



# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: [siting.council@ct.gov](mailto:siting.council@ct.gov)

[www.ct.gov/csc](http://www.ct.gov/csc)

### VIA ELECTRONIC MAIL

March 21, 2019

Ryan Bailey  
Cherundolo Consulting  
1280 Route 46 West, Suite 9  
Parsippany, NJ 07054

RE: **EM-SPRINT-151-190215** – Sprint notice of intent to modify an existing telecommunications facility located at 39 Cherry Street, Waterbury, Connecticut.

Dear Mr. Bailey:

The Connecticut Siting Council (Council) is in receipt of your correspondence of March 20, 2019 submitted in response to the Council's February 22, 2019 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman  
Executive Director

MAB/IN/emr



## Fontaine, Lisa

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**From:** Ryan Bailey <[ryan@mackenzierealtyconsulting.com](mailto:ryan@mackenzierealtyconsulting.com)>  
**Sent:** Wednesday, March 20, 2019 4:47 PM  
**To:** Robidoux, Evan  
**Cc:** CSC-DL Siting Council; Ryan Bailey  
**Subject:** RE: Council Incomplete Letter for EM-SPRINT-151-190215-CherrySt-Waterbury  
**Attachments:** CT52XC055 CSC full filing.pdf

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

**Categories:** satisfied

Attached please find an updated pdf of our filing. I updated it with the correct dated drawings as well as the revised structural. I have also attached a separate pdf of the revised structural. Please let me know if you need anything else in order to deem this complete.

Thank you

Ryan Bailey  
Mackenzie Realty Consulting  
3B Prospect Pl  
Madison NJ 07940  
856-625-1596  
973-215-2940 Fax  
[ryan@mackenzierealtyconsulting.com](mailto:ryan@mackenzierealtyconsulting.com)

**From:** Robidoux, Evan <[Evan.Robidoux@ct.gov](mailto:Evan.Robidoux@ct.gov)>  
**Sent:** Wednesday, February 27, 2019 8:19 AM  
**To:** Ryan Bailey <[ryan@mackenzierealtyconsulting.com](mailto:ryan@mackenzierealtyconsulting.com)>  
**Cc:** CSC-DL Siting Council <[Siting.Council@ct.gov](mailto:Siting.Council@ct.gov)>  
**Subject:** Council Incomplete Letter for EM-SPRINT-151-190215-CherrySt-Waterbury

Please see the attached correspondence.

Evan Robidoux  
Clerk Typist  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051



1280 Route 46 West, Suite 9, Parsippany NJ, 07054

Melanie Bachman  
Executive Director CT  
Siting Council  
10 Franklin Square New  
Britain, CT 06051

Re: Notice of Exempt Modification Application  
39 Cherry St, Waterbury, CT

Latitude: N41.5594  
Longitude: W74.0341

Dear Ms. Bachman:

Sprint currently maintains 3 existing panel antennas, 3 remote radio heads and three microwave dishes at the 127' centerline level of the existing 143.5 ft smoke stack. Sprint proposes to remove all 3 existing panel antennas and radio heads and replace them with 6 new panel antennas and add 12 remote radio units at the 127' centerline on the smoke stack as well add 4 hybrid cable. Sprint is performing a new high-performance upgrade for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

Please accept this letter as notification to the Council, pursuant to R.C.S.A. Section 16-50j-73, for construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter is being sent to Neil O'Leary, City of Waterbury Mayor, James Sequin, Zoning Official, City of Waterbury, and New Opportunities Economic Development Corporation as property owner.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in Sprint's operations at the site. Also included is documentation of the structural sufficiency of the tower with proposed modifications to accommodate the revised antenna configuration as well as the latest CSC decision.

### **Existing Facility**

CSC Summary Statement – CT52XC055 – 39 Cherry St  
Waterbury, CT 06702

The Communications Tower facility is located at 39 Cherry St, Waterbury, Ct and is owned by New Opportunities Economic Development Corporation, the Site coordinates are: N41.5594 W74.0341.

The existing facility consists of a 143.5' Smoke Stack. Sprint currently operates wireless communications equipment on the ground at the facility and has 3 antenna and 3 remote radio heads mounted on at centerline of 127 feet.

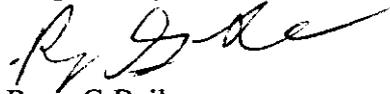
## **Statutory Considerations**

The planned modifications to the facility fall within the activities explicitly provided for in R.C.S.A. 16-50j-72(b)(2)

1. The height of the overall structure will be unaffected.
2. The proposed changes will not require an extension of the property boundaries.
3. The proposed additions will not increase the noise level at the existing facility by six decibels or more, or to levels that exceed state and/or local criteria
4. The changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Sprint respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A Section §16-50j-72(b)(2).

Respectfully submitted,



Ryan G Bailey

Charles Cherundolo Consulting

856-625-1596

[ryan@mackenzierealtyconsulting.com](mailto:ryan@mackenzierealtyconsulting.com)

### Additional Recipients:

Neil O'Leary, Mayor, City of Waterbury

James Sequin, AICP, Zoning Official, City of Waterbury

New Opportunities Economic Development Corporation, Property Owner

Date: **March 20, 2019**

**ARCHITECTURE & ENGINEERING DIVISION**  
604 FOX GLEN . BARRINGTON, IL 60010  
847/277-0070 . FAX: 847/277-0080

AE@westchesterservices.com / www.westchesterservices.com

Tom Jupin  
Charles Cherundolo Consulting, Inc.  
1280 Rt. 46 West  
Parsippany, NY 07054

**Subject: Structural Analysis Report**

**Sprint Co-Locate**

**Site Number:** CT52XC055-C  
**Site Name:** 39 Cherry Ave SS

**Engineering Firm Designation:** Westchester Services, LLC

**Site Data:** 253 Cherry St., Waterbury, CT 06702  
New Haven County – 143.5' Smokestack

Tom Jupin,

Westchester Services, LLC is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above mentioned smokestack.

The purpose of the analysis is to determine acceptability of the smokestack stress levels. Based on our analysis we have determined the stress levels to be:

**Existing and Proposed Equipment**

Note: See Table 2-1 for the existing and proposed loading.

**Sufficient Capacity**

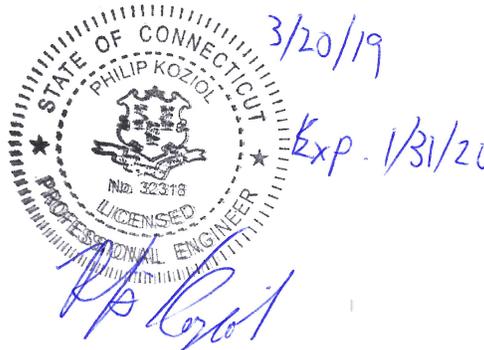
The analysis has been performed in accordance with the TIA-222-G standard and local code requirements based upon a wind speed of 120 mph ultimate gust, exposure category B with topographic category 1 and crest height of 0 feet.

We at Westchester Services, LLC appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Tom Holt, PE

I certify that this report was prepared by me or under my direct supervision and that I am a licensed Professional Engineer under the laws of the State of Connecticut.

Philip Koziol, PE  
Professional Engineer



## **TABLE OF CONTENTS**

- 1) INTRODUCTION**
- 2) ANALYSIS CRITERIA**
  - Table 2-1 – Proposed Final Antenna Configuration
- 3) ANALYSIS PROCEDURE**
  - Table 3-1 – Documents Provided
  - 3.1 Analysis Method
- 4) ANALYSIS RESULTS**
  - Table 4-1 – Critical Section Capacity (Summary)
  - 4.1 Recommendations
- 5) ASSUMPTIONS**
- 6) APPENDIX A**
  - Calculations

## 1) INTRODUCTION

This structure is a 143.5' chimney is located in New Haven County, CT. The proposed antennas will be mounted on the existing smokestack.

## 2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Antenna Supporting Structures and Antennas using a ultimate gust wind speed of 120 mph (converted to 92.9 mph 3-second gust) with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B with topographic category 1 and crest height of 0 feet.

**Table 2-1 – Proposed Final Antenna Configuration**  
(New antennas in **bold**)

Center Line Elevation (ft)	Sector	Pos.	Antenna	Radio(s)	Note
127	Alpha	1	<b>(1) NNH4-65B-R4</b>		
		2		<b>(2) ALU RRH-2x50-800</b> <b>(1) ALU RRH-4x45-1900</b>	
		3	<b>(1) Nokia AAHC</b>		
		4	(1) 12in MW Dish		
127	Beta	1	<b>(1) NNH4-65B-R4</b>		
		2		<b>(2) ALU RRH-2x50-800</b> <b>(1) ALU RRH-4x45-1900</b>	
		3	<b>(1) Nokia AAHC</b>		
		4	(1) 12in MW Dish		
127	Gamma	1	<b>(1) NNH4-65B-R4</b>		
		2		<b>(2) ALU RRH-2x50-800</b> <b>(1) ALU RRH-4x45-1900</b>	
		3	<b>(1) Nokia AAHC</b>		
		4	(1) 24in MW Dish		

### 3) ANALYSIS PROCEDURE

**Table 3-1 – Documents Provided**

Document	Remarks	Reference	Date	Source
Construction Drawings	Westchester Services	N/A	09/28/2017	WSLLC
Field Mapping	Westchester Services	N/A	05/27/2017	WSLLC
Structural Analysis	CHA	N/A	06/23/2010	Sprint
Structural Analysis	Westchester Services	N/A	11/13/17	WSLLC

#### 3.1) Analysis Method

Mathcad 15 is a mathematics software program used for creating hand calc templates. The output of these calculations can be found in Appendix A.

### 4) ANALYSIS RESULTS

**Table 4-1 – Critical Section Capacity (Summary)**

Member Type	Result	Limit	Pass/Fail
Overall Stress	0.068%	<100%	Pass
Compression Check	1.28psi	Positive Value	Pass
Overturning Factor of Safety	2.577	>2	Pass
Stress Factor	0.445	<1	Pass
Overall			Pass

#### 4.1) Recommendations

The existing chimney has sufficient capacity to carry the existing and proposed loads.

## 5) ASSUMPTIONS

- The analysis performed is to the theoretical capacity of the members and connections. No accommodations are taken for any damaged, rusted, deteriorated, or otherwise compromised member conditions. To this, the tower or structure is assumed to be properly maintained and monitored and this analysis cannot be considered to be a condition assessment of the structure.
- The analysis is performed to the minimum design wind, ice, and other environmental loading prescribed by the governing building codes and standards. Any higher loading conditions required by the local jurisdiction or structure owner should be made known to Westchester immediately for analysis. No lesser conditions will be accommodated.
- Member sizes are assumed to be of standard AISC or manufacturer designations unless explicitly specified otherwise. The geometry of the tower or structure is assumed as schematic. Steel grade and concrete strength are assumed to be conservative standard and fully developed unless otherwise specified.
- The information provided to Westchester for analysis is assumed accurate and up to date as supplied. No independent efforts were taken by Westchester to verify the validity of the information supplied. If any additional information is presented at any time that contradicts what is referenced in the analysis, the analysis is invalid and must be performed again with the new information.
- Any reinforcement or modifications are assumed to be fully installed and functional.
- All welds are assumed to have been performed to current welding standards and are assumed to develop their full capacity and to be in good condition. In addition, all bolts and bolt-like anchors are assumed to be fully tightened, fastened, or bonded to the manufacturers' specifications and are assumed to have full capacity.
- Numerous connection details of large-scale structures are unobtainable and are omitted from the structural analysis. This includes, but is not limited to: bolts, welds, flanges, and plates. These connections are considered adequate and are therefore neglected from the analysis. In addition, in the absence of building plans, many wall, floor, and ceiling constructions can only be determined from observable field data and are supplemented by best judgment and experience.
- Antennas, dishes, feedlines, and any other such appurtenances are assumed adequate through manufacturer testing. No analysis is provided for the structural strength or stability of these items unless otherwise specified.
- Equipment mounting systems are assumed structurally sound unless specifically called for in the analysis.
- Soil conditions and foundations are not considered unless specified in the analysis and have no deterioration or defects. For sites located on a building, only local effects of the equipment is considered unless otherwise specified. The overall structure of the building and its foundation are assumed to be unaffected by the telecom equipment.
- Any changes or differences to the site or site plans at any time prior to installation must be brought to the attention of Westchester immediately.

**APPENDIX A**  
**CALCULATIONS**

**References:**

- 1) 2015 International Building Code
- 2) ANSI TIA-222-G, Structural Standard for Antenna Supporting Structures and Antennas
- 3) AISC 360-10 Specification for Structural Steel Buildings
- 4) Structural Analysis by CHA, dated 6/23/10
- 5) Structural Analysis by Westchester Services, dated 11/13/17

**Input****Wind Factors (as per TIA-222-G)****V** := 93 mph $V_{ult}$  per Ref. (1) converted to  $V_{nom}$  for Ref. (2)**V<sub>i</sub>** := 50 mph

Basic wind speed with ice

**t<sub>i</sub>** := .75-in

Design ice thickness

**G<sub>H</sub>** := 1.35

Ref. (2), Section 2.6.7

**i<sub>m</sub>** := 1

Importance Factor

**K<sub>d</sub>** := 0.95

Wind Direction Probability Factor, Ref. (2), Table 2-2

**Ex** := "B"

Exposure category. See Ref. (2), Table 2-4

**TC** := "1"

Topographic Category. See Ref. (2), Table 2-5

**H** := 0-ft

Crest Height

## Chimney Geometry

$$f_m := 1000\text{psi}$$

$$E_m := 800\text{ksi}$$

$$\gamma_{\text{mason}} := 120\text{pcf}$$

The dimensions of the chimney are from the referenced material. Nine sections are considered in the calculations.

$$N_{\text{sections}} := 14$$

Number of chimney sections

$H_{\text{chim}} :=$	(	143.5		
		131.75		
		120.01	<-- indicates instantaneous	
		120	thickness change @ 120'	
		105		
		90.01	<-- indicates instantaneous	
		90	thickness change @ 90'	
		70.01	<-- indicates instantaneous	Height at boundary of
		70	thickness change @ 70'	
		55		
		40.01	<-- indicates instantaneous	
		40	thickness change @ 40'	
		20.01	<-- indicates instantaneous	
		20	thickness change @ 20'	
0	)			



## Equipment Properties

### Antennas

<i>Antenna name/model</i>	<i>Number of antennas</i>	<i>Height of antennas</i>	<i>Width of antennas</i>
---------------------------	---------------------------	---------------------------	--------------------------

$\begin{pmatrix} \text{NNH4-65B-R4} \\ \text{AAHC} \\ \text{RRH-2x50-800} \\ \text{RRH-4x45-1900} \\ \text{"existing antenna"} \\ \text{"existing antenna"} \end{pmatrix}$	$n_{\text{ant}} := \begin{pmatrix} 3 \\ 3 \\ 6 \\ 3 \\ 3 \\ 3 \end{pmatrix}$	$\text{height}_{\text{ant}} := \begin{pmatrix} 72 \\ 25.6 \\ 16 \\ 25 \\ 72 \\ 72 \end{pmatrix} \cdot \text{in}$	$\text{width}_{\text{ant}} := \begin{pmatrix} 19.6 \\ 19.7 \\ 13 \\ 12 \\ 12 \\ 12 \end{pmatrix} \cdot \text{in}$
--	--	--	---

<i>Depth of antennas*</i>	<i>Weight of antennas</i>	<i>Elevation of antennas</i>	<i>Number of antenna groups</i>
---------------------------	---------------------------	------------------------------	---------------------------------

$\text{depth}_{\text{ant}} := \begin{pmatrix} 7.8 \\ 9.64 \\ 10 \\ 12 \\ 6 \\ 6 \end{pmatrix} \cdot \text{in}$	$\text{weight}_{\text{ant}} := \begin{pmatrix} 84.7 \\ 103.7 \\ 69.1 \\ 69.5 \\ 50 \\ 50 \end{pmatrix} \cdot \text{lb}$	$z_{\text{ant}} := \begin{pmatrix} 127 \\ 127 \\ 127 \\ 127 \\ 110 \\ 137 \end{pmatrix} \cdot \text{ft}$	$N_{\text{antenna}} := 6$
--	---	--	---------------------------

*Shape of antenna*  
1 = Flat  
0 = Round

*Azimuth adjustment for entire antenna group rotated about structure (in cases where azimuths are unknown, 0 for all yields most conservative result)*

*Shielding factor*  
0 = NO shielding - Full wind load  
1 = Partial shielding\* - due to structure  
2 = Full shielding - NO WIND WILL BE APPLIED

$\text{SHAPE} := \begin{pmatrix} 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \end{pmatrix}$	$\text{AZ} := \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \cdot \text{deg}$	$\text{SHIELD} := \begin{pmatrix} 1 \\ 1 \\ 1 \\ 2 \\ 1 \\ 1 \end{pmatrix}$
--	--	---

\*Note: Partial shielding is considered for the noted antennas. Shielding is detailed in Ref. (2), Section 2.6.9.4. For the purposes of the analysis, each antenna group is even spaced about the shielding structure, yielding a result where the wind can act upon two of the three sectors.

*Dishes, Mounts, and Other Equipment*

*Number of appurtenances*

*Number of appurtenance groups*

"12in Dish"  
 "24in Dish"  
 "not used"  
 "not used"

$$n_{\text{equip}} := \begin{pmatrix} 2 \\ 1 \\ 0 \\ 0 \end{pmatrix}$$

$$N_{\text{equip}} := 2$$

$$CaAa_{\text{equip}} := \begin{pmatrix} 0.785 \\ 3.14 \\ 0 \\ 0 \end{pmatrix} \cdot \text{ft}^2$$

*CaAa of equipment*

$$CaAa_{\text{equip.ice}} := \begin{pmatrix} 1.2 \\ 4.2 \\ 0 \\ 0 \end{pmatrix} \cdot \text{ft}^2$$

*CaAa with ice*

$$z_{\text{equip}} := \begin{pmatrix} 127 \\ 127 \\ 0 \\ 0 \end{pmatrix} \cdot \text{ft}$$

*Elevation*

$$\text{weight}_{\text{equip}} := \begin{pmatrix} 15 \\ 30 \\ 0 \\ 0 \end{pmatrix} \cdot \text{lbf}$$

*Weight*

$$\text{weight}_{\text{equip.ice}} := \begin{pmatrix} 25 \\ 40 \\ 0 \\ 0 \end{pmatrix} \cdot \text{lbf}$$

*Weight with ice*

Pipes

Nominal pipe size (AISC STD pipes)

$$\text{Pipe} := \begin{pmatrix} 2.5 \\ 2.5 \\ 0 \\ 0 \end{pmatrix}$$

Number of pipe groups

$$N_{\text{pipe}} := 2$$

$$\text{length}_{\text{pipe}} := \begin{pmatrix} 72 \\ 72 \\ 0 \\ 0 \end{pmatrix} \cdot \text{in}$$

Length of pipes

$$n_{\text{pipe}} := \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

Number of pipes

$$z_{\text{pipe}} := \begin{pmatrix} 127 \\ 127 \\ 0 \\ 0 \end{pmatrix} \cdot \text{ft}$$

Elevation

**▮** \*Note: Shielding is considered for all of the above pipes. Shielding is detailed in Ref. (2), Section 2.6.9.4. For the purposes of the analysis, each antenna group is even spaced about the tank, yielding a result where the wind can act upon only two of the three sectors. in addition, the pipes are located closely enough to their respect antennas that they can also be considered shielded.

### Feedlines

*Number of coaxial cables*

$$N_{\text{feed}} := \begin{pmatrix} 3 \\ 3 \\ 1 \\ 3 \\ 6 \\ 0 \end{pmatrix}$$

$$N_{\text{Feed}} := 6$$

$$n_{\text{feed}} := 1$$

*Nominal coaxial size*

$$\text{Size}_{\text{feed}} := \begin{pmatrix} 0.375 \\ 1.25 \\ 0.75 \\ 1.25 \\ 1.25 \\ 0 \end{pmatrix} \cdot \text{in}$$

*Number of feedline groups*

*Number of feedlines exposed to wind loading*

*Length of coaxial cables*

$$L_{\text{feed}} := \begin{pmatrix} 127 \\ 127 \\ 127 \\ 110 \\ 137 \\ 0 \end{pmatrix} \cdot \text{ft}$$

## **Calculations**

*wind calculations collapsed*

### **Section Calculations**

$$K_h := e^{\left(\frac{f \cdot z}{H}\right)}$$

$$K_h = 1$$

$$k_{zt} := \left(1 + \frac{K_e \cdot K_t}{K_h}\right)^2$$

$$k_{zt} = 1$$

$$K_{zt} := \begin{cases} 1.0 & \text{if TC} = "1" \\ k_{zt} & \text{if TC} \neq "1" \end{cases}$$

$$K_{zt} = 1$$

$$q_z := .00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot i_m \cdot V^2 \cdot \text{psf}$$

$$q_z = 22.743 \cdot \text{psf}$$

*Velocity Pressure per Ref. (2),  
 Section 2.6.9.6.*

$$C := \left(i_m \cdot K_{zt} \cdot K_z\right)^{0.5} \cdot V \cdot \text{width}_{\text{ant}} \cdot \frac{1}{\text{ft}}$$

$$Q_z := q_z$$

*Section Length*

$$L := \begin{cases} \text{for } n \in 1 \dots N_{\text{sections}} \\ l_n \leftarrow H_{\text{chim}_n} - H_{\text{chim}_{n+1}} \\ 1 \end{cases}$$

*Thickness at center line of each section*

$$t := \begin{cases} \text{for } n \in 1 \dots N_{\text{sections}} \\ t_n \leftarrow \frac{T_{\text{chim}_n} + T_{\text{chim}_{n+1}}}{2} \\ t \end{cases}$$

*O.D. at center line of each section*

$$D_{\text{mid}} := \begin{cases} \text{for } n \in 1 \dots N_{\text{sections}} \\ p_n \leftarrow 0.5(D_{\text{chim}_n} + D_{\text{chim}_{n+1}}) \\ p \end{cases}$$

	1
1	10
2	10
3	10.5
4	11
5	11
6	12
7	13
8	15
9	17
10	17
11	18.5
12	20
13	22
14	24

t = ·in

	1
1	141
2	140.88
3	0.12
4	180
5	179.88
6	0.12
7	239.88
8	0.12
9	180
10	179.88
11	0.12
12	239.88
13	0.12
14	240

L = ·in

	1
1	98.48
2	104.58
3	107.5
4	111.375
5	119.125
6	123
7	128.2
8	133.4
9	137.3
10	145.1
11	149
12	154.15
13	159.3
14	164.5

Dmid = ·in

$$\text{Aspect} := \begin{cases} \text{for } n \in 1 \dots N_{\text{sections}} \\ x_n \leftarrow \frac{L_n}{D_{\text{mid}_n}} \\ x \end{cases}$$

$$C_f := \begin{cases} \text{for } n \in 1 \dots N_{\text{sections}} \\ x_n \leftarrow \begin{cases} \text{if } n_{\text{side}_n} = 4 & \text{Square chimney,} \\ & \text{wind normal to face} \\ \quad \begin{cases} 1.3 & \text{if } \text{Aspect}_n \leq 1 \\ 1.3 + 0.1 \cdot \frac{\text{Aspect}_n - 1}{7 - 1} & \text{if } 1 < \text{Aspect}_n \leq 7 \\ 1.4 + 0.6 \cdot \frac{\text{Aspect}_n - 7}{25 - 7} & \text{if } 7 < \text{Aspect}_n < 25 \\ 2.0 & \text{if } \text{Aspect}_n \geq 25 \end{cases} \\ \text{if } 4 < n_{\text{side}_n} \leq 8 & \text{Hexagonal through Octagonal} \\ & \text{chimney.} \\ \quad \begin{cases} 1.0 & \text{if } \text{Aspect}_n \leq 1 \\ 1.0 + 0.2 \cdot \frac{\text{Aspect}_n - 1}{7 - 1} & \text{if } 1 < \text{Aspect}_n \leq 7 \\ 1.2 + 0.2 \cdot \frac{\text{Aspect}_n - 7}{25 - 7} & \text{if } 7 < \text{Aspect}_n < 25 \\ 1.4 & \text{if } \text{Aspect}_n \geq 25 \end{cases} \\ \text{if } n_{\text{side}_n} > 8 & \text{Round chimney; moderately} \\ & \text{smooth, as } D/D \text{ will typically be} \\ & \text{significantly lower than } 0.02 \\ \quad \begin{cases} 0.5 & \text{if } \text{Aspect}_n \leq 1 \\ 0.5 + 0.1 \cdot \frac{\text{Aspect}_n - 1}{7 - 1} & \text{if } 1 < \text{Aspect}_n \leq 7 \\ 0.6 + 0.1 \cdot \frac{\text{Aspect}_n - 7}{25 - 7} & \text{if } 7 < \text{Aspect}_n < 25 \\ 0.7 & \text{if } \text{Aspect}_n \geq 25 \end{cases} \end{cases} \\ x \end{cases}$$

	1
1	1.432
2	1.347
3	0.001
4	1.616
5	1.51
6	0.001
7	1.871
8	0.001
9	1.311
10	1.24
11	0.001
12	1.556
13	0.001
14	1.459

Hexagonal through Octagonal chimney.

