



Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

July 19, 2019

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

RE: **Notice of Exempt Modification for T-Mobile:
826747- T-Mobile Site ID: CT11314C
1197 Norwich Rd. Plainfield, CT 06234
Latitude: 41° 38' 46.77"/ Longitude: -71° 56' 28.70"**

Dear Ms. Bachman:

T-Mobile currently maintains three (3) total antennas at the 149-foot mount on the existing 150-foot Monopole Tower, located at 1197 Norwich Rd. Plainfield, CT. The tower is owned by Crown Castle. The property is owned by Plainfield Limited Inc. T-Mobile now intends to add three (3) new 600/700 MHz antennas at the 149-foot mount. T-Mobile is also proposing tower mount modifications as shown on the enclosed mount analysis.

Planned Modifications:

Tower:

Install New:

- (3) RFS-APXVAARR24_43U-NA20 Antenna 600/700/2100 MHz **(ADD)**
- (3) TMA KRY 112 489/2
- (3) Ericsson 4449 B12/B71 RRU
- (6) 1-1/4" Coax
- (2) Hybrid Lines

Existing to Remain:

- (6) 1-5/8" Coax
- (3) EMS RR90-17-XXDP Antenna (Dormant)
- (3) TMA KRY 112 144/1

Ground:

Install New:

- (3) 4415 B66A Radio

Upgrade:

Upgrade to existing cabinet.

The Foundation for a Wireless World.

CrownCastle.com

The tower was approved by the Town of Plainfield, CT on September 18, 2000 with no conditions. The town approval document is included.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j- 73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to First-Selectman - Ms. Cathy Tendrich, Town of Plainfield, Planning & Zoning Supervisor - Ms. Mary Ann Chinatti, Town of Plainfield, as well as the property owner, and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication 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, T-Mobile respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Anne Marie Zsamba.

Sincerely,

Anne Marie Zsamba
Real Estate Specialist
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
(201) 236-9224
AnneMarie.Zsamba@crowncastle.com

Attachments

cc:

First-Selectman - Ms. Cathy Tendrich
Town of Plainfield
8 Community Avenue
Plainfield, CT 06374
860-230-3001

Planning & Zoning Supervisor - Ms. Mary Ann Chinatti
Town of Plainfield
8 Community Avenue
Plainfield, CT 06374
860-230-3028

Plainfield Limited Inc
32 Packer Road
Canterbury, CT 06331
860-546-9819

Crown Castle, Tower Owner

ORIGIN ID: GFLA (518) 373-3523
ANNE MARIE ZSAMBA
CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065
UNITED STATES US

SHIP DATE: 17 JUL 19
ACTWGT: 2.00 LB
CAD: 104924194/INET4160

BILL SENDER

TO **PLAINFIELD LIMITED INC**

32 PACKER ROAD

CANTERBURY CT 06331

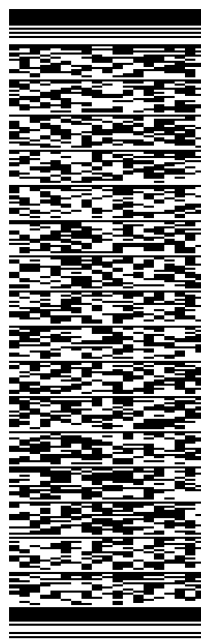
(860) 546-9819

REF: 1734.7890

INV:
PO:

DEPT:

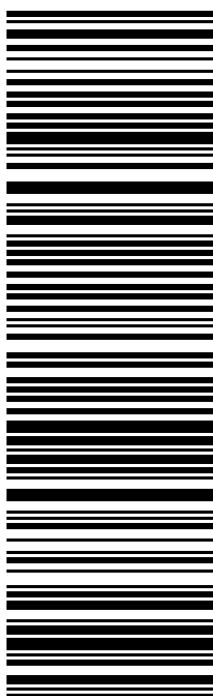
567 J2/A6F9/K05A2



TRK#
0201 **7757 6241 6152**

THU - 18 JUL 4:30P
PRIORITY OVERNIGHT

EB GONA
06331
CT-US **BDL**



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Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ORIGIN ID: GFLA (518) 373-3523
ANNE MARIE ZSAMBA
CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065
UNITED STATES US

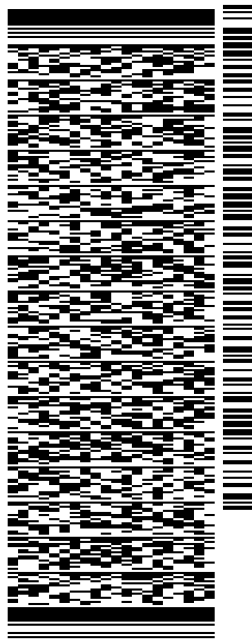
SHIP DATE: 17 JUL 19
ACTWGT: 2.00 LB
CAD: 104924194INET4160

BILL SENDER

TO **MARY ANN CHINATTI, PLANNING & ZONIN**
TOWN OF PLAINFIELD
8 COMMUNITY AVENUE

PLAINFIELD CT 06374

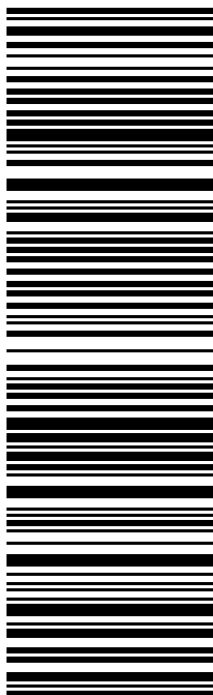
(860) 230-3001 REF: 1734.7880
INV: DEPT:
PO:



J192019062401uv

TRK# THU - 18 JUL 10:30A
0201 7757 6239 8881 PRIORITY OVERNIGHT

EB GONA 06374
CT-US BDL



567 J2/A6F9/K05A2

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CLIFTON PARK, NY 12065
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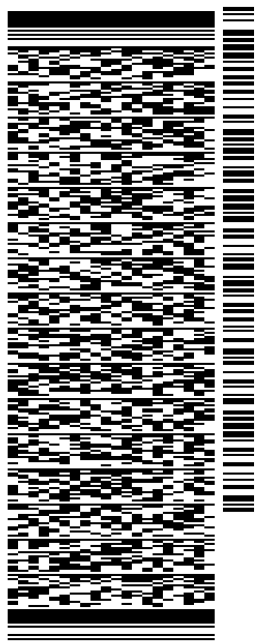
SHIP DATE: 17 JUL 19
ACTWGT: 2.00 LB
CAD: 104924194IN/ET4160

BILL SENDER

TO CATHY TENDRICH, FIRST SELECTWOMAN
TOWN OF PLAINFIELD
8 COMMUNITY AVENUE

PLAINFIELD CT 06374

(860) 230-3001 REF: 1734.7880
INV: DEPT:
PO:

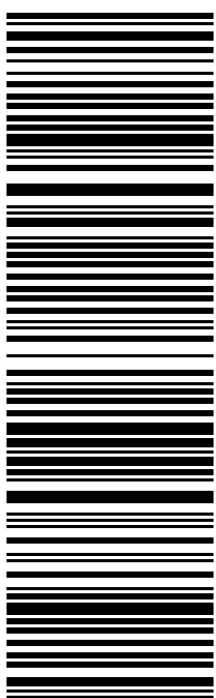


J192019062401uv

567 J2/A6F9/K05A2

TRK# THU - 18 JUL 10:30A
0201 7757 6238 3890 PRIORITY OVERNIGHT

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CT-US BDL



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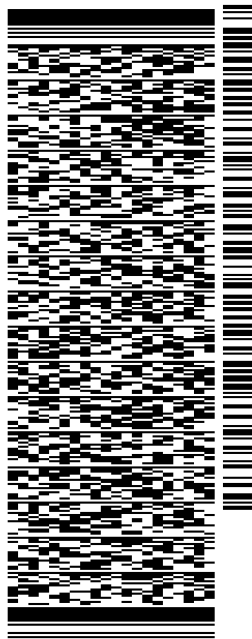
SHIP DATE: 17 JUL 19
ACTWGT: 4.00 LB
CAD: 104924194/INET4160

BILL SENDER

TO **MELANIE BACHMAN**
CONNECTICUT SITING COUNCIL
10 FRANKLIN SQUARE

NEW BRITAIN CT 06051

(860) 827-2951 REF: 1765 6880
INV: PO: DEPT:

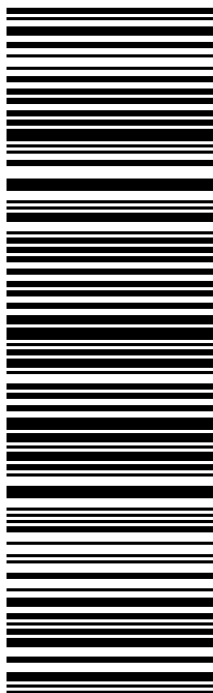


J192019062401uv

567 J2/A6F9/05A2

TRK# 7757 6236 3317 THU - 18 JUL 10:30A
0201 PRIORITY OVERNIGHT

EB BDLA 06051
CT-US BDL



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Exhibit A

Original Facility Approval

CTI-314



Town Hall
8 Community Avenue
Plainfield, CT 06374

Telephone (860) 230-3030
Fax (860) 230-3033

THE PLAINFIELD TOWN HALL
PLAINFIELD • CENTRAL VILLAGE • MOOSUP • WAUREGAN

PLANNING AND ZONING COMMISSION

September 18, 2000

Omnipoint Communications, Inc.
100 Filley Street
Bloomfield, CT 06002

Dear Applicant:

At its meeting on Tuesday, September 12, 2000, the Planning & Zoning Commission approved your request SP-2000-05 for a Special Permit under Section 6.35 to install a telecommunications monopole with antenna and equipment compound on property located at 1197 Norwich Road, Plainfield. Map 5, Block 4, Lot 40.

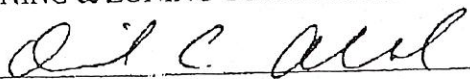
The Conditions are:
None.

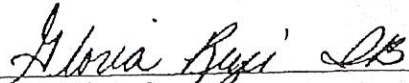
Please file the enclosed Special Permit on the Land Records in the Town Clerk's office.

A copy of the Legal Notice is enclosed for your records and will appear in the Norwich Bulletin on Wednesday, September 20, 2000.

Yours Truly,

PLANNING & ZONING COMMISSION


Dave Allard, Chairman


Gloria Rizer, Secretary

CC: Plainfield Limited Inc.
133 Packer Rd.
Canterbury, CT 06331

Exhibit B

Property Card

1197 NORWICH RD

Location 1197 NORWICH RD

Mblu 005/ 0004/ 0040/ /

Acct# 00026300

Owner PLAINFIELD LIMITED INC

Assessment \$411,070

Appraisal \$723,550

PID 282

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$433,150	\$290,400	\$723,550
Assessment			
Valuation Year	Improvements	Land	Total
2018	\$303,210	\$107,860	\$411,070

Owner of Record

Owner PLAINFIELD LIMITED INC
Co-Owner
Address 32 PACKER ROAD
CANTERBURY, CT 06331

Sale Price \$300,000
Certificate
Book & Page 0223/0366
Sale Date 06/21/1994
Instrument

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
PLAINFIELD LIMITED INC	\$300,000		0223/0366		06/21/1994

Building Information

Building 1 : Section 1

Year Built: 1946
Living Area: 43,998
Replacement Cost: \$1,068,271
Building Percent 31
Good:
Replacement Cost
Less Depreciation: \$331,160

Building Attributes	
Field	Description

Zone C
Neighborhood 1010
Alt Land Appr No
Category

Depth
Assessed Value \$107,860
Appraised Value \$290,400

Outbuildings

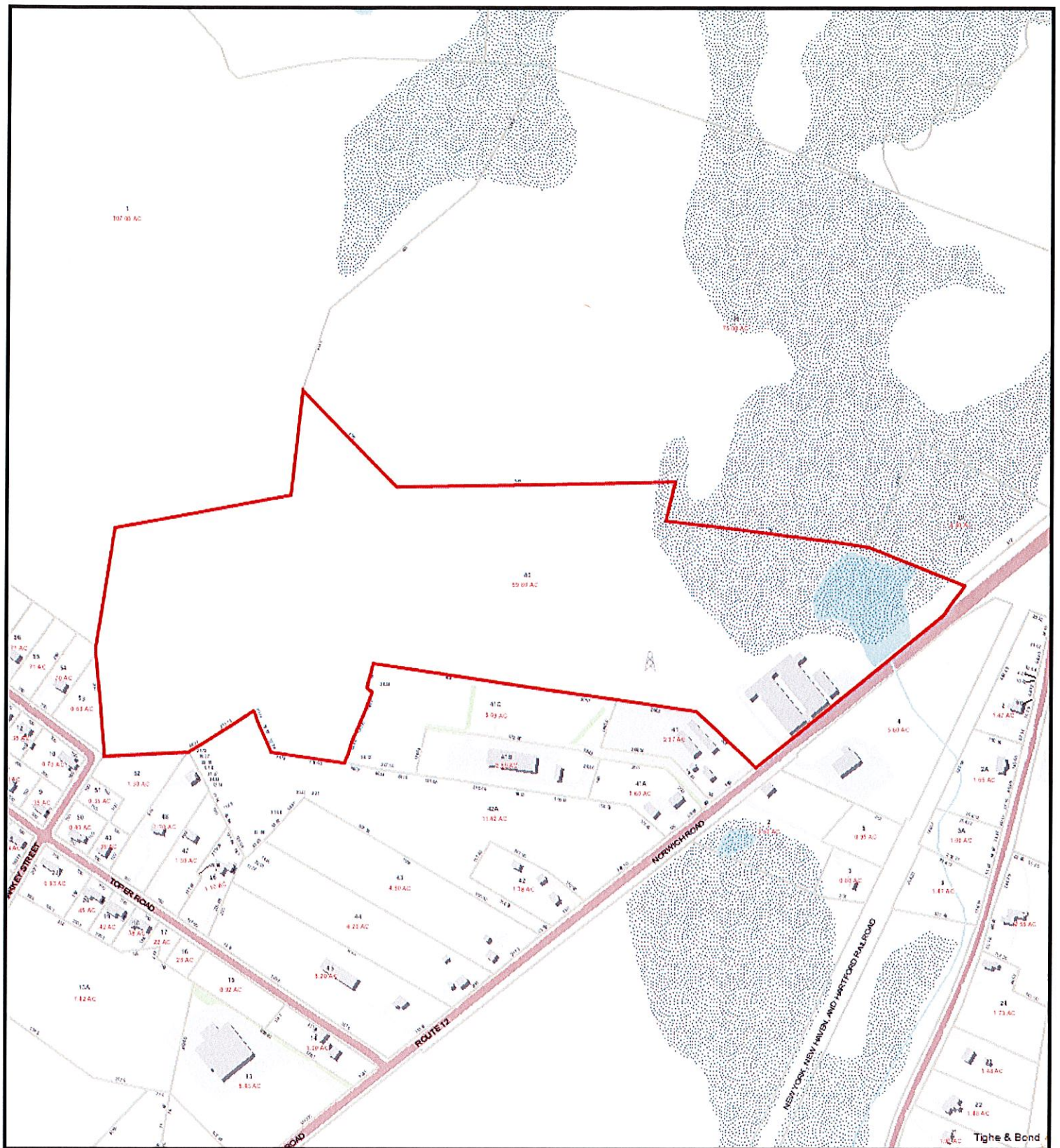
Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	Paving-Asphalt			4400 S.F.	\$4,400	1
TT4	Cell Tower			150 HEIGHT	\$67,500	1
FN4	Fence 8' Chain			192 L.F.	\$2,780	1
RS5	Cell Tower Building			360 UNITS	\$27,000	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$433,150	\$290,400	\$723,550
2017	\$433,150	\$290,400	\$723,550
2016	\$475,570	\$290,400	\$765,970

Assessment			
Valuation Year	Improvements	Land	Total
2017	\$303,210	\$107,860	\$411,070
2017	\$303,210	\$107,860	\$411,070
2016	\$332,900	\$107,860	\$440,760

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1197 Norwich Road

7/15/2019 3:36:38 PM

Scale: 1"=500'

Scale is approximate

The information depicted on this map is for planning purposes only.
It is not adequate for legal boundary definition, regulatory
interpretation, or parcel-level analyses.



Exhibit C

Construction Drawings



T-MOBILE SITE NAME:
PLAINFIELD/I-395

T-MOBILE SITE NUMBER:
CT11314C

CROWN BU: 826747 / APP#: 479828
CUSTOM CONFIGURATION

1197 NORWICH ROAD
PLAINFIELD, CT 06234

EXISTING 150'-0" MONOPOLE



PROJECT SUMMARY

SITE TYPE: EXISTING EQUIPMENT UPGRADE

SITE ADDRESS: 1197 NORWICH ROAD
PLAINFIELD, CT 06234

JURISDICTION: TOWN OF PLAINFIELD

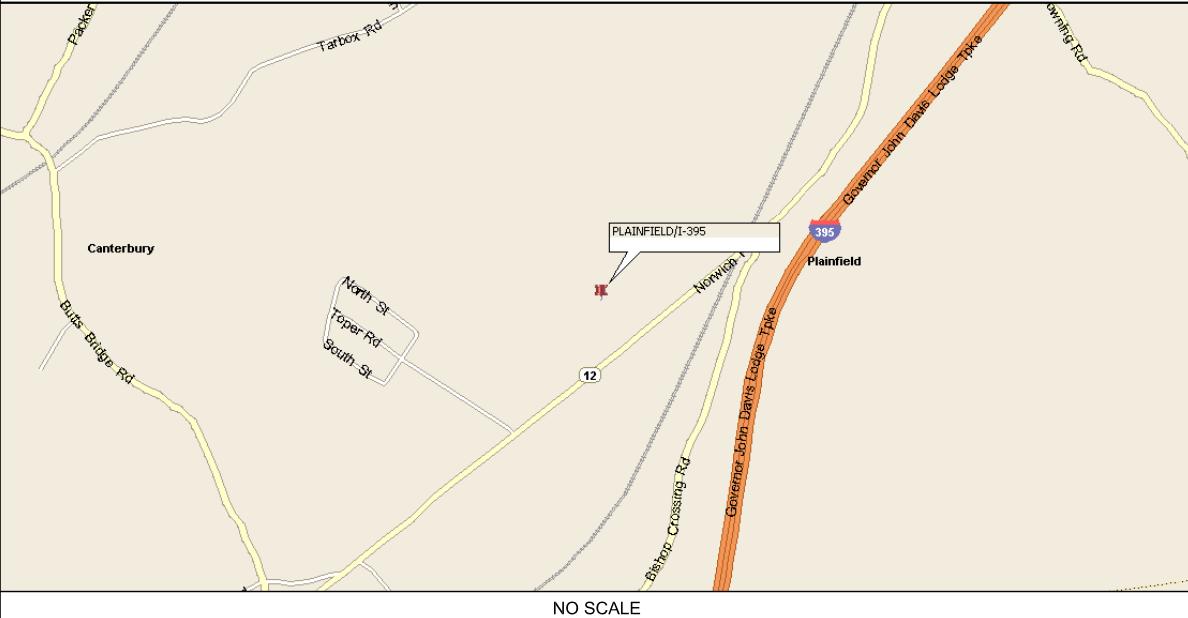
NAD83	
LATITUDE:	41.646324° N
LONGITUDE:	71.941305° W
TOWER OWNER:	CROWN CASTLE 3200 HORIZON DRIVE, SUITE 150 KING OF PRUSSIA, PA 19406 JASON SMITH (610) 635-3225

CUSTOMER/APPLICANT: T-MOBILE
4 SYLVAN WAY
PARSIPPANY, NJ 07054
(973) 397-4800

OCCUPANCY TYPE: UNMANNED

A.D.A. COMPLIANCE: FACILITY IS UNMANNED AND NOT
FOR HUMAN HABITATION

LOCATION MAP



DRAWING INDEX

[illegible]

CONTACT INFORMATION

A&E FIRM: B+T GROUP
1717 S. BOULDER, STE. 300
TULSA, OK 74119
CONTACT: MIKE OAKES
PHONE: (918) 587-4630

ELECTRIC PROVIDER: ATMOS ENERGY
(866) 322-8667

TELCO PROVIDER: DIRECTV (866) 852-2721

DRIVING DIRECTIONS

DEPART FROM BRADLEY INTERNATIONAL AIRPORT ON TERMINAL RD. ROAD NAME CHANGES TO BRADLEY FIELD CONNECTOR. ROAD NAME CHANGES TO CT-20. TAKE RAMP ONTO I-91. AT EXIT 30, TAKE RAMP ONTO I-84. AT EXIT 55, TAKE RAMP ONTO CT-2. AT EXIT 28N, TAKE RAMP ONTO I-395. AT EXIT 84, TURN RIGHT ONTO RAMP. TURN RIGHT ONTO CT-12. KEEP STRAIGHT ONTO CT-12. TURN LEFT ONTO LOCAL ROAD AND ARRIVE AT PLAINFIELD/I-395.

A/E DOCUMENT REVIEW STATUS

TITLE	SIGNATURE	DATE
T-MOBILE PROP:		
T-MOBILE R.F. MGR.:		
T-MOBILE NetOps:		
T-MOBILE CONST. MGR.:		
INTERCONNECT:		
T-MOBILE SITE DEV. MGR.:		
PROPERTY OWNER:		
PLANNING:		

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS
AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION
DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE
LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS



CALL CONNECTICUT ONE CALL
(800) 922-4455
CALL 3 WORKING DAYS
BEFORE YOU DIG!



CODE COMPLIANCE

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

<u>CODE TYPE</u>	<u>CODE</u>
BUILDING/DWELLING	2018 CONNECTICUT STATE BUILDING CODES
STRUCTURAL	2018 CONNECTICUT STATE BUILDING CODES
MECHANICAL	2018 CONNECTICUT STATE BUILDING CODES
ELECTRICAL	NEC 2017

THE PROPOSED PROJECT INCLUDES:

- REMOVE (1) DUS41.
- RELOCATE (3) EXISTING TMAS AT 150'-0".
- INSTALL (3) NEW ANTENNAS AT 150'-0".
- INSTALL (3) NEW RRUS AT 150'-0".
- INSTALL (3) NEW RRUS ON THE GROUND.
- INSTALL (3) NEW TMAS AT 150'-0".
- INSTALL (2) NEW 6x12 HCS CABLE.
- INSTALL (6) NEW 1 1/4" COAX CABLES.
- INSTALL (2) BB6630.
- INSTALL (1) BBU.

DO NOT SCALE DRAWINGS

ALL DRAWINGS CONTAINED HEREIN
ARE FORMATTED FOR 11X17.
CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING
DIMENSIONS AND CONDITIONS ON THE JOB SITE AND
SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING
OF ANY DISCREPANCIES BEFORE PROCEEDING WITH
THE WORK OR BE RESPONSIBLE FOR SAME.

