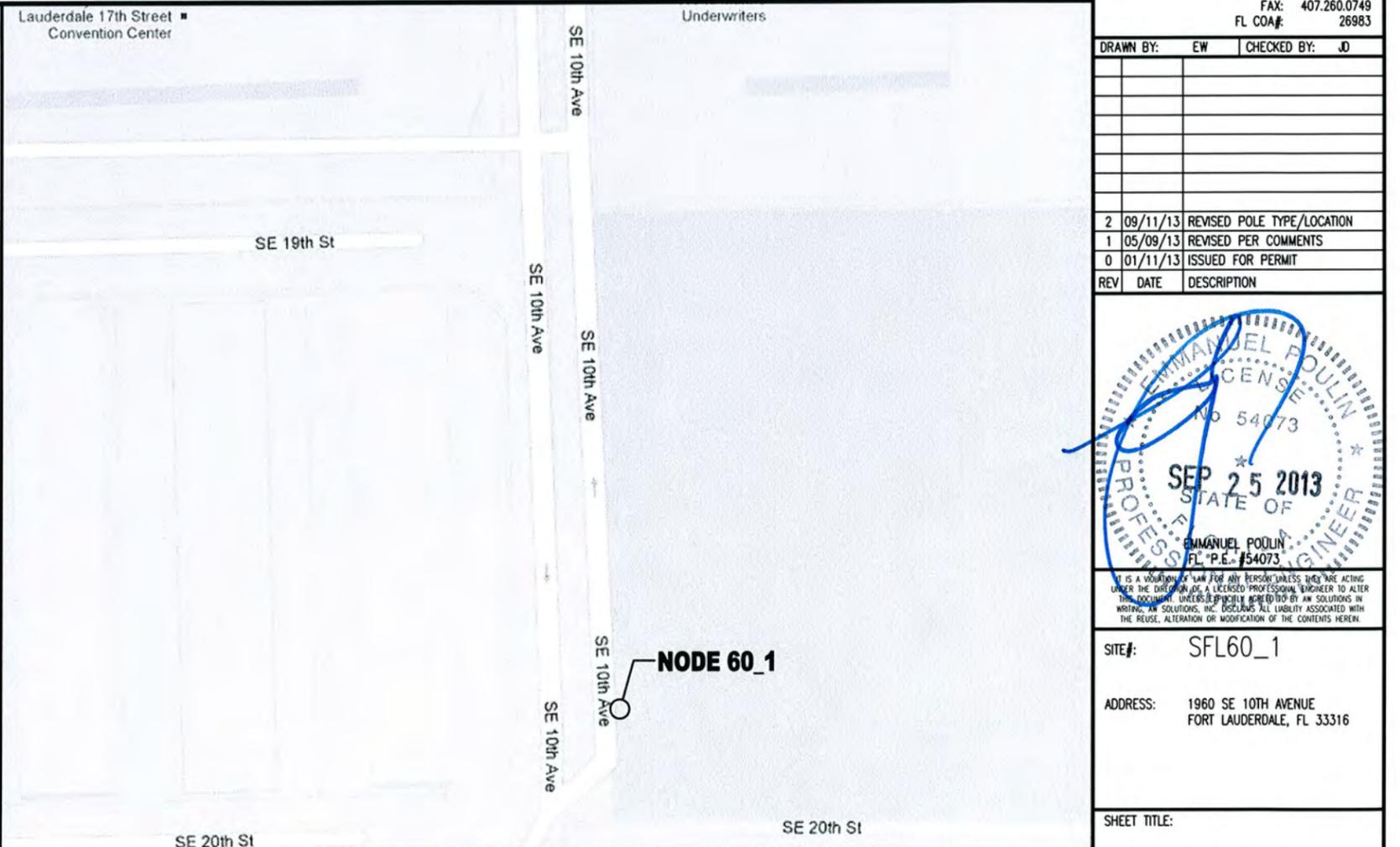
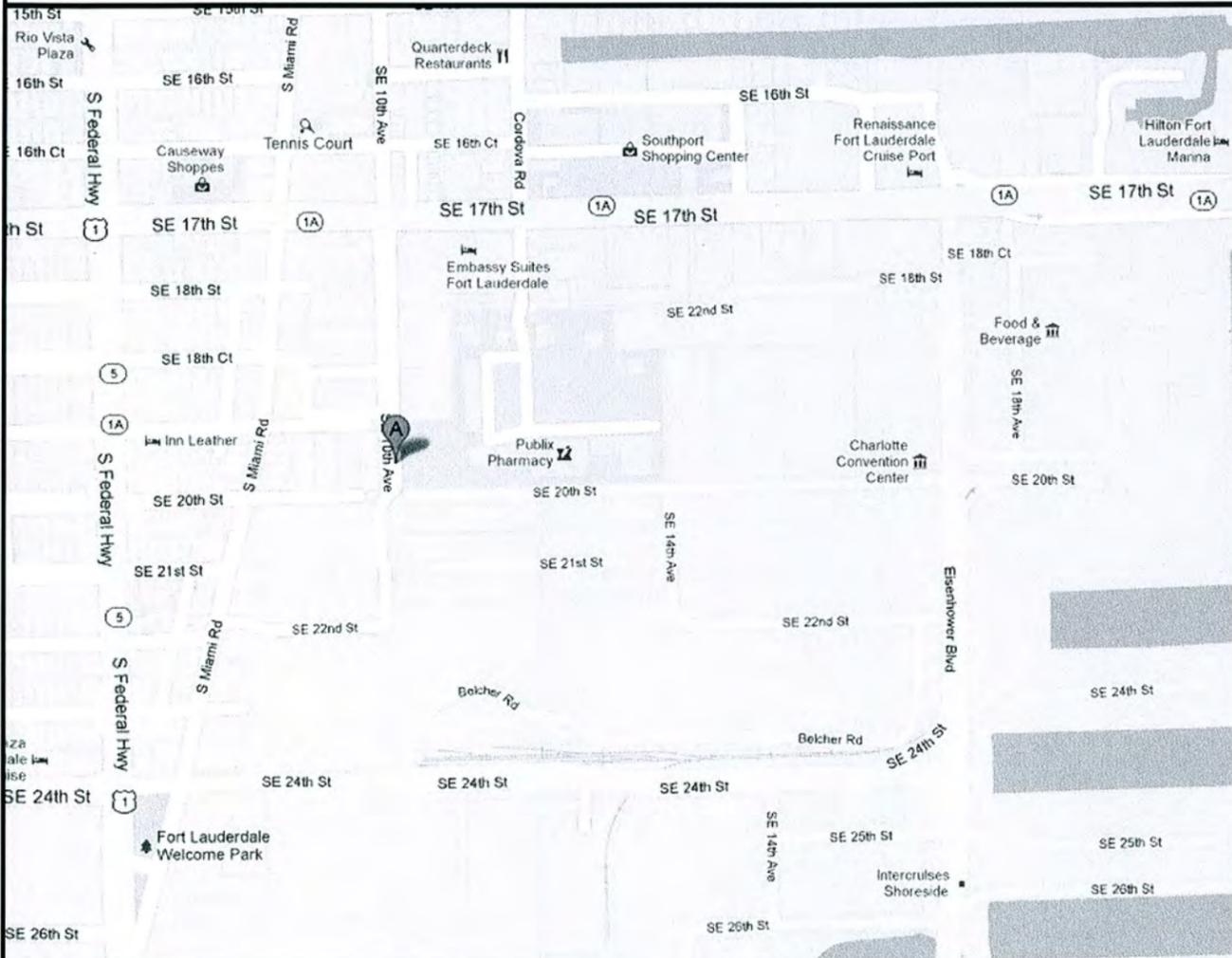


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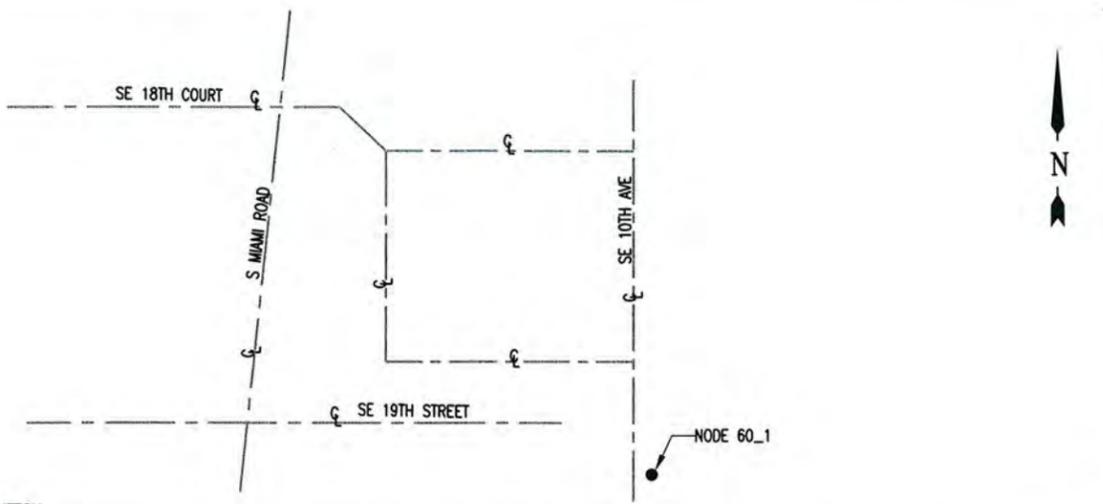
SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T1

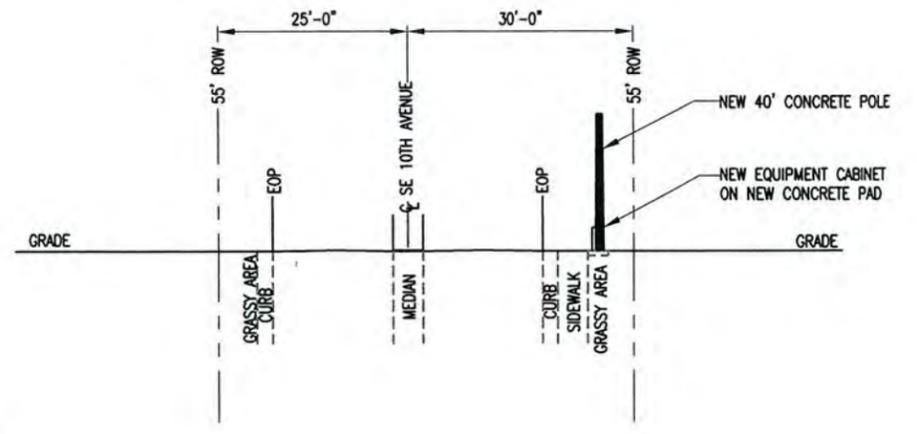


DRIVING DIRECTIONS
 FROM CROWN CASTLE OFFICE IN MIAMI, HEAD WEST ON NORTHWEST 64TH STREET. TURN RIGHT ONTO NORTHWEST 87TH AVENUE. TURN RIGHT ONTO NORTH WEST 74TH STREET, TURN LEFT TO MERGE ONTO FLORIDA-826 NORTH, TAKE THE US-441 SOUTH EXIT TOWARD I-95 NORTH, MERGE ONTO US-441 NORTH/FL-7 NORTH. KEEP LEFT AT THE FORK AND MERGE ONTO I-95 NORTH, TAKE EXIT 24 TO MERGE ONTO I-595 EAST TOWARD PORT EVERGLADES/FORT LAUDERDALE/HOLLYWOOD/INTERNATIONAL AIRPORT, TAKE EXIT 12B TO MERGE ONTO NORTH SR-A1A NORTH/U.S.1 NORTH/SOUTH FEDERAL HIGHWAY, TURN RIGHT ONTO SOUTH EAST 17TH STREET, TURN RIGHT ONTO EISENHOWER BLVD (RESTRICTED USAGE ROADS) TURN RIGHT ONTO SOUTH EAST 18TH STREET, TURNS LEFT AND BECOMES SOUTH EAST 10TH AVENUE, DESTINATION WILL BE ON THE LEFT.

UNDERGROUND SERVICE ALERT
 CALL TOLL FREE
 1-800-432-4770
 48 HOURS BEFORE YOU DIG



1 LOCATION SKETCH
SCALE: NTS

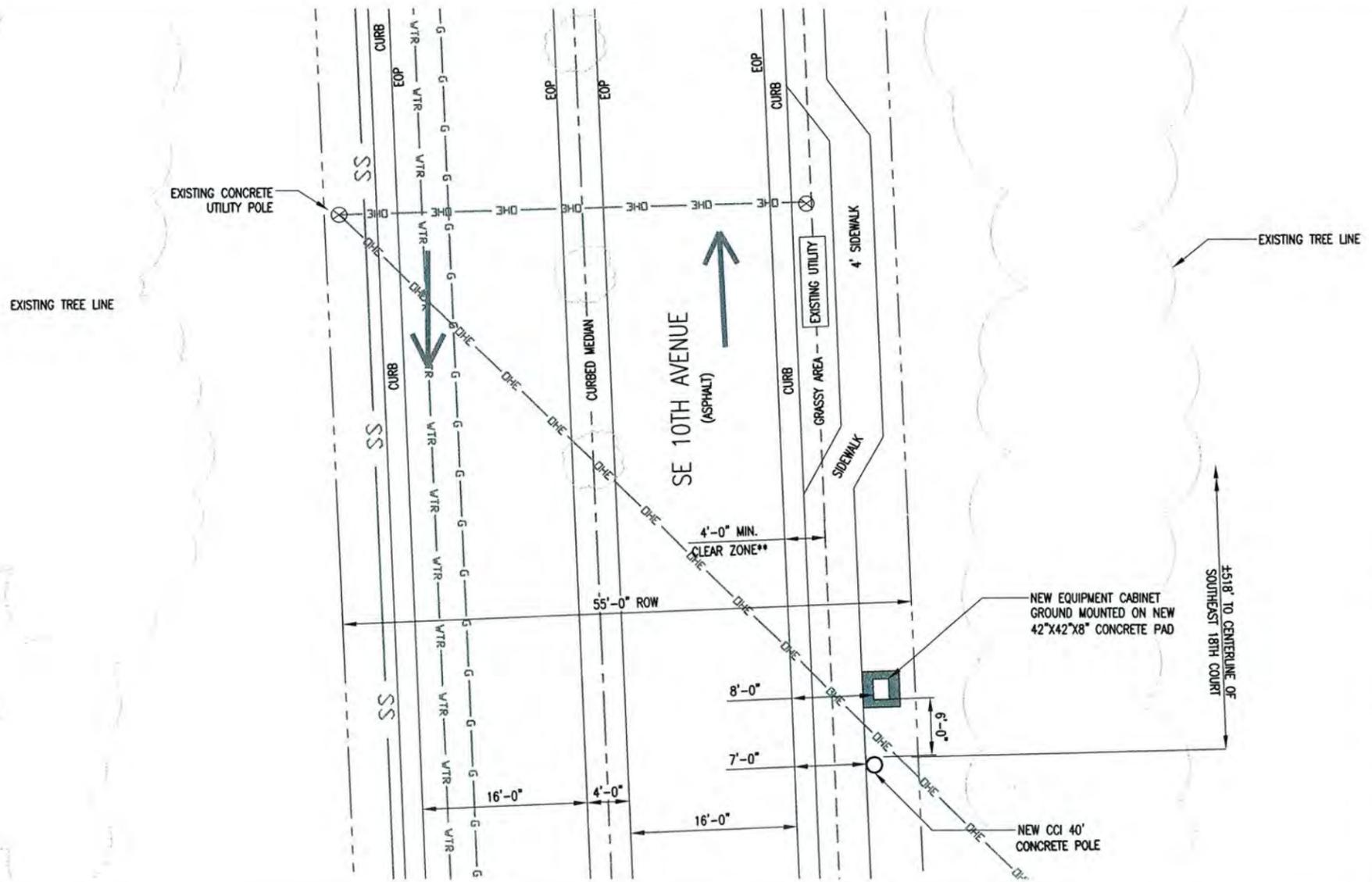


2 TYPICAL PROFILE VIEW
SCALE: NTS



300 CROWN OAK CENTRE DRIVE
LONGWOOD, FL 32750
TEL: 407.260.0231
FAX: 407.260.0749
FL COA#: 26983

DRAWN BY:	EW	CHECKED BY:	JD
REV	DATE	DESCRIPTION	
2	09/11/13	REVISED POLE TYPE/LOCATION	
1	05/09/13	REVISED PER COMMENTS	
0	01/11/13	ISSUED FOR PERMIT	



3 PLAN VIEW
SCALE: NTS

** MINIMUM CLEAR ZONES ILLUSTRATED USING DESIGN GUIDELINES FROM FDOT FLORIDA GREENBOOK, MAY 2007 EDITION

POSTED SPEED LIMIT:
30 MPH



UNDERGROUND SERVICE ALERT
CALL TOLL FREE 1-800-432-4770
48 HOURS BEFORE YOU DIG

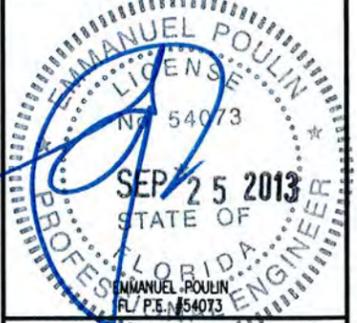
- NOTES:
- CONTRACTOR SHALL MAINTAIN UNINTERRUPTED ACCESS TO ALL DRIVEWAYS, SIDE STREETS AND WALKWAYS AT ALL TIMES UNLESS OTHERWISE PERMITTED.
 - CONTRACTOR SHALL PREPARE A MAINTENANCE OF TRAFFIC (M.O.T.) PLAN FOR PEDESTRIAN TRAFFIC AND WORK WITHIN THE RIGHT-OF-WAY, INCLUDING VEHICLE PARKING AND EQUIPMENT STAGING.
 - CONTRACTOR SHALL RESTORE ANY DISTURBED AREAS TO ORIGINAL CONDITION OR BETTER.