Round chimney; moderately smooth, as D/D will typically be significantly lower than 0.02

C<sub>f</sub> =

	1
1	0.507
2	0.506
3	0.5
4	0.51
5	0.509
6	0.5
7	0.515
8	0.5
9	0.505
10	0.504
11	0.5
12	0.509
13	0.5
14	0.508

See Figure 6-21, Ref. (4)

$$K_{d, \text{chim}} := \text{for } i \in 1 \dots N_{\text{sections}}$$

$$x_i \leftarrow \begin{cases} 0.90 & \text{if } n_{\text{side}_i} = 4 \\ 0.95 & \text{if } 4 < n_{\text{side}_i} \leq 8 \\ 0.95 & \text{if } n_{\text{side}_i} > 8 \end{cases}$$

$$K_d = 0.95$$

From Table 6-4, Ref. (4)

$$K_{z, \text{chim}} := \text{for } i \in 1 \dots N_{\text{sections}}$$

$$x_i \leftarrow \begin{cases} 2.01 \cdot \left( \frac{H_{\text{chim}_i} - 0.5 \cdot L_i}{z_g} \right)^{\frac{2}{\alpha}} & \text{if } H_{\text{chim}_i} - 0.5 \cdot L_i \geq 15 \cdot \text{ft} \\ 2.01 \cdot \left( \frac{15 \cdot \text{ft}}{z_g} \right)^{\frac{2}{\alpha}} & \text{otherwise} \end{cases}$$

$$K_z = 1.081$$

$$q_z := \text{for } i \in 1 \dots N_{\text{sections}}$$

$$x_i \leftarrow 0.00256 \cdot K_{z, \text{chim}_i} \cdot K_{zt} \cdot K_{d, \text{chim}_i} \cdot V^2 \cdot i_m \cdot \text{psf}$$

$$q_z = \text{psf}$$

$$A_f := \text{for } i \in 1 \dots N_{\text{sections}}$$

$$x_i \leftarrow L_i \cdot D_{\text{mid}_i}$$

$$A_f = \text{ft}^2$$

$$F := \text{for } i \in 1 \dots N_{\text{sections}}$$

$$x_i \leftarrow q_{z_i} \cdot G_H \cdot C_{f_i} \cdot A_{f_i}$$

$$F = \text{kip}$$

	1
1	22.773
2	22.2
3	21.899
4	21.498
5	20.637
6	20.171
7	19.503
8	18.773
9	18.175
10	16.805
11	15.999
12	14.737
13	13.125
14	12.089

	1
1	96.43
2	102.31
3	0.09
4	139.22
5	148.81
6	0.1
7	213.56
8	0.11
9	171.63
10	181.25
11	0.12
12	256.79
13	0.13
14	274.17

	1
1	1.5
2	1.55
3	0
4	2.06
5	2.11
6	0
7	2.89
8	0
9	2.13
10	2.07
11	0
12	2.6
13	0
14	2.27

$$z_{center} := \begin{cases} \text{for } i \in 1 \dots N_{sections} \\ x_i \leftarrow H_{chim_i} - 0.5 \cdot L_i \\ x \end{cases}$$

	1
1	137.625
2	125.88
3	120.005
4	112.5
5	97.505
6	90.005
7	80.005
8	70.005
9	62.5
10	47.505
11	40.005
12	30.005
13	20.005
14	10

$z_{center} =$  ft

$$M := \begin{cases} \text{for } i \in 1 \dots N_{sections} \\ x_i \leftarrow \sum_{j=1}^{N_{antenna}} \text{if}[z_{ant_j} > (H_{chim_i} - L_i), F_{A_j} \cdot [z_{ant_j} - (H_{chim_i} - L_i)], 0] \dots \\ + \sum_{j=1}^{N_{pipe}} \text{if}[z_{pipe_j} > (H_{chim_i} - L_i), F_{pipe_j} \cdot [z_{pipe_j} - (H_{chim_i} - L_i)], 0] \dots \\ + \sum_{j=1}^{N_{equip}} \text{if}[z_{equip_j} > (H_{chim_i} - L_i), F_{equip_j} \cdot [z_{equip_j} - (H_{chim_i} - L_i)], 0] \dots \\ + \text{if}[z_{feed} > H_{chim_i} - L_i, 0.5 \cdot q_{feed} \cdot [z_{feed} - (H_{chim_i} - L_i)]^2, 0] \dots \\ + \sum_{j=1}^i [F_j \cdot [z_{center_j} - (H_{chim_i} - L_i)]] \\ x \end{cases}$$

*Overturing moment at the bottom of the section*

	1
1	11.54
2	54.132
3	54.182
4	147.251
5	277.566
6	277.664
7	503.589
8	503.717
9	712.516
10	954.018
11	954.19
12	1325.12
13	1325.319
14	1747.622

$M =$  ·kip·ft

$$\alpha := \begin{cases} \text{for } i \in 1 \dots N_{\text{sections}} \\ x_i \leftarrow \frac{360 \cdot \text{deg}}{2 \cdot n_{\text{side}_i}} \\ x \end{cases}$$

$$a := \begin{cases} \text{for } i \in 1 \dots N_{\text{sections}} \\ x_i \leftarrow D_{\text{chim}_{i+1}} \cdot \tan(\alpha_i) \\ x \end{cases}$$

	1
1	0.074
2	0.078
3	0.078
4	0.084
5	0.089
6	0.089
7	0.097
8	0.097
9	0.103
10	0.108
11	0.108
12	0.116
13	0.116
14	0.123

a = ft

	1
1	0.5
2	0.5
3	0.5
4	0.5
5	0.5
6	0.5
7	0.5
8	0.5
9	0.5
10	0.5
11	0.5
12	0.5
13	0.5
14	0.5

α = .deg

I := for i ∈ 1..N<sub>sections</sub>

$$x_i \leftarrow \frac{n_{side_i} \cdot (a_i)^3 \cdot t_i}{8} \cdot \left[ \frac{1}{3} + \frac{1}{(\tan(\alpha_i))^2} \right] \cdot \left[ 1 - 3 \cdot \frac{t_i \cdot \tan(\alpha_i)}{a_i} + 4 \cdot \left( \frac{t_i \cdot \tan(\alpha_i)}{a_i} \right)^2 - 2 \cdot \left( \frac{t_i \cdot \tan(\alpha_i)}{a_i} \right)^3 \right]$$

A := for i ∈ 1..N<sub>sections</sub>

$$x_i \leftarrow n_{side_i} \cdot a_i \cdot t_i \cdot \left( 1 - \frac{t_i \cdot \tan(\alpha_i)}{a_i} \right)$$

r := for i ∈ 1..N<sub>sections</sub>

$$x_i \leftarrow \frac{a_i}{\sqrt{8}} \cdot \sqrt{\frac{1}{3} + \frac{1}{(\tan(\alpha_i))^2}} \cdot \left[ 1 - 2 \cdot \frac{t_i \cdot \tan(\alpha_i)}{a_i} + 2 \cdot \left( \frac{t_i \cdot \tan(\alpha_i)}{a_i} \right)^2 \right]$$

	1
1	3.06 · 10 <sup>6</sup>
2	3.678 · 10 <sup>6</sup>
3	3.808 · 10 <sup>6</sup>
4	4.949 · 10 <sup>6</sup>
5	6.128 · 10 <sup>6</sup>
6	6.52 · 10 <sup>6</sup>

7	9.014 · 10 <sup>6</sup>
8	9.934 · 10 <sup>6</sup>
9	1.303 · 10 <sup>7</sup>
10	1.561 · 10 <sup>7</sup>
11	1.647 · 10 <sup>7</sup>
12	2.167 · 10 <sup>7</sup>
13	2.294 · 10 <sup>7</sup>
14	2.994 · 10 <sup>7</sup>

	1
1	19.998
2	21.272
3	22.221
4	25.019
5	26.879
6	29.06
7	34.148
8	38.747
9	46.065
10	48.958
11	52.672
12	60.783
13	65.901
14	76.29

	1
1	2.717
2	2.888
3	2.875
4	3.089
5	3.316
6	3.289
7	3.568
8	3.516
9	3.693
10	3.921
11	3.883
12	4.146
13	4.097
14	4.351

A = ft<sup>2</sup>

r = ft

$h := 0.5L$

$$x := \begin{cases} \text{for } i \in 1 \dots N_{\text{sections}} \\ x_i \leftarrow \frac{h_i}{r_i} \\ x \end{cases}$$

	1
1	2.163
2	2.033
3	0.002
4	2.428
5	2.26
6	0.002
7	2.801
8	0.001
9	2.031
10	1.911
11	0.001
12	2.411
13	0.001
14	2.299

	1
1	70.5
2	70.44
3	0.06
4	90
5	89.94
6	0.06
7	119.94
8	0.06
9	90
10	89.94
11	0.06
12	119.94
13	0.06
14	120

$h =$   $\cdot \text{in}$

Weight of each section

$$W := \begin{cases} \text{for } n \in 1 \dots N_{\text{sections}} \\ p_n \leftarrow \gamma_{\text{mason}} \cdot L_n \cdot (A_n) \\ p \end{cases}$$

Overturing factor of safety

$$FS := \begin{cases} \text{for } i \in 1 \dots N_{\text{sections}} \\ x_i \leftarrow \frac{\left( \sum_{j=1}^i W_j \right) \cdot 0.5 \cdot D_{\text{chim}_{i+1}}}{M_i} \\ x \end{cases}$$

$$F_a := \begin{cases} \text{for } i \in 1 \dots N_{\text{sections}} \\ x_i \leftarrow \begin{cases} \frac{1}{4} \cdot f_m \cdot \left[ 1 - \left( \frac{h_i}{140 \cdot r_i} \right)^2 \right] & \text{if } \frac{h_i}{r_i} \leq 99 \\ \frac{1}{4} \cdot f_m \cdot \left( \frac{70 \cdot r_i}{h_i} \right)^2 & \text{otherwise} \end{cases} \\ x \end{cases}$$

$$P := \begin{cases} \text{for } i \in 1 \dots N_{\text{sections}} \\ x_i \leftarrow \sum_{j=1}^i W_j \\ x \end{cases}$$

	1
1	10.35
2	4.813
3	4.811
4	3.366
5	2.799
6	2.798
7	2.578
8	2.577
9	2.613
10	2.633
11	2.633
12	2.757
13	2.757
14	2.968

FS =

	1
1	28.197
2	58.164
3	58.191
4	103.225
5	151.574
6	151.609
7	233.524
8	233.57
9	316.487
10	404.552
11	404.615
12	550.421
13	550.5
14	733.597

P =

	1
1	28.197
2	29.968
3	0.027
4	45.034
5	48.35
6	0.035
7	81.915
8	0.046
9	82.917
10	88.065
11	0.063
12	145.805
13	0.079
14	183.097

W =

	1
1	249.94
2	249.947
3	250
4	249.925
5	249.935
6	250
7	249.9
8	250
9	249.947
10	249.953
11	250
12	249.926
13	250
14	249.933

F<sub>a</sub> =

·kip

·kip

·psi

$$f_a := \begin{cases} \text{for } i \in 1 \dots N_{\text{sections}} \\ x_i \leftarrow \frac{P_i}{A_i} \end{cases}$$

	1
1	2.3
2	9.492
3	9.178
4	20.575
5	33.429
6	31.427
7	44.714
8	40.584
9	46.326
10	54.638
11	51.79
12	58.451
13	55.228
14	59.427

$f_b =$  psi

	1
1	9.792
2	18.989
3	18.186
4	28.652
5	39.161
6	36.229
7	47.49
8	41.861
9	47.712
10	57.384
11	53.346
12	62.886
13	58.01
14	66.777

$f_a =$  psi

$$f_b := \begin{cases} \text{for } i \in 1 \dots N_{\text{sections}} \\ x_i \leftarrow \frac{M_i}{I_i} \cdot (0.5 \cdot D_{\text{chim}_{i+1}}) \end{cases}$$

$$F_b := \frac{1}{3} \cdot f_m \quad F_b = 333.333 \cdot \text{psi}$$

*Eccentricity*

$$e := \begin{cases} \text{for } i \in 1 \dots N_{\text{sections}} \\ x_i \leftarrow \frac{M_i}{P_i} \end{cases}$$

	1
1	$3.701 \cdot 10^6$
2	$3.157 \cdot 10^6$
3	$4.489 \cdot 10^{12}$
4	$1.904 \cdot 10^6$
5	$1.892 \cdot 10^6$
6	$4.472 \cdot 10^{12}$
7	$1.367 \cdot 10^6$
8	$5.877 \cdot 10^{12}$
9	$3.461 \cdot 10^6$
10	$4.242 \cdot 10^6$
11	$9.903 \cdot 10^{12}$
12	$3.497 \cdot 10^6$
13	$1.452 \cdot 10^{13}$
14	$5.255 \cdot 10^6$

$P_e =$  ·kip

*Euler buckling*

$$P_e := \begin{cases} \text{for } i \in 1 \dots N_{\text{sections}} \\ x_i \leftarrow \frac{\pi^2 \cdot E_m \cdot I_i}{(h_i)^2} \cdot \left( 1 - 0.577 \cdot \frac{e_i}{r_i} \right)^3 \end{cases}$$

	1
1	0.409
2	0.931
3	0.931
4	1.427
5	1.831
6	1.831
7	2.156
8	2.157
9	2.251
10	2.358
11	2.358
12	2.407
13	2.407
14	2.382

$e =$  ft

*Factor of safety*

$$SF := \begin{cases} \text{for } i \in 1 \dots N_{\text{sections}} \\ x_i \leftarrow \frac{f_{a_i}}{F_{a_i}} + \frac{f_{b_i}}{F_b} \end{cases}$$

	1
1	0.046
2	0.104
3	0.1
4	0.176
5	0.257
6	0.239
7	0.324
8	0.289
9	0.33
10	0.393
11	0.369
12	0.427
13	0.398
14	0.445

SF =

*Compression in section  
 (negative denotes tension)*

$$Comp := \begin{cases} \text{for } i \in 1 \dots N_{\text{sections}} \\ x_i \leftarrow f_{a_i} - f_{b_i} \end{cases}$$

	1
1	7.492
2	9.496
3	9.007
4	8.077
5	5.732
6	4.803
7	2.776
8	1.278
9	1.386
10	2.746
11	1.556
12	4.434
13	2.782
14	7.35

Comp =

psi

*Overall stress*

$$Stress\% := \begin{cases} \text{for } i \in 1 \dots N_{\text{sections}} \\ x_i \leftarrow \frac{P_i}{0.25 P_{e_i}} \end{cases}$$

	1
1	0.003
2	0.007
3	0
4	0.022
5	0.032
6	0
7	0.068
8	0
9	0.037
10	0.038
11	0
12	0.063
13	0
14	0.056

Stress% =

·%

## Chimney Review

Overall stress review

	1	
1	0.003	
2	0.007	
3	0	
4	0.022	
5	0.032	
6	0	
7	0.068	
8	0	
9	0.037	
10	0.038	
11	0	
12	0.063	
13	0	
14	0.056	

Stress% = .%

all < 100%, OK

Compression check review

	1	
1	7.492	
2	9.496	
3	9.007	
4	8.077	
5	5.732	
6	4.803	
7	2.776	
8	1.278	
9	1.386	
10	2.746	
11	1.556	
12	4.434	
13	2.782	
14	7.35	

Comp = psi

all > 0, entire chimney is in compression OK

Overturning factor of safety review

	1	
1	10.35	
2	4.813	
3	4.811	
4	3.366	
5	2.799	
6	2.798	
7	2.578	
8	2.577	
9	2.613	
10	2.633	
11	2.633	
12	2.757	
13	2.757	
14	2.968	

FS =

all > 2, OK

Stress factor review

	1	
1	0.046	
2	0.104	
3	0.1	
4	0.176	
5	0.257	
6	0.239	
7	0.324	
8	0.289	
9	0.33	
10	0.393	
11	0.369	
12	0.427	
13	0.398	
14	0.445	

SF =

all < 1, OK

# Sprint



**PROJECT: MIMO UPGRADE**

**SITE NAME: 39 CHERRY AVE SS**

**SITE CASCADE: CT52XC055-C**

**SITE ADDRESS: 253 CHERRY ST  
WATERBURY, CT 06702**

**Sprint**  
201 STATE ROUTE 17 NORTH  
RUTHERFORD, NJ 07070  
TEL: (201) 684-4000  
FAX: (201) 684-4223

**Cherundolo Consulting**  
1280 ROUTE 46 WEST  
PARSIPPANY, NJ 07054  
TELEPHONE: 646-544-5324

**WESTCHESTER SERVICES LLC**  
604 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
FAX : 847-277-0080  
AE@westchesterservices.com

**JOHN M. BANKS ARCHITECT**  
604 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
FAX : 847-277-0080

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**SITE INFORMATION**

**SITE ADDRESS:**  
253 CHERRY ST  
WATERBURY, CT 06702

**PROPERTY OWNER:**  
NORTH SQUARE GATEWAY DEVELOPMENT INC.  
232 NORTH ELM ST  
WATERBURY, CT 06702

**ZONING JURISDICTION:**  
COUNTY OF NEW HAVEN

**ZONING DISTRICT:**  
-

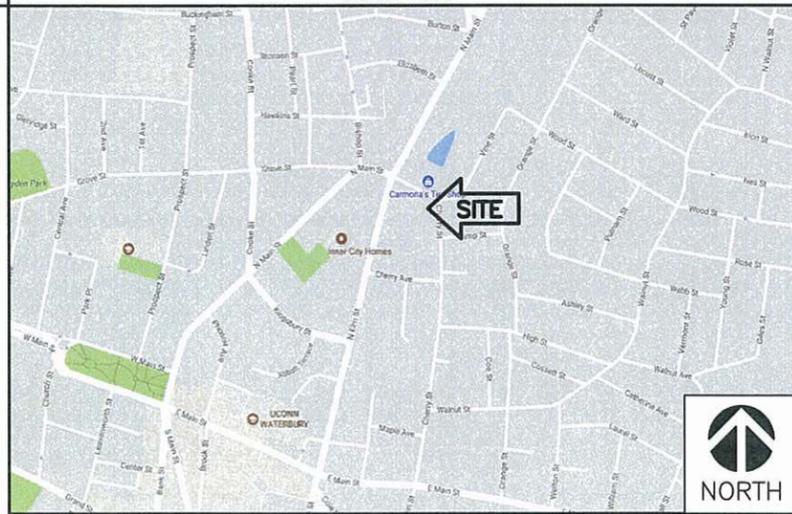
**POWER COMPANY:**  
NORTHEAST UTILITIES  
(800) 286-2000

**COUNTY:**  
NEW HAVEN

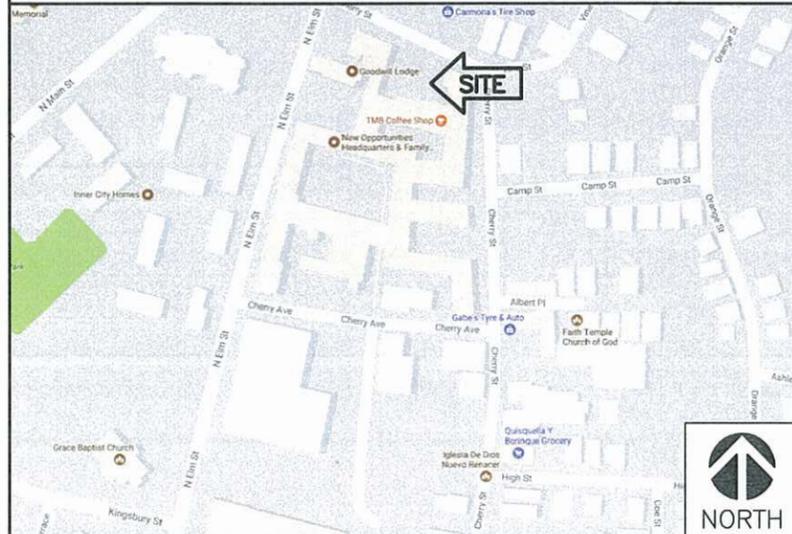
**GEOGRAPHIC COORDINATES (NAD83):**  
LAT: 41° 33' 34.15"N (41.559486°)  
LONG: 73° 02' 2.774"W (-73.034104°)

**SPRINT CONSTRUCTION MANAGER:**  
NAME:  
PHONE:  
EMAIL:

**AREA MAP**



**LOCATION MAP**



**PROJECT DESCRIPTION**

- (1) EXISTING CW EQUIPMENT CABINET, (1) EXISTING SPRINT GPS UNIT & (1) EXISTING WORK LIGHT TO BE REMOVED
- INSTALL (1) NEW ELTEK E-CAB CABINET
- INSTALL (1) NEW ELTEK I-CAB CABINET
- INSTALL (1) NEW SPRINT SPRINT GPS UNIT
- INSTALL (1) NEW SPRINT 200A PPC CABINET
- REMOVE (3) EXISTING CW ANTENNAS
- REMOVE (3) EXISTING CW RRHS
- (1) EXISTING 2'-0" & (2) EXISTING 1'-0" SPRINT DISH ANTENNAS TO REMAIN
- INSTALL (3) NEW 800/1900 MHz ANTENNAS
- INSTALL (3) NEW MIMO ANTENNAS
- INSTALL (6) NEW 800 MHz RRHS
- INSTALL (3) NEW 1900 MHz RRHS
- INSTALL (3) NEW 1-1/4" HYBRIFLEX CABLES
- INSTALL (1) NEW MIMO UPGRADE HYBRID CABLE
- INSTALL (6) NEW 'COMMSCOPE' PART#MT-547-126 MOUNTING PIPES

**APPLICABLE CODES**

- SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT OF THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
- 2015 INTERNATIONAL BUILDING CODE AS ADOPTED BY THE STATE OF CONNECTICUT
  - NEC 2014, AS ADOPTED BY THE STATE OF CONNECTICUT
  - NFPA 780 - LIGHTNING PROTECTION CODE
  - ANSI/TIA-222G TELECOM STRUCTURAL STANDARD

**DIG SAFE**



**811**

TO OBTAIN LOCATION OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN CONNECTICUT, CONTACT CALL BEFORE YOU DIG

TOLL FREE: 1-800-922-4455 OR [www.cbyd.com](http://www.cbyd.com)

CONNECTICUT STATUTE REQUIRES MIN OF 2 WORKING DAYS NOTICE BEFORE YOU EXCAVATE

**Know what's below. Call before you dig.**

**DRAWING INDEX**

SHEET NO:	SHEET TITLE	REV
T-1	TITLE SHEET	0
SP-1	SPRINT SPECIFICATIONS	0
SP-2	SPRINT SPECIFICATIONS	0
SP-3	SPRINT SPECIFICATIONS	0
A-1	OVERALL SITE PLAN	0
A-2	EQUIPMENT LAYOUT	0
A-3	SMOKE STACK ELEVATION	0
A-4	ANTENNA LAYOUT	0
A-5	MIMO PLUMBING DIAGRAM	0
A-6	CABLE DETAILS	0
A-7	EQUIPMENT DETAILS	0
A-8	ANTENNA MOUNTING DETAILS	0
E-1	ELECTRIC PLAN & NOTES	0
E-2	GROUNDING RISER DIAGRAM	0
E-3	ELECTRICAL DETAILS	0

NO.	DATE	DESCRIPTION
0	04.20.18	FINAL CD

DRAWN BY: JS  
CHECKED BY: JMB  
JOB NUMBER: CT52XC055-C  
ARCHITECT: JOHN BANKS

SEAL  
SITE NAME  
**39 CHERRY AVE SS**

SITE NUMBER  
**CT52XC055-C**

SITE LOCATION  
253 CHERRY STREET  
WATERBURY, CT 06702  
NEW HAVEN COUNTY

SHEET TITLE  
TITLE SHEET

SHEET NUMBER  
**T-1**

**PROFESSIONAL LICENSE**

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF CONNECTICUT

EXPIRES: 04/30/2018 SIGNED: *[Signature]* 4/20/18

**SECTION 01 100 – SCOPE OF WORK**

**THE WORK:**

THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE CONSTRUCTION DRAWINGS AND ASSOCIATED OUTLINE SPECIFICATIONS AND SITE SPECIFIC WORK ORDER, DESCRIBE THE WORK TO BE PERFORMED BY THIS CONSTRUCTION CONTRACTOR SUPPLIER

**RELATED DOCUMENTS**

- A. THE REQUIREMENTS OF EACH SECTION OF THIS SPECIFICATION APPLY TO ALL, INDIVIDUALLY AND COLLECTIVELY.
- B. RELATED DOCUMENTS: THE CONTRACTOR SHALL COMPLY WITH THE MOST CURRENT VERSION OF THE FOLLOWING SUPPLEMENTAL REQUIREMENTS FOR INSTALLATION AND TESTING
  - 1. EN-2012-001: (FIBER OPTIC, DC CABLE, AND DC CIRCUIT BREAKER TAGGING STANDARDS)
  - 2. TS-200-(TRANSMISSION ANTENNA LINE ACCEPTANCE STANDARDS)
  - 3. EL-0568: (FIBER TESTING POLICY)
  - 4. NP-312-201: (EXTERIOR GROUNDING SYSTEM TESTING)
  - 5. NP-760-500: ETHERNET, MICROWAVE, TESTING AND ACCEPTANCE

**NATIONALLY RECOGNIZED CODES AND STANDARDS:**

- THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS, INCLUDED
- A. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
  - B. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT
  - C. GR-1089-CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY-GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT
  - D. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE-"NEW") AND NFPA 101 (LIFE SAFETY CODE).
  - E. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
  - F. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
  - G. AMERICAN CONCRETE INSTITUTE (ACI)
  - H. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
  - I. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
  - J. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
  - K. PORTLAND CEMENT ASSOCIATION (PCA)
  - L. NATIONAL CONCRETE MASONRY ASSOCIATION (PCA)
  - M. BRICK INDUSTRY ASSOCIATION (BIA)
  - N. AMERICAN WELDING SOCIETY (AWS)
  - P. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
  - Q. DOOR AND HARDWARE INSTITUTE (DHI)
  - R. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
  - S. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND INTERNATIONAL BUILDING CODE.

