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

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

Re: Notice of Exempt Modification Application
319-321 New Britain Ave., Farmington, CT 06032

December 6, 2017

Dear Ms. Bachman:

Sprint Spectrum Realty Company, L.P. ("Sprint"), is submitting to the Connecticut Siting Council for a Notice of Exempt Modification for Proposed Modifications to an Existing Telecommunications Facility located at the above-referenced site. Sprint currently maintains 3 existing panel antenna and 3 parabolic dishes at the 170' level of the Tower. Sprint proposes to add 3 panel antennas and 6 remote radio unit at 170' tower level as well as 1 fiber cable, 1 new battery string in existing ground based battery cabinet, new 2.5 MHz radio equipment in existing ground based radio cabinet and remove existing antenna platform with new Valmont RMQP-484 platform with HRK 12 Handrail kit.

The Sprint Tower Share was initially approved on 2/20/2002 by CT Siting Council. The building permit was approved on 2/22/2002 by Farmington Building Department. The structural and construction documents enclosed have been revised to reflect the current reality of the installations on the Tower.

If you have any questions, please feel free to contact me.

Thank you,

By: *Paul F. Sagristano*

Paul F. Sagristano
Cherundolo Consulting
917.841.0247
psagristano@lrivassoc.com

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

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

December 6, 2017

Re: Notice of Exempt Modification –
Existing Sprint Telecommunication Facility
319-321 New Britain Ave. Farmington, CT 06032

Latitude : N41.74972
Longitude: W72.8725

Dear Ms. Bachman:

Sprint currently maintains 3 existing panel antenna and 3 parabolic dishes at the 170' level of the Tower. Sprint proposes to add 3 panel antennas and 6 remote radio unit at 170' tower level as well as 1 fiber cable, 1 new battery string in existing ground based battery cabinet, new 2.5 MHz radio equipment in existing ground based radio cabinet and remove existing antenna platform with new Valmont RMQP-484 platform with HRK 12 Handrail kit. 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.

The initial Sprint tower share was approved on 2/20/2002 by CT Siting Council and the building permit was approved by the Farmington Building Department on February 22, 2002. A copy of these approvals are attached.

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 Kathleen A. Eagen, Town Administrator for Farmington, the property owner William Warner, Town Planner for Farmington and Michael Guliano, the Fire Marshall for Farmington.
.
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.

Existing Facility

The Fairfield facility is located at 319-321 New Britain Ave., Farmington, CT, the Site coordinates are: N41. 74972, W – 72.8725. The facility is owned by the Town of Farmington Fire Department, The existing facility consists of a 190' Monopole. Sprint currently operates wireless communications equipment on a concrete slab at the facility and has 3 antennas and 3 Parabolic dishes mounted on at a centerline of 170' 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,

Paul F. Sagristano

Paul F. Sagristano
Charles Cherundolo Consulting
917-841-0247
psagristano@lrivassoc.com

PFS/mtf

Additional Recipients:
Town of Farmington – Kathleen A. Eagen – Town Manager – Via Fed Ex
Town of Farmington Fire Dept. – Michael Guliano – Fire Marshall - Via Fed Ex
Town of Famington – Town Planner – William Warner – Via Fed Ex

December 7,2017

Dear Customer:

The following is the proof-of-delivery for tracking number 770912317372.

Delivery Information:

Status:	Delivered	**Delivered to:**	Receptionist/Front Desk
Signed for by:	K.SACCU	**Delivery location:**	1 MONTIETH DR FARMINGTON, CT 06032
Service type:	FedEx Express Saver	**Delivery date:**	Dec 7, 2017 13:29
Special Handling:	Deliver Weekday Direct Signature Required		

Shipping Information:

Tracking number:	770912317372	**Ship date:**	Dec 6, 2017
		Weight:	0.5 lbs/0.2 kg

Recipient:
Kathleen A. Eagen, Town Manager
Town of Farmington
1 Monteith Drive
FARMINGTON, CT 06032 US

Shipper:
Paul Sagristano
CCC
4 Davis Road West
Suite 5
OLD LYME, CT 06371 US

Reference
CT33XC534 CSC to Town Mgr,

Thank you for choosing FedEx.

December 7,2017

Dear Customer:

The following is the proof-of-delivery for tracking number 770912342650.

Delivery Information:

Status:	Delivered	**Delivered to:**	Receptionist/Front Desk
Signed for by:	K.SACCU	**Delivery location:**	1 MONTIETH DR FARMINGTON, CT 06032
Service type:	FedEx Express Saver	**Delivery date:**	Dec 7, 2017 13:29
Special Handling:	Deliver Weekday Direct Signature Required		

Shipping Information:

Tracking number:	770912342650	**Ship date:**	Dec 6, 2017
		Weight:	0.5 lbs/0.2 kg

Recipient:
William Warner, Town Planner
Town of Farmington
1 Monteith Drive
FARMINGTON, CT 06032 US

Shipper:
Paul Sagristano
CCC
4 Davis Road West
Suite 5
OLD LYME, CT 06371 US

Reference
CT33XC534 CSC to Town Planner

Thank you for choosing FedEx.

December 7,2017

Dear Customer:

The following is the proof-of-delivery for tracking number 770912370260.

Delivery Information:

Status:	Delivered	**Delivered to:**	Receptionist/Front Desk
Signed for by:	K.SACCU	**Delivery location:**	1 MONTIETH DR FARMINGTON, CT 06032
Service type:	FedEx Express Saver	**Delivery date:**	Dec 7, 2017 13:29
Special Handling:	Deliver Weekday Direct Signature Required		

Shipping Information:

Tracking number:	770912370260	**Ship date:**	Dec 6, 2017
		Weight:	0.5 lbs/0.2 kg

Recipient:
Michael Guliano, Fire Marshall
Town of Farmington
1 Monteith Drive
FARMINGTON, CT 06032 US

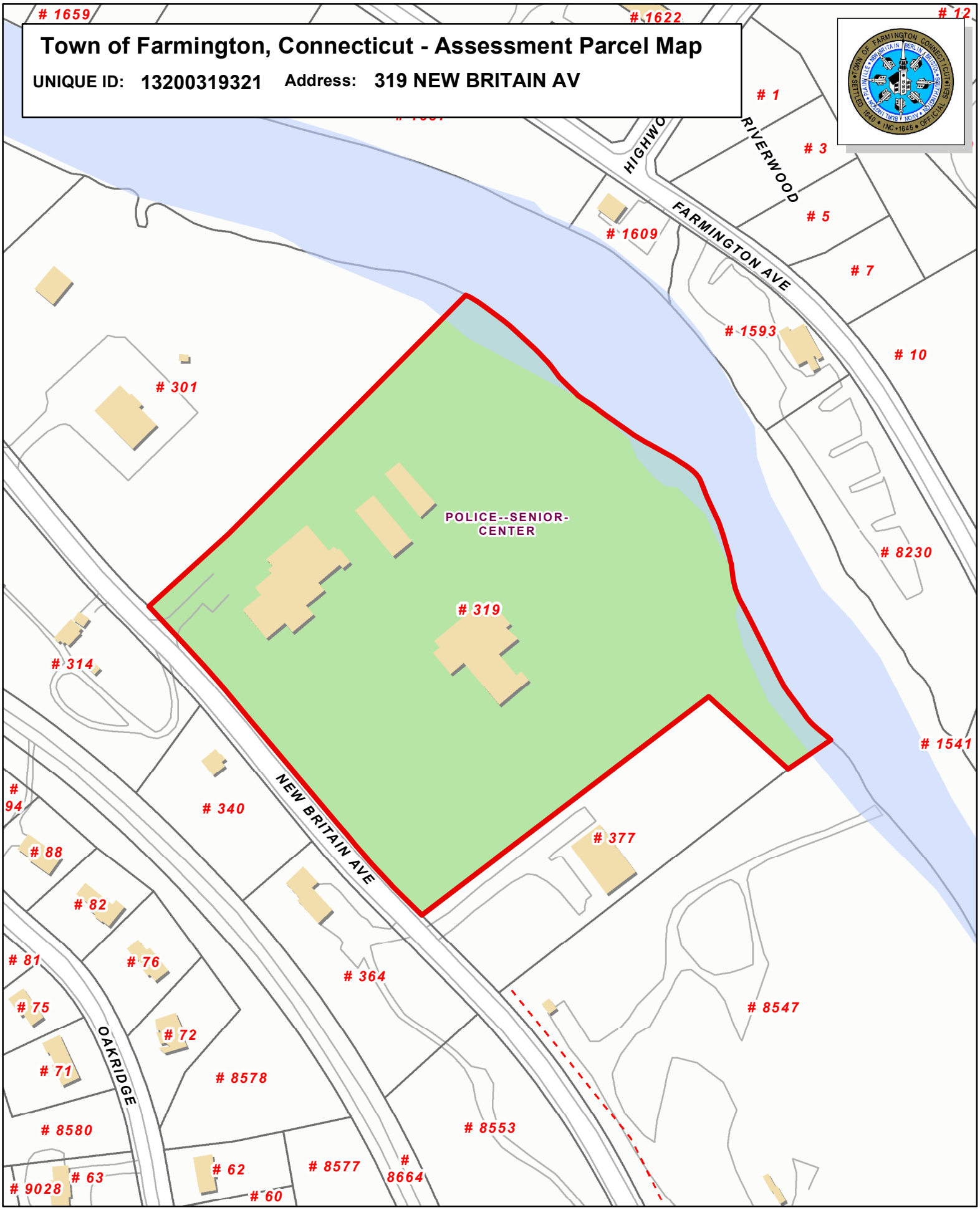
Shipper:
Paul Sagristano
CCC
4 Davis Road West
Suite 5
OLD LYME, CT 06371 US

Reference
CT33XC534 CSC to Fire Marshall

Thank you for choosing FedEx.

Town of Farmington, Connecticut - Assessment Parcel Map

UNIQUE ID: 13200319321 **Address:** 319 NEW BRITAIN AV



Map Produced Aug 2017

Approximate Scale: 1 inch = 200 feet

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 2012.

Information on the Property Records for the Municipality of Farmington was last updated on 12/4/2017.

Parcel Information

Location:	319 NEW BRITAIN AV	Property Use:	Office	Primary Use:	Office Building
Unique ID:	13200319321	Map Block Lot:	0035 1-8	Acres:	13.20
490 Acres:	0.00	Zone:	CR	Volume / Page:	0571/0159
Developers Map / Lot:		Census:	4603-00		

Value Information

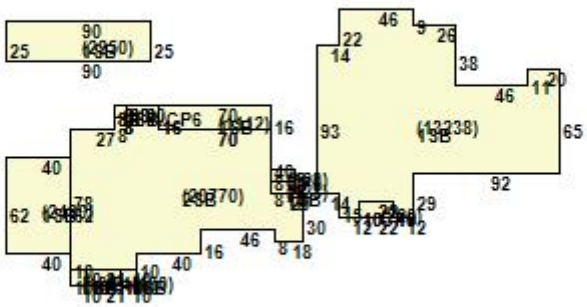
	Appraised Value	70% Assessed Value
Land	2,790,000	1,953,000
Buildings	9,146,914	6,402,840
Detached Outbuildings	0	0
Total	11,936,914	8,355,840

Owner's Information

Owner's Data
FAMINGTON TOWN OF NEW POLICE/COMMUNITY CENTER 1 MONTEITH DR FARMINGTON CT 06032

Building 1

Photo Not Available



Category:	Office	Use:	Office Building	GLA:	24,758
Stories:	2.00	Construction:	Fire Proof	Year Built:	2001
Heating:		Fuel:		Cooling Percent:	0
Siding:		Roof Material:		Beds/Units:	0

Special Features

Elevator, Comm Elec Pass	1
Wet Sprinklers	13238
Wet Sprinklers	24758
Wet Sprinklers	2250

Attached Components

Type:	Year Built:	Area:
Commercial Canopy	2001	220
Commercial Canopy	2001	128
Commercial Canopy	2001	210
Commercial Canopy	2001	68

Building 2

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@po.state.ct.us
Web Site: www.state.ct.us/csc/index.htm

February 20, 2002

Thomas J. Regan, Esq.
Brown, Rudnick, Freed & Gesmer, P.C.
185 Asylum Street, CityPlace I
Hartford, CT 06103-3402

RE: **TS-SPRINT-052-020118** - Sprint Spectrum, L.P. d/b/a Sprint PCS request for an order to approve tower sharing at an existing telecommunications facility located at 319-321 New Britain Avenue, Farmington, Connecticut.

Dear Attorney Regan:

At a public meeting held February 14, 2002, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. 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.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed shared use is to be implemented as specified in your letters dated January 18, 2002, January 28, 2002, and February 4, 2002.

Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/RKE/laf

c: Honorable Arline B. Whitaker, Chairman Town Council, Town of Farmington
Jeffrey Ollendorf, Town Planner, Town of Farmington
Michael Whalen, Chief of Police, Farmington Police Department

TOWN OF FARMINGTON PERMIT#: 37515

**** BUILDING PERMIT ****

E: 22-Feb-2002 EST. COST: 300,000.00 BUILD FEES: .00 WAIVED

DEV SEW PER: .00

R: TOWN OF FARMINGTON LOT#: MISC SEW: .00

****

D:* 0319 NEW BRITAIN AV * TOTAL FEE:

****

E & ADDRESS OF APPLICANT DESCRIPTION OF WORK TO BE DONE

INT POS Commercial

SPRING ST Tower

DSOR LOCKS, CT 06096

t.Area: Lot Area: No.Stories: Height:

: ALL WORK TO BE DONE IN ACCORDANCE WITH THE APPLICATION AND PLANS APPROVED BY THE BUILDING DEPARTMENT.

. ZONE DEV.PERMIT CBYD #

FEE FEE

12.0 2002 0801499

Applicant

Mark H. Pierce

Building Official

_____ PLB_____ HTG/AC_____ SPRINKLER_____ SEWER_____ AS BUILT_____

TOWN OF FARMINGTON PERMIT#: 37516

**** BUILDING PERMIT ****

E: 22-Feb-2002 EST. COST: 50,000.00 BUILD FEES: .00 WAIVED

DEV SEW PER: .00

R: TOWN OF FARMINGTON LOT#: MISC SEW: .00

****

D:* 0319 NEW BRITAIN AV * TOTAL FEE:

****

E & ADDRESS OF APPLICANT DESCRIPTION OF WORK TO BE DONE

NT POS Commercial

SPRING ST Antenna

DSOR LOCKS, CT 06096

t.Area: Lot Area: No.Stories: Height:

. ALL WORK TO BE DONE IN ACCORDANCE WITH THE APPLICATION AND PLANS APPROVED BY THE BUILDING DEPARTMENT.

. ZONE DEV.PERMIT CBYD #

FEE FEE

12.0 2002 0801499

Applicant

Mark H. Pierce

Building Official

_____ PLB_____ HTG/AC_____ SPRINKLER_____ SEWER_____ AS BUILT_____

EBI Consulting
environmental | engineering | due diligence

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

SPRINT Existing Facility

Site ID: CT33XC534

Unionville/Police Dept.
319-321 New Britain Avenue
Farmington, CT 06032

November 7, 2017

EBI Project Number: 6217004930

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	9.62 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

November 7, 2017

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

Emissions Analysis for Site: **CT33XC534 – Unionville/Police Dept.**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **319-321 New Britain Avenue, Farmington, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ 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.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands is 1000 $\mu W/cm^2$. 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 **319-321 New Britain Avenue, Farmington, 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, 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 20 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) 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.

7) 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 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.

8) The antennas used in this modeling are the **RFS APXVSPP18-C-A20, RFS APXV9ERR18-C-A20 and the Commscope DT465B-2XR** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. 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, 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.

9) The antenna mounting height centerlines of the proposed antennas are **170 feet** above ground level (AGL) for **Sector A**, **170 feet** above ground level (AGL) for **Sector B** and **170 feet** above ground level (AGL) for Sector C.

10) 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 #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXV9ERR18-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	**170 feet**	Height (AGL):	**170 feet**	Height (AGL):	**170 feet**
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):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	7,537.38	ERP (W):	7,537.38	ERP (W):	5,873.76
Antenna A1 MPE%	**1.15 %**	Antenna B1 MPE%	**1.15 %**	Antenna C1 MPE%	**0.88 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope DT465B-2XR	Make / Model:	Commscope DT465B-2XR	Make / Model:	Commscope DT465B-2XR
Gain:	15.05 dBd	Gain:	15.05 dBd	Gain:	15.05 dBd
Height (AGL):	**170 feet**	Height (AGL):	**170 feet**	Height (AGL):	**170 feet**
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%	**0.68 %**	Antenna B2 MPE%	**0.68 %**	Antenna C2 MPE%	**0.68 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**1.83 %**
Town	0.23 %
Emergency	0.89 %
Public Works	4.04 %
Clearwire	0.07 %
AT&T	1.86 %
T-Mobile	0.70 %
Site Total MPE %:	**9.62 %**

SPRINT Sector A Total:	1.83 %
SPRINT Sector B Total:	1.83 %
SPRINT Sector C Total:	1.56 %
Site Total:	9.62 %

SPRINT _ Max Values per Frequency Band / Technology (Sectors A & B)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	437.55	170	0.58	850 MHz	567	0.10%
Sprint 850 MHz LTE	2	437.55	170	1.17	850 MHz	567	0.21%
Sprint 1900 MHz (PCS) CDMA	5	622.47	170	4.16	1900 MHz (PCS)	1000	0.42%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	170	4.16	1900 MHz (PCS)	1000	0.42%
Sprint 2500 MHz (BRS) LTE	8	639.78	170	6.84	2500 MHz (BRS)	1000	0.68%
						Total:	**1.83%**

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:	1.83 %
Sector B:	1.83 %
Sector C:	1.56 %
SPRINT Maximum Total (Sectors A & B):	1.83 %
Site Total:	9.62 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **9.62 %** 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.

RAMAKER & ASSOCIATES, INC.

October 19, 2017

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

Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583

SUBJECT: **STRUCTURAL ASSESSMENT**
190-FOOT MONOPOLE TOWER

CARRIER: **SPRINT**

SITE: **UNIONVILLE/POLICE DEPARTMENT (CT33XC534-B)**
319-321 NEW BRITAIN AVENUE
FARMINGTON, HARTFORD COUNTY, CONNECTICUT 06032
RAMAKER & ASSOCIATES PROJECT NUMBER: 23009

RESULTS:			
	TOWER:	**93.5%**	**PASS WITH MODIFICATIONS**
	FOUNDATION:	**92.1%**	**PASS**

Dear Tom Jupin:

Ramaker & Associates, Inc. (RAMAKER) respectfully submits this mount and structural assessment for the above mentioned site. The purpose of this report is to determine the structural integrity of the structure(s) with the proposed loading configurations. Engineering recommendations regarding the analysis results are provided in the following pages.

RAMAKER developed a finite element model of the tower using tnxTower analysis software. Also, RAMAKER developed a finite element model of the mount(s) using RISA analysis software. All information contained herein is valid only for the described structure configuration and loading conditions. RAMAKER reserves the right to modify our recommendations should alterations to the tower loading occur.

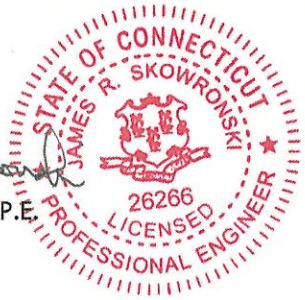
If you have any questions or comments, please do not hesitate to contact our office.

Sincerely,

RAMAKER & ASSOCIATES, INC.

Thomas E. Moore
Project Engineer

James R. Skowronski, P.E.
Supervising Engineer



ANALYSIS CRITERIA

State Building Code	2016 CT State Building Code
Adopted Building Code	2012 IBC
Referenced Standard	TIA-222-G
Risk Category	II
Ultimate Design Wind Speed, V_{ult}	125 mph (3 sec. gust)
Nominal Design Wind Speed, V_{asd}	97 mph (3 sec. gust)
Design Wind Speed w/ Ice	40 mph (3 sec. gust)
Ice Thickness	1.0 inch
Exposure Category	C
Topographic Category	1
Crest Height	N/A

SUPPORTING DOCUMENTATION

- Tower drawings by Pirod Inc., drawing number 157375-B, dated April 19, 2002
- Structural analysis by RAMAKER, site number 23009, dated November 16, 2012
- Structural analysis by Bay State Design, site number CT-HFD0073A, dated March 10, 2010
- Structural analysis by Malouf Engineering, job number CT00937M-07V0, dated September 28, 2007
- Construction drawings by RAMAKER, project number 23009
- Site visit(s) conducted by RAMAKER
- Other pertinent data procured or assumed by RAMAKER during site due diligence activities

TOWER LOADING

RAMAKER understands that the loading to be used for this analysis will consist of the antenna equipment, mount, and cable configurations as shown in the following chart:

Elevation	Appurtenance	Mount	Coax	Owner	Status
190	(2) 10' Omni	(3) Standoff	(4) 7/8	--	Existing
	(1) Kathrein Scala PR-850				
	(1) Andrew 2' Dish w/ Shroud				
185	(2) 3' Yagi	(2) Standoff	(2) 7/8	--	Existing
180	(1) 5' Omni	(2) Standoff	(1) 7/8	--	Existing
175	(3) ALU 1900MHz 4x40W RRH	(1) Collar Mount	(3) 1-1/4	Sprint	Existing
	(3) ALU 800MHz 2x50W RRH				
170	(3) Argus LLPX310R	**(1) Platform w/Handrail**	(6) 1-5/8 (3) 5/16 **(2) 1-1/4**	Clearwire	Existing
	(3) Samsung RRH				
	(2) RFS APXVSPP18-C-A20			Sprint	
	(1) RFS APXV9ERR18-C-A20				
	(1) Andrew VHLP2-18				
	(1) Andrew VHLP800-11				
	(3) Commscope DT465B-2XR				**Proposed**
	(3) ALU RRH-2x50-800				
	(3) ALU TD-RRH8X20				
160	(6) 5' Panel Antenna	(1) LP Platform	(12) 1-1/4 (1) 1/2	T-Mobile	Existing
	(3) 7' Panel Antenna				
	(3) RRH				
150	(3) Powerwave P65-17-XLH-RR	(3) T-Arm	(6) 1-5/8	AT&T	Existing
	(3) Kathrein Scala 800 10121				
	(3) Powerwave LGP214nn				
	(3) Ericsson RRUS-11				
	(1) Raycap DC6-48-60-18-8F				
113	(3) 6' Omni	(3) Standoff	(3) 1/2	--	Existing
90	(3) 18' Omni	(3) Standoff	(3) 1/2	--	Existing

TOWER RESULTS

The maximum tower member stress capacities under the loading conditions previously described are as follows:

Component Type	Percent Capacity	Pass/Fail
Pole	93.5	Pass
Reinforcement	91.8	Pass
Anchor Rod	86.6	Pass
Base Plate	--	Pass
RATING	**93.5**	**PASS**

Results of the analysis show that the modified tower will be stressed to a maximum of 93.5 percent of capacity. Therefore, the modified tower will pass the TIA-222-G analysis requirements under proposed loading conditions.

DISH TWIST/SWAY RESULTS

The twist/sway results for a 60 mph service wind speed are as follows:

Elevation	Dish	Deflection (in)	Tilt (deg)	Twist (deg)
192	(1) Andrew 2' Dish w/Shroud	34.429	1.6225	0.0137
190	(1) Kathrein Scala PR-850	34.402	1.6225	0.0137
176	(1) Andrew VHLP2-18	29.668	1.6008	0.0104
176	(1) Andrew VHLP800-11	29.668	1.6008	0.0104

FOUNDATION RESULTS

The maximum foundation stress capacities are as follows:

Component Type	Percent Capacity	Pass/Fail
Soil Interaction	91.6	Pass
Structural	92.1	Pass
RATING	**92.1**	**PASS**

The foundations were analyzed utilizing the previous Malouf analysis and geotechnical report referenced above. Results of the analysis show that the existing foundation will be stressed to a maximum of 92.1 percent of capacity. Therefore, the existing foundation will pass the TIA-222-G analysis requirements under proposed loading conditions.

LIMITATIONS

The recommendations contained within this report were developed using the supporting documentation as previously described. All recommendations pertain only to the proposed antenna installation activities as described in this report. RAMAKER assumes no responsibility for failures caused by factors beyond our control. These include but are not limited to the following:

- Missing, corroding, and/or deteriorating members
- Improper manufacturing and/or construction
- Improper maintenance

RAMAKER assumes no responsibility for modifications completed prior to or hereafter in which RAMAKER was not directly involved. These modifications include but are not limited to the following:

- Replacing or strengthening bracing members
- Reinforcing or extending vertical members
- Installing or removing antenna mounting gates or side arms
- Changing loading configurations

The tower owner is responsible for verifying that the existing loading on the structure is consistent with the loading applied to the structure within this report. If there is any information contrary to that contained herein, or if there are any defects arising from the original design, material, fabrication and erection deficiencies, this report should be disregarded and RAMAKER should be contacted immediately. RAMAKER is not liable for any representation, recommendation, or conclusion not expressly stated herein.

This analysis pertains only to the tower structure, and no analyses or conclusions were made regarding the antenna and equipment mounting structure(s). Analysis and certification of the antenna and equipment mounting structure(s) is performed and submitted separately.

RAMAKER & ASSOCIATES, INC.

October 17, 2017

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

Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583

SUBJECT: **MOUNT ASSESSMENT**

CARRIER: **SPRINT**

SITE: **UNIONVILLE/POLICE DEPARTMENT (CT33XC534-B)**
319-321 NEW BRITAIN AVENUE
FARMINGTON, HARTFORD COUNTY, CONNECTICUT 06032
RAMAKER & ASSOCIATES PROJECT NUMBER: 23009

RESULTS: **MOUNT:** **PASS WITH REPLACEMENT**

Dear Tom Jupin:

Ramaker & Associates, Inc. (RAMAKER) respectfully submits this mount assessment for the above mentioned site. The purpose of this report is to determine the structural integrity of the mounting structure with the proposed loading configurations. Engineering recommendations regarding the analysis results are provided in the following pages.

RAMAKER developed a finite element model of the mount(s) using RISA analysis software. All information contained herein is valid only for the described structure configuration and loading conditions. RAMAKER reserves the right to modify our recommendations should alterations to the mount loading occur.

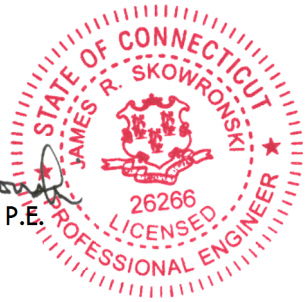
If you have any questions or comments, please do not hesitate to contact our office.

Sincerely,

RAMAKER & ASSOCIATES, INC.