SYMBOL LEGEND

— E — POWER CONDUIT	— SS — STORM
— T — TELCO CONDUIT	⊗ EXISTING UTILITY POLE
— F — PROPOSED FIBER CONDUIT	⊙ HYDRANT
— DHE — OVERHEAD CONDUCTORS	⊕ MANHOLE
— G — GROUNDING	— — — CENTERLINE OF ROAD
— X — FENCE	○ PROPOSED WOOD POLE
— W — WATER	■ PROPOSED CONCRETE UTILITY POLE
— S — SEWER	
— GAS — GAS	

1 ← REPRESENTS DETAIL #
C7 ← REPRESENTS SHEET #

NOTE 1 ← REPRESENTS NOTE
SHT E7 ← REPRESENTS SHEET #

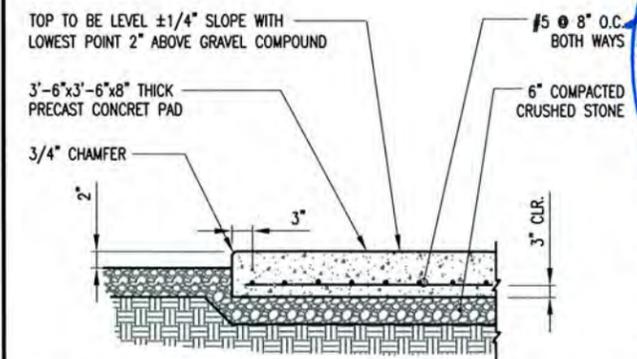
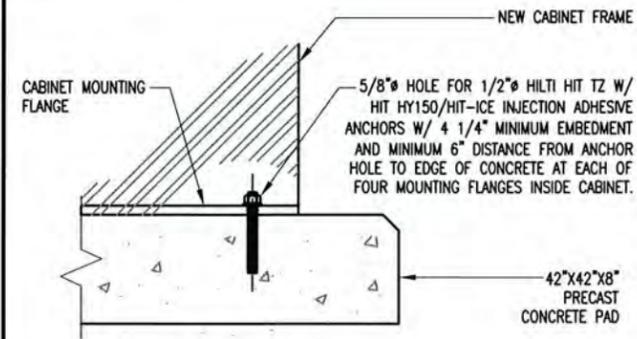
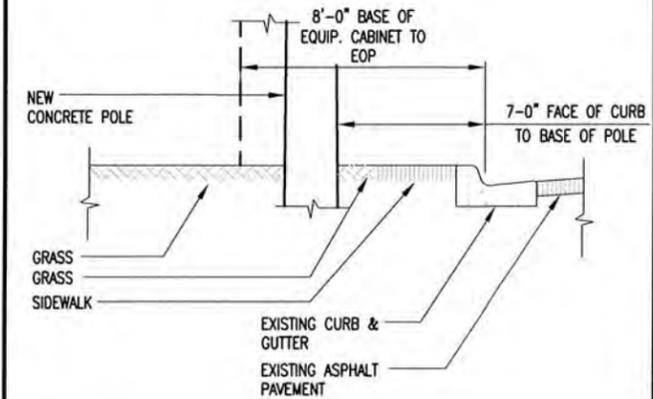
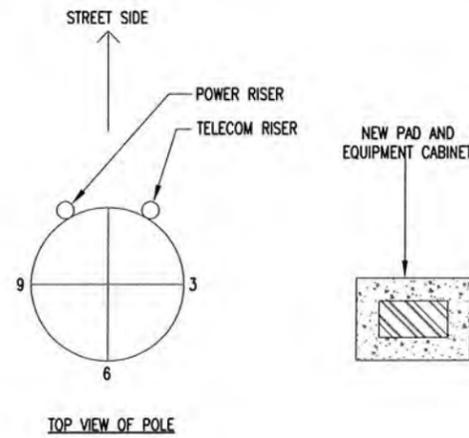
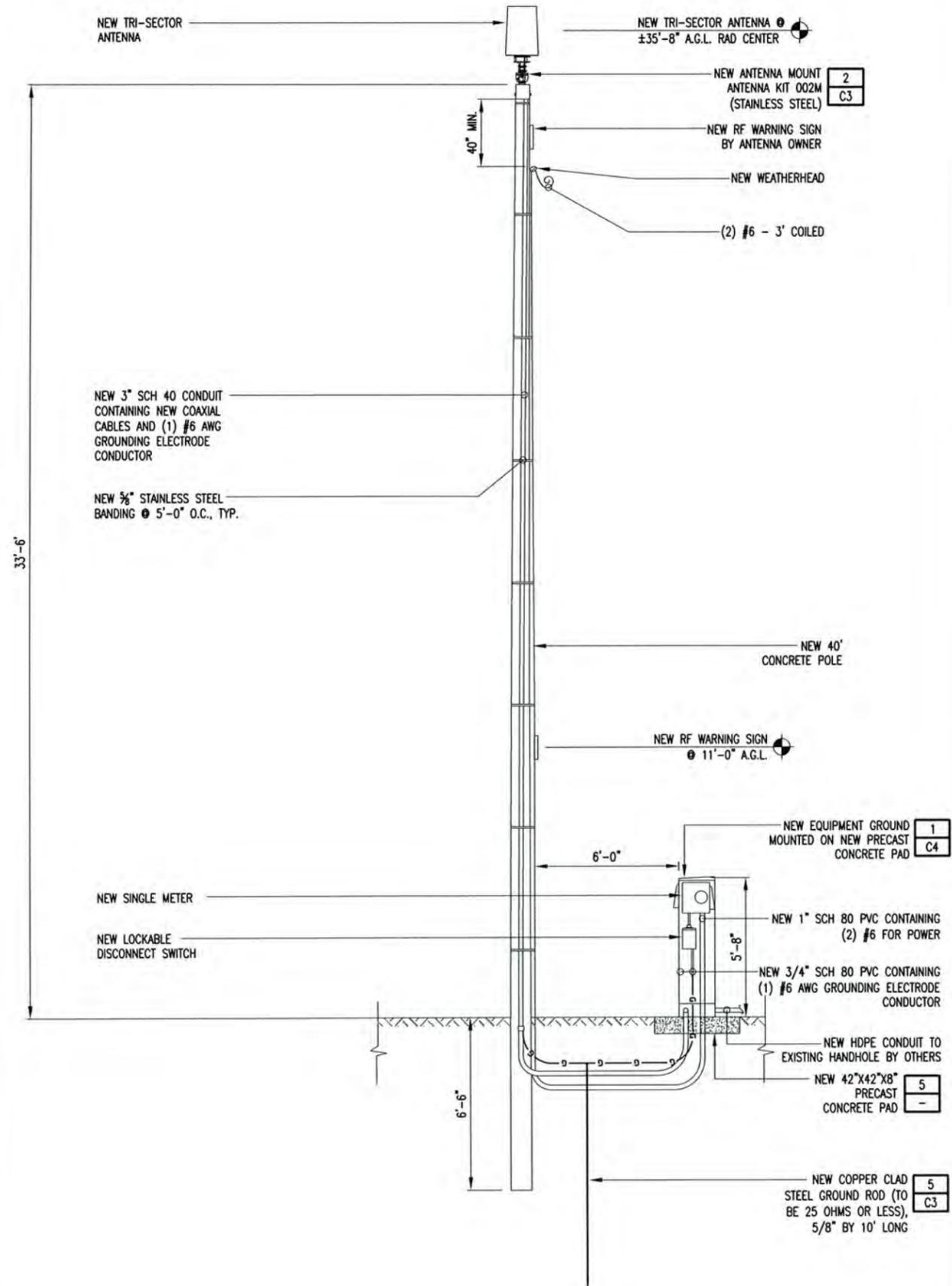


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FORT LAUDERDALE, FL 33316

SHEET TITLE:
SITE PLAN

SHEET NUMBER:
C1



SYMBOL LEGEND

—E—	POWER CONDUIT	—X—	FENCE
—T—	TELCO CONDUIT	—S—	SILT FENCE
—OHE—	OVERHEAD CONDUCTORS		
—G—	GROUNDING		

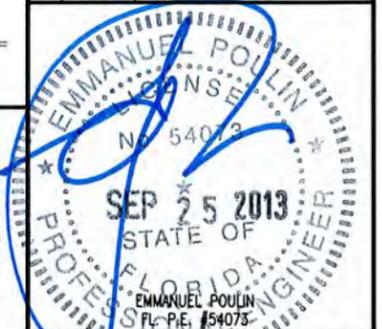
1	← REPRESENTS DETAIL #	NOTE 1	← REPRESENTS NOTE
C7	← REPRESENTS SHEET #	SHT E7	← REPRESENTS SHEET #



300 CROWN OAK CENTRE DRIVE
LONGWOOD, FL 32750
TEL: 407.260.0231
FAX: 407.260.0749
FL COA#: 26983

DRAWN BY: EW CHECKED BY: JD

REV	DATE	DESCRIPTION
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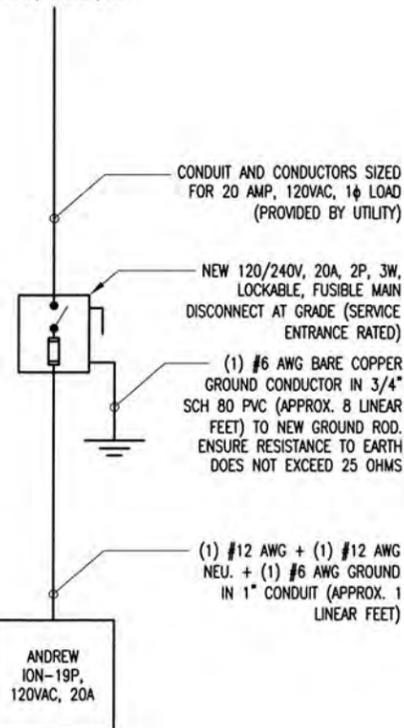
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ADDRESS: 1960 SE 10TH AVENUE
FORT LAUDERDALE, FL 33316

SHEET TITLE:
ELEVATION

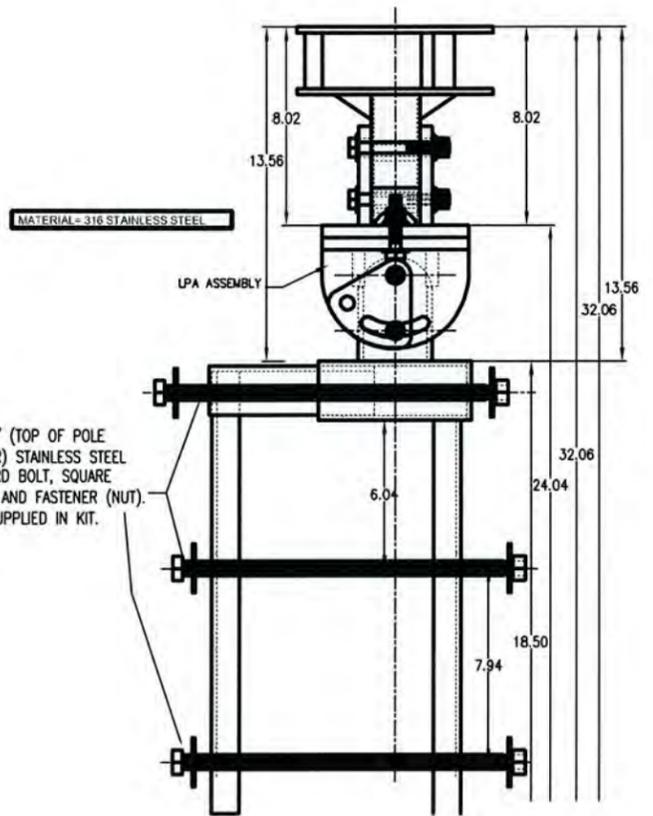
SHEET NUMBER:
C2

NEW ELECT. SERVICE,
20 AMP, 120VAC, 1φ



1 RISER DIAGRAM
SCALE: NTS

1. SHORT CIRCUIT CURRENT RATING OF FUSIBLE MAIN DISCONNECT: 100kA.
2. PER FLORIDA BUILDING CODE 2010: FEEDER CONDUCTORS ARE SIZED FOR A MAXIMUM VOLTAGE DROP OF 2% AT DESIGN LOAD OF 20A.
3. PER FLORIDA BUILDING CODE 2010: BRANCH CIRCUIT CONDUCTORS ARE SIZED FOR A MAXIMUM VOLTAGE DROP OF 3% AT DESIGN LOAD. HOWEVER, THIS DESIGN CONTAINS NO BRANCH CIRCUITS.
4. ALL CONDUCTORS ARE TO BE COPPER WIRE WITH INSULATION TYPE XHHW.
5. ALL ABOVE GRADE CONDUIT IS TO BE UV RESISTANT SCHEDULE 80 PVC. ALL BELOW GRADE CONDUIT IS TO BE SCHEDULE 40 PVC.



2 ANTENNA MOUNTING KIT (002M)
SCALE: NTS

KATHREIN
SCALA DIVISION

Kathrein's dual band antennas are ready for 3G applications, covering all existing wireless bands as well as all spectrum under consideration for future systems, AMPS, PCS and 3G/UMTS.

- Wide band operation.
- Exceptional intermodulation characteristics.
- High strength fiberglass radome.
- Internal duplexers allow the +45° polarization (upper and lower bands) to be combined on one connector and the -45° polarization (upper and lower bands) to be combined on a second connector for each antenna.

General specifications:

Frequency range	806-960 MHz 1710-2170 MHz
VSWR	<1.5:1
Impedance	50 ohms
Intermodulation (2x20w)	IM3: <-150 dBc
Polarization	+45° upper and lower band -45° upper and lower band
Connector	6 x 7-16 DIN female
Isolation	intrasystem >30 dB intersystem >40 dB (806-960 // 1710-2170 MHz)
Radome color	Brown, gray or dark gray (custom colors available at additional cost)
Weight	50 lb (22.7 kg)
Height	24 inches (609 mm)
Radome diameter	16 inches (407 mm)
Equivalent flat plate area	1.6 ft² (0.148 m²)
Wind survival rating*	100 mph (160 kph)
Shipping dimensions	32 x 20 x 19 inches (813 x 508 x 483 mm)
Shipping weight	52 lb (23.6 kg)
Mounting	Designed to be mounted on top of a utility pole using a custom mounting bracket supplied by the customer.

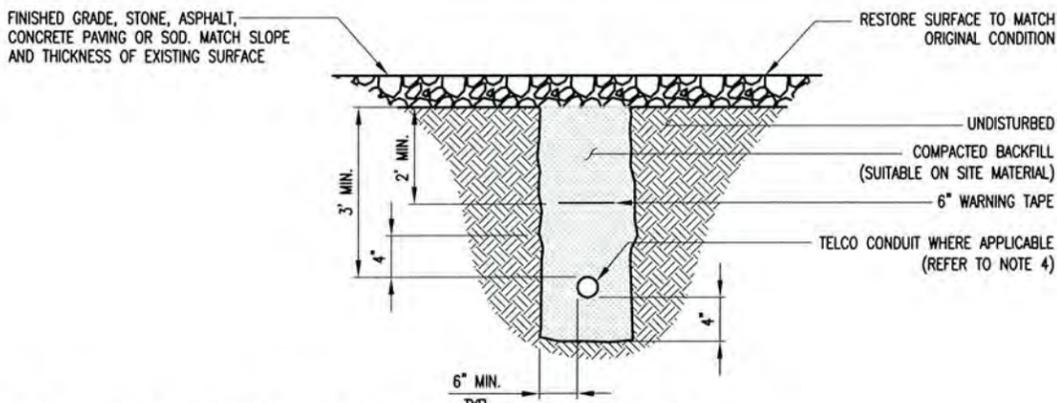
See reverse for order information.