**DEFINITIONS:**

- A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN CONTRACT DOCUMENTS
- B. COMPANY: "SPRINT": SPRINT CORPORATION AND ITS OPERATING ENTITIES
- C. ARCHITECT: SYNONYMOUS WITH ARCHITECT&ENGINEER AND "A&E", THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT
- D. CONTRACTOR: CONSTRUCTION CONTRACTOR, SUPPLIER, VENDOR; INDIVIDUAL OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.
- E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE CO, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK
- F. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FOLLO THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT.

**SITE FAMILIARITY:**

CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.

**POINT OF CONTACT:**

COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT

**ON-SITE SUPERVISION:**

THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

**DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE:**

THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.

- A. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. PROVIDE ALL MATERIALS AND LABOR AS REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONING SYSTEM. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
- B. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.

**USE OF JOB SITE:**

CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.

**UTILITY SERVICES:**

WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OF WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED:

**PERMITS/FEES:**

WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR

**CONTRACTOR:**

CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY

**USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:**

CONTRACTOR WILL UTILIZE ITS BEST EFFORTS TO WORK WITH SPRINT ELECTRONIC PM SYSTEMS. CONTRACTOR UNDERSTANDS THAT SUFFICIENT INTERNET ACCESS, EQUIVALENT TO "BROADBAND" OR BETTER, IS REQUIRED TO TIMELY AND EFFECTIVELY UTILIZE SPRINT DATA AND DOCUMENT MANAGEMENT SYSTEMS AND AGREES TO MAINTAIN APPROPRIATE CONNECTIONS FOR CONTRACTORS STAFF AND OFFICE THAT ARE COMPATIBLE WITH SPRINT DATA AND DOCUMENT MANAGEMENT SYSTEMS.

**TEMPORARY UTILITIES AND FACILITIES:**

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMP UTILITIES AND FACILITIES NECESSARY EXCEPT OTHERWISE INDICATED IN CONSTRUCTION DOCUMENTS. TEMP UTILITIES AND FACILITIES INCLUDE POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSABLE FALSITIES, TELECOM SERVICES, PROVIDE TEMP UTILITIES AND FACILITIES ACCORDANCE WITH OSHA AND AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE CO. ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSOR'S OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN CONTRACT DOCUMENTS.

**ACCESS TO WORK:**

THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE A&E DURING ALL PHASED OF WORK.

**DIMENSIONS:**

VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

**EXISTING CONDITIONS:**

NOTIFY SPRINT CM OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

**SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT:**

**FURNISHED MATERIALS:**

COMPANY FURNISHED MATERIALS AND EQUIPMENT TO BE INSTALLED BY THE CONTRACTOR (OFIC) IS IDENTIFIED ON THE RFDS IN THE CONSTRUCTION DOCUMENTS.

**RECEIPT OF MATERIAL AND EQUIPMENT:**

- A. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON PRECEPT SHALL:
  - 1. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT
  - 2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES
  - 3. TAKE RESPONSIBILITIES FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT
- B. RECORD ANY DEFECTS OR DAMAGES AND WITHIN 24 HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
- C. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
- D. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

**DELIVERABLES:**

- A. COMPLETE SHIPPING RECEIPT DOCUMENTATION IN ACCORDANCE W/COMPANY PRACTICE
- B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE W/COMPANY PRACTICE, AND AS DIRECTED BY COMPANY

**SECTION 01 300-CELL SITE CONSTRUCTION**

**NOTICE TO PROCEED:**

- A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S ISSUANCE OF THE WORK ORDER.
- B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.
- C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITIONS
  - 1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITIONS WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
  - 2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR EXPOSE TO INDIVIDUALS.
- D. CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS: SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION.

**FUNCTIONAL REQUIREMENTS:**

- A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. CONTRACTOR SHALL TAKE ALL ACTIONS AS NECESSARY TO COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.
- B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.
- C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES
- D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
  - 1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
  - 2. PREPARE GROUND SITES; PROVIDE DE-GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
  - 3. MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND BACKHAUL (FIBER, COPPER, OR MICROWAVE).
  - 4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
  - 5. INSTALL ABOVE GROUND GROUNDING SYSTEMS, CONDUIT AND BOXES.
  - 6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
  - 7. INSTALL H-FRAMES, CABINETS, PADS & PLATFORMS AS INDICATED.
  - 8. INSTALL ROADS, ACCESS WAYS, CURBS AND DRAINS AS INDICATED.
  - 9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.

- 10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
- 11. PROVIDE SLABS AND EQUIPMENT PLATFORMS
- 12. INSTALL COMPOUND FENCING, SIGHT SHIELDING, LANDSCAPING AND ACCESS BARRIERS
- 13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER
- 14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER
- 15. INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS
- 15. INSTALLED FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS
- 16. INSTALL ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EX. TOWER AS REQUIRED
- 17. INSTALL CELL SITE RADIOS, MICROWAVE, GPS, COAXIAL MAINLINE, ANTENNAS, CROSS BAND COUPLERS, TOWER TOP AMPLIFIERS, LOW NOISE AMPLIFIERS AND RELATED EQUIPMENT
- 18. CONDUCT ALL REQUIRED TESTS AND INSPECTIONS
- 19. PERFORM, DOCUMENT, AND CLOSE OUT ALL JURISDICTIONAL PERMITTING REQUIREMENTS AND CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
- 20. PERFORM ALL ADDITIONAL WORK AS IDENTIFIED IN SCOPE OF SERVICES ATTACHED TO THE SUPPLIER AGREEMENT FOR THIS PROJECT. THIS WORK MAY INCLUDE COMMISSIONING, INTEGRATION, SPECIAL WAREHOUSING, REVERSE LOGISTICS ACTIVITIES, ETC. PERFORM COMMISSIONING AND INTEGRATION ACTIVATIONS PER APPLICABLE MOPS

**DELIVERABLES:**

- A. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED TEST REPORTS AND DOCUMENTATION INCLUDED BU NOT LIMITED TO THE FOLLOWING
  - 1. PRODUCT SPECIFICATIONS FOR MATERIALS OR SPECIAL CONSTRUCTION REQUESTED BY SPRINT
  - 2. ACTUALIZE ALL CONSTRUCTION RELATED MILESTONES IN SITERRA AND COMPLETE ALL ON-LINES AND COMPLETE DOCUMENT UP-LOADS. UPLOAD ALL REQUIRED CLOSEOUT DOCUMENTS AND FINAL SITE PHOTOS.
  - 3. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT LEFT ON SITE INSIDE BASE OF MAIN RF CABINET IN A PROTECTIVE POUCH.
  - 4. ALL REQUIRED TEST REPORTS.
  - 5. REQUIRED CLOSEOUT DOCUMENTATION INCLUDING BUT NOT LIMITED TO:
    - a. ALL JURISDICTIONAL PERMITTING AND OCCUPANCY INFORMATION
    - b. PDF SCAN OF REDLINES PRODUCED IN THE FIELD
    - c. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS
    - d. LIEN WAIVERS
    - e. FINAL PAYMENT APPLICATION
    - f. REQUIRED FINAL CONSTRUCTION PHOTOS
    - g. CONSTRUCTION & COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
    - h. LISTS OF SUBCONTRACTORS
- B. PROVIDE ADDITIONAL DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT &/OR UPLOADED INTO SMS
  - 1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
  - 2. PROJECT PROGRESS REPORTS.
  - 3. PRE-CONSTRUCTION MEETING NOTES.

**SECTION -1 400-TESTS, INSPECTIONS, SUBMITTALS, AND PROJECT CLOSEOUT**

**TESTS AND INSPECTIONS:**

- A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
- B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
  - 1. COAX SWEEPS AND FIBER TESTS PER TS-0200 (CURRENT VERSION) ANTENNA LINE ACCEPTANCE STANDARDS
  - 2. POST CONSTRUCTION HEIGHT VERIFICATION, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
  - 3. CONCRETE BREAK TESTS
  - 4. SITE RESISTANCE TO EARTH TEST
  - 5. STRUCTURAL BACKFILL COMPACTION TESTS
  - 6. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
  - 7. ADDITIONAL TESTING AS REQUIRED ELSEWHERE IN THIS SPECIFICATION.

**SUBMITTALS:**

- A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
- B. UPLOAD FOLLOWING TO SITERRA AS APPLICABLE BUT NOT LIMITED TO THE FOLLOWING:
  - 1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
  - 2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
  - 3. CHEMICAL GROUNDING SYSTEM
  - 4. REINFORCEMENT CERTIFICATIONS
  - 5. STRUCTURAL BACKFILL TEST RESULTS
  - 6. SWEEP AND FIBER TESTS
  - 7. ANTENNA AZIMUTH AND DOWN-TILT VERIFICATION
  - 8. POST CONSTRUCTION HEIGHT VERIFICATION
  - 9. ADDITIONAL SUBMITTALS MAY BE REQUIRED FOR SPECIAL CONSTRUCTION OR MINOR MATERIALS
- C. ALTERNATES: AT COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS FOR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

**TESTING:**

- A. EMPLOY AN AGENCY OF ENGINEERS AND SCIENTISTS WHO IS REGULARLY ENGAGED IN FIELD AND LABORATORY TESTING AND ANALYSIS. AGENCY SHALL HAVE BEEN IN BUSINESS A MINIMUM OF FIVE YEARS, AND BE LICENSED AS PROFESSIONAL ENGINEERS IN THE STATE WHERE THE PROJECT IS LOCATED. AGENCY IS SUBJECT TO APPROVAL BY COMPANY.
  - 1. AGENCY MUST HAVE THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
  - 2. AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
  - 3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE AND ASPHALT TESTING USIING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.
- B. REQUIRED THIRD PARTY TESTS
  - 1. SITE RESISTANCE TO EARTH TEST PER NP-3 2-201
  - 2. CONCRETE CYLINDER BREAK TESTS FOR TOWER PIER AND ANCHORS PER NATIONALLY RECOGNIZED STANDARDS
  - 3. STRUCTURAL SOILS COMPACTION TESTS PER NATIONALLY RECOGNIZED STANDARDS
  - 4. REBAR PLACEMENT VERIFICATION WITH REPORT
  - 5. SITE RESISTANCE TO EARTH TEST
  - 6. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES &/OR AS A RESULT OF TESTING



201 STATE ROUTE 17 NORTH  
RUTHERFORD, NJ 07070  
TEL: (201) 684-4000  
FAX: (201) 684-4223



1280 ROUTE 46 WEST  
PARSIPPANY, NJ 07054  
TELEPHONE: 646-544-5324



604 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
FAX : 847-277-0080  
AE@westchesterservices.com

**JOHN M. BANKS**  
**ARCHITECT**  
604 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
FAX : 847-277-0080

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0	04.20.18	FINAL CD
NO.	DATE	DESCRIPTION
DRAWN BY: JS		
CHECKED BY: JMB		
JOB NUMBER: CT52XC055-C		
ARCHITECT: JOHN BANKS		



SITE NAME  
**39 CHERRY AVE SS**

SITE NUMBER  
**CT52XC055-C**

SITE LOCATION  
253 CHERRY STREET  
WATERBURY, CT 06702  
NEW HAVEN COUNTY

SHEET TITLE  
**SPRINT SPECIFICATIONS**

SHEET NUMBER  
**SP-1**

C. REQUIRED BY CONTRACTOR

1. COAX SWEEP TESTS PER SPRINT STANDARD TS-0200
  2. FIBER TESTS PER SPRINT STANDARD EL-0568
  3. MICROWAVE LINK TESTS PER NP-760-500
  4. ANTENNA AZIMUTHS AND DOWN TILT USING ELECTRONIC ALIGNMENT TOOL PER ANTENNA INSTALLATION SPECIFICATION HEREIN
  5. POST CONSTRUCTION HEIGHT VERIFICATION AS REQUIRED HERewith IN IN THE TOWER INSTALLATION SPECIFICATIONS.
  6. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED HERewith IN THE ASPHALT PAVING SPECIFICATIONS.
  7. FIELD QUALITY CONTROL TESTING AS SPECIFIED HERewith IN THE CONCRETE PAVING SPECIFICATIONS.
  8. TESTING REQUIRED HERewith UNDER SPECIFICATIONS FOR AGGREGATE BASE FOR ROADWAYS.
  9. ALL OTHER TESTS REQUIRED BY LOCAL JURISDICTION.
- D. INSPECTIONS BY COMPANY: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN INSPECTION ACTIVITIES, FINAL ACCEPTANCE/PUNCH WALK REVIEW, AND/OR AS A RESULT OF TESTING.
- E. SPRINT RESERVES THE RIGHT TO INSPECT THE CONSTRUCTION SITE AT ANY TIME VIA SITE WALKS AND/OR PHOTO REVIEWS. CONTRACTOR SHALL GIVE SPRINT 24 HOURS NOTICE PRIOR TO COMMENCEMENT.
1. GROUNDING SYSTEM AND BURIED UTILITIES INSTALLATION PRIOR TO EARTH CONCEALMENT DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
  2. FORMING FOR CONCRETE AND REBAR PLACEMENT PRIOR TO POUR DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
  3. COMPACTION OF BACKFILL MATERIALS, AGGREGATE BASE FOR ROADS, PADS, AND ANCHORS, ASPHALT PAVING, AND SHAFT BACKFILL FOR CONCRETE AND WOOD POLES, BY INDEPENDENT THIRD PARTY AGENCY.
  4. PRE AND POST CONSTRUCTION ROOFTOP AND STRUCTURAL INSPECTIONS ON EXISTING FACILITIES. PRIOR TO CONSTRUCTION ACTIVITIES AND AFTER CONSTRUCTION IS COMPLETE, PROVIDE PHOTOGRAPHIC DOCUMENTATION OF ROOF, FLASHINGS, AND PARAPETS, BOTH BEFORE AND AFTER CONSTRUCTION IS COMPLETE.
  5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
  6. TOWER TOP AND INACCESSIBLE EQUIPMENT (RRUS, ANTENNAS, AND CABLING): PROVIDE PHOTOS OF THE BACKS OF ALL ANTENNAS, RRUS, COMBINERS, FILTERS, FIBER AND DC CABLING, CABLE COLOR CODING, EQUIPMENT GROUNDING AND CONNECTOR WATER PROOFING INCLUDING NAME PLATE AND SERIAL NUMBER FOR ALL SERIALIZED EQUIPMENT.

PROJECT CLOSEOUT:

- A. FINAL ACCEPTANCE PUNCH WALK AND INSPECTION: AS IDENTIFIED IN THE SCOPE OF SERVICES, SPRINT WILL CONDUCT A FINAL PUNCH WALK OR FINAL DESK TOP PHOTO REVIEW (SITE MODIFICATIONS). PUNCH WALKS MUST BE SCHEDULED IN ADVANCE AS REQUIRED. AT THE PUNCH WALK / REVIEW, SPRINT MAY IDENTIFY CRITICAL DEFICIENCIES WHICH MUST BE CORRECTED PRIOR TO PUTTING SITE ON AIR. MINOR DEFICIENCIES MUST BE CORRECTED WITHIN 30 DAYS EXCEPT AS OTHERWISE REQUIRED. VERIFICATIONS OF CORRECTIONS MAY BE MADE BY COMPANY DURING A REPEAT SITE WALK OR DESK TOP PHOTO REVIEW AT COMPANY'S SOLE DISCRETION.
- B. CLOSEOUT DOCUMENTATION: ALL CLOSEOUT DOCUMENTATION AND PHOTOGRAPHS SHALL BE UPLOADED PRIOR TO FINAL ACCEPTANCE. SPRINT WILL REVIEW CLOSEOUT DOCUMENTATION FOR PRESENCE AND CONTENT. CLOSEOUT DOCUMENTATION SHALL INCLUDE BUT IS NOT LIMITED TO THE FOLLOWING AS APPLICABLE:
1. COAX SWEEP TESTS:
  2. FIBER TESTS:
  3. JURISDICTION FINAL INSPECTION DOCUMENTATION
  4. REINFORCEMENT CERTIFICATION (MILL CERTIFICATION)
  5. CONCRETE MIX DESIGN AND PRODUCT DATA (TOWER FOUNDATION)
  6. LIEN WAIVERS AND RELEASES.
  7. POST -CONSTRUCTION HEIGHT VERIFICATION
  8. JURISDICTION CERTIFICATE OF OCCUPANCY
  9. ELECTRONIC ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
  10. STRUCTURAL BACKFILL TEST RESULTS (IF APPLICABLE)
  11. CELL SITE UTILITY SETUP
  12. AS-BUILT REDLINE CONSTRUCTION DRAWINGS (PDF SCAN OF FIELD MARKS)
  13. AS-BUILT CONSTRUCTION DRAWINGS IN DWG AND PDF FORMATS
  14. LIST OF SUB CONTRACTORS
  15. APPROVED PERMITTING DOCUMENTS
  16. FINAL SITE PHOTOS UP-LOADED TO SITERRA. INCLUDE THE FOLLOWING AS APPLICABLE:
    - a. TOWER, ANTENNAS, RRUS, AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX/CABLE LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING - TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
    - b. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
    - c. SITE LAYOUT - PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
    - d. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.

PROJECT PHOTOGRAPHS

- A. PROVIDE PROJECT CLOSEOUT GENERAL ARRANGEMENT PHOTOS OF ALL NEW YORK. THE FOLLOWING LIST REPRESENTS MIN. REQUIREMENTS AND MIN QUANTITY. ADDITIONAL PHOTOS MAY BE REQUIRED TO ADEQUATELY DOCUMENT THE WORK
1. ASR AND RF MPE SIGNAGE (IF NOT IN PLACE, SUPPLIER NOTIFIES EMS FIELD REPRESENTATIVE)
  2. BACK OF ANTENNAS AND RRUS (1 EACH SECTOR)
  3. BACK OF ANTENNAS AND RRUS (1 EACH SECTOR) CLOSE UP SHOWING WEATHERPROOFING AND GROUNDING (AS REQUIRED). CLOSE-UP OF BACK SIDE OF EACH PERMANENT RRU SHOWING SERIAL NUMBER/BAR CODE.
  4. VIEW (1 EACH SECTOR) ALONG THE AZIMUTH AND TILT OF THE ANTENNAS
  5. TOP OF TOWER FROM GROUND, 1 EACH SECTOR
  6. MAINLINE HYBRID CABLE ROUTE DOWN TOWER SHOWING FASTENERS AND SUPPORT
  7. MAINLINE/HYBRID CABLE ROUTE ALONG ICE BRIDGE OR IN CABLE TRAY SHOWING FASTENERS AND SUPPORT
  8. GROUND MOUNTED RRU RACKS (FRONT AND BACK)
  9. FRONT, SIDE AND BACK ELEVATIONS OF ALL GROUND CABINETS
  10. VIEW OF COMPOUND FROM A DISTANCE
  11. VIEW OF EACH GROUND CABINET (POWER, RF, FIBER SPOOL, PPC POWER, PPC TELCO WITH DOOR OPEN)
  12. BACKHAUL FIBER MEET-ME-POINT AND CONDUIT ROUTE (MICROWAVE INSTALLATION IF NOT FIBER)
  13. AAV NETWORK INTERFACE DEVICE OR MICROWAVE RADIO INSTALLATION

DEFICIENCY CORRECTIONS:

CONTRACTOR IS RESPONSIBLE FOR ALL CORRECTIONS TO DEFICIENCIES IDENTIFIED THROUGH TESTING, REVIEW OF SUBMITTALS, INSPECTIONS AND CLOSEOUT REVIEWS.

SECTION 01 500-PROJECT REPORTING

WEEKLY REPORTS:

- A. CONTRACTOR SHALL REPORT TO SPRINT AT MINIMUM ON A WEEKLY BASIS VIA SITERRA BY UPDATING ALL APPLICABLE POST END KEEPING MILESTONES WITH ACTUAL AND FORECASTED COMPLETION DATES.
- B. ADDITIONAL REQUIREMENTS FOR REPORTING MAY BE IDENTIFIED ELSEWHERE OR REQUIRED BY THE SCOPE OF SERVICES OR SPRINTS LOCAL MARKET CONSTRUCTION MANAGER. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

PROJECT CONFERENCE CALLS:

SPRINT MAY HOLD PERIODIC PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.

FINAL PROJECT ACCEPTANCE: PRIOR TO SPRINTS FINAL PROJECT ACCEPTANCE. ALL REQUIRED MILESTONE ACTUALS MUST BE UPDATED IN SITERRA AND ALL REQUIRED REPORTING TASKS MUST BE COMPLETE.

SECTION II 700-ANTENNA ASSEMBLY, REMOTE RADIO UNITS AND CABLE INSTALLATION

SUMMARY:

THIS SECTION SPECIFIES INSTALLATION OF ANTENNAS, RRUS, AND CABLE EQUIPMENT, INSTALLATION, AND TESTING OF COAXIAL FIBER CABLE.

ANTENNAS AND RRUS:

THE NUMBER AND TYPE OF ANTENNAS AND RRUS TO BE INSTALLED IS DETAILED ON THE CONSTRUCTION DRAWINGS.

HYBRID CABLE:

HYBRID CABLE WILL DC/FIBER AND FURNISHED FOR INSTALLATION AT EACH SITE. CABLE SHALL BE INSTALLED PER CONSTRUCTION DRAWINGS AND APPLICABLE MANUFACTURER'S REQUIREMENT.

JUMPERS AND CONNECTORS:

FURNISH AND INSTALL 1/2" COAX JUMPER CABLES BETWEEN THE RRUS AND ANTENNAS. JUMPERS SHALL BE LDF 4, FLC 12-50, CR 540, OR FXL 540. SUPER-FLEX CABLES ARE NOT ACCEPTABLE. JUMPERS BETWEEN THE RRUS AND ANTENNAS OR TOWER TOP AMPLIFIERS SHALL CONSIST OF 1/2 INCH FOAM DIELECTRIC, OUTDOOR RATED COAXIAL, MIN. LENGTH FOR JUMPER SHALL BE 10'-0"

REMOTE ELECTRICAL TILT (RET) CABLES:

MISCELLANEOUS:

INSTALL SPLITTERS, COMBINERS, FILTERS PER RF DATA SHOW, FURNISHED BY SPRINT.