Kali L. Phillips
Structural Designer

James R. Skowronski, P.E.
Supervising Engineer



ANALYSIS CRITERIA

State Building Code	2016 CT State Building Code
Adopted Building Code	2012 IBC
Referenced Standard	TIA-222-G
Risk Category	II
Ultimate Design Wind Speed, V_{ult}	125 mph (3 sec. gust)
Nominal Design Wind Speed, V_{asd}	97 mph (3 sec. gust)
Design Wind Speed w/ Ice	40 mph (3 sec. gust)
Ice Thickness	1 inch
Exposure Category	C
Topographic Category	1
Crest Height	N/A

SUPPORTING DOCUMENTATION

- Structural analysis by RAMAKER, job number 23009, dated January 17, 2013
- Construction drawings by RAMAKER, job number 23009, dated May 13, 2014
- Construction drawings by RAMAKER, project number 23009
- Site visit(s) conducted by RAMAKER
- Other pertinent data procured or assumed by RAMAKER during site due diligence activities

MOUNT LOADING

RAMAKER understands that the loading to be used for this analysis will consist of the antennas and equipment configurations as shown in the following chart(s):

Antenna Mount – Alpha Sector				
Elevation	**Position**	**Appurtenance**	**Mount Type**	**Status**
170	1	--	**Multi-Sector Platform w/ Handrail**	--
	2	(1) Andrew VHLP2-18		Existing
		(1) Argus LLPX310R		
		(1) Samsung RRH		
	3	(1) RFS APXVSPP18-C-A20		Existing
	4	**(1) Commscope DT465B-2XR**		**Proposed**
		(1) ALU TD-RRH8X20		
		(1) ALU 800MHz 2x50W RRH		

Antenna Mount – Beta Sector				
Elevation	**Position**	**Appurtenance**	**Mount Type**	**Status**
170	1	--	**Multi-Sector Platform w/ Handrail**	--
	2	(1) Andrew VHLP800-11		Existing
		(1) Argus LLPX310R		
		(1) Samsung RRH		
	3	(1) RFS APXVSPP18-C-A20		Existing
	4	**(1) Commscope DT465B-2XR**		**Proposed**
		(1) ALU TD-RRH8X20		
		(1) ALU 800MHz 2x50W RRH		

Antenna Mount – Gamma Sector				
Elevation	**Position**	**Appurtenance**	**Mount Type**	**Status**
170	1	--	**Multi-Sector Platform w/ Handrail**	--
	2	(1) RFS APXV9ERR18-C-A20		Existing
	3	(1) Argus LLPX310R		Existing
		(1) Samsung RRH		
	4	**(1) Commscope DT465B-2XR**		**Proposed**
		(1) ALU TD-RRH8X20		
		(1) ALU 800MHz 2x50W RRH		

Collar Mount		
Elevation	**Appurtenance**	**Status**
175	(3) ALU 800MHz 2x50W RRH	Existing
	(3) ALU 1900MHz 4x45W RRH	

MOUNT RESULTS

By engineering calculation and inspection, the ***proposed*** antenna and equipment mounting structure(s) are capable of supporting the proposed loading configurations without causing an overstress condition in the antenna and equipment mounting structure(s). ***The existing antenna and equipment mounting structure(s) shall be removed and replaced with the proposed antenna and equipment mounting structure(s) prior to antenna and equipment installation. See attached details for the proposed mounting structures.***

LIMITATIONS

The recommendations contained within this report were developed using the supporting documentation as previously described. All recommendations pertain only to the proposed antenna installation activities as described in this report. RAMAKER assumes no responsibility for failures caused by factors beyond our control. These include but are not limited to the following:

- Missing, corroding, and/or deteriorating members
- Improper manufacturing and/or construction
- Improper maintenance
- Member grades less than assumed grades show below:

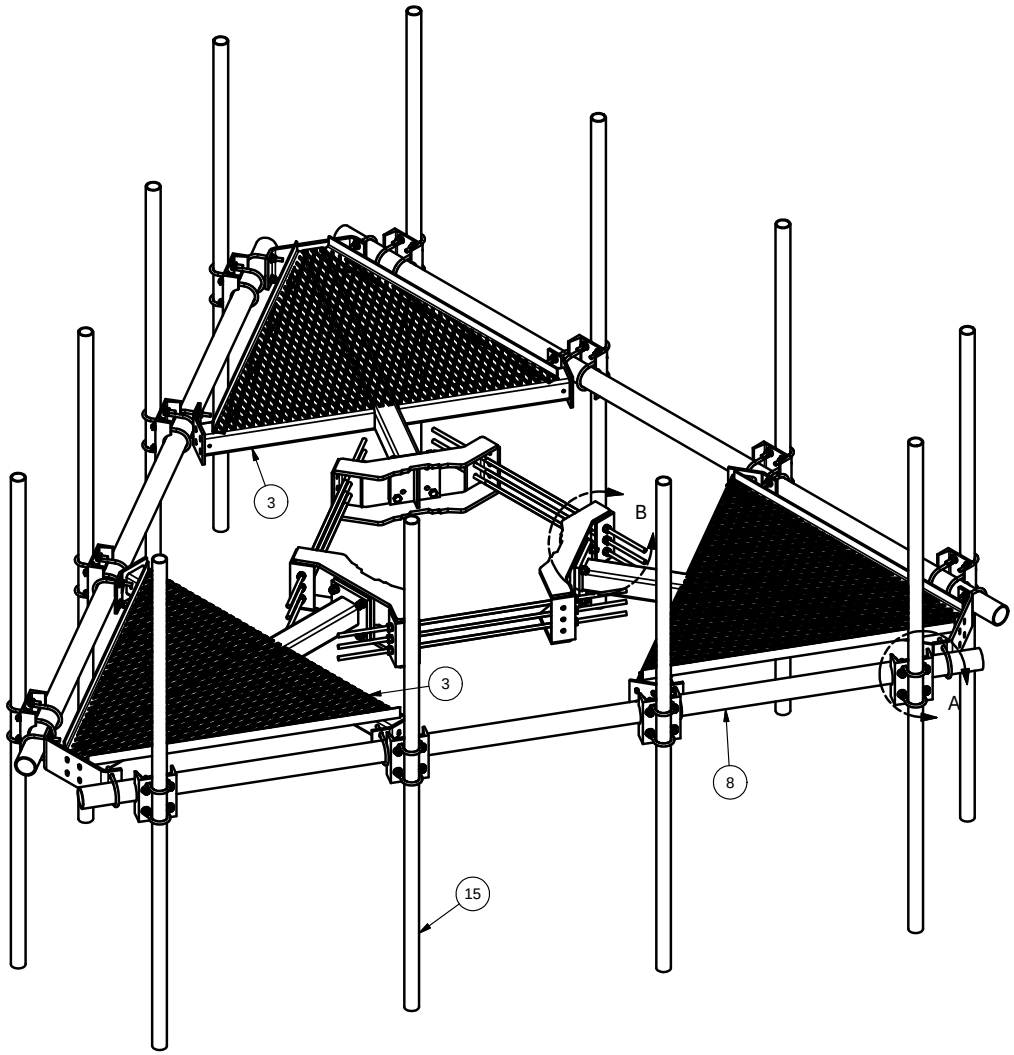
Assumed Steel Member Grades	
Angles/Plates	ASTM A36, 36 ksi
Pipes	ASTM A53 Gr. B, 35 ksi
HSS (Square Tube)	ASTM A36, 36 ksi

Charles Cherundolo Consulting, Inc. is responsible for verifying that the loading on the structure is consistent with the loading applied to the structure within this report. If there is any information contrary to that contained herein, or if there are any defects arising from the original design, material, fabrication and erection deficiencies, this report should be disregarded and RAMAKER should be contacted immediately. RAMAKER is not liable for any representation, recommendation, or conclusion not expressly stated herein.

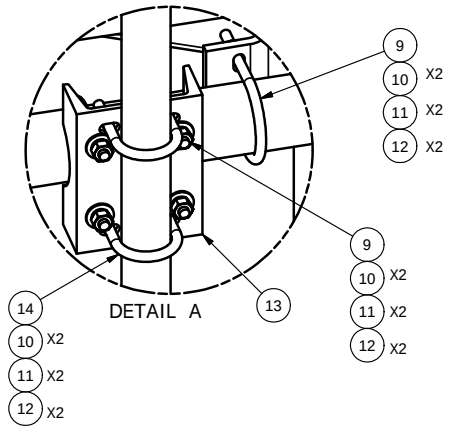
This analysis pertains only to the mounting structure, and no analyses or conclusions were made regarding the supporting structure. Analysis and certification of the supporting structure is performed and submitted separately.

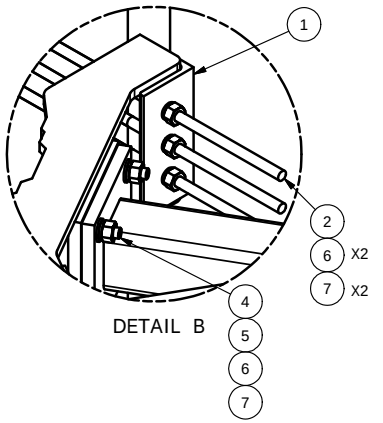
ATTACHMENTS

- Mount Details
- Analysis Figures
- Analysis Calculations



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.40	3.59
2	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.40	3.59
3	3	X-SV196	LOW PROFILE PLATFORM CORNER		212.10	636.31
4	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2.75	0.36	4.27
5	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
6	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
7	30	A58NUT	5/8" HDG A325 HEX NUT		0.13	3.90
8	3	P3150	3-1/2" X 150" SCH 40 GALVANIZED PIPE	150.000 in	94.80	284.40
9	36	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.26	9.25
10	120	G12FW	1/2" HDG USS FLATWASHER		0.03	4.09
11	120	G12LW	1/2" HDG LOCKWASHER		0.01	1.67
12	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
13	12	X-SP219	SMALL SUPPORT CROSS PLATE	8.250 in	8.61	103.33
14	24	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	6.17
15	12	B	ANTENNA MOUNTING PIPE	C	D	E





2-3/8" O.D. VERTICAL MOUNTING PIPES					
ASSEMBLY NO. "A"	PART NO. "B"	LENGTH, "C"	UNIT WEIGHT, "D"	NET WEIGHT, "E"	TOTAL WEIGHT
RMQP-463	P263	63"	20.18	242.16	1591.11
RMQP-472	P272	72"	23.07	276.84	1625.79
RMQP-484	P284	84"	26.91	322.92	1671.87
RMQP-496	P296	96"	30.76	369.12	1718.07
RMQP-4126	P2126	126"	40.75	489.00	1837.95

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	ADDED 10' 6" ANTENNA MOUNTING PIPES		CEK	7/9/2015

REVISION HISTORY

TOLERANCE NOTE

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (± 0.030")
DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE - ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

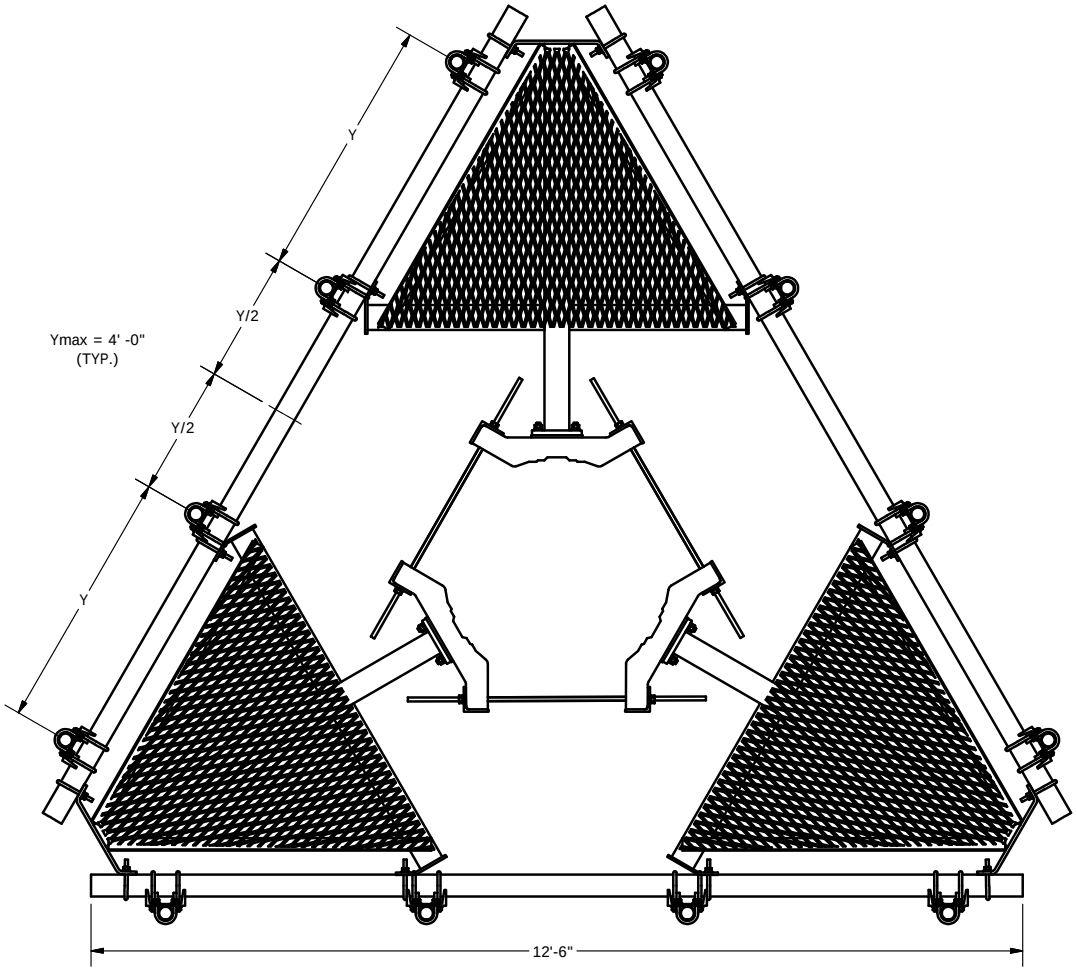
DESCRIPTION
LOW PROFILE CO-LOCATION PLATFORM
FOR 12 ANTENNAS WITH 12' 6" FACE WIDTH
FOR 12" - 38" DIAMETER POLES

SITE PRO 1
A valmont COMPANY

Engineering Support Team: 1-888-753-7446

Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

DRAWN BY	CPD NO.	DRAWING USAGE	PART NO.
CEK 1/20/2012	semb	CUSTOMER	SEE ASSEMBLY NO. "A"
ENG. APPROVAL	CHECKED BY		DWG. NO.
	BMC 7/9/2015		RMQP-4XX



TOLERANCE NOTE

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (± 0.030")
DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE - ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	ADDED 10' 6" ANTENNA MOUNTING PIPES		CEK	7/9/2015

REVISION HISTORY

DESCRIPTION
LOW PROFILE CO-LOCATION PLATFORM
FOR 12 ANTENNAS WITH 12' 6" FACE WIDTH
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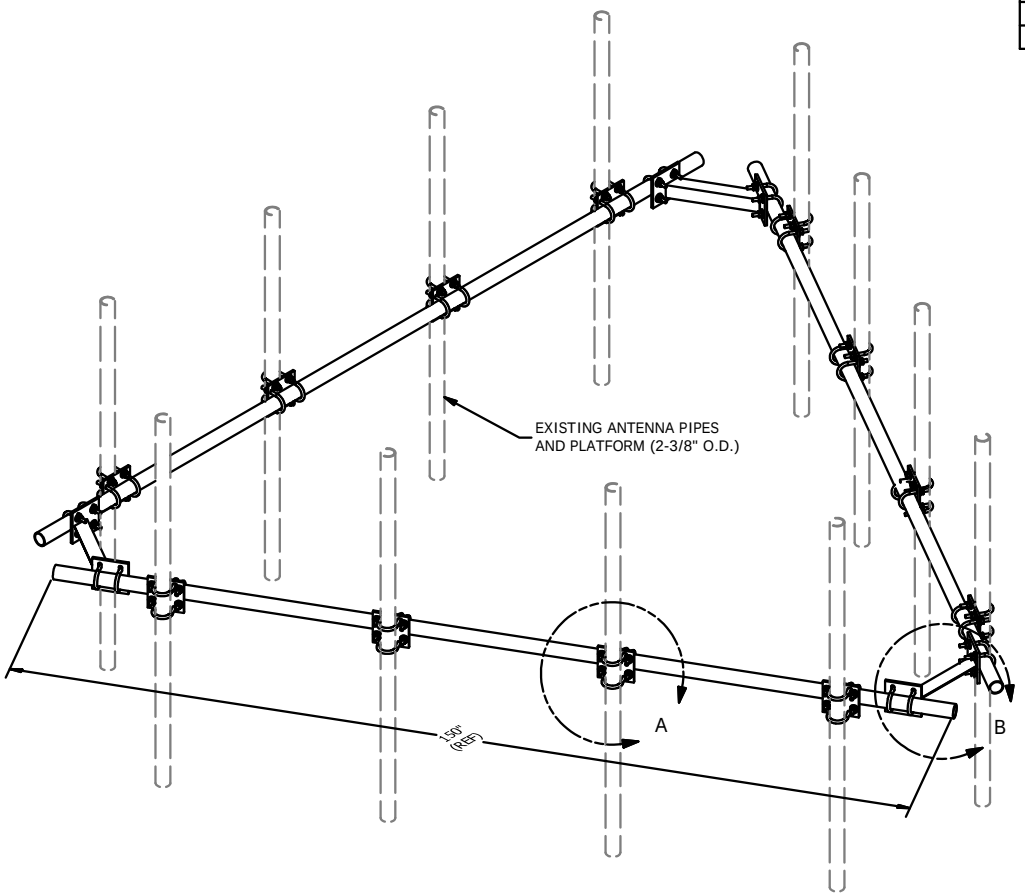
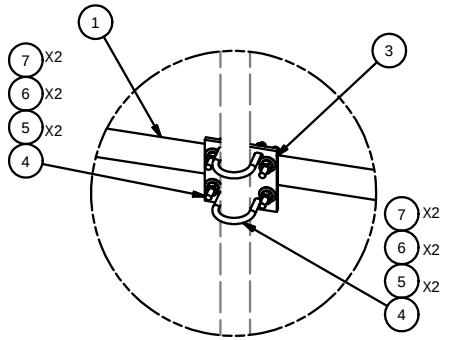
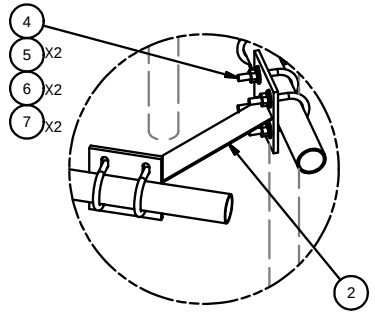
DRAWN BY	CPD NO.	DRAWING USAGE	PART NO.
CEK 1/20/2012	semb	CUSTOMER	SEE ASSEMBLY NO. "A"
ENG. APPROVAL	CHECKED BY	DWG. NO.	PAGE
	BMC 7/9/2015	RMQP-4XX	2 OF 2

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" OD X 150" SCH 40 GALVANIZED PIPE	150 in	48.06	144.17
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"		3.71	44.50
4	120	G12FW	1/2" HDG USS FLATWASHER		0.03	4.08
5	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.73	43.90
6	120	G12LW	1/2" HDG LOCKWASHER		0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.58
					TOTAL WT. #	261.72





DETAIL A



DETAIL B

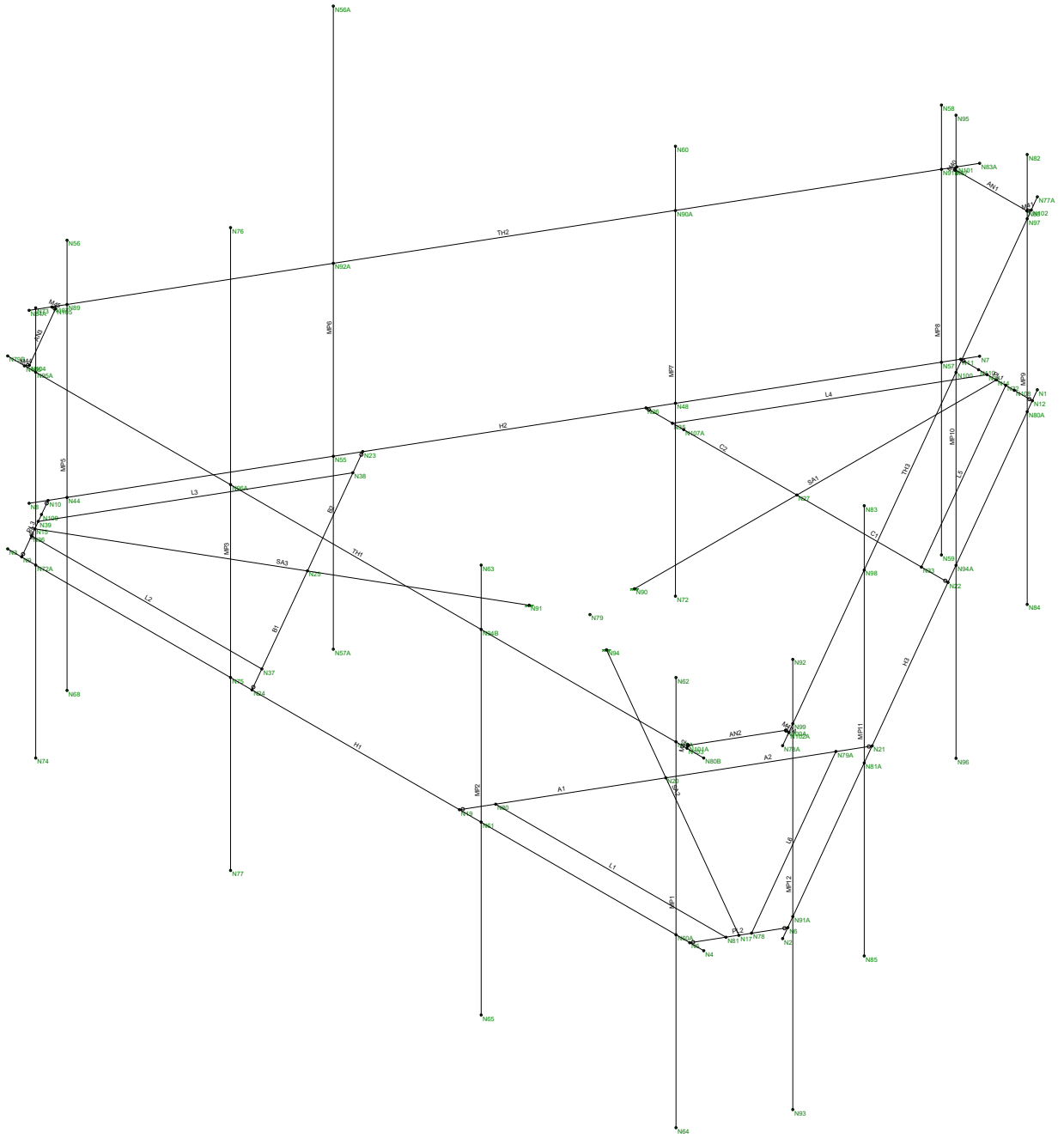
TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

REVISION HISTORY				
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP		CEK	7/10/2014

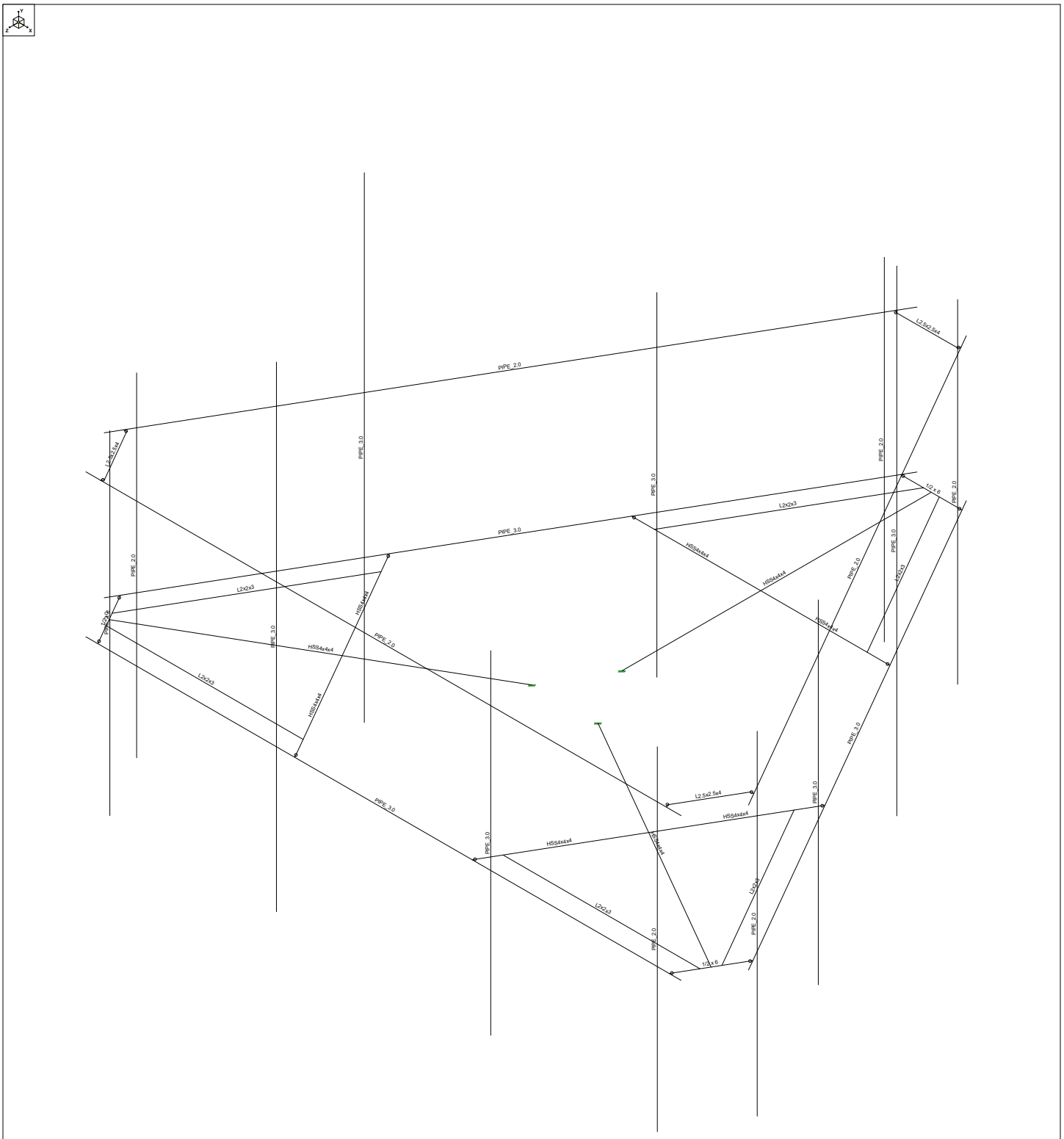
DESCRIPTION: HANDRAIL KIT FOR 12'-6" FACE			
CPD NO.	DRAWN BY: KC8 5/30/2012	ENG. APPROVAL	PART NO.: HRK12
CLASS: 81 / SUB: 01	DRAWING USAGE: CUSTOMER	CHECKED BY: BMC 7/14/2014	DWG. NO.: HRK12

SITE PRO 1 — A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX



Envelope Only Solution

Ramaker & Associates	Unionville / Police Dept. (CT33XC534-B)	SK - 1
KLP		Oct 18, 2017 at 3:06 PM
23009		23009 Platform Rev4.r3d



Envelope Only Solution

Ramaker & Associates	Unionville / Police Dept. (CT33XC534-B)	SK - 2
KLP		Oct 18, 2017 at 3:07 PM
23009		23009 Platform Rev4.r3d

RAMAKER & ASSOCIATES, INC.
855 Community Drive, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999

Job: Unionville Police Dept.
Project: 23009
By: KLP
Date: 10/17/17

Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	B		Exposure Category
V:	97	mph	Basic Wind Speed (Annex B)
z:	170	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_z:	1.15		Velocity Pressure Coefficient (2.6.5.2)
K_{zt}:	1.00		Topographic Factor (2.6.6.4)
K_d:	0.95		Wind Direction Probability Factor (Table 2-2)
q_z:	26.2	psf	Velocity Pressure at Height z
G_h:	1.00		Strength Design of Appurtenances and their Connections