Specifications:

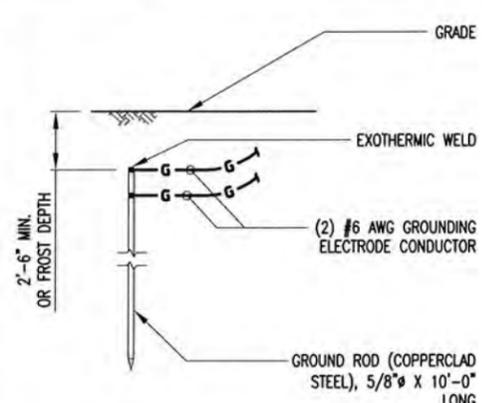
	806-866 MHz	824-894 MHz	880-960 MHz	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Gain	11.1 dBi	11.4 dBi	11.8 dBi	12.5 dBi	13.3 dBi	13.6 dBi
Front-to-back ratio (180° ± 30°)	>23 dB (co-polar) >20 dB (total power)	>23 dB (co-polar) >20 dB (total power)	>25 dB (co-polar) >22 dB (total power)	>25 dB (co-polar) >22 dB (total power)	>25 dB (co-polar) >22 dB (total power)	>25 dB (co-polar) >22 dB (total power)
Maximum input power	250 watts (at 50°C)	250 watts (at 50°C)	250 watts (at 50°C)	200 watts (at 50°C)	200 watts (at 50°C)	200 watts (at 50°C)
+45° and -45° polarization horizontal beamwidth	67° (half-power)	66° (half-power)	64° (half-power)	66° (half-power)	60° (half-power)	60° (half-power)
+45° and -45° polarization vertical beamwidth	34° (half-power)	33° (half-power)	30° (half-power)	20° (half-power)	18° (half-power)	17.5° (half-power)
Cross polar ratio						
Main direction	0°	0°	0°	16 dB (typical)	16 dB (typical)	20 dB (typical)
Sector	>10 dB	>10 dB	>10 dB	>10 dB	>10 dB	>10 dB

3 ANTENNA SPECIFICATIONS
SCALE: NTS



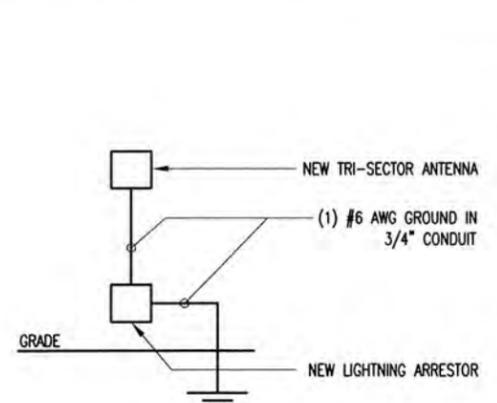
4 NEW UNDERGROUND CONDUIT(S) TRENCHING DETAIL (IF APPLICABLE, REFER TO SITE PLAN)
SCALE: NTS

1. PROVIDE SCHEDULE 40 PVC CONDUIT BELOW GRADE EXCEPT AS NOTED BELOW.
2. PROVIDE SCHEDULE 80 PVC CONDUIT AND ELBOWS AT STUB UP LOCATIONS (i.e. SERVICE POLE, BTS EQUIPMENT, ETC.).
3. INSTALL UTILITY PULLBOXES PER NEC.
4. SEPARATION DIMENSION TO BE VERIFIED WITH LOCAL UTILITY CO. REQUIREMENTS.
5. CONDUIT/TUBING CONTAINING FIBER OPTIC CABLING TO BE FILLED WITH GEL TO PREVENT WATER PENETRATION, COMMONLY REFERRED TO AS "ICKY PICK."



5 GROUND ROD DETAIL
SCALE: NTS

1. GROUND ROD TO BE DRIVEN 10' VERTICALLY.



6 ANTENNA GROUNDING SCHEMATIC
SCALE: NTS



AW Solutions
INCORPORATED
300 CROWN OAK CENTRE DRIVE
LONGWOOD, FL 32750
TEL: 407.260.0231
FAX: 407.260.0749
FL COA#: 26983

DRAWN BY: EW CHECKED BY: JD

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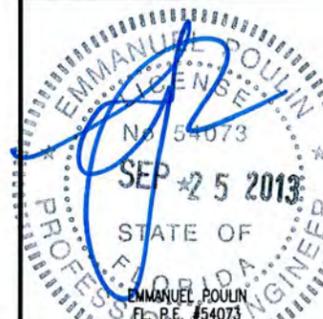
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SHEET NUMBER: **C3**

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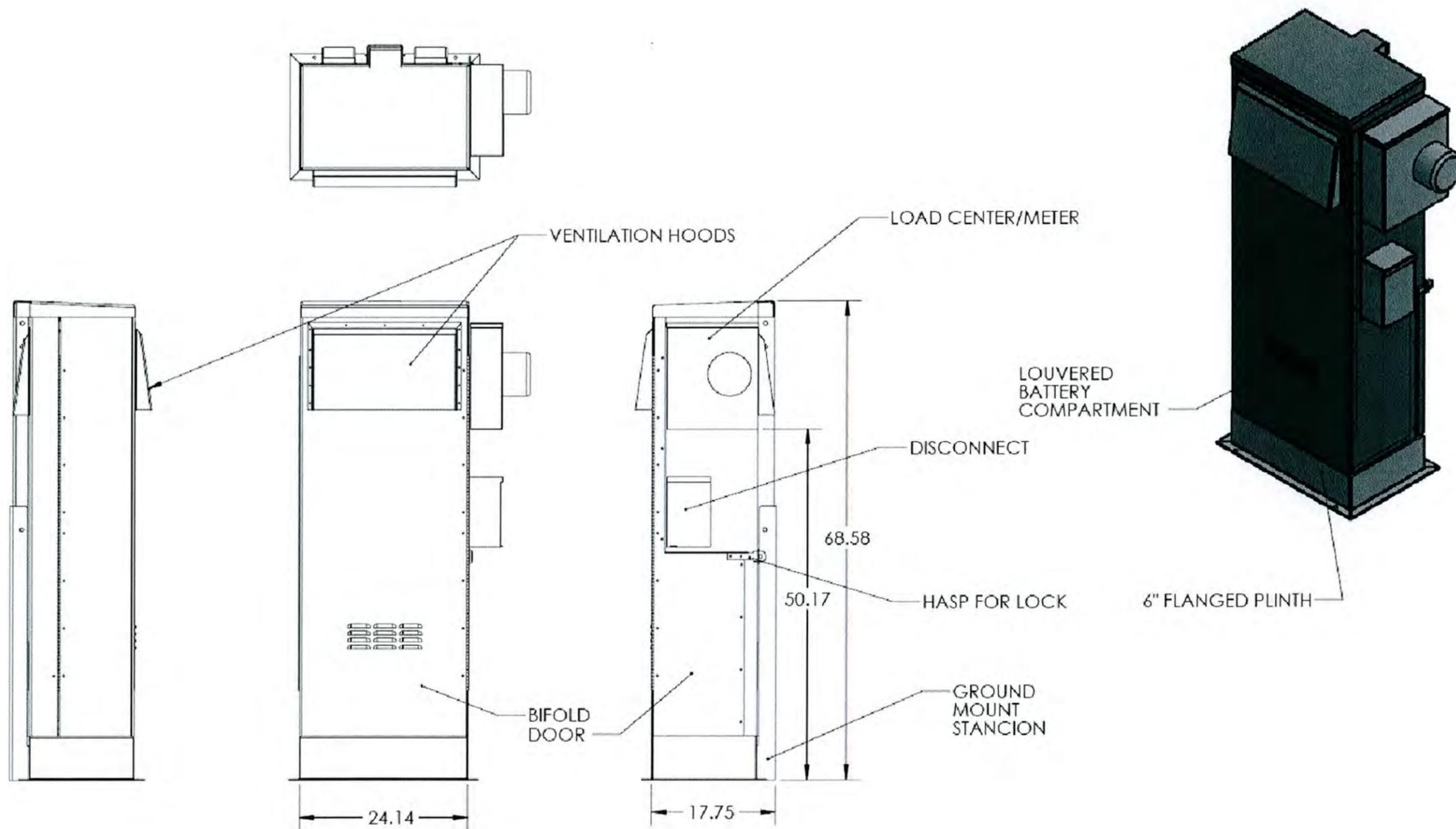


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SHEET TITLE:
DETAILS

SHEET NUMBER:
C4



1 - GENERAL PROVISIONS

1.1 CONTRACT OVERVIEW

1. INTENTION OF THE DOCUMENTS IS TO SHOW THE COMPLETE INSTALLATION AND TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY, WHETHER OR NOT SPECIFICALLY INDICATED, FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT. THE INTENT OF THIS DOCUMENT IS NOT TO DESIGNATE THE MEANS AND METHODS OF PROCEDURE OF THE WORK. THE CONTRACTOR SHALL SUPERVISE AND COORDINATE ALL WORK, USING HIS PROFESSIONAL KNOWLEDGE AND SKILLS. HE IS SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, TECHNIQUES, PROCEDURES, SEQUENCING AND COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING CODES, STANDARDS AND SUPPLEMENTS:

- FBC - FLORIDA BUILDING CODE 2010
- ASC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATIONS
- IEEE - INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
- NEC - NATIONAL ELECTRICAL CODE
- NEMA - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
- UL - UNDERWRITERS LABORATORIES
- NSPC - NATIONAL STANDARD PLUMBING CODE
- IMC - INTERNATIONAL MECHANICAL CODE
- NFPA - NATIONAL FIRE PROTECTION ASSOCIATION
- OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
- ANSI/TIA - TELECOMMUNICATIONS INDUSTRY ASSOCIATION - 222-C STANDARD
- ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND ORDINANCES

THE MOST STRINGENT CODE WILL APPLY IN THE CASE OF DISCREPANCIES OR DIFFERENCES IN THE CODE REQUIREMENTS.

3. THE ENGINEERING DRAWINGS SHOW PRINCIPAL AREAS WHERE WORK MUST BE ACCOMPLISHED UNDER THIS CONTRACT. INCIDENTAL WORK MAY ALSO BE NECESSARY IN AREAS NOT SHOWN ON THE ENGINEERING DRAWINGS DUE TO CHANGES AFFECTING EXISTING ELECTRICAL OR OTHER SYSTEMS. SUCH INCIDENTAL WORK IS ALSO A PART OF THIS CONTRACT. INSPECT THOSE AREAS AND ASCERTAIN WHAT IS NEEDED TO DO THAT WORK IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER.

4. DO NOT SCALE DRAWINGS. ALL DIMENSIONS TAKE PRECEDENCE OVER SCALE.

5. MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK HOWEVER, NO CHANGE THAT ALTERS THE CHARACTER INTENT OF THE DESIGN WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT A CHANGE ORDER.

6. GENERAL CIVIL, STRUCTURAL, ELECTRICAL AND ANTENNA DRAWINGS ARE INTERRELATED. IN PERFORMANCE OF THE WORK, EACH CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

7. THE GENERAL NOTES CONTAINED HEREIN ARE PART OF THE PLANS AND SPECIFICATIONS, AND ARE TO BE COMPLIED WITH IN ALL RESPECTS. THE MOST RESTRICTIVE NOTES SPECIFIED ARE TO TAKE PRECEDENCE. CERTAIN SECTIONS OF THE GENERAL NOTES MAY NOT APPLY TO EVERY SITE. THE CONTRACTOR IS TO COMPLY WITH ALL APPLICABLE GENERAL NOTES IN ALL RESPECTS.

8. ALL GENERAL NOTES AND STANDARD DETAILS ARE THE MINIMUM REQUIREMENT TO BE USED IN CONDITIONS WHICH ARE NOT SPECIFICALLY SHOWN OTHERWISE.

9. REPRESENTATION OF TRUE NORTH OTHER THAN THOSE FOUND ON THE PLOT OF THE SURVEY DRAWING SHALL NOT BE USED TO IDENTIFY OR ESTABLISH THE BEARING OF THE TRUE NORTH AT THE SITE. THE CONTRACTOR SHALL RELY SOLELY ON THE PLOT OF THE SURVEY DRAWING AND ANY SURVEYOR'S MARKING AT THE SITE FOR THE ESTABLISHMENT OF THE TRUE NORTH, AND SHALL NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK IF ANY DISCREPANCY IS FOUND BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND THE TRUE NORTH ORIENTATION AS DEPICTED ON THE CIVIL SURVEY. THE CONTRACTOR SHALL ASSUME SOLE LIABILITY FOR ANY FAILURE TO NOTIFY THE ENGINEER.

10. THE CONTRACTOR SHALL USE ADEQUATE NUMBERS 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.

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

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL SAFETY PRECAUTIONS AND REGULATIONS SUCH AS OSHA COMPLIANCE DURING THE PROGRESS OF THE WORK. THE ENGINEER WILL NOT ADVISE NOR PROVIDE DIRECTION AS TO SAFETY PRECAUTIONS AND PROGRAMS.

13. THE CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY OF THE SECURITY OF THE SITE UNTIL COMPLETION OF THE CONSTRUCTION.

14. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLAN SHEETS AND SPECIFICATIONS AND COORDINATE HIS WORK WITH THE WORK OF ALL OTHER CONTRACTORS TO ENSURE THAT WORK PROGRESSION IS NOT INTERRUPTED.

15. THE CONTRACTOR IS INSTRUCTED TO COOPERATE WITH ANY AND ALL OTHER CONTRACTORS PERFORMING WORK ON THIS JOB SITE DURING THE PERFORMANCE OF THIS CONTRACT TO AVOID DELAYS IN THE CONTRACT SCHEDULE OR OTHER WORK PERFORMED IN THE WORKING AREA.

16. THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION SCHEDULE TO THE PROPERTY OWNER WELL IN ADVANCE OF THE STARTING DATE OF THE WORK. THE OWNER SHALL ALSO BE NOTIFIED OF A CHANGE IN THE CONSTRUCTION SCHEDULE.

17. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIRED PERMITS.

18. EACH CONTRACTOR IS RESPONSIBLE FOR PULLING THE BUILDING PERMIT AT THE LOCAL JURISDICTION AS THE CONTRACTOR OF RECORD, AND SHALL PROVIDE THE JURISDICTION WITH ALL PROOF REQUIRED TO OPERATE AS THE CONTRACTOR IN THIS JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING, AND INCURRING THE COST OF ALL REQUIRED PERMITS, INSPECTIONS, CERTIFICATIONS, ETC. PRIOR TO BEGIN THE WORK.

19. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE NOTICE TO THE BUILDING INSPECTION DEPARTMENT TO SCHEDULE THE REQUIRED INSPECTIONS. A MINIMUM OF 48 HOURS OF NOTICE SHOULD BE GIVEN TO AUTHORITIES. AN EXTENSION IN THE CONTRACT SCHEDULE WILL NOT BE GRANTED DUE TO DELAY CAUSED BY INSPECTIONS.

20. EACH CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF CONTRACTOR LICENSES, BONDS AND INSURANCES. DOCUMENTATION SHALL BE PROVIDED TO THE OWNER PRIOR TO THE WORK.

21. A COPY OF THE APPROVED PLANS SHALL BE KEPT IN A PLACE SPECIFIED BY THE GOVERNING AGENCY, AND BY LAW SHALL BE AVAILABLE FOR INSPECTION AT ALL TIMES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE ALL CONSTRUCTION SETS REFLECT THE SAME INFORMATION AS THE APPROVED PLANS. THE CONTRACTOR SHALL ALSO MAINTAIN ONE SET OF PLANS AT THE SITE FOR THE PURPOSE OF DOCUMENTING ALL AS-BUILTS CHANGES, REVISIONS, ADDENDA, OR CHANGES ORDERS.

22. THE CONTRACTOR IS TO PROVIDE THE OWNER WITH A FULL SET OF RECORD DRAWINGS WITH ACTUAL DIMENSIONS, ROUTING AND CIRCUITS UPON COMPLETION OF CONSTRUCTION.