PROJECT NO: 136593.001.01

CHECKED BY: RMC

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	7/11/19	MMI	CONSTRUCTION
1	7/18/19	JJD	CONSTRUCTION

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20

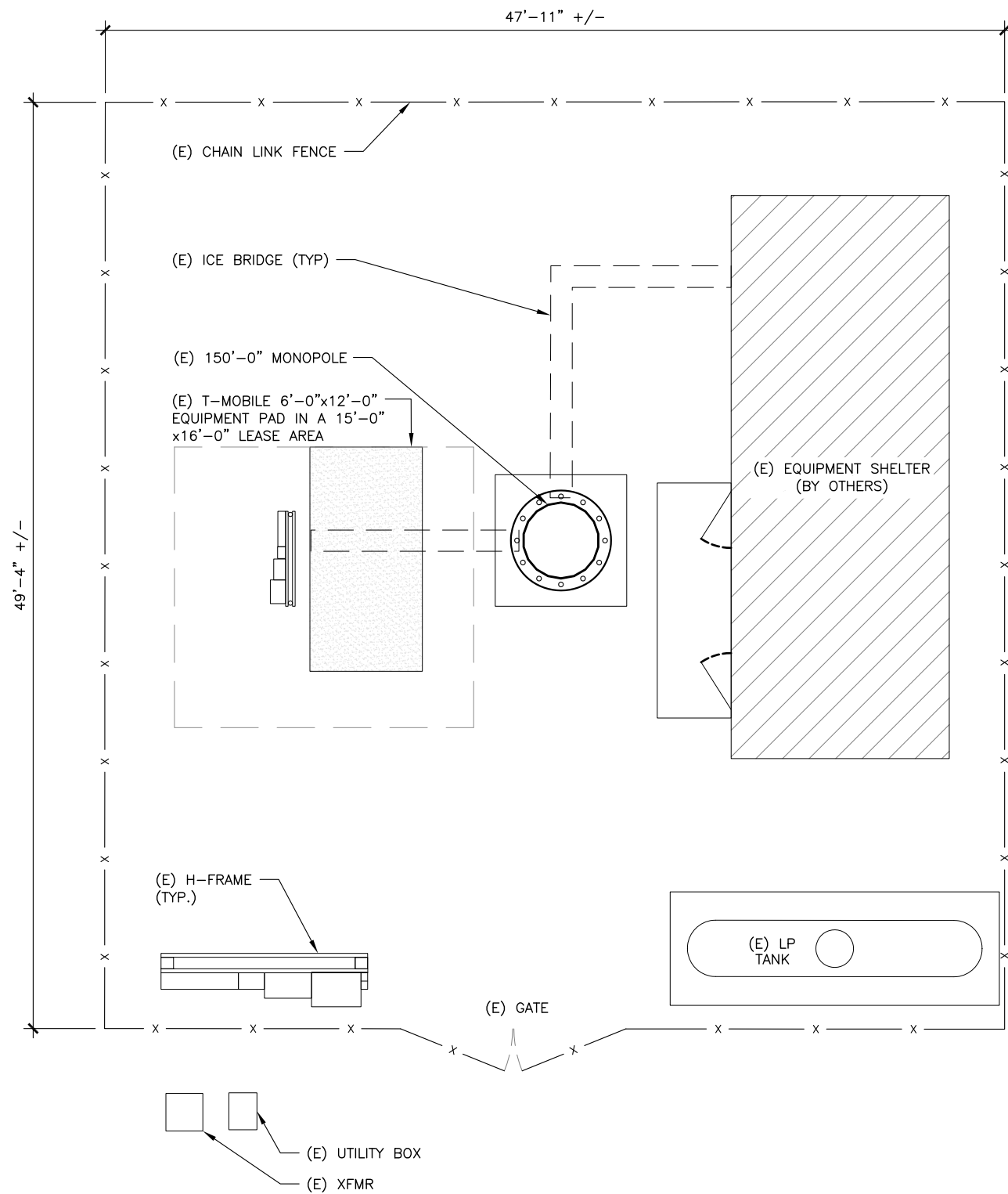


IT IS A VIOLATION OF LAW FOR ANY PERSON,
UNLESS THEY ARE ACTING UNDER THE DIRECTION
OF A LICENSED PROFESSIONAL ENGINEER,
TO ALTER THIS DOCUMENT.

SHEET NUMBER
T-1

1

136593_826747_Plainfield - I-35_CD.dwg - Sheet:A-1 - User: ghoyes - Jul 18, 2019 - 1:47pm



1 OVERALL SITE PLAN
SCALE: 0' 4' 8' 16' 32'

- GENERAL NOTES:**
- SUBJECT PROPERTY IS SITUATED AT 1197 NORWICH ROAD, PLAINFIELD, CT 06234.
 - APPLICANT: T-MOBILE
A DELAWARE LIMITED LIABILITY COMPANY
4 SYLVAN WAY
PARSIPPANY, NEW JERSEY 07054
(973) 397-4800

TOWER OWNER: CROWN CASTLE INTERNATIONAL
 - THE APPLICANT IS TO UPDATE THEIR NETWORK BY INSTALLING THREE (3) NEW PANEL ANTENNAS, THREE (3) TMAS, SIX (6) RRUS, AND EIGHT (8) ADDITIONAL CABLES MOUNTED ON AN EXISTING MONOPOLE.
 - THIS FACILITY SHALL BE VISITED ON THE AVERAGE OF ONCE A MONTH FOR MAINTENANCE AND SHALL BE MONITORED FROM A REMOTE FACILITY.
 - THE EXISTING SITE IS LOCATED AT LATITUDE OF 41.646324' N± AND LONGITUDE OF 71.941305' W±. THE HORIZONTAL DATUM ARE IN TERMS OF NORTH AMERICAN DATUM OF 1983 (NAD 83).
 - THIS SET OF PLANS HAS BEEN PREPARED FOR THE PURPOSES OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL CONDITIONS OF APPROVAL HAVE BEEN SATISFIED AND EACH OF THE DRAWINGS HAVE BEEN REVISED TO INDICATED "ISSUED FOR CONSTRUCTION"
 - ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION FOR THE SITE IMPROVEMENTS SHOWN HEREON SHALL BE IN ACCORDANCE WITH:

6.A. CURRENT PREVAILING MUNICIPAL AND/OR COUNTY SPECIFICATIONS, STANDARDS, AND REQUIREMENTS.
6.B. CURRENT PREVAILING UTILITY COMPANY AUTHORITY SPECIFICATIONS, STANDARDS AND REQUIREMENTS.
 - THE CONTRACTOR SHALL NOTIFY B+T GROUP, P.A. IMMEDIATELY IF ANY FIELD-CONDITIONS ENCOUNTERED DIFFER FROM THOSE REPRESENTED HEREON, AND/OR IF SUCH CONDITIONS WOULD OR COULD RENDER THE DESIGNS SHOWN HEREON INAPPROPRIATE AND/OR INEFFECTIVE.
 - THE CONTRACTOR IS RESPONSIBLE TO PROTECT, REPAIR AND/OR REPLACE ANY DAMAGED STRUCTURES, UTILITIES OR LANDSCAPED AREA WHICH MAY BE DISTURBED DURING THE CONSTRUCTION OF THIS FACILITY.
 - THE CONSTRUCTION CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ALL CONSTRUCTION MEANS AND METHODS. THE CONSTRUCTION CONTRACTOR IS ALSO RESPONSIBLE FOR ALL JOB SITE SAFETY.
 - SITE INFORMATION SHOWN TAKEN FROM CROWN CASTLE SITE PLANS AND FROM CROWN CASTLE INSPECTION PHOTOS.
 - NO GUARANTEE IS MADE NOR SHOULD BE ASSUMED AS TO THE COMPLETENESS OR ACCURACY OF THE HORIZONTAL OR VERTICAL LOCATIONS. ALL PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS OF THE INFORMATION SHOWN PRIOR TO CONSTRUCTION ACTIVITIES.
 - ALL IMPROVEMENTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE TOWNSHIP ENGINEER WHO WILL BE GIVEN PROPER NOTIFICATION PRIOR TO THE START OF ANY CONSTRUCTION.



CT11314C
BU #: 826747

PLAINFIELD/I-395
1197 NORWICH ROAD
PLAINFIELD, CT 06234
EXISTING 150'-0" MONOPOLE

PROJECT NO: 136593.001.01
CHECKED BY: RMC

ISSUED FOR:			
REV	DATE	DRWN	DESCRIPTION
0	7/11/19	MMI	CONSTRUCTION
1	7/18/19	JJD	CONSTRUCTION

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20



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SHEET NUMBER: **A-1**
REVISION: **1**

136593_826747_Plainfield - I-35_CD.dwg - Sheet A-2 - User: ghoyes - Jul 18, 2019 - 1:47pm

LEGEND		
EXISTING/DEMOLITION NOTES		INSTALLATION NOTES
(A)	EXISTING EMS RR90-17-XXDP ANTENNA TO REMAIN (TOTAL OF 3)	(1) INSTALL RFS APXVAARR24_43-U-NA20 (8 FT) ANTENNAS ON EXISTING MOUNT. PROVIDE NEW 2 7/8" OD SCH.40 PIPE MAST (LENGTH TO BE V.I.F) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
(B)	EXISTING ERICSSON KRY 112 144/1 TMA TO BE RELOCATED TO POS 2 (SEE INSTALLATION NOTE 3)	(2) INSTALL NEW ERICSSON KRY 112 489/2 TMA BEHIND ANTENNA (TYP. OF 1 PER SECTOR, TOTAL OF 3)
(C)	EXISTING 1 5/8" COAX TO REMAIN (TOTAL OF 6)	(3) RELOCATED TMA (TYP. OF 1 PER SECTOR, TOTAL OF 3)
(D)	EXISTING DUS41 TO BE REMOVED (TOTAL OF 1)	(4) INSTALL RADIO 4449 B12/B71 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
(E)	(1) EXISTING RBS 6201 ODE CABINET TO REMAIN	(5) INSTALL RADIO 4415 B66A (TOTAL OF 3)
		(6) INSTALL (2) 6x12 HCS FIBER. RUN FROM EQUIPMENT TO ANTENNAS FOLLOWING EXISTING ROUTING
		(7) INSTALL (6) COAX CABLES 1 5/8" RUN FROM EQUIPMENT TO ANTENNAS FOLLOWING EXISTING ROUTING

ANTENNA AND CABLE SCHEDULE											
SECTOR	POSITION	EXISTING ANTENNAS	PROPOSED ANTENNA CONFIGURATION		E-TILT	M-TILT	ANTENNA CENTERLINE	TMA/RRU	CABLES	JUMPER TYPE	CABLE LENGTH
40° - ALPHA	A1	EMS - RR90-17-XXDP	-	-	2°	0°	150'-0"	0/0	-	-	-
	A2	RFS APXVAARR24_43-U-NA20	LTE	B71+B12 (TOWER) B66A (GROUND)	2°/2°/2°/2°	0°		2/2	(1) 6x12 HCS FIBER (2) 1 5/8" COAX (2) 1 1/4" COAX	DC/FIBER & 1/2" COAX	160'-0"
170° - BETA	B1	EMS - RR90-17-XXDP	-	-	2°	0°	150'-0"	0/0	-	-	-
	B2	RFS APXVAARR24_43-U-NA20	LTE	B71+B12 (TOWER) B66A (GROUND)	2°/2°/2°/2°	0°		2/2	(1) 6x12 HCS FIBER (2) 1 5/8" COAX (2) 1 1/4" COAX	DC/FIBER & 1/2" COAX	160'-0"
270° - GAMMA	G1	EMS - RR90-17-XXDP	-	-	2°	0°	150'-0"	0/0	-	-	-
	G2	RFS APXVAARR24_43-U-NA20	LTE	B71+B12 (TOWER) B66A (GROUND)	2°/2°/2°/2°	0°		2/2	(1) 6x12 (SHARED) (2) 1 5/8" COAX (2) 1 1/4" COAX	DC/FIBER & 1/2" COAX	160'-0"



CT11314C
BU #: 826747

PLAINFIELD/I-395
1197 NORWICH ROAD
PLAINFIELD, CT 06234
EXISTING 150'-0" MONOPOLE

PROJECT NO: 136593.001.01
CHECKED BY: RMC

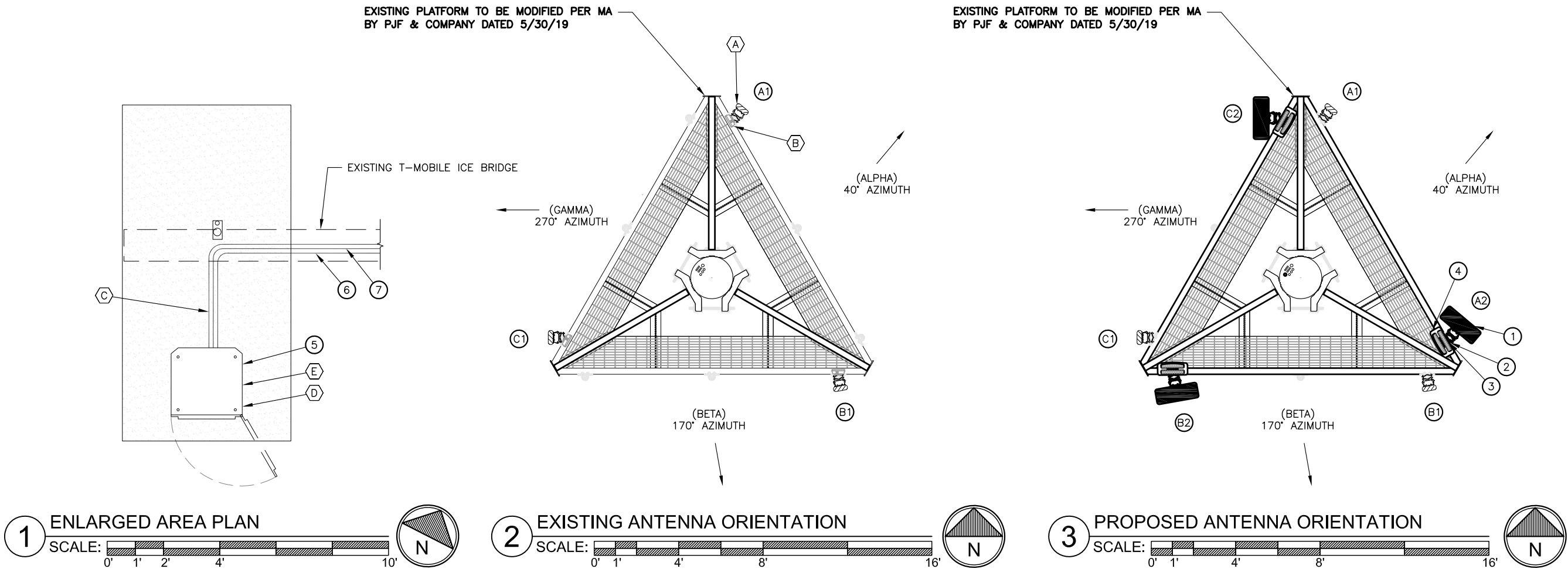
ISSUED FOR:			
REV	DATE	DRWN	DESCRIPTION
0	7/11/19	MMI	CONSTRUCTION
1	7/18/19	JJD	CONSTRUCTION

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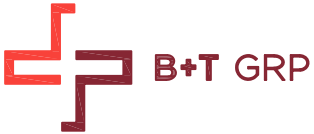
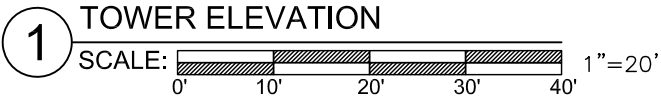
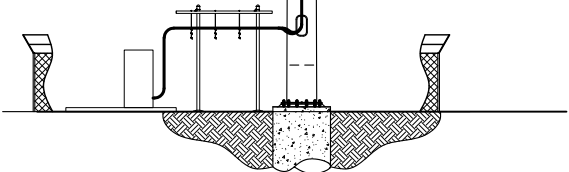
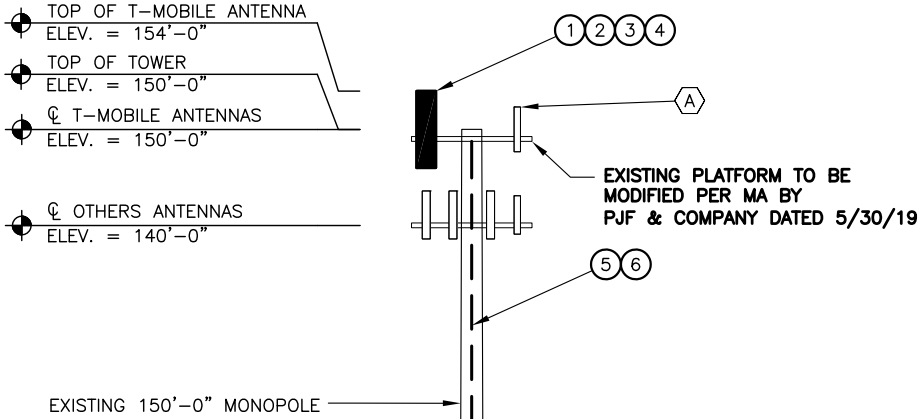


136593_826747_Plainfield - I-35_CD.dwg - Sheet:A-3 - User: ghoyes - Jul 18, 2019 - 1:47pm

LEGEND		
EXISTING/DEMOLITION NOTES		INSTALLATION NOTES
A	EXISTING EMS RR90-17-XXDP ANTENNA TO REMAIN (TOTAL OF 3)	1 INSTALL RFS APXVAARR24_43-U-NA20 (8 FT) ANTENNAS ON EXISTING MOUNT. PROVIDE NEW 2 7/8" OD SCH.40 PIPE MAST (LENGTH TO BE V.I.F) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
B	EXISTING ERICSSON KRY 112 144/1 TMA TO BE RELOCATED TO POS 2 (SEE INSTALLATION NOTE 3)	2 INSTALL NEW ERICSSON KRY 112 489/2 TMA BEHIND ANTENNA (TYP. OF 1 PER SECTOR, TOTAL OF 3)
C	EXISTING 1 5/8" COAX TO REMAIN (TOTAL OF 6)	3 RELOCATED TMA (TYP. OF 1 PER SECTOR, TOTAL OF 3)
D	EXISTING DUS41 TO BE REMOVED (TOTAL OF 1)	4 INSTALL RADIO 4449 B12/B71 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
E	(1) EXISTING RBS 6201 ODE CABINET TO REMAIN	5 INSTALL (2) 6x12 HCS FIBER. RUN FROM EQUIPMENT TO ANTENNAS FOLLOWING EXISTING ROUTING
		6 INSTALL (6) COAX CABLES 1 5/8" RUN FROM EQUIPMENT TO ANTENNAS FOLLOWING EXISTING ROUTING

STRUCTURAL ANALYSIS NOTE:
REFER TO STRUCTURAL ANALYSIS OR STRUCTURAL LETTER FOR APPROVAL OF ADDITIONAL NEW APPURTENANCES.

- LEGEND:
- NEW
- EXISTING
- FUTURE



CT11314C
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PLAINFIELD/I-395
1197 NORWICH ROAD
PLAINFIELD, CT 06234
EXISTING 150'-0" MONOPOLE

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SHEET NUMBER: A-3
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PROPOSED ANTENNA TO PIPE CLAMP
(INCLUDED WITH ANTENNA)

PROPOSED L7/L6 ANTENNA

2
A-4

3
A-3

PROPOSED RRU

EXISTING PLATFORM
MOUNTING RAIL

PROPOSED PIPE TO PIPE
CROSS-OVER CLAMP KIT
SITEPRO P/N: SP219
(OR APPROVED EQUAL)

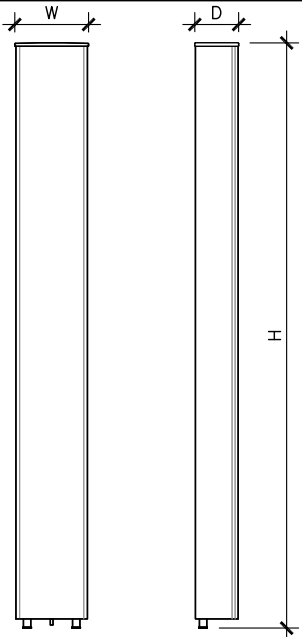
EXISTING MOUNTING PIPE

PROPOSED ANTENNA & RRU MOUNTING DETAIL

SCALE: N.T.S.

NOTES:

1. TAG ALL EXISTING AND PROPOSED CABLES/JUMPERS PER T-MOBILE SPECIFICATIONS.
2. SEE RF SCHEDULE FOR CABLE AND JUMPER LENGTHS.
3. REFER TO ANTENNA ORIENTATION ON SHEET A-3 FOR EXACT ANTENNA POSITIONING.

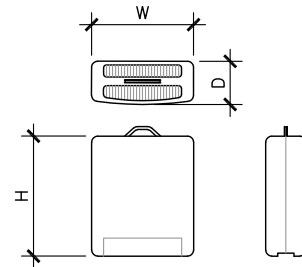


ANTENNA SPECS

MANUFACTURER	RFS
MODEL #	APXVAARR24_43-U-NA20
WIDTH	24.0"
DEPTH	8.7"
HEIGHT	95.9"
WEIGHT	128.0 LBS

L7/L6 ANTENNA DETAIL

SCALE: N.T.S.

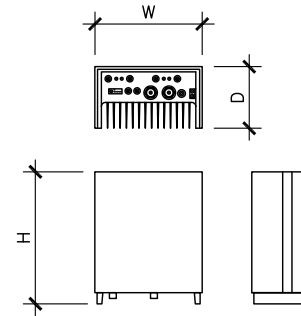


RRU SPECIFICATIONS

MANUFACTURER	ERICSSON
MODEL #	4449
WIDTH	13.2"
DEPTH	10.4"
HEIGHT	14.9"
WEIGHT	74 LBS

3A REMOTE RADIO UNIT (RRU)

SCALE: N.T.S.

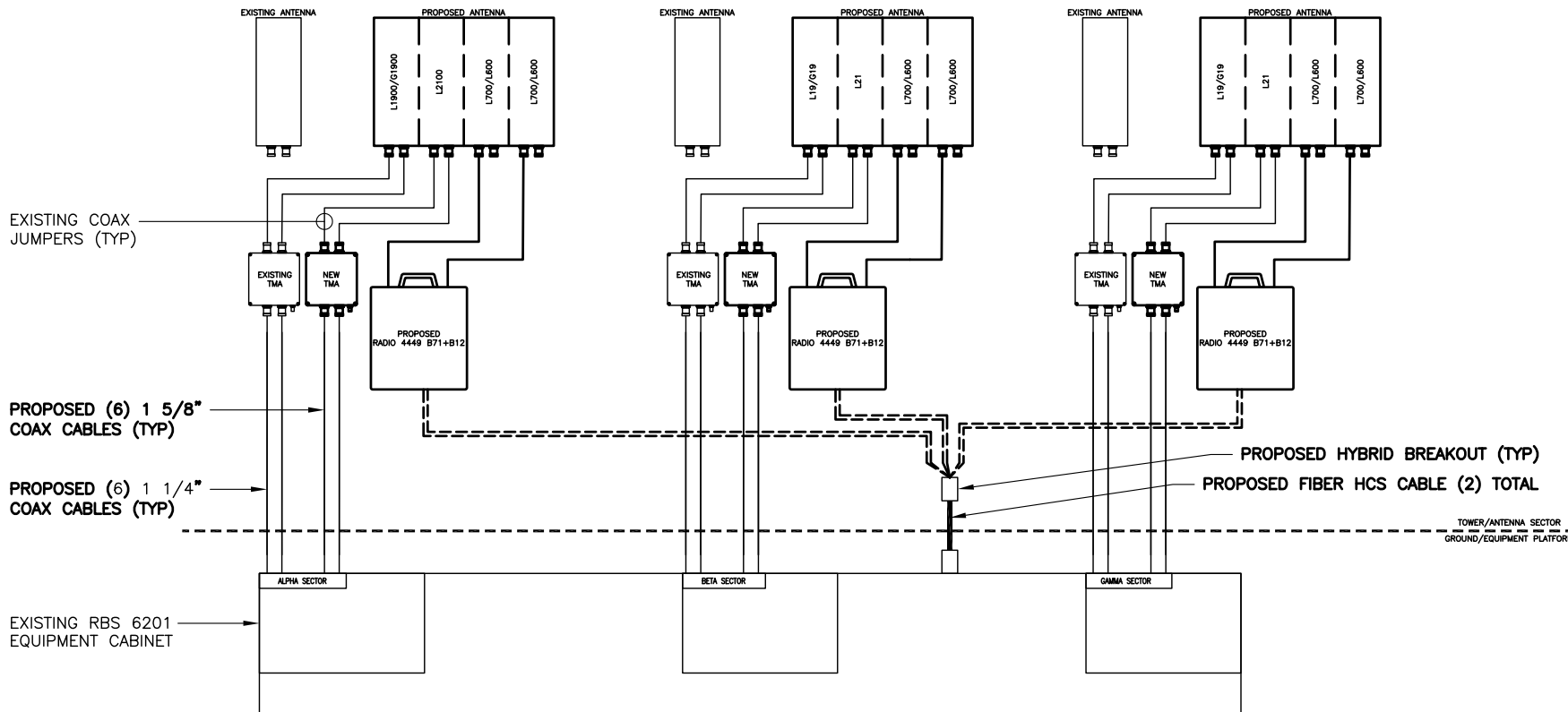


RRU SPECIFICATIONS

MANUFACTURER	ERICSSON
MODEL #	4415 B25
WIDTH	13.4"
DEPTH	5.9"
HEIGHT	16.5"
WEIGHT	46 LBS

3B REMOTE RADIO UNIT (RRU)

SCALE: N.T.S.



4 ANTENNA & CABLING SCHEMATIC

SCALE: N.T.S.