ANTENNA INSTALLATION:

THE CONTRACTOR SHALL ASSEMBLE ALL ANTENNAS ONSITE IN ACCORDANCE WITH THE INSTRUCTIONS SUPPLIED BY THE MANUFACTURER. ANTENNA HEIGHT, AZIMUTH, AND FEED ORIENTATION INFORMATION SHALL BE A DESIGNATED ON THE CONSTRUCTION DRAWINGS. A. THE CONTRACTOR SHALL POSITION THE ANTENNA ON TOWER PIPE MOUNTS SO THAT THE BOTTOM STRUT IS LEVEL. THE PIPE MOUNTS SHALL BE PLUMB TO WITHIN 1 DEGREE B. ANTENNA MOUNTING REQUIREMENTS: PROVIDE ANTENNA MOUNTING HARDWARE AS INDICATED ON THE DRAWINGS

HYBRID CABLE INSTALLATION:

- A. THE CONTRACTOR SHALL ROUTE, TEST, AND INSTALL ALL CABLES AS INDICATED ON THE CONSTRUCTION DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS
- B. THE INSTALLED RADIUS OF THE CABLES SHALL NOT BE LESS THAN THE MANUFACTURER'S SPECS FOR BENDING RADI
- C. EXTREME CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE CABLES DURING HANDLING AND INSTALLATION.
  1. FASTENING MAIN HYBRID CABLES: ALL CABLES SHALL BE INSTALLED INSIDE MONOPOLE WITH CABLE SUPPORT GRIPS AS REQUIRED BY THE MANUFACTURER
  2. FASTENING INDIVIDUAL FIBER & DC CABLES ABOVE BREAKOUT ENCLOSURE, WITHIN THE MMBS CABINET AND ANY INTERMEDIATE DISTRIBUTION BOXES

1. FASTENING MAIN HYBRID CABLES: ALL CABLES SHALL BE INSTALLED INSIDE MONOPOLE WITH CABLE SUPPORT GRIPS AS REQUIRED BY THE MANUFACTURER
2. FASTENING INDIVIDUAL FIBER & DC CABLES ABOVE BREAKOUT ENCLOSURE, WITHIN THE MMBS CABINET AND ANY INTERMEDIATE DISTRIBUTION BOXES
  - a. INSPECT CABLE PRIOR TO USE FOR SHIPPING DAMAGE, NOTIFY THE CONSTRUCTION MANAGER.
  - b. CABLE ROUTING: CABLE INSTALLATION SHALL BE PLANNED TO ENSURE THAT THE LIENS WILL BE PROPERLY ROUTED IN THE CABLE ENVELOP AS INDICATED ON THE DRAWINGS. AVOID TWISTING AND CROSSOVERS.
  - c. HOIST CABLE USING PROPER HOISTING GRIPS. DO NOT EXCEED MANUFACTURER'S RECOMMENDED MAXIMUM BEND RADIUS
3. FASTENING JUMPERS: SECURE JUMPERS TO THE SIDE ARMS OR HEAD FRAMES USING STAINLESS STEEL TIE WRAPS OR STAINLESS STEEL BUTTERFLY CLIPS.
4. CABLE INSTALLATION:
  - a. INSPECT CABLE PRIOR TO USE FOR SHIPPING DAMAGE, NOTIFY THE CONSTRUCTION MANAGER.
  - b. CABLE ROUTING: CABLE INSTALLATION SHALL BE PLANNED TO ENSURE THAT THE LINES WILL BE PROPERLY ROUTED IN THE CABLE ENVELOP AS INDICATED ON THE DRAWINGS. AVOID TWISTING AND CROSSOVERS
  - c. HOIST CABLE USING PROPER HOISTING GRIPS. DO NOT EXCEED MANUFACTURER'S RECOMMENDED MAXIMUM BEND RADIUS.
5. GROUNDING OF TRANSMISSION LINES: ALL TRANSMISSION LINES SHALL BE GROUNDED AS INDICATED ON DRAWINGS.
6. HYBRID CABLE COLOR CODING: ALL COLOR CODING SHALL BE AS REQUIRED IN TS 0200 (CURRENT VERSION)
7. HYBRID CABLE LABELING: INDIVIDUAL HYBRID AND DC BUNDLES SHALL BE LABELED ALPHA-NUMERICALLY ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE-EN2012-001, REV 1

WEATHERPROOFING EXTERIOR CONNECTORS AND HYBRID CABLE GROUND KITS:

- A. ALL FIBER & COAX CONNECTORS AND GROUND KITS SHALL BE WEATHERPROOFED.
- B. WEATHERPROOFED USING ONE OF THE FOLLOWING METHODS. ALL INSTALLATIONS MUST BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY BEST PRACTICES.
  1. COLD SHRINK: ENCOMPASS CONNECTOR IN COLD SHRINK TUBING AND PROVIDE A DOUBLE WRAP OR 2" ELEC TAPE EXTENDING 2" BEYOND TUBING. PROVIDE 3M COLD SHRINK CXS SERIES OR EQUAL.
  2. SELF AMALGAMATING TAPE: CLEAN SURFACES. APPLY A DOUBLE WRAP OF SELF-AMALGAMATING TAPE 2" BEYOND CONNECTOR. APPLY A SECOND WRAP OF SELF AMALGAMATING TAPE IN OPPOSITE DIRECTION. APPLY DOUBLE WRAP OF 2" WIDE ELEC TAPE EXTENDING 2" BEYOND SELF-AMALGAMATING TAPE.
  3. 3M SLIM LOCK CLOSURE 7 16: SUBSTITUTIONS WILL NOT BE ALLOWED.
  4. OPEN FLAME ON JOB SITE IS NOT ACCEPTABLE

SECTION 11 800-INSTALLATION OF MULTIMODAL BASE STATIONS AND RELATED EQUIPMENT:

SUMMARY:

- A. THIS SECTION SPECIFIES MMBS CABINETS, POWER CABINETS, AND INTERNAL EQUIPMENT INCLUDING BUT NOT LIMITED TO RECTIFIERS, POWER DIST UNITS, BASE BAND UNITS, SURGE ARRESTORS, BATTERIES, AND SIMILAR EQUIPMENT FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CONTRACTOR (OFC)
- B. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISC MATERIALS AND PROVIDE ALL LABOR REQUIRED FOR INSTALLATION EQUIPMENT IN EXISTING CABINET OR NEW CABINET AS SHOWN ON DRAWINGS AND REQUIRED BY THE APPLICABLE INSTALLATION MOPS.
- C. COMPLY WITH MANUFACTURER'S INSTALLATION AND START-UP REQUIREMENTS.

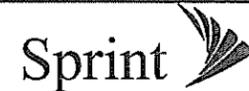
DC CIRCUIT BREAKER LABELING:

A. NEW DC CIRCUIT IS REQUIRED IN MMBS CABINET SHALL BE CLEARLY IDENTIFIED AS TO RRU BEING SERVICED.

SECTION 26-100-BASIC ELECTRICAL REQUIREMENTS

SUMMARY:

- THIS SECTION SPECIFIES BASIC ELECTRICAL REQUIREMENTS FOR SYSTEMS AND COMPONENTS
- QUALITY ASSURANCE:
- A. ALL EQUIPMENT FURNISHED UNDER DIVISION 26 SHALL CARRY UL LABELS AND LISTINGS WHERE SUCH LABELS AND LISTINGS ARE AVAILABLE IN THE INDUSTRY
  - B. MANUFACTURERS OR EQUIPMENT SHALL HAVE A MINIMUM OF THREE YEARS EXPERIENCE WITH THEIR EQUIPMENT INSTALLED AND OPERATING IN THE FIELD IN A USE SIMILAR TO THE PROPOSED USE FOR THIS PROJECT.
- C. MATERIALS AND EQUIPMENT: ALL MATERIALS AND EQUIPMENT SPECIFIED IN DIVISION 26 OF THE SAME TYPE SHALL BE OF THE SAME MANUFACTURER AND SHALL BE NEW, OF THE BEST QUALITY AND DESIGN AND FREE FROM DEFECTS.
- SUPPORTING DEVICES:
- A. MANUFACTURED STRUCTURAL SUPPORT MATERIALS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS PROVIDE PRODUCTS BY THE FOLLOWING
    1. ALLIED TUBE AND CONDUIT
    2. B-LINE SYSTEM
    3. UNISTRUT DIVERSIFIED PRODUCTS.
    4. THOMAS & BETTS
  - B. FASTENERS: TYPES, MATERIALS, AND CONSTRUCTION FEATURES AS FOLLOWS:
    1. EXPANSION ANCHORS: CARBON STEEL WEDGE OR SLEEVE TYPE.
    2. POWER-DRIVEN THREADED STUDS: HEAT-TREATED STEEL DESIGNED SPECIFICALLY FOR THE INTENDED SERVICE
    3. FASTEN BY MEANS OF WOOD SCREWS ON WOOD.
    4. TOGGLE BOLTS ON HOLLOW MASONRY UNITS.
    5. CONCRETE INSERTS OR EXPANSION BOLTS ON CONCRETE SOLID MASONRY.
    6. MACHINE SCREWS, WELDED THREADED STUDS, OR SPRINT-TENSION CLAMPS ON STEEL.
    7. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE SHALL NOT BE PERMITTED.
    8. DO NOT WELD CONDUIT, PIPE STRAPS, OR ITEMS OTHER THAN THREADED STUDS TO STEEL STRUCTURES
    9. IN PARTITIONS OF LIGHT STEEL CONSTRUCTION, USE SHEET METAL SCREWS.



201 STATE ROUTE 17 NORTH  
RUTHERFORD, NJ 07070  
TEL: (201) 684-4000  
FAX: (201) 684-4223



1280 ROUTE 46 WEST  
PARSIPPANY, NJ 07054  
TELEPHONE: 646-544-5324



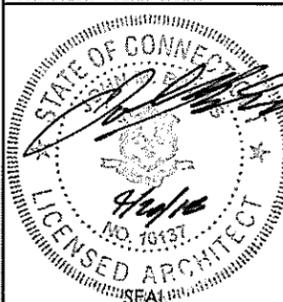
604 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
FAX : 847-277-0080  
AE@westchesterservices.com

JOHN M. BANKS  
ARCHITECT

604 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
FAX : 847-277-0080

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WATERBURY, CT 06702  
NEW HAVEN COUNTY

SHEET TITLE

SPRINT  
SPECIFICATIONS

SHEET NUMBER

SP-2

**SUPPORTING DEVICES:**

- A. INSTALL SUPPORTING DEVICES TO FASTEN ELECTRICAL COMPONENTS SECURELY AND PERMANENTLY IN ACCORDANCE WITH NEC.
- B. COORDINATE WITH THE BUILDING STRUCTURAL SYSTEM AND WITH OTHER TRADES
- C. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTING HARDWARE SECURELY TO THE STRUCTURE IN ACCORDANCE WITH THE FOLLOWING:
  - 1. ENSURE THAT THE LOAD APPLIED BY ANY FASTENER DOES NOT EXCEED 25 PERCENT OF THE PROOF TEST LOAD.
  - 2. USE VIBRATION AND SHOCK-RESISTANT FASTENERS FOR ATTACHMENTS TO CONCRETE SLABS.

**ELECTRICAL IDENTIFICATION:**

- A. UPDATE AND PROVIDE TYPED CIRCUIT BREAKER SCHEDULES IN THE MOUNTING BRACKET, INSIDE DOORS OF AC PANEL BOARDS WITH ANY CHANGES MADE TO THE AC SYSTEM.
- B. BRANCH CIRCUITS FEEDING AVIATION OBSTRUCTION LIGHTING EQUIPMENT SHALL BE CLEARLY IDENTIFIED AT THE BRANCH CIRCUIT PANELBOARD.

**SECTION 26 200-ELECTRICAL MATERIALS AND EQUIPMENT**

- A. RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL BE USED FOR EXTERIOR LOCATIONS ABOVE GROUND AND IN UNFINISHED INTERIOR LOCATIONS AND FOR UNDERGROUND RUNS. RIGID CONDUIT AND FITTINGS SHALL BE STEEL, COATED WITH ZINC EXTERIOR AND INTERIOR BY THE HOT DIP GALVANIZING PROCESS. CONDUIT SHALL BE PRODUCED TO ANSI SPECIFICATIONS C80.1, FEDERAL SPECIFICATION WW-C-581 AND SHALL BE LISTED WITH THE UNDERWRITER'S LABORATORIES. FITTINGS SHALL BE THREADED - SET SCREW OR COMPRESSION FITTINGS WILL NOT BE ACCEPTABLE. RGS CONDUITS SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND.
- B. UNDERGROUND CONDUIT IN CONCRETE SHALL BE POLYVINYLCHLORIDE (PVC) SUITABLE FOR DIRECT BURIAL AS APPLICABLE. JOINTS SHALL BE BELLED, AND FLUSH SOLVENT WELDED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE CARLON ELECTRICAL PRODUCTS OR APPROVED EQUAL.
- C. TRANSITIONS BETWEEN PVC AND RIGID (RGS) SHALL BE MADE WITH PVC COATED METALLIC LONG SWEEP RADIUS ELBOWS.
- D. EMT OR RIGID GALVANIZED STEEL MAYBE USED IN FINISHED SPACES CONCEALED IN WALLS AND CEILINGS. EMT SHALL BE MILD STEEL, ELECTRICALLY WELDED, ELECTRO-GALVANIZED OR HOT DIPPED GALVANIZED AND PRODUCED TO ANSI SPECIFICATION C80.3, FEDERAL SPECIFICATION WW-C-563, AND SHALL BE UL LISTED. EMT SHALL BE MANUFACTURED BY ALLIED, REPUBLIC, OR WHEATLAND, OR APPROVED EQUAL. FITTINGS SHALL BE METALLIC COMPRESSION. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE.
- E. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR FINAL CONNECTION TO EQUIPMENT. FITTINGS SHALL BE METALLIC GLAND TYPE COMPRESSION FITTINGS, MAINTAINING THE INTEGRITY OF THE CONDUIT SYSTEM. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE. MAXIMUM LENGTH OF FLEXIBLE CONDUIT SHALL NOT EXCEED 6 FEET. LFMC SHALL BE PROTECTED AND SUPPORTED AS REQUIRED BY NEC. MANUFACTURERS OF FLEXIBLE CONDUITS SHALL BE CAROL, ANACONDA METAL HOSE OR UNIVERSAL METAL HOSE, OR APPROVED EQUAL.
- F. MINIMUM SIZE CONDUIT SHALL BE 3/4 INCH (21 MM)

**HUBS AND BOXES:**

- A. AT ENTRANCES TO CABINETS OR OTHER EQUIPMENT NOT HAVING INTEGRAL THREADED HUBS PROVIDE METALLIC THREADED HUBS OF THE SIZE AND CONFIGURATION REQUIRED. HUB SHALL INCLUDE LOCKNUT AND NEOPRENE O-RING SEAL. PROVIDE IMPACT RESISTANT 105 DEGREE C PLASTIC BUSHINGS TO PROTECT CABLE INSULATION.
- B. CABLE TERMINATION FITTINGS FOR CONDUIT
  - 1. CABLE TERMINATORS FOR RGS CONDUITS SHALL BE TYPE CRC BY O-Z/GEDNEY OR EQUAL BY ROXTEC.
  - 2. CABLE TERMINATORS FOR LFMC SHALL BE ETCO - CL2075; OR MADE FOR THE PURPOSE PRODUCTS BY ROXTEC.
- C. EXTERIOR PULL BOXES AND PULL BOXES IN INTERIOR INDUSTRIAL AREAS SHALL BE PLATED CAST ALLOY, HEAVY DUTY, WEATHERPROOFED, DUST PROOF, WITH GASKET, PLATED IRON ALLOY COVER AND STAINLESS STEEL COVER SCREWS, CROUSE-HINDS FORM 8 OR EQUAL
- D. CONDUIT OUTLET BODIES SHALL BE PLATED CAST ALLOY WITH SIMILAR GASKET COVERS, OUTLET BODIES SHALL BE OF THE CONFIGURATION AND SIZE SUITABLE FOR THE APPLICATION. PROVIDE CROUSE-HINDS FORM 8 OR EQUAL.
- E. MANUFACTURER FOR BOXES AND COVERS SHALL BE HOFFMAN, SQUARE"D", CROUSE-HINDS, COOPER, ADALET, APPLETON, O-Z GEDNEY, OR APPROVED EQUAL.

**SUPPLEMENTAL GROUNDING SYSTEM:**

- A. FURNISH AND INSTALL A SUPPLEMENTAL GROUNDING SYSTEM TO THE EXTENT INDICATED ON THE DRAWINGS. SUPPORT SYSTEM WITH NON-MAGNETIC STAINLESS STEEL CLIPS WITH RUBBER GROMMETS. GROUNDING CONNECTORS SHALL BE TINNED COPPER WIRE.
- B. SUPPLEMENTAL GROUNDING SYSTEM: ALL CONNECTIONS TO BE MADE WITH CAD WELDS, EXCEPT AT EQUIPMENT USE LUGS OR OTHER AVAILABLE GROUNDING MEANS AS REQUIRED BY MANUFACTURER; AT GROUND BARS USE TWO HOLE SPADES WITH NO-OX
- C. STOLEN GROUND BARS: IN THE EVENT OF STOLEN GROUND BARS, CONTACT SPRINT CM FOR REPLACEMENT INSTRUCTION USING THREADED RODS.

**EXISTING STRUCTURE:**

- A. EXISTING EXPOSED WIRING AND ALL EXPOSED OUTLETS, RECEPTACLES, SWITCHES, DEVICES, BOXES AND OTHER EQUIPMENT THAT ARE NOT TO BE UTILIZED IN THE COMPLETED PROJECT SHALL BE REMOVED OR DE-ENERGIZED AND CAPPED IN THE WALL, CEILING, OR FLOOR SO THAT THEY ARE CONCEALED AND SAFE. WALL, CEILING, OR FLOOR SHALL BE PATCHED TO MATCH THE ADJACENT CONSTRUCTION.

**CONDUIT AND CONDUCTOR INSTALLATION:**

- A. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, PARALLEL, AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIE.
- B. CONDUCTORS SHALL BE PULLED IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE.



201 STATE ROUTE 17 NORTH  
RUTHERFORD, NY 07070  
TEL: (201) 684-4000  
FAX: (201) 684-4223



1280 ROUTE 46 WEST  
PARSIPPANY, NJ 07054  
TELEPHONE: 646-544-5324



604 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
FAX : 847-277-0080  
AE@westchesterservices.com

**JOHN M. BANKS ARCHITECT**

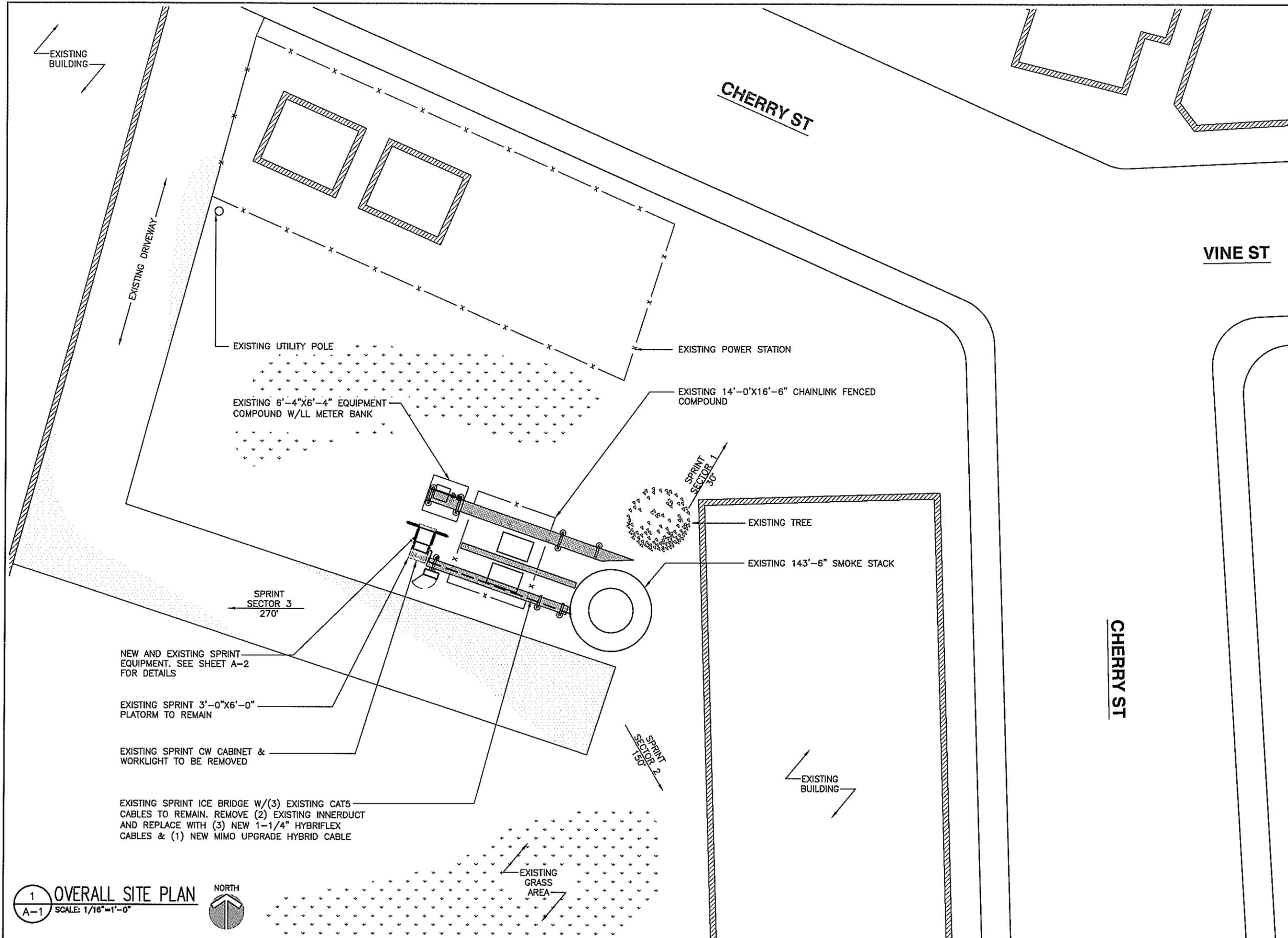
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39 CHERRY AVE SS
SITE NUMBER
CT52XC055-C
SITE LOCATION
253 CHERRY STREET WATERBURY, CT 06702 NEW HAVEN COUNTY
SHEET TITLE
SPRINT SPECIFICATIONS
SHEET NUMBER
SP-3



**Sprint**  
 201 STATE ROUTE 17 NORTH  
 RUTHERFORD, NY 07070  
 TEL: (201) 684-4000  
 FAX: (201) 684-4223

**Cherundolo Consulting**  
 1280 ROUTE 46 WEST  
 PARSIPPANY, NJ 07054  
 TELEPHONE: 646-544-5324

**WESTCHESTER SERVICES LLC**  
 604 FOX GLEN  
 BARRINGTON, IL 60010  
 TELEPHONE: 847-277-0070  
 FAX: 847-277-0080  
 AE@westchesterservices.com

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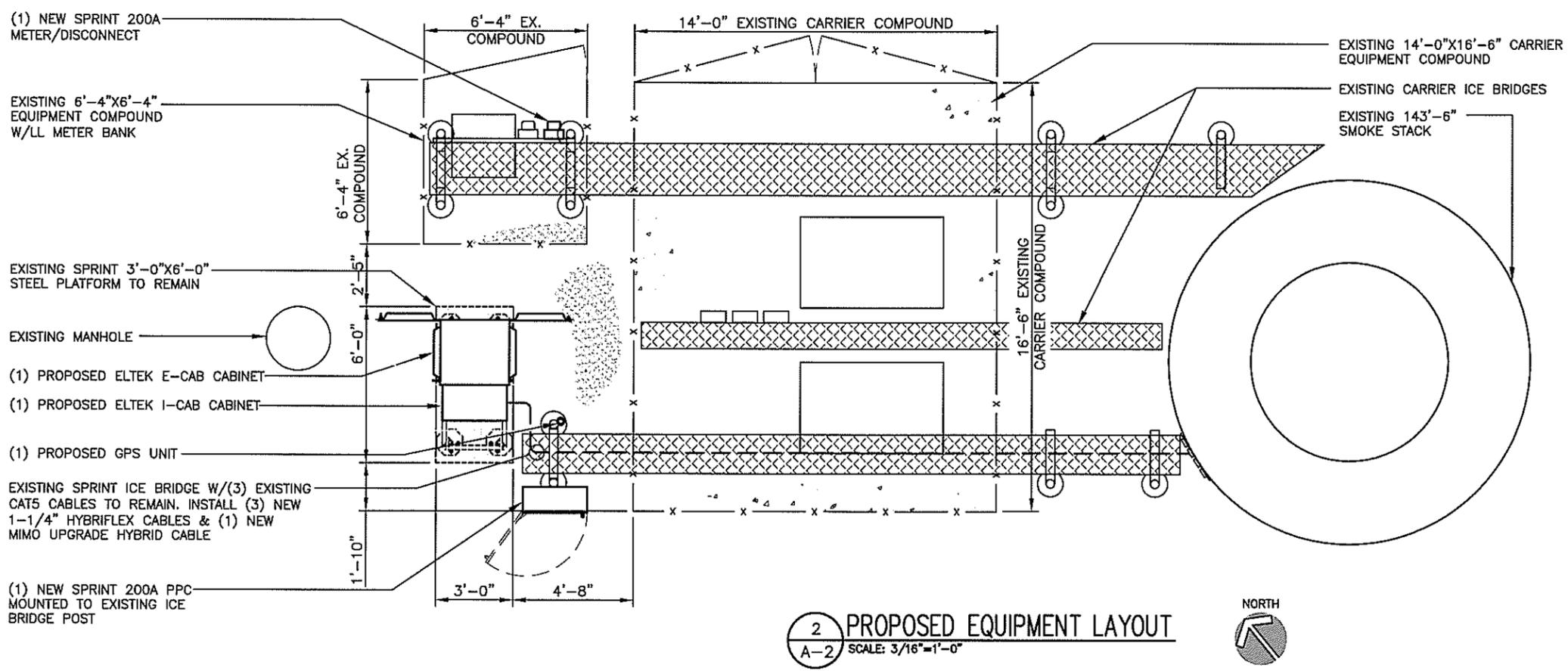
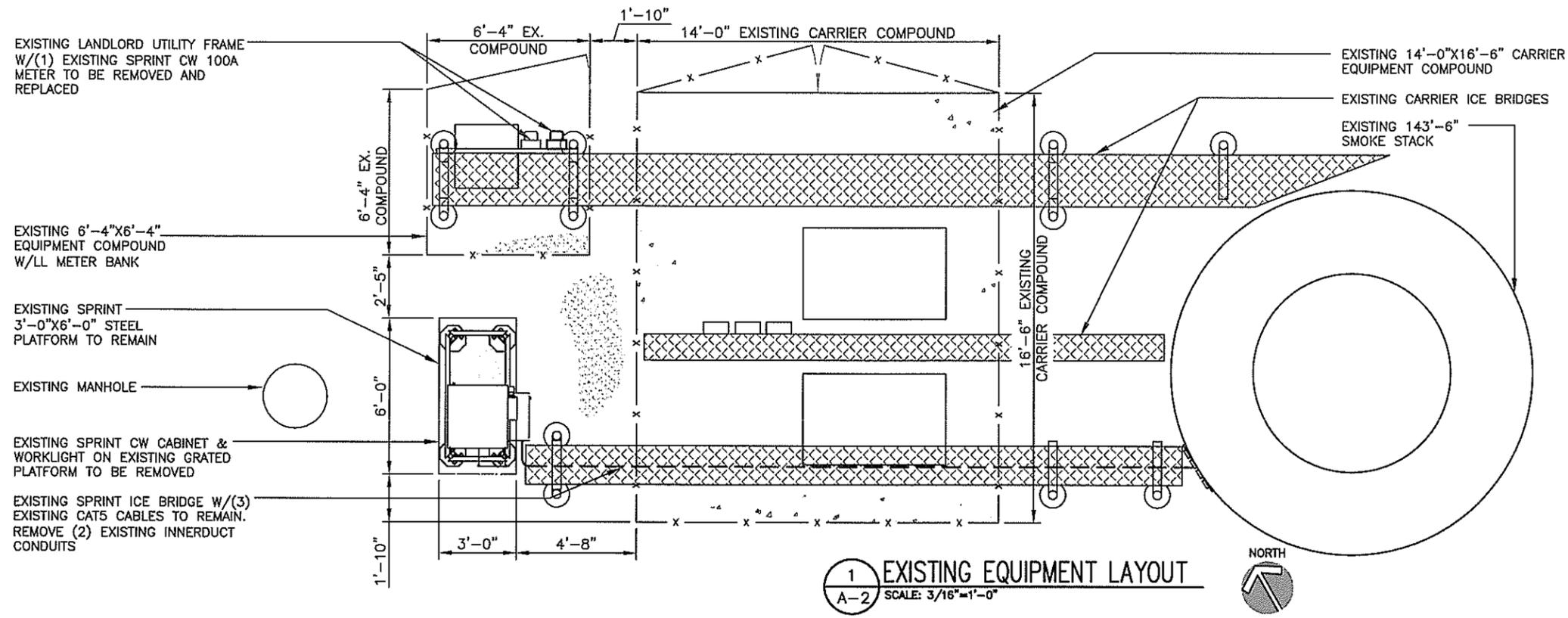
SITE NUMBER  
 CT52XC055-C