Mount & Antenna Wind Loads

Appurtenance	Height	Width	h/D	Shape	C_a	A_f	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
LLPX310R	42.4	11.8	3.6	Flat	1.248	3.48	113.8	
APXVSPP18-C-A20	72.0	11.9	6.1	Flat	1.358	5.95	211.7	
APXV9ERR18-C-A20	72.0	11.9	6.1	Flat	1.358	5.95	211.7	
DT465B-2XR	71.9	13.8	5.2	Flat	1.320	6.89	238.6	
RRH	16.1	11.6	1.4	Flat	1.200	1.30	40.8	
TD-RRH8x20	26.1	18.6	1.4	Flat	1.200	3.37	106.1	
VHLP2-18	26.1	0.0	1.0	Generic	1.262	3.72	122.9	
VHLP800-11	35.0	0.0	1.0	Generic	1.262	6.68	221.0	
800MHz 2x50W RRH	19.0	13.0	1.5	Flat	1.200	1.72	54.0	
Pipe3STD x 12.5 ft	150.0	3.5	42.9	Round	1.200	3.65	114.7	9.2
Pipe3STD x 10 ft	120.0	3.5	34.3	Round	1.200	2.92	91.8	9.2
Pipe2STD x 7 ft	84.0	2.4	35.4	Round	1.200	1.39	43.6	6.2
L2X2X3/16 x 4.138 ft	49.7	2.0	24.8	Flat	1.994	0.69	36.1	8.7
HSS4X4X1/4 x 6.5 ft	78.0	4.0	19.5	Flat	1.817	2.17	103.2	15.9
HSS4X4X1/4 x 2.713 ft	32.6	4.0	8.1	Flat	1.438	0.90	34.1	12.6
PL 6x1/4 x 1.289 ft	15.5	6.0	2.6	Flat	1.203	0.64	20.3	15.8
Pipe3STD x 7 ft	84.0	3.5	24.0	Round	1.178	2.04	63.0	9.0
Pipe2STD x 12.5 ft	150.0	2.4	63.2	Round	1.200	2.47	77.8	6.2
L2-1/2X2-1/2X1/4 x 1.3 ft	15.6	2.5	6.2	Flat	1.366	0.27	9.7	7.5

RAMAKER & ASSOCIATES, INC.
855 Community Drive, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999

Job:	Unionville Police Dept.
Project:	23009
By:	KLP
Date:	10/17/17

Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	B		Exposure Category
V:	97	mph	Basic Wind Speed (Annex B)
z:	170	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_z:	1.15		Velocity Pressure Coefficient (2.6.5.2)
K_{zt}:	1.00		Topographic Factor (2.6.6.4)
K_d:	0.95		Wind Direction Probability Factor (Table 2-2)
q_z:	26.2	psf	Velocity Pressure at Height z
G_h:	1.00		Strength Design of Appurtenances and their Connections

Mount & Antenna Wind Loads

Appurtenance	Height	Depth	h/D	Shape	C_a	A_f	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
LLPX310R	42.4	4.5	9.4	Flat	1.479	1.33	51.7	
APXVSPP18-C-A20	72.0	7.0	10.3	Flat	1.509	3.50	138.7	
APXV9ERR18-C-A20	72.0	7.9	9.1	Flat	1.470	3.95	152.3	
DT465B-2XR	71.9	8.2	8.8	Flat	1.459	4.09	156.6	
RRH	16.1	5.3	3.0	Flat	1.224	0.59	19.0	
TD-RRH8x20	26.1	6.7	3.9	Flat	1.262	1.21	40.2	
VHLP2-18	26.1	0.0	1.0	Generic	0.625	3.72	60.9	
VHLP800-11	35.0	0.0	1.0	Generic	0.625	6.68	109.5	
800MHz 2x50W RRH	19.0	12.2	1.6	Flat	1.200	1.61	50.6	
Pipe3STD x 12.5 ft	150.0	3.5	42.9	Round	1.200	3.65	114.7	9.2
Pipe3STD x 10 ft	120.0	3.5	34.3	Round	1.200	2.92	91.8	9.2
Pipe2STD x 7 ft	84.0	2.4	35.4	Round	1.200	1.39	43.6	6.2
L2X2X3/16 x 4.138 ft	49.7	2.0	24.8	Flat	1.994	0.69	36.1	8.7
HSS4X4X1/4 x 6.5 ft	78.0	4.0	19.5	Flat	1.817	2.17	103.2	15.9
HSS4X4X1/4 x 2.713 ft	32.6	4.0	8.1	Flat	1.438	0.90	34.1	12.6
PL 6x1/4 x 1.289 ft	15.5	0.3	61.9	Flat	2.000	0.03	1.4	1.1
Pipe3STD x 7 ft	84.0	3.5	24.0	Round	1.178	2.04	63.0	9.0
Pipe2STD x 12.5 ft	150.0	2.4	63.2	Round	1.200	2.47	77.8	6.2
L2-1/2X2-1/2X1/4 x 1.3 ft	15.6	2.5	6.2	Flat	1.366	0.27	9.7	7.5

RAMAKER & ASSOCIATES, INC.
855 Community Drive, Sauk City, WI 53583
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Job: Unionville Police Dept.
Project: 23009
By: KLP
Date: 10/17/17

Ice Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	B		Exposure Category
V_i:	40	mph	Basic Wind Speed (Annex B)
z:	170	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_z:	1.15		Velocity Pressure Coefficient (2.6.5.2)
K_{zt}:	1.00		Topographic Factor (2.6.6.4)
K_d:	0.95		Wind Direction Probability Factor (Table 2-2)
q_z:	4.47	psf	Velocity Pressure at Height z
G_h:	1.00		Strength Design of Appurtenances and their Connections
K_{iz}:	1.18		Height Escalation Factor for Ice Thickness
t_{iz}:	2.36	in	Factored Thickness of Radial Glaze Ice at Height z

Mount & Antenna Ice Wind Loads

Appurtenance	Height	Width	h/D	Shape	C_a	A_f	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
LLPX310R	47.1	16.5	2.9	Flat	1.216	5.41	29.4	
APXVSPP18-C-A20	76.7	16.6	4.6	Flat	1.294	8.85	51.2	
APXV9ERR18-C-A20	76.7	16.6	4.6	Flat	1.294	8.85	51.2	
DT465B-2XR	76.6	18.5	4.1	Flat	1.273	9.85	56.1	
RRH	20.8	16.3	1.3	Flat	1.200	2.36	12.7	
TD-RRH8x20	30.8	23.3	1.3	Flat	1.200	4.99	26.8	
VHLP2-18	30.8	4.7	1.0	Generic	1.262	5.18	29.2	
VHLP800-11	39.7	4.7	1.0	Generic	1.262	8.60	48.6	
800MHz 2x50W RRH	23.7	17.7	1.3	Flat	1.200	2.92	15.7	
Pipe3STD x 12.5 ft	154.7	8.2	18.8	Round	1.063	8.82	42.0	3.3
Pipe3STD x 10 ft	124.7	8.2	15.2	Round	0.982	7.11	31.3	3.0
Pipe2STD x 7 ft	88.7	7.1	12.5	Round	0.923	4.37	18.0	2.4
L2X2X3/16 x 4.138 ft	54.4	6.7	8.1	Flat	1.437	2.53	16.3	3.6
HSS4X4X1/4 x 6.5 ft	82.7	8.7	9.5	Flat	1.483	5.00	33.2	4.8
HSS4X4X1/4 x 2.713 ft	37.3	8.7	4.3	Flat	1.279	2.25	12.9	4.2
PL 6x1/4 x 1.289 ft	20.2	10.7	1.9	Flat	1.200	1.50	8.1	4.8
Pipe3STD x 7 ft	88.7	8.2	10.8	Round	0.884	5.06	20.0	2.7
Pipe2STD x 12.5 ft	154.7	7.1	21.8	Round	1.130	7.61	38.5	3.0
L2-1/2X2-1/2X1/4 x 1.3 ft	20.3	7.2	2.8	Flat	1.214	1.02	5.5	3.3

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Ice Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	B		Exposure Category
V_i:	40	mph	Basic Wind Speed (Annex B)
z:	170	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_z:	1.15		Velocity Pressure Coefficient (2.6.5.2)
K_{zt}:	1.00		Topographic Factor (2.6.6.4)
K_d:	0.95		Wind Direction Probability Factor (Table 2-2)
q_z:	4.47	psf	Velocity Pressure at Height z
G_h:	1.00		Strength Design of Appurtenances and their Connections
K_{iz}:	1.18		Height Escalation Factor for Ice Thickness
t_{iz}:	2.36	in	Factored Thickness of Radial Glaze Ice at Height z

Mount & Antenna Ice Wind Loads

Appurtenance	Height	Depth	h/D	Shape	C_a	A_f	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
LLPX310R	47.1	9.2	5.1	Flat	1.316	3.02	17.8	
APXVSPP18-C-A20	76.7	11.7	6.5	Flat	1.380	6.24	38.6	
APXV9ERR18-C-A20	76.7	12.6	6.1	Flat	1.359	6.72	40.9	
DT465B-2XR	76.6	12.9	5.9	Flat	1.353	6.87	41.6	
RRH	20.8	10.0	2.1	Flat	1.200	1.45	7.8	
TD-RRH8x20	30.8	11.4	2.7	Flat	1.209	2.44	13.2	
VHLP2-18	30.8	4.7	1.0	Generic	0.625	5.18	14.5	
VHLP800-11	39.7	4.7	1.0	Generic	0.625	8.60	24.1	
800MHz 2x50W RRH	23.7	16.9	1.4	Flat	1.200	2.78	15.0	
Pipe3STD x 12.5 ft	154.7	8.2	18.8	Round	1.063	8.82	42.0	3.3
Pipe3STD x 10 ft	124.7	8.2	15.2	Round	0.982	7.11	31.3	3.0
Pipe2STD x 7 ft	88.7	7.1	12.5	Round	0.923	4.37	18.0	2.4
L2X2X3/16 x 4.138 ft	54.4	6.7	8.1	Flat	1.437	2.53	16.3	3.6
HSS4X4X1/4 x 6.5 ft	82.7	8.7	9.5	Flat	1.483	5.00	33.2	4.8
HSS4X4X1/4 x 2.713 ft	37.3	8.7	4.3	Flat	1.279	2.25	12.9	4.2
PL 6x1/4 x 1.289 ft	20.2	5.0	4.1	Flat	1.270	0.70	4.0	2.3
Pipe3STD x 7 ft	88.7	8.2	10.8	Round	0.884	5.06	20.0	2.7
Pipe2STD x 12.5 ft	154.7	7.1	21.8	Round	1.130	7.61	38.5	3.0
L2-1/2X2-1/2X1/4 x 1.3 ft	20.3	7.2	2.8	Flat	1.214	1.02	5.5	3.3

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Ice Load on Antennas TIA-222-G

Ice Weight:	56	pcf	Ice Density
t_i:	1.00		Design Ice Thickness
Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	B		Exposure Category
V_i:	40	mph	Basic Wind Speed (Annex B)
z:	170	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_{iz}:	1.18		Height Escalation Factor for Ice Thickness
K_{zt}:	1.00		Topographic Factor (2.6.6.4)
t_{iz}:	2.36	in	Factored Thickness of Radial Glaze Ice at Height z

Platform Grating:	Expanded	
Ice Load:	11.0	psf

Mount & Antenna Ice Wind Loads

Appurtenance	Height	Width	Depth	Diam.	Area	Perim.	Ice Weight	
	in	*in*	*in*	*in*	*sq in*	*in*	*lb*	*plf*
LLPX310R	47.1	16.5	9.2	12.65	111.08	42.10	152.6	
APXVSPP18-C-A20	76.7	16.6	11.7	13.80	119.60	47.22	279.1	
APXV9ERR18-C-A20	76.7	16.6	12.6	14.28	123.11	49.01	287.3	
DT465B-2XR	76.6	18.5	12.9	16.05	136.27	53.43	317.5	
RRH	20.8	16.3	10.0	12.75	111.85	43.23	58.4	
TD-RRH8x20	30.8	23.3	11.4	19.77	163.79	60.03	138.5	
VHLP2-18	-	-	-	-	-	-	154.2	
VHLP800-11	-	-	-	-	-	-	180.0	
800MHz 2x50W RRH	23.7	17.7	16.9	17.83	149.41	59.83	92.0	
Pipe3STD x 12.5 ft	154.7	8.2	8.2	3.50	43.35	18.40	210.7	16.9
Pipe3STD x 10 ft	124.7	8.2	8.2	3.50	43.35	18.40	168.6	16.9
Pipe2STD x 7 ft	88.7	7.1	7.1	2.38	35.02	14.86	95.3	13.6
L2X2X3/16 x 4.138 ft	54.4	6.7	6.7	2.83	38.38	17.43	61.8	14.9
HSS4X4X1/4 x 6.5 ft	82.7	8.7	8.7	5.19	55.87	31.69	141.2	21.7
HSS4X4X1/4 x 2.713 ft	37.3	8.7	8.7	5.19	55.87	31.69	58.9	21.7
PL 6x1/4 x 1.289 ft	20.2	10.7	5.0	6.01	61.90	21.93	31.0	24.1
Pipe3STD x 7 ft	88.7	8.2	8.2	3.50	43.35	18.40	118.0	16.9
Pipe2STD x 12.5 ft	154.7	7.1	7.1	2.38	35.02	14.86	170.2	13.6
L2-1/2X2-1/2X1/4 x 1.3 ft	20.3	7.2	7.2	3.54	43.61	19.43	22.0	17.0

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.4	58	1.3
6	A53 Gr. B	29000	11154	.3	.65	.49	35	1.5	60	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	HSS4x4x1/4	HSS4x4x4	Beam	SquareTube	A36 Gr.36	Typical	3.37	7.8	7.8	12.8
2	L2x2x3/16	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
3	L2.5x2.5x1/4	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
4	Pipe_3.0	PIPE_3.0	Beam	Pipe	A53 Gr. B	Typical	2.07	2.85	2.85	5.69
5	Pipe_2.0	PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
6	PL 6x1/2	1/2 x 6	Beam	Pipe	A36 Gr.36	Typical	3	9	.063	.237

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	H3	N1	N2			Pipe_3.0	Beam	Pipe	A53 Gr. B	Typical
2	H1	N3	N4			Pipe_3.0	Beam	Pipe	A53 Gr. B	Typical
3	PL2	N5	N6		90	PL 6x1/2	Beam	Pipe	A36 Gr.36	Typical
4	H2	N7	N8			Pipe_3.0	Beam	Pipe	A53 Gr. B	Typical
5	PL3	N9	N10		90	PL 6x1/2	Beam	Pipe	A36 Gr.36	Typical
6	PL1	N11	N12		90	PL 6x1/2	Beam	Pipe	A36 Gr.36	Typical
7	SA1	N90	N14			HSS4x4x1/4	Beam	SquareTube	A36 Gr.36	Typical
8	SA3	N15	N91			HSS4x4x1/4	Beam	SquareTube	A36 Gr.36	Typical
9	SA2	N17	N94			HSS4x4x1/4	Beam	SquareTube	A36 Gr.36	Typical
10	A1	N19	N20			HSS4x4x1/4	Beam	SquareTube	A36 Gr.36	Typical
11	A2	N20	N21			HSS4x4x1/4	Beam	SquareTube	A36 Gr.36	Typical
12	C1	N27	N22			HSS4x4x1/4	Beam	SquareTube	A36 Gr.36	Typical
13	B2	N25	N23			HSS4x4x1/4	Beam	SquareTube	A36 Gr.36	Typical
14	B1	N24	N25			HSS4x4x1/4	Beam	SquareTube	A36 Gr.36	Typical
15	C2	N26	N27			HSS4x4x1/4	Beam	SquareTube	A36 Gr.36	Typical
16	L5	N32	N33			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
17	L4	N34	N35		270	L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
18	L2	N36	N37		270	L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
19	L3	N38	N39		270	L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
20	MP5	N68	N56			Pipe_2.0	Beam	Pipe	A53 Gr. B	Typical
21	MP7	N72	N60			Pipe_3.0	Beam	Pipe	A53 Gr. B	Typical
22	L6	N78	N79A		270	L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
23	L1	N80	N81		270	L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
24	MP8	N59	N58			Pipe_2.0	Beam	Pipe	A53 Gr. B	Typical
25	MP6	N57A	N56A			Pipe_3.0	Beam	Pipe	A53 Gr. B	Typical
26	MP1	N62	N64			Pipe_2.0	Beam	Pipe	A53 Gr. B	Typical
27	MP2	N65	N63			Pipe_3.0	Beam	Pipe	A53 Gr. B	Typical
28	MP4	N74	N73			Pipe_2.0	Beam	Pipe	A53 Gr. B	Typical
29	MP3	N77	N76			Pipe_3.0	Beam	Pipe	A53 Gr. B	Typical
30	MP9	N84	N82			Pipe_2.0	Beam	Pipe	A53 Gr. B	Typical
31	MP11	N85	N83			Pipe_3.0	Beam	Pipe	A53 Gr. B	Typical
32	MP12	N93	N92			Pipe_2.0	Beam	Pipe	A53 Gr. B	Typical
33	MP10	N96	N95			Pipe_3.0	Beam	Pipe	A53 Gr. B	Typical
34	TH3	N77A	N78A			Pipe_2.0	Beam	Pipe	A53 Gr. B	Typical
35	TH1	N79B	N80B			Pipe_2.0	Beam	Pipe	A53 Gr. B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
36	TH2	N83A	N84A			Pipe_2.0	Beam	Pipe	A53 Gr. B	Typical
37	AN1	N87	N88		180	L2.5x2.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
38	M40	N87	N101			RIGID	None	None	RIGID	Typical
39	M41	N88	N102			RIGID	None	None	RIGID	Typical
40	AN2	N100A	N101A		180	L2.5x2.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
41	M41A	N100A	N102A			RIGID	None	None	RIGID	Typical
42	M42	N101A	N103			RIGID	None	None	RIGID	Typical
43	AN3	N104	N105		180	L2.5x2.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
44	M44	N104	N106			RIGID	None	None	RIGID	Typical
45	M45	N105	N107			RIGID	None	None	RIGID	Typical

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead Load	None		-1			29		3	
2	Antenna Wind 0	None					58			
3	Antenna Wind 30	None					58			
4	Antenna Wind 45	None					58			
5	Antenna Wind 60	None					58			
6	Antenna Wind 90	None					58			
7	Antenna Wind 120	None					58			
8	Antenna Wind 135	None					58			
9	Antenna Wind 150	None					58			
10	Antenna Wind 180	None					58			
11	Antenna Wind 210	None					58			
12	Antenna Wind 225	None					58			
13	Antenna Wind 240	None					58			
14	Antenna Wind 270	None					58			
15	Antenna Wind 300	None					58			
16	Antenna Wind 315	None					58			
17	Antenna Wind 330	None					58			
18	Antenna Ice Dead Load	None					29			
19	Antenna Wind w/Ice 0	None					58			
20	Antenna Wind w/Ice 30	None					58			
21	Antenna Wind w/Ice 45	None					58			
22	Antenna Wind w/Ice 60	None					58			
23	Antenna Wind w/Ice 90	None					58			
24	Antenna Wind w/Ice 1...	None					58			
25	Antenna Wind w/Ice 1...	None					58			
26	Antenna Wind w/Ice 1...	None					58			
27	Antenna Wind w/Ice 1...	None					58			
28	Antenna Wind w/Ice 2...	None					58			
29	Antenna Wind w/Ice 2...	None					58			
30	Antenna Wind w/Ice 2...	None					58			
31	Antenna Wind w/Ice 2...	None					58			
32	Antenna Wind w/Ice 3...	None					58			
33	Antenna Wind w/Ice 3...	None					58			
34	Antenna Wind w/Ice 3...	None					58			
35	Member Wind 0	None						78		
36	Member Wind 30	None						78		
37	Member Wind 45	None						78		
38	Member Wind 60	None						78		
39	Member Wind 90	None						78		
40	Member Wind 120	None						78		
41	Member Wind 135	None						78		
42	Member Wind 150	None						78		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
43	Member Wind 180	None						78		
44	Member Wind 210	None						78		
45	Member Wind 225	None						78		
46	Member Wind 240	None						78		
47	Member Wind 270	None						78		
48	Member Wind 300	None						78		
49	Member Wind 315	None						78		
50	Member Wind 330	None						78		
51	Member Ice Dead Load	None						39	3	
52	Member Wind w/Ice 0	None						78		
53	Member Wind w/Ice 30	None						78		
54	Member Wind w/Ice 45	None						78		
55	Member Wind w/Ice 60	None						78		
56	Member Wind w/Ice 90	None						78		
57	Member Wind w/Ice 1...	None						78		
58	Member Wind w/Ice 1...	None						78		
59	Member Wind w/Ice 1...	None						78		
60	Member Wind w/Ice 1...	None						78		
61	Member Wind w/Ice 2...	None						78		
62	Member Wind w/Ice 2...	None						78		
63	Member Wind w/Ice 2...	None						78		
64	Member Wind w/Ice 2...	None						78		
65	Member Wind w/Ice 3...	None						78		
66	Member Wind w/Ice 3...	None						78		
67	Member Wind w/Ice 3...	None						78		
68	Live Load - Area	None							3	
69	Live Load - Point 1	None					3			
70	Live Load - Point 2	None					1			
71	Live Load - Point 3	None					1			
72	Railing Dist. LL z	None						3		
73	Railing Dist. LL x	None						3		
74	Railing Point LL z	None					3			
75	Railing Point LL x	None					3			
76	BLC 1 Transient Area...	None						43		
77	BLC 51 Transient Are...	None						45		
78	BLC 68 Transient Are...	None						45		

Load Combinations

	Description	So..	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
1	1.4D	Yes	Y		1	1.4																		
2	0.9D + 1.6 (0-Wind)	Yes	Y		1	.9	2	1.6	35	1.6														
3	0.9D + 1.6 (30-Wind)	Yes	Y		1	.9	3	1.6	36	1.6														
4	0.9D + 1.6 (45-Wind)	Yes	Y		1	.9	4	1.6	37	1.6														
5	0.9D + 1.6 (60-Wind)	Yes	Y		1	.9	5	1.6	38	1.6														
6	0.9D + 1.6 (90-Wind)	Yes	Y		1	.9	6	1.6	39	1.6														
7	0.9D + 1.6 (120-Wind)	Yes	Y		1	.9	7	1.6	40	1.6														
8	0.9D + 1.6 (135-Wind)	Yes	Y		1	.9	8	1.6	41	1.6														
9	0.9D + 1.6 (150-Wind)	Yes	Y		1	.9	9	1.6	42	1.6														
10	0.9D + 1.6 (180-Wind)	Yes	Y		1	.9	10	1.6	43	1.6														
11	0.9D + 1.6 (210-Wind)	Yes	Y		1	.9	11	1.6	44	1.6														
12	0.9D + 1.6 (225-Wind)	Yes	Y		1	.9	12	1.6	45	1.6														
13	0.9D + 1.6 (240-Wind)	Yes	Y		1	.9	13	1.6	46	1.6														
14	0.9D + 1.6 (270-Wind)	Yes	Y		1	.9	14	1.6	47	1.6														
15	0.9D + 1.6 (300-Wind)	Yes	Y		1	.9	15	1.6	48	1.6														
16	0.9D + 1.6 (315-Wind)	Yes	Y		1	.9	16	1.6	49	1.6														

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
17	0.9D + 1.6 (330-Wind)	Yes	Y		1	.9	17	1.6	50	1.6														
18	1.2D + 1.6 (0-Wind)	Yes	Y		1	1.2	2	1.6	35	1.6														
19	1.2D + 1.6 (30-Wind)	Yes	Y		1	1.2	3	1.6	36	1.6														
20	1.2D + 1.6 (45-Wind)	Yes	Y		1	1.2	4	1.6	37	1.6														
21	1.2D + 1.6 (60-Wind)	Yes	Y		1	1.2	5	1.6	38	1.6														
22	1.2D + 1.6 (90-Wind)	Yes	Y		1	1.2	6	1.6	39	1.6														
23	1.2D + 1.6 (120-Wind)	Yes	Y		1	1.2	7	1.6	40	1.6														
24	1.2D + 1.6 (135-Wind)	Yes	Y		1	1.2	8	1.6	41	1.6														
25	1.2D + 1.6 (150-Wind)	Yes	Y		1	1.2	9	1.6	42	1.6														
26	1.2D + 1.6 (180-Wind)	Yes	Y		1	1.2	10	1.6	43	1.6														
27	1.2D + 1.6 (210-Wind)	Yes	Y		1	1.2	11	1.6	44	1.6														
28	1.2D + 1.6 (225-Wind)	Yes	Y		1	1.2	12	1.6	45	1.6														
29	1.2D + 1.6 (240-Wind)	Yes	Y		1	1.2	13	1.6	46	1.6														
30	1.2D + 1.6 (270-Wind)	Yes	Y		1	1.2	14	1.6	47	1.6														
31	1.2D + 1.6 (300-Wind)	Yes	Y		1	1.2	15	1.6	48	1.6														
32	1.2D + 1.6 (315-Wind)	Yes	Y		1	1.2	16	1.6	49	1.6														
33	1.2D + 1.6 (330-Wind)	Yes	Y		1	1.2	17	1.6	50	1.6														
34	1.2D + 1.0Di + 1.0 (0-Wi...	Yes	Y		1	1.2	18	1	51	1	19	1	52	1										
35	1.2D + 1.0Di + 1.0 (30-W...	Yes	Y		1	1.2	18	1	51	1	20	1	53	1										
36	1.2D + 1.0Di + 1.0 (45-W...	Yes	Y		1	1.2	18	1	51	1	21	1	54	1										
37	1.2D + 1.0Di + 1.0 (60-W...	Yes	Y		1	1.2	18	1	51	1	22	1	55	1										
38	1.2D + 1.0Di + 1.0 (90-W...	Yes	Y		1	1.2	18	1	51	1	23	1	56	1										
39	1.2D + 1.0Di + 1.0 (120-...	Yes	Y		1	1.2	18	1	51	1	24	1	57	1										
40	1.2D + 1.0Di + 1.0 (135-...	Yes	Y		1	1.2	18	1	51	1	25	1	58	1										
41	1.2D + 1.0Di + 1.0 (150-...	Yes	Y		1	1.2	18	1	51	1	26	1	59	1										
42	1.2D + 1.0Di + 1.0 (180-...	Yes	Y		1	1.2	18	1	51	1	27	1	60	1										
43	1.2D + 1.0Di + 1.0 (210-...	Yes	Y		1	1.2	18	1	51	1	28	1	61	1										
44	1.2D + 1.0Di + 1.0 (225-...	Yes	Y		1	1.2	18	1	51	1	29	1	62	1										
45	1.2D + 1.0Di + 1.0 (240-...	Yes	Y		1	1.2	18	1	51	1	30	1	63	1										
46	1.2D + 1.0Di + 1.0 (270-...	Yes	Y		1	1.2	18	1	51	1	31	1	64	1										
47	1.2D + 1.0Di + 1.0 (300-...	Yes	Y		1	1.2	18	1	51	1	32	1	65	1										
48	1.2D + 1.0Di + 1.0 (315-...	Yes	Y		1	1.2	18	1	51	1	33	1	66	1										
49	1.2D + 1.0Di + 1.0 (330-...	Yes	Y		1	1.2	18	1	51	1	34	1	67	1										
50	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	68	1.5	72	1.5														
51	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	68	1.5	73	1.5														
52	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	68	1.5	74	1.5														
53	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	68	1.5	75	1.5														
54	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	69	1.5	72	1.5														
55	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	69	1.5	73	1.5														
56	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	69	1.5	74	1.5														
57	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	69	1.5	75	1.5														
58	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	70	1.5	72	1.5														
59	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	70	1.5	73	1.5														
60	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	70	1.5	74	1.5														
61	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	70	1.5	75	1.5														
62	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	71	1.5	72	1.5														
63	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	71	1.5	73	1.5														
64	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	71	1.5	74	1.5														
65	1.0D + 1.5LL + 1.5 Railin...	Yes	Y		1	1	71	1.5	75	1.5														
66	Serviceability (0-Wind)	Yes	Y		1	1	2	.344	35	.344														
67	Serviceability (30-Wind)	Yes	Y		1	1	3	.344	36	.344														
68	Serviceability (45-Wind)	Yes	Y		1	1	4	.344	37	.344														
69	Serviceability (60-Wind)	Yes	Y		1	1	5	.344	38	.344														
70	Serviceability (90-Wind)	Yes	Y		1	1	6	.344	39	.344														
71	Serviceability (120-Wind)	Yes	Y		1	1	7	.344	40	.344														
72	Serviceability (135-Wind)	Yes	Y		1	1	8	.344	41	.344														
73	Serviceability (150-Wind)	Yes	Y		1	1	9	.344	42	.344														