23. THE CONTRACTOR IS TO CONTACT BOTH LOCAL POWER AND TELEPHONE UTILITY COMPANIES BEFORE CONSTRUCTION BEGINS TO ORDER SERVICE, OBTAIN AND PAY ALL FEES ASSOCIATED WITH CONSTRUCTION, SCHEDULE INSTALLATION OF SERVICE, COORDINATE CONDUIT RUN/TERMINATION POINT AND OBTAIN ANY FIELD MATERIALS THAT MAY BE SUPPLIED BY THE UTILITY COMPANIES AND INSTALLED BY THE CONTRACTORS.

24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY BRACING, SHORING, TIES, FORM WORK AND THE PROTECTION OF ALL WORK DURING CONSTRUCTION TO AVOID DAMAGE, COLLAPSE, DISTORTION, MISALIGNMENT AND ALTERATION OF ROOFING WARRANTIES.

25. THE CONTRACTOR IS RESPONSIBLE TO PROMOTE TEMPORARY POWER, WATER AND TOILET FACILITIES AS REQUIRED BY THE PROPERTY OWNER OR GOVERNING AGENCY.

26. THE CONTRACTOR SHALL MONITOR ALL EXISTING STRUCTURES DURING CONSTRUCTION.

27. THE CONTRACTOR SHALL COORDINATE THE FINAL DIMENSIONS OF ANY TYPE OF BEAM LAYOUT WITH THE FOOTPRINT OF THE NEW EQUIPMENT BEFORE ORDERING ANY MATERIALS.

28. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN SAFE CONDITIONS PRIOR TO INSTALLATIONS, AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT.

29. ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY LOCATION AND IN A MANNER THAT WILL NOT OBSTRUCT THE FLOW OF OTHER WORK RELATED OR NOT TO THIS CONTRACT. ANY EQUIPMENT OR MATERIAL STORAGE MUST MEET ALL RECOMMENDATIONS OF THE MANUFACTURER. THE CONTRACTOR SHALL INSPECT THOROUGHLY ALL MATERIALS AND EQUIPMENT PRIOR TO FINAL INSTALLATION. EQUIPMENT MATERIALS SHALL NOT BE INSTALLED PERMANENTLY.

30. ALL MATERIALS SHALL BE INSTALLED PER THE MANUFACTURERS' INSTRUCTIONS.

31. EXCEPT FOR WARNING SIGNS SUCH AS "NO TRESPASSING" AND SIGNS THAT STATE OWNERSHIP AND EMERGENCY TELEPHONE NUMBERS, NO SIGN SHALL BE LOCATED ON THE TOWER.

32. ALL EQUIPMENT SHALL BE INSTALLED LEVEL AND PLUMB.

1.2 EXISTING CONDITIONS AND STRUCTURES

1. BEFORE BEGINNING WORK AT THE SITE, THE CONTRACTOR SHALL INSPECT THE EXISTING COMPOUND OR BUILDING AND DETERMINE THE EXTENT OF EXISTING FINISHES, SPECIALTIES, EQUIPMENT AND OTHER ITEMS WHICH MUST BE REMOVED AND REINSTALLED IN ORDER TO PERFORM THE WORK UNDER THIS CONTRACT. THE CONTRACTOR MUST VERIFY ALL DIMENSIONS, CONDITIONS AND ELEVATIONS BEFORE STARTING WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCES BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. 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. BY SUBMITTING A BID FOR THIS WORK, THE CONTRACTOR ACKNOWLEDGES THAT HE HAS THOROUGHLY REVIEWED AND UNDERSTOOD THE CONSTRUCTION DOCUMENTS, VISITED THE SITE AND IS FAMILIAR WITH THE CONDITIONS ENCOUNTERED AT THE SITE.

3. THE CONTRACTOR, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY MATTER OR THING WHICH SUCH THE CONTRACTOR MIGHT NOT HAVE FULLY INFORMED HIMSELF PRIOR TO BIDDING.

4. NO PLEA OF KNOWLEDGE OF CONDITIONS THAT EXIST, OR OF OBSTACLES THAT MAY BE ENCOUNTERED OR OF ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED WILL BE ACCEPTED AS A REASON FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

5. IT IS UNDERSTOOD BY THE OWNER THAT THE CONTRACTOR IN SUBMITTING HIS BID, WARRANTS THAT HE HAS CAREFULLY EXAMINED THE SITE OF THE PROJECT TO ACQUAINT HIMSELF WITH THE SURROUNDING PROPERTIES, THE MEANS OF APPROACH TO THE SITE, THE CONDITIONS OF THE ACTUAL JOB SITE, THE FACILITIES FOR DELIVERING, STORING, PLACING,

HANDLING AND THE REMOVAL OF MATERIALS AND EQUIPMENT AND ANY AND ALL DIFFICULTIES THAT MAY BE ENCOUNTERED DURING THE EXECUTION OF THE ALL WORK IN ACCORD WITH THE CONTRACT DOCUMENTS.

6. THE LOCATION OF EXISTING UNDERGROUND UTILITIES HAVE NOT BEEN VERIFIED BY THE OWNER OR HIS REPRESENTATIVE. THE CONTRACTOR IS RESPONSIBLE FOR HAVING ALL UNDERGROUND UTILITIES LOCATED WITHIN THE LIMITS OF CONSTRUCTION AND ACCEPTS FULL RESPONSIBILITY FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY THE CONTRACTOR FAILURE TO LOCATE ALL UNDERGROUND UTILITIES BEFORE COMMENCING WORK.

7. SHOULD ANY ERROR OR INCONSISTENCY APPEAR IN THE DRAWINGS OR SPECIFICATIONS, THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK MUST MAKE MENTION OF THE SAME TO THE ENGINEER AND OWNER FOR PROPER ADJUSTMENT AND IN NO CASE PROCEED WITH THE WORK IN UNCERTAINTY OR WITH INSUFFICIENT DRAWINGS.

8. THE CONTRACTOR AND EACH SUBCONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR CONSIDERATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY IN DIMENSIONS WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE ENGINEER AND THE OWNER REPRESENTATIVE FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS. THE CONTRACTOR'S WORK SHALL NOT VARY FROM THE PLANS WITHOUT THE EXPRESSED APPROVAL OF THE OWNER OR HIS REPRESENTATIVE.

9. TRADE, PRODUCT NAMES OR MANUFACTURER'S NAMES OR CATALOG NUMBERS AND INDICATIONS OF EXISTING PRODUCT TYPES SHOWN ON THE DRAWINGS ARE BELIEVED TO BE ACCURATE. IF THEY ARE DISCOVERED TO BE INACCURATE, NOTIFY ENGINEERS IMMEDIATELY AND DO NOT PROCEED WITHOUT INSTRUCTIONS.

10. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL PROTECT ALL AREAS FROM DAMAGES WHICH MAY OCCUR DURING CONSTRUCTION. ANY DAMAGES TO NEW OR EXISTING SURFACES, STRUCTURES OR EQUIPMENT SHALL BE IMMEDIATELY REPAIRED OR REPLACED TO THE SATISFACTION OF THE PROPERTY OWNER. THE CONTRACTOR SHALL BEAR THE COST OF REPAIRING OR REPLACING ANY DAMAGES AREAS.

11. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES AND EFFORTS TO PROTECT THE STRUCTURAL INTEGRITY OF EXISTING STRUCTURES. WHEN WORK IS PERFORMED IN THE VICINITY OF EXISTING STRUCTURE, THE STRUCTURAL INTEGRITY AND STABILITY SHALL BE MONITORED AT ALL TIMES DURING EVERY PHASE OF THE CONSTRUCTION.

12. THE CONTRACTOR SHALL PROTECT EXISTING PROPERTY LINE MONUMENTATION. ANY MONUMENTATION DISTURBED OR DESTROYED, AS JUDGED BY THE OWNER OR OWNER'S REPRESENTATIVE SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE UNDER THE SUPERVISION OF A LICENSED LAND SURVEYOR.

13. NEW CONSTRUCTION ADDED TO EXISTING CONSTRUCTION SHALL BE MATCHED IN FORM, TEXTURE, MATERIAL AND PAINT COLOR EXCEPT AS NOTED IN THE PLANS.

14. WHERE INDICATED ON THE PLANS, THE CONTRACTOR SHALL PAINT ALL NEW ANTENNAS SHROUDS AND RELATED MOUNTING HARDWARE TO MATCH THE EXISTING ADJACENT SURFACES. THE CONTRACTOR SHALL NOT USE A METAL BASED PAINT ON ANTENNAS. ALL SURFACE CONTAMINATION SHALL BE REMOVED PRIOR TO PAINTING NEW SURFACES.

15. THE PLANS SHOW SOME KNOWN SUBSURFACE STRUCTURES, ABOVE-GROUND STRUCTURES AND/OR UTILITIES BELIEVED TO EXIST IN THE WORKING AREA. EXACT LOCATION OF WHICH MAY VARY FROM THE LOCATIONS INDICATED. IN PARTICULAR, THE CONTRACTOR IS WARNED THAT THE EXACT OR EVEN APPROXIMATE LOCATION OF SUCH PIPELINES, SUBSURFACE STRUCTURES AND/OR UTILITIES IN THE AREA MAY BE SHOWN OR MAY NOT BE SHOWN; AND IT SHALL BE HIS RESPONSIBILITY TO PROCEED WITH GREAT CARE IN EXECUTING ANY WORK. BEFORE YOU DIG, DRILL OR BLAST, CALL THE UNDERGROUND SERVICES ALERT NUMBER ON SHEET T1 AT THE REQUIRED TIME.

16. ALL EXISTING ACTIVE SEWER, WATER GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK SHALL BE PROTECTED AT ALL TIMES. WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. THE CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW IF AN INACTIVE ELECTRICAL, TELEPHONE, SEWER, WATER OR ANY OTHER UTILITY ARE ENCOUNTERED AND INTERFERE WITH THE EXECUTION OF THE WORK. THE CONTRACTOR IS TO REMOVE THE UTILITY AND CAP, PLUG OR OTHERWISE TERMINATE THE UTILITY AT A POINT WHERE IT NO LONGER COMFLICTS WITH THE WORK. THE UTILITY WORK SHALL BE DONE IN ACCORDANCE WITH THE UTILITY COMPANIES RECOMMENDATIONS AND PER LOCAL AUTHORITY HAVING JURISDICTION.

18. ALL UTILITY WORK INVOLVING CONNECTIONS TO EXISTING SYSTEMS SHALL BE COORDINATED WITH THE OWNER OR OWNER'S REPRESENTATIVE AND THE UTILITY OWNER BEFORE EACH AND EVERY CONNECTION TO EXISTING SYSTEMS IS MADE.

19. MAINTAIN FLOW FOR ALL EXISTING UTILITIES.

20. THE CONTRACTOR SHALL RESTORE ALL PUBLIC OR PRIVATE PROPERTY DAMAGED OR REMOVED TO AT LEAST AS GOOD OF CONDITION AS BEFORE DISTURBED AS DETERMINED BY THE OWNER OR OWNER'S REPRESENTATIVE.

21. PROTECT FINISHED SURFACES INCLUDING JAMES AND HEADS OF OPENINGS USED AS PASSAGeways THROUGH WHICH EQUIPMENT AND MATERIALS WILL PASS.

22. PROVIDE PROTECTION FOR EQUIPMENT ROOM SURFACES PRIOR TO ALLOWING EQUIPMENT OR MATERIALS TO BE MOVED OVER SUCH SURFACES.

23. MAINTAIN FINISHED SURFACES CLEAN, UNWORN AND SUITABLY PROTECTED UNTIL JOB SITE IS ACCEPTED BY THE OWNER.

24. IN THE EVENT OF DAMAGE TO AN EXISTING STRUCTURE, THE CONTRACTOR SHALL NOTIFY THE OWNER OR ITS REPRESENTATIVE IMMEDIATELY, AND THEN PROMPTLY MAKE ALL REPAIRS AND REPAIRS TO THE SATISFACTION OF THE OWNER. THE OWNER MAY ELECT TO USE A THIRD PARTY CONTRACTOR TO PERFORM THE REPAIRS. ALL EXPENSES ASSOCIATED WITH THE REPAIRS AND REPLACEMENTS SHALL BE PAID BY THE GENERAL CONTRACTOR SELECTED FOR THIS CONTRACT.

25. ADDITIONAL TIME REQUIRED TO SECURE REPLACEMENT AND MAKE REPAIRS WILL NOT BE CONSIDERED BY THE OWNER TO JUSTIFY AN EXTENSION IN THE CONTRACT TIME FOR COMPLETION.

1.3 ACCESS

1. USE MOST DIRECT ROUTE FROM PUBLIC STREET AS AGREED TO BY COMPOUND OR BUILDING OWNER. FOR ACCESS TO EXISTING BUILDING INTERIOR, USE LOADING DOCK AS AGREED TO BY BUILDING OWNER.

2. COORDINATE WITH SITE OWNER CONSTRUCTION SCHEDULE & SITE ACCESS. ENSURE THAT THE OWNER OF PARENT PARCEL IS NOTIFIED IN WRITING OF CONSTRUCTION ACTIVITIES.

3. A LIST OF WORKERS INVOLVED IN THIS PROJECT SHALL BE PROVIDED TO THE PROPERTY OWNER OR ITS REPRESENTATIVE.

4. THE CONTRACTOR SHALL COORDINATE ALL SPECIAL CONSIDERATIONS OF CONSTRUCTION SUCH AS NOISE OPERATION, INTERRUPTION OF ANY MECHANICAL AND/OR ELECTRICAL SERVICES, MATERIAL DELIVERIES AND STORAGE, STAGING AREA, CRANE LIFTS WITH THE OWNER PRIOR TO THE START OF THE WORK.

5. CONTRACTOR SHALL COORDINATE WITH AN OWNER REPRESENTATIVE, THE TEMPORARY REMOVAL OF FENCE, LANDSCAPING & ANY EXISTING DAMAGE TO ACCESS ROAD OR ADJACENT REPAIR OF PROPERTY PRIOR TO COMMENCING THE WORK.

6. THE CONTRACTOR SHALL COORDINATE WORK HOURS & STAGING AREAS WITH OWNER.

7. CONTRACTOR TO NOTIFY PROPERTY OWNER OF CONSTRUCTION START DATE WELL IN ADVANCE OF CONSTRUCTION.

1.4 SITE MAINTENANCE

1. REMOVE STAINING OR REACTIVE MATERIALS FROM NEW AND EXISTING SURFACES IMMEDIATELY. REMOVE HAZARDOUS ACCUMULATIONS OF DEBRIS PROMPTLY, AT LEAST DAILY. CONTINUE DUST PRODUCING OPERATIONS DURING CUTTING, DRILLING, PAINTING AND FINISHING. THERE SHOULD BE NO OVER SPRAYING PAINT IN PARKING AREA. VACUUM IMMEDIATELY AFTER COMPLETION.

2. THERE SHALL NOT BE ANY CREATION OF NOISE OUTSIDE THE NORMAL HOURS OF 7 AM TO 6 PM, UNLESS OTHERWISE SPECIFIED. NOISE SHALL BE KEPT TO A MINIMUM THROUGHOUT CONSTRUCTION.

3. NOISE AND EXISTING BUILDING STRUCTURE VIBRATION GENERATED BY CONSTRUCTION PROCEDURES, EQUIPMENT, TOOL AND OPERATIONS ARE TO BE KEPT TO A PRACTICABLE MINIMUM. WHERE USE OF HIGH NOISE LEVEL EQUIPMENT IS UNAVOIDABLE, AND CAN BE HEARD, CONFINED TO HOURS BEFORE 7 A.M. AND AFTER 6 P.M. MONDAY THROUGH FRIDAY OR AS AGREED TO BY BUILDING OWNER.

4. THE CONTRACTOR IS TO PROVIDE PORTABLE FIRE EXTINGUISHERS WITH A RATING OF NOT LESS THAN 2-A OR 2 ABC WITHIN 75FT OF TRAVEL TO ALL PORTIONS OF THE CONSTRUCTION AREA.

5. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A NEAT AND ORDERLY SITE, YARD AND GROUNDS, REMOVE AND DISPOSE LEGALLY OFF SITE ALL RUBBISH, WASTE MATERIALS, LITTER, AND ALL FOREIGN SUBSTANCES. REMOVE PETROCHEMICAL SPILLS, STAINS AND OTHER FOREIGN DEPOSITS. RAKE GROUNDS TO A SMOOTH EVEN-TEXTURED SURFACE.

6. AT PROJECT COMPLETION, REMOVE TEMPORARY SERVICES, CONSTRUCTION EQUIPMENT, TOOLS AND FACILITIES, WOODPIPS, TEMPORARY STRUCTURES, SURPLUS MATERIALS, DEBRIS, AND RUBBISH FROM BUILDING OWNERS PROPERTY. PUT SITE IN NEAT, ORDERLY CONDITION, READY FOR USE. LEAVE ROOF AREAS, PIPE SPACES AND OTHER SPACES CLEAN AND FREE FROM DEBRIS ON A DAILY BASIS.