SITE LOCATION  
 253 CHERRY STREET  
 WATERBURY, CT 06702  
 NEW HAVEN COUNTY

SHEET TITLE  
 OVERALL SITE PLAN

SHEET NUMBER  
 A-1

1 OVERALL SITE PLAN  
 A-1 SCALE: 1/16"=1'-0"  
 NORTH



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201 STATE ROUTE 17 NORTH  
RUTHERFORD, NJ 07070  
TEL: (201) 684-4000  
FAX: (201) 684-4223

**Cherundolo Consulting**

1280 ROUTE 46 WEST  
PARSIPPANY, NJ 07054  
TELEPHONE: 646-544-5324

**WESTCHESTER SERVICES LLC**

604 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
FAX: 847-277-0080  
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BARRINGTON, IL 60010  
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SHEET TITLE

EQUIPMENT LAYOUT

SHEET NUMBER

A-2

EXISTING CARRIER ANTENNAS TO REMAIN

(2) EXISTING SPRINT 12" DISH ANTENNAS & (1) EXISTING SPRINT 24" DISH ANTENNA TO BE RELOCATED TO NEW 3" SCHED. 40 GALV. MOUNTING PIPE

(1) PROPOSED SPRINT 800/1900MHz ANTENNA W/(2) PROPOSED 800MHZ RRH, (1) PROPOSED 1900MHZ RRH ON NEW 3" SCHED. 40 GALV. MOUNTING PIPE (TYP. OF 3 SECTORS)

(1) PROPOSED SPRINT MIMO ANTENNA ON NEW 3" SCHED. 40 GALV. MOUNTING PIPE (TYP. OF 3 SECTORS)

EXISTING CARRIER ANTENNAS TO REMAIN

(3) EXISTING CAT5 CABLES ROUTED UP INSIDE OF SMOKE STACK TO REMAIN. REMOVE (2) EXISTING 2" INNERDUCT AND REPLACE WITH (3) NEW 1-1/4" HYBRIFLEX CABLES & (1) NEW MIMO UPGRADE HYBRID CABLE

EXISTING 14'-0"X16'-6" CARRIER EQUIPMENT COMPOUND

EXISTING SPRINT ICE BRIDGE

(1) PROPOSED GPS UNIT & (1) PROPOSED 200A PPC UNIT MOUNTED TO EXISTING ICE BRIDGE POST

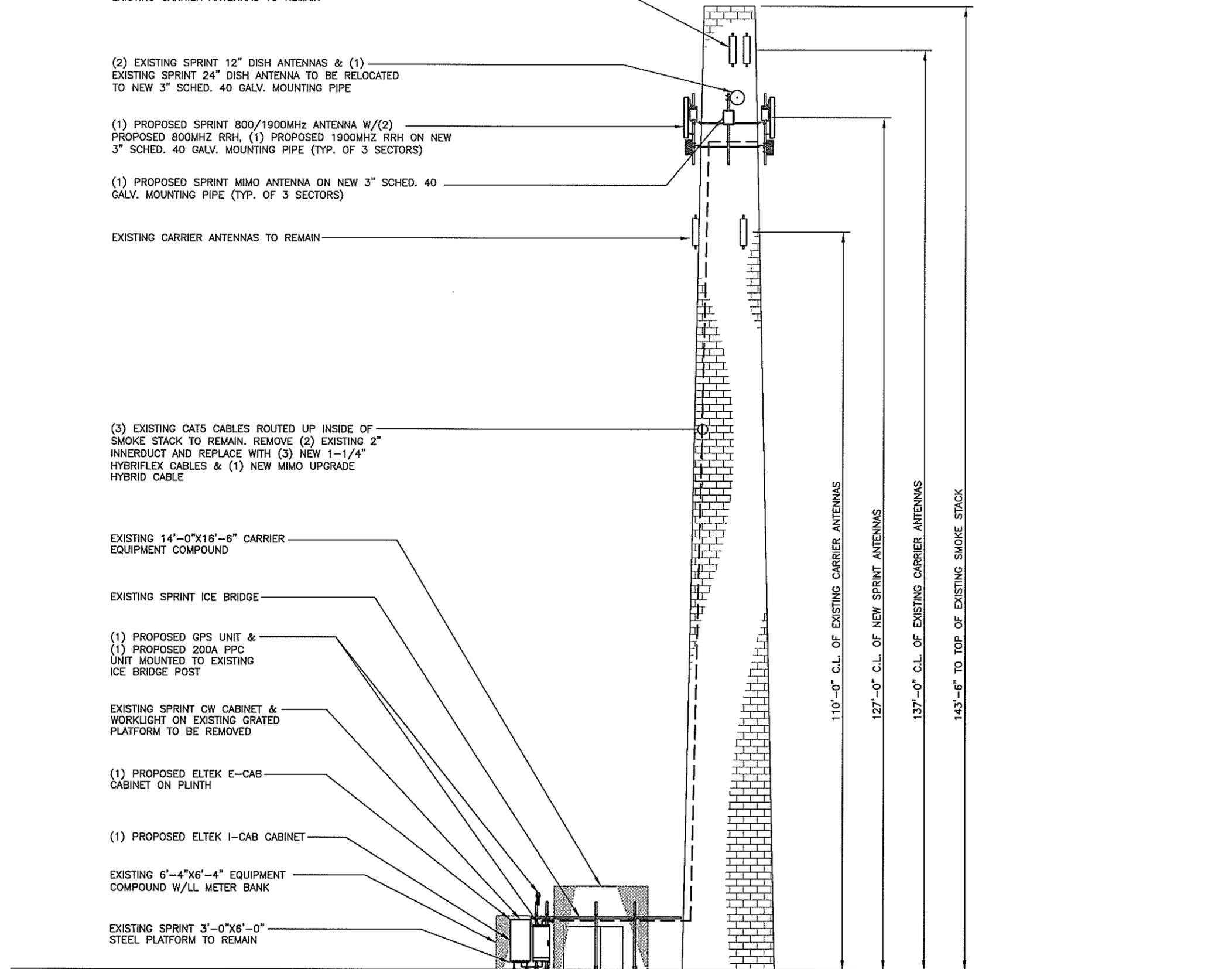
EXISTING SPRINT CW CABINET & WORKLIGHT ON EXISTING GRATED PLATFORM TO BE REMOVED

(1) PROPOSED ELTEK E-CAB CABINET ON PLINTH

(1) PROPOSED ELTEK I-CAB CABINET

EXISTING 6'-4"X6'-4" EQUIPMENT COMPOUND W/LL METER BANK

EXISTING SPRINT 3'-0"X6'-0" STEEL PLATFORM TO REMAIN



110'-0" C.L. OF EXISTING CARRIER ANTENNAS  
 127'-0" C.L. OF NEW SPRINT ANTENNAS  
 137'-0" C.L. OF EXISTING CARRIER ANTENNAS  
 143'-6" TO TOP OF EXISTING SMOKE STACK

1 SMOKE STACK ELEVATION (NORTH)  
 A-3 SCALE: 1/16"=1'-0"



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 RUTHERFORD, NJ 07070  
 TEL: (201) 684-4000  
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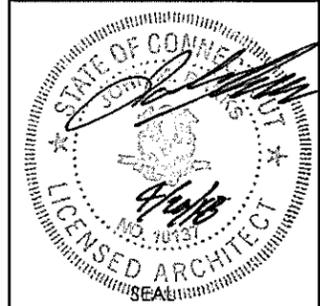
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JOB NUMBER: CT52XC055-C		
ARCHITECT: JOHN BANKS		



SITE NAME

39 CHERRY AVE SS

SITE NUMBER

CT52XC055-C

SITE LOCATION

253 CHERRY STREET  
 WATERBURY, CT 06702  
 NEW HAVEN COUNTY

SHEET TITLE

SMOKE STACK  
 ELEVATION

SHEET NUMBER

A-3

**Sprint**  
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 RUTHERFORD, NY 07070  
 TEL: (201) 684-4000  
 FAX: (201) 684-4223

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 PARSIPPANY, NJ 07054  
 TELEPHONE: 646-544-5324

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 604 FOX GLEN  
 BARRINGTON, IL 60010  
 TELEPHONE: 847-277-0070  
 FAX: 847-277-0080  
 AE@westchesterservices.com

**JOHN M. BANKS ARCHITECT**  
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 BARRINGTON, IL 60010  
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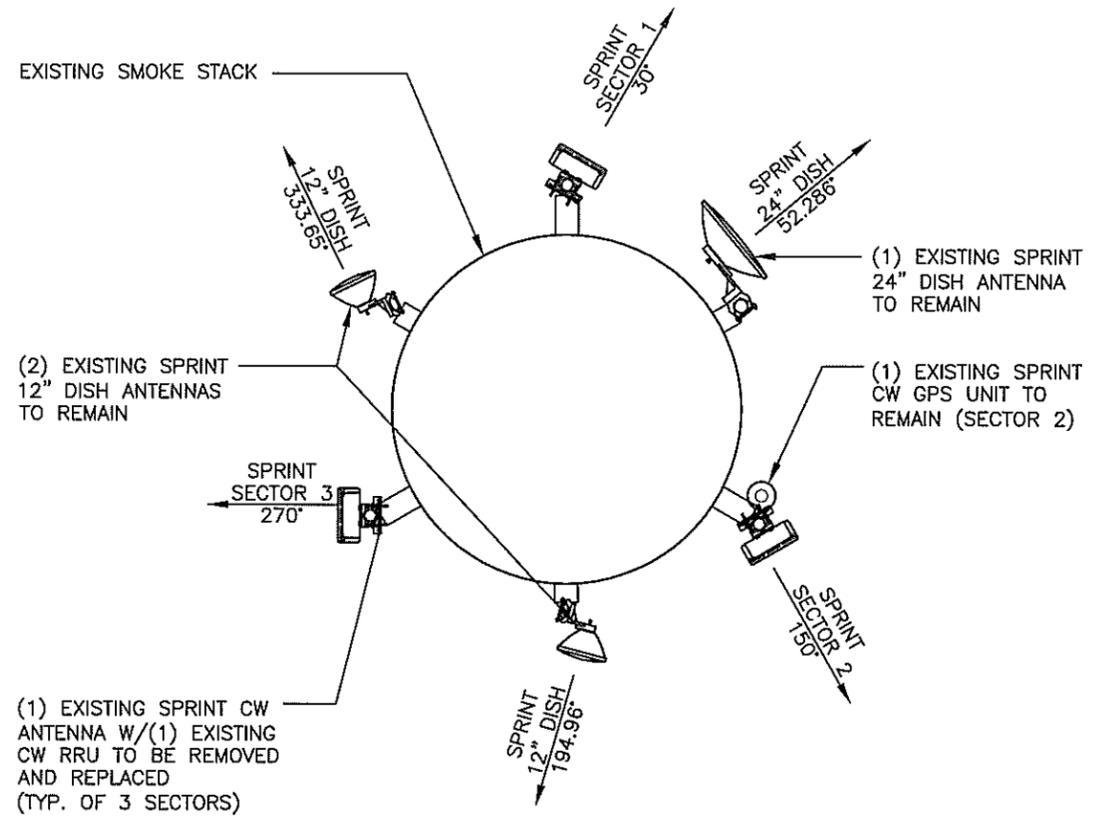
SITE NAME  
 39 CHERRY AVE SS

SITE NUMBER  
 CT52XC055-C

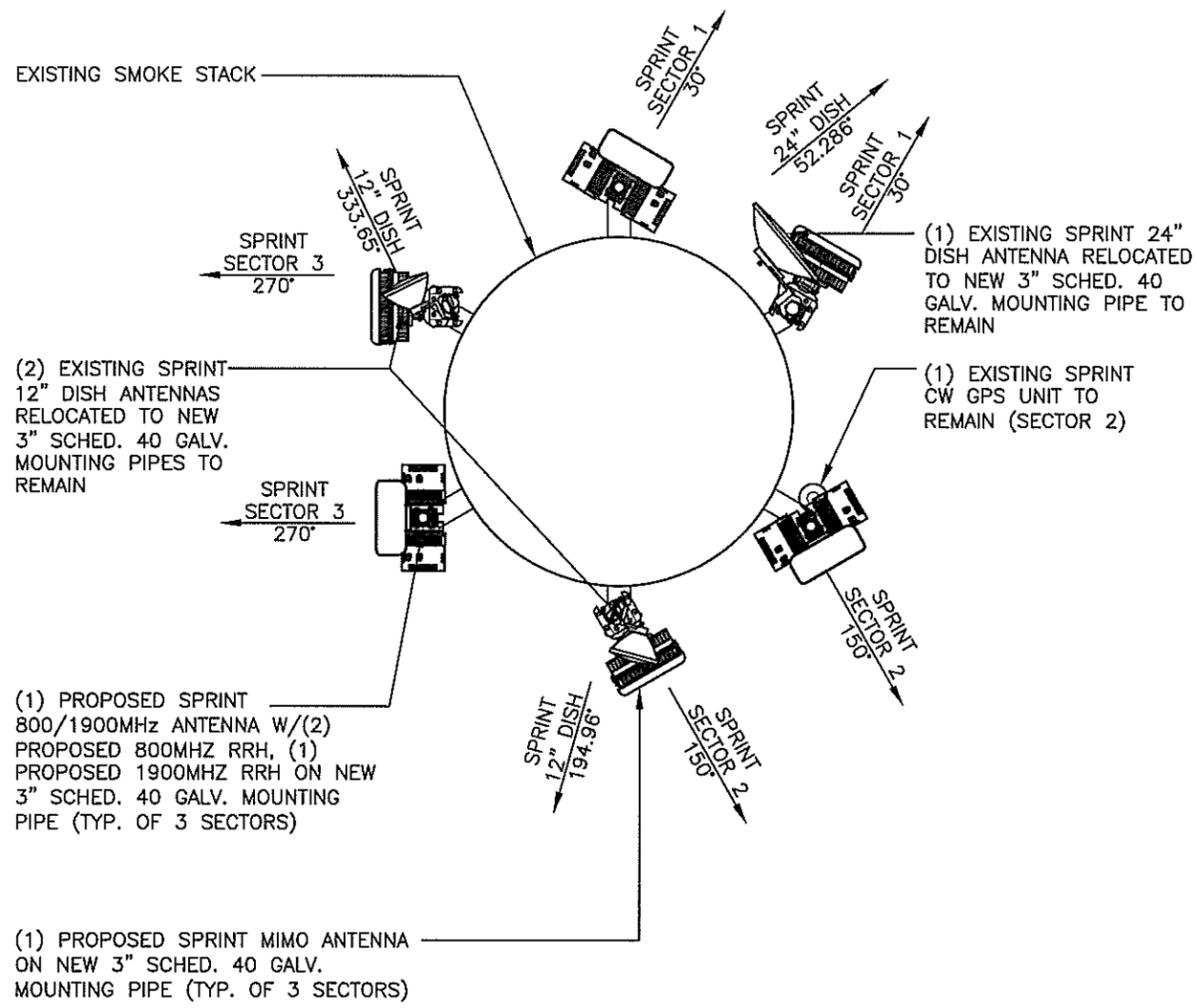
SITE LOCATION  
 253 CHERRY STREET  
 WATERBURY, CT 06702  
 NEW HAVEN COUNTY

SHEET TITLE  
 ANTENNA LAYOUT

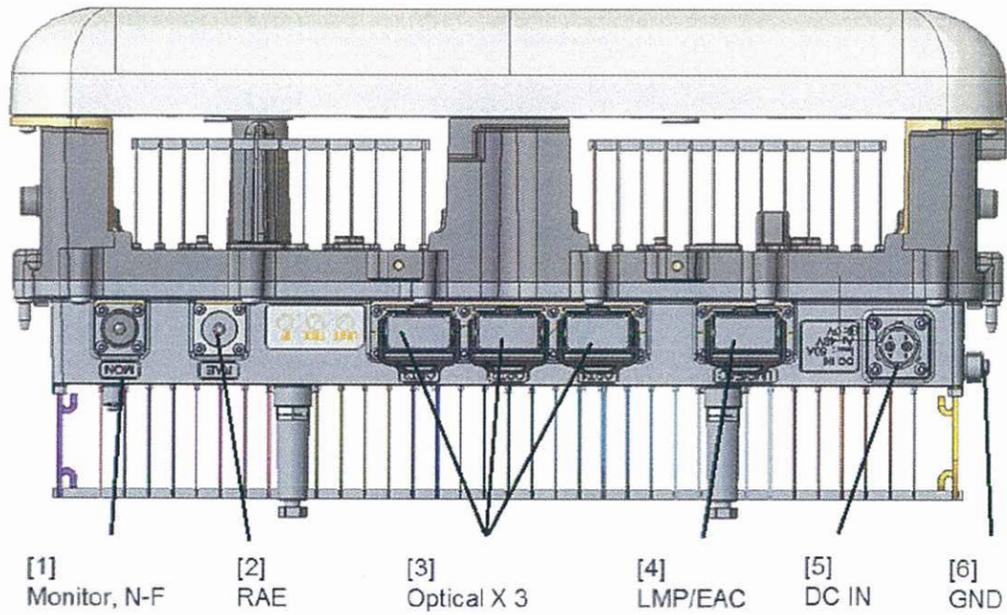
SHEET NUMBER  
 A-4



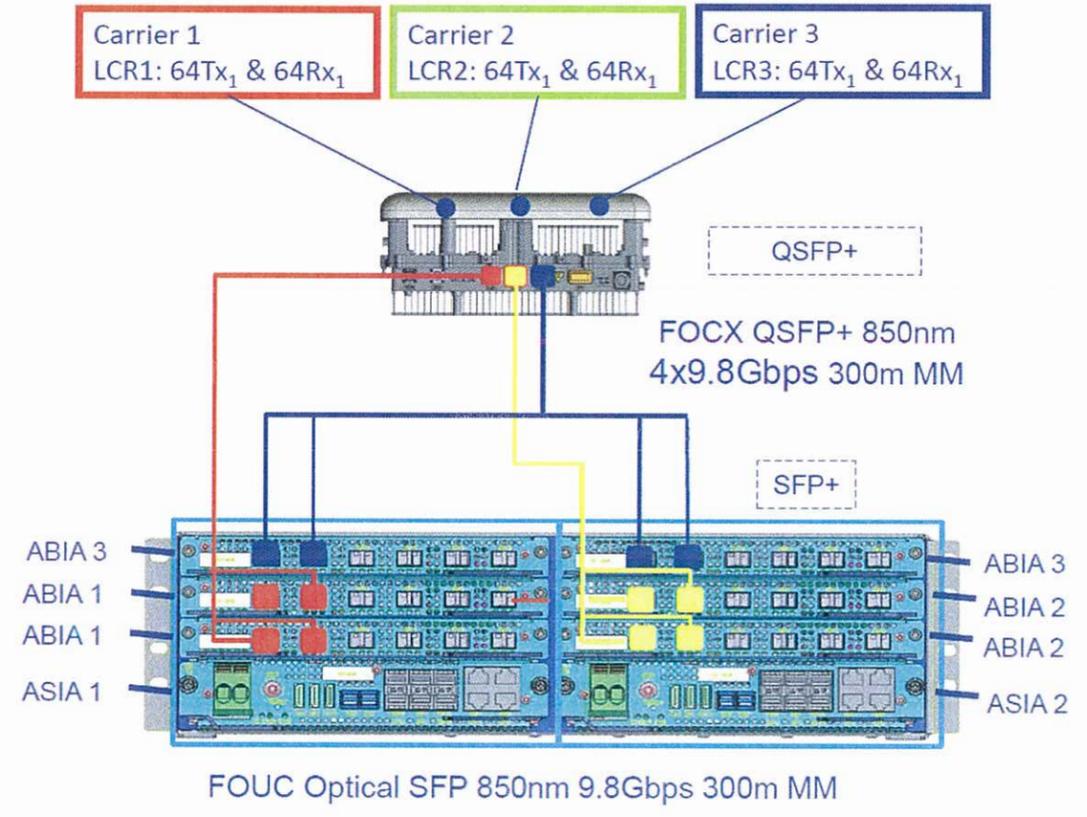
1 EXISTING ANTENNA PLAN  
 A-4 SCALE: 1/4"=1'-0" NORTH



2 PROPOSED ANTENNA PLAN  
 A-4 SCALE: 1/4"=1'-0" NORTH

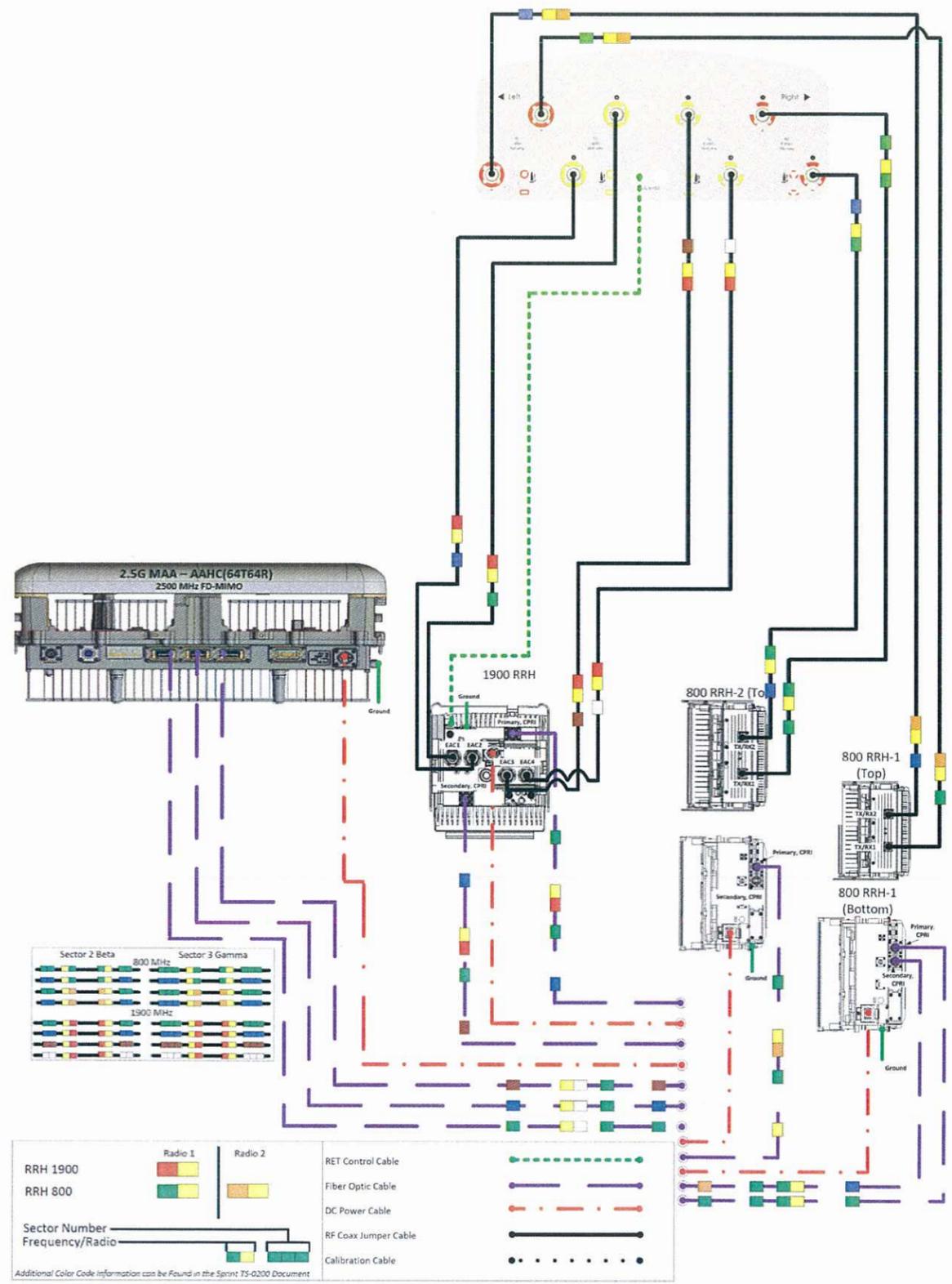


1 MIMO CONNECTORS DETAIL  
A-5 SCALE: N.T.S.



2 64T64R DIAGRAM  
A-5 SCALE: N.T.S.