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
74	Serviceability (180-Wind)	Yes	Y		1	1	10	.344	43	.344														
75	Serviceability (210-Wind)	Yes	Y		1	1	11	.344	44	.344														
76	Serviceability (225-Wind)	Yes	Y		1	1	12	.344	45	.344														
77	Serviceability (240-Wind)	Yes	Y		1	1	13	.344	46	.344														
78	Serviceability (270-Wind)	Yes	Y		1	1	14	.344	47	.344														
79	Serviceability (300-Wind)	Yes	Y		1	1	15	.344	48	.344														
80	Serviceability (315-Wind)	Yes	Y		1	1	16	.344	49	.344														
81	Serviceability (330-Wind)	Yes	Y		1	1	17	.344	50	.344														

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N94	max	2299.449	31	3529.095	39	1338.431	32	988.587	58	2252.798	27	7301.078	39
2		min	-2233.62	7	20.478	59	-1299.445	8	-3945.666	40	-2227.09	19	-1365.162	59
3	N90	max	1506.328	14	3817.109	34	2599.499	2	9149.631	34	2594.802	6	557.699	6
4		min	-1456.581	6	189.326	10	-2691.257	26	-764.671	10	-2698.48	14	-633.802	59
5	N91	max	2198.015	13	3663.131	45	1633.311	18	880.589	58	2242.184	17	610.779	5
6		min	-2272.83	21	172.896	5	-1633.209	10	-4383.789	44	-2278.539	9	-7612.621	45
7	Totals:	max	5684.079	30	10678.86	35	5537.715	2						
8		min	-5645.972	6	2304.399	11	-5575.281	26						

Envelope AISC 13th(360-05): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [...	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	H3	PIPE_3.0	.310	4.036	29	.321	4.297		30	28250.554	65205	5748.75	5748.75	2....	H3-6
2	H1	PIPE_3.0	.179	8.073	38	.189	8.203		36	28250.554	65205	5748.75	5748.75	1....	H1-1b
3	PL2	1/2 x 6	.248	.644	22	.250	0	y	58	53371.658	97200	12150	1012.5	1....	H1-1b
4	H2	PIPE_3.0	.226	3.906	59	.225	8.203		25	28250.554	65205	5748.75	5748.75	2....	H1-1b
5	PL3	1/2 x 6	.256	.644	19	.260	.819	y	24	53371.658	97200	12150	1012.5	1....	H1-1b
6	PL1	1/2 x 6	.255	.644	25	.351	.967	y	30	53371.658	97200	12150	1012.5	1....	H1-1b
7	SA1	HSS4x4x4	.729	0	47	.140	0	y	47	95077.277	109188	12663	12663	3	H1-1b
8	SA3	HSS4x4x4	.702	6.5	42	.129	6.5	y	47	95077.277	109188	12663	12663	3	H1-1b
9	SA2	HSS4x4x4	.664	6.5	37	.144	6.5	y	37	95077.277	109188	12663	12663	3	H1-1b
10	A1	HSS4x4x4	.350	2.713	41	.175	0	z	54	106586.9...	109188	12663	12663	1....	H1-1b
11	A2	HSS4x4x4	.338	0	38	.211	2.261	z	29	106586.9...	109188	12663	12663	1....	H1-1b
12	C1	HSS4x4x4	.385	0	36	.245	2.261	z	29	106586.9...	109188	12663	12663	1....	H1-1b
13	B2	HSS4x4x4	.373	0	47	.198	2.261	z	23	106586.9...	109188	12663	12663	1....	H1-1b
14	B1	HSS4x4x4	.340	2.713	43	.172	0	z	54	106586.9...	109188	12663	12663	1....	H1-1b
15	C2	HSS4x4x4	.362	2.713	48	.209	.452	z	23	106586.9...	109188	12663	12663	1....	H1-1b
16	L5	L2x2x3	.339	4.138	29	.021	4.138	y	45	9921.867	23392.8	557.717	1239.29	2....	H2-1
17	L4	L2x2x3	.356	4.138	16	.018	4.138	z	39	9921.867	23392.8	557.717	1239.29	2....	H2-1
18	L2	L2x2x3	.339	4.138	11	.021	4.138	z	50	9921.867	23392.8	557.717	1229.662	2....	H2-1
19	L3	L2x2x3	.300	4.138	30	.020	0	z	39	9921.867	23392.8	557.717	1235.207	2....	H2-1
20	MP5	PIPE_2.0	.370	3.063	49	.113	5.979		30	17855.085	32130	1871.625	1871.625	2....	H1-1b
21	MP7	PIPE_3.0	.293	3.063	42	.092	3.063		26	50160.801	65205	5748.75	5748.75	1....	H1-1b
22	L6	L2x2x3	.355	4.138	6	.018	4.138	z	51	9921.867	23392.8	557.717	1239.29	2....	H2-1
23	L1	L2x2x3	.293	0	50	.020	0	z	35	9921.867	23392.8	557.717	1239.29	2....	H2-1
24	MP8	PIPE_2.0	.401	3.063	30	.125	3.063		19	17855.085	32130	1871.625	1871.625	1....	H1-1b
25	MP6	PIPE_3.0	.304	3.021	38	.068	5.938		43	38176.7	65205	5748.75	5748.75	3	H1-1b
26	MP1	PIPE_2.0	.370	3.938	43	.117	1.021		22	17855.085	32130	1871.625	1871.625	1....	H1-1b
27	MP2	PIPE_3.0	.277	3.063	47	.070	3.063		30	50160.801	65205	5748.75	5748.75	2....	H1-1b
28	MP4	PIPE_2.0	.364	3.063	25	.121	3.063		31	17855.085	32130	1871.625	1871.625	1....	H1-1b
29	MP3	PIPE_3.0	.294	3.021	36	.067	5.938		46	38176.7	65205	5748.75	5748.75	3	H1-1b
30	MP9	PIPE_2.0	.349	3.063	38	.130	5.979		19	17855.085	32130	1871.625	1871.625	2....	H1-1b
31	MP11	PIPE_3.0	.286	3.063	47	.096	3.063		30	50160.801	65205	5748.75	5748.75	2....	H1-1b
32	MP12	PIPE_2.0	.348	3.063	34	.101	5.979		38	17855.085	32130	1871.625	1871.625	1....	H1-1b

Envelope AISC 13th(360-05): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [...	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn
33	MP10	PIPE_3.0	.325	3.021	29	.065	5.938		48	38176.7	65205	5748.75	5748.75	1....	H1-1b
34	TH3	PIPE_2.0	.352	8.594	34	.144	.521		19	6295.422	32130	1871.625	1871.625	2....	H1-1b
35	TH1	PIPE_2.0	.357	8.594	44	.101	8.594		38	6295.422	32130	1871.625	1871.625	2....	H1-1b
36	TH2	PIPE_2.0	.371	3.906	45	.122	11.979		30	6295.422	32130	1871.625	1871.625	2....	H1-1b
37	AN1	L2.5x2.5x4	.118	0	22	.351	0	y	14	36522.304	38556	1113.554	2537.388	2....	H2-1
38	AN2	L2.5x2.5x4	.098	1.289	28	.284	0	y	58	36522.304	38556	1113.554	2537.388	2....	H2-1
39	AN3	L2.5x2.5x4	.103	1.289	58	.312	1.289	y	58	36522.304	38556	1113.554	2537.388	2....	H2-1

Sprint®

PROJECT: DO MACRO UPGRADE

SITE NAME: UNIONVILLE/POLICE DEPT.

SITE CASCADE: CT33XC534-B

SITE ADDRESS: 319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032

SITE TYPE: 190'-0" MONOPOLE

Sprint®
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

RAMAKER & ASSOCIATES, INC.
855 Community Drive, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
www.Ramaker.com

Charles Cherundolo Consulting, Inc.
713 Clover Lane, Moscow, PA 18444
Phone: 570-840-5084 Fax: 570-842-5592

SITE INFORMATION

PROPERTY OWNER:
TOWN OF FARMINGTON
1 MONTEITH DRIVE
FARMINGTON, CT 06032
PH.:860-675-2325

SITE ADDRESS:
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

GEOGRAPHIC COORDINATES:
LATITUDE: 41° 44' 58.9986" N (41.749722)
LONGITUDE: 72° 52' 21" W (-72.8725)

ZONING JURISDICTION:
TOWN OF FARMINGTON

ZONING DISTRICT:
COMMERCIAL/RESIDENTIAL

POWER COMPANY:
CONN. LIGHT & POWER
PH.: (800) 286-2000

AAV PROVIDER:
AT&T
PH.: (210) 821-4105

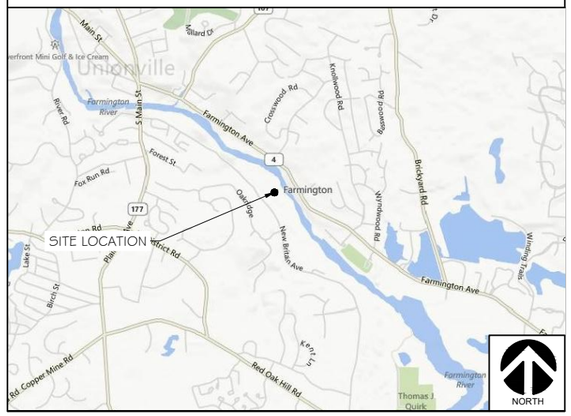
SPRINT CONSTRUCTION MANAGER:
NAME: MIKE DELIA
PHONE: (781) 316-6348
E-MAIL: michael.delia@sprint.com

EQUIPMENT SUPPLIER:
ALCATEL-LUCENT
600-700 MOUNTAIN AVENUE
MURRAY HILL, NJ 07974
PH.: (908) 508-8080

SITE ACQUISITION:
CHARLES CHERUNDOLO CONSULTING, INC.
1280 RT. 46 WEST
PARSIPPANY, NJ 07054
CONTACT: TOM JUPIN, PMP, PROJECT MANAGER
CELL: (973) 819-9033
EMAIL: tom.jupin@cherundoloconsulting.com

PLANS PREPARED BY:
RAMAKER & ASSOCIATES, INC.
CONTACT: KEITH BOHNSACK, PROJECT MANAGER
PH.: (608) 643-4100
EMAIL: kbohnsack@ramaker.com

AREA MAP



LOCATION MAP

PROJECT DESCRIPTION

- INSTALL NEW EQUIPMENT IN EXISTING BTS CABINET
  *(1) RECTIFIER SHELF AND (3) RECTIFIERS
  *(1) BASE BAND UNIT
- INSTALL NEW BATTERY STRING IN EXISTING BATTERY CABINET
- INSTALL (3) PANEL ANTENNAS
- INSTALL (6) RRH'S ON TOWER
- INSTALL (1) HYBRIFLEX CABLE

APPLICABLE CODES

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

1. INTERNATIONAL BUILDING CODE
2. ANSI/TIA-222 STRUCTURAL STANDARD FOR ANTENNA STRUCTURES
3. NFPA 780 - LIGHTNING PROTECTION CODE
4. NATIONAL ELECTRIC CODE

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SHEET INDEX

SHT NO:	SHEET TITLE:	REV:	ENGINEER:
T-1	TITLE SHEET	-	JRS
SP-1	SPRINT SPECIFICATIONS	-	JRS
SP-2	SPRINT SPECIFICATIONS	-	JRS
SP-3	SPRINT SPECIFICATIONS	-	JRS
A-1	SITE PLAN	-	JRS
A-2	EQUIPMENT PLAN	-	JRS
A-3	BUILDING ELEVATION & ANTENNA DETAILS	-	JRS
A-4	RF DATA SHEET	-	JRS
A-5	FIBER PLUMBING DIAGRAM	-	JRS
A-6	CABLE COLOR CODING	-	JRS
A-7	ANTENNA & RRH DETAILS	-	JRS
A-8	EQUIPMENT DETAILS	-	JRS
S-1	STRUCTURAL NOTES	-	JRS
S-2	STRUCTURAL DETAILS	-	JRS
S-3	STRUCTURAL DETAILS	-	JRS
S-4	STRUCTURAL DETAILS	-	JRS
S-5	STRUCTURAL DETAILS	-	JRS
S-6	STRUCTURAL DETAILS	-	JRS
E-1	EQUIPMENT UTILITY & GROUNDING PLAN	-	JRS
E-2	GROUNDING DETAILS	-	JRS
E-3	DC POWER DETAILS & PANEL SCHEDULES	-	JRS

Certification & Seal:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: Date: 10/26/2017

MARK	DATE	DESCRIPTION
1	10/26/17	REVISED RF AND STRUCTURAL DETAILS

ISSUE PHASE: FINAL DATE ISSUED: 08/10/2017

PROJECT TITLE:
UNIONVILLE / POLICE DEPARTMENT
CT33XC534-B

PROJECT INFORMATION:
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

SHEET TITLE:
TITLE SHEET

SCALE: NONE

PROJECT NUMBER: 23009
SHEET NUMBER: T-1

DRAWN BY: TJN CHECKED BY: KAB

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SECTION 01 100 - SCOPE OF WORK

THE WORK:
THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE CONSTRUCTION DRAWINGS AND ASSOCIATED OUTLINE SPECIFICATIONS AND THE 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 SECTIONS, 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-0200 - (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

PRECEDENCE:
SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.

NATIONALLY RECOGNIZED CODES AND STANDARDS:
THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
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 - "NEC") 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 (NCMA)
M. BRICK INDUSTRY ASSOCIATION (BIA)
N. AMERICAN WELDING SOCIETY (AWS)
O. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
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 THE INTERNATIONAL BUILDING CODE.

DEFINITIONS:
A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
B. COMPANY: "SPRINT"; SPRINT NEXTEL CORPORATION AND IT'S OPERATING ENTITIES.
C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
D. CONTRACTOR: CONSTRUCTION CONTRACTOR, SUPPLIER, CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, 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 FLOW 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. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.

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. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.

DRAWINGS REQUIRED AT JOBSITE:
THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
A. THE JOBSITE DRAWINGS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.
B. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.

USE OF JOB SITE:
THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND 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 OR 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 PROJECT MANAGEMENT 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 CONTRACTOR'S STAFF AND OFFICES THAT ARE COMPATIBLE WITH SPRINT DATA AND DOCUMENT MANAGEMENT SYSTEMS

TEMPORARY UTILITIES AND FACILITIES:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY 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 THE CONTRACT DOCUMENTS.

ACCESS TO WORK:
THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.

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

EXISTING CONDITIONS:
NOTIFY THE SPRINT CONSTRUCTION MANAGER 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 RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.

RECEIPT OF MATERIAL AND EQUIPMENT:
A. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:
   1. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
   2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
   3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
B. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR 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 AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.
B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH 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.

GENERAL REQUIREMENTS FOR CONSTRUCTION:
A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
   1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION 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 TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.
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 SUCCESSFULLY 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 AND PADS AND 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.
   16. INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS 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 ANY 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 ACTIVITIES PER APPLICABLE MOPS.

DELIVERABLES:
A. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED TEST REPORTS AND DOCUMENTATION INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
   1. PRODUCT SPECIFICATIONS FOR MATERIALS OR SPECIAL CONSTRUCTION IF REQUESTED BY SPRINT
   2. ACTUALIZE ALL CONSTRUCTION RELATED MILESTONES IN SITERRA AND COMPLETE ALL ON-LINE FORMS 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 AND 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 AND/OR UPLOADED INTO SMS.
   1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
   2. PROJECT PROGRESS REPORTS.
   3. PRE-CONSTRUCTION MEETING NOTES.

SECTION 01 400 - 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 THE FOLLOWING TO SITERRA AS APPLICABLE INCLUDING 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 THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR 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 BY THIRD PARTY AGENCY:
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 A 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 USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.
B. REQUIRED THIRD PARTY TESTS:
   1. SITE RESISTANCE TO EARTH TEST PER NP-312-201
   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. TESTING TENSION STUDY FOR ROCK ANCHORS
   6. ALL THIRD PARTY TESTS AS REQUIRED BY LOCAL JURISDICTION
C. REQUIRED TESTS 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.

Sprint
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

RAMAKER & ASSOCIATES, INC.
855 Community Drive, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
www.Ramaker.com

Charles Cherundolo Consulting, Inc.
713 Clover Lane, Moscow, PA 18444
Phone: 570-840-5084 Fax: 570-842-5592

Certification & Seal:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: James R. Skowronski Date: 10/26/2017

MARK	DATE	DESCRIPTION
1	10/26/17	REVISED RF AND STRUCTURAL DETAILS

ISSUE PHASE: FINAL DATE ISSUED: 08/10/2017

PROJECT TITLE:
UNIONVILLE / POLICE DEPARTMENT
CT33XC534-B

PROJECT INFORMATION:
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

SHEET TITLE:
SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 23009
SHEET NUMBER: SP-1

DRAWN BY: TJN CHECKED BY: KAB

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5. POST CONSTRUCTION HEIGHT VERIFICATION AS REQUIRED HEREWITH 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 THE COMMENCEMENT OF THE FOLLOWING CONSTRUCTION ACTIVITIES AND PHOTOGRAPHS OF THE IN-PROGRESS WORK.

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 COAXCABLE 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 WORK. THE FOLLOWING LIST REPRESENTS MINIMUM REQUIREMENTS AND MINIMUM 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 11 700 - ANTENNA ASSEMBLY, REMOTE RADIO UNITS AND CABLE INSTALLATION

SUMMARY:

THIS SECTION SPECIFIES INSTALLATION OF ANTENNAS, RRU'S, AND CABLE EQUIPMENT, INSTALLATION, AND TESTING OF COAXIAL FIBER CABLE.

ANTENNAS AND RRU'S:

THE NUMBER AND TYPE OF ANTENNAS AND RRU'S TO BE INSTALLED IS DETAILED ON THE CONSTRUCTION DRAWINGS.

HYBRID CABLE:

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

JUMPERS AND CONNECTORS:

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

REMOTE ELECTRICAL TILT (RET) CABLES:

MISCELLANEOUS:

INSTALL SPLITTERS, COMBINERS, FILTERS PER RF DATA SHEET, 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 SPECIFICATIONS FOR BENDING RADII.

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 AND DC CABLES ABOVE BREAKOUT ENCLOSURE (MEDUSA), WITHIN THE MMBS CABINET AND ANY INTERMEDIATE DISTRIBUTION BOXES:
    a. FIBER: SUPPORT FIBER BUNDLES USING 1/2" VELCRO STRAPS OF THE REQUIRED LENGTH AT 18" O.C. STRAPS SHALL BE UV, OIL AND WATER RESISTANT AND SUITABLE FOR INDUSTRIAL INSTALLATIONS AS MANUFACTURED BY TEXTOL OR APPROVED EQUAL.
    b. DC: SUPPORT DC BUNDLES WITH ZIP TIES OF THE ADEQUATE LENGTH. ZIP TIES TO BE UV STABILIZED, BLACK NYLON, WITH TENSILE STRENGTH AT 12,000 PSI AS MANUFACTURED BY NELCO PRODUCTS OR EQUAL.
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 - EN 2012-001, 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 OF 2" ELECTRICAL 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 ELECTRICAL TAPE EXTENDING 2" BEYOND THE SELF-AMALGAMATING TAPE.
3. 3M SLIM LOCK CLOSURE 716: SUBSTITUTIONS WILL NOT BE ALLOWED.
4. OPEN FLAME ON JOB SITE IS NOT ACCEPTABLE

SECTION 11 800 - INSTALLATION OF MULTIMODAL BASE STATIONS (MMBS) AND RELATED EQUIPMENT

SUMMARY:

A. THIS SECTION SPECIFIES MMBS CABINETS, POWER CABINETS, AND INTERNAL EQUIPMENT INCLUDING BY NOT LIMITED TO RECTIFIERS, POWER DISTRIBUTION UNITS, BASE BAND UNITS, SURGE ARRESTORS, BATTERIES, AND SIMILAR EQUIPMENT FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CONTRACTOR (OFCI).

B. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS MATERIALS AND PROVIDE ALL LABOR REQUIRED FOR INSTALLATION EQUIPMENT IN EXISTING CABINET OR NEW CABINET AS SHOWN ON DRAWINGS AND AS 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 OF 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 OR SOLID MASONRY.
6. MACHINE SCREWS, WELDED THREADED STUDS, OR SPRING-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.

Sprint
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RAMAKER & ASSOCIATES, INC.
855 Community Drive, Sauk City, WI 53583
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www.Ramaker.com

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Certification & Seal:

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

STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: Date: 10/26/2017

MARK	DATE	DESCRIPTION
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ISSUE PHASE: FINAL DATE ISSUED: 08/10/2017

PROJECT TITLE:
UNIONVILLE / POLICE DEPARTMENT
CT33XC534-B

PROJECT INFORMATION:
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

SHEET TITLE:
SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 23009
SHEET NUMBER: SP-2

DRAWN BY: TJN CHECKED BY: KAB

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 AS SUCH 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 UNDERWRITERS' 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 CONDUIT MAY BE 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 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 (21MM).

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, WEATHERPROOF, DUST PROOF, WITH GASKET, PLATED IRON ALLOY COVER AND STAINLESS STEEL COVER SCREWS, CROUSE-HINDS WAB SERIES 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, RACO, 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, SIZES AS INDICATED ON THE DRAWINGS. PROVIDE STRANDED OR SOLID BARE OR INSULATED CONDUCTORS EXCEPT AS OTHERWISE NOTED.

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 ROD KITS.

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 INSIDE.

B. CONDUCTORS SHALL BE PULLED IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE.

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855 Community Drive, Sauk City, WI 53583
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www.Ramaker.com

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Certification & Seal:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: Date: 10/26/2017

MARK	DATE	DESCRIPTION
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ISSUE PHASE: FINAL
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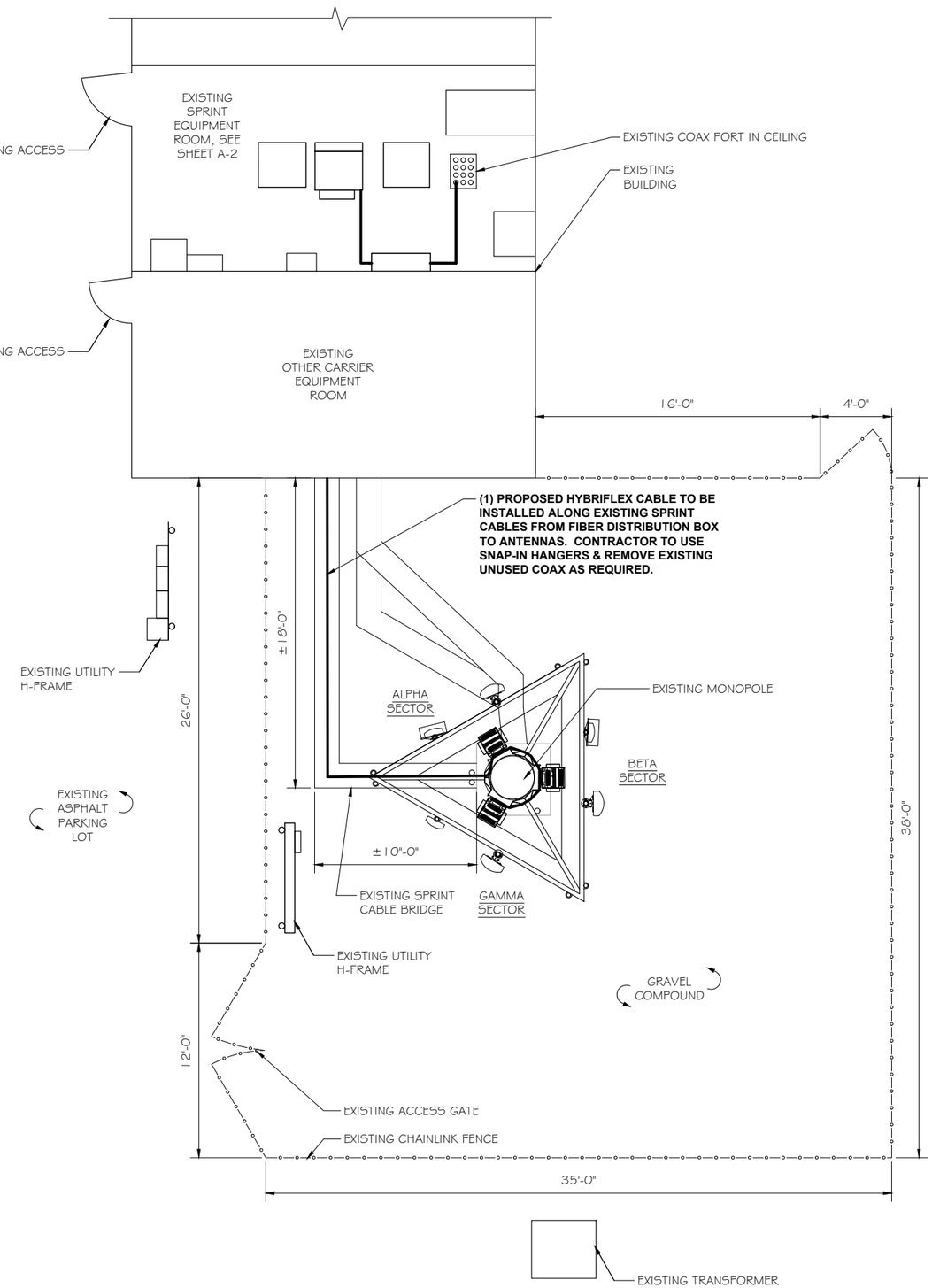
UNIONVILLE / POLICE DEPARTMENT
CT33XC534-B

PROJECT INFORMATION:
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

SHEET TITLE:
SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 23009
SHEET NUMBER: SP-3



SITE PLAN
SCALE: 1" = 7.5'

NORTH

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STATE OF CONNECTICUT
JAMES R. SKOWRONSKI
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LICENSED PROFESSIONAL ENGINEER