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PLAINFIELD, CT 06234
EXISTING 150'-0" MONOPOLE

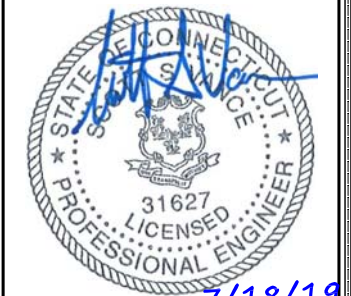
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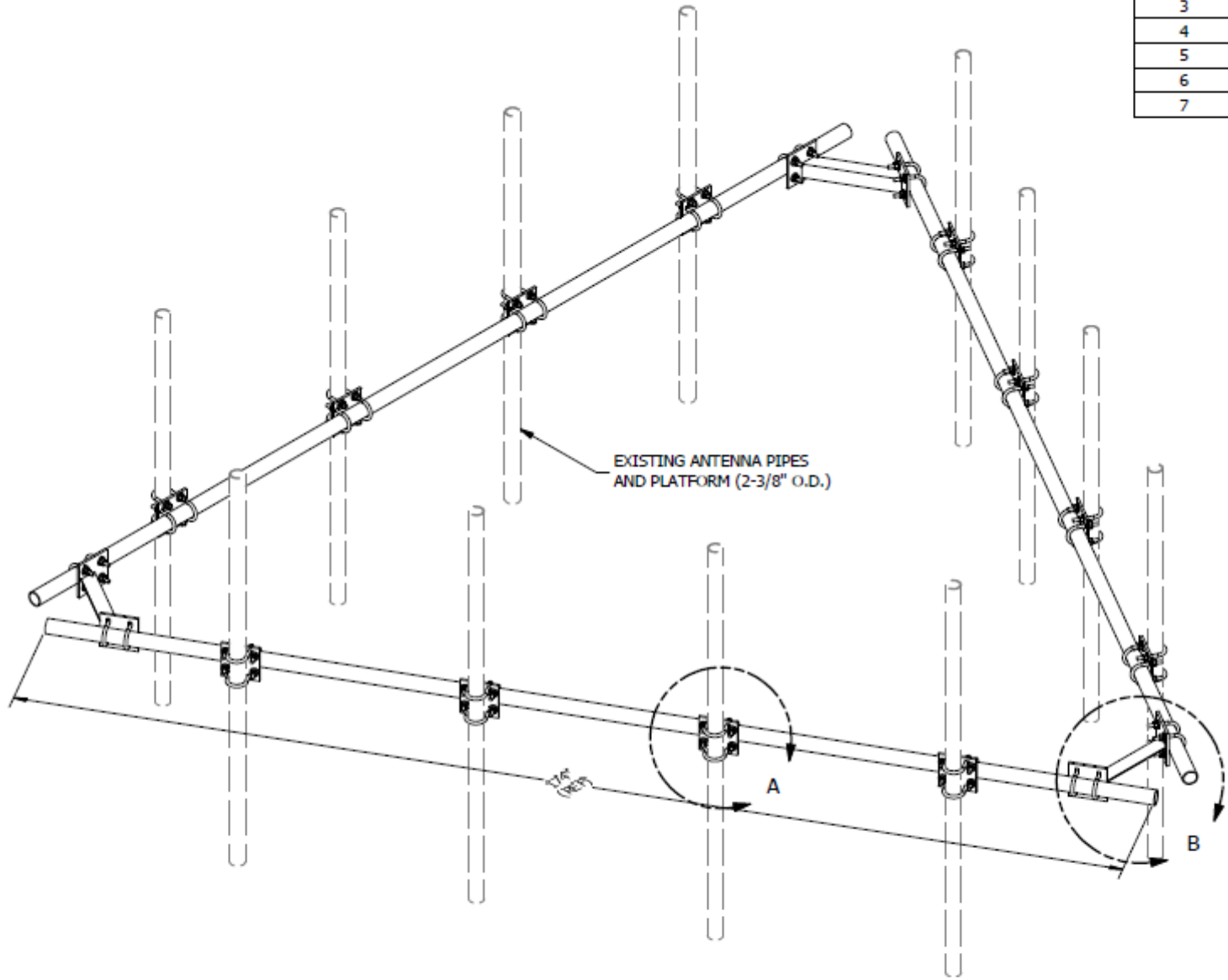


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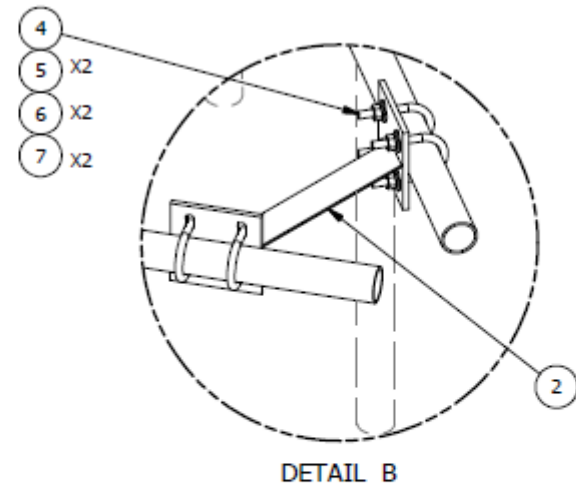
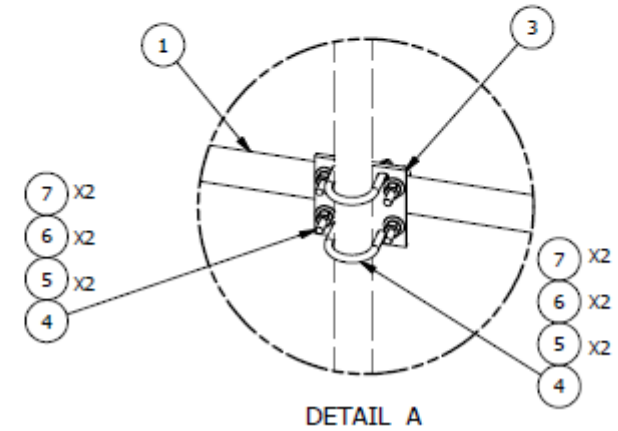
SHEET NUMBER: REVISION:

A-4 1

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PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2174	2-3/8" OD X 174" SCH 40 GALVANIZED PIPE	174 in	55.75	167.24
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
TOTAL WT. #						302.36



TOLERANCE NOTES

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

PROPRIETARY NOTE:
THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION

HANDRAIL KIT
FOR 14'-6" FACE



A valmont COMPANY

Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX
Engineering Support Team:
1-888-753-7446

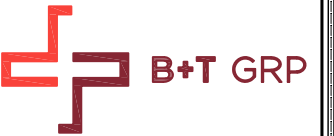
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP		CEK	7/11/2014
REVISION HISTORY				

CPD NO.	DRAWN BY	ENG. APPROVAL
	KC8 5/30/2012	
CLASS	SUB	DRAWING USAGE
81	01	CUSTOMER

PART NO.	HRK14
DWG. NO.	HRK14

PAGE
1 OF 1

1 SITEPRO1 HRK14 HANDRAIL KIT DETAIL
SCALE: N.T.S.



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PLAINFIELD, CT 06234
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PROJECT NO: 136593.001.01
CHECKED BY: RMC

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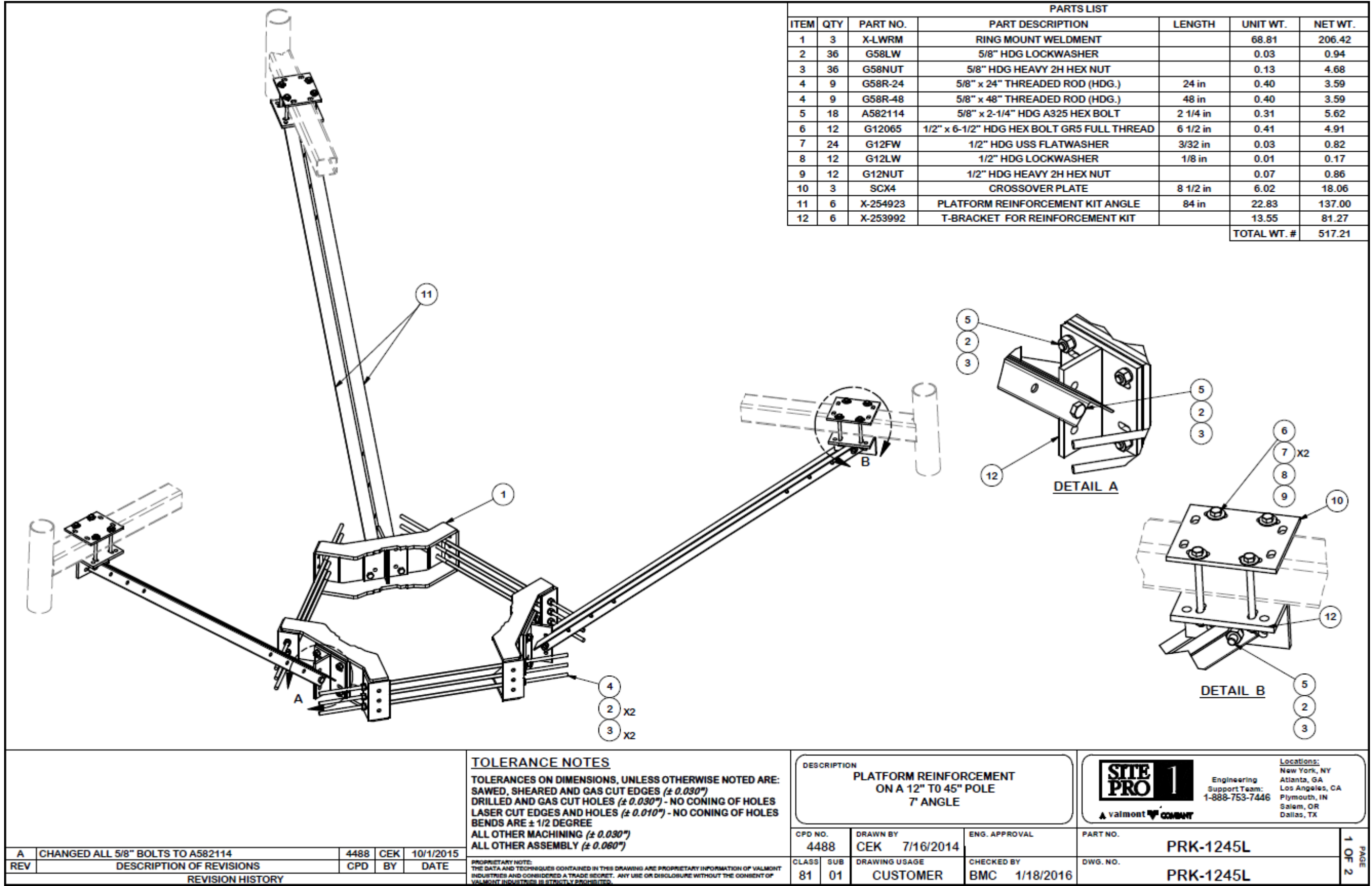
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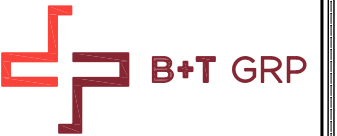
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1 SITEPRO1 PRK-1245L PLATFORM REINFORCEMENT KIT DETAIL
SCALE: N.T.S.



CT11314C
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1197 NORWICH ROAD
PLAINFIELD, CT 06234
EXISTING 150'-0" MONOPOLE

PROJECT NO: 136593.001.01
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SHEET NUMBER: A-6
REVISION: 1

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CT11314C
BU #: 826747

PLAINFIELD/I-395
1197 NORWICH ROAD
PLAINFIELD, CT 06234
EXISTING 150'-0" MONOPOLE

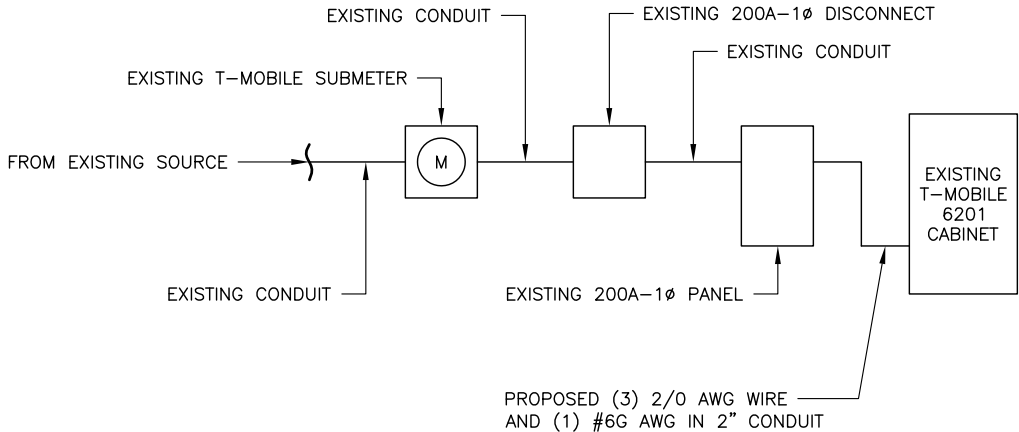
FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS		AMPS	POLES	LOAD
			L1	L2			
BTS	2	40	1	2	15	1	EQUIPMENT
			3	4	—	—	—
GFI	1	15	5	6	—	—	—
			7	8	—	—	—
RBS 6201	2	100	9	10	—	—	—
RATED VOLTAGE: ☒ 120/240 ☐ _____, 1 PHASE, 3 WIRE			BRANCH POLES: ☐ 12 ☐ 24 ☒ 30 ☐ 42			APPROVED MF'RS	
RATED AMPS: ☐ 100 ☒ 225 ☐ 400 ☐ _____,			CABINET: ☒ SURFACE ☐ FLUSH			NEMA ☐ 1 ☒ 3R ☐ 4X	
☐ MAIN LUGS ONLY MAIN 200 AMPS ☒ BREAKER ☐ FUSED SWITCH			☒ HINGED DOOR			☒ KEYED DOOR LATCH	
☐ FUSED ☒ CIRCUIT BREAKER BRANCH DEVICES			☐ _____ TO BE GFCI BREAKERS			FULL NEUTRAL BUS	GROUND BAR
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL							

REPLACE EXISTING 60A BREAKER IN POSITION 7 & 9 WITH NEW 2P 100A BREAKER INSIDE EXISTING PANEL
REPLACE EXISTING WIRES FOR EXISTING 6201 CABINET WITH (3) 2/0 AWG THWN (COPPER) AND (1) #6G AWG. MINIMUM CONDUIT SIZE TO BE 2"
IF 100A BREAKER WILL NOT PROPERLY FIT IN EXISTING PANEL, REPLACE (E) PANEL WITH SQUARE D PANEL Q012040M200RB (OR APPROVED EQUAL).
UPGRADE FEEDER WIRES TO MEET AMPACITY IF NEW PANEL IS REQUIRED.
FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING PHOTOS

1

FINAL T-MOBILE PANEL DETAIL

SCALE: N.T.S.



2

ONE-LINE DIAGRAM

SCALE: N.T.S.

PROJECT NO: 136593.001.01
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SHEET NUMBER:	REVISION:
E-1	1

Exhibit D

Structural Analysis Report

Date: **June 10, 2019**

Heather Simeone
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277



GPD Engineering and Architecture
Professional Corporation
520 South Main Street Suite 2531
Akron, Ohio 44311
(216) 927-8663

Subject: **Structural Analysis Report**

Carrier Designation: **T-Mobile Co-Locate**
Carrier Site Number: CT11314C
Carrier Site Name: Plainfield/I-395

Crown Castle Designation: **Crown Castle BU Number:** 826747
Crown Castle Site Name: Plainfield/I-395
Crown Castle JDE Job Number: 559247
Crown Castle Work Order Number: 1730462
Crown Castle Order Number: 479828 Rev. 7

Engineering Firm Designation: **GPD Project Number:** 2019777.826747.02

Site Data: **1197 Norwich Road, Plainfield, Windham County, CT 06234**
Latitude 41° 38' 46.766", Longitude -71° 56' 28.698"
149 Foot – PiROD Monopole Tower

Dear Heather Simeone,

We are pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Proposed Equipment Configuration

Sufficient Capacity - 99.4%

This analysis utilizes an ultimate 3-second gust wind speed of 135 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Naser Tabanja

Respectfully submitted by:

Christopher J. Scheks, P.E.
Connecticut #: 0030026

6/10/2019



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1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Configuration

Table 2 - Other Considered Equipment

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Table 3 - Documents Provided

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4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Table 5 - Tower Component Stresses vs. Capacity – LC5

4.1) Recommendations

5) DISCLAIMER OF WARRANTIES

6) APPENDIX A

tnxTower Output

7) APPENDIX B

Base Level Drawing

8) APPENDIX C

Additional Calculations

1) INTRODUCTION

The existing tower consists of five major sections connected by slip joints. It has an 18-sided cross section and is evenly tapered from 22.0663" (flat-flat) at the top to 56.125" (flat-flat) at the bottom. The structure is galvanized and does not have aviation lighting.

This tower is a 149 ft Monopole tower designed by PiROD Manufactures Inc. in October of 2000. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	135 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
149.0	152.0	1	Site Pro 1	HRK14 Handrail Kit	8 6	1-5/8 1-1/4
	150.0	3	Ericsson	KRY 112 144/1		
		3	Ericsson	KRY 112 489/2		
		3	Ericsson	RADIO 4449 B12/B71		
		3	EMS Wireless	RR90-17-02DP		
		3	RFS/ Celwave	APXVAARR24_43-U-NA20		
	149.0	3	Site Pro 1	P2.5 STD x 8' Mount Pipe		
		1	-	Platform Mount [LP 403-1]		
	146.0	1	Site Pro 1	PRK-1245 Kicker Kit		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
140.0	140.0	3	Alcatel Lucent	RRH2X60-AWS	13	1-5/8
		3	Alcatel Lucent	RRH2X60-PCS		
		3	Antel	BXA-80090/4CF		
		6	Commscope	HBXX-6517DS-A2M		
		3	RFS/ Celwave	APX75-866514-CT0		
		1	RFS/ Celwave	DB-T1-6Z-8AB-0Z		
		6	RFS/ Celwave	FD9R6004/2C-3L		
		1	-	Platform Mount [LP 304-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Tower Drawings	PiROD File #: A-117712-, dated 10/17/2000	3523624	CCISITES
Foundation Drawings	PiROD File #: A-117712-, dated 10/17/2000	3879941	CCISITES
Geotechnical Report	JGI Project #: 00672G, dated 10/04/2000	3523623	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.5.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) The tower and structures were built and have been maintained in accordance with the manufacturer's specifications.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. GPD should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	149.083 - 133.083	Pole	TP26x22.0663x0.25	1	-6.89	1220.12	15.3	Pass
L2	133.083 - 98.5	Pole	TP34.0625x24.7828x0.3125	2	-12.33	1998.46	38.8	Pass
L3	98.5 - 64.833	Pole	TP41.75x32.489x0.375	3	-20.05	2940.70	43.2	Pass
L4	64.833 - 32	Pole	TP49.0625x39.8474x0.375	4	-29.27	3460.79	52.0	Pass
L5	32 - 0	Pole	TP56.125x46.961x0.375	5	-41.58	4075.94	60.1	Pass
							Summary	
						Pole (L5)	60.1	Pass
						Rating =	60.1	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	61.6	Pass
1	Base Plate	0	Sufficient	Pass
1	Base Foundation Structural	0	99.4	Pass
1	Base Foundation Soil Interaction	0	93.8	Pass

Structure Rating (max from all components) =	99.4%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Rating per TIA-222-H, section 15.5

4.1) Recommendations

The tower has sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

5) DISCLAIMER OF WARRANTIES

GPD has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

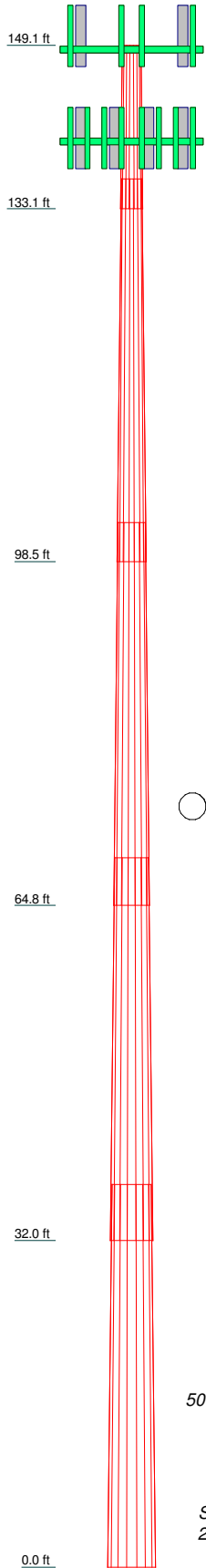
Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

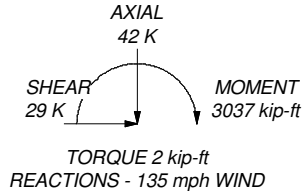
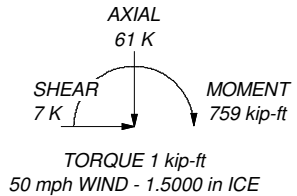
GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3	4	5
Length (ft)	16.00	37.50	37.50	37.50	37.50
Number of Sides	18	18	18	18	18
Thickness (in)	0.2500	0.3125	0.3750	0.3750	0.3750
Socket Length (ft)	2.92	3.83	4.67	5.50	46.9610
Top Dia (in)	22.0663	24.7828	32.4890	39.8474	56.1250
Bot Dia (in)	26.0000	34.0625	41.7500	49.0625	
Grade			A572-65		
Weight (K)	1.0	3.7	5.6	6.7	7.8
					24.8



ALL REACTIONS
ARE FACTORED



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 135 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 60.1%



GPD

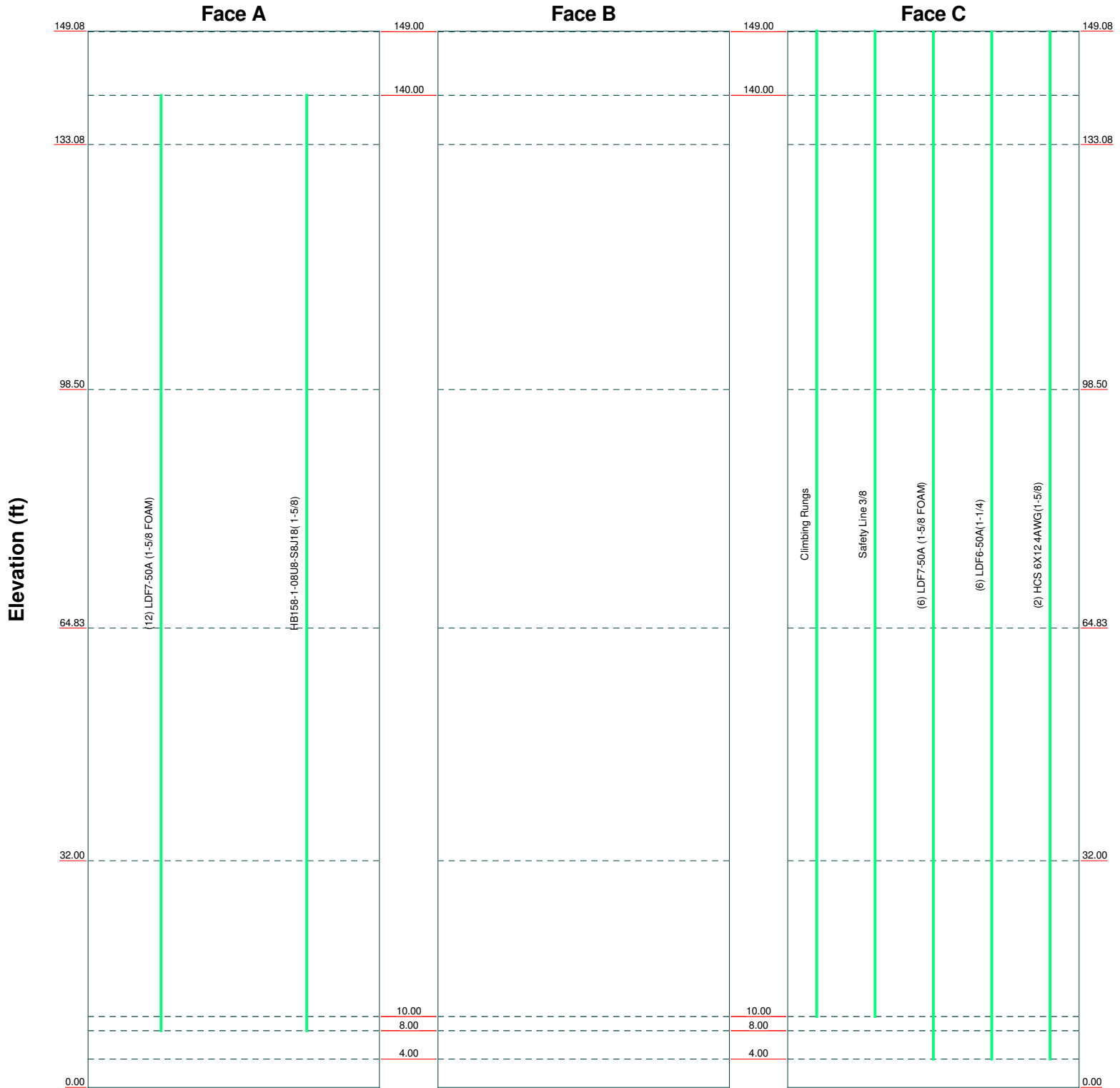
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (555) 555-1234
FAX: (555) 555-1235