7. THE SITE AND/OR BUILDING SECURITY SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION IN ORDER TO PREVENT UNAUTHORIZED PERSONS FROM ENTERING THE PREMISES. EXISTING AND NEW EQUIPMENT AND MATERIALS REMAIN THE CONTRACTOR'S RESPONSIBILITY AT ALL TIMES DURING CONSTRUCTION.

8. THE TENANT'S INGRESS AND EGRESS OF THE SITE AND/OR BUILDING SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

9. THE CONTRACTOR SHALL TAKE ALL MEASURE NECESSARY TO MAINTAIN POLLUTION CONTROL, COMPLY WITH ALL GOVERNING REGULATION PERTAINING TO ENVIRONMENTAL PROTECTION, AND PROMPTLY REMOVE ALL DEBRIS AND ACCUMULATION OF MATERIALS RESULTING FROM THE WORK.

1.5 TEMPORARY FACILITIES

1. THE CONTRACTOR SHALL CONSIDER THAT WATER, POWER AND LIGHT ARE NOT AVAILABLE AT THIS SITE. WHEN PERMANENT POWER IS ESTABLISHED, ALL CONTRACTORS MAY USE THE SERVICE CONNECTION FOR PRODUCTION WORK ONLY, PROVIDED THAT ELECTRICAL CORDS AND CONNECTIONS ARE FURNISHED BY THE CONTRACTORS AND ARE DISCONNECTED AND PROPERLY STORED DURING NON-WORKING HOURS.

2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE TEMPORARY POWER, WATER AND TOILET FACILITIES AS REQUIRED BY THE PROPERTY OWNER OR GOVERNING AGENCY.

2 - DEMOLITION AND EXISTING STRUCTURAL ALTERATION

2.1 DEMOLITION SPECIFICS

1. GENERAL CONTRACTOR IS TO DEMOLISH AND REMOVE FROM SITE (AND DISPOSE OF APPROPRIATELY) ALL ITEMS NOTED FOR DEMOLITION IN THE ARCHITECTURAL, CIVIL, ELECTRICAL AND/OR STRUCTURAL DRAWINGS, INCLUDING BELOW GRADE FOUNDATION AND STRUCTURES. CONTRACTOR SHALL COORDINATE WITH THE OWNER REPRESENTATIVE THE DISPOSAL OF EQUIPMENT & MATERIALS.

2. GENERAL CONTRACTOR IS TO EXERCISE UTMOST CARE DURING DEMOLITION AND PROMPTLY INFORM THE ENGINEER OF ANY DEVIATION TO THE EXISTING STRUCTURE FROM WHAT IS SHOWN IN THESE PLANS PRIOR TO PROCEEDING WITH THE WORK.

3. GENERAL CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SHORING, BRACING, PROVIDING LATERAL SUPPORT, AND FOR MAINTAINING THE INTEGRITY OF THE EXISTING STRUCTURE DURING ALL PHASES OF THE DEMOLITION AND CONSTRUCTION AND SHALL PROVIDE, IF REQUIRED, SIGNED & SEALED SHOP DRAWINGS, BY A REGISTERED PROFESSIONAL ENGINEER, FOR THE SHORING OF ALL WALLS, BEAMS, SLABS, ROOF JOISTS, OR OTHER ELEVATED STRUCTURAL ITEMS, THAT ARE

HAVING THE SUPPORT BELOW NOTED FOR DEMOLITION.

4. ANY DAMAGE DUE TO DEMOLITION, OR OTHER CONSTRUCTION ACTIVITIES, DONE TO ANY EXISTING SURFACE TO REMAIN SHALL BE REPAIRED TO MATCH EXISTING AT NO ADDITIONAL COST TO THE OWNER.

2.2 CUTTING & PATCHING

1. DO NOT DRILL OR CUT EXISTING FLOOR JOISTS, BEAMS, COLLARS OR OTHER STRUCTURAL ELEMENTS UNLESS SPECIFICALLY INDICATED. DRILL SLABS WHERE APPROVED. CORE DRILL CIRCULAR OPENINGS THROUGH CONCRETE SLAB. LINE DRILL FOR RECTANGULAR OPENINGS. MAKE OPENINGS OF PROPER SIZE FOR CONDUITS, DUCTS, PIPES AND OTHER ITEMS PASSING THROUGH OPENINGS. MAKE ALL HOLE OR OPENINGS BE WEATHER TIGHT OR FIRE SAFE AS REQUIRED BY LOCAL BUILDING CODES & ORDINANCES.

2. PREPARE, SUBMIT AND RECEIVE APPROVAL OF SLEEVES AND OPENING DRAWINGS BEFORE LOCATING SLEEVES AND OPENINGS IN NEW CONSTRUCTION AND BEFORE DRILLING EXISTING STRUCTURE. SHOW EACH OPENING AND SLEEVE IN THE ENTIRE PROJECT.

3. SEAL WATER TIGHT AND PROTECT WITH FIRE PROOFING MATERIALS NEW SLEEVES AND OPENINGS THROUGH ROOFS, FLOORS AND VERTICAL CHASES AS REQUIRED BY CODE AND INDUSTRY STANDARDS. ALL FLOOR AND WALL PENETRATIONS SHALL BE SEALED WITH FIRE RETARDANT COMPOUND MEETING UL CLASSIFICATIONS.

4. THE CONTRACTOR SHALL PROVIDE THE FIRE MARSHALL APPROVED MATERIALS TO FILL/SEAL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES.

5. WHERE CUTTING OF EXISTING SURFACES OR REMOVAL OF EXISTING FINISHES IS REQUIRED TO PERFORM THE WORK UNDER THIS CONTRACT AND A NEW FINISH IS NOT INDICATED, FILL RESULTING OPENINGS AND PATCH THE SURFACE AFTER DOING THE WORK AND FINISH TO MATCH ADJACENT EXISTING SURFACES.

6. EXCEPT IN SPACE WHERE NO WORK UNDER THIS CONTRACT IS REQUIRED, ENCLOSE EXISTING AND NEW CONDUITS, DUCTS, PIPES AND SIMILAR ITEMS IN FURRING WHERE SUCH ITEMS PASS THROUGH FINISHED SPACES WHETHER OR NOT FURRING IS INDICATED.

7. ALL CONCRETE AND MASONRY PENETRATIONS SHALL BE DONE USING ROTARY ACTION ONLY (NO HAMMERING ACTION). X-RAYS ARE TO BE TAKEN PRIOR TO DRILLING.

8. CORE LOCATIONS IF REQUIRED SHALL BE CHOSEN SO AS TO AVOID CUTTING ANY REINFORCING BARS. FIRESTOP FLOOR OR WALL PENETRATION WITH TWO HOUR RATED SEALANT TO MEET UL CLASSIFICATIONS. PROVIDE WEATHERPROOFING OF ANY ROOF PENETRATIONS.

9. REPAIR, PATCH, FINISH AND/OR REFINISH AS APPLICABLE TO MATCH ADJACENT EXISTING FINISHES THOSE EXISTING SURFACES DAMAGED OR NEW PROPOSED SURFACES DURING PERFORMANCE OF THE WORK UNDER THIS CONTRACT.

10. WHERE CONDUITS, DUCTS, PIPES AND SIMILAR ITEMS ARE SHOW TO BE INSTALLED IN EXISTING WALLS OR PARTITIONS. NEARLY CHASE THE WALLS OR PARTITIONS. INSTALL THE TIMES AND PATCH THE WALLS OR PARTITIONS TO MAKE THE INSTALLATION NOT DISCREPANT IN THE FINISHED WORK.

11. WHERE A NEW CUTTING IS NOT SCHEDULED, INSTALL NEW CONDUITS AND PIPES IN EVERY CASE, AND NEW DUCT WHERE POSSIBLE ABOVE EXISTING CEILING. REMOVE EXISTING CEILING AS NECESSARY. AFTER INSTALLATION OF CONCEALED WORK, REINSTATE REMOVED CEILING AND PATCH AND REFINISH TO MATCH ADJACENT UNREMOVED CEILING.

12. REPAIR ALL METAL SURFACES THAT HAVE BEEN CUT OR DAMAGED BY REMOVING ANY EXISTING RUST AND APPLYING COLD GALVANIZATION.

3 - SITE WORK

3.1 CLEARING AND GRUBBING

1. CLEARING OF TREES AND VEGETATION ON THE SITE SHOULD BE HELD TO A MINIMUM. ONLY THE TREES NECESSARY FOR THE CONSTRUCTION OF THE FACILITY SHALL BE REMOVED. ANY DAMAGES TO PROPERTY OUTSIDE THE CONSTRUCTION LIMIT SHALL BE REPAIRED OR MADE GOOD BY THE CONTRACTOR'S EXPENSE.

2. THE CONTRACTOR SHALL PROTECT EXISTING TREES, VEGETATION, LANDSCAPING MATERIALS AND SITE IMPROVEMENTS NOT SCHEDULED FOR CLEARING OR REMOVAL WHICH MIGHT BE DAMAGED BY CONSTRUCTION ACTIVITIES.

3. TRIM EXISTING TREES AND VEGETATION AS RECOMMENDED BY THE ARBORIST FOR PROTECTION DURING CONSTRUCTION.

4. CLEAR AND GRUB STUMPS, VEGETATION, DEBRIS, RUBBISH, DESIGNATED TREES AND SITE IMPROVEMENT.

5. STRIP AND STOCKPILE TOPSOIL.

6. PROTECT TEMPORARILY ADJACENT PROPERTY, STRUCTURES, BENCHMARKS AND MONUMENTS.

7. MARK DESIGNATED TREES AND VEGETATION DURING CONSTRUCTION ACTIVITIES.

8. PROVIDE TEMPORARY EROSION CONTROL, SILTATION CONTROL AND DUST CONTROL.

9. REMOVE AND LEGALLY DISPOSE OF CLEARED MATERIALS.

3.2 EXCAVATION AND BACKFILL

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

2. ALL SITE FILL SHALL MEET SELECTED FILL STANDARDS AS DEFINED BY THE OWNER'S REPRESENTATIVE ON THE DRAWINGS OR GEOTECHNICAL REPORT RECOMMENDATIONS.

3. THIS PROJECT INCLUDES:

- EXCAVATION, TRENCHING, FILLING, COMPACTING AND GRADING FOR STRUCTURES, SITE IMPROVEMENTS, ACCESS ROAD AND UTILITIES.
- ALL MATERIALS FOR SUBBASE, DRAINAGE FILL, BACK FILL AND GRAVEL FOR SLABS, PAVEMENT AND IMPROVEMENTS.
- ROCK EXCAVATION WITHOUT BLASTING.
- SUPPLY OF ADDITIONAL MATERIALS FROM OFF SITE AS REQUIRED.
- REMOVAL AND LEGAL DISPOSAL OF EXCAVATED MATERIALS AS REQUIRED.

4. FILL LAYERS THAT REQUIRE COMPACTION SHALL HAVE A MAXIMUM THICKNESS OF 6 INCHES.

5. THE COMPACTING UNDER STRUCTURES, BUILDING SLABS, STEPS, PAVEMENT AND WALKWAYS SHALL BE 95% MAXIMUM DENSITY, ASTM D-1557, TESTED IN EACH OF THE COMPACTING LAYERS AT EACH COMPACTING SITE, OR AT LEAST IN EACH 1000 LBS PER YARDS OF MATERIAL VOLUME.

6. THE COMPACTING UNDER LAWNS OR UNPAVED AREAS SHALL BE 85% MAXIMUM DENSITY, ASTM D1557.

7. THE COMPACTED LAYERS SHALL NOT EXCEED 8 INCHES.

8. AREAS THAT DO NOT MEET ASTM D-1557 REQUIREMENTS MUST BE RECOMPACTED AT THE CONTRACTOR'S EXPENSES.

9. ALL TRENCH EXCAVATIONS AND ANY REQUIRED SHEETING AND SHORING SHALL BE DONE IN ACCORDANCE WITH OSHA REGULATIONS FOR CONSTRUCTION.

10. WHERE UNSTABLE SOIL CONDITIONS EXIST, LINE THE GRUBBED AREAS WITH GEOTEXTILE FABRIC (MIRAFI 500X OR APPROVED EQUIVALENT) PRIOR TO PLACING FILL OR BASE MATERIAL.

11. THE USE OF EXPLOSIVE IS PROHIBITED ON SITE.

12. EXCAVATION ON WHICH CONCRETE IS TO BE PLACED SHALL BE SUBSTANTIAL HORIZONTAL, UNDISTURBED AND BE FREE FROM LOOSE MATERIAL AND EXCESS GROUND WATER. DOWELING FOR EXCESS GROUND WATER SHALL BE PROVIDED IF REQUIRED.

13. ANY EXCAVATION OVER THE REQUIRED DEPTH SHALL BE FILLED WITH OTHER 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.

14. BACK FILL SHALL USE APPROVED MATERIALS CONSISTING OF LOAM, SANDY CLAY, SAND, GRAVEL OR SOFT SHALE AND SHALL BE FREE FROM FLODS OR STEPS OVER 2 IN.

15. AFTER COMPLETION OF CONSTRUCTION, ALL OTHER CONSTRUCTION BELOW GRADE AND BEFORE BACK FILLING, ALL EXCAVATIONS SHALL BE CLEAN OF UNSUITABLE MATERIALS SUCH AS VEGETATION, DEBRIS, TRASH AND ANY FOREIGN MATERIAL.

3.3 DRAINAGE

1. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE AWAY FROM BUILDING OR EQUIPMENT 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 CONTRACTOR'S EXPENSES.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETAHERING AND THE MAINTENANCE OF SURFACE DRAINAGE DURING THE COURSE OF WORK.

3. ANY DRAIN, FIELD TILE OR DRAINAGE STRUCTURE ENCOUNTERED DURING CONSTRUCTION SHALL BE RETURNED TO ITS ORIGINAL OR BETTER CONDITIONS AFTER CONSTRUCTION AND BE NOTED ON THE RECORD DOCUMENTS.

3.4 EROSION CONTROL

1. CONTRACTOR SHALL PROVIDE ALL EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED BY LOCAL CODES AND ORDINANCES TO PROTECT EMBANKMENTS FROM SOIL LOSS AND TO PREVENT ACCUMULATION OF SOIL AND SILT IN STREAMS AND DRAINAGE PATHS LEAVING THE CONSTRUCTION AREA. THIS MAY INCLUDE SUCH MEASURES AS SILT FENCE, STRAW BALES, SEDIMENT BARRIERS AND CHECK DAMS.

2. EROSION CONTROL MEASURES MAY BE REQUIRED IN ADDITION TO THOSE SHOWN ON DRAWINGS WHERE DETERMINED NECESSARY BY ACTUAL SITE CONDITIONS.

3. PRIOR TO ANY CONSTRUCTION, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE CONSTRUCTED AT EACH ENTRY TO OR FROM THE SITE.

4. THE CONSTRUCTION EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD INTO PUBLIC RIGHT OF WAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH STONE AS CONDITIONS DEMAND. REPAIR AND/OR CLEAN OUT OF ANY STRUCTURES USED TO TRAP SEDIMENTS. ALL MATERIALS SPILLED, DROPPED WASHED OR TRACKED FROM VEHICLE OFF SITE ONTO ROADWAY OR INTO STORM DRAINS MUST BE REMOVED.

5. IMMEDIATELY AFTER THE ESTABLISHMENT OF CONSTRUCTION ENTRANCES/EXITS, ALL PERMETER EROSION CONTROL DEVICES AND STORMWATER MANAGEMENT DEVICES SHALL BE INSTALLED PRIOR TO ANY OTHER CONSTRUCTION.

6. ALL SILT BARRIERS MUST BE PLACED AS ACCESS IS OBTAINED DURING CLEARING. NO GRADING SHALL BE DONE UNTIL SILT BARRIER INSTALLATION AND DETENTION FACILITIES ARE CONSTRUCTED. SILT BARRIERS SHALL BE PLACED AT ALL DOWNSTREAM TOE OF CUT AND FILL SLOPES.

7. THE LOCATION OF SOME EROSION CONTROL DEVICES MAY HAVE TO BE ALTERED FROM WHAT IS SHOWN ON THE APPROVED PLANS IF DRAINAGE PATTERNS DURING CONSTRUCTION ARE DIFFERENT FROM THE FINAL PROPOSED DRAINAGE PATTERNS. IT IS THE CONTRACTOR RESPONSIBILITY TO ACCOMPLISH EROSION CONTROL FOR DRAINAGE PATTERN CHANGED AT VARIOUS STAGES DURING CONSTRUCTION. ANY DIFFICULTY IN CONTROL EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN (7) DAYS SHALL BE STABILIZED WITH TEMPORARY SEEDING.