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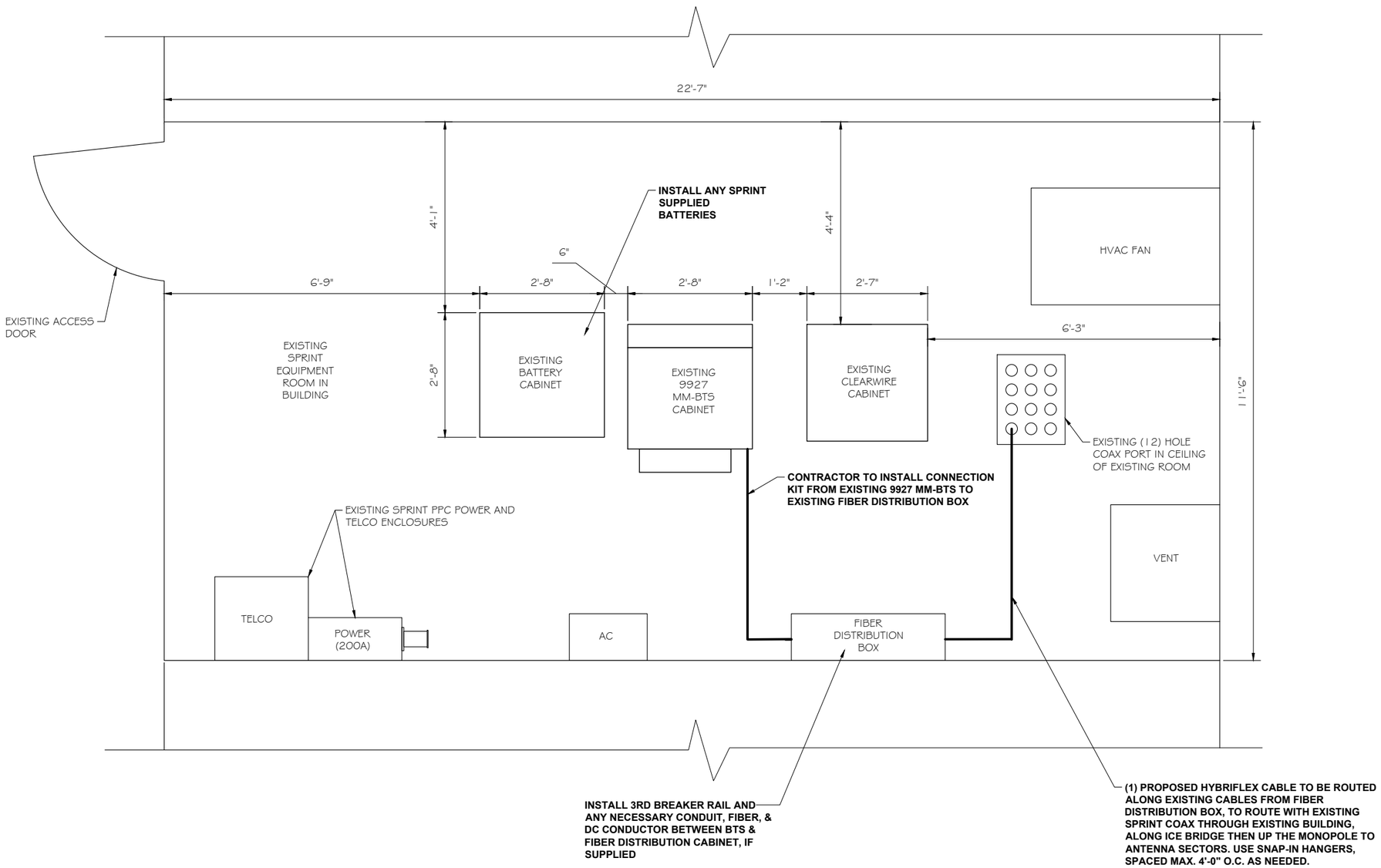
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

SHEET TITLE:
SITE PLAN

0 3.75' 7.5' 15'
11" x 17" - 1" = 7.5'
22" x 34" - 1" = 3.75'

PROJECT NUMBER: 23009
SHEET NUMBER: A-1



EQUIPMENT PLAN
SCALE: 1" = 2.5'
1

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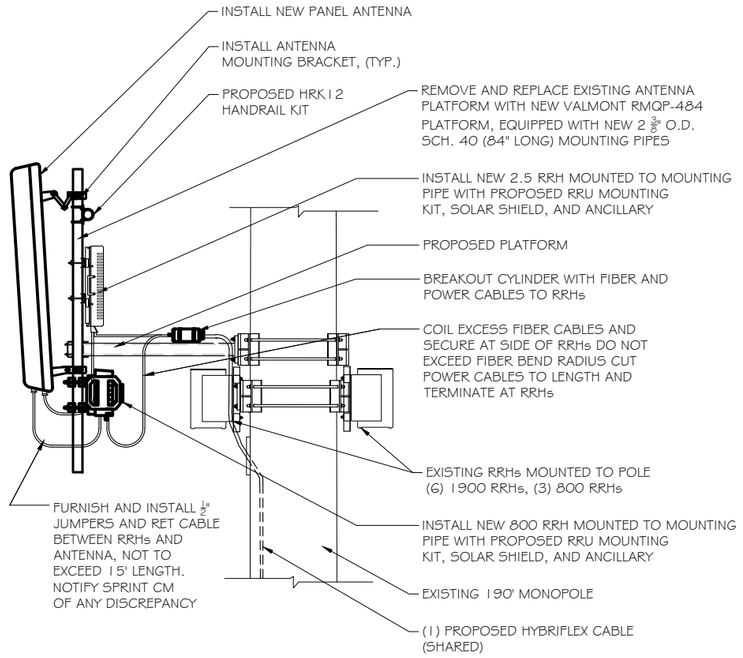
HARTFORD COUNTY

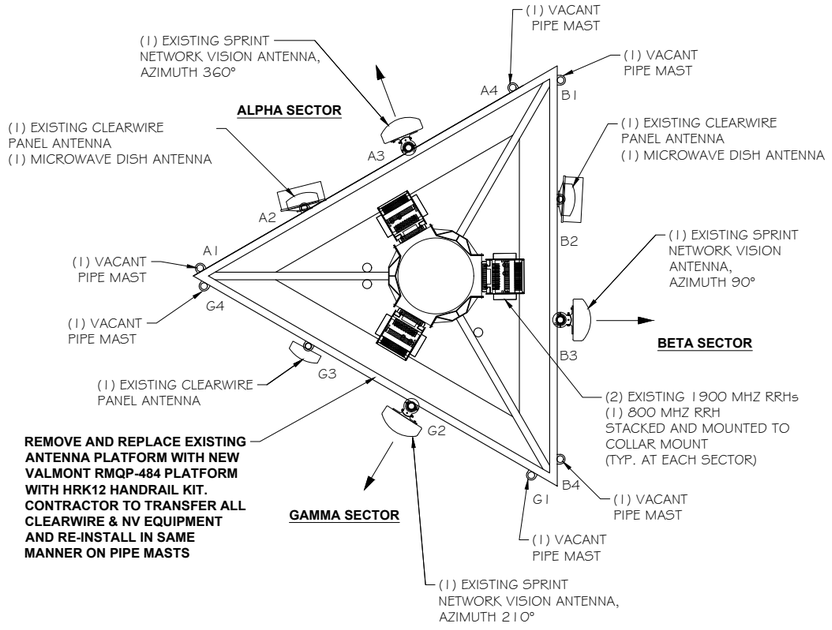
SHEET TITLE:
EQUIPMENT PLAN

0 1.25' 2.5' 5'
11" x 17" - 1" = 2.5'
22" x 34" - 1" = 1.25'

PROJECT NUMBER: 23009
SHEET NUMBER: A-2

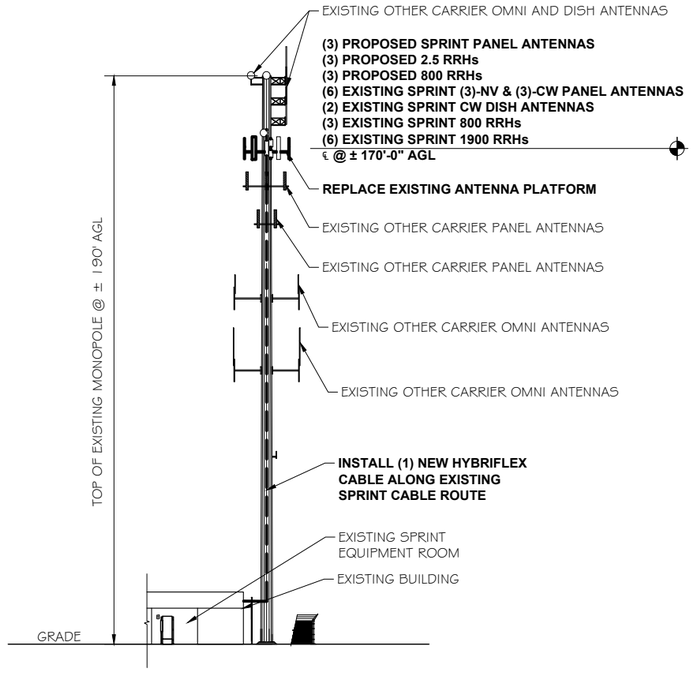


ANTENNA & RRH MOUNTING DETAILS — 1
SCALE: NTS

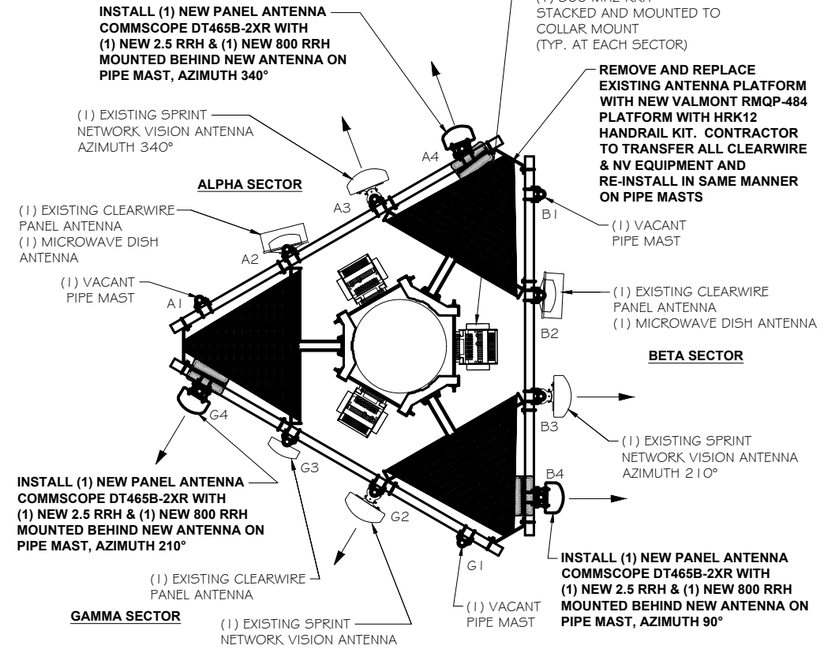


NORTH

EXISTING ANTENNA ARRAY — 3
SCALE: NTS



BUILDING ELEVATION — 2
SCALE: 1" = 40'



NORTH

PROPOSED ANTENNA ARRAY — 4
SCALE: NTS

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STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: Date: 10/26/2017

MARK	DATE	DESCRIPTION
1	10/26/17	REVISED RF AND STRUCTURAL DETAILS

ISSUE PHASE: FINAL — DATE ISSUED: 08/10/2017

PROJECT TITLE:
UNIONVILLE / POLICE DEPARTMENT
CT33XC534-B

PROJECT INFORMATION:
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

SHEET TITLE:
BUILDING ELEVATIONS & ANTENNA DETAILS

0 20' 40' 80'
11" x 17" - 1" = 40'
22" x 34" - 1" = 20'

PROJECT NUMBER: 23009
SHEET NUMBER: A-3

RFDS Sheet

General Site Information

Site ID	CT33XC534
Market	Northern Connecticut
Region	Northeast
MLA	N/A
Structure Type	Monopole
BTS Type	

Equipment Vendor	Alcatel-Lucent
Lattitude	41.749722
Longitude	-72.8725
LL SITE ID	N/A

Solution ID	

Siterra SR Equipment type	
Equipment Vendor	Alcatel-Lucent

Incremental Power Draw needed by added Equipment: N/A

Base Equipment

BBU Kit	ALU BBU Kit
BBU Kit Qty	1

Top Hat	None
Top Hat Qty	N/A
Top Hat Dimenstions	N/A
Top Hat Weight (lbs)	N/A

Growth Cabinet	None
Growth Cabinet Qty	N/A
Growth Cabinet Dimensions	N/A
Growth Cabinet Weight	N/A

RF Path Information

RRH	TD-RRH8x20-25 & RRH-2X50-800	
RRH Qty	(3-EACH, 6-TOTAL)	
RRH Dimensions	SEE SHEET A-7	
RRH Weight. lbs.	SEE SHEET A-7	
RRH Mount Weight. Lbs.	SEE SHEET A-7	
Power and Fiber Cable	ALU HYBRIFLEX	
Cable Qty	1	
Weight per foot. Lbs.	1	
Diameter. Inches.	1.54	
Length Ft.	225	(calculated as antenna height plus 20%)
Coax Jumper	2.5 JUMPER	
Coax Jumper Qty	27	
Coax Jumper Length. Feet.	8	
Coax Jumper Weight	1.7	
Coax Jumper Diameter. Inches	0.5	
AISG Cable	COMMSCOPE ATCB-B01-006	
AISG Cable Qty	3	
AISG Diameter. Inches.	0.315	
AISG Cable length.	8'	
Weight of entire AISG cable. Lbs.	1.3	

Antenna Sector Information

	Sector 1	Sector 2	Sector 3
Antenna make/model	COMMSCOPE DT465B-2XR	COMMSCOPE DT465B-2XR	COMMSCOPE DT465B-2XR
Antenna qty	1	1	1
Antenna Dimensions. Inches	26"x18.6"x6.7"	26"x18.6"x6.7"	26"x18.6"x6.7"
Antenna Weight. Lbs	76.2	76.2	76.2
Antenna Mounting Kit Weight. Lbs.	11.5	11.5	11.5
CL Height	170	170	170
Antenna Azimuth	340	90	210
Antenna Mechanical Downtilt	0	0	0
Antenna etilt	-2	-2	-2

*RFDS SHEET WAS GENERATED BY RAMAKER & ASSOCIATES FROM PLAN OF RECORD (POR) PROVIDED BY SPRINT. CONTRACTOR SHALL VERIFY AND OBTAIN FINAL RFDS FROM SPRINT CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION.

NOTES:

1. GENERAL CONTRACTOR TO FIELD VERIFY AZIMUTH AND C/L HEIGHT AND MECHANICAL DOWNTILT. IF DIFFERENT THAN CALLED OUT BELOW, HALT ANTENNA WORK FOR ONE HOUR, CALL SPRINT RF ENGINEER (OR MANAGER IF RF ENGINEER DOES NOT ANSWER, BUT STILL LEAVE A MESSAGE TO RF ENGINEER) USING CONTACT INFORMATION ABOVE FOR FURTHER INSTRUCTIONS. IF SPRINT DOES NOT RESPOND WITHIN ONE HOUR, PLACE 2.5GHZ ANTENNA AT SAME C/L HEIGHT AS 1.9GHZ ANTENNA AND EMAIL CORRECT C/L HEIGHT AND AZIMUTH TO SPRINT RF ENGINEER. UPDATE AS-BUILD DRAWING WITH CORRECT C/L HEIGHT. ALSO EMAIL CORRECT 1.9GHZ AND 800MHZ ANTENNA C/L HEIGHT, AZIMUTH AND MECHANICAL DOWNTILT TO RF ENGINEER.
2. AISG TESTS TO VERIFY OPERATION IS TO BE PERFORMED AFTER FINAL INSTALLATION OF ANTENNAS AND AISG CABLES HAVE BEEN CONNECTED. VERIFY OPERATION OF ALL EXISTING SPRINT AISG EQUIPMENT INCLUDING 800MHZ, 1.9GHZ AND 2.5GHZ. TEST TO INCLUDE COMPLETE DOWNTILT, AZIMUTH (IF APPLICABLE) AND BEAMWIDTH SWINGS (IF APPLICABLE). DOCUMENT AISG TEST RESULTS IN COAX SWEEP TEST SPREADSHEET.
3. GENERAL CONTRACTOR MUST ENSURE THAT NO OBJECT IS LOCATED WITHIN 45 DEGREES OF LEFT AND RIGHT OF FRONT OF ANTENNA OR 7 DEGREES UP AND DOWN FROM CENTER OF ANTENNA. IF THIS IS NOT POSSIBLE, CONTACT RF ENGINEER FOR FURTHER INSTRUCTION. IN ADDITION, 2.5GHZ ANTENNA IS NOT TO BE PLACED IN FRONT OF ANY OTHER ANTENNA USING THE SAME 45 DEGREE RULE. THIS INCLUDES SPRINT AND NON-SPRINT ANTENNAS.
4. 2.5GHZ ANTENNA MUST BE AT LEAST 6' FROM 1.9GHZ ANTENNA, 30" FROM 800MHZ ANTENNA AND 30" FROM DUAL BAND 1.9GHZ AND 800MHZ ANTENNA.
5. GENERAL CONTRACT IS REQUIRED TO USE A DIGITAL ALIGNMENT TOOL TO SET AZIMUTH, ROLL AND DOWNTILT. AZIMUTH ACCURACY IS TO BE WITHIN 1 DEGREE. DOWNTILT AND ROLL (LEFT TO RIGHT TILT) IS TO BE WITHIN 0.1 DEGREES. IF FOR SOME REASON THIS ACCURACY CANNOT BE ACHIEVED, UPDATE AS-BUILT DRAWINGS AND EMAIL SPRINT RF ENGINEER WITH AS-BUILT SETTINGS. USE 3Z RF ALIGNMENT TOOL OR EQUIVALENT TOOL.

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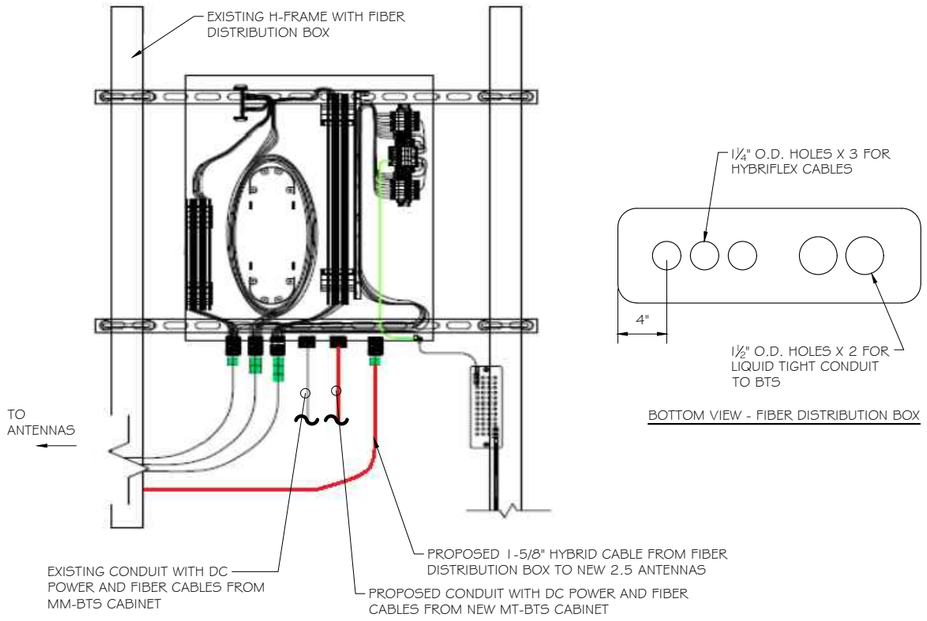
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

SHEET TITLE:
RF DATA SHEET

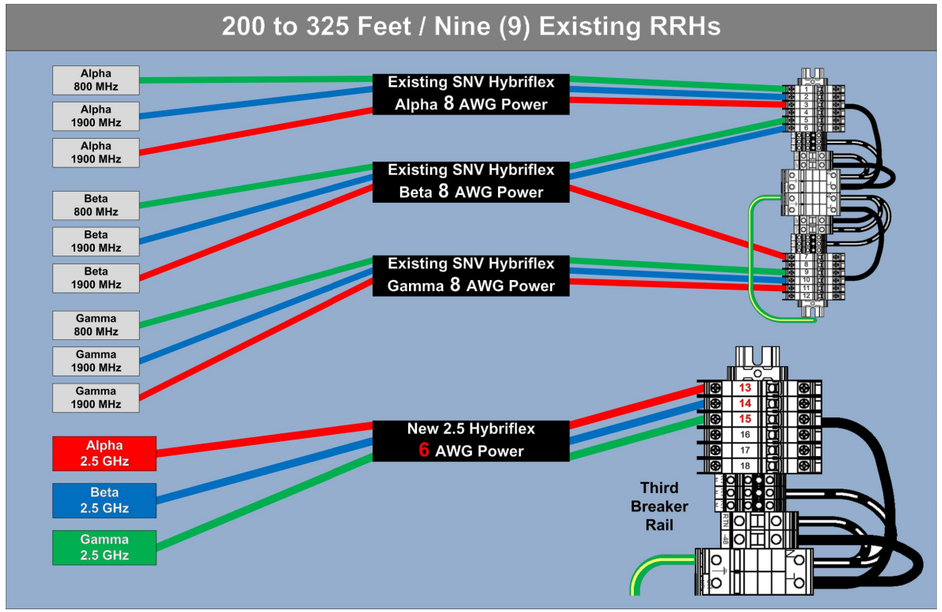
SCALE: NONE

PROJECT NUMBER: 23009
SHEET NUMBER: A-4

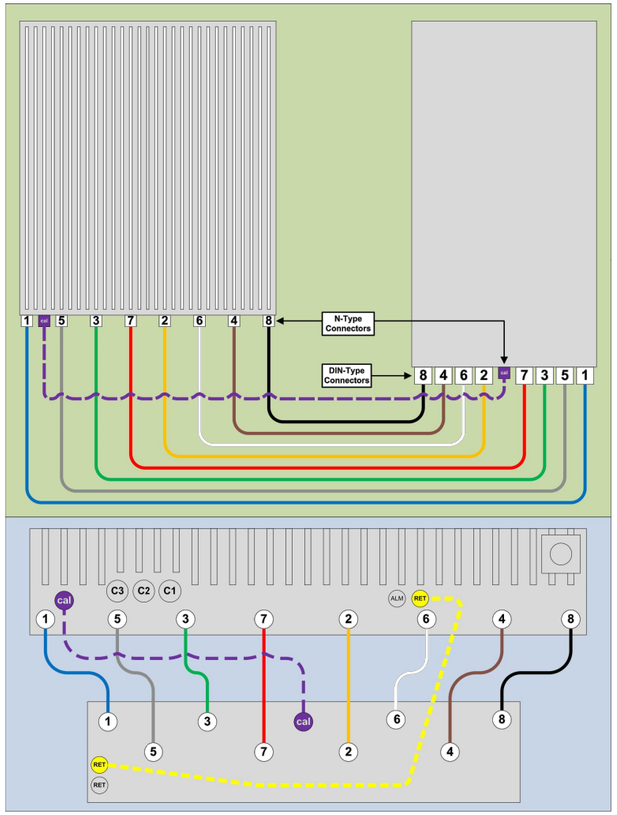


BOTTOM VIEW - FIBER DISTRIBUTION BOX

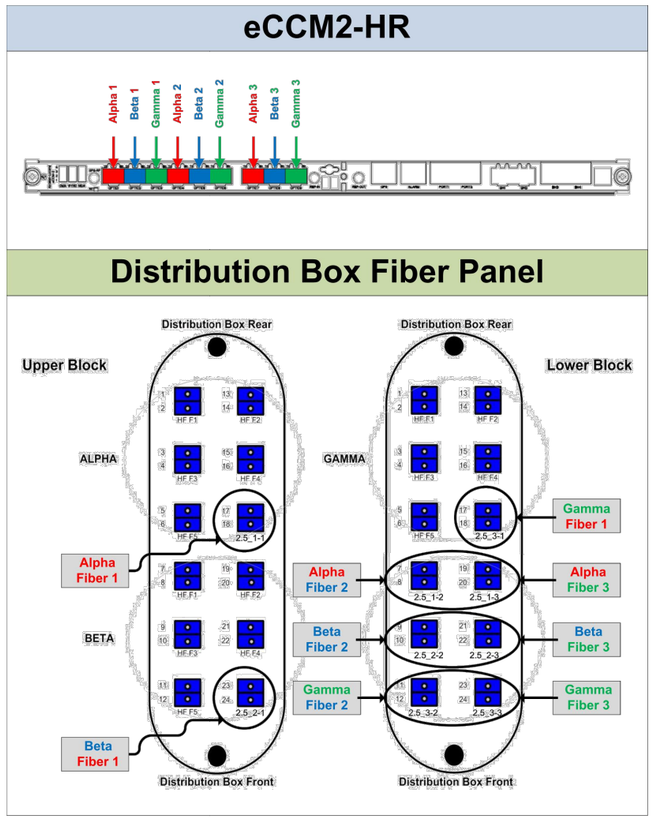
TYPICAL FIBER DISTRIBUTION BOX DETAIL (1)
SCALE: NTS



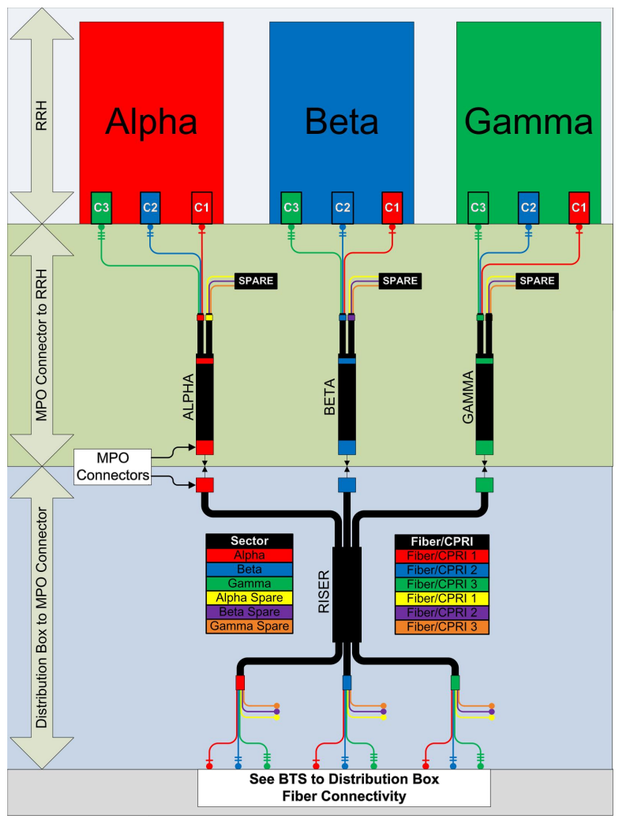
RRH TO DISTRIBUTION BOX POWER CONNECTIVITY DETAIL (2)
SCALE: NTS



8T8R DETAIL (3)
SCALE: NTS



BTS TO DISTRIBUTION BOX FIBER CONNECTIVITY DETAIL (4)
SCALE: NTS



RRH TO DISTRIBUTION BOX FIBER CONNECTIVITY DETAIL (5)
SCALE: NTS

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CT33XC534-B

PROJECT INFORMATION:
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

SHEET TITLE:
FIBER PLUMBING DIAGRAM

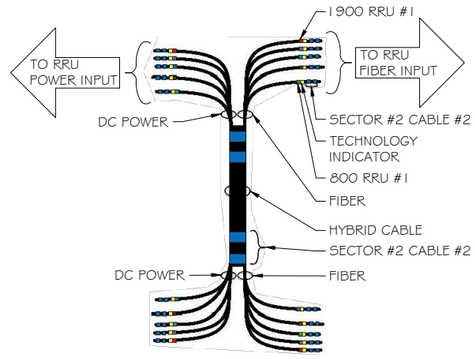
SCALE: NONE

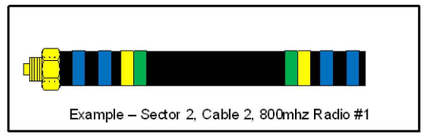
PROJECT NUMBER: 23009
SHEET NUMBER: A-5

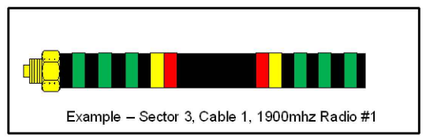
2.5 FREQUENCY	INDICATOR		ID
2500 -1	YEL	WHT	GRN
2500 -2	YEL	WHT	RED
2500 -3	YEL	WHT	BRN
2500 -4	YEL	WHT	BLU
2500 -5	YEL	WHT	SLT
2500 -6	YEL	WHT	ORG
2500 -7	YEL	WHT	WHT
2500 -8	YEL	WHT	PPL

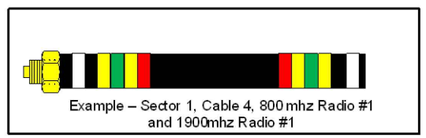
NV FREQUENCY	INDICATOR	ID
800-1	YEL	GRN
1900-1	YEL	RED
1900-2	YEL	BRN
1900-3	YEL	BLU
1900-4	YEL	SLT
800-1	YEL	ORG
RESERVED	YEL	WHT
RESERVED	YEL	PPL

Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape
2	3	Brown	Brown	No Tape
2	4	White	White	No Tape
2	5	Red	Red	No Tape
2	6	Grey	Grey	No Tape
2	7	Purple	Purple	No Tape
2	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
3	2	Blue	Blue	Blue
3	3	Brown	Brown	Brown
3	4	White	White	White
3	5	Red	Red	Red
3	6	Grey	Grey	Grey
3	7	Purple	Purple	Purple
3	8	Orange	Orange	Orange




Example – Sector 2, Cable 2, 800mhz Radio #1


Example – Sector 3, Cable 1, 1900mhz Radio #1


Example – Sector 1, Cable 4, 800 mhz Radio #1 and 1900mhz Radio #1

COLOR CODING CHARTS (1)
SCALE: NTS

CABLE MARKING NOTES

1. ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.
2. THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM THE END CONNECTOR, WEATHERPROOFING, OR BREAKOUT UNIT. THERE SHALL BE 1" SPACE BETWEEN EACH RING.
3. A 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
4. THE 2" COLORED TAPE(S) SHALL BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.
5. SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE SECOND CABLE IDENTIFIED BY BLUE BANDS OF TAPE
6. HYBRID FIBER CABLE SHALL BE SECTOR IDENTIFIED INSIDE THE CABINET ON FREQUENCY BUNDLES, ON THE SEALTITE, ON THE MAIN LINE UPON EXIT OF SEALTITE, AND BEFORE AND AFTER THE BREAKOUT UNIT (MEDUSA), AS WELL AS BEFORE AND AFTER ANY ENTRANCE OR EXIT.
7. HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.
8. INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABELED WITH BOTH THE CABLE AND FREQUENCY.