Job:	PLAINFIELD/I-395 - BU #: 826747		
Project:	2019777.826747.02		
Client:	Crown Castle USA, Inc.	Drawn by:	ntabanja
Code:	TIA-222-H	Date:	06/10/19
Path:	\\AKRN05.gpdco.com\TELECOM\Crown\826747\02\Rev.0\Inx\826747.erl		
		App'd:	
		Scale:	NTS
		Dwg No.	E-1

Feed Line Distribution Chart

0' - 149'31/32"

Round Flat App In Face App Out Face Truss Leg



GPD
 520 South Main Street Suite 2531
 Akron, Ohio 44311
 Phone: (555) 555-1234
 FAX: (555) 555-1235

Job: PLAINFIELD/I-395 - BU #: 826747		
Project: 2019777.826747.02		
Client: Crown Castle USA, Inc.	Drawn by: ntabanja	App'd:
Code: TIA-222-H	Date: 06/10/19	Scale: NTS
Path: \\AKRN05.gpdco.com\TELECOM\Crown\826747\02\Rev.0\Inx\826747.erl		Dwg No. E-7

Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

- 1) Tower is located in Windham County, Connecticut.
- 2) Tower base elevation above sea level: 150.00 ft.
- 3) Basic wind speed of 135 mph.
- 4) Risk Category II.
- 5) Exposure Category C.
- 6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- 7) Topographic Category: 1.
- 8) Crest Height: 0.00 ft.
- 9) Nominal ice thickness of 1.5000 in.
- 10) Ice thickness is considered to increase with height.
- 11) Ice density of 56 pcf.
- 12) A wind speed of 50 mph is used in combination with ice.
- 13) Temperature drop of 50 °F.
- 14) Deflections calculated using a wind speed of 60 mph.
- 15) A non-linear (P-delta) analysis was used.
- 16) Pressures are calculated at each section.
- 17) Stress ratio used in pole design is 1.05.
- 18) Tower analysis based on target reliabilities in accordance with Annex S.
- 19) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- 20) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	✓ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	✓ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
Use Code Stress Ratios	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
✓ Use Code Safety Factors - Guys	Retention Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	✓ Bypass Mast Stability Checks	✓ Consider Feed Line Torque
Always Use Max Kz	✓ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	✓ Project Wind Area of Appurt.	Use TIA-222-H Bracing Resist.
		Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-H Tension Splice
		Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
Secondary Horizontal Braces Leg	✓ Sort Capacity Reports By Component	✓ Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric	Ignore KL/ry For 60 Deg. Angle Legs	✓ Pole Without Linear Attachments
		Pole With Shroud Or No
		Appurtenances
		Outside and Inside Corner Radii Are
		Known

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	149.08-133.08	16.00	2.92	18	22.0663	26.0000	0.2500	1.0000	A572-65 (65 ksi)
L2	133.08-98.50	37.50	3.83	18	24.7828	34.0625	0.3125	1.2500	A572-65 (65 ksi)
L3	98.50-64.83	37.50	4.67	18	32.4890	41.7500	0.3750	1.5000	A572-65 (65 ksi)
L4	64.83-32.00	37.50	5.50	18	39.8474	49.0625	0.3750	1.5000	A572-65 (65 ksi)
L5	32.00-0.00	37.50		18	46.9610	56.1250	0.3750	1.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	22.3681	17.3112	1040.9447	7.7448	11.2097	92.8612	2083.2592	8.6573	3.4437	13.775
	26.3625	20.4326	1711.6544	9.1412	13.2080	129.5922	3425.5610	10.2183	4.1360	16.544
L2	25.8499	24.2715	1836.1758	8.6870	12.5897	145.8477	3674.7677	12.1381	3.8118	12.198
	34.5398	33.4758	4817.4335	11.9812	17.3038	278.4040	9641.2058	16.7411	5.4450	17.424
L3	33.8935	38.2237	4980.3359	11.4005	16.5044	301.7579	9967.2251	19.1155	5.0581	13.488
	42.3362	49.2466	10650.982	14.6881	21.2090	502.1916	21315.979	24.6280	6.6880	17.835
L4	41.5688	46.9821	9248.2053	14.0127	20.2425	456.8708	18508.579	23.4955	6.3531	16.942
	49.7615	57.9503	17355.137	17.2841	24.9238	696.3293	34733.111	28.9807	7.9750	21.267
L5	48.9923	55.4489	15203.399	16.5380	23.8562	637.2943	30426.804	27.7297	7.6051	20.28
	56.9330	66.3564	26056.150	19.7913	28.5115	913.8821	52146.586	33.1845	9.2180	24.581

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
L1 149.08-133.08				1	1	1			
L2 133.08-98.50				1	1	1			
L3 98.50-64.83				1	1	1			
L4 64.83-32.00				1	1	1			
L5 32.00-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
Climbing Rungs	C	No	No	CaAa (Out Of Face)	149.08 - 10.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.13 0.23 0.33 0.53	7.12 8.24 9.97 15.26
Safety Line 3/8	C	No	No	CaAa (Out Of Face)	149.08 - 10.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.04 0.14 0.24 0.44	0.22 0.75 1.28 2.34

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_{AA} ft ² /ft	Weight plf
LDF7-50A (1-5/8 FOAM)	C	No	No	Inside Pole	149.00 - 4.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
LDF6-50A(1-1/4)	C	No	No	Inside Pole	149.00 - 4.00	6	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
							2" Ice	0.00	0.60
HCS 6X12 4AWG(1-5/8)	C	No	No	Inside Pole	149.00 - 4.00	2	No Ice	0.00	2.40
							1/2" Ice	0.00	2.40
							1" Ice	0.00	2.40
							2" Ice	0.00	2.40
LDF7-50A (1-5/8 FOAM)	A	No	No	Inside Pole	140.00 - 8.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
HB158-1-08U8- S8J18(1-5/8)	A	No	No	Inside Pole	140.00 - 8.00	1	No Ice	0.00	1.30
							1/2" Ice	0.00	1.30
							1" Ice	0.00	1.30
							2" Ice	0.00	1.30

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	149.08-133.08	A	0.000	0.000	0.000	0.000	0.08
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.733	0.33
L2	133.08-98.50	A	0.000	0.000	0.000	0.000	0.39
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.907	0.71
L3	98.50-64.83	A	0.000	0.000	0.000	0.000	0.38
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.750	0.70
L4	64.83-32.00	A	0.000	0.000	0.000	0.000	0.37
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.608	0.68
L5	32.00-0.00	A	0.000	0.000	0.000	0.000	0.27
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.758	0.53

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	149.08-133.08	A	1.474	0.000	0.000	0.000	0.000	0.08
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.167	0.44
L2	133.08-98.50	A	1.445	0.000	0.000	0.000	0.000	0.39
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	26.299	0.95
L3	98.50-64.83	A	1.395	0.000	0.000	0.000	0.000	0.38
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	25.205	0.92
L4	64.83-32.00	A	1.324	0.000	0.000	0.000	0.000	0.37
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	23.931	0.89

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight K
L5	32.00-0.00	A	1.186	0.000	0.000	0.000	0.000	0.27
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	15.411	0.67

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	149.08-133.08	-1.2258	0.7077	-2.4244	1.3997
L2	133.08-98.50	-1.2544	0.7242	-2.5819	1.4906
L3	98.50-64.83	-1.2801	0.7391	-2.7038	1.5610
L4	64.83-32.00	-1.2967	0.7486	-2.7485	1.5868
L5	32.00-0.00	-0.8947	0.5165	-1.9060	1.1004

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor K_a

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
---------------	----------------------	-------------	-------------------------	-----------------	--------------

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	$C_A A_A$ Front ft ²	$C_A A_A$ Side ft ²	Weight K
Platform Mount [LP 403-1]	C	None		0.0000	149.00	No Ice 18.85 1/2" 24.30 Ice 29.75 1" Ice 40.65 2" Ice 40.65	18.85 24.30 29.75 40.65 40.65	1.50 1.80 2.09 2.69 2.69
RR90-17-02DP w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 4.59 1/2" 5.09 Ice 5.58 1" Ice 6.59 2" Ice 6.23	3.32 4.09 4.78 6.23 6.23	0.03 0.07 0.12 0.22 0.22
RR90-17-02DP w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 4.59 1/2" 5.09 Ice 5.58 1" Ice 6.59 2" Ice 6.23	3.32 4.09 4.78 6.23 6.23	0.03 0.07 0.12 0.22 0.22
RR90-17-02DP w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 4.59 1/2" 5.09 Ice 5.58 1" Ice 6.59 2" Ice 6.23	3.32 4.09 4.78 6.23 6.23	0.03 0.07 0.12 0.22 0.22
APXVAARR24_43-U-NA20	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 14.67 1/2" 15.43 Ice 16.21 1" Ice 17.81	5.32 5.99 6.68 8.08	0.15 0.27 0.39 0.66

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
APXVAARR24_43-U-NA20	B	From Centroid- Leg	4.00 0.00 1.00	0.0000	149.00	2" Ice No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	0.15 0.27 0.39 0.66
APXVAARR24_43-U-NA20	C	From Centroid- Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	0.15 0.27 0.39 0.66
KRY 112 489/2	A	From Centroid- Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.56 0.66 0.76 1.00	0.37 0.45 0.54 0.75	0.02 0.02 0.03 0.05
KRY 112 489/2	B	From Centroid- Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.56 0.66 0.76 1.00	0.37 0.45 0.54 0.75	0.02 0.02 0.03 0.05
KRY 112 489/2	C	From Centroid- Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.56 0.66 0.76 1.00	0.37 0.45 0.54 0.75	0.02 0.02 0.03 0.05
KRY 112 144/1	A	From Centroid- Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.35 0.43 0.51 0.70	0.17 0.23 0.30 0.46	0.01 0.01 0.02 0.03
KRY 112 144/1	B	From Centroid- Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.35 0.43 0.51 0.70	0.17 0.23 0.30 0.46	0.01 0.01 0.02 0.03
KRY 112 144/1	C	From Centroid- Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.35 0.43 0.51 0.70	0.17 0.23 0.30 0.46	0.01 0.01 0.02 0.03
RADIO 4449 B12/B71	A	From Centroid- Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	0.07 0.09 0.11 0.16
RADIO 4449 B12/B71	B	From Centroid- Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	0.07 0.09 0.11 0.16
RADIO 4449 B12/B71	C	From Centroid- Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	0.07 0.09 0.11 0.16
P2.5 STD x 8' Mount Pipe	A	From Centroid- Leg	4.00 0.00 0.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.30 3.13 3.62 4.62	2.30 3.13 3.62 4.62	0.05 0.06 0.09 0.15
P2.5 STD x 8' Mount Pipe	B	From Centroid- Leg	4.00 0.00 0.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	2.30 3.13 3.62 4.62	2.30 3.13 3.62 4.62	0.05 0.06 0.09 0.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
P2.5 STD x 8' Mount Pipe	C	From Centroid- Leg	4.00 0.00 0.00	0.0000	149.00	2" Ice No Ice 1/2" Ice 1" Ice 2" Ice	2.30 3.13 3.62 4.62	2.30 3.13 3.62 4.62	0.05 0.06 0.09 0.15
Site Pro 1 HRK14 Handrail Kit	C	None		0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.00 8.50 11.00 16.00	6.00 8.50 11.00 16.00	0.23 0.34 0.45 0.68
Site Pro 1 PRK-1245 Kicker Kit	C	None		0.0000	146.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.84 16.96 22.08 32.32	11.84 16.96 22.08 32.32	0.28 0.30 0.32 0.36
Platform Mount [LP 304-1]	C	None		0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	17.46 22.44 27.42 37.38	17.46 22.44 27.42 37.38	1.35 1.62 1.90 2.45
APX75-866514-CT0 w/ Mount Pipe	A	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.91 10.52 11.12 12.31	6.57 7.88 9.02 11.02	0.04 0.11 0.19 0.38
APX75-866514-CT0 w/ Mount Pipe	B	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.91 10.52 11.12 12.31	6.57 7.88 9.02 11.02	0.04 0.11 0.19 0.38
APX75-866514-CT0 w/ Mount Pipe	C	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.91 10.52 11.12 12.31	6.57 7.88 9.02 11.02	0.04 0.11 0.19 0.38
BXA-80090/4CF w/ Mount Pipe	A	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.46 5.14 5.70 6.86	4.37 5.40 6.16 7.78	0.04 0.08 0.13 0.25
BXA-80090/4CF w/ Mount Pipe	B	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.46 5.14 5.70 6.86	4.37 5.40 6.16 7.78	0.04 0.08 0.13 0.25
BXA-80090/4CF w/ Mount Pipe	C	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.46 5.14 5.70 6.86	4.37 5.40 6.16 7.78	0.04 0.08 0.13 0.25
(2) HBXX-6517DS-A2M w/ Mount Pipe	A	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.97 8.73 9.50 11.11	5.99 6.72 7.47 9.02	0.08 0.14 0.22 0.40
(2) HBXX-6517DS-A2M w/ Mount Pipe	B	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.97 8.73 9.50 11.11	5.99 6.72 7.47 9.02	0.08 0.14 0.22 0.40
(2) HBXX-6517DS-A2M w/ Mount Pipe	C	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.97 8.73 9.50 11.11	5.99 6.72 7.47 9.02	0.08 0.14 0.22 0.40

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
(2) FD9R6004/2C-3L	A	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	2" Ice No Ice 1/2" Ice 1" Ice 2" Ice	0.31 0.39 0.47 0.65	0.08 0.12 0.17 0.29	0.00 0.01 0.01 0.02
(2) FD9R6004/2C-3L	B	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.31 0.39 0.47 0.65	0.08 0.12 0.17 0.29	0.00 0.01 0.01 0.02
(2) FD9R6004/2C-3L	C	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.31 0.39 0.47 0.65	0.08 0.12 0.17 0.29	0.00 0.01 0.01 0.02
RRH2X60-AWS	A	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.50 3.76 4.03 4.58	2.10 2.34 2.58 3.09	0.06 0.08 0.11 0.18
RRH2X60-AWS	B	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.50 3.76 4.03 4.58	2.10 2.34 2.58 3.09	0.06 0.08 0.11 0.18
RRH2X60-AWS	C	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.50 3.76 4.03 4.58	2.10 2.34 2.58 3.09	0.06 0.08 0.11 0.18
RRH2X60-PCS	A	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.59 3.01	1.36 1.52 1.68 2.04	0.06 0.07 0.09 0.14
RRH2X60-PCS	B	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.59 3.01	1.36 1.52 1.68 2.04	0.06 0.07 0.09 0.14
RRH2X60-PCS	C	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.59 3.01	1.36 1.52 1.68 2.04	0.06 0.07 0.09 0.14
DB-T1-6Z-8AB-0Z	A	From Centroid- Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	2.00 2.19 2.39 2.81	0.04 0.08 0.12 0.21

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice

Comb. No.	Description
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149.083 - 133.083	14.642	45	0.8701	0.0008
L2	136 - 98.5	12.280	45	0.8461	0.0008
L3	102.333 - 64.833	6.925	45	0.6457	0.0006
L4	69.5 - 32	3.181	45	0.4320	0.0004
L5	37.5 - 0	0.935	45	0.2266	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
152.00	Site Pro 1 HRK14 Handrail Kit	45	14.642	0.8701	0.0008	37659
149.00	Platform Mount [LP 403-1]	45	14.627	0.8700	0.0008	37659
146.00	Site Pro 1 PRK-1245 Kicker Kit	45	14.080	0.8663	0.0008	37659
140.00	Platform Mount [LP 304-1]	45	12.994	0.8564	0.0008	20741

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	149.083 - 133.083	79.048	14	4.7020	0.0044
L2	136 - 98.5	66.300	14	4.5722	0.0042
L3	102.333 - 64.833	37.389	14	3.4880	0.0030
L4	69.5 - 32	17.174	14	2.3333	0.0019
L5	37.5 - 0	5.046	14	1.2232	0.0010

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
152.00	Site Pro 1 HRK14 Handrail Kit	14	79.048	4.7020	0.0044	7078
149.00	Platform Mount [LP 403-1]	14	78.966	4.7015	0.0044	7078
146.00	Site Pro 1 PRK-1245 Kicker Kit	14	76.015	4.6811	0.0043	7078
140.00	Platform Mount [LP 304-1]	14	70.151	4.6275	0.0042	3898

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio P _u /φP _n
	ft		ft	ft		in ²	K	K	
L1	149.083 - 133.083 (1)	TP26x22.0663x0.25	16.00	0.00	0.0	19.8636	-6.89	1162.02	0.006
L2	133.083 - 98.5 (2)	TP34.0625x24.7828x0.3125	37.50	0.00	0.0	32.5350	-12.33	1903.30	0.006
L3	98.5 - 64.833 (3)	TP41.75x32.489x0.375	37.50	0.00	0.0	47.8748	-20.05	2800.67	0.007
L4	64.833 - 32 (4)	TP49.0625x39.8474x0.375	37.50	0.00	0.0	56.3416	-29.27	3295.99	0.009
L5	32 - 0 (5)	TP56.125x46.961x0.375	37.50	0.00	0.0	66.3564	-41.58	3881.85	0.011

Pole Bending Design Data

Section No.	Elevation	Size	M _{ux}	φM _{rx}	Ratio M _{ux} /φM _{rx}	M _{uy}	φM _{ny}	Ratio M _{uy} /φM _{ny}
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	149.083 - 133.083 (1)	TP26x22.0663x0.25	114.68	748.42	0.153	0.00	748.42	0.000
L2	133.083 - 98.5 (2)	TP34.0625x24.7828x0.3125	635.39	1587.29	0.400	0.00	1587.29	0.000
L3	98.5 - 64.833	TP41.75x32.489x0.375	1270.02	2847.78	0.446	0.00	2847.78	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L4	(3) 64.833 - 32	TP49.0625x39.8474x0.375	2015.43	3755.81	0.537	0.00	3755.81	0.000
L5	(4) 32 - 0 (5)	TP56.125x46.961x0.375	3036.80	4897.52	0.620	0.00	4897.52	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	149.083 - 133.083 (1)	TP26x22.0663x0.25	13.67	348.61	0.039	0.12	764.23	0.000
L2	133.083 - 98.5 (2)	TP34.0625x24.7828x0.3125	17.34	570.99	0.030	0.48	1640.22	0.000
L3	98.5 - 64.833 (3)	TP41.75x32.489x0.375	21.32	840.20	0.025	0.90	2959.59	0.000
L4	64.833 - 32 (4)	TP49.0625x39.8474x0.375	25.20	988.80	0.025	1.33	4099.00	0.000
L5	32 - 0 (5)	TP56.125x46.961x0.375	29.11	1164.56	0.025	1.69	5685.72	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	149.083 - 133.083 (1)	0.006	0.153	0.000	0.039	0.000	0.161	1.050	4.8.2
L2	133.083 - 98.5 (2)	0.006	0.400	0.000	0.030	0.000	0.408	1.050	4.8.2
L3	98.5 - 64.833 (3)	0.007	0.446	0.000	0.025	0.000	0.454	1.050	4.8.2
L4	64.833 - 32 (4)	0.009	0.537	0.000	0.025	0.000	0.546	1.050	4.8.2
L5	32 - 0 (5)	0.011	0.620	0.000	0.025	0.000	0.631	1.050	4.8.2

Section Capacity Table

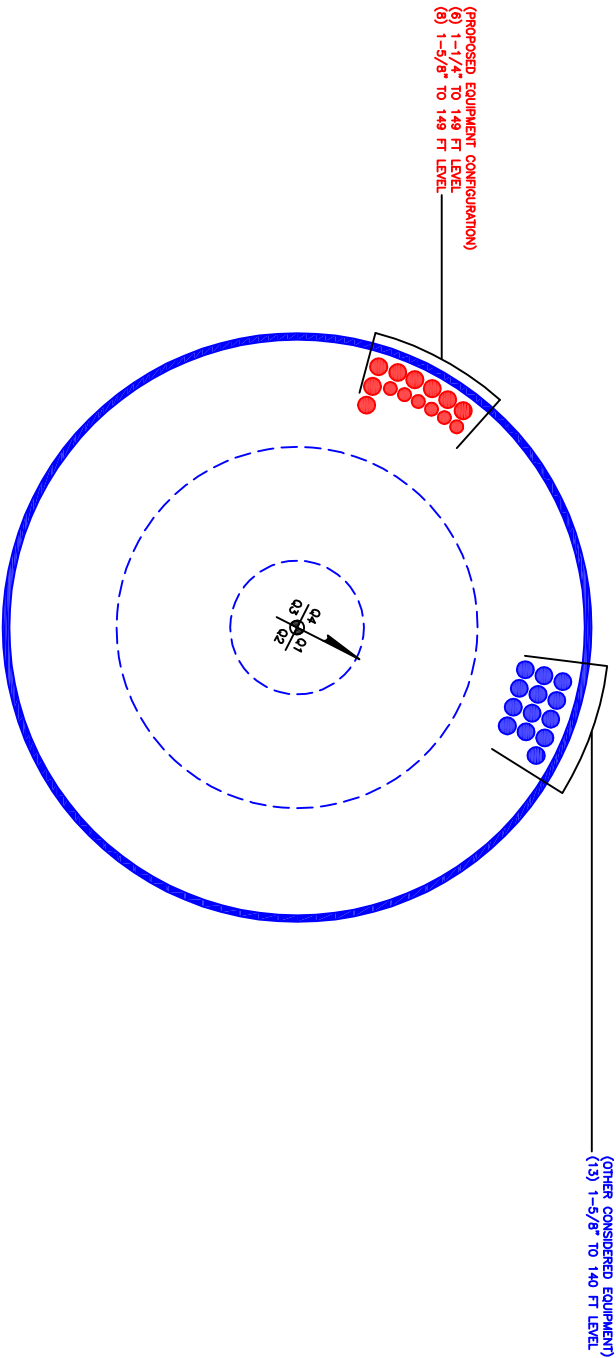
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	149.083 - 133.083	Pole	TP26x22.0663x0.25	1	-6.89	1220.12	15.3	Pass
L2	133.083 - 98.5	Pole	TP34.0625x24.7828x0.3125	2	-12.33	1998.46	38.8	Pass
L3	98.5 - 64.833	Pole	TP41.75x32.489x0.375	3	-20.05	2940.70	43.2	Pass
L4	64.833 - 32	Pole	TP49.0625x39.8474x0.375	4	-29.27	3460.79	52.0	Pass
L5	32 - 0	Pole	TP56.125x46.961x0.375	5	-41.58	4075.94	60.1	Pass
Summary							ELC:	LC5
Pole (L5)							60.1	Pass
Rating =							60.1	Pass

APPENDIX B
BASE LEVEL DRAWING



PLOT DATE: 10/3/2016

FILE NAME: 826747_BASELEVEL.dwg



CROWN REGION ADDRESS
USA

ANC
TOD
AMT
ACE
SS
JO

- 26/03/13 NEW BUILD PER WORK ORDER # 580880
- 27/06/14 UPDATED PER WORK ORDER # 772234
- 12/3/2015 UPDATED PER WORK ORDER 1028218
- 27/7/2015 UPDATED PER WORK ORDER 1077085
- 03/10/16 UPDATED PER WORK ORDER 1307884
- 23/04/18 UPDATED PER WORK ORDER 1730461

DRAWN BY: CIR
CHECKED BY: KNL
DRAWING DATE: 26/3/2013

SITE NUMBER:

SITE NAME:

SITE NAME

PLANFIELD-395

BUSINESS UNIT NUMBER

826747

SITE ADDRESS

1157 NORWICH ROAD
WINDHAM, VT 06094
WINDHAM COUNTY
USA

SHEET TITLE

BASE LEVEL DRAWING

SHEET NUMBER

A1-0

N.T.S.