MIMO + NNVV-65B-R4 w/o FILTERS



3 MIMO + 800/1900 MHz PLUMBING DIAGRAM  
A-5 SCALE: N.T.S.

**Sprint**  
201 STATE ROUTE 17 NORTH  
RUTHERFORD, NJ 07070  
TEL: (201) 684-4000  
FAX: (201) 684-4223

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1280 ROUTE 46 WEST  
PARSIPPANY, NJ 07054  
TELEPHONE: 646-544-5324

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604 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
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BARRINGTON, IL 60010  
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SITE LOCATION  
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WATERBURY, CT 06702  
NEW HAVEN COUNTY

SHEET TITLE  
MIMO PLUMBING  
DIAGRAM

SHEET NUMBER  
A-5

**Nokia-A  
New Build Hybrid Selection Table**

Nokia-A Scenarios	Cable Description	Cable Length (ft)	Diameter (in)	Weight (lbs/ft)
1 Cable per Sector (1)1900 (2)800 (1)mMIMO or 8T8R	4 pairs of 6AWG DC Conductors with 24 Multi-Mode Fiber Pairs	0-120	1.376	1.354
1 Cable per Sector (1)1900 (2)800 (1)mMIMO or 8T8R	4 pairs of 4AWG DC Conductors with 24 Multi-Mode Fiber Pairs	121-200	1.545	1.875
1 Cable per Sector (1)1900 (2)800 (1)mMIMO(WITH B)-WIRE) or 8T8R	5 pairs of 4AWG DC Conductors with 24 Multi-Mode Fiber Pairs	201-375	1.619	2.161

\* All Fiber Pairs Terminate in SENKO IP-LC at Tower Top

**mMIMO Addition Non-Standard Structure Hybrid Selection Table**

Nokia-A Scenarios	Cable Description	Cable Length (ft)	Diameter (in)	Weight (lbs/ft)
1 Cable per mMIMO Radio WITH SPARES	6 pairs of 4AWG DC Conductors with 48 Multi-Mode Fiber Pairs (12' in cabinet)	30	1.689	2.307

\* All Fiber Pairs Terminate in SENKO IP-LC at Tower Top.

**mMIMO Addition Non-Standard Structure Trunk Selection Table**

Nokia-A Scenarios	Cable Description	Cable Length (ft)	Diameter (in)	Weight (lbs/ft)
1 Cable per mMIMO Radio WITH SPARES	16 Multi-Mode Fiber Pairs	0-375	0.41	0.091

\* All Fiber Pairs Terminate in SENKO IP-LC at Tower Top

MIMO CABLE LENGTHS				
SECTOR	DESCRIPTION	QTY	DIMENSIONS	PART/MODEL#
3 SECTORS	6-PAIRS 4 AWG +48 MM FIBER-PAIRS	1	175'-0"	MIMO UPGRADE HYBRID 1.689"φ

**1 MIMO CABLE LENGTHS & DETAIL**  
A-6 SCALE: N.T.S.

Structure			
Outer Conductor Armor	Corrugated Aluminum	[mm (in)]	36.0 (1.42)
Jacket	Polyethylene, PE	[mm (in)]	39.0 (1.54)
UV-Protection	Individual and External Jacket		Yes

Mechanical Properties			
Weight, Approximate		[kg/m (lbs/ft)]	1.78 (1.20)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)

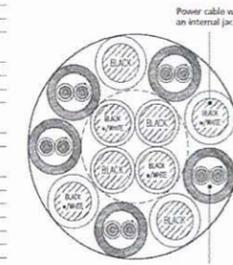
Electrical Properties			
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	0.9 (0.27)
DC-Resistance Power Cable, 8.4mm (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.64)

Fiber Optic Properties			
Version			Multi-mode
Quantity, Fiber Count			5 pairs
Core/Clad		[μm]	50/125
Primary Coating (Acrylate)		[μm]	245
Buffer Diameter, Nominal		[μm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant

DC Power Cable Properties			
Size		[mm² (AWG)]	8.4 (8)
Quantity, Wire Count			4 (2 pairs)
Size		[mm² (AWG)]	13.3 (6)
Quantity, Wire Count			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.1 (0.24)
Standards (Meets or exceeds)			KEA 5-55-658, T-39-520 UL Type XHHW-2, VVW-1 IEEE-383 (1974) RoHS Compliant

Environment			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)

- DC conductor and fiber needs one full sector (includes CPRI's for CDMA):
  - Massive MIMO: 12 fiber pairs and 1 pair DC conductor (Nokia/ALU)
  - 1900 RRH: 2 fiber pairs and 1 pair DC conductor
  - 800 RRH no 1: 2 fiber pairs and 1 pair DC conductor
  - 800 RRH no 2: 1 fiber pair and 1 pair DC conductor
- Total need is 17 Pairs of Multimode fiber and 4 pair DC conductors plus spares.

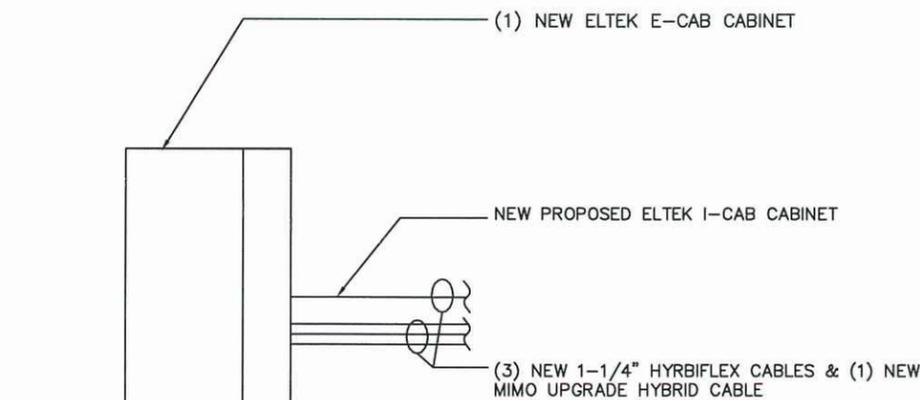


Construction Detail

**HB114-1-0813U4-M5J**

MIMO CABLE LENGTHS				
SECTOR	DESCRIPTION	QTY	DIMENSIONS	PART/MODEL#
SECTOR 1	1-1/4" HYBRIFLEX CABLE	1	175'-0"	HB114-1-0813U4-M5J
SECTOR 2	1-1/4" HYBRIFLEX CABLE	1	175'-0"	HB114-1-0813U4-M5J
SECTOR 3	1-1/4" HYBRIFLEX CABLE	1	175'-0"	HB114-1-0813U4-M5J

**2 800/1900 CABLE LENGTHS & DETAIL**  
A-6 SCALE: N.T.S.



**3 EQUIPMENT SCHEMATIC**  
A-6 SCALE: N.T.S.



201 STATE ROUTE 17 NORTH  
RUTHERFORD, NY 07070  
TEL: (201) 684-4000  
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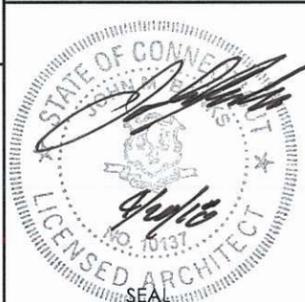
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BARRINGTON, IL 60010  
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FAX : 847-277-0080  
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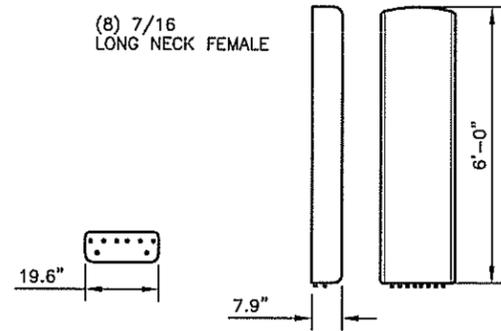
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SITE NAME	39 CHERRY AVE SS
SITE NUMBER	CT52XC055-C
SITE LOCATION	253 CHERRY STREET WATERBURY, CT 06702 NEW HAVEN COUNTY
SHEET TITLE	CABLE DETAILS
SHEET NUMBER	A-6

**COMMSCOPE ANTENNA NNVV-65B-R4**

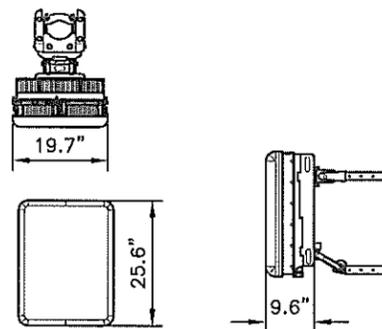
DIMENSIONS, HxWxD: (72"x19.6"x7.8")  
 WEIGHT, WITH OUT PRE-MOUNTED BRACKETS: 77.4 lbs  
 CONNECTOR: (8) 7/16 LONG NECK FEMALE



**1 800/1900 MHz ANTENNA SPECIFICATIONS**  
 SCALE: A-7

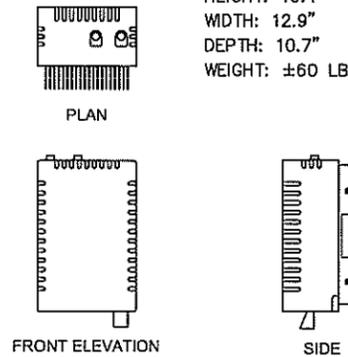
**NOKIA MIMO AAHC ANTENNA**

DIMENSIONS, HxWxD: 25.6"x19.7"x9.64"  
 WEIGHT: 103.7 lbs



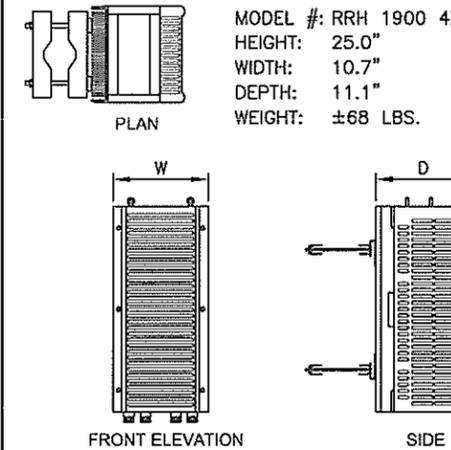
**2 MIMO ANTENNA SPECIFICATIONS**  
 SCALE: A-7

TYPE: 800 MHz 2x50W  
 MODEL #: FD-RRH-2x50-800  
 HEIGHT: 19.4"  
 WIDTH: 12.9"  
 DEPTH: 10.7"  
 WEIGHT: ±60 LBS



**3 800 MHz RRH DETAIL**  
 SCALE: A-7

TYPE: 1900 MHz 4x45W  
 MODEL #: RRH 1900 4X45 65MHz  
 HEIGHT: 25.0"  
 WIDTH: 10.7"  
 DEPTH: 11.1"  
 WEIGHT: ±68 LBS.



**4 1900 MHz RRH DETAIL**  
 SCALE: A-7

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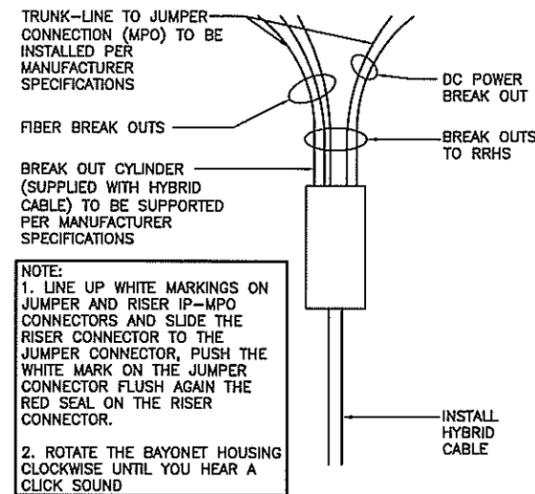
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 BARRINGTON, IL 60010  
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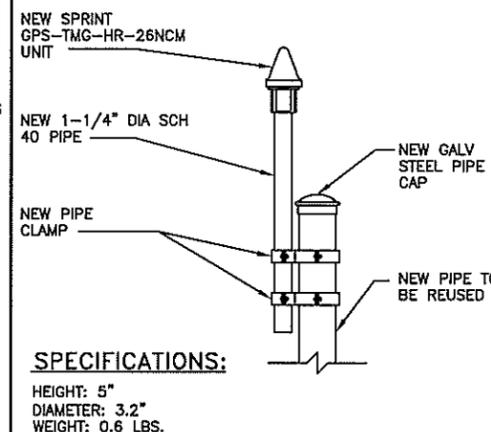
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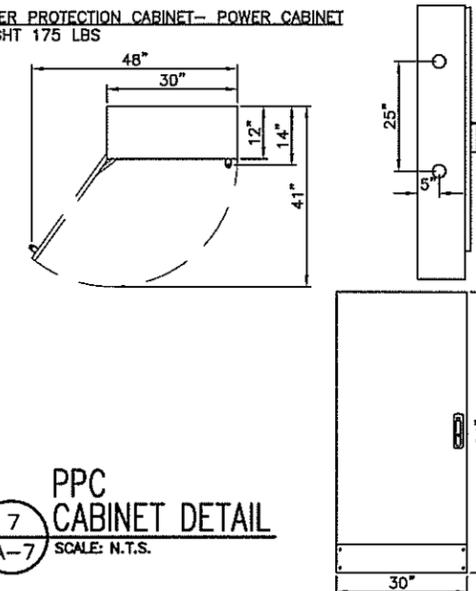


**5 HYBRID BREAKOUT**  
 SCALE: N.T.S.

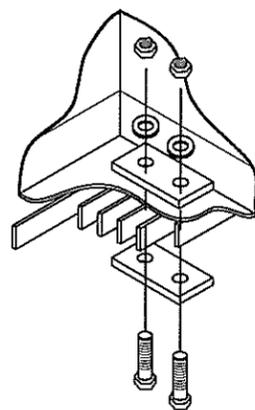


**6 GPS UNIT DETAIL**  
 SCALE: N.T.S.

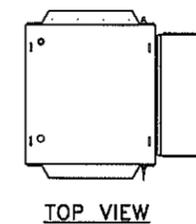
**POWER PROTECTION CABINET- POWER CABINET**  
 WEIGHT 175 LBS



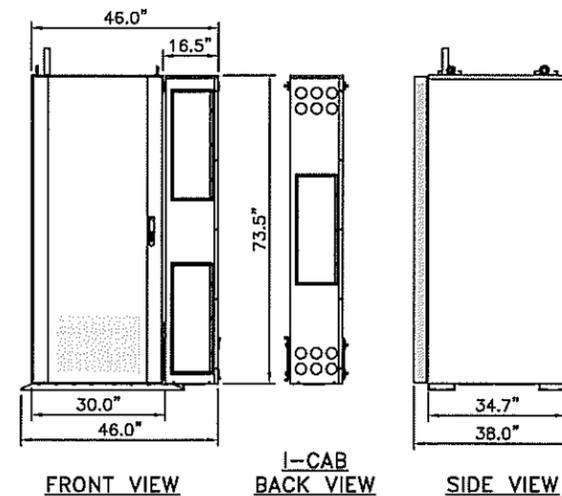
**7 PPC CABINET DETAIL**  
 SCALE: N.T.S.



**8 CABINET MOUNTING DETAIL**  
 SCALE: N.T.S.



**E-CAB & I-CAB**  
 DIMENSIONS  
 HxWxD: 73.5"x30.0"x38.0"  
 EMPTY WEIGHT: 505lbs  
 FULLY LOADED WEIGHT: 1,381lbs



**9 ELTEK E-CAB & I-CAB DETAIL**  
 SCALE: N.T.S.

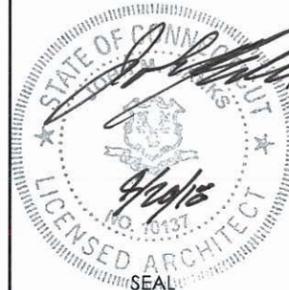
SITE NAME  
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 SITE NUMBER  
 CT52XC055-C  
 SITE LOCATION  
 253 CHERRY STREET  
 WATERBURY, CT 06702  
 NEW HAVEN COUNTY  
 SHEET TITLE  
 EQUIPMENT DETAILS  
 SHEET NUMBER

**A-7**

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SITE LOCATION

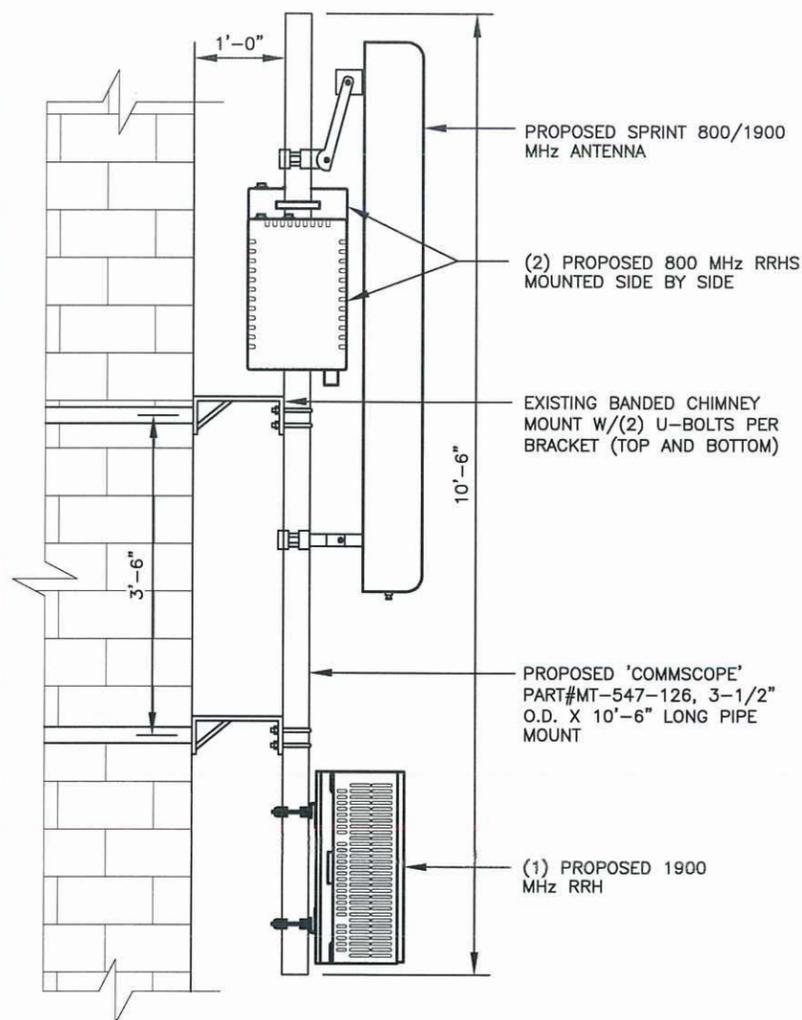
253 CHERRY STREET  
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SHEET TITLE