8. THE CONSTRUCTION OF THE SITE WILL INITIATE WITH THE INSTALLATION OF EROSION CONTROL MEASURES SUFFICIENT TO CONTROL SEDIMENT DEPOSIT AND EROSION. ALL SEDIMENT CONTROL WILL BE MAINTAINED UNTIL ALL UPSTREAM GROUND WITHIN THE CONSTRUCTION AREA HAS BEEN COMPLETELY STABILIZED WITH PERMANENT VEGETATION AND ALL ROADS AND DRIVEWAYS HAVE BEEN COMPLETED. THE CONTRACTOR SHALL INSPECT EROSION CONTROL MEASURES AT THE END OF EACH WORKING DAY TO ENSURE MEASURES ARE FUNCTIONING PROPERLY.

9. FAILURE TO INSTALL, OPERATE OR MAINTAIN ALL EROSION CONTROL MEASURES WILL RESULT IN ALL CONSTRUCTION BEING STOPPED ON THE JOB SITE UNTIL SUCH MEASURES ARE CORRECTED.

10. THE CONTRACTOR SHALL REMOVE ACCUMULATED SILT WHEN THE SILT IS WITHIN 12" OF THE TOP OF THE SILT FENCE

UTILIZED FOR EROSION CONTROL.

11. ALL OPEN SLOPES MUST BE GRASSED, AND RIP-RAP MUST BE PLACED AS REQUIRED TO CONTROL EROSION. ALL CUT AND FILL SLOPES MUST BE SURFACE ROUGHENED AND VEGETATED WITHIN (7) DAYS OF CONSTRUCTION.

12. 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 PERIOD OF ONE YEAR.

13. SEEDBED PREPARATION: AREA TO BE SEEDBED SHALL BE LOOSE AND FRABLE TO A DEPTH OF AT LEAST 3". THE TOP LAYER SHALL BE LOOSEENED BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING OCCURS. IN LIEU OF SOIL TEST RESULTS, APPLY 50 LBS. OF DOLOMITE LIMESTONE AND 25 LBS. OF 10-10-10 FERTILIZER PER 1000 SF. HARROW OR DISK LIMESTONE AND FERTILIZER INTO SOIL TO A DEPTH OF AT LEAST 3" ON THE SLOPES FLATTER THAN 3:1.

14. SEEDING: APPLY 5-6 LBS. PER 1000 SF. OF KENTUCKY 31 TALL FESCUE. APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER DRILL OUTPACKER SEEDER OR HYDROSEEDER (SLURRY INCLUDES SEEDS AND FERTILIZER RECOMMENDED ON STEEP SLOPES ONLY) ON MOST, FIRM SEEDBED. MAXIMUM SEED DEPTH SHOULD BE 1/2" WHEN USING THE HYDROSEEDER METHOD. IRRIGATE UNTIL VEGETATION IS FIRMLY ESTABLISHED IF SOIL MOISTURE IS NOT SUFFICIENT TO SUPPORT ADEQUATE GROWTH.

15. IN CONCENTRATED AREAS, ALL SLOPES STEEPER THAN 2.5:1 AND LENGTH OF 10 FEET OR GREATER, AND CUTS AND FILLS WITHIN STREAM BUFFER, SHALL BE STABILIZED WITH THE APPROPRIATE EROSION CONTROL MATTING OR BLANKETS. RIPRAP SHALL BE CLEAN, HARD, SOUND, DURABLE, UNIFORM IN QUALITY, AND FREE OF ANY DETRIMENTAL QUANTITIES OF SOFT, FRABLE, THIN, ELONGATED OR LAMINATED PIECES, DISINTEGRATED MATERIAL, ORGANIC MATTER, OIL, ALKALI OR OTHER DETRIMENTAL SUBSTANCES.

3.5 GRADING

1. THE CONTRACTOR SHALL SEED THE GRADED AREAS PER DOT STANDARDS. AN SI GEOSOLUTIONS LAND LOCK CS2 EROSION CONTROL BLANKET SHALL BE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS.

2. THE CONTRACTOR SHALL PROVIDE ADEQUATE WATERING TO ENSURE FAVORABLE GROWTH OF VEGETATION FOR A PERIOD OF 6 MONTHS.

3. ALL GROUNDING, UTILITIES AND UNDERGROUND EQUIPMENT EXPOSED BY GRADING SHALL BE REPLACED AND PROPERLY CONNECTED TO THE EXISTING PORTION OF THE ORIGINAL SYSTEM PER APPROVED CODES AND JURISDICTION REQUIREMENTS.

4. THE GRADING TOLERANCE FOR FILL UNDER BUILDING SLABS SHALL BE ±1/8" INCH MEASURE WITH 10 FT STRAIGHTEDGE.

5. THE GRADING TOLERANCES OUTSIDE BUILDING LINES SHALL BE ±1/8" INCH FOR LAWNS, UNPAVED AREAS AND WALKS; AND ±1/4" INCH UNDER PAVEMENT.

6. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING AND RE-GRADING ROADWAY AND/OR FIELD FOLLOWING THE INSTALLATION OF UTILITIES.

7. ANY CUTS OR EXISTING SLOPES THAT ARE GREATER THAN 10 HORIZONTAL TO 1 VERTICAL SHALL BE PROPERLY BENCHED INTO THE EXISTING SLOPE.

8. THE CONTRACTOR SHALL TAKE SPECIAL CARE TO RE-GRADE THE SITE AND MONITOR THE STABILITY OF EMBANKMENT STEEPER THAN 1:3 AT ALL TIME DURING CONSTRUCTION.

9. PROTECT EXISTING GRAVEL SURFACING AND SUB-GRADE IN AREAS WHERE EQUIPMENT LOADS WILL OPERATE. USE PLANKING OR OTHER SUITABLE MATERIALS DESIGNED TO SPREAD EQUIPMENT LOADS. REPAIR DAMAGE TO EXISTING GRAVEL SURFACING OR SUB-GRADE WHERE SUCH DAMAGE IS DUE TO THE CONTRACTOR OPERATIONS. DAMAGED GRAVEL SURFACING SHALL BE RESTORED TO MATCH THE ADJACENT UNDAMAGED GRAVEL SURFACING AND SHALL BE THE SAME THICKNESS.

4 - CONCRETE

4.1 GENERAL

1. DESIGN AND CONSTRUCTION OF ALL CONCRETE ELEMENTS SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING APPLICABLE CODES:

- ACI 301 - SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS
- ACI 318 - BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE
- ACI 544.1R - FIBER REINFORCED CONCRETE (IF SPECIFIED)
- ACI 544.2R - MEASUREMENT OF PROPERTIES OF FIBER REINFORCED CONCRETE (IF SPECIFIED)

2. MIX DESIGN SHALL BE APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO PLACING CONCRETE.

3. CONCRETE SHALL BE NORMAL WEIGHT, 6% AIR ENTRAINMENT (+/-1.5%) WITH A MAXIMUM OF 4" SLUMP, AND HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI UNLESS OTHERWISE NOTED.

4. MAXIMUM AGGREGATE SIZE SHALL BE 1".

5. THE FOLLOWING MATERIALS SHALL BE USED:

- PORTLAND CEMENT: ASTM C 150, TYPE 1
- REINFORCEMENT: ASTM A 615, GRADE 60, DEFORMED UNLESS OTHERWISE NOTED. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS OTHERWISE NOTED. SPICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
- NORMAL WEIGHT AGGREGATE: ASTM C 33
- WATER: DRINKABLE
- ADMIXTURES: NON-CHLORIDE CONTAINING
- FIBEROUS REINFORCEMENT: ASTM C1116 (IF SPECIFIED)

6. REINFORCING DETAILS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ACI 315.

7. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS OTHERWISE NOTED. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS OTHERWISE NOTED. SPICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.

8. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

- CONCRETE CAST AGAINST EARTH: 3 IN.
- CONCRETE EXPOSED TO SOIL OR WEATHER:
 - #6 AND LARGER: 2 IN.
 - #5 AND SMALLER AND WWF: 1 1/2 IN.
- CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
 - SLABS AND WALL: 1/2 IN.
 - BEAMS AND COLLARS: 1 1/2 IN.

9. A CHAMFER OF 1/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

10. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHORS SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL WHEN DRILLING HOLES IN CONCRETE.

11. CURING COMPOUNDS SHALL CONFORM TO ASTM C-309.

12. ADMIXTURE SHALL CONFORM TO THE APPROPRIATE ASTM STANDARD AS REFERENCED IN ACI-301.

13. DO NOT WELD OR TACKWELD REINFORCING STEEL.

14. ALL DOWELS, ANCHORS BOLTS, EMBEDMENT STEEL, ELECTRICAL CONDUITS, PIPE SLEEVES, GROUNDS AND ALL OTHER EMBEDDED ITEMS AND FORMED DETAILS SHALL BE IN PLACE BEFORE START OF CONCRETE PLACEMENT.

15. LOCATE ADDITIONAL CONSTRUCTION JOINTS REQUIRED TO FACILITATE CONSTRUCTION AS ACCEPTABLE TO THE ENGINEER. PLACE REINFORCEMENT CONTINUOUSLY THROUGH JOINT.

16. REINFORCEMENT SHALL BE COLD BENT WHEN BENDING IS REQUIRED.

17. PLACE CONCRETE IN A UNIFORM MANNER TO PREVENT THE FORMATION OF COLD JOINTS AND OTHER PLANE OF WEAKNESS. VIBRATE THE CONCRETE TO FULLY DIBED REINFORCING. DO NOT USE VIBRATOR TO TRANSPORT CONCRETE THROUGH CHUTES OR FORMWORK.

18. DO NOT PLACE CONCRETE IN PAVING, ICE, OR ON FROZEN GROUND.

19. FOR COLD WEATHER AND HOT WEATHER CONCRETE PLACEMENT, CONFORM TO APPLICABLE ACI CODES AND RECOMMENDATIONS. IN EITHER CASE, MATERIALS CONTAINING CHLORIDE, CALCIUM, SALTS, ETC. SHALL NOT BE USED. PROTECT FRESH CONCRETE FROM WEATHER FOR 7 DAYS MINIMUM.

20. FIBER REINFORCED CONCRETE MIX, IF SPECIFIED, SHALL INCLUDE 1 1/2 LBS OF FIBER PER CUBIC YARD.



AW Solutions
INCORPORATED

300 CROWN OAK CENTRE DRIVE
LONGWOOD, FL 32750
TEL: 407.260.0231
FAX: 407.260.0749
FL COA#: 26983

DRAWN BY:	EW	CHECKED BY:	JD
2	09/11/13	REVISED POLE TYPE/LOCATION	
1	05/09/13	REVISED PER COMMENTS	
0	01/11/13	ISSUED FOR PERMIT	
REV	DATE		

11 - ELECTRICAL

11.1 GENERAL

- 1. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, TRANSPORTATION, CONSTRUCTION TOOLS, ETC., FOR THE INSTALLATION OF COMPLETE AND PROPERLY OPERATING SYSTEMS.
2. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE LAWS AND ORDINANCES OF ALL AUTHORITIES HAVING JURISDICTION AND WITH ALL ASSOCIATED UTILITY COMPANY REGULATIONS AND APPLICABLE REQUIREMENTS.
3. RECORD DRAWINGS: MAINTAIN A RECORD OF ALL CHANGES, SUBSTITUTIONS BETWEEN WORK AS SPECIFIED AND INSTALLED.
4. ALL BROCHURES, OPERATION MANUALS, CATALOGS, SHOP DRAWINGS, SPECIFICATIONS, ETC., SHALL BE TURNED OVER TO THE CARRIER AT THE COMPLETION OF THE PROJECT.
5. GUARANTEE/WARRANTY: GUARANTEE INSTALLATION TO BE FREE OF DEFECTS, SHORTS, GROUND, ETC., FOR A PERIOD OF ONE YEAR.
6. THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES, AS NECESSARY.
7. DO NOT INTERRUPT EXISTING SERVICES WITHOUT WRITTEN PERMISSION OF THE OWNER OF THAT SERVICE AND WRITTEN PERMISSION OF THE INSTALLATION'S CARRIER.
8. CHANGES: NO ADDITIONAL COSTS FOR LABOR OR MATERIALS WILL BE ALLOWED FOR CHANGES OR MODIFICATIONS MADE UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM THE ARCHITECT, ENGINEER OR OWNER IN THE FORM OF A CHANGE ORDER.
9. DRAWINGS: ELECTRICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT TO BE SCALED.
10. DISCREPANCIES: DISCREPANCIES ON THESE PLANS, SPECIFICATIONS, ETC., MUST BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
11. SURVEY AND CONDITIONS: VISIT THE JOB SITE PRIOR TO SUBMITTING BID, AND MAKE A SURVEY OF EXISTING CONDITIONS WHICH MAY AFFECT THE WORK TO BE PERFORMED.
12. CO-OPERATION: CO-OPERATE WITH OTHER CONTRACTORS AND SUBCONTRACTORS ON SITE.
13. TEMPORARY POWER: ARRANGE AND PAY FOR THE CARRIER'S TEMPORARY POWER DURING CONSTRUCTION.
14. INSTALLATION SHALL COMPLY SPECIFICALLY WITH ENGINEERING STANDARDS MANUAL. ANY DEVIATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER PRIOR TO COMMENCEMENT OF WORK.
15. PROCUREMENT VERIFICATION: PROVIDE AN ITEMIZED CERTIFICATION TO THE PROJECT MANAGER THAT EQUIPMENT AND RELATED HARDWARE HAVE BEEN ORDERED WITHIN 24 HOURS OF NOTICE TO PROCEED.
16. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

11.2 INSPECTIONS

- 1. GENERAL: DURING AND UPON COMPLETION OF WORK, ARRANGE AND PAY ALL ASSOCIATED INSPECTIONS OF ALL ELECTRICAL WORK INSTALLED UNDER THIS CONTRACT IN ACCORDANCE WITH THE CONDITIONS OF THE CONTRACT.
2. INSPECTIONS REQUIRED: AS PER THE LAWS AND REGULATIONS OF THE LOCAL AND/OR STATE AGENCIES HAVING JURISDICTION AT THE PROJECT SITE.
3. INSPECTION AGENCY: APPROVED BY THE LOCAL AND/OR STATE AGENCIES HAVING JURISDICTION AT THE PROJECT SITE.
4. CERTIFICATES: SUBMIT ALL REQUIRED INSPECTION CERTIFICATES TO THE CARRIER AND UTILITY.
11.3 HANGERS AND SUPPORTS
1. MATERIALS: ALL HANGERS, SUPPORTS, FASTENERS AND HARDWARE SHALL BE ZINC COATED OR OF EQUIVALENT CORROSION RESISTANCE BY TREATMENT OR INHERENT PROPERTY AND SHALL BE MANUFACTURED PRODUCTS DESIGNED FOR THE APPLICATION.
2. TYPES: HANGERS, STRAPS, RISER SUPPORTS, CLAMPS, U-CHANNEL, THREADED ROOFS, ETC., AS INDICATED OR REQUIRED.
3. INSTALLATION: RIGIDLY SUPPORT AND SECURE ALL MATERIAL, RACEWAY AND EQUIPMENT TO BUILDING STRUCTURE USING HANGERS, SUPPORTS AND FASTENERS SUITABLE FOR THE USE ON MATERIALS AND LOADS ENCOUNTERED.
4. STRUCTURAL MEMBERS: DO NOT CUT, DRILL OR WELD ANY STRUCTURAL MEMBER EXCEPT AS SPECIFICALLY APPROVED BY THE ENGINEER.
5. MISCELLANEOUS SUPPORTS: PROVIDE ANY ADDITIONAL STRUCTURAL SUPPORT STEEL BRACKETS, ANGLES, FASTENERS AND HARDWARE AS REQUIRED TO ADEQUATELY SUPPORT ALL ELECTRICAL MATERIALS AND EQUIPMENT.
6. ONE-HOLE STRAPS SHALL NOT BE USED FOR CONDUITS LARGER THAN 3/4 INCH.