APPENDIX C

ADDITIONAL CALCULATIONS

Monopole Base Plate Connection

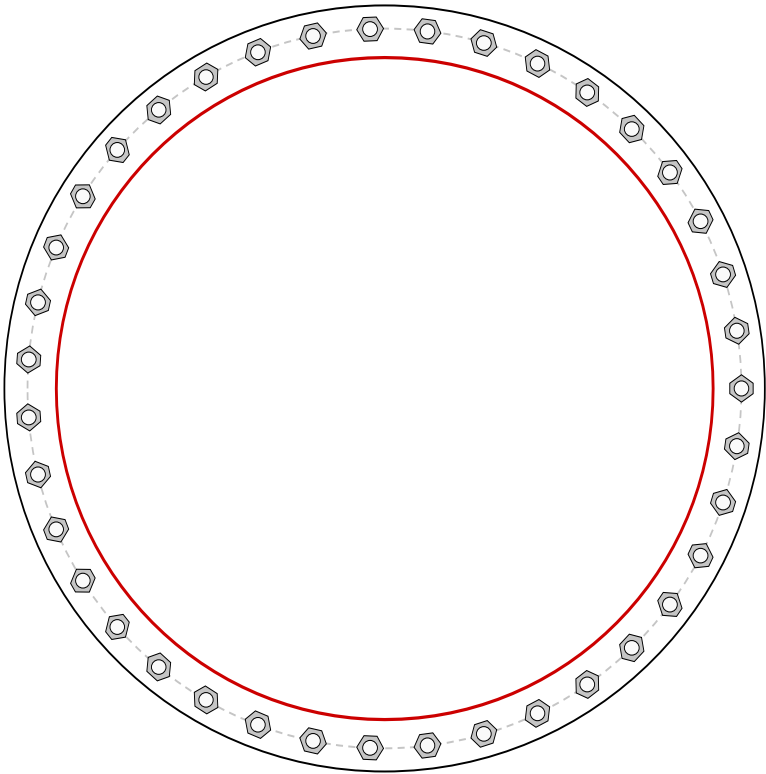


Site Info	
BU #	826747
Site Name	Plainfield/I-395
Order #	479828 Rev.7

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l _{ar} (in)	1.5

Applied Loads	
Moment (kip-ft)	3036.80
Axial Force (kips)	41.58
Shear Force (kips)	29.11

*TIA-222-H Section 15.5 Applied



Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary <i>(units of kips, kip-in)</i>	
(39) 1-1/4" ϕ bolts (A687 N; F _y =105 ksi, F _u =125 ksi) on 61" BC		P _{u_c} = 62.33	ϕ P _{n_c} = 101.75 Stress Rating
Base Plate Data		V _u = 0.75	ϕ V _n = 30.52 61.6%
65" OD x 1.5" Plate (A572-50; F _y =50 ksi, F _u =65 ksi)		M _u = 0.73	ϕ M _n = 21.58 Pass
Stiffener Data		Base Plate Summary	
N/A		Max Stress (ksi):	-
Pole Data		Allowable Stress (ksi):	-
56.125" x 0.375" 18-sided pole (A572-65; F _y =65 ksi, F _u =80 ksi)		Stress Rating:	Pirolod OK

Pier and Pad Foundation



BU #: 826747
 Site Name: Plainfield/I-395
 App. Number: 479828 Rev.7

TIA-222 Revision: H
 Tower Type: Monopole

Top & Bot. Pad Rein. Different?: ☐
 Block Foundation?: ☐

Superstructure Analysis Reactions		
Compression, P_{comp} :	41.58	kips
Base Shear, V_{u_comp} :	29.11	kips
Moment, M_u :	3036.80	ft-kips
Tower Height, H :	149.083	ft
BP Dist. Above Fdn, bp_{dist} :	2.5	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, dpier :	6.5	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, Sc :	8	
Pier Rebar Quantity, mc :	31	
Pier Tie/Spiral Size, St :	4	
Pier Tie/Spiral Quantity, mt :	9	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Pad Properties		
Depth, D :	6	ft
Pad Width, W :	21.5	ft
Pad Thickness, T :	2	ft
Pad Rebar Size (Bottom), Sp :	6	
Pad Rebar Quantity (Bottom), mp :	41	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, Fy :	60	ksi
Concrete Compressive Strength, F'c :	4	ksi
Dry Concrete Density, δc :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	120	pcf
Ultimate Net Bearing, Q_{net} :	5.000	ksf
Cohesion, Cu :	0.000	ksf
Friction Angle, φ :	30	degrees
SPT Blow Count, N_{blows} :	30	
Base Friction, μ :	0.5	
Neglected Depth, N :	3.50	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	8.5	ft

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
<i>Lateral (Sliding) (kips)</i>	197.50	29.11	14.0%	Pass
<i>Bearing Pressure (ksf)</i>	4.29	3.67	85.5%	Pass
<i>Overturing (kip*ft)</i>	3446.46	3232.05	93.8%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	3767.23	3167.78	80.1%	Pass
<i>Pier Compression (kip)</i>	26891.28	75.80	0.3%	Pass
<i>Pad Flexure (kip*ft)</i>	1563.37	1627.50	99.1%	Pass
<i>Pad Shear - 1-way (kips)</i>	486.46	274.90	53.8%	Pass
<i>Pad Shear - 2-way (Comp) (ksi)</i>	0.190	0.000	0.0%	Pass
<i>Flexural 2-way (Comp) (kip*ft)</i>	1821.07	1900.67	99.4%	Pass

*Rating per TIA-222-H Section 15.5

Soil Rating*:	93.8%
Structural Rating*:	99.4%

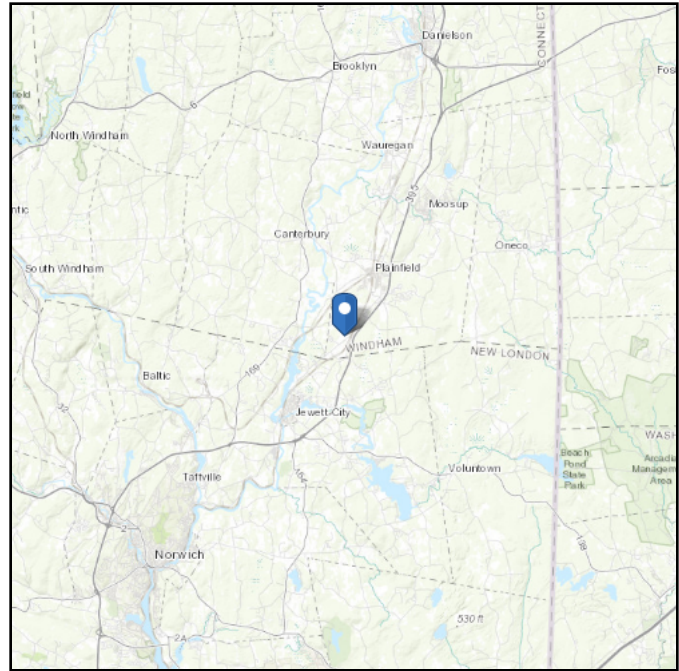
<--Toggle between Gross and Net

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 151.39 ft (NAVD 88)
Latitude: 41.646325
Longitude: -71.941306



Wind

Results:

Wind Speed:	132 Vmph
10-year MRI	79 Vmph
25-year MRI	89 Vmph
50-year MRI	98 Vmph
100-year MRI	107 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Sun Jun 09 2019

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

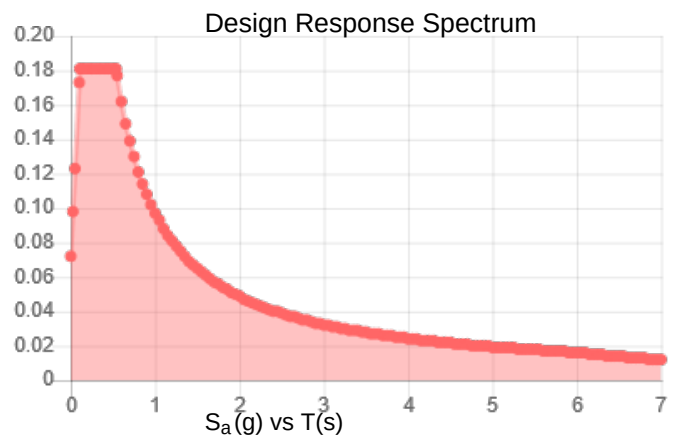
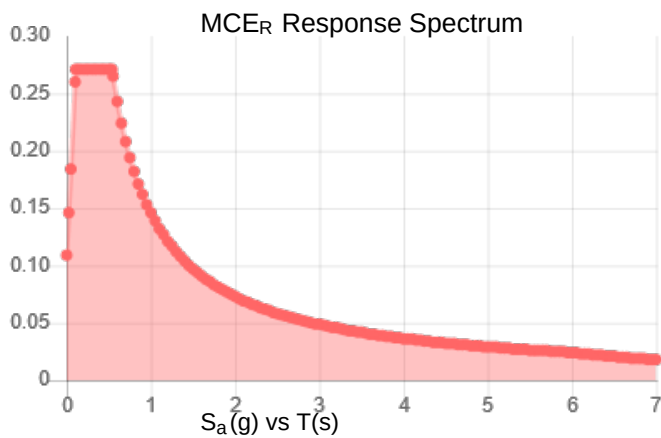
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.17	S_{DS} :	0.181
S_1 :	0.061	S_{D1} :	0.097
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.085
S_{MS} :	0.271	PGA_M :	0.136
S_{M1} :	0.146	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Sun Jun 09 2019

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Results:

Ice Thickness: 0.75 in.
Concurrent Temperature: 15 F
Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Sun Jun 09 2019

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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Exhibit E

Mount Analysis

Date: May 30, 2019

Kevin Morrow
Crown Castle
3530 Toringdon Way
Charlotte, NC 28277

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679

Subject: Mount Modification Report

Carrier Designation: T-Mobile Equipment Change-out
Carrier Site Number: CT11314C
Carrier Site Name: Plainfield/I-395

Crown Castle Designation:
Crown Castle BU Number: 826747
Crown Castle Site Name: Plainfield/I-395
Crown Castle JDE Job Number: 559247
Crown Castle Purchase Order Number: 1386072
Crown Castle Order Number: 479828 Rev. 7

Engineering Firm Designation: Paul J Ford and Company Project Number: A37519-1567.003.7191

Site Data: 1197 Norwich Road, Plainfield, Windham County, CT 06234
Latitude 41.646325°, Longitude -71.941306°

Structure Information:
Tower Height & Type: 150 Foot Monopole
Mount Elevation: 149 Foot
Mount Type: (1) 13.5 Foot Platform

Dear Kevin Morrow,

Paul J Ford and Company is pleased to submit this "Mount Modification Report" to determine the structural integrity of the T-Mobile antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point is not part of this document.

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

13.5' Platform

SUFFICIENT*

*The mount has sufficient capacity once the modifications, as described in Section 4.1 Recommendations of this report, are completed.

This analysis utilizes an ultimate 3-second gust wind speed of 135 mph as required by the 2018 Connecticut State Building Code and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by



Deepesh Savla, P.E.
Project Engineer
dsavla@pauljford.com

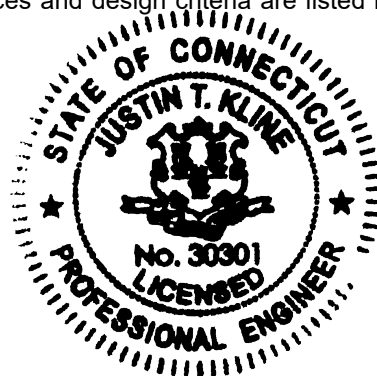


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MANUFACTURER DRAWINGS (FOR REFERENCE ONLY)

1) INTRODUCTION

The existing mount under consideration is (1) 13.5' Platform mount identified as a QMSP platform by Site Pro based on photos and Manufacturer Drawings

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	135 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
149	150	3	EMS Wireless	RR90-17-02DP	(1) 13.5' Platform
		3	RFS/Celwave	APXVAARR24_43-UNA20	
		3	Ericsson	KRY 112 489/2	
		3	Ericsson	RADIO 4449 B12/B71	
		3	Ericsson	KRY 112 144/1	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Manufacturer Drawings	Dated: 05/17/10	QMSP	Site Pro
Photos	-	-	CCISites
Order	ID: 479828 Rev. 7 Dated: 04/18/19	-	CCISites

3.1) Analysis Method

RISA-3D (version 17.0.2), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision C).

3.2) Assumptions

- 1) *The analysis of the existing tower or the effect of the mount attachment to the tower is not within the current scope of work.*
- 2) *The antenna mounting system was properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications and all bolts are tightened as specified by the manufacturer and AISC requirements.*
- 3) *The configuration of antennas, mounts, and other appurtenances are as specified in Table 1.*
- 4) *All member connections have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report. All U-Bolt connections have been properly tightened. This analysis will be required to be revised if the existing conditions in the field differ from those shown in the above referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.*
- 5) *Steel grades are as follows, unless noted otherwise:*

a) Channel, Solid Round, Angle, Plate, Unistrut	ASTM A36 (GR 36)
b) Pipe	ASTM A53 (GR 35)
c) HSS (Rectangular)	ASTM 500 (GR B-46)
d) HSS (Round)	ASTM 500 (GR B-42)
e) Threaded Rods	ASTM F1554 (GR 36)
f) Connection Bolts	ASTM A325
g) U-Bolts	SAE J429 (GR 2)
- 6) *Proposed equipment is to be installed in the locations specified in Appendix A. Any changes to the proposed equipment locations will render this report invalid.*
- 7) *Mount has been modeled based on the photographs and/or the TIA inspection referenced in Table 2. Member information and dimensions not provided have been assumed based on previous experience with similar mounts. No guarantee can be made as to the accuracy of these assumptions without a complete mount mapping.*

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company should be notified to determine the effect on the structural integrity of the mount.

4) ANALYSIS RESULTS

Table 3- Mount Component Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Face Horizontals	149	18.9	Pass
1	Support Rail		19.9	Pass
1	Grating Support Members		12.3	Pass
1	Standoff Members		16.9	Pass
1	Corner Plates		50.6	Pass
1	Kicker Support		20.0	Pass
1	Mount Pipes		62.5	Pass
1	Mount to Tower Connection		20.0	Pass

Mount Rating (max from all components) =	62.5%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C – Software Analysis Output" for calculations supporting the % capacity consumed.

4.1) Recommendations

The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modifications listed below must be completed.

- Install SitePro1 PRK-1245L Platform Reinforcement Kit or EOR approved equivalent as indicated in "Appendix D – Supplemental Modification Information" and in conformance with the attached manufacturer drawings.
- Install SitePro1 HRK14 Handrail Support Kit or EOR approved equivalent as indicated in "Appendix D – Supplemental Modification Information" and in conformance with the attached manufacturer drawings.
- Replace existing mount pipes with 8-ft long, P2.5 STD (2.88" O.D. x 0.189") mount pipes where required. See Appendix D details.

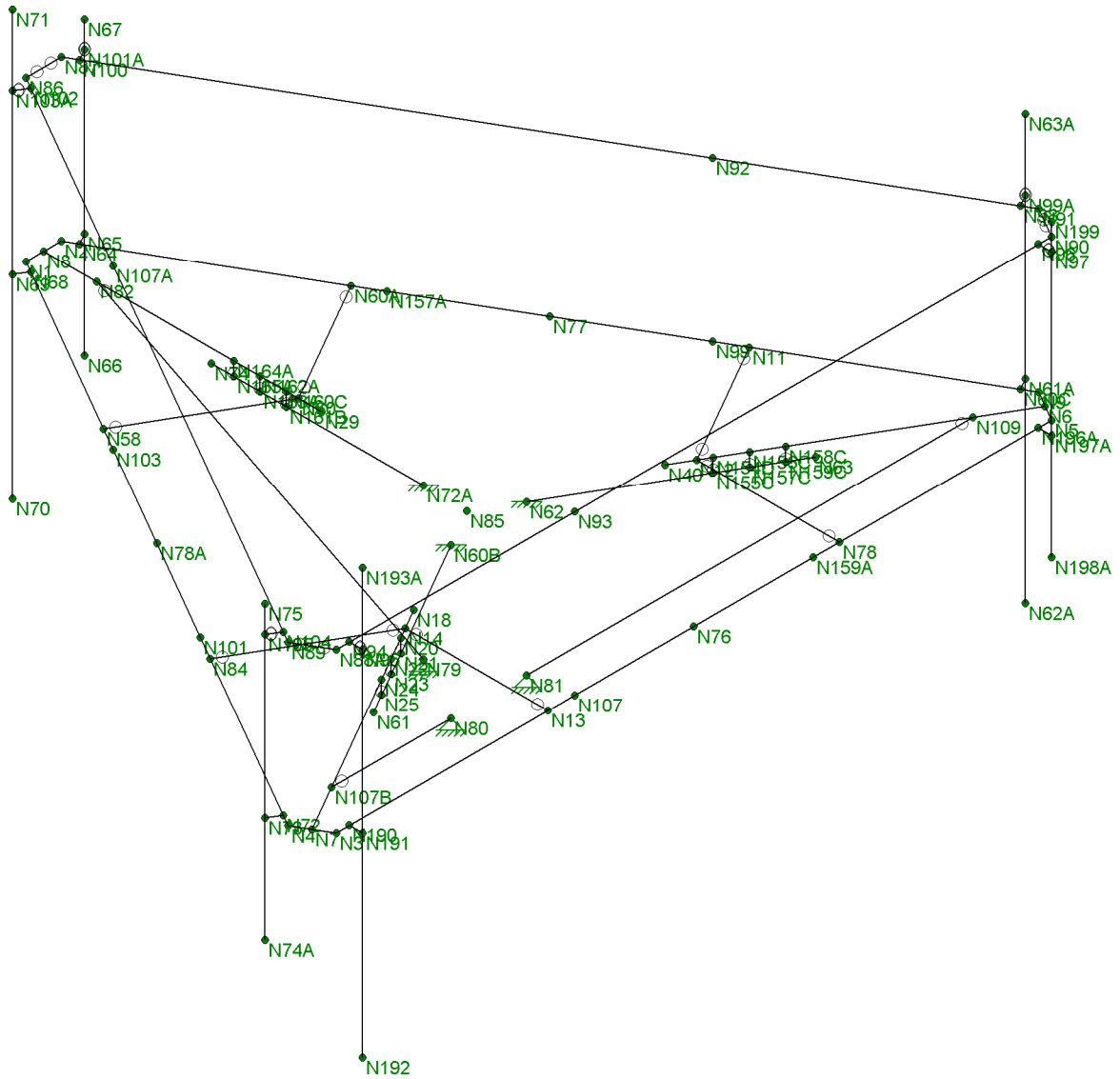
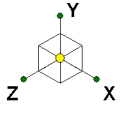
Connection from the mount to the tower and local stresses on the tower are sufficient.

**STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING
SERVICES ON EXISTING MOUNTS BY PAUL J. FORD AND COMPANY**

- 1) It is the responsibility of the client to ensure that the information provided to Paul J. Ford and Company is accurate and complete. Paul J. Ford and Company will rely on the accuracy and completeness of such information in performing or furnishing services under this project.
- 2) If the existing conditions are not as represented on the referenced drawings and/or documents, Paul J. Ford and Company should be contacted immediately to evaluate the significance of the deviation.
- 3) The mount has been analyzed according to the minimum design loads recommended by the Reference Standard. If additional design loads are required, Paul J. Ford and Company should be made aware of this prior to the start of the project.
- 4) The standard of care for all Professional Engineering Services performed or furnished by Paul J. Ford and Company under this project will be the skill and care used by members of the Consultant's profession practicing under similar circumstances at the same time and in the same locality.
- 5) All Services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Paul J. Ford and Company is not responsible for the conclusions, opinions and/or recommendations made by others based on the information supplied herein.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



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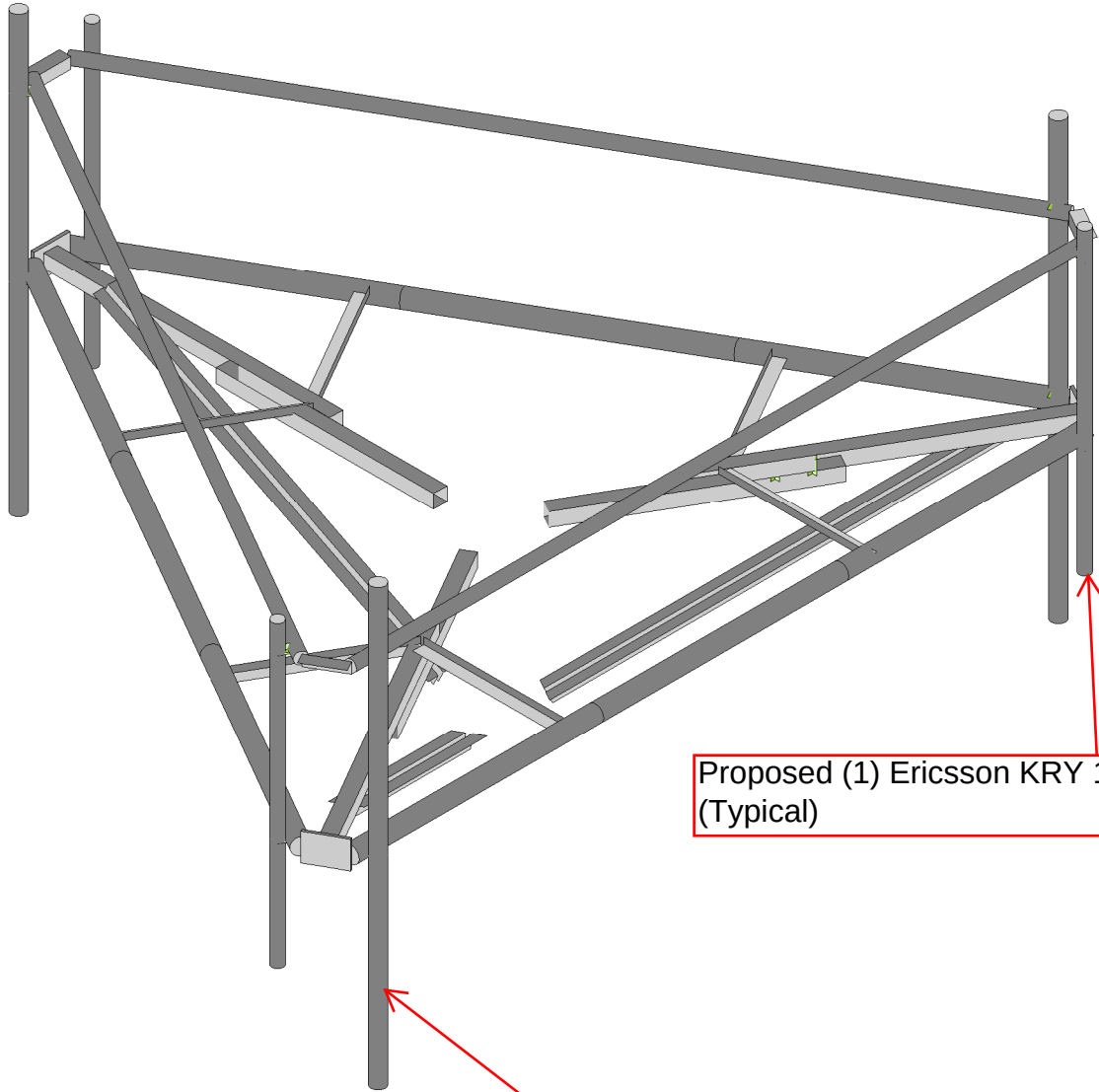
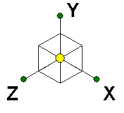
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Proposed (1) Ericsson KRY 112 489/2
(Typical)

Proposed (1) RFS/CELWAVE / APXVAARR24_43-UNA20
+ (1) ERICSSON / RADIO 4449 B12/B71
(Typical)

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APPENDIX B

SOFTWARE INPUT CALCULATION

ANSI/TIA-222H - WIND & ICE LOAD CALCULATIONS

Site Code/Name	826747 - Plainfield/I-395
State	Connecticut
County	Windham
V	135 mph
V _i	50 mph
t _i	1.5 in
z _s	151 ft
z	150 ft

Structure Class	II
Exposure Category	C
Topographic Category	1
Wind direction probability factor	0.95
Gust factor	1
Wind Pressure (including K _a = 0.9)	54.69 psf
t _{iz}	1.75 in

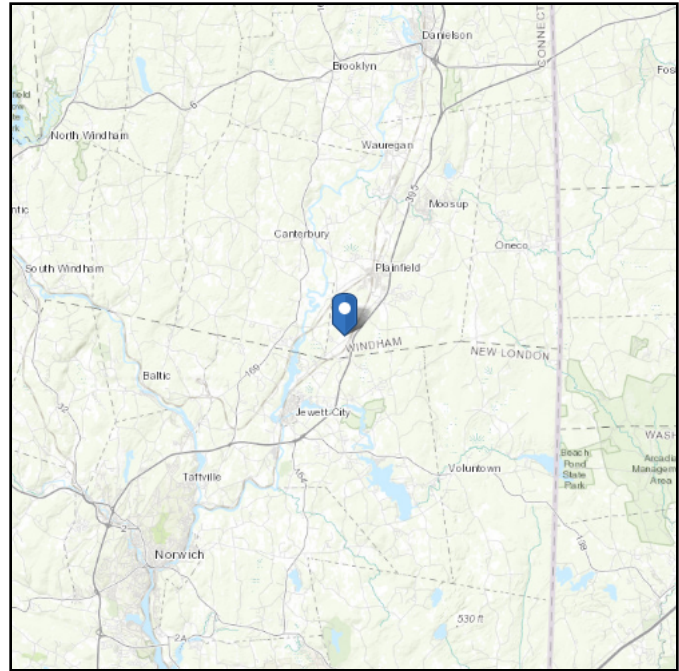
Dead and Wind Forces for Equipment									
Manufacturer	Model	L [in]	W [in]	D [in]	0° [lbs]	30° [lbs]	60° [lbs]	90° [lbs]	Weight [lbs]
EMS WIRELESS	RR90-17-02DP	56	8	2.75	238.2	205.6	140.5	107.9	13.5
RFS/CELWAVE	APXVAARR24_43-UNA20	95.6	24	8.7	1103.0	948.3	638.9	484.2	128.0
ERICSSON	KRY 112 144/1	7	6	3	19.1	16.7	12.0	9.6	11.0
ERICSSON	KRY 112 489/2	11	6.1	3.94	30.6	27.9	22.6	20.0	15.4
ERICSSON	RADIO 4449 B12/B71	14.95	13.19	9.25	89.9	83.2	69.7	63.0	75.0