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CT33XC534-B

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319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
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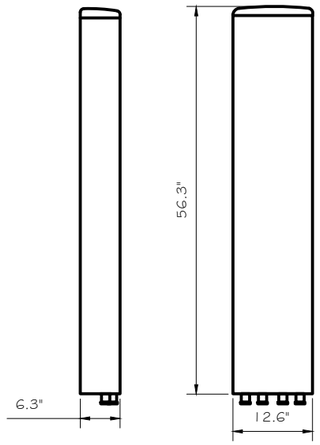
SHEET TITLE:
CABLE COLOR CODING

SCALE: NONE

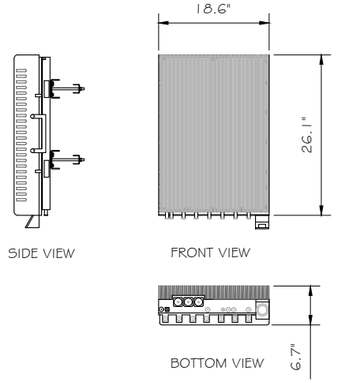
PROJECT NUMBER: 23009
SHEET NUMBER: A-6

RFS: APXVTM14-ALU-120



DIMENSIONS, HxWxD:	56.3" x 12.6" x 6.3"
WEIGHT, WITHOUT PRE-MOUNTED BRACKETS:	55.12 lbs.
CONNECTOR:	(9) XX" MINI-DIN FEMALE/BOTTOM

2.5 ANTENNA DETAIL
SCALE: NTS (1)



ALCATEL-LUCENT: TD-RRH8x20-25

HxWxD = (26.1" x 18.6" x 6.7")

WEIGHT = 70 lbs.

2.5 RRH DETAIL
SCALE: NTS (2)

800MHz 2X50W Remote Radio Head (RRH)

Simultaneous CDMA & LTE Multi technology RRH 862-869 MHz
- Any combination of CDMA and LTE carriers supported by 100W RF Power

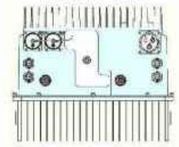
2 CPRI-like Optical Connections for daisy chaining
Software Switchable External Filter for use before Public Safety is cleared

Dimensions:	w/o Filter	w/ Filter
Height:	480 mm (19")	480 mm (19")
Width:	330 mm (13")	330 mm (13")
Depth:	218 mm (8.6")	310 (12.2")
Weight:	24 kg (53 lbs)	29 kg (64 lbs)
	49 liters, <29kg	

Power Supply: -48 VDC
Power Consumption: <400W Typical
Operating Temp range -40° C to +55° C
Option to mount on Ground at tower base

Front/Top View

Bottom View



Alcatel-Lucent's 800 RRH satisfies Sprint's requirements.

MECHANICAL	
DIMENSION (HxWxD)	19" x 13" x 12.2"
WEIGHT	64 lbs

RRH MODEL: ALU #800 MHz 2x50W - RADIO SPECS

800 RRH DETAIL
SCALE: NTS (3)

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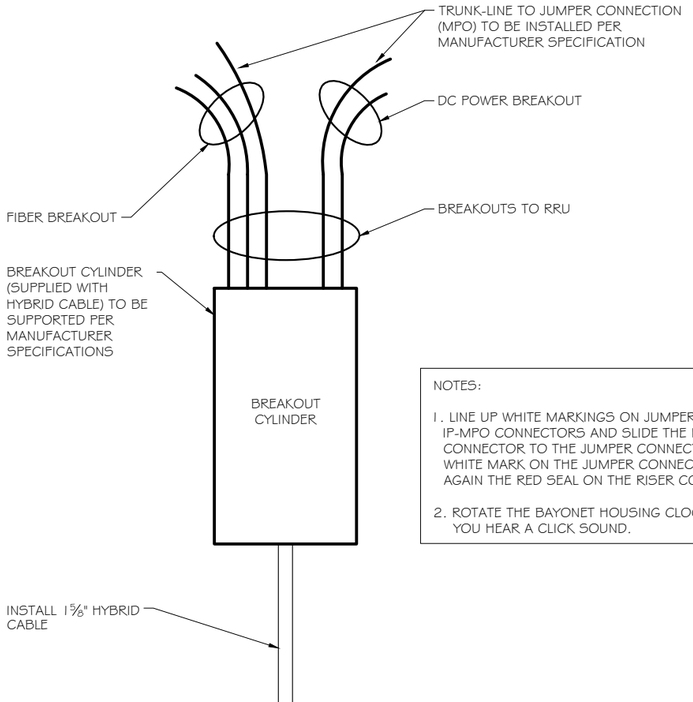
HARTFORD COUNTY

SHEET TITLE:
ANTENNA & RRH DETAILS

SCALE: NONE

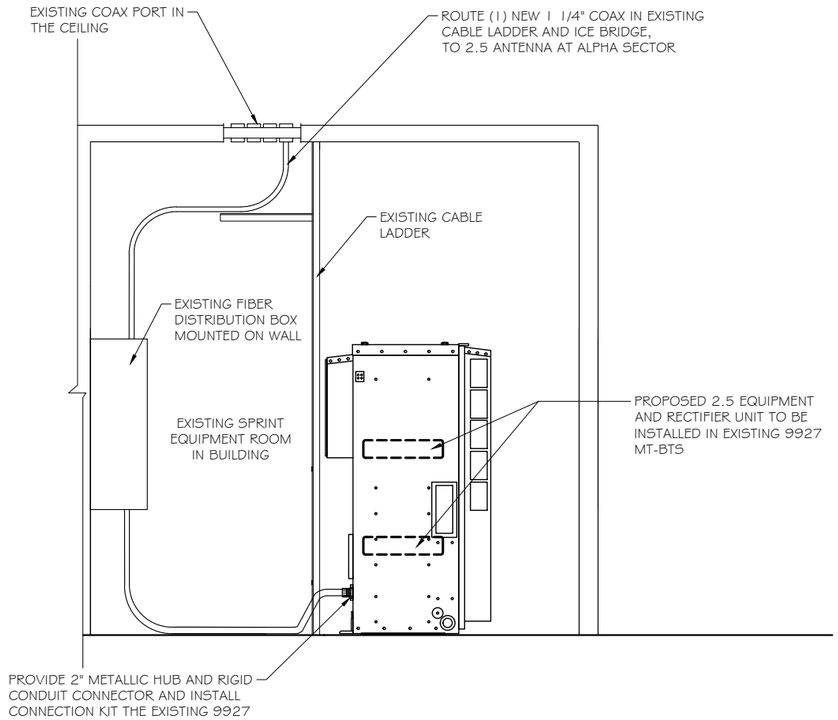
PROJECT NUMBER: 23009
SHEET NUMBER: A-7



NOTES:

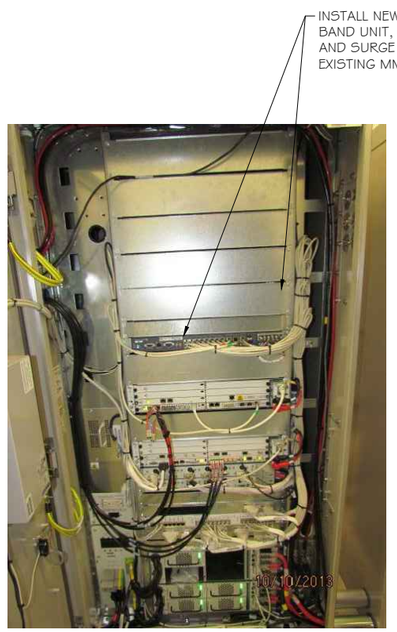
1. LINE UP WHITE MARKINGS ON JUMPER AND RISER IP-MPO CONNECTORS AND SLIDE THE RISER CONNECTOR TO THE JUMPER CONNECTOR. PUSH THE WHITE MARK ON THE JUMPER CONNECTOR FLUSH AGAIN THE RED SEAL ON THE RISER CONNECTOR.
2. ROTATE THE BAYONET HOUSING CLOCKWISE UNTIL YOU HEAR A CLICK SOUND.

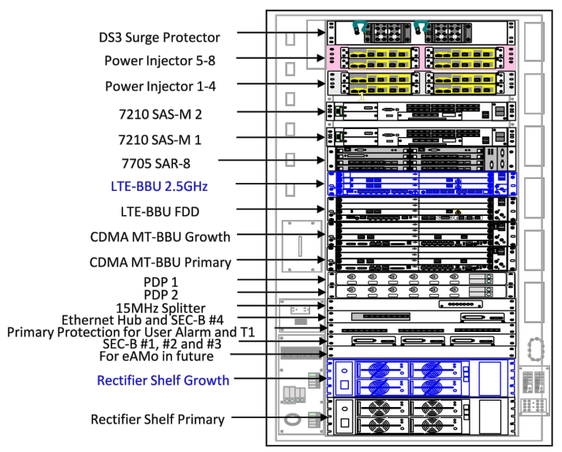
HYBRID BREAKOUT DETAIL ①
SCALE: NTS



CABLE ROUTE FROM CABINET ②
SCALE: NTS

EXISTING BBU CABINET ③
SCALE: NTS





EXISTING MMBS CABINET ④
SCALE: NTS

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Certification & Seal:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: Date: 10/26/2017

MARK	DATE	DESCRIPTION
1	10/26/17	REVISED RF AND STRUCTURAL DETAILS

ISSUE PHASE: FINAL
DATE ISSUED: 08/10/2017

PROJECT TITLE:
UNIONVILLE / POLICE DEPARTMENT
CT33XC534-B

PROJECT INFORMATION:
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

SHEET TITLE:
EQUIPMENT DETAILS

SCALE: NONE

PROJECT NUMBER: 23009
SHEET NUMBER: A-8

GENERAL NOTES:

1. ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST HAVE CONSIDERABLE EXPERIENCE IN PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED AND PROPERLY REGISTERED TO DO THIS WORK IN THE STATE AND/OR COUNTY IN WHICH IT IS TO BE PREFORMED.
2. WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE CURRENT STATE BUILDING CODE.
3. UNLESS SHOWN OR NOTED OTHERWISE ON THE CONTRACT DRAWINGS, OR IN THE SPECIFICATIONS, THE FOLLOWING NOTES SHALL APPLY TO THE MATERIALS LISTED HEREIN, AND TO THE PROCEDURES TO BE USED ON THIS PROJECT.
4. ALL HARDWARE ASSEMBLY MANUFACTURERS' INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
5. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.
6. ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS SHOWN ON THE DRAWINGS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING ANY MATERIALS ORDERING, FABRICATION OR CONSTRUCTION WORK ON THIS PROJECT. CONTRACTOR SHALL NOT SCALE CONTRACT DRAWINGS IN LIEU OF FIELD VERIFICATIONS. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND THE OWNER'S ENGINEER. THE DISCREPANCIES MUST BE RESOLVED BEFORE THE CONTRACTOR IS TO PROCEED WITH THE WORK. THE CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTION OF THE PROTECTIVE MEASURES OR THE PROCEDURES.
7. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.
9. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIALS ACCESS, WITH THE RESIDENT LEASING AGENT FOR APPROVAL.
10. ALL PERMITS THAT MUST BE OBTAINED ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
11. IF APPLICABLE, ALL CONCRETE WORK SHALL COMPLY WITH LOCAL CODES AND THE ACI 318-11, "BUILDING REQUIREMENTS FOR STRUCTURAL CONCRETE".
12. 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, THE CONTRACTOR MUST NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY OR CITY) ENGINEER.
13. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR ONE YEAR FROM ACCEPTANCE DATE.
14. ALL TOWER DIMENSIONS SHALL BE VERIFIED WITH THE PLANS (LA TEST REVISION) PRIOR TO COMMENCING CONSTRUCTION. NOTIFY THE ENGINEER IMMEDIATELY IF ANY DISCREPANCIES ARE DISCOVERED. THE OWNER SHALL HAVE A SET OF APPROVED PLANS AVAILABLE AT THE SITE AT ALL TIMES WHILE WORK IS BEING PERFORMED. A DESIGNATED RESPONSIBLE EMPLOYEE SHALL BE AVAILABLE FOR CONTACT BY GOVERNING AGENCY.
15. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE TOWER OWNER OR ENGINEER OF RECORD.
16. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/TIA 1019 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-1019 (LATEST EDITION).

STRUCTURAL STEEL NOTES:

1. THE FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATION FOR MANUAL OF STEEL CONSTRUCTION, LOAD AND RESISTANCE FACTOR DESIGN (LRFD), 13TH EDITION.
2. UNLESS OTHERWISE NOTED, ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
   STRUCTURAL STEEL:
   - ANGLE: ASTM A36
   - PIPE/TUBE: ASTM A500-46
   - PLATE: ASTM A572-50 (SELF SUPPORTING AND GUYED TOWERS), UNLESS NOTED OTHERWISE
   - PLATE: ASTM A572-65 (MONOPOLE)
   - BOLTS: ASTM A325 TYPE 1 GALVANIZED HIGH STRENGTH BOLTS.
   - U-BOLTS: ASTM A193 GRADE B7
   - NUTS: ASTM A563 CARBON AND ALLOY STEEL NUTS.
   - WASHERS: ASTM F436 HARDENED STEEL WASHERS.
3. ALL CONNECTIONS NOT FULLY DETAILED ON THESE PLANS SHALL BE DETAILED BY THE STEEL FABRICATOR IN ACCORDANCE WITH AISC SPECIFICATION FOR MANUAL OF STEEL CONSTRUCTION, LRFD, 13TH EDITION.
4. HOLES SHALL NOT BE FLAME CUT THROUGH STEEL UNLESS APPROVED BY THE ENGINEER.
5. HOT-DIP GALVANIZE ALL ITEMS UNLESS OTHERWISE NOTED, AFTER FABRICATION WHERE PRACTICABLE. GALVANIZING: ASTM A123, ASTM, A153/A153M OR ASTM A653/A653M, G90, AS APPLICABLE. ADDITIONALLY, ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
6. REPAIR DAMAGED SURFACES WITH GALVANIZING REPAIR METHOD AND PAINT CONFORMING TO ASTM A780 OR BY APPLICATION OF STICK OR THICK PASTED MATERIAL SPECIFICALLY DESIGNED FOR REPAIR OF GALVANIZING. CLEAN AREAS TO BE REPAIRED AND REMOVE SLAG FROM WELDS. HEAT SURFACES TO WHICH STICK OR PASTE MATERIAL IS APPLIED, WITH A TORCH TO A TEMPERATURE SUFFICIENT TO MELT THE METALLICS IN STICK OR PASTED; SPREAD MOLTEN MATERIAL UNIFORMLY OVER SURFACES TO BE COATED AND WIPE OFF EXCESS MATERIAL. AFTER REPAIR, STEEL SHALL BE REPAINTED TO MATCH EXISTING FINISH (IF APPLICABLE).
7. A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED BOLTS.
8. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXCLUDE THE THREADS FROM THE SHEAR PLANE.
9. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT BE AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
10. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.

WELDING NOTES:

1. ALL WELDING SHALL BE IN ACCORDANCE WITH THE AWS D1.1/D1.1M: 2010 "STRUCTURAL WELDING CODE-STEEL".
2. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS.
3. CONTRACTOR SHALL RETAIN AN AWS CERTIFIED WELD INSPECTOR TO PERFORM VISUAL INSPECTIONS ON FIELD WELDS.
4. GRIND THE SURFACE ADJACENT TO THE WELD FOR A DISTANCE OF 2" MINIMUM ALL AROUND. GRIND THE SURFACE OF THE ROD TO BE INSTALLED FOR A DISTANCE OF 2" MINIMUM ALL AROUND THE AREA TO BE WELDED. ENSURE BOTH AREAS ARE 100% FREE OF ALL GALVANIZING. SURFACES TO BE WELDED SHALL BE FREE FROM SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER FOREIGN MATERIAL THAT WOULD PREVENT PROPER WELDING.
5. DO NOT WELD IF THE TEMPERATURE OF THE STEEL IN THE VICINITY OF THE WELD AREA IS BELOW 0 DEG F. THE MINIMUM PREHEAT AND INTERPASS TEMPERATURE REQUIREMENTS SHALL COMPLY WITH SECTION 3.5.1 AND TABLE 3.2 OF THE AWS D1.1/D1.1M: 2010.
6. DO NOT WELD ON WET ON FROST -COVERED SURFACES AND PROVIDE ADEQUATE PROTECTION FROM HIGH WINDS.
7. FOR ALL WELDING, USE 70 KSI LOW HYDROGEN ELECTRODES. ELECTRODES SHALL BE APPROPRIATE FOR THE WELDING POSITION REQUIRED TO MAKE THE JOINT.
8. AFTER FINAL INSPECTION, THE AREA OF THE WELDS, THE INSTALLATION AND ALL SURFACES DAMAGED BY WELDING OR GRINDING SHALL RECEIVE A COLD-GALVANIZED COATING. THIS COATING SHALL BE APPLIED BY BRUSH. THE GALVANIZING COMPOUND SHALL CONTAIN A MINIMUM OF 95% ± PURE ZINC. THE FINISHED COATING SHALL BE A MINIMUM THICKNESS OF 3 MILS.
9. FOR MONOPOLE TOWERS FULL PENETRATION WELDS IN THE VICINITY OF THE BASE OF THE TOWER ARE REQUIRED TO BE 100% NDE INSPECTED BY ULTRASONIC TESTING (UT) IN ACCORDANCE WITH AWS D1.1.
10. FOR MONOPOLE TOWERS PARTIAL PENETRATION AND FILLET WELDS IN THE VICINITY OF THE BASE OF THE TOWER ARE REQUIRED TO BE 50% NDE INSPECTED BY MAGNETIC PARTICLE (MT) IN ACCORDANCE WITH AWS D1.1.

BOLT TIGHTENING PROCEDURE:

1. TIGHTEN CONNECTION BOLTS BY AISC - "TURN OF THE NUT" METHOD, USING THE CHART BELOW.

   BOLT LENGTHS UP TO AND INCLUDING FOUR DIAMETERS
   1/2" BOLTS UP TO AND INCLUDING 2.0 INCH LENGTH + 1/3 TURN BEYOND SNUG TIGHT
   5/8" BOLTS UP TO AND INCLUDING 2.5 INCH LENGTH + 1/3 TURN BEYOND SNUG TIGHT
   3/4" BOLTS UP TO AND INCLUDING 3.0 INCH LENGTH + 1/3 TURN BEYOND SNUG TIGHT
   7/8" BOLTS UP TO AND INCLUDING 3.5 INCH LENGTH + 1/3 TURN BEYOND SNUG TIGHT
   1" BOLTS UP TO AND INCLUDING 4.0 INCH LENGTH + 1/3 TURN BEYOND SNUG TIGHT

   BOLT LENGTHS OVER FOUR DIAMETERS BUT NOT EXCEEDING EIGHT DIAMETERS
   1/2" BOLTS 2.25 TO 4.0 INCH LENGTH + 1/2 TURN BEYOND SNUG TIGHT
   5/8" BOLTS 2.75 TO 5.0 INCH LENGTH + 1/2 TURN BEYOND SNUG TIGHT
   3/4" BOLTS 3.25 TO 6.0 INCH LENGTH + 1/2 TURN BEYOND SNUG TIGHT
   7/8" BOLTS 3.75 TO 7.0 INCH LENGTH + 1/2 TURN BEYOND SNUG TIGHT
   1" BOLTS 4.25 TO 8.0 INCH LENGTH + 1/2 TURN BEYOND SNUG TIGHT
2. CONNECTION BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8.2.1 OF THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS, LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:
3. FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8.2.1 THROUGH 8.2.4.

   TURN-OF-THE-NUT TIGHTENING
   BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION B.1, UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED ABOVE. DURING THE TIGHTENING OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT IN A MANNER THAT WILL MINIMIZE RELAXATION OF PREVIOUSLY PRE-TENSIONED BOLTS.
4. ALL OTHER BOLTED CONNECTIONS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1 OF THE SPECIFICATION.

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STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: James R. Skowronski Date: 10/26/2017

MARK	DATE	DESCRIPTION
1	10/26/17	REVISED RF AND STRUCTURAL DETAILS

ISSUE PHASE: FINAL DATE ISSUED: 08/10/2017

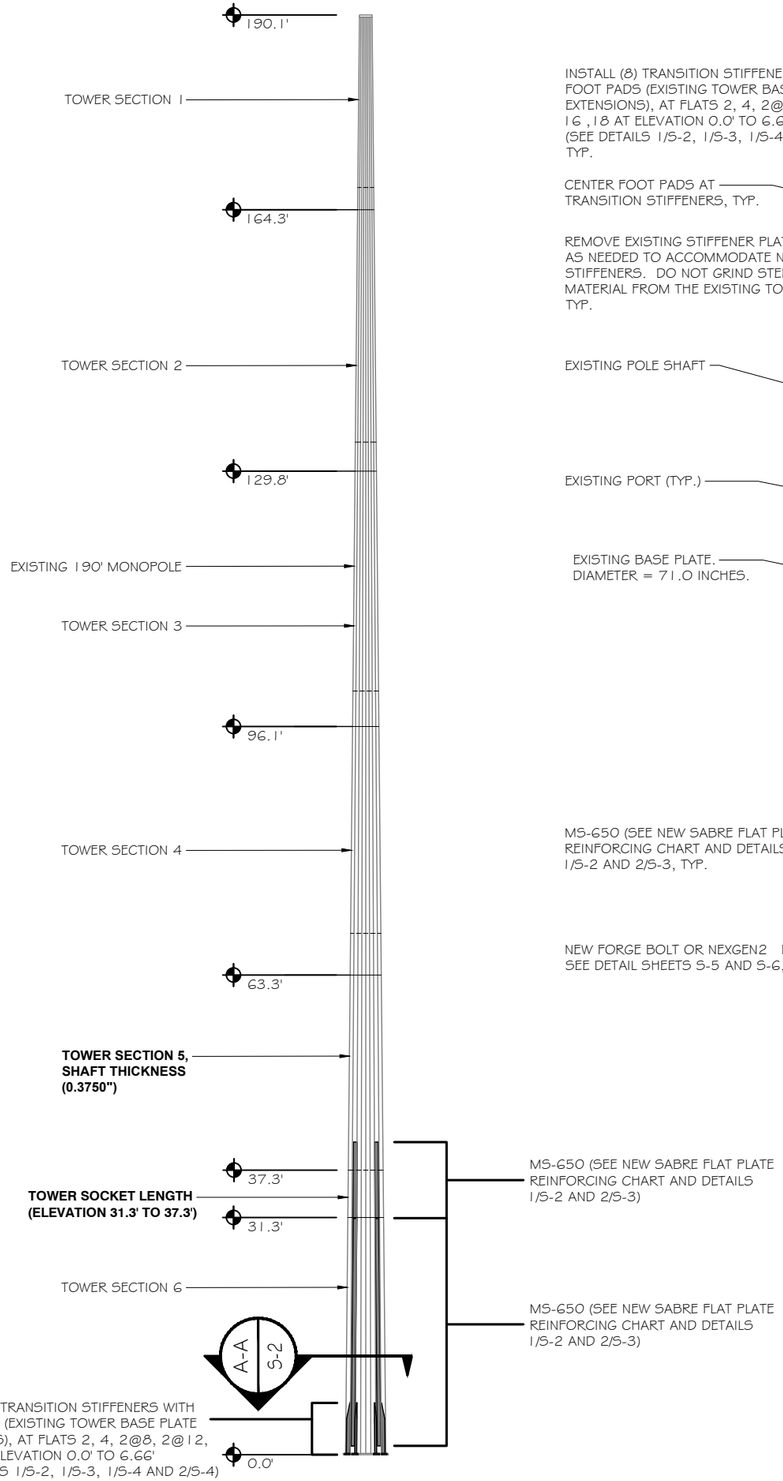
PROJECT TITLE:
UNIONVILLE / POLICE DEPARTMENT
CT33XC534-B

PROJECT INFORMATION:
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

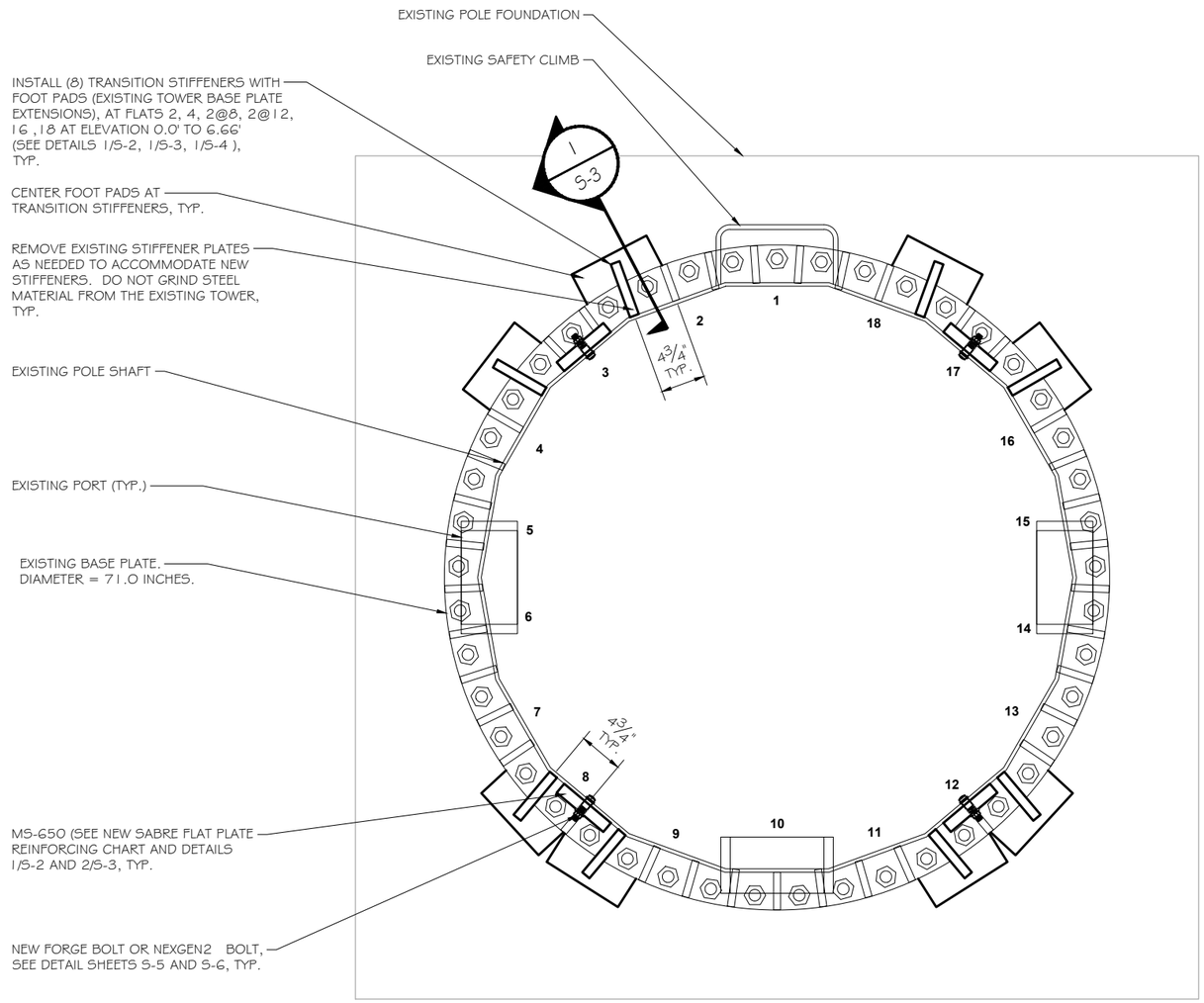
SHEET TITLE:
STRUCTURAL NOTES

SCALE: NONE

PROJECT NUMBER: 23009
SHEET NUMBER: S-1



MODIFIED TOWER ELEVATION (1)
SCALE: 1" = 20'



SECTION A-A

NEW SABRE FLAT PLATE REINFORCING			
ELEVATION	FLAT #	FLAT PLATE	BOLT QUANTITIES
1'-0" TO 31'-0"	3, 8, 12, 17	MS-650	STD. REQ.
31'-0" TO 41'-0"	3, 8, 12, 17	MS-650	STD. REQ.