11.4 ENCLOSURES / WIREWAYS

- 1. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND BE RATED NEMA 1 (OR BETTER) INDOORS OR NEMA 3R (OR BETTER) OUTDOORS.
2. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
3. JUNCTION BOXES: JUNCTION BOXES SHALL BE A MINIMUM SIZE OF 4 INCHES SQUARE BY 1-1/4 INCHES DEEP.
11.5 HOLES, SLEEVES AND OPENINGS
1. GENERAL: PROVIDE ALL HOLES, SLEEVES AND OPENINGS REQUIRED FOR THE COMPLETION OF WORK AND RESTORE ALL DAMAGED SURFACES TO MATCH SURROUNDING SURFACES.
2. CONDUIT PENETRATIONS: SIZE CORE-DRILLED HOLES SO THAT AN ANNUAL SPACE OF NOT LESS THAN 1/4 INCH AND NOT MORE THAN 1 INCH IS LEFT AROUND THE CONDUIT, PIPE, ETC.
3. PROVIDE APPROPRIATE WEATHERPROOFING MATERIALS FOR PENETRATIONS NEEDING TO BE SEALED FROM POTENTIAL WATER INTRUSION.
4. IF ANY ROOFTOP WORK IS TO BE PERFORMED, THE CONTRACTOR SHALL USE THE BUILDING OWNER'S APPROVED ROOFING CONTRACTOR TO PREVENT VIOLATING ANY EXISTING ROOFING WARRANTIES.
5. GENERAL: PROVIDE ALL CUTTING, DRILLING, FITTING AND PATCHING NECESSARY FOR ACCOMPLISHING THE WORK. THIS INCLUDES REMOVAL AND REPLACEMENT OF DEFECTIVE WORK AND WORK NOT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
6. REPAIRS: REPAIR ANY AND ALL DAMAGE TO WORK OF OTHER TRADES CAUSED BY CUTTING AND PATCHING OPERATIONS.

11.6 CONDUCTORS

- 1. USE 80% CONDUCTIVITY COPPER WITH TYPE XHHW-2 INSULATION, 600 VOLT, COLOR CODED. USE SOLID CONDUCTORS FOR WIRE UP TO AND INCLUDING NO. 8 AWG, STRANDED CONDUCTORS FOR WIRE LARGER THAN NO. 8 AWG. USE PRESSURE-TYPE INSULATED TWIST-ON CONNECTORS FOR NO. 10 AWG AND SMALLER, SOLDERLESS MECHANICAL TERMINAL LUGS FOR NO. 8 AWG AND LARGER. ALUMINUM CONDUCTORS SHALL NOT BE USED.
2. NO BX, MC OR ROMEX CABLE SHALL BE PERMITTED.
3. EACH END OF EVERY POWER, GROUNDING AND TI CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND), 1/2 INCH PLASTIC ELECTRICAL TAP WITH UV PROTECTION, OR EQUAL. THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA AND MATCH EXISTING INSTALLATION REQUIREMENTS. ALL THE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL. REMOVE SHARP EDGES.
4. ALL CONDUIT SIZES SPECIFIED IN THIS DOCUMENT WERE DONE SO TAKING INTO ACCOUNT THE USE OF COPPER CONDUCTORS.
11.7 ELECTRICAL SERVICE
1. GENERAL: COMPLY WITH AND CO-ORDINATE ALL REQUIREMENTS OF THE UTILITY COMPANY.
2. SHORT CIRCUIT RATINGS: PROVIDE EQUIPMENT WITH HIGHER FAULT CURRENT RATINGS AS NEEDED TO MATCH UTILITY COMPANY AVAILABLE FAULT CURRENT.
3. CONTRACTOR TO VERIFY UTILITY CO. FAULT CURRENT AND ENSURE THAT ALL EQUIPMENT MEETS FAULT CURRENT (AT A MINIMUM ALL EQUIPMENT TO BE 10,000 AC).
4. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ARRANGEMENTS WITH THE ELECTRIC UTILITY RELATIVE TO A TIMELY INSTALLATION OF THE NEW SERVICE AND PAYING ALL ASSOCIATED FEES.
5. IDENTIFICATION: IDENTIFY SERVICE DISCONNECTION MEANS WITH PERMANENT NAMEPLATE.
6. THE LOCATION SHOWN FOR A UTILITY POLE OR CONNECTION TO NEW UTILITIES IS FOR CONCEPTUAL USE ONLY. THE CONTRACTOR SHALL COORDINATE THE ACTUAL LOCATION WITH THE ELECTRIC UTILITY.
7. LOCATION AND ARRANGEMENTS: DRAWINGS INDICATE DIAGRAMMATICALLY THE DESIRED LOCATION OF EQUIPMENT, FIXTURES, OUTLETS, ETC., AND ARE NOT TO BE SCALED. PROPER JUDGMENT MUST BE EXERCISED IN THE EXECUTION TO ENSURE THE BEST POSSIBLE INSTALLATION.
8. PANEL AND DISTRIBUTION BOARD IDENTIFICATION: SWITCHBOARDS, PANELBOARDS, TRANSFORMERS AND DISTRIBUTION SECTIONS SHALL BE IDENTIFIED WITH ENGRAVED, WHITE ON BLACK, LAMINATED, RIGID PHENOLIC NAMEPLATES WITH 1/4 INCH CHARACTERS, SECURELY AFFIXED TO FACE OF CABINET.
11.8 TELEPHONE SERVICE
1. GENERAL: INSTALLATION SHALL BE IN ACCORDANCE WITH TELEPHONE UTILITY COMPANY'S RULES AND REGULATIONS. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ARRANGEMENTS WITH THE TELEPHONE UTILITY RELATIVE TO A TIMELY INSTALLATION OF THE INCOMING TELEPHONE SERVICES AND PAYING ALL ASSOCIATED FEES.
2. METALLIC CONDUIT OR TUBING FOR T1 LINES SHALL BE BONDED TO GROUND ON BOTH ENDS.
3. THE LOCATION SHOWN FOR A TELEPHONE POLE OR CONNECTION TO THE TELCO DEMARC IS FOR CONCEPTUAL USE ONLY. THE CONTRACTOR SHALL COORDINATE THE ACTUAL LOCATION WITH THE TELEPHONE UTILITY.
11.9 CHECKOUT, TESTING AND ADJUSTING
1. CORRECTION/REPLACEMENT: AFTER TESTING BY CONTRACTOR, OWNER OR ENGINEER, CORRECT ANY DEFICIENCIES AND REPLACE MATERIALS AND EQUIPMENT SHOWN TO BE DEFECTIVE OR UNABLE TO PERFORM AT DESIGN OR RATED CAPACITY.
2. POWER CONDUCTORS: CONTRACTOR SHALL CONDUCT A CONTINUITY AND INSULATION TEST ON CONDUCTORS BETWEEN SERVICE DISCONNECT SWITCH AND LOAD CENTER.
3. WHEN SITE POWER IS DERIVED FROM A 3-PHASE SOURCE, LOAD READINGS WILL BE TAKEN AND RECORDED TO MAINTAIN A BALANCED LOAD AT THE PRIMARY SOURCE. RECORDS SHALL BE RETURNED TO THE OWNER'S REPRESENTATIVE.
11.10 RACEWAY SYSTEMS / CONDUIT
1. UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC CONDUIT. UNDERGROUND PVC CONDUIT SHALL TRANSITION TO RIGID GALVANIZED STEEL CONDUIT OR SCHEDULE 80 PVC CONDUIT BEFORE BEING ABOVE GRADE OR CONCRETE SLAB. EXPOSED CONDUIT SHALL BE RIGID GALVANIZED STEEL (RGS) CONDUIT OR SCHEDULE 80 PVC CONDUIT.
2. RGS CONDUITS, WHEN SPECIFIED, SHALL MEET UL-6 FOR GALVANIZED STEEL. ALL FITTINGS SHALL BE SUITABLE FOR USE WITH THREADED RIGID CONDUIT.
3. ELECTRICAL METALLIC TUBING (EMT) OR RIGID, NONMETALLIC CONDUIT (RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (RIGID PVC SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
4. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
5. PLUG AND CAP EACH END OF SPARE AND EMPTY CONDUITS AND PROVIDE TWO SEPARATE PULL STRINGS - 200 LB. TEST POLYETHYLENE CORD.
6. ALL CONDUIT BENDS SHALL BE MINIMUM OF 24 INCH RADIUS.
7. ALL METALLIC RACEWAYS SHALL BE GROUNDED PER NEC.
8. THE CONTRACTOR SHALL FIELD VERIFY THE BEST AND LEAST DISRUPTIVE ROUTING OF CONDUITS, CABLE TRAYS AND DUCTS. CONDUIT ROUTING IS SHOWN AS A GUIDE ONLY, ACTUAL CONDUIT PLACEMENT IS TO BE DONE IN A PROFESSIONAL MANNER.
11.11 BELOW GRADE
1. THIS SITE INCLUDES NEW CRITICAL UNDERGROUND ELECTRIC, TELEPHONE AND OTHER SERVICES IN THE VICINITY OF OTHER UNDERGROUND SERVICES AND EQUIPMENT SUPPORTS. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID SERVICE DISRUPTION TO THESE FACILITIES. THE CONTRACTOR SHALL ALSO CONTACT ELECTRIC AND TELEPHONE, AND ALL OTHER APPROPRIATE AGENCIES PRIOR TO EXCAVATION AT THIS SITE.
2. PRIOR TO EXCAVATION, A UTILITY MARK OUT SHALL BE DONE TO LOCATE EXISTING UNDERGROUND UTILITIES. ALL UNDERGROUND UTILITIES MUST BE LOCATED AND MARKED OUT PRIOR TO ANY EXCAVATION WORK BEING PERFORMED. PHOTOS SHALL BE TAKEN OF ALL UNDERGROUND WORK AND GIVEN TO THE CARRIER DURING THE SITE'S HANDOFF. ALL TRENCHING AND EXCAVATION WITHIN EXISTING COMPOUNDS MUST BE PERFORMED BY HAND IN ACCORDANCE WITH THE OWNER'S SPECIFICATIONS. ANY OTHER METHODS OF DIGGING MUST FIRST BE APPROVED BY THE CONSTRUCTION MANAGER.
3. ALL LOW VOLTAGE CONDUIT (600V OR LESS) SHALL HAVE A MINIMUM BURIAL DEPTH OF 24". ALL HIGH VOLTAGE CONDUIT (600V OR MORE) SHALL HAVE A MINIMUM BURIAL DEPTH OF 36". UNDERGROUND CONDUIT SHALL BE ENCASED IN REINFORCED CONCRETE IN AREAS OF VEHICLE TRAFFIC. CONCRETE ENCASEMENT SHALL BE 3" MINIMUM ALL AROUND AND BETWEEN CONDUITS.
4. ALL BURIED CONDUIT SHALL BE IDENTIFIED WITH ELECTRICAL MARKER TAPE. TAPE SHALL BE PLACED 12" ABOVE CONDUIT FOR EASY IDENTIFICATION.
11.12 EQUIPMENT
1. THE MAIN CIRCUIT BREAKER SHALL BE RATED FOR STANDARD A.I.C. RATING HIGHER THAN INCOMING EQUIPMENT A.I.C. ALL EQUIPMENT SHALL BE BRANDED FOR STANDARD A.I.C. RATING HIGHER THAN INCOMING FROM UTILITY CO.
2. THE CONTRACTOR SHALL PROVIDE AN ITEMIZED CERTIFICATION TO THE CARRIER OF ALL EQUIPMENT AND RELATED HARDWARE, SPECIFIED TO BE PURCHASED AND INSTALLED BY THE CONTRACTOR, WHERE ORDERED WITHIN 24 HRS OF THE NOTICE TO PROCEED.
3. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH ITS VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).
4. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND BE RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER-PROTECTED (WP OR BETTER) OUTDOORS.
5. NONMETALLIC RECEPTACLE SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2, AND BE RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER-PROTECTED (WP OR BETTER) OUTDOORS.
11.13 TRANSIENT VOLTAGE SURGE SUPPRESSION (TVSS)
1. TVSS DEVICES FOR AC POWER SHALL BE INSTALLED IN ALL EXISTING FACILITIES THAT ARE MISSING TVSS DEVICES OR HAVE UNSUITABLE TVSS DEVICES.
2. THE AC POWER COMMON MODE SURGE SUPPRESSOR SHALL BE CONNECTED TO THE COMMERCIAL POWER INPUT SIDE OF THE MANUAL TRANSFER SWITCH.
3. IN MARKETS WITH LIGHTNING ZONE > OR = TO 4, 8F TVSS DEVICE SHALL BE INSTALLED AT THE ENTRANCE TO THE SHELTER OR AS CLOSE AS POSSIBLE TO THE BTS CABINET FOR OUTDOOR SITES, TO PROTECT AGAINST LIGHTNING AND TRANSIENT VOLTAGES.
4. A T1 TRANSPORT TVSS DEVICE SHALL BE INSTALLED AT ALL SITES BETWEEN THE MU AND THE BTS.

11 - RF AND TOWER APPURTENANCE INSTALLATION RELATED NOTES

13.1 COAXIAL CABLE REQUIREMENTS

- 1. GENERAL: PROVIDE ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY FOR RECEIVING, INSTALLING, TESTING, AND ADJUSTING ANTENNA CABLES FROM THE ANTENNA TO THE CONNECTIONS AT THE BASE TRANSMISSION SYSTEM (BTS). THIS SHALL INCLUDE ALL EQUIPMENT SHOWN OR REQUIRED FOR A COMPLETE OPERATING SYSTEM. ANTENNA, ANTENNA CABLES, CONNECTORS, AND FITTING SHALL BE THIRD PARTY FURNISHED COMPONENTS AS SHOWN ON THE BILL OF MATERIALS.
2. CABLE HANGERS SHALL BE INSTALLED AT A MAXIMUM 4' SPACING.
3. INSTALLATION
A. COAXIAL CABLE LENGTHS SHALL BE FIELD MEASURED. INSTALLER SHALL NOTIFY CARRIER PRIOR TO PURCHASE OF CABLE OF THE OVERALL LENGTH REQUIRED.
B. COAXIAL CABLE TYPE AND DIAMETER SHALL BE VERIFIED WITH CARRIER.
C. COAXIAL CABLES SHALL BE LABELED IN ACCORDANCE WITH CARRIER ELECTRICAL MATERIALS AND METHODS SPECIFICATIONS. ALL MAIN CABLES WILL BE COLOR CODED AT FOUR LOCATIONS: A) AT ANTENNA PRIOR TO JUMPER, B) AT THE BOTTOM OF THE TOWER, C) EXTERIOR PART OF THE WAVE GUIDE ENTRY PORT (AT THE SHELTER/CABINET WALL), D) INTERIOR OF THE SHELTER/CABINET. PROVIDE AT LEAST 6" OF SLACK IN THE MAIN COAXIAL CABLES AT THE ANTENNA END TO PROVIDE FOR FUTURE CONNECTOR REPLACEMENT.
E. INSTALL CONNECTORS TO COAXIAL CABLE AT BOTH ENDS (ANTENNA END AND BTS LOCATION). UPON SUCCESSFUL COMPLETION OF THE SWEEP TEST, THE CONTRACTOR SHALL PROVIDE A WEATHERTIGHT SEAL ON THE COAX CABLES.
F. THE MINIMUM BENDING RADIUS FOR ALL ANTENNA CABLES SHALL BE AS SHOWN BELOW OR PER THE MANUFACTURER, WHICHEVER IS MORE CONSERVATIVE:

13.2 ANTENNA REQUIREMENTS

- 1. AZIMUTHS ARE ORIENTED CLOCKWISE FROM TRUE NORTH.
2. CONTRACTOR SHALL VERIFY ANTENNA TYPE, AZIMUTHS, AND DOWNTILTS WITH THE CARRIER PRIOR TO CONSTRUCTION.
3. THE MINIMUM DISH RAD CENTER HEIGHT ABOVE THE ROOF SHALL BE 6'-8".
13.3 TOWER CLIMBING SAFETY GUIDELINES
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2. CONTRACTOR MUST COMPLY WITH THE STANDARD "RF POWER AND LOCKOUT/TAGOUT" PROCEDURES BEFORE ALLOWING CLIMBERS ON THIS STRUCTURE.
3. TOWER CLIMBERS WILL NOT BE ALLOWED TO ACCESS TOWER IN ADVERSE WEATHER CONDITIONS, INCLUDING HIGH WINDS, LIGHTNING, RAIN, SNOW ICE OR DURING NIGHT TIME.
4. CONTRACTOR OR CLIMBERS SHALL IMMEDIATELY REPORT ANY CLIMBING EQUIPMENT OR CONDITIONS JUDGED INADEQUATE OR UNSAFE.
5. EMERGENCY NUMBERS SHALL BE POSTED ON SITE AND ADVERTISED TO CLIMBERS BEFORE THE BEGINNING OF THE WORK.
6. SAFETY MEETINGS SHALL TAKE PLACE EVERY MORNING BEFORE THE WORK DAY BEGINS.