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 151.39 ft (NAVD 88)
Latitude: 41.646325
Longitude: -71.941306



Wind

Results:

Wind Speed:	132 Vmph
10-year MRI	79 Vmph
25-year MRI	89 Vmph
50-year MRI	98 Vmph
100-year MRI	107 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Thu May 02 2019

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

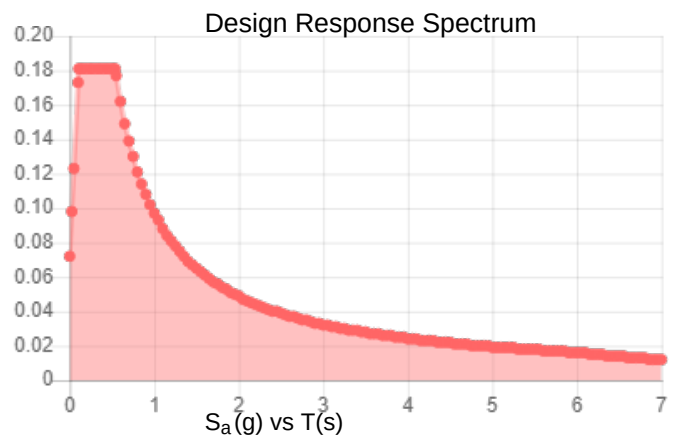
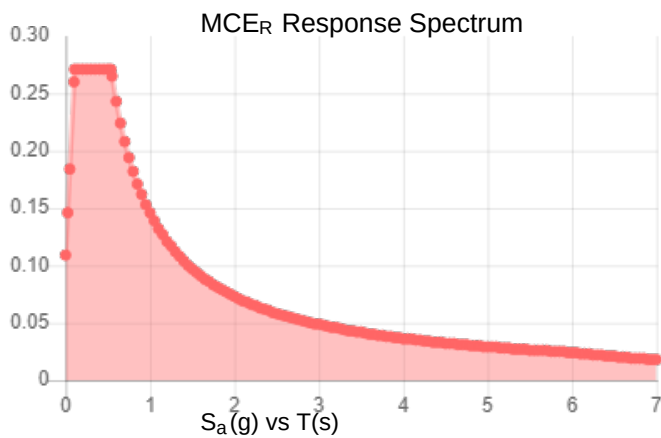
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.17	S_{DS} :	0.181
S_1 :	0.061	S_{D1} :	0.097
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.085
S_{MS} :	0.271	PGA_M :	0.136
S_{M1} :	0.146	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Thu May 02 2019

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Thu May 02 2019

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

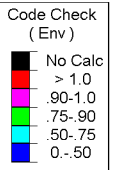
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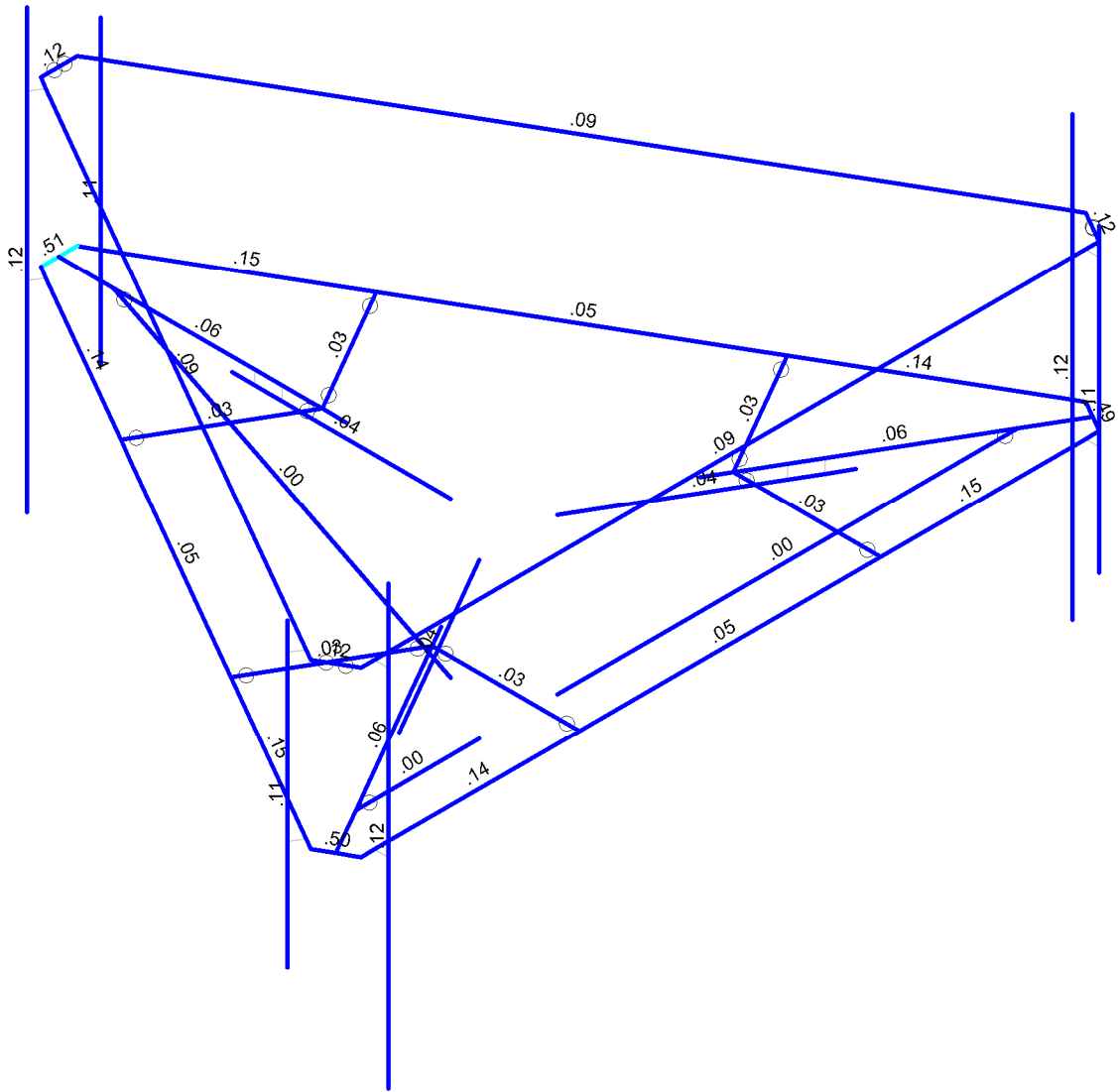
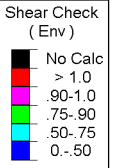
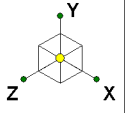
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APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Page 3



Member Shear Checks Displayed (Enveloped)
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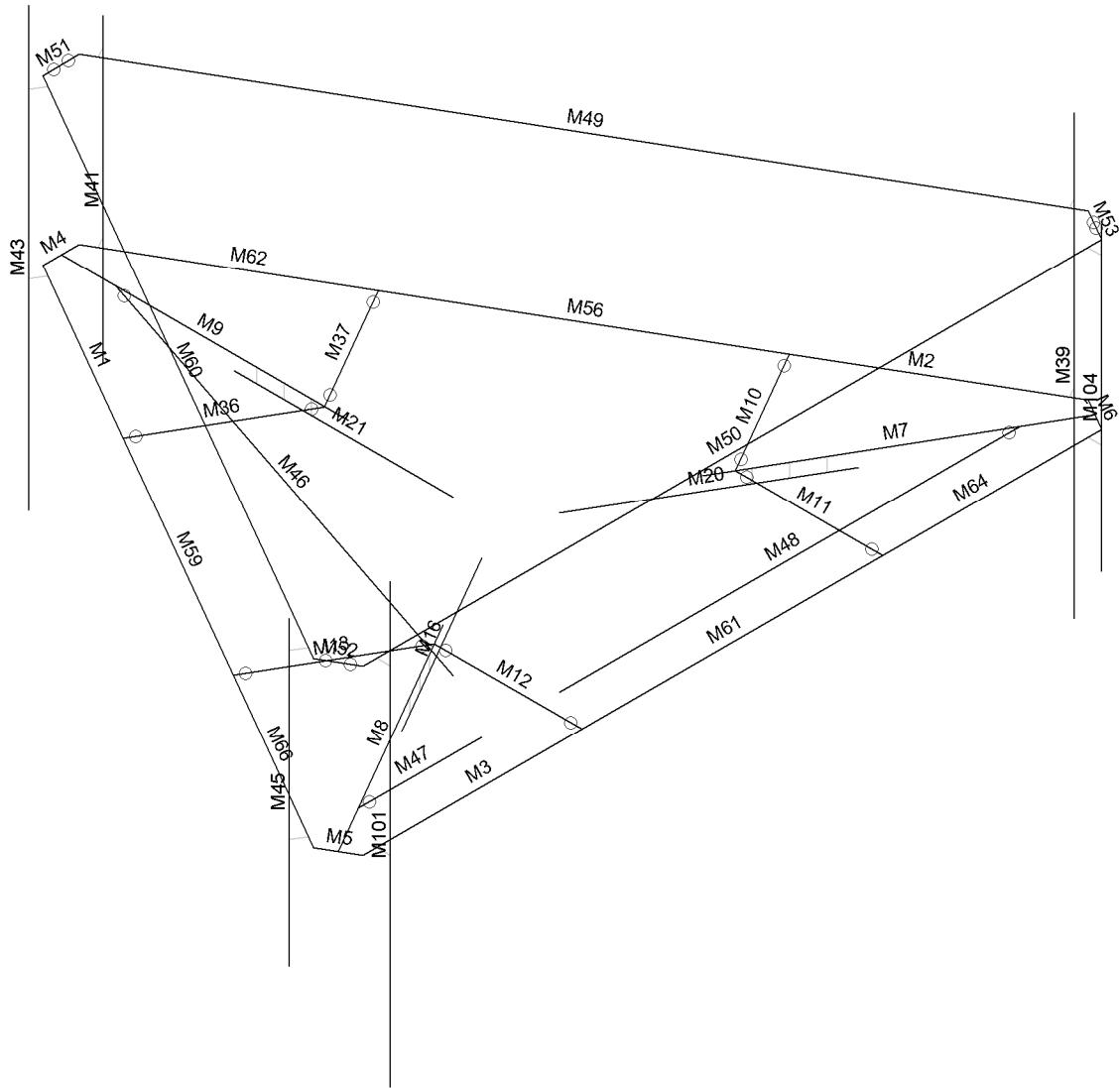
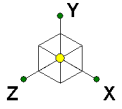
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Envelope Only Solution

Paul J Ford Company

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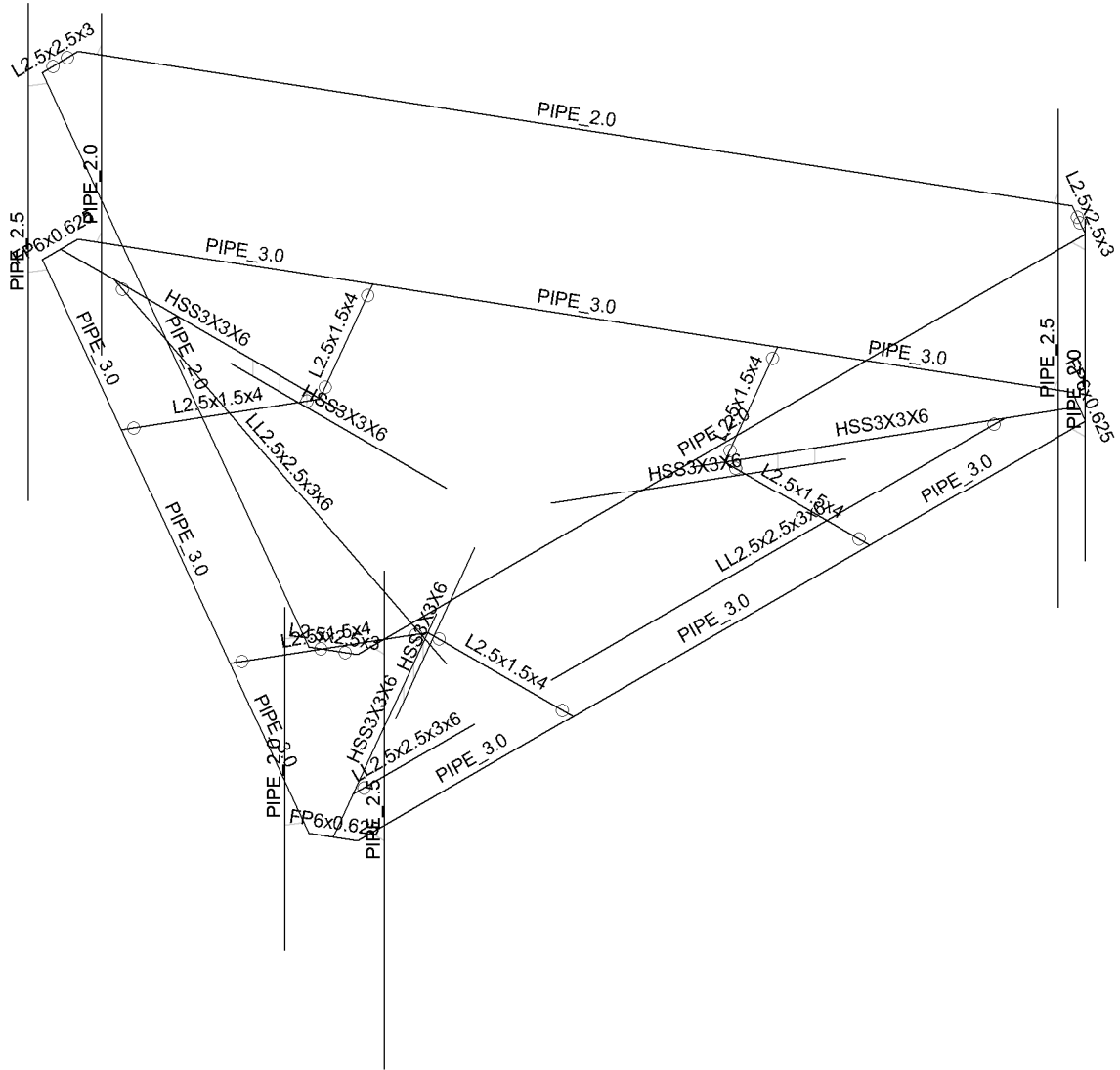
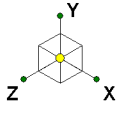
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Paul J Ford Company

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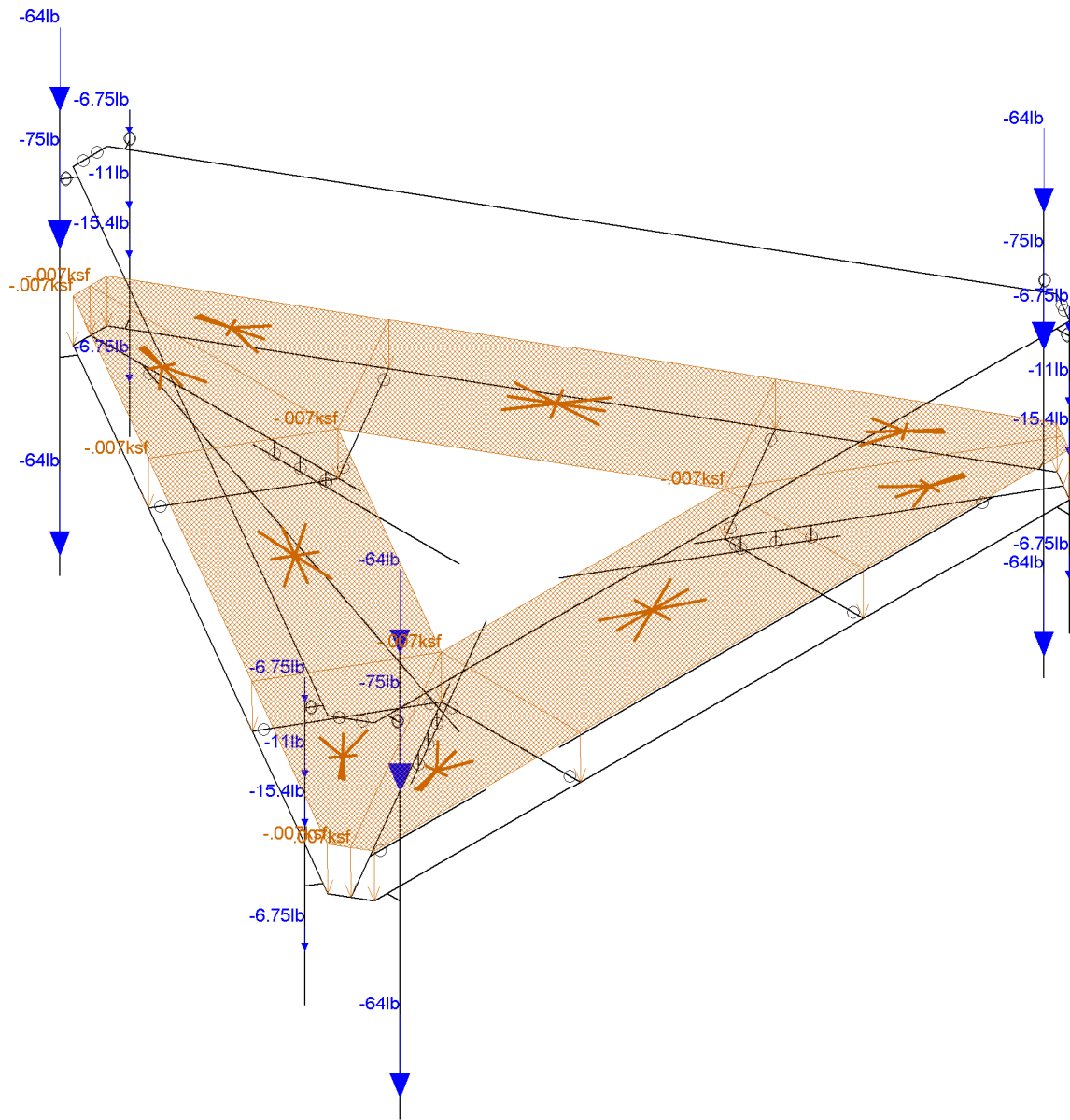
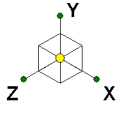
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Paul J Ford Company

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826747_Plainfield I-395

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May 27, 2019 at 2:27 PM

826747_Plainfield I-395_REINF.R3D



Company : Paul J Ford Company
 Designer : SS
 Job Number : 37519-1567.003.7191
 Model Name : 826747_Plainfield I-395

May 27, 2019
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 Checked By: DS

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver
Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	None
Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parame Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR SET ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-16
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\...)	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B 42	29000	11154	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.B 46	29000	11154	.3	.65	.49	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	TS3x3x5	HSS3X3X5 A10...	Beam	Tube	A53 Gr.B	Typical	3.363	4.102	4.102	6.071
2	L2.5x2.5x4	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
3	PIPE 3.0	PIPE 3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
4	PIPE 2.0	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	FP6x0.625	FP6x0.625	Beam	BAR	A36 Gr.36	Typical	3.75	.122	11.25	.456

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N72A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N60B	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N62	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N79	Reaction	Reaction	Reaction			
5	N80	Reaction	Reaction	Reaction			
6	N81	Reaction	Reaction	Reaction			

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	PIPE 3.0	54									Lateral
2	M2	PIPE 3.0	54									Lateral
3	M3	PIPE 3.0	54									Lateral
4	M4	FP6x0.625	8									Lateral
5	M5	FP6x0.625	8									Lateral
6	M6	FP6x0.625	8									Lateral
7	M7	HSS3X3X6	63									Lateral
8	M8	HSS3X3X6	63									Lateral
9	M9	HSS3X3X6	63									Lateral
10	M10	L2.5x1.5x4	32.332									Lateral
11	M11	L2.5x1.5x4	32.332									Lateral
12	M12	L2.5x1.5x4	32.332									Lateral
13	M13	L2.5x1.5x4	32.332									Lateral
14	M16	HSS3X3X6	48									Lateral
15	M20	HSS3X3X6	48									Lateral
16	M21	HSS3X3X6	48									Lateral
17	M56	PIPE 3.0	54									Lateral
18	M59	PIPE 3.0	54									Lateral
19	M61	PIPE 3.0	54									Lateral
20	M62	PIPE 3.0	54									Lateral
21	M64	PIPE 3.0	54									Lateral
22	M66	PIPE 3.0	54									Lateral
23	M101	PIPE 2.5	96									Lateral
24	M104	PIPE 2.0	66									Lateral
25	M36	L2.5x1.5x4	32.332									Lateral
26	M37	L2.5x1.5x4	32.332									Lateral
27	M39	PIPE 2.5	96									Lateral
28	M41	PIPE 2.0	66									Lateral
29	M43	PIPE 2.5	96									Lateral
30	M45	PIPE 2.0	66									Lateral
31	M46	LL2.5x2.5x3...	82.735									Lateral
32	M47	LL2.5x2.5x3...	82.735									Lateral
33	M48	LL2.5x2.5x3...	82.735									Lateral
34	M49	PIPE 2.0	162									Lateral
35	M50	PIPE 2.0	162									Lateral
36	M51	L2.5x2.5x3	8									Lateral
37	M52	L2.5x2.5x3	8									Lateral
38	M53	L2.5x2.5x3	8									Lateral
39	M60	PIPE 2.0	162									Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(de...	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N103			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
2	M2	N9	N99			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
3	M3	N3	N107			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
4	M4	N1	N2			FP6x0.625	Beam	BAR	A36 Gr.36	Typical
5	M5	N3	N4			FP6x0.625	Beam	BAR	A36 Gr.36	Typical
6	M6	N5	N9			FP6x0.625	Beam	BAR	A36 Gr.36	Typical
7	M7	N6	N40			HSS3X3X6	Beam	SquareTube	A500 Gr....	Typical
8	M8	N7	N18			HSS3X3X6	Beam	SquareTube	A500 Gr....	Typical
9	M9	N8	N29			HSS3X3X6	Beam	SquareTube	A500 Gr....	Typical
10	M10	N11	N12		270	L2.5x1.5x4	Beam	Single Angle	A36 Gr.36	Typical
11	M11	N12	N78		270	L2.5x1.5x4	Beam	Single Angle	A36 Gr.36	Typical
12	M12	N13	N14		270	L2.5x1.5x4	Beam	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