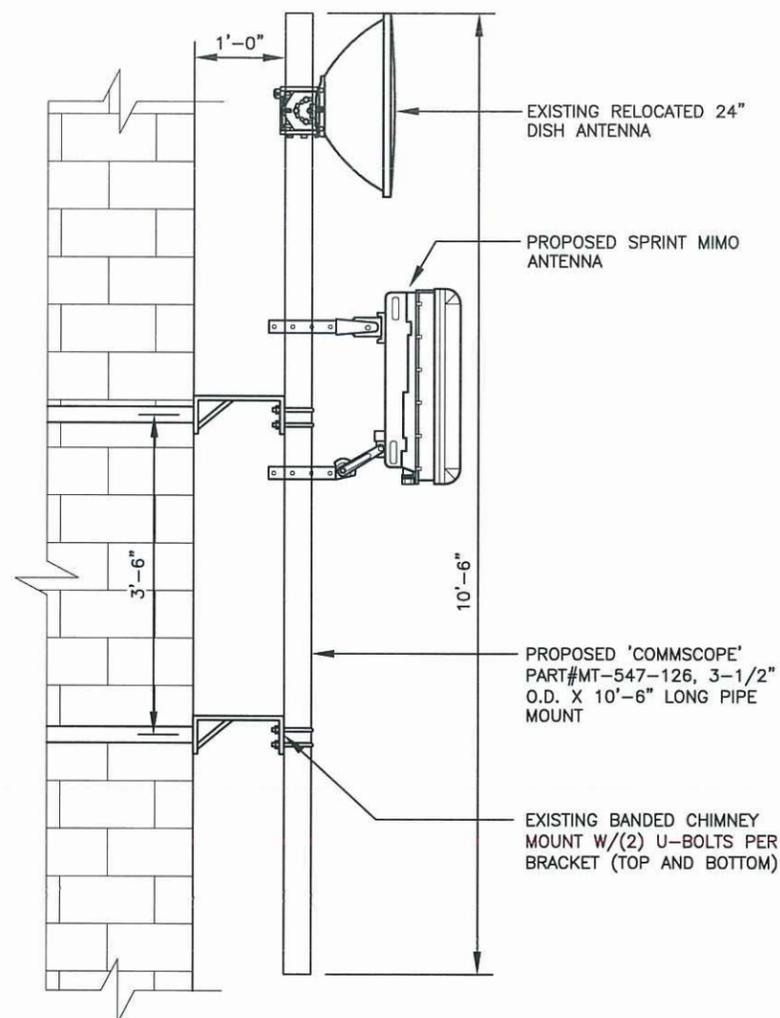
ANTENNA MOUNTING DETAILS

SHEET NUMBER

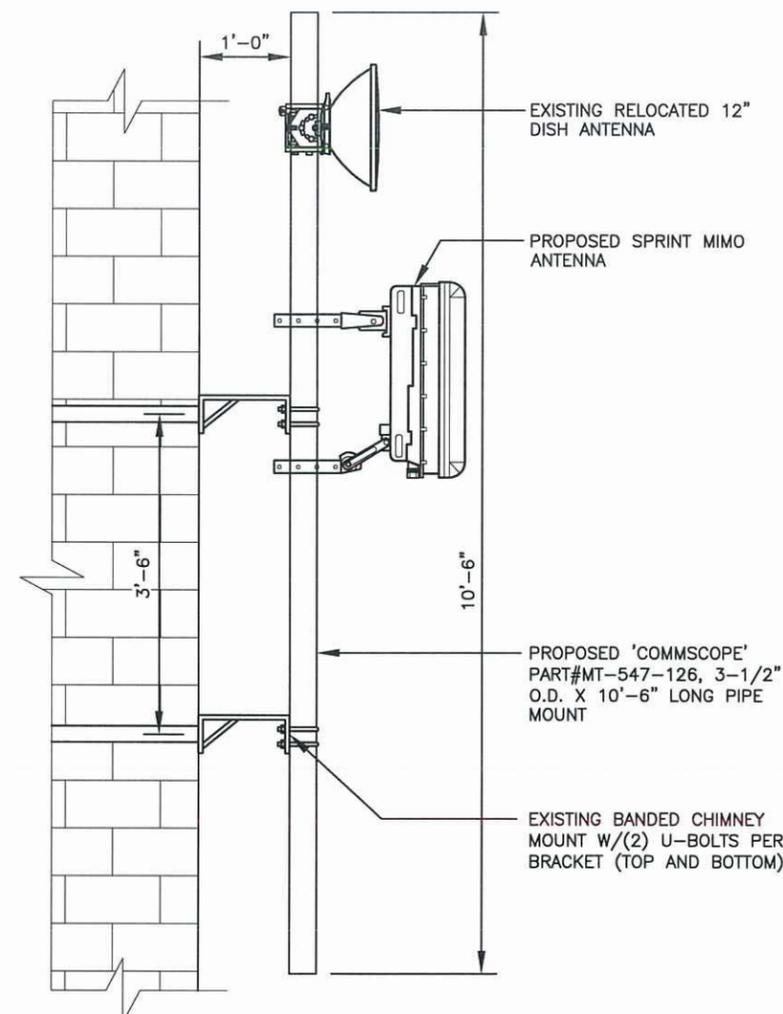
A-8



1  
A-8 TYPICAL 800/1900 MHz ANTENNA/RRH MOUNTING DETAIL  
SCALE: 1/2"=1'-0"



2  
A-8 MIMO (SECTOR 1) ANTENNA MOUNTING DETAIL  
SCALE: 1/2"=1'-0"



3  
A-8 MIMO (SECTOR 2&3) ANTENNA MOUNTING DETAIL  
SCALE: 1/2"=1'-0"

NEW ISOLATED GROUND PER NEC

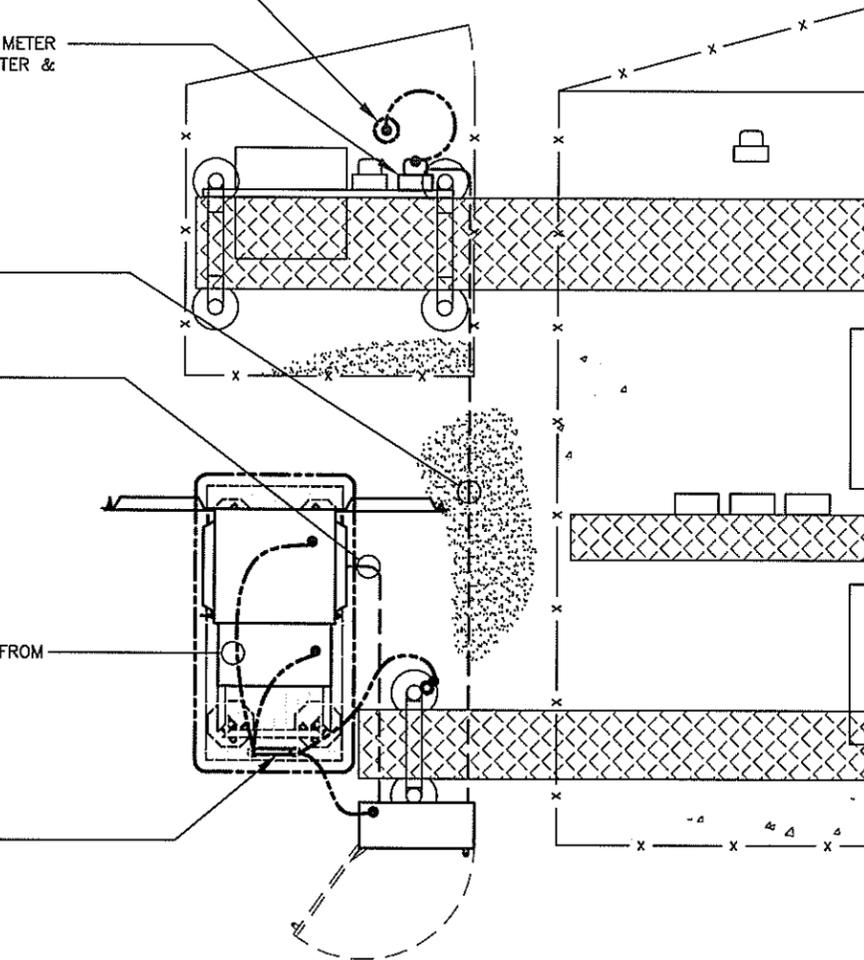
REPLACE EXISTING SPRINT 100A METER & DISCONNECT W/NEW 200A METER & DISCONNECT

NEW 2" POWER CONDUIT FROM NEW SPRINT PPC TO NEW SPRINT METER

(1) NEW 1-1/2" RGS POWER CONDUIT FROM ECAB MMBS CABINET TO 200A PPC

NEW #2 GREEN GROUND LEADS FROM MGB TO NEW SPRINT EQUIPMENT CABINETS

EXISTING MGB



1 PROPOSED ELECTRIC PLAN  
E-1 SCALE: 3/16"=1'-0"



**GROUNDING NOTES:**

- 1 ALL ELECTRICAL AND GROUNDING AT THE CELL SITE SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 780 (LATEST EDITION), AND MANUFACTURER.
- 2 IF THE AC PANEL IN THE POWER CABINET IS WIRED AS SERVICE ENTRANCE, THE AC SERVICE GROUND CONDUCTOR SHALL BE CONNECTED TO GROUND ELECTRODE SYSTEM. WHEN THE AC PANEL IN THE POWER CABINET IS CONSIDERED A SUB-PANEL, THE GROUND WIRE SHALL BE INSTALLED IN THE AC POWER CONDUIT. THE INSTALLATION SHALL BE PER LOCAL AND NATIONAL ELECTRIC CODE (NFPA-70).
- 3 EXOTHERMIC WELDING IS RECOMMENDED FOR GROUNDING CONNECTION WHERE PRACTICAL. OTHERWISE, THE CONNECTION SHALL BE MADE USING COMPRESSION TYPE-2 HOLES, LONG BARREL LUGS OR DOUBLE CRIMP CLAMP "C" CLAMP. THE COPPER CABLES SHALL BE COATED WITH ANTI-OXIDANT (COPPER SHIELD) BEFORE MAKING THE CONNECTIONS. THE MANUFACTURER'S TORQUE RECOMMENDATIONS ON THE BOLT ASSEMBLY TO SECURE CONNECTIONS SHALL BE FOLLOWED.
- 4 THE ANTENNA CABLES SHALL BE GROUNDED AT THE TOP AND BOTTOM OF THE VERTICAL RUN FOR LIGHTNING PROTECTION. THE ANTENNA CABLE SHIELD SHALL BE BONDED TO A COPPER GROUND BUSS AT THE LOWER MOST POINT OF A VERTICAL RUN JUST BEFORE IT BEGINS TO BEND TOWARD THE HORIZONTAL PLANE. WIRE RUNS TO GROUND SHALL BE KEPT AS STRAIGHT AND SHORT AS POSSIBLE. ANTENNA CABLE SHIELD SHALL BE GROUNDED JUST BEFORE ENTERING THE CELL CABINET. ANY ANTENNA CABLES OVER 200 FEET IN LENGTH SHALL ALSO BE EQUIPPED WITH ADDITIONAL GROUNDING AT MID-POINT.
- 5 ALL GROUNDING CONDUCTORS INSIDE THE BUILDING SHALL BE RUN IN CONDUIT RACEWAY SYSTEM, AND SHALL BE INSTALLED AS STRAIGHT AS PRACTICAL WITH MINOR BENDS TO AVOID OBSTRUCTIONS. THE BENDING RADIUS OF ANY #2 GROUNDING CONDUCTOR IS 8". PVC RACEWAY MAY BE FLEXIBLE OR RIGID PER THE FIELD CONDITIONS. GROUNDING CONDUCTORS SHALL NOT MAKE CONTACT WITH ANY METALLIC CONDUITS, SURFACES OR EQUIPMENT.
- 6 PROVIDE PVC SLEEVES WHERE GROUNDING CONDUCTORS PASS THROUGH THE BUILDING WALLS AND /OR CEILINGS.
- 7 INSTALL GROUND BUSHINGS ON ALL METALLIC CONDUITS AND BOND TO THE EQUIPMENT GROUND BUSS IN THE PANEL BOARD.
- 8 GROUND ANTENNA BASES, FRAMES, CABLE RACKS AND OTHER METALLIC COMPONENTS WITH #2 GROUNDING CONDUCTORS AND CONNECT TO INSULATED SURFACE MOUNTED GROUND BARS. CONNECTION DETAILS SHALL FOLLOW MANUFACTURER'S SPECIFICATIONS FOR GROUNDING.
- 9 GROUND COAXIAL SHIELD AT BOTH ENDS USING MANUFACTURER'S GUIDELINES. GROUND FIELD TEST PROCEDURE:  
A. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A "FALL OF POTENTIAL" TEST ON THE NEW SUPPLEMENTAL GROUND FIELD PRIOR TO FINAL CONNECTION OF THE GROUNDING SYSTEM TO EQUIPMENT. THE TEST SHALL BE PERFORMED BY A QUALIFIED AND CERTIFIED TESTING AGENT. PROVIDE INDEPENDENT TEST RESULTS TO THE PROJECT MANAGER FOR REVIEW. THE GROUND SYSTEM RESISTANCE TO EARTH GROUND SHALL NOT EXCEED FIVE (5) OHMS. IF THE GROUND TEST EXCEEDS THE MAXIMUM OF 5 OHMS

**GROUNDING LEGEND (ITEMS IN THIS LEGEND ONLY APPLY AS DETAILED IN GROUNDING PLAN):**

- (A) GROUNDING RING. #2 AWG SOLID BARE TINNED COPPER WIRE
- (B) GROUND ROD
- (C) INSPECTION WELL
- (D) STEEL EQUIPMENT PLATFORM GROUNDING
- (E) STEEL EQUIPMENT GROUNDING
- (F) ICE BRIDGE GROUNDING AT EACH POST,
- (G) NEW GROUND RING BONDED TO EXISTING GROUND RING,
- (H) EXISTING GROUND RING. FIELD DETERMINE EXACT LOCATION.
- (J) SPRINT EQUIPMENT CABINET GROUNDING, TYP OF 3

**GROUNDING LEGEND**

- GROUND RING
- ⊗ GROUND ROD
- ⊠ INSPECTION WELL
- CADWELD CONNECTION (EXOTHERMIC WELD)
- ▲ MECHANICAL CONNECTION

CADWELD CONNECTIONS OR APPROVED EQUAL		BURNDY CONNECTIONS OR APPROVED EQUAL	
 PARALLEL HORIZONTAL CONDUCTORS PARALLEL THROUGH CONNECTION OF HORIZONTAL CABLES TYPE PT	 HORIZONTAL STEEL SURFACE TO FLAT STEEL SURFACE OR HORIZONTAL PIPE TYPE HS	 BOND JUMPER FIELD FABRICATED GREEN STRANDED INSULATED TYPE 2-YA-2	
 THROUGH CABLE TO GROUND ROD THROUGH CABLE TO TOP OF GROUND ROD TYPE GT	 VERTICAL STEEL SURFACE CABLE DOWN AT 45° TO VERTICAL STEEL SURFACE INCLUDING PIPE TYPE VS	 COPPER LUGS TWO HOLE - LONG BARREL LENGTH TYPE YA-2	
 VERTICAL PIPE CABLE DOWN AT 45° TO RANGE OF VERTICAL PIPES TYPE VS	TYPICAL CADWELD TYPE CONNECTIONS NO SCALE		



201 STATE ROUTE 17 NORTH  
RUTHERFORD, NJ 07070  
TEL: (201) 684-4000  
FAX: (201) 684-4223



1280 ROUTE 46 WEST  
PARSIPPANY, NJ 07054  
TELEPHONE: 646-544-5324



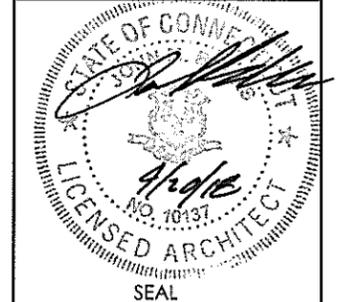
604 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
FAX : 847-277-0080  
AE@westchesterservices.com



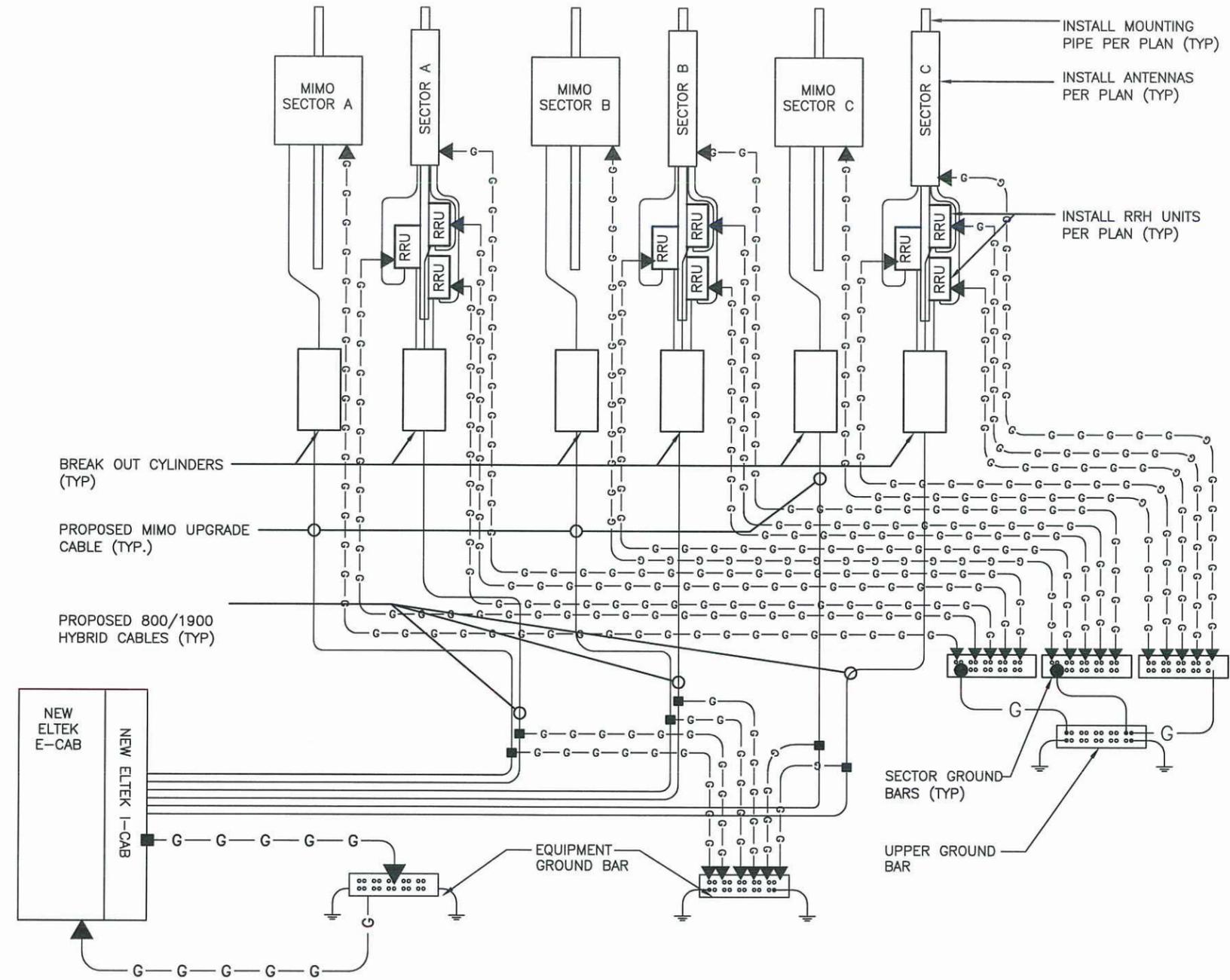
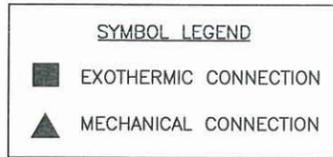
604 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
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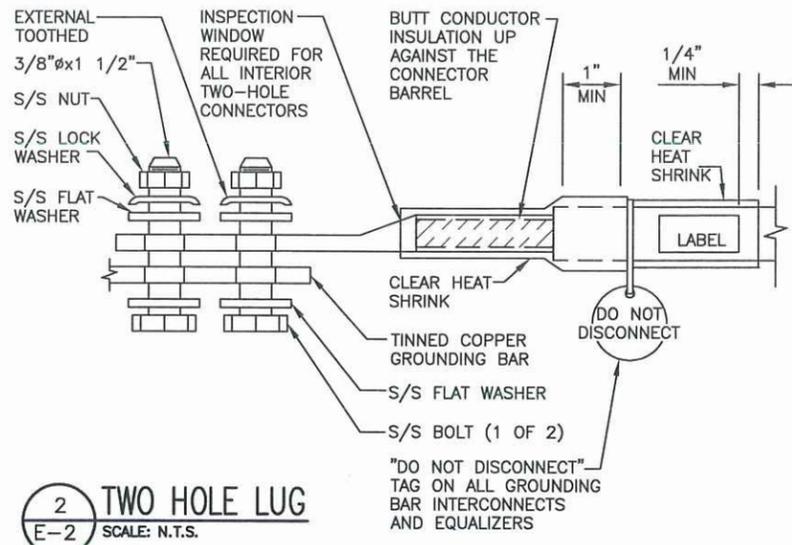
0	04.20.18	FINAL CD
NO.	DATE	DESCRIPTION
DRAWN BY: JS		
CHECKED BY: JMB		
JOB NUMBER: CT52XC055-C		
ARCHITECT: JOHN BANKS		



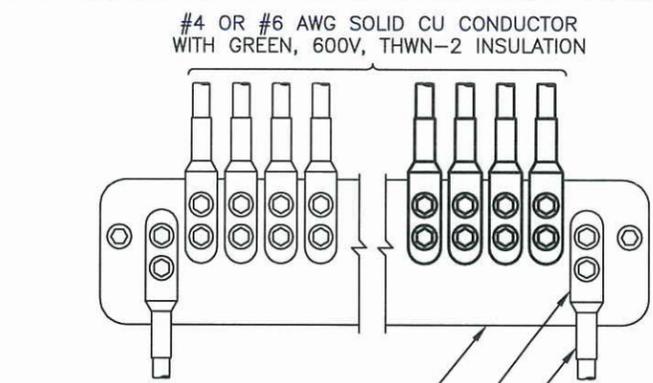
SITE NAME	39 CHERRY AVE SS
SITE NUMBER	CT52XC055-C
SITE LOCATION	253 CHERRY STREET WATERBURY, CT 06702 NEW HAVEN COUNTY
SHEET TITLE	ELECTRIC PLAN & NOTES
SHEET NUMBER	E-1



**1** GROUNDING RISER DIAGRAM  
E-2 SCALE: N.T.S.



**2** TWO HOLE LUG  
E-2 SCALE: N.T.S.



- TWO HOLE SPADE, TO BE USED TO CONNECT TO GROUND BAR
- GROUNDING SHALL BE ELIMINATED WHEN GROUND BAR IS ELECTRICALLY BONDED TO METAL TOWER
1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
  2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

**3** GROUND CONDUCTOR INSTALLATION  
E-2 SCALE: N.T.S.

**Sprint**  
201 STATE ROUTE 17 NORTH  
RUTHERFORD, NJ 07070  
TEL: (201) 684-4000  
FAX: (201) 684-4223

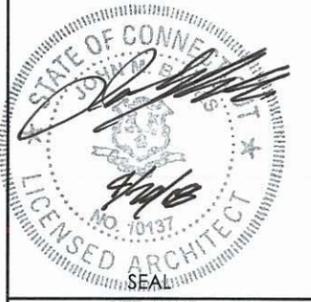
**Cherundolo Consulting**  
1280 ROUTE 46 WEST  
PARSIPPANY, NJ 07054  
TELEPHONE: 646-544-5324

**WESTCHESTER SERVICES LLC**  
604 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
FAX: 847-277-0080  
AE@westchesterservices.com

**JOHN M. BANKS ARCHITECT**  
604 FOX GLEN  
BARRINGTON, IL 60010  
TELEPHONE: 847-277-0070  
FAX: 847-277-0080

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ARCHITECT: JOHN BANKS		



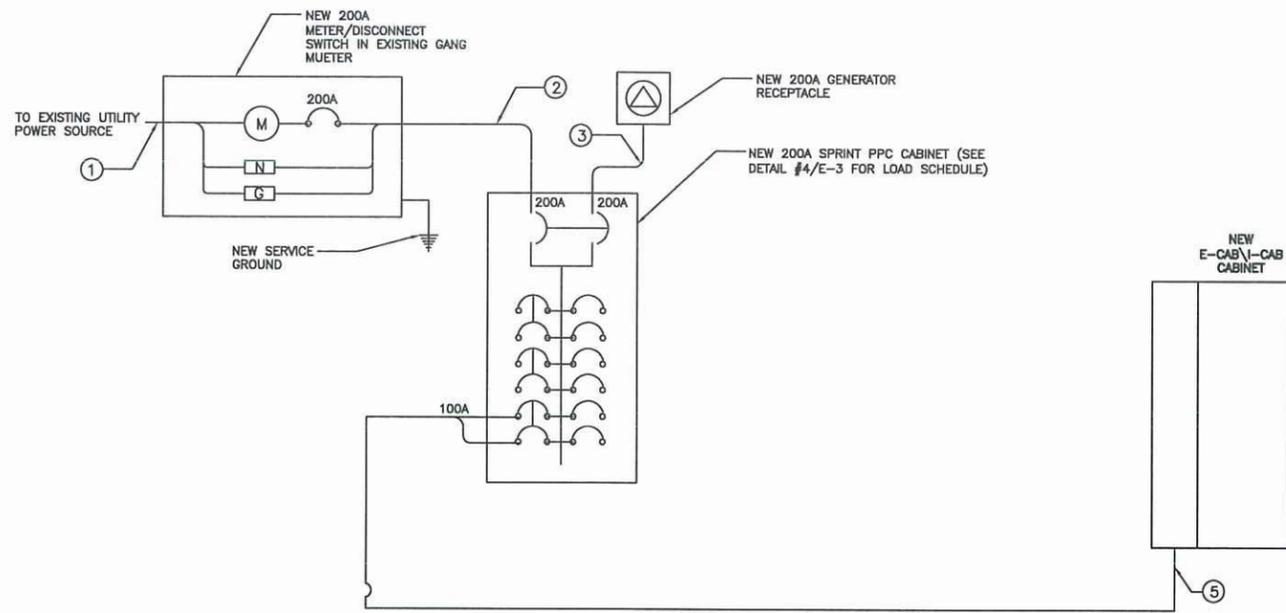
SITE NAME  
**39 CHERRY AVE SS**

SITE NUMBER  
**CT52XC055-C**

SITE LOCATION  
253 CHERRY STREET  
WATERBURY, CT 06702  
NEW HAVEN COUNTY

SHEET TITLE  
**GROUND RISER DIAGRAM**

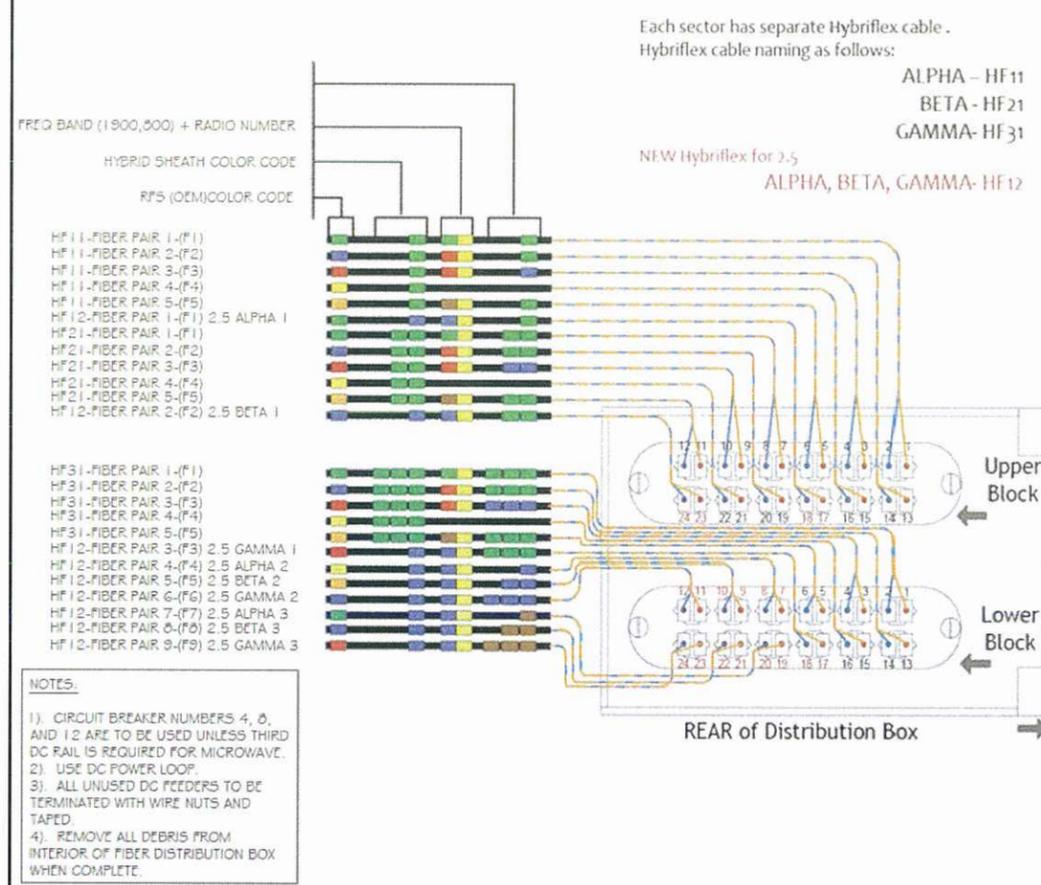
SHEET NUMBER  
**E-2**



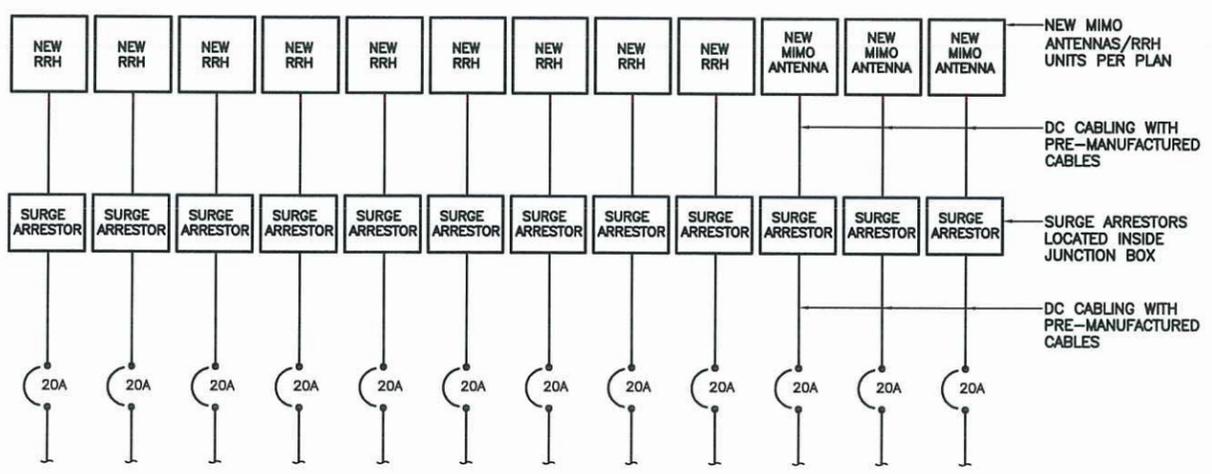
CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
①	UTILITY SOURCE	METER/DISCONNECT	NEW 200A METER
②	METER/DISCONNECT	TRANSFER & LOAD CENTER	(2) #3/0 + (1) #2 GND
③	TRANSFER & LOAD CTR.	GENERATOR RECEPTACLE	(2) #3/0 + (1) #2 GND
④	TRANSFER & LOAD CTR.	NEW SPRINT B-CAB CABINET	NONE
⑤	TRANSFER & LOAD CTR.	NEW SPRINT E-CAB CABINET	(3) #2 AWG, (1) #8 GND IN 1-1/2" CONDUIT

NOTE: CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.