20 - SITE SPECIFIC NOTES

20.1 GENERAL

- 1. CONSTRUCTION INCLUDES:
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* ANTENNAS AND MOUNT INSTALLATION ON STRUCTURE
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* ENGINEER: AW SOLUTIONS, INC. 300 CROWN OAK CENTRE DRIVE LONGWOOD, FL 32750 PHONE 407.260.0231

LEGEND AND ABBREVIATIONS

Table with 2 columns: Abbreviation and Description. Includes entries for AHJ, AWG, BCW, BTS, CGSBE, DIA, EMT, GEN, GPS, MGB, NEC, PPC, PVC, RGS, TYP.

USING SKILLED MECHANICS OF THE TRADES INVOLVED. DO NOT CUT MAJOR STRUCTURAL ELEMENTS WITHOUT APPROVAL. PATCHING SHALL BE OF QUALITY EQUAL TO AND OF MATCHING APPEARANCE OF EXISTING CONSTRUCTION.

11.6 CONDUCTORS

- 1. USE 80% CONDUCTIVITY COPPER WITH TYPE XHHW-2 INSULATION, 600 VOLT, COLOR CODED. USE SOLID CONDUCTORS FOR WIRE UP TO AND INCLUDING NO. 8 AWG, STRANDED CONDUCTORS FOR WIRE LARGER THAN NO. 8 AWG. USE PRESSURE-TYPE INSULATED TWIST-ON CONNECTORS FOR NO. 10 AWG AND SMALLER, SOLDERLESS MECHANICAL TERMINAL LUGS FOR NO. 8 AWG AND LARGER. ALUMINUM CONDUCTORS SHALL NOT BE USED.
2. NO BX, MC OR ROMEX CABLE SHALL BE PERMITTED.
3. EACH END OF EVERY POWER, GROUNDING AND TI CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND), 1/2 INCH PLASTIC ELECTRICAL TAP WITH UV PROTECTION, OR EQUAL.
4. ALL THE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL. REMOVE SHARP EDGES.
5. ALL CONDUIT SIZES SPECIFIED IN THIS DOCUMENT WERE DONE SO TAKING INTO ACCOUNT THE USE OF COPPER CONDUCTORS.

11.7 ELECTRICAL SERVICE

- 1. GENERAL: COMPLY WITH AND CO-ORDINATE ALL REQUIREMENTS OF THE UTILITY COMPANY.
2. SHORT CIRCUIT RATINGS: PROVIDE EQUIPMENT WITH HIGHER FAULT CURRENT RATINGS AS NEEDED TO MATCH UTILITY COMPANY AVAILABLE FAULT CURRENT.
3. CONTRACTOR TO VERIFY UTILITY CO. FAULT CURRENT AND ENSURE THAT ALL EQUIPMENT MEETS FAULT CURRENT (AT A MINIMUM ALL EQUIPMENT TO BE 10,000 AC).
4. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ARRANGEMENTS WITH THE ELECTRIC UTILITY RELATIVE TO A TIMELY INSTALLATION OF THE NEW SERVICE AND PAYING ALL ASSOCIATED FEES.
5. IDENTIFICATION: IDENTIFY SERVICE DISCONNECTION MEANS WITH PERMANENT NAMEPLATE.
6. THE LOCATION SHOWN FOR A UTILITY POLE OR CONNECTION TO NEW UTILITIES IS FOR CONCEPTUAL USE ONLY. THE CONTRACTOR SHALL COORDINATE THE ACTUAL LOCATION WITH THE ELECTRIC UTILITY.
7. LOCATION AND ARRANGEMENTS: DRAWINGS INDICATE DIAGRAMMATICALLY THE DESIRED LOCATION OF EQUIPMENT, FIXTURES, OUTLETS, ETC., AND ARE NOT TO BE SCALED. PROPER JUDGMENT MUST BE EXERCISED IN THE EXECUTION TO ENSURE THE BEST POSSIBLE INSTALLATION.
8. PANEL AND DISTRIBUTION BOARD IDENTIFICATION: SWITCHBOARDS, PANELBOARDS, TRANSFORMERS AND DISTRIBUTION SECTIONS SHALL BE IDENTIFIED WITH ENGRAVED, WHITE ON BLACK, LAMINATED, RIGID PHENOLIC NAMEPLATES WITH 1/4 INCH CHARACTERS, SECURELY AFFIXED TO FACE OF CABINET.

11.8 TELEPHONE SERVICE

- 1. GENERAL: INSTALLATION SHALL BE IN ACCORDANCE WITH TELEPHONE UTILITY COMPANY'S RULES AND REGULATIONS. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ARRANGEMENTS WITH THE TELEPHONE UTILITY RELATIVE TO A TIMELY INSTALLATION OF THE INCOMING TELEPHONE SERVICES AND PAYING ALL ASSOCIATED FEES.
2. METALLIC CONDUIT OR TUBING FOR T1 LINES SHALL BE BONDED TO GROUND ON BOTH ENDS.
3. THE LOCATION SHOWN FOR A TELEPHONE POLE OR CONNECTION TO THE TELCO DEMARC IS FOR CONCEPTUAL USE ONLY. THE CONTRACTOR SHALL COORDINATE THE ACTUAL LOCATION WITH THE TELEPHONE UTILITY.

11.9 CHECKOUT, TESTING AND ADJUSTING

- 1. CORRECTION/REPLACEMENT: AFTER TESTING BY CONTRACTOR, OWNER OR ENGINEER, CORRECT ANY DEFICIENCIES AND REPLACE MATERIALS AND EQUIPMENT SHOWN TO BE DEFECTIVE OR UNABLE TO PERFORM AT DESIGN OR RATED CAPACITY.
2. POWER CONDUCTORS: CONTRACTOR SHALL CONDUCT A CONTINUITY AND INSULATION TEST ON CONDUCTORS BETWEEN SERVICE DISCONNECT SWITCH AND LOAD CENTER.
3. WHEN SITE POWER IS DERIVED FROM A 3-PHASE SOURCE, LOAD READINGS WILL BE TAKEN AND RECORDED TO MAINTAIN A BALANCED LOAD AT THE PRIMARY SOURCE. RECORDS SHALL BE RETURNED TO THE OWNER'S REPRESENTATIVE.

11.10 RACEWAY SYSTEMS / CONDUIT

- 1. UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC CONDUIT. UNDERGROUND PVC CONDUIT SHALL TRANSITION TO RIGID GALVANIZED STEEL CONDUIT OR SCHEDULE 80 PVC CONDUIT BEFORE BEING ABOVE GRADE OR CONCRETE SLAB. EXPOSED CONDUIT SHALL BE RIGID GALVANIZED STEEL (RGS) CONDUIT OR SCHEDULE 80 PVC CONDUIT.
2. RGS CONDUITS, WHEN SPECIFIED, SHALL MEET UL-6 FOR GALVANIZED STEEL. ALL FITTINGS SHALL BE SUITABLE FOR USE WITH THREADED RIGID CONDUIT.
3. ELECTRICAL METALLIC TUBING (EMT) OR RIGID, NONMETALLIC CONDUIT (RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (RIGID PVC SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
4. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
5. PLUG AND CAP EACH END OF SPARE AND EMPTY CONDUITS AND PROVIDE TWO SEPARATE PULL STRINGS - 200 LB. TEST POLYETHYLENE CORD.
6. ALL CONDUIT BENDS SHALL BE MINIMUM OF 24 INCH RADIUS.
7. ALL METALLIC RACEWAYS SHALL BE GROUNDED PER NEC.
8. THE CONTRACTOR SHALL FIELD VERIFY THE BEST AND LEAST DISRUPTIVE ROUTING OF CONDUITS, CABLE TRAYS AND DUCTS. CONDUIT ROUTING IS SHOWN AS A GUIDE ONLY, ACTUAL CONDUIT PLACEMENT IS TO BE DONE IN A PROFESSIONAL MANNER.

11.11 BELOW GRADE

- 1. THIS SITE INCLUDES NEW CRITICAL UNDERGROUND ELECTRIC, TELEPHONE AND OTHER SERVICES IN THE VICINITY OF OTHER UNDERGROUND SERVICES AND EQUIPMENT SUPPORTS. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID SERVICE DISRUPTION TO THESE FACILITIES. THE CONTRACTOR SHALL ALSO CONTACT ELECTRIC AND TELEPHONE, AND ALL OTHER APPROPRIATE AGENCIES PRIOR TO EXCAVATION AT THIS SITE.
2. PRIOR TO EXCAVATION, A UTILITY MARK OUT SHALL BE DONE TO LOCATE EXISTING UNDERGROUND UTILITIES. ALL UNDERGROUND UTILITIES MUST BE LOCATED AND MARKED OUT PRIOR TO ANY EXCAVATION WORK BEING PERFORMED. PHOTOS SHALL BE TAKEN OF ALL UNDERGROUND WORK AND GIVEN TO THE CARRIER DURING THE SITE'S HANDOFF. ALL TRENCHING AND EXCAVATION WITHIN EXISTING COMPOUNDS MUST BE PERFORMED BY HAND IN ACCORDANCE WITH THE OWNER'S SPECIFICATIONS. ANY OTHER METHODS OF DIGGING MUST FIRST BE APPROVED BY THE CONSTRUCTION MANAGER.
3. ALL LOW VOLTAGE CONDUIT (600V OR LESS) SHALL HAVE A MINIMUM BURIAL DEPTH OF 24". ALL HIGH VOLTAGE CONDUIT (600V OR MORE) SHALL HAVE A MINIMUM BURIAL DEPTH OF 36". UNDERGROUND CONDUIT SHALL BE ENCASED IN REINFORCED CONCRETE IN AREAS OF VEHICLE TRAFFIC. CONCRETE ENCASEMENT SHALL BE 3" MINIMUM ALL AROUND AND BETWEEN CONDUITS.
4. ALL BURIED CONDUIT SHALL BE IDENTIFIED WITH ELECTRICAL MARKER TAPE. TAPE SHALL BE PLACED 12" ABOVE CONDUIT FOR EASY IDENTIFICATION.

11.12 EQUIPMENT

- 1. THE MAIN CIRCUIT BREAKER SHALL BE RATED FOR STANDARD A.I.C. RATING HIGHER THAN INCOMING EQUIPMENT A.I.C. ALL EQUIPMENT SHALL BE BRANDED FOR STANDARD A.I.C. RATING HIGHER THAN INCOMING FROM UTILITY CO.
2. THE CONTRACTOR SHALL PROVIDE AN ITEMIZED CERTIFICATION TO THE CARRIER OF ALL EQUIPMENT AND RELATED HARDWARE, SPECIFIED TO BE PURCHASED AND INSTALLED BY THE CONTRACTOR, WHERE ORDERED WITHIN 24 HRS OF THE NOTICE TO PROCEED.
3. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH ITS VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).
4. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND BE RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER-PROTECTED (WP OR BETTER) OUTDOORS.
5. NONMETALLIC RECEPTACLE SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2, AND BE RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER-PROTECTED (WP OR BETTER) OUTDOORS.

11.13 TRANSIENT VOLTAGE SURGE SUPPRESSION (TVSS)

- 1. TVSS DEVICES FOR AC POWER SHALL BE INSTALLED IN ALL EXISTING FACILITIES THAT ARE MISSING TVSS DEVICES OR HAVE UNSUITABLE TVSS DEVICES.
2. THE AC POWER COMMON MODE SURGE SUPPRESSOR SHALL BE CONNECTED TO THE COMMERCIAL POWER INPUT SIDE OF THE MANUAL TRANSFER SWITCH.
3. IN MARKETS WITH LIGHTNING ZONE > OR = TO 4, 8F TVSS DEVICE SHALL BE INSTALLED AT THE ENTRANCE TO THE SHELTER OR AS CLOSE AS POSSIBLE TO THE BTS CABINET FOR OUTDOOR SITES, TO PROTECT AGAINST LIGHTNING AND TRANSIENT VOLTAGES.
4. A T1 TRANSPORT TVSS DEVICE SHALL BE INSTALLED AT ALL SITES BETWEEN THE MU AND THE BTS.

13 - RF AND TOWER APPURTENANCE INSTALLATION RELATED NOTES

13.1 COAXIAL CABLE REQUIREMENTS

- 1. GENERAL: PROVIDE ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY FOR RECEIVING, INSTALLING, TESTING, AND ADJUSTING ANTENNA CABLES FROM THE ANTENNA TO THE CONNECTIONS AT THE BASE TRANSMISSION SYSTEM (BTS). THIS SHALL INCLUDE ALL EQUIPMENT SHOWN OR REQUIRED FOR A COMPLETE OPERATING SYSTEM. ANTENNA, ANTENNA CABLES, CONNECTORS, AND FITTING SHALL BE THIRD PARTY FURNISHED COMPONENTS AS SHOWN ON THE BILL OF MATERIALS.
2. CABLE HANGERS SHALL BE INSTALLED AT A MAXIMUM 4' SPACING.
3. INSTALLATION
A. COAXIAL CABLE LENGTHS SHALL BE FIELD MEASURED. INSTALLER SHALL NOTIFY CARRIER PRIOR TO PURCHASE OF CABLE OF THE OVERALL LENGTH REQUIRED.
B. COAXIAL CABLE TYPE AND DIAMETER SHALL BE VERIFIED WITH CARRIER.
C. COAXIAL CABLES SHALL BE LABELED IN ACCORDANCE WITH CARRIER ELECTRICAL MATERIALS AND METHODS SPECIFICATIONS. ALL MAIN CABLES WILL BE COLOR CODED AT FOUR LOCATIONS: A) AT ANTENNA PRIOR TO JUMPER, B) AT THE BOTTOM OF THE TOWER, C) EXTERIOR PART OF THE WAVE GUIDE ENTRY PORT (AT THE SHELTER/CABINET WALL), D) INTERIOR OF THE SHELTER/CABINET. PROVIDE AT LEAST 6" OF SLACK IN THE MAIN COAXIAL CABLES AT THE ANTENNA END TO PROVIDE FOR FUTURE CONNECTOR REPLACEMENT.
E. INSTALL CONNECTORS TO COAXIAL CABLE AT BOTH ENDS (ANTENNA END AND BTS LOCATION). UPON SUCCESSFUL COMPLETION OF THE SWEEP TEST, THE CONTRACTOR SHALL PROVIDE A WEATHERTIGHT SEAL ON THE COAX CABLES.
F. THE MINIMUM BENDING RADIUS FOR ALL ANTENNA CABLES SHALL BE AS SHOWN BELOW OR PER THE MANUFACTURER, WHICHEVER IS MORE CONSERVATIVE:

Table with 3 columns: Cable Size, In Air or Cable Tray, In Conduit. Rows for 1/2", 7/8", 1-5/8" cable sizes.

4. CABLES SHALL BE INSTALLED WITH THE MINIMUM NUMBER OF BENDS. CABLE SHALL NOT BE LEFT UNTERMINATED IN THE FIELD.

5. GROUNDING

- A. ALL MAIN CABLES WILL BE GROUNDED AT: A) THE ANTENNA, B) MIDDLE OF THE CABLE RUN IF OVER 200', C) PRIOR TO ENTERING EQUIPMENT SHELTER/CABINET (WITHIN 1' OF ENTRY).
B. GROUNDING KITS - AFTER INSTALLATION OF GROUND STRAPS, THE CONNECTIONS SHALL BE MADE WEATHER TIGHT USING WEATHERPROOF KITS AS IDENTIFIED. GROUND PIGTAILS SHALL BE BROUGHT OUT IN THE DOWNWARD DIRECTION FROM THE CONNECTION TO THE ANTENNA CABLE WITHOUT ANY SHARP BENDS (MINIMUM RADIUS 10") AND CONNECTION SHALL BE MADE TO GROUNDING SYSTEM.

13.2 ANTENNA REQUIREMENTS

- 1. AZIMUTHS ARE ORIENTED CLOCKWISE FROM TRUE NORTH.
2. CONTRACTOR SHALL VERIFY ANTENNA TYPE, AZIMUTHS, AND DOWNTILTS WITH THE CARRIER PRIOR TO CONSTRUCTION.
3. THE MINIMUM DISH RAD CENTER HEIGHT ABOVE THE ROOF SHALL BE 6'-8".

13.3 TOWER CLIMBING SAFETY GUIDELINES

- 1. TOWER CLIMBERS MUST HAVE COMPLETED A NATE CERTIFIED CLIMBING TRAINING COURSE PER CONTRACT SPECIFICATIONS PRIOR TO WORK ON THIS STRUCTURE.
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Table with 3 columns: REV, DATE, DESCRIPTION. Contains revision history entries.



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SHEET TITLE:

SPECIFICATIONS

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