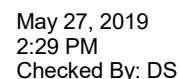
	Label	I Joint	J Joint	K Joint	Rotate(de...)	Section/Shape	Type	Design List	Material	Design Rules
13	M13	N14	N84		270	L2.5x1.5x4	Beam	Single Angle	A36 Gr.36	Typical
14	M16	N61	N60B			HSS3X3X6	Beam	SquareTube	A500 Gr....	Typical
15	M17	N20	N21			RIGID	None	None	RIGID	Typical
16	M18	N22	N23			RIGID	None	None	RIGID	Typical
17	M19	N24	N25			RIGID	None	None	RIGID	Typical
18	M20	N63	N62			HSS3X3X6	Beam	SquareTube	A500 Gr....	Typical
19	M21	N74	N72A			HSS3X3X6	Beam	SquareTube	A500 Gr....	Typical
20	M56	N99	N157A			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
21	M59	N103	N101			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
22	M61	N107	N159A			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
23	M62	N157A	N2			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
24	M64	N159A	N5			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
25	M66	N101	N4			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
26	M79	N154D	N155C			RIGID	None	None	RIGID	Typical
27	M80	N156C	N157C			RIGID	None	None	RIGID	Typical
28	M81	N158C	N159C			RIGID	None	None	RIGID	Typical
29	M82	N160C	N161B			RIGID	None	None	RIGID	Typical
30	M83	N162A	N163A			RIGID	None	None	RIGID	Typical
31	M84	N164A	N165A			RIGID	None	None	RIGID	Typical
32	M100	N190	N191			RIGID	None	None	RIGID	Typical
33	M101	N193A	N192			PIPE 2.5	Column	Pipe	A53 Gr.B	Typical
34	M103	N196A	N197A			RIGID	None	None	RIGID	Typical
35	M104	N199	N198A			PIPE 2.0	Column	Pipe	A36 Gr.36	Typical
36	M36	N58	N60		270	L2.5x1.5x4	Beam	Single Angle	A36 Gr.36	Typical
37	M37	N60	N60A		270	L2.5x1.5x4	Beam	Single Angle	A36 Gr.36	Typical
38	M38	N60C	N61A			RIGID	None	None	RIGID	Typical
39	M39	N63A	N62A			PIPE 2.5	Column	Pipe	A53 Gr.B	Typical
40	M40	N64	N65			RIGID	None	None	RIGID	Typical
41	M41	N67	N66			PIPE 2.0	Column	Pipe	A36 Gr.36	Typical
42	M42	N68	N69			RIGID	None	None	RIGID	Typical
43	M43	N71	N70			PIPE 2.5	Column	Pipe	A53 Gr.B	Typical
44	M44	N72	N73			RIGID	None	None	RIGID	Typical
45	M45	N75	N74A			PIPE 2.0	Column	Pipe	A36 Gr.36	Typical
46	M46	N79	N82			LL2.5x2.5x3x6	VBrace	Double Angle...	A36 Gr.36	Typical
47	M47	N80	N107B			LL2.5x2.5x3x6	VBrace	Double Angle...	A36 Gr.36	Typical
48	M48	N81	N109			LL2.5x2.5x3x6	VBrace	Double Angle...	A36 Gr.36	Typical
49	M49	N91	N87			PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
50	M50	N88A	N90			PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
51	M51	N86	N87		180	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical
52	M52	N88A	N89		180	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical
53	M53	N90	N91		90	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical
54	M54	N94	N95			RIGID	None	None	RIGID	Typical
55	M55	N96	N97			RIGID	None	None	RIGID	Typical
56	M56A	N98	N99A			RIGID	None	None	RIGID	Typical
57	M57	N100	N101A			RIGID	None	None	RIGID	Typical
58	M58	N102	N103A			RIGID	None	None	RIGID	Typical
59	M59A	N104	N105			RIGID	None	None	RIGID	Typical
60	M60	N86	N89			PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes	** NA **			None
2	M2						Yes	** NA **			None
3	M3						Yes	** NA **			None
4	M4						Yes				None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
5	M5						Yes				None
6	M6						Yes				None
7	M7						Yes				None
8	M8						Yes	Default			None
9	M9						Yes				None
10	M10	BenPIN	BenPIN				Yes				None
11	M11	BenPIN	BenPIN				Yes				None
12	M12	BenPIN	BenPIN				Yes				None
13	M13	BenPIN	BenPIN				Yes				None
14	M16						Yes	Default			None
15	M17	BenPIN					Yes	** NA **			None
16	M18	BenPIN					Yes	** NA **			None
17	M19	BenPIN					Yes	** NA **			None
18	M20						Yes				None
19	M21						Yes				None
20	M56						Yes	** NA **			None
21	M59						Yes	** NA **			None
22	M61						Yes	** NA **			None
23	M62						Yes	** NA **			None
24	M64						Yes	** NA **			None
25	M66						Yes	** NA **			None
26	M79	BenPIN					Yes	** NA **			None
27	M80	BenPIN					Yes	** NA **			None
28	M81	BenPIN					Yes	** NA **			None
29	M82	BenPIN					Yes	** NA **			None
30	M83	BenPIN					Yes	** NA **			None
31	M84	BenPIN					Yes	** NA **			None
32	M100						Yes	** NA **			None
33	M101						Yes	** NA **			None
34	M103						Yes	** NA **			None
35	M104						Yes	** NA **			None
36	M36	BenPIN	BenPIN				Yes				None
37	M37	BenPIN	BenPIN				Yes				None
38	M38						Yes	** NA **			None
39	M39						Yes	** NA **			None
40	M40						Yes	** NA **			None
41	M41						Yes	** NA **			None
42	M42						Yes	** NA **			None
43	M43						Yes	** NA **			None
44	M44						Yes	** NA **			None
45	M45						Yes	** NA **			None
46	M46		BenPIN				Yes	** NA **			None
47	M47		BenPIN				Yes	** NA **			None
48	M48		BenPIN				Yes	** NA **			None
49	M49						Yes				None
50	M50						Yes				None
51	M51	OOOOOX	OOOOOX				Yes				None
52	M52	OOOOOX	OOOOOX				Yes				None
53	M53	OOOOOX	OOOOOX				Yes				None
54	M54	OOOXOX					Yes	** NA **			None
55	M55	OOOXOX					Yes	** NA **			None
56	M56A	OOOXOX					Yes	** NA **			None
57	M57	OOOXOX					Yes	** NA **			None
58	M58	OOOXOX					Yes	** NA **			None
59	M59A	OOOXOX					Yes	** NA **			None
60	M60						Yes				None

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Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-in]	LC	MY [k-in]	LC	MZ [k-in]	LC
5	N62	max	1390.052	4	315.278	4	4416.812	10	3.903	4	21.469	7	2.71	3
6		min	-2711.522	10	-295.746	10	-2147.484	4	-2.932	10	-21.582	13	-2.182	9
7	N79	max	-895.479	8	2822.477	14	6.629	13	0	76	0	76	0	76
8		min	-5595.522	14	475.636	8	-6.034	3	0	1	0	1	0	1
9	N80	max	2836.147	17	2859.061	17	4908.384	17	0	76	0	76	0	76
10		min	449.094	12	476.053	12	775.689	12	0	1	0	1	0	1
11	N81	max	2833.273	23	2856.655	23	-776.718	4	0	76	0	76	0	76
12		min	447.194	4	476.024	4	-4904.499	23	0	1	0	1	0	1
13	Totals:	max	4733.4	2	7893.818	23	4730.132	11						
14		min	-4733.398	8	2559.541	76	-4730.139	5						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M43	PIPE 2.5	.625	52	3	.119	52		10	30038.461	50715	43.155	43.155	1...	H1-1b
2	M101	PIPE 2.5	.617	52	7	.119	52		2	30038.461	50715	43.155	43.155	1...	H1-1b
3	M39	PIPE 2.5	.617	52	11	.119	52		6	30038.461	50715	43.155	43.155	1...	H1-1b
4	M45	PIPE 2.0	.543	41.938	8	.107	41.938		4	22757.755	33048	23.101	23.101	1...	H1-1b
5	M104	PIPE 2.0	.543	41.938	12	.106	41.938		8	22757.755	33048	23.101	23.101	1...	H1-1b
6	M41	PIPE 2.0	.543	41.938	4	.107	41.938		12	22757.755	33048	23.101	23.101	2...	H1-1b
7	M4	FP6x0.625	.288	4	9	.506	4	y	17	109546.7...	121500	18.986	182.25	1...	H1-1b
8	M5	FP6x0.625	.288	4	13	.499	4	y	23	109546.7...	121500	18.986	182.25	1...	H1-1b
9	M6	FP6x0.625	.288	4	5	.489	4	y	14	109546.7...	121500	18.986	182.25	1...	H1-1b
10	M53	L2.5x2.5x3	.226	0	5	.122	8	z	6	27994.715	29192.4	10.471	23.662	1...	H2-1
11	M52	L2.5x2.5x3	.226	8	13	.122	0	y	2	27994.715	29192.4	10.471	23.662	1...	H2-1
12	M51	L2.5x2.5x3	.226	8	9	.122	0	y	10	27994.715	29192.4	10.471	23.662	1...	H2-1
13	M49	PIPE 2.0	.202	81	23	.088	162		9	5397.31	32130	22.459	22.459	1...	H1-1b
14	M60	PIPE 2.0	.201	79.313	17	.088	162		13	5397.31	32130	22.459	22.459	1...	H1-1b
15	M47	LL2.5x2.5x3x6	.200	0	17	.002	0	y	1	31808.924	58320	55.717	30.314	1	H1-1b*
16	M48	LL2.5x2.5x3x6	.199	0	23	.002	0	y	1	31808.924	58320	55.717	30.314	1	H1-1b*
17	M50	PIPE 2.0	.199	79.313	20	.088	162		5	5397.31	32130	22.459	22.459	1...	H1-1b
18	M46	LL2.5x2.5x3x6	.197	0	14	.002	0	y	1	31808.924	58320	55.717	30.314	1	H1-1b*
19	M64	PIPE 3.0	.189	50.625	23	.147	54		9	58506.375	65205	68.985	68.985	2...	H1-1b
20	M66	PIPE 3.0	.184	50.625	8	.147	54		5	58506.375	65205	68.985	68.985	1...	H1-1b
21	M62	PIPE 3.0	.184	50.625	4	.147	54		13	58506.375	65205	68.985	68.985	1...	H1-1b
22	M1	PIPE 3.0	.177	3.375	2	.141	0		2	58506.375	65205	68.985	68.985	1...	H1-1b
23	M3	PIPE 3.0	.177	3.375	6	.140	0		6	58506.375	65205	68.985	68.985	1...	H1-1b
24	M2	PIPE 3.0	.177	3.375	10	.140	0		10	58506.375	65205	68.985	68.985	1...	H1-1b
25	M61	PIPE 3.0	.173	27	75	.052	54		13	58506.375	65205	68.985	68.985	1...	H1-1b
26	M21	HSS3X3X6	.169	48	11	.041	48	z	5	122133.6...	140346	134.55	134.55	1...	H1-1b
27	M16	HSS3X3X6	.169	48	3	.041	48	z	9	122133.6...	140346	134.55	134.55	1...	H1-1b
28	M20	HSS3X3X6	.169	48	7	.041	48	z	13	122133.6...	140346	134.55	134.55	1...	H1-1b
29	M8	HSS3X3X6	.139	12.469	17	.063	11.813	y	17	110461.91	140346	134.55	134.55	2...	H1-1b
30	M7	HSS3X3X6	.139	12.469	23	.063	11.813	y	23	110461.91	140346	134.55	134.55	2...	H1-1b
31	M9	HSS3X3X6	.132	12.469	15	.063	11.813	y	14	110461.91	140346	134.55	134.55	2...	H1-1b
32	M10	L2.5x1.5x4	.123	16.503	18	.026	32.332	z	7	17986.715	30682.8	5.53	19.167	1...	H2-1
33	M12	L2.5x1.5x4	.123	16.503	14	.026	32.332	z	3	17986.715	30682.8	5.53	19.167	1...	H2-1
34	M36	L2.5x1.5x4	.123	16.503	22	.026	32.332	z	11	17986.715	30682.8	5.53	19.167	1...	H2-1
35	M13	L2.5x1.5x4	.122	15.829	25	.030	0	z	21	17986.715	30682.8	5.53	19.167	1...	H2-1
36	M11	L2.5x1.5x4	.122	15.829	17	.030	0	z	25	17986.715	30682.8	5.53	19.167	1...	H2-1
37	M37	L2.5x1.5x4	.122	15.829	21	.032	0	z	17	17986.715	30682.8	5.53	19.167	1...	H2-1
38	M59	PIPE 3.0	.106	0	7	.052	54		9	58506.375	65205	68.985	68.985	1...	H1-1b
39	M56	PIPE 3.0	.106	0	3	.052	54		5	58506.375	65205	68.985	68.985	1...	H1-1b

SITE DETAILS

Site Name/Code
Date
Engineer

826747 - Plainfield/I-395
5/27/2019
LB

CONNECTION PARAMETERS

Loadcase #
Number of bolts
B
H
Bolt Diameter
Tensile Area
Tensile Area
Grade
Bolt Ultimate Strength
Connection length reduction factor

5
4
4.0 in
4.0 in
d 5/8 in
A_b 0.31 in²
A_n 0.23 in²
A325
F_{ub} 120 ksi
R_b 1



Connection Sketch/Photo

CONNECTION LOADS

Bending Moment
Bending Moment
Torsional Moment
Shear Force
Shear Force
Axial Force

M_{xx} 21.59 kips-in
M_{zz} 0.41 kips-in
M_{yy} 2.16 kips-in
V_x 0.00 kips
V_z 0.78 kips
T_y 1.43 kips

SOFTWARE REACTIONS TABLE

L...	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [k-in]	MY [k-in]	MZ [k-in]
5	N72A	1433.06	-811	-777.713	-2.157	-21.588	-414
5	N60B	-2566.294	-256.869	-3838.284	2.849	-11.317	-569
5	N62	1140.71	261.629	-1713.227	3.221	-7.936	1.38
5	N79	-1997.751	1026.35	5.829	0	0	0
5	N80	1460.215	1481.238	2515.905	0	0	0
5	N81	530.076	559.909	-922.649	0	0	0
5	Totals:	.017	3071.446	-4730.139			

BOLT CHECK

Bolt Tension Capacity

$$\phi R_{nt} = 0.75 \cdot F_{ub} \cdot A_n$$

$$\phi R_{nt} = 20.3 \text{ kips}$$

Bolt Shear Capacity

$$\phi R_{nv} = 0.75 \cdot 0.625 \cdot 0.8 \cdot F_{ub} \cdot A_b \cdot R_b$$

$$\phi R_{nv} = 13.8 \text{ kips}$$

Maximum Bolt Tension

$$T_{ub} = F_{Mxx} + F_{Mzz} + T_y / 4$$

$$T_{ub} = 3.11 \text{ kips}$$

Maximum Bolt Shear

$$V_{ub} = \sqrt{((V_x/4)^2 + (V_y/4)^2) + F_{Myy}}$$

$$V_{ub} = 0.39 \text{ kips}$$

Tension Ratio:

15.3% PASS

Shear Ratio:

2.8% PASS

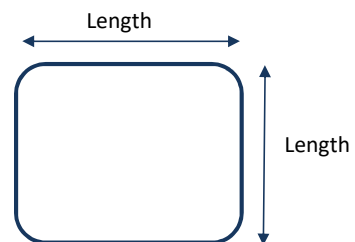
$$(T_{ub} / \phi R_{nt})^2 + (V_{ub} / \phi R_{nv})^2 < 1.0$$

Ratio 2.4% PASS

WELD CHECK

Filler Metal Strength
Weld Thk.
Nominal Weld Thk.
Length
Shear
Moment
A
S_w
f_v
f_m
f_r
Allowable Weld Stress

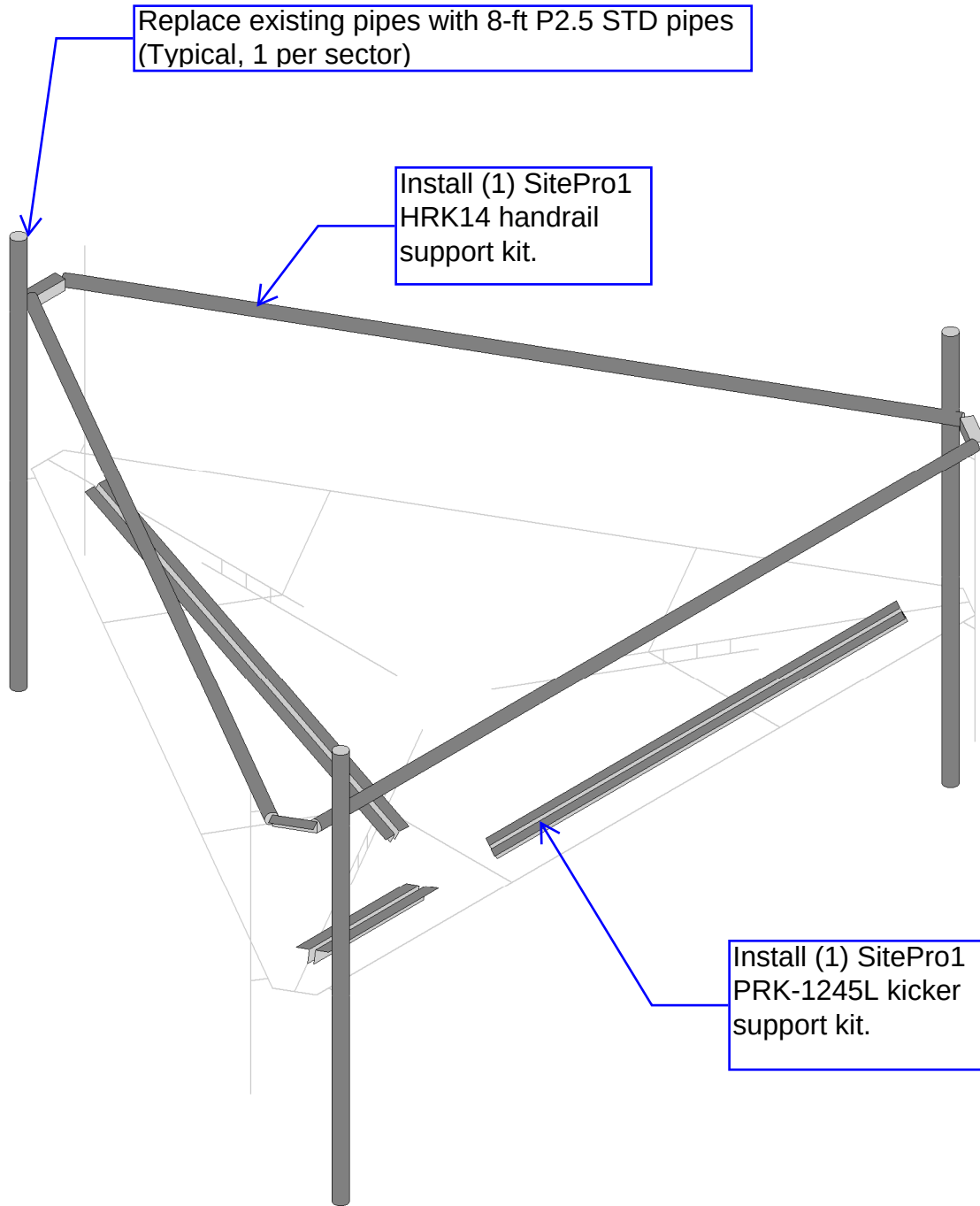
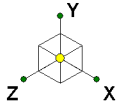
70 ksi
0.375 in
0.265 in
3.0 in
0.78 kips
22.00 kips-in
1.59 in²
3.51 in³
0.49 ksi
6.27 ksi
6.29 ksi
31.5 ksi



20.0% PASS

APPENDIX D

SUPPLEMENTAL MODIFICATION INFORMATION



Replace existing pipes with 8-ft P2.5 STD pipes
(Typical, 1 per sector)

Install (1) SitePro1
HRK14 handrail
support kit.

Install (1) SitePro1
PRK-1245L kicker
support kit.

Envelope Only Solution

Paul J Ford Company

SS

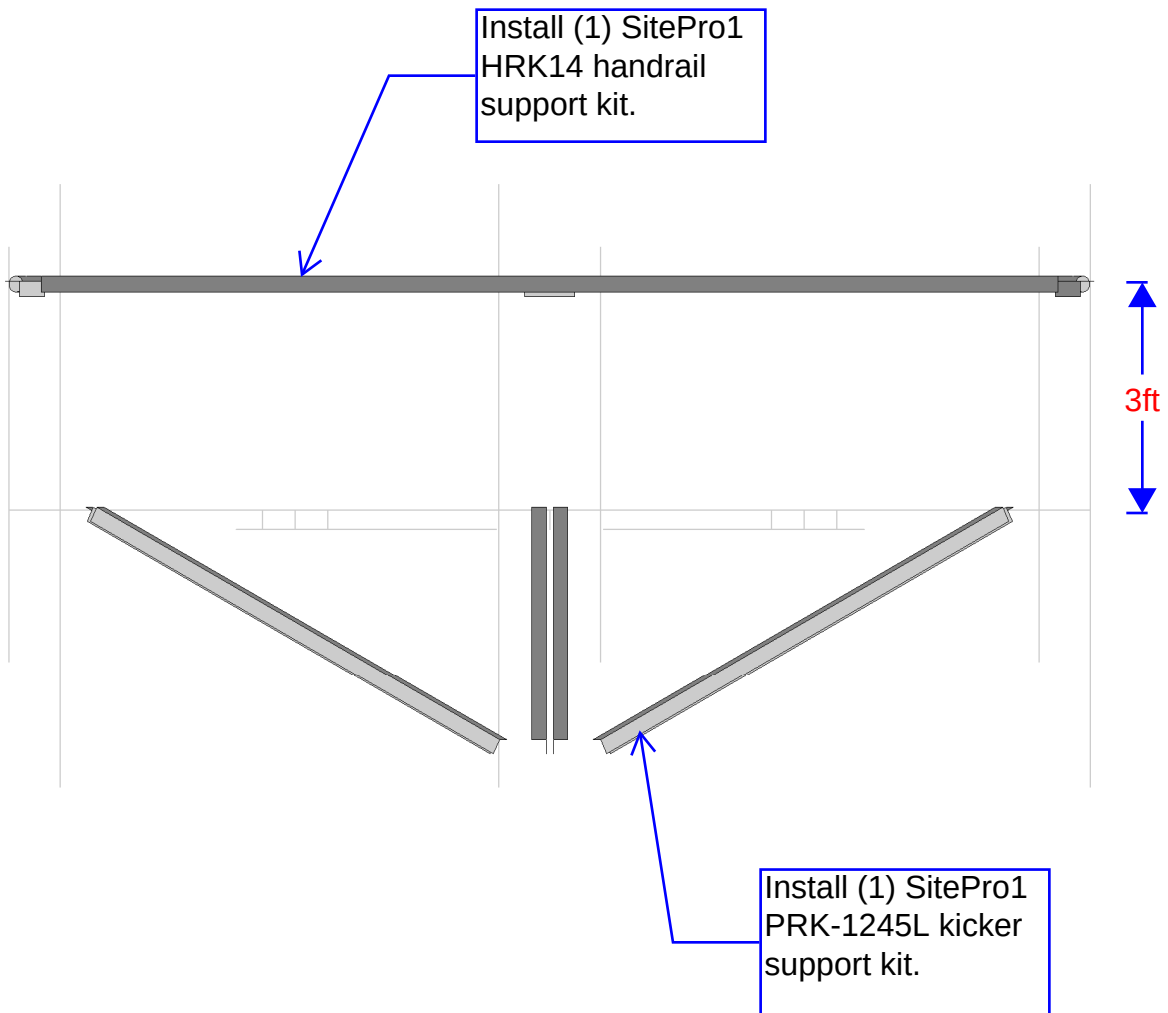
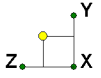
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826747_Plainfield I-395

SK - 8

May 27, 2019 at 2:27 PM

826747_Plainfield I-395_REINF.R3D



Envelope Only Solution

Paul J Ford Company

SS

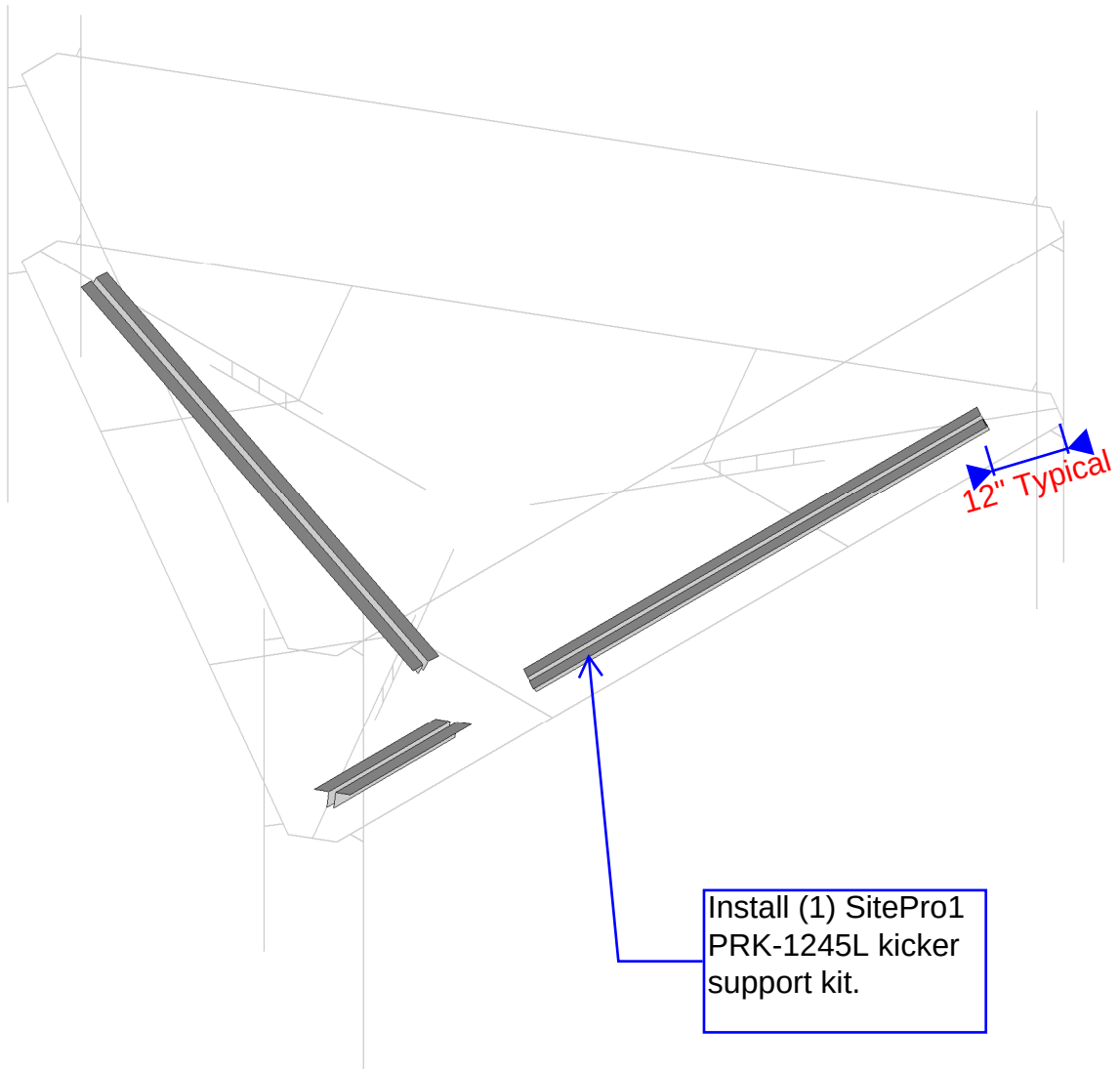
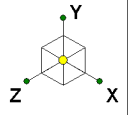
37519-1567.003.7191

826747_Plainfield I-395

SK - 9

May 27, 2019 at 2:28 PM

826747_Plainfield I-395_REINF.R3D



Install (1) SitePro1
PRK-1245L kicker
support kit.