1. ALL BOLTS SHALL BE "FORGEBOLT" OR "NEXGEN2" BOLTS. CONTACT SUPPLIER FOR MATERIAL (PLATE & BOLTS) & INSTALLATION PROCEDURES.
2. CONTACT SABRE TOWERS & POLES MODIFICATION DEPARTMENT FOR SUPPLY & INSTALLATION PRICING OF MODIFICATION MATERIAL. CONTACT: MICHAEL KELLEN - MKELLEN@SABREINDUSTRIES.COM OR JOE TOMSHO - JJTOMSHO@SABREINDUSTRIES.COM

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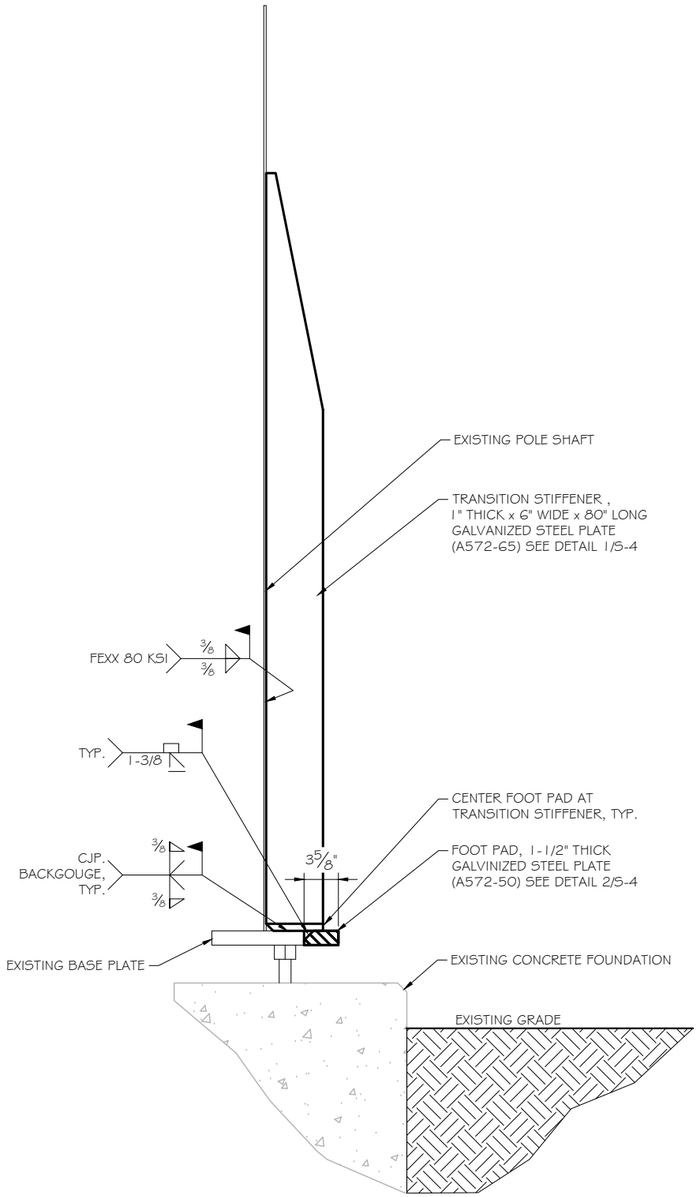
PROJECT INFORMATION:
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

SHEET TITLE:
STRUCTURAL DETAILS

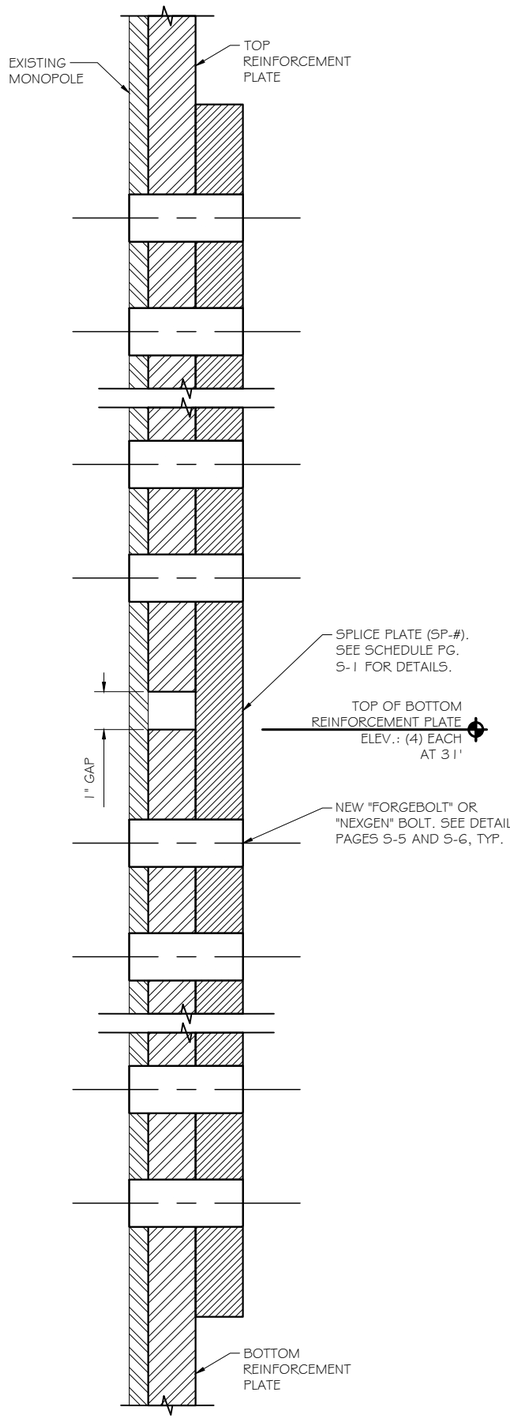
0 10' 20' 40'
11" x 17" - 1" = 20'
22" x 34" - 1" = 10'

PROJECT NUMBER: 23009
SHEET NUMBER: S-2

NOTE:
- APPLY COLD GALVANIZING COMPOUND TO WELDS.

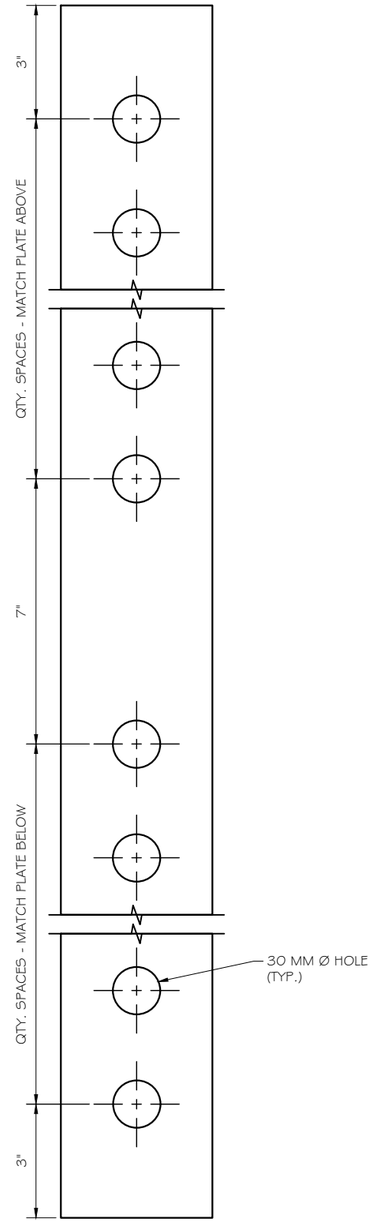


TRANSITION STIFFENER & FOOT PAD DETAIL (1)
SCALE: N.T.S.



NOTE:

USE MAX PLATE WIDTH & THICKNESS FOR SPLICE PLATE.



SPLICE PLATE ASSEMBLY DETAIL (2)
SCALE: N.T.S.

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HARTFORD COUNTY

SHEET TITLE:
STRUCTURAL DETAILS

SCALE: NONE

PROJECT NUMBER: 23009
SHEET NUMBER: S-3

GENERAL NOTES

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO FABRICATION AND CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW COAXIAL CABLES AND OTHER EQUIPMENT DURING CONSTRUCTION.
3. ANY EXISTING ATTACHMENTS AND/OR PROJECTIONS ON THE POLE THAT MAY INTERFERE WITH THE INSTALLATION OF THE REINFORCING SYSTEM WILL HAVE TO BE REMOVED, AND/OR RELOCATED, AND/OR REPLACED AND RE-INSTALLED AFTER THE REINFORCING IS SUCCESSFULLY COMPLETED. THE CONTRACTOR SHALL IDENTIFY AND COORDINATE THESE ITEMS PRIOR TO CONSTRUCTION WITH THE OWNER, TESTING AGENCY, AND ENGINEER.

STRUCTURAL STEEL

1. STRUCTURAL STEEL MATERIALS, FABRICATIONS, DETAILING, AND WORKMANSHIP SHALL CONFORM TO THE LATEST ADDITION OF THE FOLLOWING REFERENCE STANDARDS:
   BY THE AMERICAN INSTITUTION OF STEEL CONSTRUCTION (AISC):
   A. "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
   B. "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS," AS APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS OF THE ENGINEERING FOUNDATION.
   C. "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" (PARAGRAPH 4.2.1 SPECIFICALLY EXCLUDED).
   BY THE AMERICAN WELDING SOCIETY (AWS):
   A. "STRUCTURAL WELDING CODE - STEEL D1.1."
   B. "SYMBOLS FOR WELDING AND NON-DESTRUCTIVE TESTING."
2. ANY MATERIAL OR WORKMANSHIP WHICH IS OBSERVED TO BE DEFECTIVE OR INCONSISTENT WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED, MODIFIED, OR REPLACED AT THE CONTRACTORS EXPENSE.
3. TIGHTEN ALL STRUCTURAL BOLTS, INCLUDING THE AJAX M20 BOLTS WITH SHEAR SLEEVES, ACCORDING TO THE REQUIREMENTS OF THE AISC "TURN OF THE NUT" METHOD. TIGHTEN BOLTS 1/3 TURN PAST THE SNUG TIGHT CONDITION AS DEFINED BY AISC.
4. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.1. ALL WELD ELECTRODES SHALL BE E80XX UNLESS NOTED OTHERWISE ON THE DRAWINGS.
5. ALL WELDED CONNECTIONS SHALL BE MADE BY WELDERS CERTIFIED BY AWS. CONTRACTOR SHALL SUBMIT WELDERS' CERTIFICATION AND QUALIFICATION DOCUMENTATION TO THE OWNER'S TESTING AGENCY FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
6. STRUCTURAL STEEL PLATES SHALL CONFORM TO ASTM A572 GRADE 65 (FY = 65 KSI MIN.) UNLESS NOTED OTHERWISE ON THE DRAWINGS.
7. SURFACES OF EXISTING STEEL SHALL BE PREPARED AS REQUIRED FOR FIELD WELDING PER AWS.

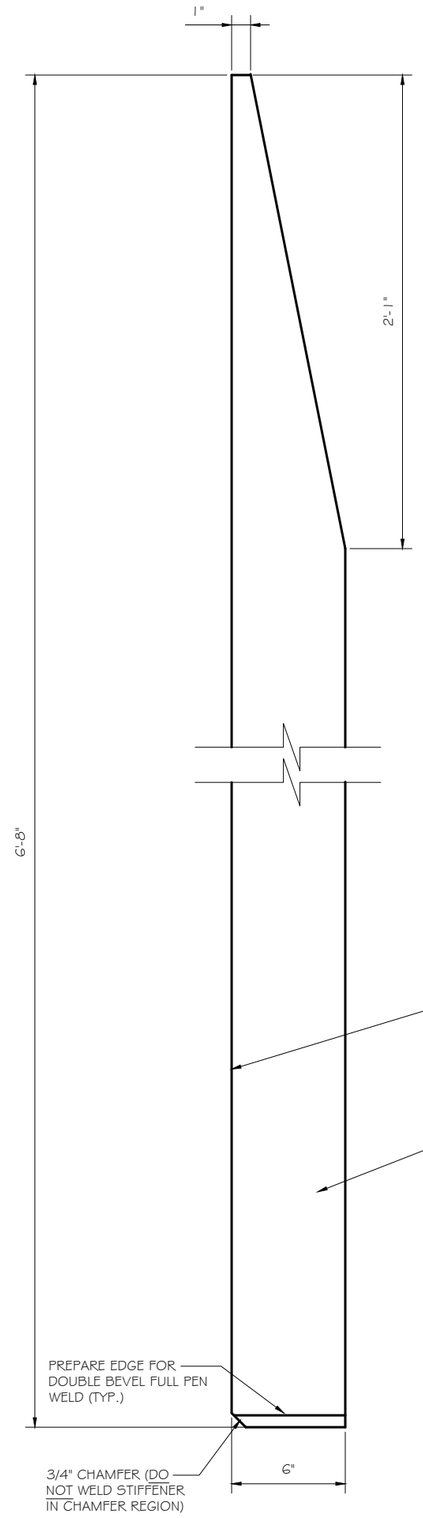
UNLESS OTHERWISE NOTED, ALL STEEL MEMBERS SHALL BE HOT-DIP GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH ASTM A123.

TOUCH-UP OF GALVANIZING

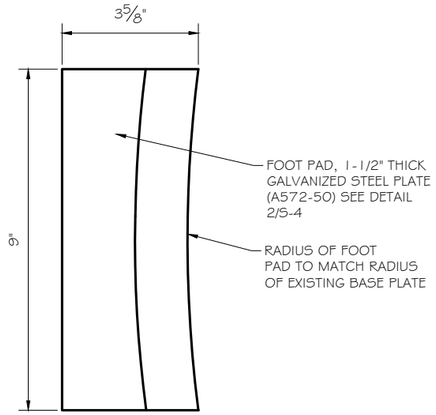
1. THE CONTRACTOR SHALL TOUCH-UP ANY AND/OR ALL AREAS OF GALVANIZING ON THE EXISTING STRUCTURE OR NEW COMPONENTS THAT ARE DAMAGED OR ABRADED DURING CONSTRUCTION. GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS ANY AND ALL ABRASIONS, CUTS, FIELD DRILLING, AND ALL FIELD WELDING SHALL BE TOUCHED UP WITH TWO (2) COATS OF ZRC-BRAND ZINC-RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.

PERPETUAL INSPECTION AND MAINTENANCE BY THE OWNER

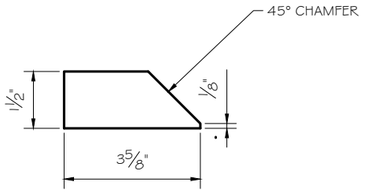
1. AFTER THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF THE MONOPOLE REINFORCING SYSTEM AND THE WORK HAS BEEN ACCEPTED BY THE OWNER, THE OWNER WILL BE RESPONSIBLE FOR THE LONG TERM AND PERPETUAL INSPECTION AND MAINTENANCE OF THE POLE AND REINFORCING SYSTEM.
2. THE OWNER SHALL REFER TO TIA-222-G, SECTION 14 AND ANNEX J FOR RECOMMENDATIONS FOR MAINTENANCE AND INSPECTION. THE FREQUENCY OF THE INSPECTION AND MAINTENANCE INTERVALS IS TO BE DETERMINED BY THE OWNER BASED UPON ACTUAL SITE AND ENVIRONMENTAL CONDITIONS.



TRANSITION STIFFENER DETAIL (1)
SCALE: N.T.S.



TOP VIEW



END VIEW

FOOT PAD DETAIL (2)
SCALE: N.T.S.

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STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: James R. Skowronski Date: 10/26/2017

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ISSUE PHASE: FINAL
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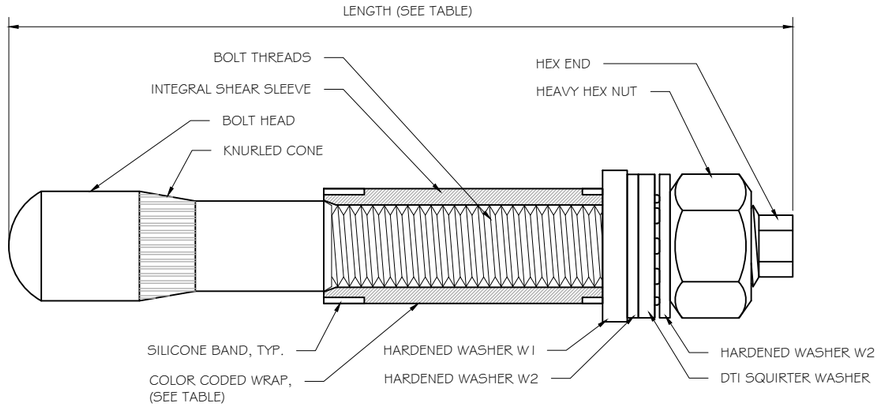
UNIONVILLE / POLICE DEPARTMENT
CT33XC534-B

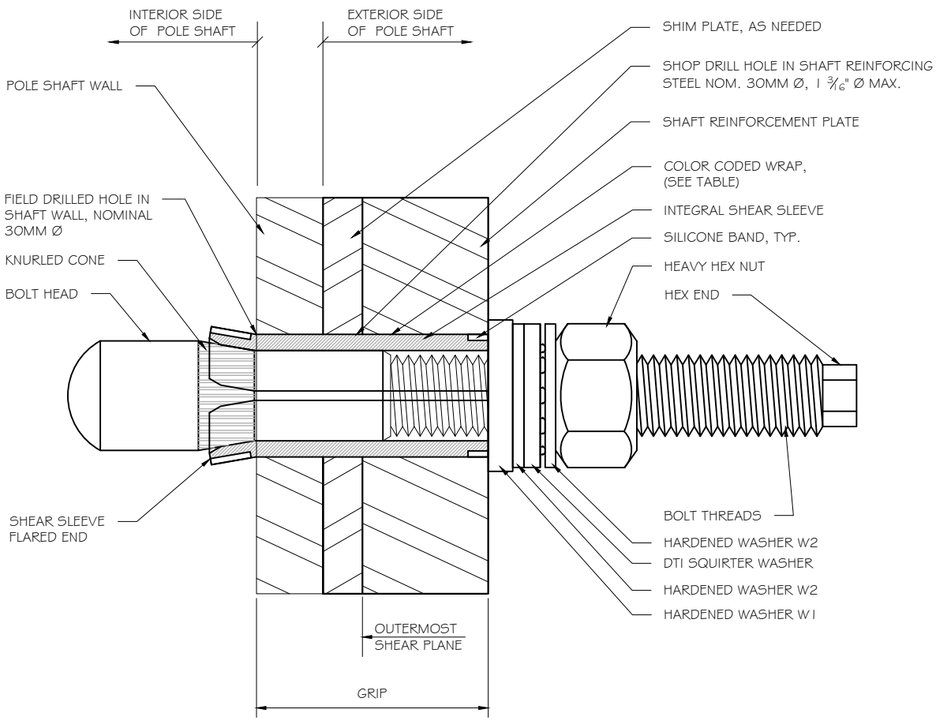
PROJECT INFORMATION:
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

SHEET TITLE:
STRUCTURAL DETAILS

SCALE: NONE

PROJECT NUMBER: 23009
SHEET NUMBER: S-4





INSTALLED FORGEBOLT™ ASSEMBLY DETAIL (2)
SCALE: NONE

FORGEBOLT		AISC GROUP A MATERIAL: ASTM A325 AND PC8.8 (TENSILE STRESS, Fu = 120 KSI MIN.)				
GROUP A	FORGEBOLT SIZE (MM)	LENGTH (IN)	WEIGHT EACH (LB)	GRIP RANGE (IN)	NOTE	COLOR CODE
FORGEBOLT A325-PC8.8	135	5.31	1.3	3/8 TO 1	-----	RED
	160	6.30	1.6	3/4 TO 1 1/2	-----	GREEN
	195	7.68	1.9	1 1/4 TO 2 1/4	-----	BLUE
	260	10.24	2.6	2 TO 3 1/2	SPLICE BOLT	YELLOW
	365	14.37	3.6	3 1/2 TO 5 1/2	FLANGE JUMP BOLT	ORANGE
	440	17.32	4.3	5 1/2 TO 8 1/2	FLANGE JUMP BOLT	BLACK
DTI NOTE	EACH GROUP A, A325/PC8.8, FORGEBOLT ASSEMBLY MUST HAVE A "SQUIRTER" DTI THAT IS COMPATIBLE WITH M20-PC8.8 BOLT.					

BOLT HOLE NOTES:

1. ALL SHOP DRILLED HOLES MUST BE NOMINAL 30MM Ø. THE MAX. SHOP DRILLED HOLE Ø IS 1 3/16".
2. ALL FIELD DRILLED HOLES MUST BE NOMINAL 30MM Ø. THE MAX. FIELD DRILLED HOLE Ø IS 30MM.

FORGEBOLT™ INSTALLATION:

1. FOLLOW ALL MANUFACTURER/DISTRIBUTER RECOMMENDATIONS FOR INSTALLATION, TIGHTENING AND INSPECTION.
2. FIELD DRILL HOLES 30MM Ø.
3. SELECT CORRECT BOLT SIZE FOR INSTALLATION GRIP, SEE CONSTRUCTION PLANS.
4. INSERT BOLT ASSEMBLY THROUGH HOLES IN SHAFT REINFORCING PLATES AND SEAT THE HARDENED WASHER W1 FLUSH AGAINST OUTSIDE OF PLATE.
5. HAND TIGHTEN NUT TO FINGER TIGHT.
6. TIGHTEN NUT TO PRETENSIONED CONDITION AND UNTIL DTI SHOWS PROPER INDICATION.
7. PROPERLY DOCUMENT AND INSPECT BOLT TIGHTENING.

NOTES:

1. ALL STRUCTURAL BOLTS MUST BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENTGH BOLTS", DEC. 31, 2009.
2. ALL STRUCTURAL BOLTS MUST BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENTGH BOLTS", DEC. 31, 2009.