1 ELECTRICAL ONE-LINE DIAGRAM  
E-3 SCALE: N.T.S.



2 TYPICAL DC POWER DISTRIBUTION  
E-3 SCALE: N.T.S.



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

EXISTING A/C PANEL SCHEDULE			
VOLTAGE:	240V/120	VOLTAGE:	EXISTING
MAIN BREAKER:	##	MODEL NUMBER:	TBD
MOUNT:	GROUND	PHASE:	1
MOUNT:	NEMA 3R	BUSS RATING:	200 AMP
		NEUTRAL BAR:	YES
		N TO GROUND BOND:	YES
		INTERNAL TVSS:	YES
		WIRE:	3
		GROUND BAR:	YES

CKT	DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	PHASE A VA	PHASE B VA	BREAKER STATUS	BREAKER POLES	BREAKER AMPS	DESCRIPTION	CKT
1	MM BTS	100	2	ON			ON	2	60	SURGE PROTECTION	7
2	MM BTS										8
3	BLANK (UNUSED)	-	-	-						AAHC	9
4	BLANK (UNUSED)	-	-	-				2	40		10
5	BLANK (UNUSED)	-	-	-				1	20	TELCO GFCI	11
6	FAN	-	-	-				-	-	BLANK (UNUSED)	12

4 AC PANEL SCHEDULE  
E-3 SCALE: N.T.S.

**Sprint**

201 STATE ROUTE 17 NORTH  
RUTHERFORD, NY 07070  
TEL: (201) 684-4000  
FAX: (201) 684-4223

**Cherundolo Consulting**

1280 ROUTE 46 WEST  
PARSIPPANY, NJ 07054  
TELEPHONE: 646-544-5324

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604 FOX GLEN  
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AE@westchesterservices.com

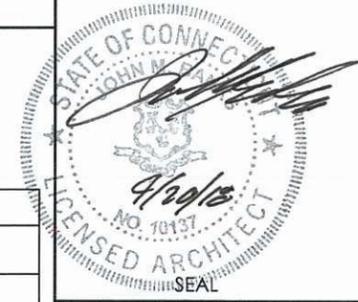
**JOHN M. BANKS ARCHITECT**

604 FOX GLEN  
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NO.	DATE	DESCRIPTION
0	04.20.18	FINAL CD

DRAWN BY: JS  
CHECKED BY: JMB  
JOB NUMBER: CT52XC055-C  
ARCHITECT: JOHN BANKS



SITE NAME  
39 CHERRY AVE SS

SITE NUMBER  
CT52XC055-C

SITE LOCATION  
253 CHERRY STREET  
WATERBURY, CT 06702  
NEW HAVEN COUNTY

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-3



## RADIO FREQUENCY EMISSIONS ANALYSIS REPORT EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

SPRINT Existing Facility

Site ID: CT52XC055

39 Cherry Ave SS  
253 Cherry Street  
Waterbury, CT 06702

**June 7, 2018**

**EBI Project Number: 6218004190**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>8.44 %</b>



June 7, 2018

SPRINT

Attn: RF Engineering Manager  
1 International Boulevard, Suite 800  
Mahwah, NJ 07495

## Emissions Analysis for Site: **CT52XC055 – 39 Cherry Ave SS**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **253 Cherry Street, Waterbury, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 850 MHz Band is approximately  $567 \mu\text{W}/\text{cm}^2$ . The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

## CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **253 Cherry Street, Waterbury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 50 Watts per Channel.
- 3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.
- 4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 6) 1 microwave backhaul channel (11 GHz) was considered for each sector. These channels have a transmit power of 1 Watt per channel.



- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the **Commscope NNVV-65B-R4 and the Nokia AAHC** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands and two (2) **12-inch microwave dishes** at sectors A & B and one (1) **24-inch microwave dish** at Sector C for the 11 GHz microwave backhaul. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antenna mounting height centerlines of the proposed panel antennas and microwave dishes are **127 feet** above ground level (AGL) for **Sector A**, **127 feet** above ground level (AGL) for **Sector B** and **127 feet** above ground level (AGL) for Sector C.
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general population threshold limits.



## SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	<b>1</b>	Antenna #:	<b>1</b>	Antenna #:	<b>1</b>
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	<b>127 feet</b>	Height (AGL):	<b>127 feet</b>	Height (AGL):	<b>127 feet</b>
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%	<b>2.24 %</b>	Antenna B1 MPE%	<b>2.24 %</b>	Antenna C1 MPE%	<b>2.24 %</b>
Antenna #:	<b>2</b>	Antenna #:	<b>2</b>	Antenna #:	<b>2</b>
Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC
Gain:	15.05 dBd	Gain:	15.05 dBd	Gain:	15.05 dBd
Height (AGL):	<b>127 feet</b>	Height (AGL):	<b>127 feet</b>	Height (AGL):	<b>127 feet</b>
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	5,118.23	ERP (W):	5,118.23	ERP (W):	5,118.23
Antenna A2 MPE%	<b>1.26 %</b>	Antenna B2 MPE%	<b>1.26 %</b>	Antenna C2 MPE%	<b>1.26 %</b>

## Microwave Backhaul Data

Antenna Type:	Gain (dBd)	Height (feet AGL):	Frequency Bands	Channel Count	Total TX Power(W)	ERP (W)	MPE %	Sector
1-foot parabolic dish	28.75 dBd	127	11 GHz	1	1	749.89	<b>0.02</b>	<b>A</b>
1-foot parabolic dish	28.75 dBd	127	11 GHz	1	1	749.89	<b>0.02</b>	<b>B</b>
2-foot parabolic dish	32.35 dBd	127	11 GHz	1	1	1,717.90	<b>0.04</b>	<b>C</b>

Site Composite MPE%	
Carrier	MPE%
SPRINT – Sector C	<b>3.53 %</b>
Clearwire	0.19 %
MetroPCS	1.72 %
T-Mobile	3.00 %
<b>Site Total MPE %:</b>	<b>8.44 %</b>

SPRINT Sector A Total:	3.51 %
SPRINT Sector B Total:	3.51 %
SPRINT Sector C Total:	<b>3.53 %</b>
<b>Site Total:</b>	<b>8.44 %</b>



# EBI Consulting

environmental | engineering | due diligence

SPRINT _ Frequency Band / Technology (Sector C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Sprint 850 MHz CDMA	1	376.73	127	0.93	850 MHz	567	0.16%
Sprint 850 MHz LTE	2	941.82	127	4.63	850 MHz	567	0.82%
Sprint 1900 MHz (PCS) CDMA	5	511.82	127	6.28	1900 MHz (PCS)	1000	0.63%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	127	6.28	1900 MHz (PCS)	1000	0.63%
Sprint 2500 MHz (BRS) LTE	8	639.78	127	12.57	2500 MHz (BRS)	1000	1.26%
Sprint 11 GHz microwave	1	1,717.90	127	0.42	11 GHz	1000	0.04%
						<b>Total*:</b>	<b>3.53%</b>

\*NOTE: Totals may vary by 0.01% due to summing of remainders



## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	3.51 %
Sector B:	3.51 %
Sector C:	3.53 %
SPRINT Maximum Total (Sector C):	3.53 %
Site Total:	8.44 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **8.44 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

C/O CITY PLAN DEPARTMENT  
236 Grand Street  
Waterbury, CT 06702  
Office: (203) 574-6817  
Fax: (203) 346-3949  
Email: jsequin@waterburyct.org



ZONING BOARD OF APPEALS  
**THE CITY OF WATERBURY**  
CONNECTICUT

September 20, 2010

Clearwire, LLC  
Maxton Technology  
1296 Blue Hills Avenue  
Bloomfield, CT 06002

**SUBJECT: 39 Cherry Avenue**

To Whom It May Concern:

Attached please find the certified letter of the Zoning Board of Appeals decision on Wednesday, September 15, 2010.

Please have the attached certification recorded in the Office of the Town Clerk, City Hall, 235 Grand Street, Waterbury, CT 06702, phone (203) 574-6806. Please check with the Town Clerk's Office at the phone number above to find out their fee schedule for recording your document.

When you apply for a permit based on this Special Exception, you must provide evidence that the certified copy of this approval is filed in the land records.

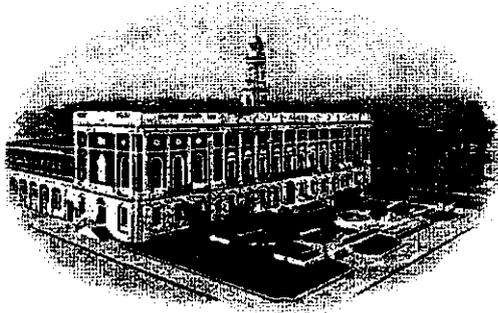
Sincerely,  
THE CITY OF WATERBURY

ATTEST:

Dennis Brown  
Land Use Officer

DB/mcr  
Attachment  
cc: City Clerk  
Town Clerk  
File:

MICHAEL J. DALTON  
CITY CLERK



Office: (203) 574-6744  
Fax: (203) 574-6745  
E-mail: mdalton@waterburyct.org

OFFICE OF CITY CLERK  
**THE CITY OF WATERBURY**  
CONNECTICUT

DATE: September 20, 2010

To Whom It May Concern:

*THIS IS TO CERTIFY THAT* at a Regular Meeting of the Zoning Board of Appeals held on Wednesday, September 15, 2010, it was voted unanimously to **GRANT** a Certificate of Approval with a stipulation that it match the color of the existing antenna for the petition submitted by Clearwire LLC, for a Special Exception from Section 5.13-9 to add antennas to an existing smoke stack for property located at **39 Cherry Avenue. Applicant: Clearwire LLC, Maxton Technology, 1296 Blue Hills Avenue, Bloomfield, CT 06002.**

ATTEST:

  
Michael J. Dalton  
City Clerk

MJD/mcr



# STATE OF CONNECTICUT

**CONNECTICUT SITING COUNCIL**  
Ten Franklin Square, New Britain, CT 06051  
Phone: (860) 827-2935 Fax: (860) 827-2950  
E-Mail: [siting.council@ct.gov](mailto:siting.council@ct.gov)  
[www.ct.gov/esc](http://www.ct.gov/esc)

August 29, 2016

Jon Ritter  
Tower Resource Management, Inc.  
16 Chestnut Street, Suite 420  
Foxboro, MA 02035

**RE: EM-T-MOBILE-151-160805** – T-Mobile Northeast LLC notice of intent to modify an existing telecommunications facility located at 39 Cherry Avenue, Waterbury, Connecticut.

Dear Mr. Ritter:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

1. Any deviation from the proposed modification as specified in this notice and supporting materials with the Council shall render this acknowledgement invalid;
2. Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
3. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
4. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by T-Mobile Northeast LLC shall be removed within 60 days of the date the antenna ceased to function;
5. The validity of this action shall expire one year from the date of this letter; and
6. The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice received August 5, 2016. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site by any dimension, increase noise levels at the tower site boundary by six decibels or more, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standards adopted by the Federal Communications Commission pursuant to Section 704 of the Telecommunications Act of 1996 and by the state Department of Energy and Environmental Protection pursuant to Connecticut General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below state and federal standards applicable to the frequencies now used on this tower.



August 29, 2016

Page 2 of 2

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

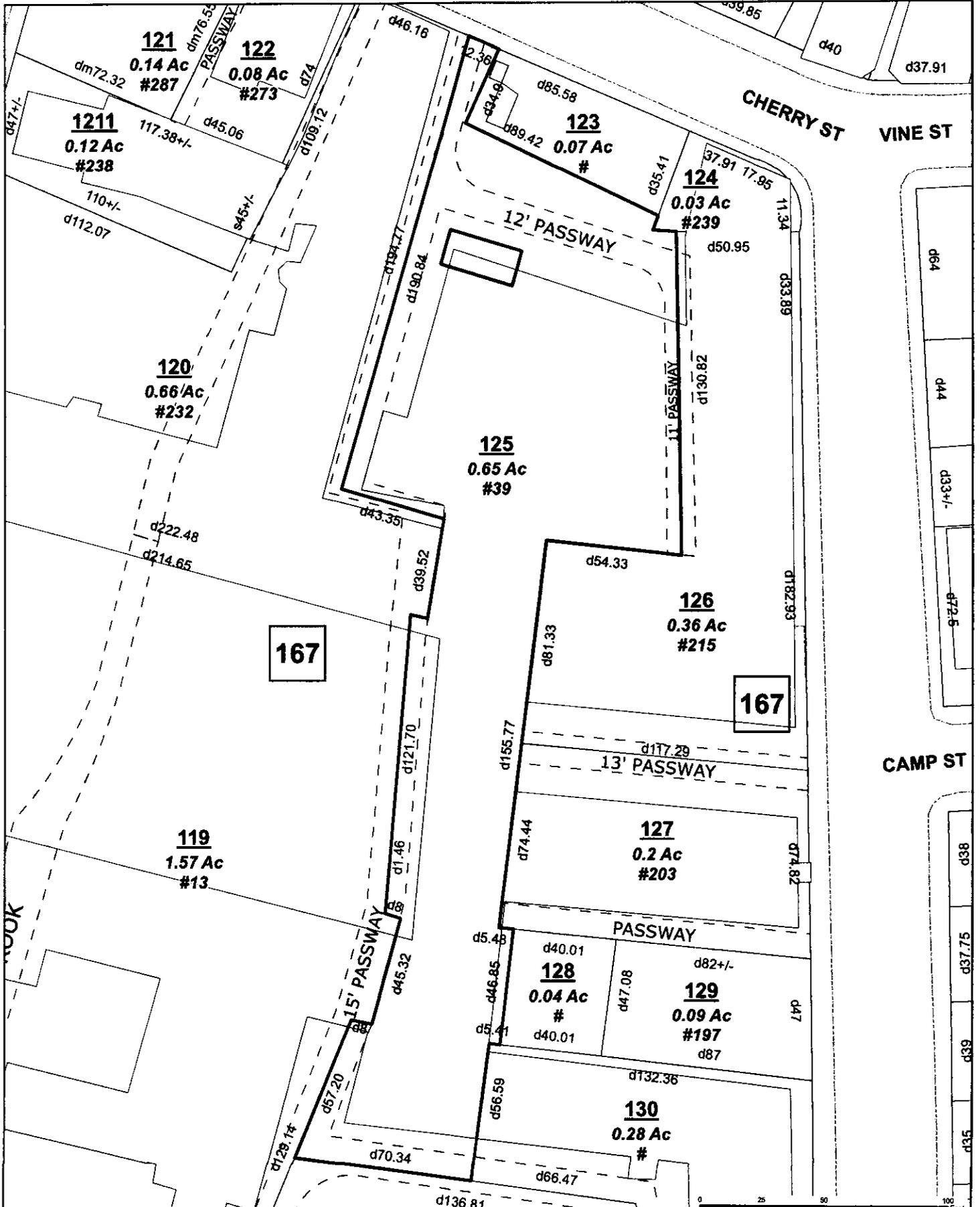
Very truly yours,



Melanie A. Bachman  
Acting Executive Director

MAB/FOC/lm

- c: The Honorable Neil M. O'Leary, Mayor, City of Waterbury
- James A. Sequin, AICP, City Planner, City of Waterbury
- American Tower Corporation
- New Opportunities Economic Development Corporation



**City of Waterbury**  
Public Works Department

**MBL: 0255-0167-0125**  
**ADDRESS: 39 CHERRY AVE**

This map is for informational purposes only and has not been prepared for, or suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to verify the usability of the information. The City of Waterbury makes no warranties, express or implied, as to the use of the information obtained herein.

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2017.

# WATERBURY

Information on the Property Records for the Municipality of Waterbury was last updated on 11/16/2018.

## Parcel Information

Location:	39 CHERRY AVE	Property Use:	Industrial	Primary Use:	Light Industrial
Unique ID:	025501670125	Map Block Lot:	0255-0167-0125	Acres:	0.65
490 Acres:	0.00	Zone:	RH	Volume / Page:	6727/ 38
Developers Map / Lot:		Census:			

## Value Information

	Appraised Value	Assessed Value
Land	110,602	77,420

	<b>Appraised Value</b>	<b>Assessed Value</b>
Buildings	25,604	17,920
Detached Outbuildings	0	0
Total	136,206	95,340

## **Owner's Information**

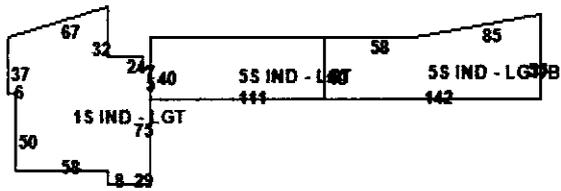
### **Owner's Data**

NEW OPPORTUNITIES ECONOMIC DEVELOPMENT  
CORPORATION  
232 NORTH ELM ST  
WATERBURY CT 06702

### **Building 1**



025501670125 04/09/2016



Category:	Industrial	Use:	Light Industrial	GLA:	61,969
Stories:	5.00	Construction:	Average	Year Built:	1900
Heating:	Steam	Fuel:	Oil	Cooling Percent:	0%
Siding:	Brick, Solid	Roof Material:		Beds/Units:	0

### Special Features

Freight Elevator Power	1
Freight Elevator Power	1
Sprinklers	3098

### Attached Components

### Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
NEW OPPORTUNITIES ECONOMIC DEVELOPMENT	6727	38	10/04/2010	Additional Parcel	No	\$0
NORTH SQUARE GATEWAY DEVELOPMENT INC	6486	106	02/06/2009	Warranty Sale	No	\$325,000
COASTAL FINANCIAL LENDING INC & CARPE LL	5461	202	08/10/2005	Warranty Sale	No	\$57,500
39 CHERRY LLC	5253	185	02/01/2005	Warranty Sale	No	\$0
OSMAN STEPHEN TRUSTEE & 39 CHERRY LLC	5253	178	02/01/2005	Warranty Sale	No	\$0

### Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
2018.2205	Electrical	08/08/2018		Open Permit	UPGRADE & REPLACEMENT OF CELL SITE
2014.2598	Commercial Demolition	09/19/2014		Closed	DEMO

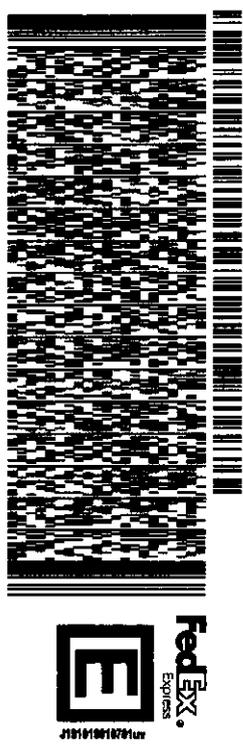
<b>Permit Number</b>	<b>Permit Type</b>	<b>Date Opened</b>	<b>Date Closed</b>	<b>Permit Status</b>	<b>Reason</b>
2013.0496	Comm Renovations	04/05/2013		Closed	REPLACE STEEL PLATFORM PAD & CABINET

Information Published With Permission From The Assessor

ORIGIN ID: LKKA (856) 625-1596  
RYAN BAILEY  
CHARLES CHERUNDOLLO CONSULTING  
3 PROSPECT PL  
B  
MADISON, NJ 07940  
UNITED STATES US  
SHIP DATE: 12FEB19  
ACTWGT: 1.00 LB  
CAD: 111040781/NET4100  
BILL SENDER

TO  
**MS. MELANIE BACHMAN, EXEC. DIR.**  
**CT SITING COUNCIL**  
**TEN FRANKLIN SQUARE**

**NEW BRITAIN CT 06051**  
(860) 827-2935 REF: CT5ZQ05 CSC SUBMISSION  
DEPT.



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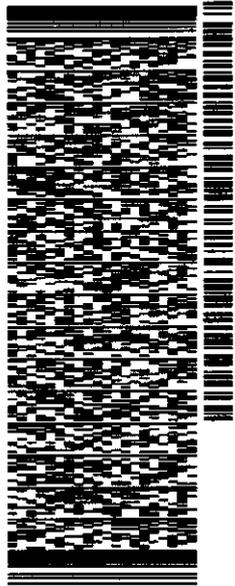
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STEVE SOFMAN  
CHARLES CHERUNDOLLO CONSULTING  
1280 ROUTE 46 WEST  
SUITE 9  
PARLIPPANY, NJ 07054  
UNITED STATES US

SHIP DATE: 12FEB19  
ACTWTG: 1.00 LB  
CAD: 111040781IN/E141100  
BILL SENDER

TO DEVELOPMENT CORPORATION  
NEW OPPORTUNITIES ECONOMIC  
232 NORTH ELM ST

WATERBURY CT 06702  
(203) 575-4399 REF: CTSDX0085 CSC  
NJ DEPT.



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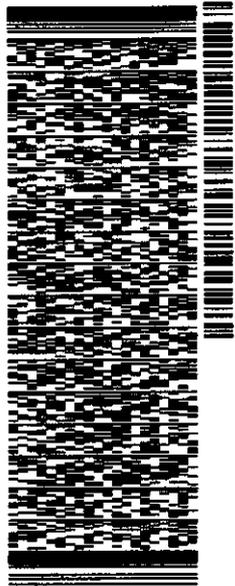
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STEVE SOFMAN  
CHARLES CHERLINDOLO CONSULTING  
1280 ROUTE 46 WEST  
SUITE 9  
PARLIPPANY, NJ 07054  
UNITED STATES US

SHIP DATE: 12FEB19  
ACTWGT: 1.00 LB  
CAD: 111040781IN/E741100  
BILL SENDER

TO  
**MAYOR NEIL O'LEARY**  
**CITY OF WATERBURY**  
**235 GRAND ST**

**WATERBURY CT 06702**  
(203) 597-3444  
NJ  
PO  
REF: CT52X0065 CSC FILING  
DEPT



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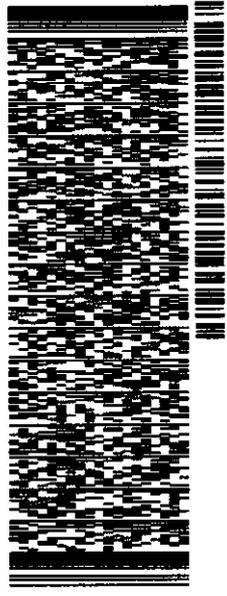
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STEVE SOFMAN  
CHARLES CHERUNDOLLO CONSULTING  
1280 ROUTE 46 WEST  
SUITE 9  
PARISPPANY, NJ 07054  
UNITED STATES US

SHIP DATE: 12FEB19  
ACTWGT: 1.09 LB  
CAD: 111040781INMET41100  
BILL SENDER

TO **JAMES SEQUIN**  
**CITY OF WATERBURY**  
**235 GRAND ST**

**WATERBURY CT 06702**  
(203) 597-3444 REF: CT52X005 CSC FLING  
NJ DEPT.  
PO



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