Envelope Only Solution

Paul J Ford Company

SS

37519-1567.003.7191

826747_Plainfield I-395

SK - 10

May 27, 2019 at 2:28 PM

826747_Plainfield I-395_REINF.R3D

APPENDIX E

MANUFACTURER DRAWINGS
(FOR REFERENCE ONLY)

Pxxx: Bulk Pipe



Features:

- Factory cut end, hot-dip galvanized pipe

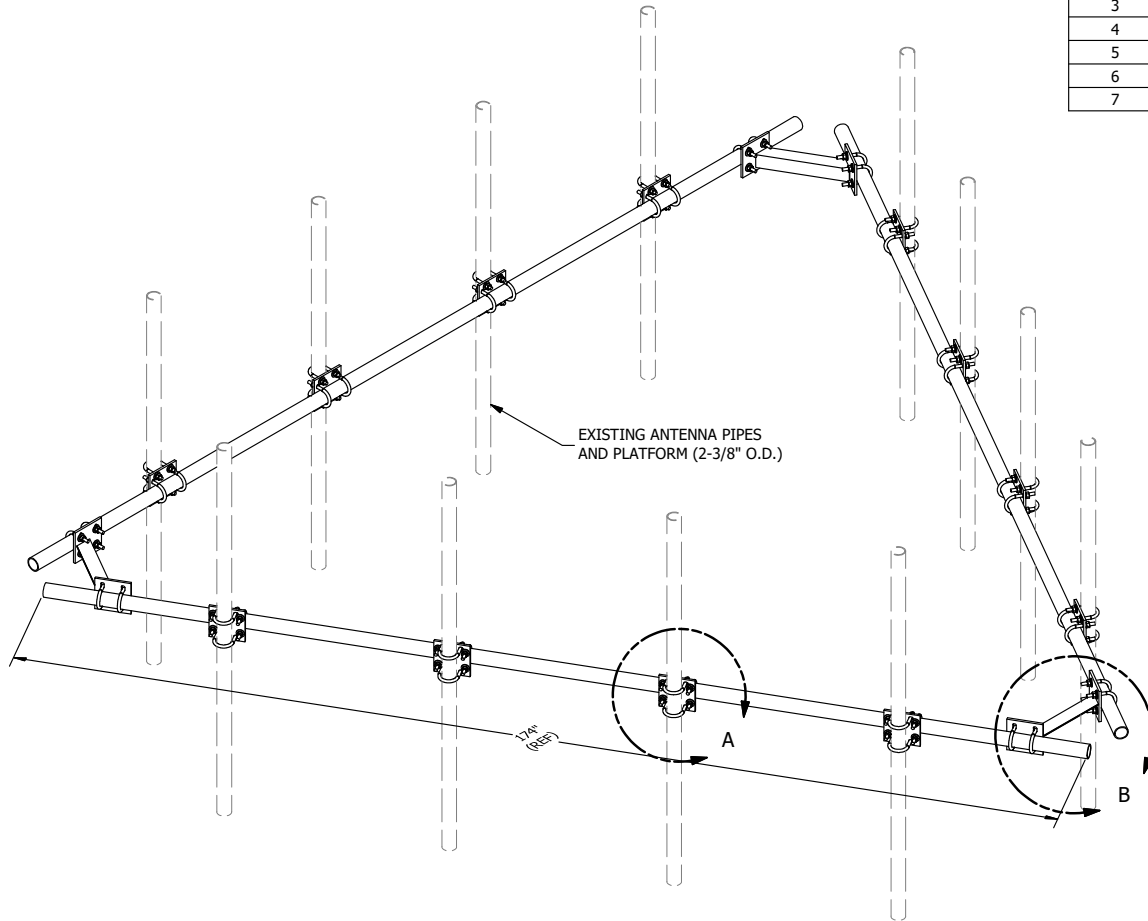
Construction:

- ASTM A53 Grade B
- Schedule 40

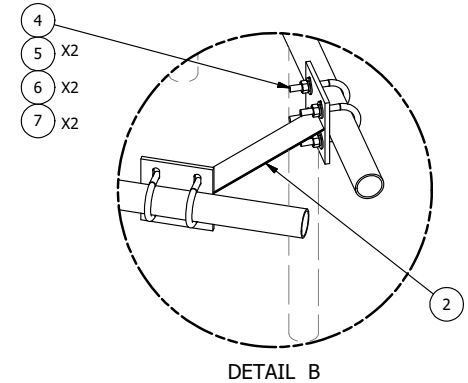
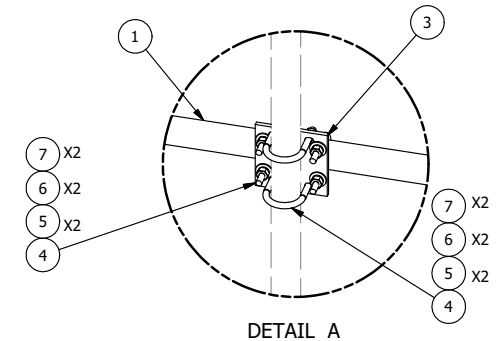
Design Criteria:

- ASTM A53 Grade B (Yield $F_y = 35$ ksi [240 MPa] / Tensile $F_u = 60$ ksi [415 MPa])
- Hot dip galvanized in accordance with ASTM A123 requirements

Part #	Length	OD x Length (in)	Weight
P263	5'-3"	2-3/8" x 63"	20 lb
P272	6'-0"	2-3/8" x 72"	22 lb
P284	7'-0"	2-3/8" x 84"	26 lb
P296	8'-0"	2-3/8" x 96"	30 lb
P2120	10'-0"	2-3/8" x 120"	37 lb
P2126	10'-6"	2-3/8" x 126"	39 lb
P2150	12'-6"	2-3/8" x 150"	46 lb
P2174	14'-6"	2-3/8" x 174"	53 lb
P3084	7'-0"	2-7/8" x 84"	41 lb
P3096	8'-0"	2-7/8" x 96"	47 lb
P30120	10'-0"	2-7/8" x 120"	58 lb
P30126	10'-6"	2-7/8" x 126"	61 lb
P30150	12'-6"	2-7/8" x 150"	73 lb
P30174	14'-6"	2-7/8" x 174"	84 lb
P360	5'-0"	3-1/2" x 60"	38 lb
P372	6'-0"	3-1/2" x 72"	46 lb
P396	8'-0"	3-1/2" x 96"	61 lb
P3150	12'-6"	3-1/2" x 150"	95 lb
P3160	13'-4"	3-1/2" x 160"	101 lb
P3174	14'-6"	3-1/2" x 174"	110 lb
P3216	18'-0"	3-1/2" x 216"	137 lb
P472	6'-0"	4-1/2" x 72"	65 lb
P4126	10'-6"	4-1/2" x 126"	114 lb



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2174	2-3/8" OD X 174" SCH 40 GALVANIZED PIPE	174 in	55.75	167.24
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
					TOTAL WT. #	302.36



TOLERANCE NOTES

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

PROPRIETARY NOTE:
THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION

**HANDRAIL KIT
FOR 14'-6" FACE**

CPD NO.	DRAWN BY	ENG. APPROVAL
	KC8 5/30/2012	
CLASS	SUB	DRAWING USAGE
81	01	CUSTOMER
	CHECKED BY	
	BMC 7/13/2014	

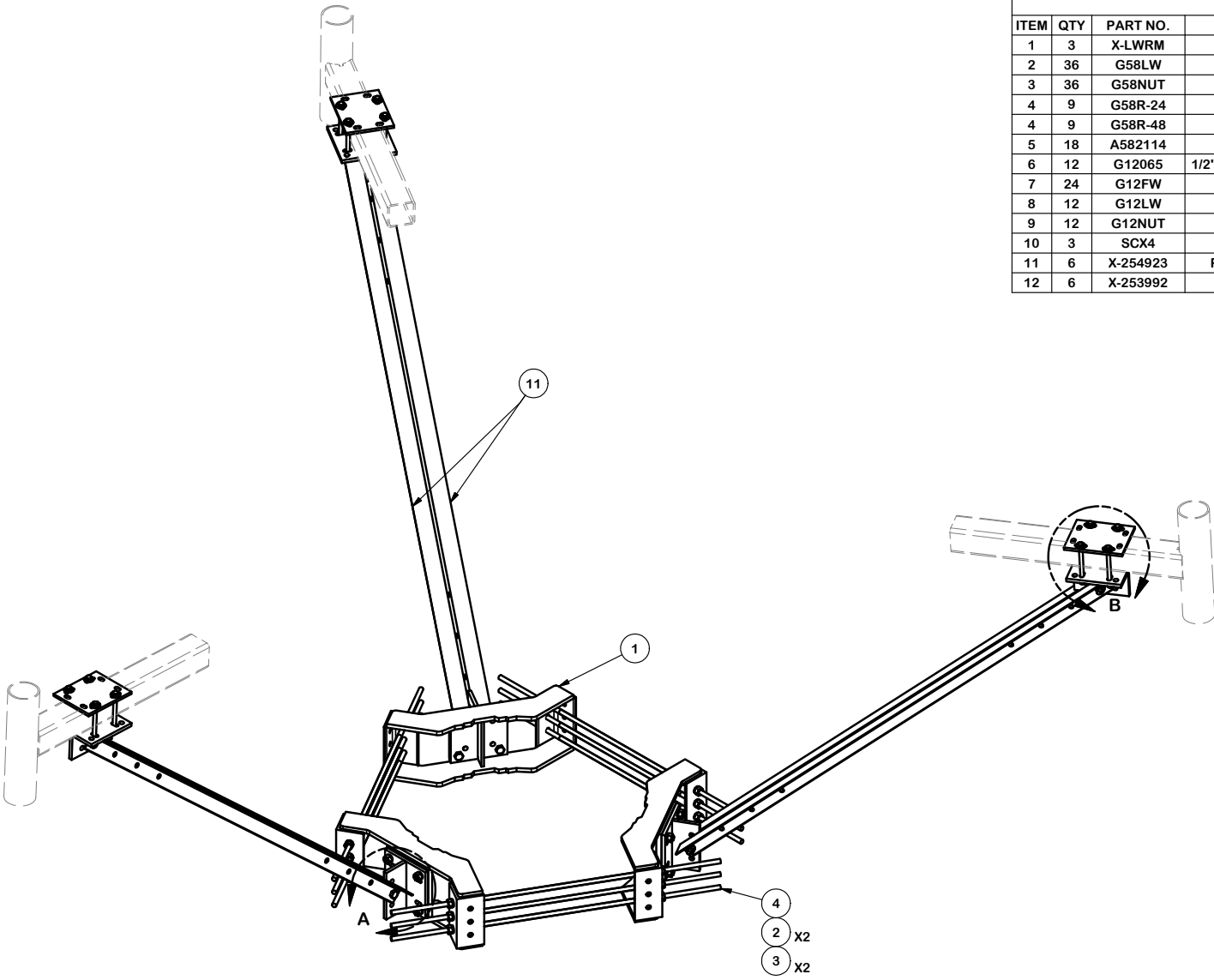


Engineering
Support Team:
1-888-753-7446

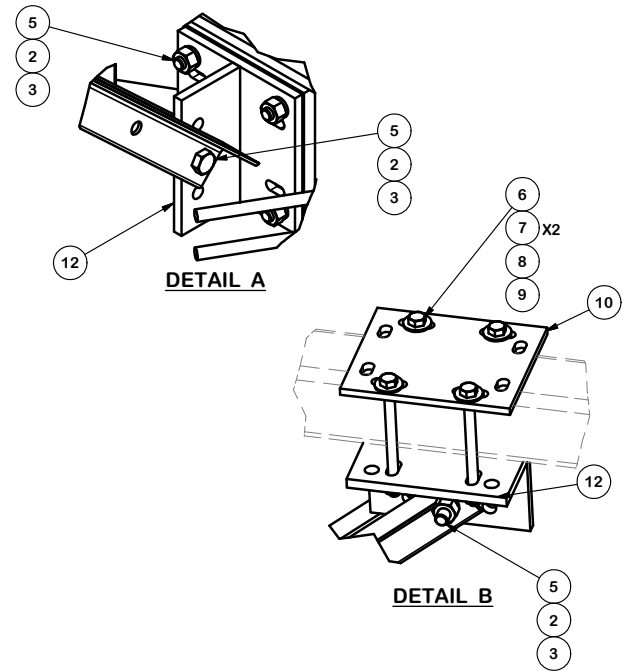
Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX

PART NO.	HRK14	PAGE
DWG. NO.	HRK14	1 OF 1

A	REPLACED HCP WITH X-AHCP	CEK	7/11/2014
REV	DESCRIPTION OF REVISIONS	CPD	BY
REVISION HISTORY			



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	36	G58LW	5/8" HDG LOCKWASHER		0.03	0.94
3	36	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	4.68
4	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)	24 in	0.40	3.59
4	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)	48 in	0.40	3.59
5	18	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	5.62
6	12	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	4.91
7	24	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	0.82
8	12	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.17
9	12	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	0.86
10	3	SCX4	CROSSOVER PLATE	8 1/2 in	6.02	18.06
11	6	X-254923	PLATFORM REINFORCEMENT KIT ANGLE	84 in	22.83	137.00
12	6	X-253992	T-BRACKET FOR REINFORCEMENT KIT		13.55	81.27
					TOTAL WT. #	517.21



REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	CHANGED ALL 5/8" BOLTS TO A582114	4488	CEK	10/1/2015
REVISION HISTORY				

TOLERANCE NOTES

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

PROPRIETARY NOTE:
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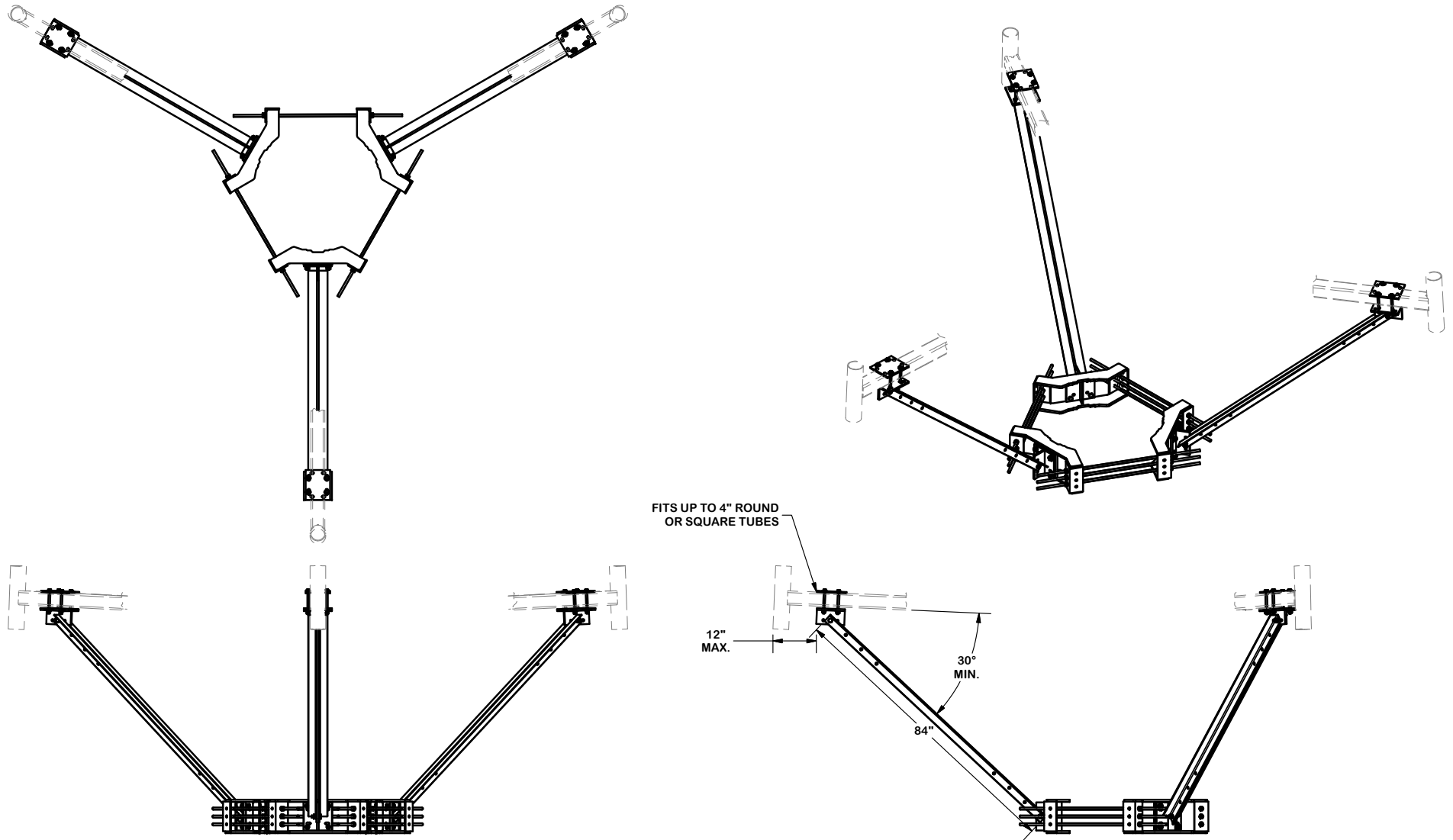
DESCRIPTION			
PLATFORM REINFORCEMENT ON A 12" TO 45" POLE 7" ANGLE			
CPD NO.	DRAWN BY	ENG. APPROVAL	
4488	CEK 7/16/2014		
CLASS	SUB	DRAWING USAGE	CHECKED BY
81	01	CUSTOMER	BMC 1/18/2016

SITE PRO 1
A valmont COMPANY

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

Engineering
Support Team:
1-888-753-7446

PART NO.	PRK-1245L	PAGE
DWG. NO.	PRK-1245L	1 OF 2



TOLERANCE NOTES

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

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION

PLATFORM REINFORCEMENT
 ON A 12" TO 45" POLE
 7° ANGLE

CPD NO.
4488

DRAWN BY
CEK 7/16/2014

ENG. APPROVAL

CLASS SUB
81 01

DRAWING USAGE
CUSTOMER

CHECKED BY
BMC 1/18/2016



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

PART NO.

PRK-1245L

DWG. NO.

PRK-1245L

PAGE
2 OF 2

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	CHANGED ALL 5/8" BOLTS TO A582114	4488	CEK	10/1/2015
REVISION HISTORY				

Exhibit F

Power Density/RF Emissions Report

Transcom Engineering, Inc.

Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CT11314C

Plainfield/I-395
1197 Norwich Road
Plainfield, CT 06374

May 17, 2019

Transcom Engineering Project Number: 737001-0018

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	4.91 %

Transcom Engineering, Inc.

Wireless Network Design and Deployment

May 17, 2019

T-MOBILE

Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 6009

Emissions Analysis for Site: **CT11314C – Plainfield/I-395**

Transcom Engineering, Inc (“Transcom”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **1197 Norwich Road, Plainfield, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

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

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 & 700 MHz bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Transcom Engineering, Inc.

Wireless Network Design and Deployment

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.

Transcom Engineering, Inc.

Wireless Network Design and Deployment

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **1197 Norwich Road, Plainfield, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE	1900 MHz (PCS)	4	40
GSM	1900 MHz (PCS)	1	15
LTE	2100 MHz (AWS)	2	60
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20

Table 1: Channel Data Table

Transcom Engineering, Inc.

Wireless Network Design and Deployment

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) 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 for directional panel antennas, 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAARR24_43-U-NA20	150
A	2	EMS RR90-17-XXDP (Dormant)	150
B	1	RFS APXVAARR24_43-U-NA20	150
B	2	EMS RR90-17-XXDP (Dormant)	150
C	1	RFS APXVAARR24_43-U-NA20	150
C	2	EMS RR90-17-XXDP (Dormant)	150

Table 2: Antenna Data

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

Cable losses were factored in the calculations for this site. Since all **1900 MHz (PCS) and 2100 MHz (AWS)** radios are ground mounted the following cable loss values were used. For each ground mounted **1900 MHz (PCS)** radio there was **1.12 dB** of cable loss calculated into the system gains / losses for this site. For each ground mounted **2100 MHz (AWS)** radio there was **1.65 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturers specifications for **160 feet** of **1-1/4"** coax for all **1900 MHz (PCS) radios** and **160 feet** of **1-5/8"** coax for all **2100 MHz (AWS) radios**.

Transcom Engineering, Inc.

Wireless Network Design and Deployment

RESULTS

Per the calculations completed for the proposed T-MOBILE configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAARR24_43-U-NA20	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz	15.65 / 16.35 / 12.95 / 13.35	11	415	10,950.83	2.48
Antenna A2	EMS RR90-17-XXDP	Dormant	N/A	0	0	0.00	0.00
Sector A Composite MPE%							2.48
Antenna B1	RFS APXVAARR24_43-U-NA20	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz	15.65 / 16.35 / 12.95 / 13.35	11	415	10,950.83	2.48
Antenna B2	EMS RR90-17-XXDP	Dormant	N/A	0	0	0.00	0.00
Sector B Composite MPE%							2.48
Antenna C1	RFS APXVAARR24_43-U-NA20	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz	15.65 / 16.35 / 12.95 / 13.35	11	415	10,950.83	2.48
Antenna C2	EMS RR90-17-XXDP	Dormant	N/A	0	0	0.00	0.00
Sector C Composite MPE%							2.48

Table 3: T-MOBILE Emissions Levels

Transcom Engineering, Inc.

Wireless Network Design and Deployment

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum T-MOBILE MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each T-MOBILE Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	MPE %
T-MOBILE – Max Per Sector Value	2.48 %
Verizon Wireless	2.43 %
Site Total MPE %:	4.91 %

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	2.48 %
T-MOBILE Sector B Total:	2.48 %
T-MOBILE Sector C Total:	2.48 %
Site Total:	4.91 %

Table 5: Site MPE Summary

Transcom Engineering, Inc.

Wireless Network Design and Deployment

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 1900 MHz (PCS) LTE	4	1,135.17	150	7.87	1900 MHz (PCS)	1000	0.79%
T-Mobile 1900 MHz (PCS) GSM	1	425.69	150	0.74	1900 MHz (PCS)	1000	0.07%
T-Mobile 2100 MHz (AWS) LTE	2	1,770.73	150	6.15	2100 MHz (AWS)	1000	0.62%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	150	2.74	600 MHz	400	0.68%
T-Mobile 700 MHz LTE	2	432.54	150	1.50	700 MHz	467	0.32%
						Total:	2.48%

Table 6: T-MOBILE Maximum Sector MPE Power Values

Transcom Engineering, Inc.

Wireless Network Design and Deployment

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 T-MOBILE 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:

T-MOBILE Sector	Power Density Value (%)
Sector A:	2.48 %
Sector B:	2.48 %
Sector C:	2.48 %
T-MOBILE Maximum Total (per sector):	2.48 %
Site Total:	4.91 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **4.91 %** 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.



Scott Heffernan

RF Engineering Director

Transcom Engineering, Inc

PO Box 1048

Sterling, MA 01564