PRECISION TOWER PRODUCTS:
PH: (888)-926-4857
EMAIL: INFO@PRECISIONTOWERPRODUCTS.COM
WEB: WWW.PRECISIONTOWERPRODUCTS.COM

CONTAINS PROPRIETARY INFORMATION PATENT PENDING

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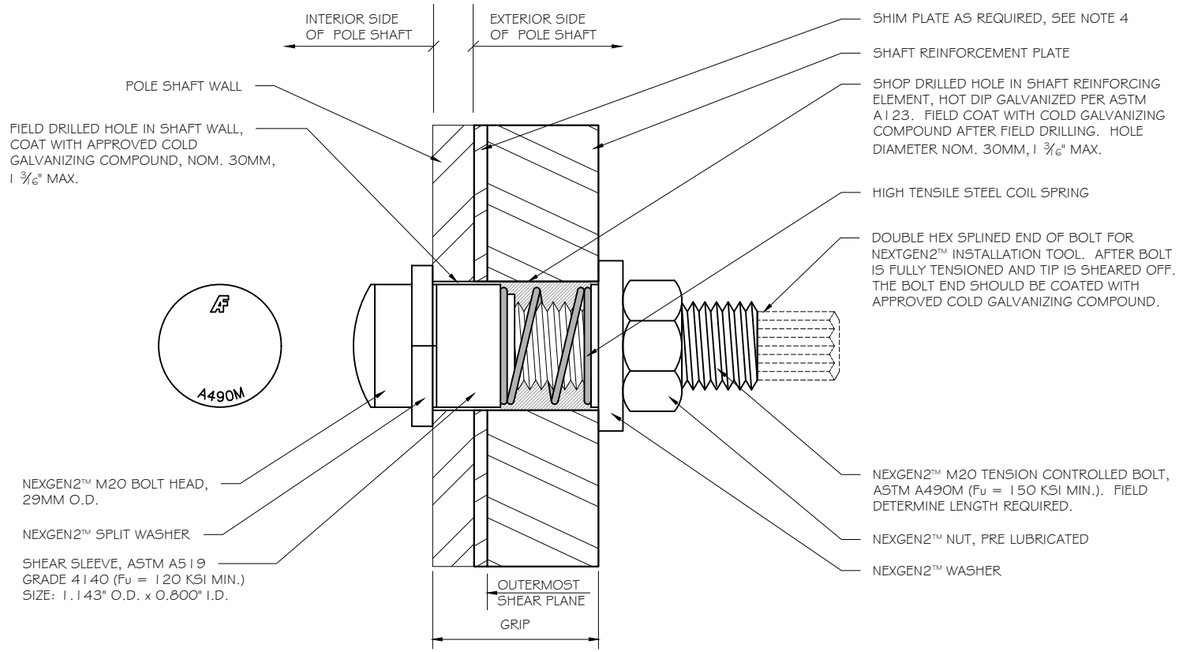
CT33XC534-B

PROJECT INFORMATION:
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

SHEET TITLE:
STRUCTURAL DETAILS

SCALE: NONE

PROJECT NUMBER: 23009
SHEET NUMBER: S-5



PART NUMBER	BOLT LENGTH	SLEEVE LENGTH (INCH)	MIN. GRIP RANGE (INCH)	MAX. GRIP RANGE (INCH)
M20x36	M20x95	1 1/16	1 5/16	1 7/16
M20x48	M20x95	1 3/16	1 7/16	1 7/8
M20x57	M20x95	1 5/8	1 7/8	2 1/4
M20x68	M20x135	2	2 1/4	2 1/16
M20x96	M20x135	2 7/16	2 1/16	3 3/4
M20x127	M20x165	3	3 3/4	5
M20x212	M20x250	4	5	8 5/16

NOTES:

1. ALL SHOP DRILLED HOLES MUST BE NOMINAL 30MM Ø. THE MAX. SHOP DRILLED HOLE Ø IS 1 3/16".
2. ALL FIELD DRILLED HOLES MUST BE NOMINAL 30MM Ø. THE MAX. FIELD DRILLED HOLE Ø IS 30MM.
3. THE NEXTGEN2™ SHALL BE MAGNI 363 COATED PER ASTM F2833 AS APPROPRIATE.
4. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
5. SHIMS FOR MONOPOLE REINFORCEMENT MEMBER SHALL BE REQUIRED WHERE GAPS BETWEEN THE POLE SHAFT AND REINFORCING MEMBER EXIST AT FASTENER LOCATIONS. FOR INTERMEDIATE CONNECTIONS, THE MINIMUM SHIM LENGTH AND WIDTH SHALL BE THE WIDTH OF THE REINFORCING MEMBER. FOR TERMINATING CONNECTIONS, A CONTINUOUS SHIM PLATE (PREFERRED) OR EQUIVALENT INDIVIDUAL SHIM PLATES THE WIDTH OF THE REINFORCING MEMBER MAY BE USED. ADJACENT SHIM PLATE THICKNESS MAY TAPER IN INCREMENTS OF 1/16" AND SHALL BE NO LESS THAN 1/16". STACKING OF SHIMS IS PERMITTED. SHIMS GRATER THAN 1/4" IN THICKNESS LOCATED WITHIN THE TERMINATION LENGTH OF THE SHAFT REINFORCEMENT PLATE SHALL BE WELDED TO THE SHAFT REINFORCEMENT PLATE.

INSPECTION NOTES AND PROCEDURES:

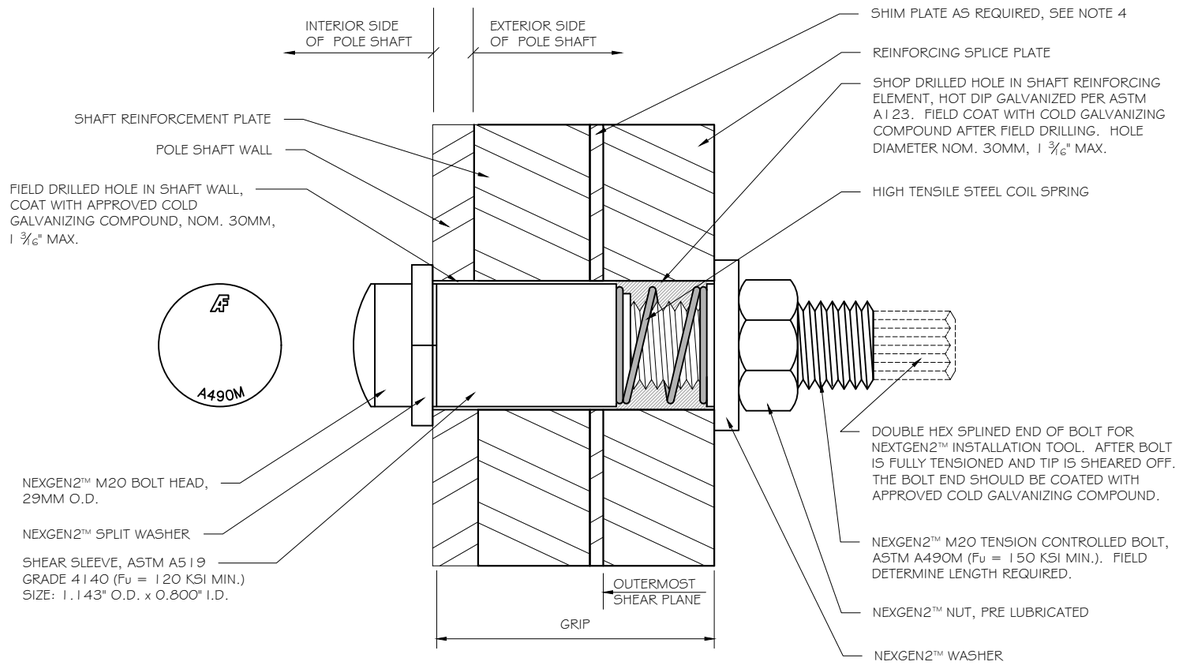
1. REVIEW STRUCTURAL DESIGN DETAILS.
2. VISUALLY INSPECT SHEARED BOLT ENDS TO ENSURE CORRECT TENSION WAS ACHIEVED.
3. VERIFY BOLT ENDS ARE SUFFICIENTLY COATED WITH APPROVED COLD GALVANIZED COMPOUNDS.

MANUFACTURER CONTACT:

ALLFASTENERS

ADDRESS:
15401 COMMERCE PARK DRIVE
BROOKPARK, OHIO, USA 44142

PH: (440)-232-6060
WEB: WWW.ALLFASTENERS.COM



NEXGEN2™ BOLT DETAILS (2)
SCALE: NONE

BOLT HOLE NOTES:

1. ALL SHOP DRILLED HOLES MUST BE NOMINAL 30MM Ø. THE MAX. SHOP DRILLED HOLE Ø IS 1 3/16".
2. ALL FIELD DRILLED HOLES MUST BE NOMINAL 30MM Ø. THE MAX. FIELD DRILLED HOLE Ø IS 30MM.

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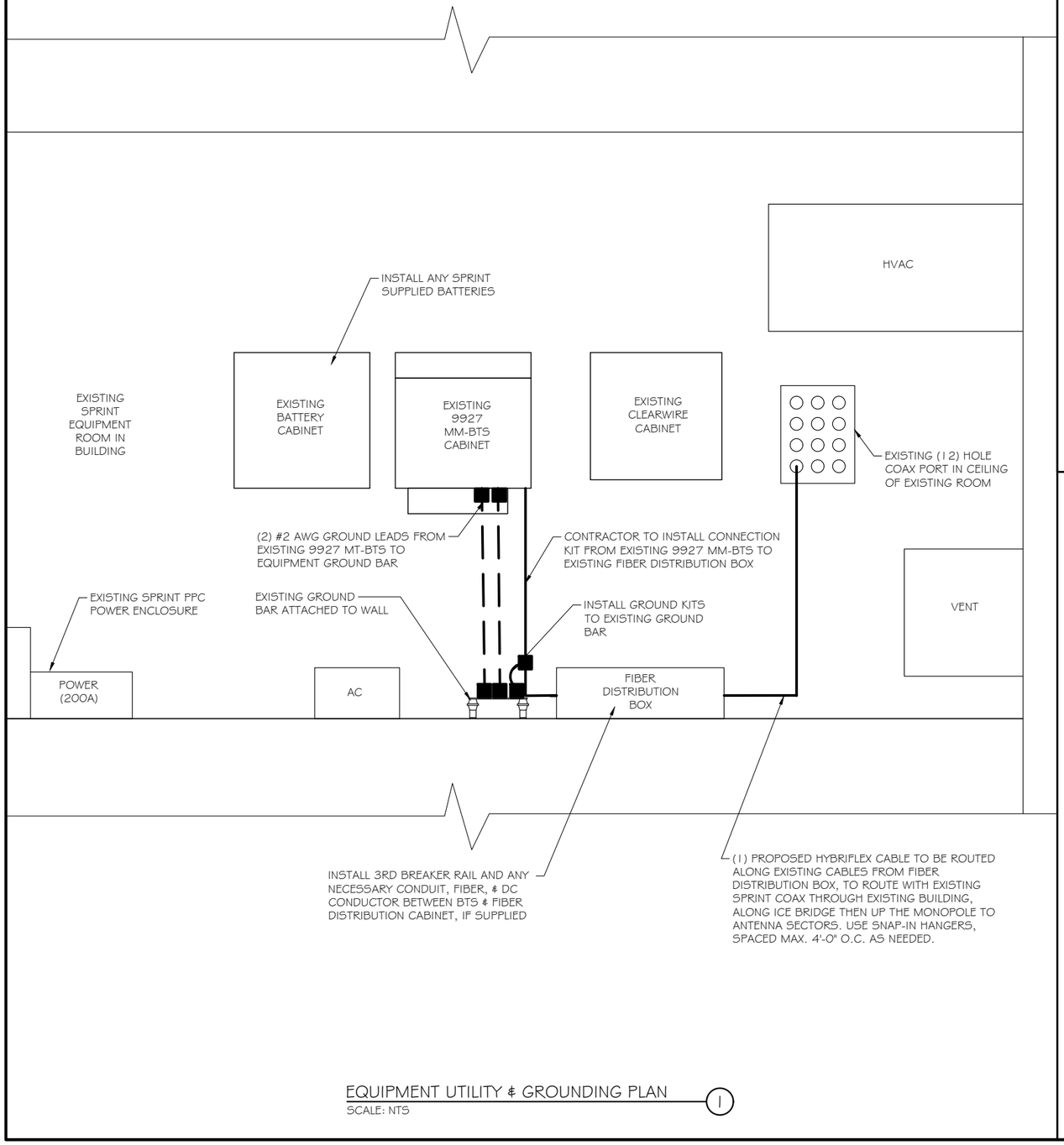
CT33XC534-B

PROJECT INFORMATION:
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

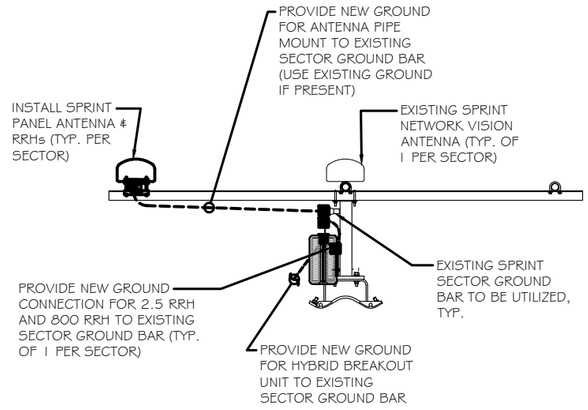
SHEET TITLE:
STRUCTURAL DETAILS

SCALE: NONE

PROJECT NUMBER: 23009
SHEET NUMBER: S-6



EQUIPMENT UTILITY & GROUNDING PLAN (1)
SCALE: NTS



ANTENNA GROUNDING DETAIL (2)
SCALE: NTS

GROUNDING NOTES:

1. CONTRACTOR TO ENSURE PROPER SEQUENCING OF GROUNDING AND UNDERGROUND CONDUIT INSTALLATION TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM AND/OR DAMAGE TO THE CONDUIT.
2. ALL EXTERIOR GROUND CONDUCTORS SHALL BE #2 AWG SOLID TINNED COPPER UNLESS NOTED OTHERWISE.
3. ALL GROUND CONNECTIONS BELOW GRADE SHALL BE EXOTHERMIC (CADWELD).
4. ALL GROUND CONNECTIONS ABOVE GRADE AND/OR INTERIOR SHALL BE COMPRESSION TYPE, TWO-HOLE LUGS OR DOUBLE-CRIMP "C" TAPS.
5. CONTACT AREAS WHERE CONNECTIONS ARE MADE SHALL BE PREPARED TO A BARE BRIGHT FINISH AND COATED WITH AN ANTI-OXIDATION MATERIAL BEFORE CONNECTIONS ARE MADE.
6. MAXIMUM RESISTANCE OF THE COMPLETED GROUND SYSTEM SHALL NOT EXCEED 5 OHMS.
7. WHERE GROUNDING CONNECTIONS ARE MADE TO PAINTED METAL SURFACES, PAINT SHALL BE REMOVED TO BEAR METAL TO ENSURE PROPER CONTACT AND RESTORED/PAINTED TO ORIGINAL FINISH.
8. GROUND DEPTH SHALL BE 30" MINIMUM BELOW FINISHED GRADE, OR 6" BELOW FROST LINE, WHICHEVER IS GREATER.

LEGEND:	
– – – – – – – – – – – – –	EXISTING GROUND CABLE
▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬	PROPOSED GROUND CABLE
▲	MECHANICAL CONNECTION
■	EXOTHERMIC CONNECTION
—E—E—E—E—	PROPOSED ELECTRIC

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UNIONVILLE / POLICE DEPARTMENT
CT33XC534-B

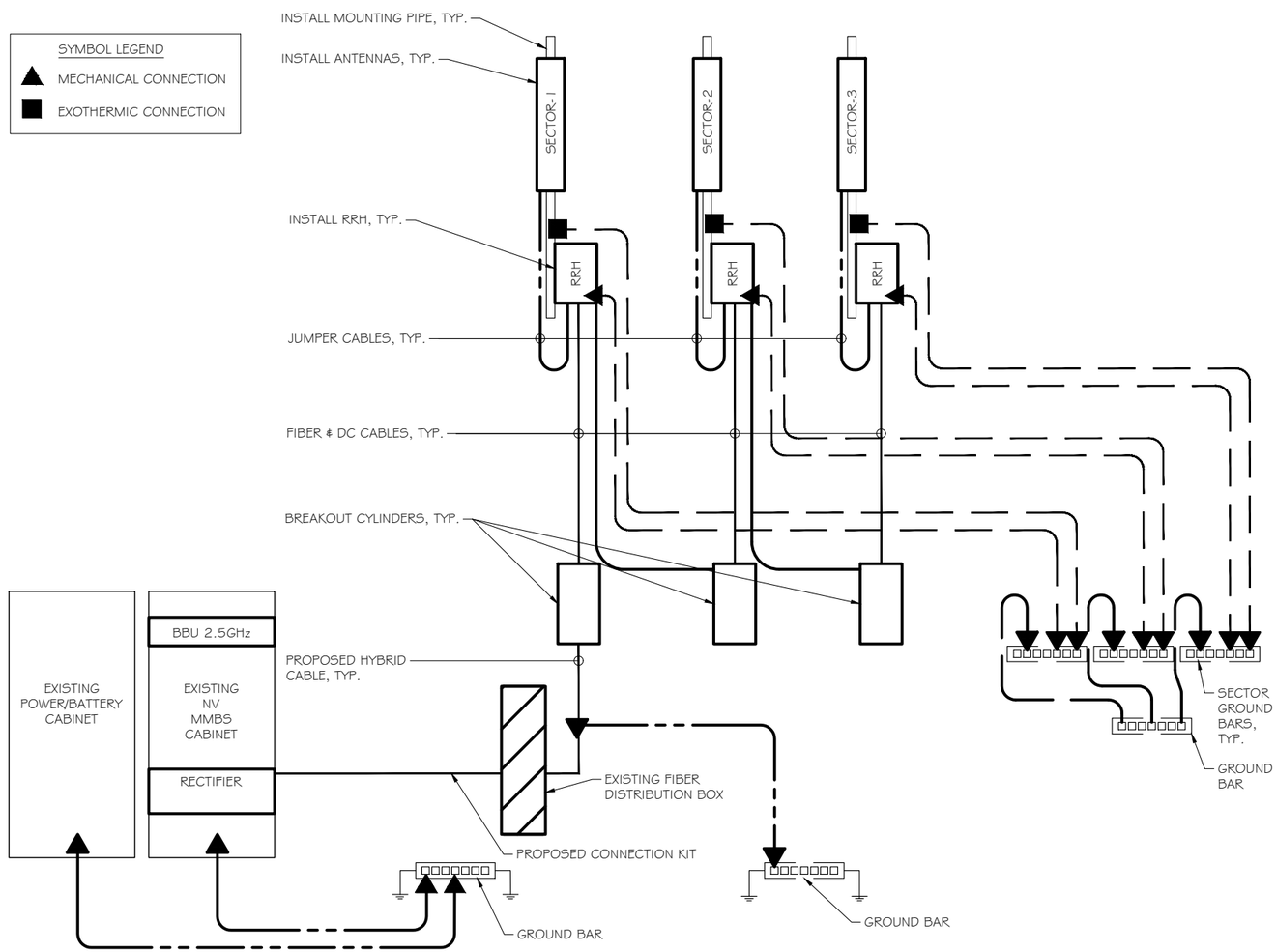
PROJECT INFORMATION:
319-321 NEW BRITAIN AVENUE
FARMINGTON, CT 06032
HARTFORD COUNTY

SHEET TITLE:
EQUIPMENT UTILITY & GROUNDING PLAN

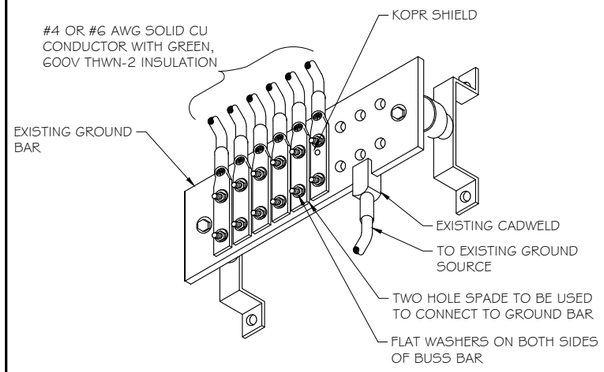
SCALE: NONE

PROJECT NUMBER: 23009
SHEET NUMBER: E-1

SYMBOL LEGEND
- MECHANICAL CONNECTION
- EXOTHERMIC CONNECTION



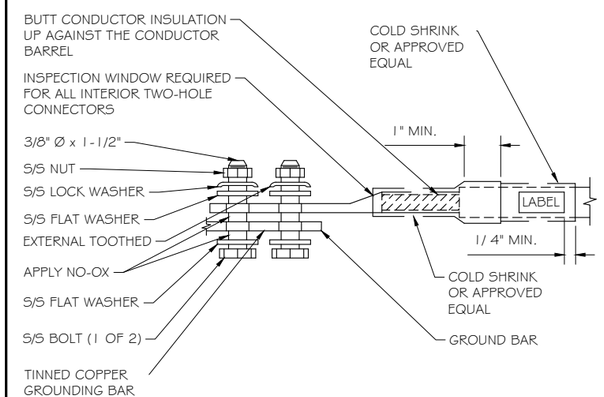
GROUNDING RISER DIAGRAM (1)
SCALE: NTS



NOTES:
1. APPLY NO-OX TO LUG AND GROUND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.

2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

GROUNDING CONDUCTOR INSTALLATION (2)
SCALE: NTS



TWO-HOLE LUG (3)
SCALE: NTS

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FARMINGTON, CT 06032
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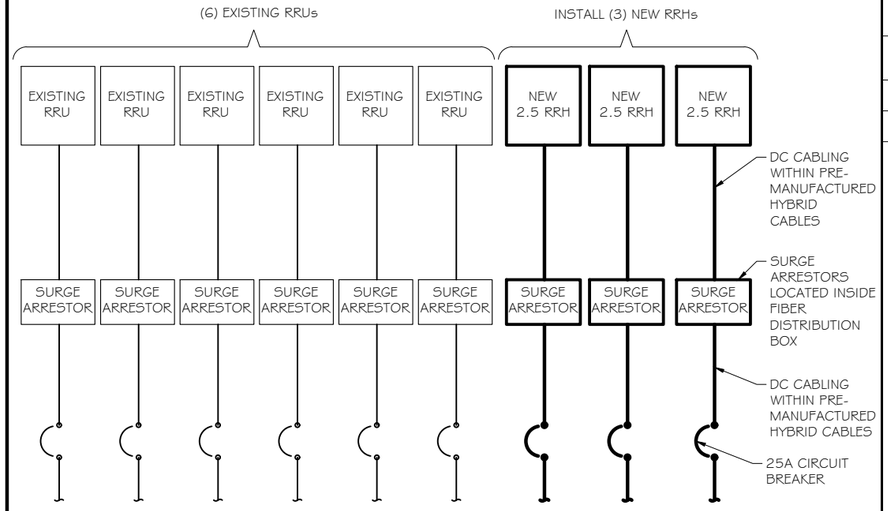
SHEET TITLE:
GROUNDING DETAILS

SCALE: NONE

PROJECT NUMBER: 23009
SHEET NUMBER: E-2



DC ONE-LINE DIAGRAM (1)
SCALE: NTS

A/C PANEL SCHEDULE

VOLTAGE:	240V/120		PANEL STATUS:	EXISTING		N TO GROUND BOND:	YES
MAIN BREAKER:	200 AMP		MODEL NUMBER:	TBD		INTERNAL TVSS:	YES
MOUNT:	EQUIPMENT ROOM		PHASE:	1		WIRE:	3
ENCLOSURE TYPE:	NEMA 3R		BUSS RATING:	200 AMP		GROUND BAR:	YES
			NEUTRAL 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	SUB PANEL	100	2	ON			ON	2	60	AC SURGE PROTECTION	7
2											8
3	UNIT 1 MMBTS	80	2	ON			-	-	-	BLANK (UNUSED)	9
4							-	-	-	BLANK (UNUSED)	10
5	BLANK (UNUSED)	-	-	-			ON	1	15	TELCO GFI	11
6	BLANK (UNUSED)	-	-	-			ON	1	10	FAN	12

AC PANEL SCHEDULE (2)
SCALE: NTS

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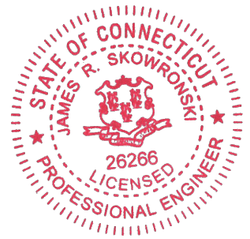

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319-321 NEW BRITAIN AVENUE
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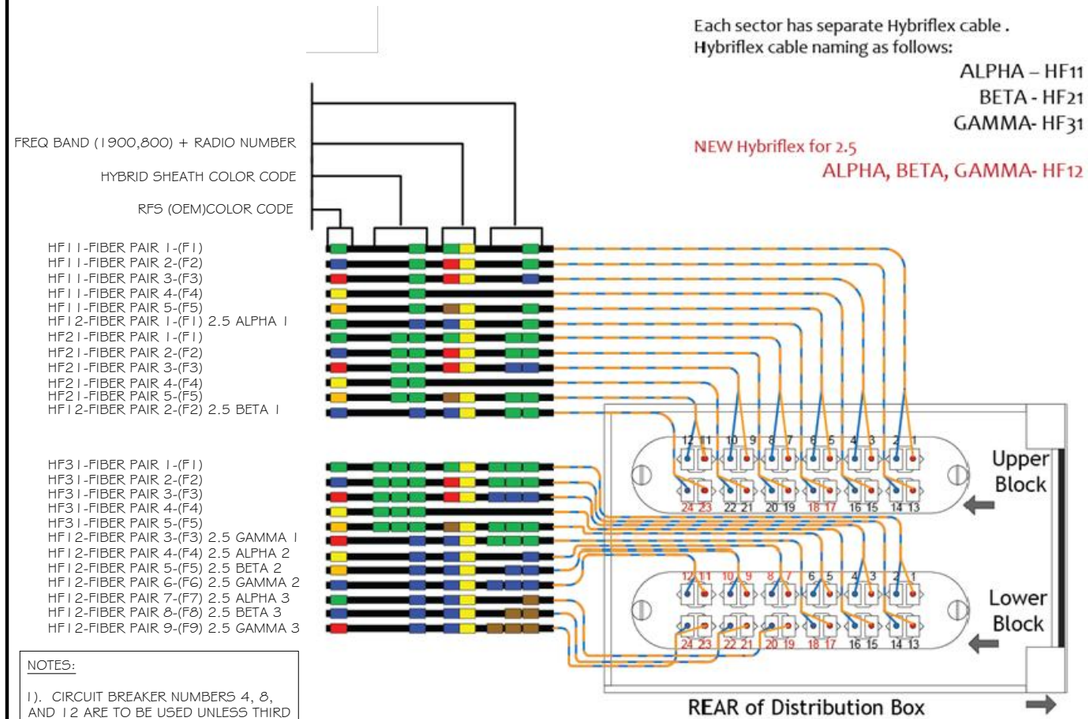
HARTFORD COUNTY

SHEET TITLE:
DC POWER DETAILS & PANEL SCHEDULES

SCALE: NONE

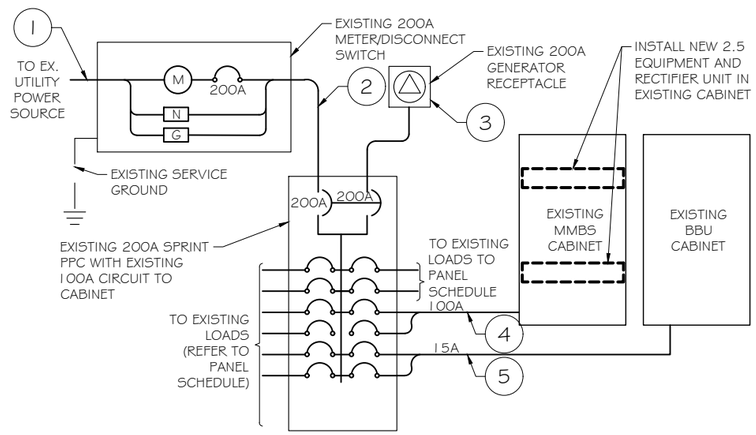
PROJECT NUMBER: 23009
SHEET NUMBER: E-3



NOTES:

1). CIRCUIT BREAKER NUMBERS 4, 8, AND 12 ARE TO BE USED UNLESS THIRD DC RAIL IS REQUIRED FOR MICROWAVE.
2). USE DC POWER LOOP.
3). ALL UNUSED DC FEEDERS TO BE TERMINATED WITH WIRE NUTS AND TAPED.
4). REMOVE ALL DEBRIS FROM INTERIOR OF FIBER DISTRIBUTION BOX WHEN COMPLETE.

TYPICAL FIBER DISTRIBUTION (3)
SCALE: NTS



CIRCUIT SCHEDULE			
NO.	FROM	TO	CONFIGURATION
1	UTILITY SOURCE	METER/ DISCONNECT	EXISTING
2	METER/ DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	TRANSFER & LOAD CENTER	EX. MMBS CABINET	(3) #2 AWG, (1) #8 GND IN 1½" CONDUIT
5	TRANSFER & LOAD CENTER	EX. BBU CABINET	(2) #12 AWG, (1) #12 GND IN ¾" CONDUIT

ELECTRICAL ONE-LINE DIAGRAM (4)
SCALE: NTS

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