NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
4 Angela's Way, Burlington CT 06013
203-435-3640
denise@northeastsitesolutions.com

October 13, 2021

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Tower Share Application
945 East Center Street, CT Wallingford CT 06492
Latitude: 41.443711
Longitude: 72.796267
Site# 876310_Crown_Dish

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the tower site located at 945 East Center Street in Wallingford, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900 5G MHz antenna and six (6) RRUs, at the 143-foot level of the existing 147-foot monopole tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by B+T Group, dated July 8, 2021 Exhibit C. Also included is a structural analysis prepared by Crown Castle, dated June 10, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. The facility was approved by the Town of Wallingford Planning and Zoning on September 8, 1997. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to the Mayor, Hon. William W. Dickinson, Jr. and Kevin Pagini, Town Planner for the Town of Wallingford, as well as the tower owner (Crown Castle) and property owner (Albert W. Beaumont)

The planned modifications of the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-89.

1. The proposed modification will not result in an increase in the height of the existing structure. The top of the tower is 147-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 143-feet.

2. The proposed modifications will not result in the increase of the site boundary as depicted on the attached site plan.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligent.

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4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total power density of 16.56% as evidenced by Exhibit F.

Connecticut General Statutes 16-50aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, Dish Wireless LLC respectfully indicates that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing monopole has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included as Exhibit D.

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this monopole in Wallingford. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish Wireless LLC to obtain a building permit for the proposed installation. Further, a Letter of Authorization is included as Exhibit G, authorizing Dish Wireless LLC to file this application for shared use.

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 143-foot level of the existing 147-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

D. Economic Feasibility. Dish Wireless LLC will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist Dish Wireless LLC with this tower sharing application.

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting Dish Wireless LLC proposed loading. Dish Wireless LLC is not aware of any public safety concerns relative to the proposed sharing of the existing tower. Dish Wireless LLC intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Wallingford.

Sincerely,

Denise Sabo

Denise Sabo
Mobile: 203-435-3640
Fax: 413-521-0558
Office: 4 Angela's Way, Burlington CT 06013
Email: denise@northeastsitesolutions.com

NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Attachments cc:

Hon. William W. Dickinson, Jr. - Mayor
Wallingford Town Hall
45 South Main Street, Room #310 Wallingford, CT 06492

Kevin Pagini, Town Planner
Wallingford Town Hall
45 South Main Street, Wallingford, CT 06492

Albert W. Beaumont
945 East Center Street Wallingford, CT 06492

Crown Castle, Tower Owner

Exhibit A

Original Facility Approval

HARRIS
BEACH &
WILCOX
A LIMITED LIABILITY PARTNERSHIP

ATTORNEYS AT LAW

147 NORTH BROAD STREET
P.O. BOX 112
MILFORD, CONNECTICUT 06460-0112
(203) 877-8000
(203) 878-9800 (Fax)

MEMO

To : Steve Paisner, Sprint Spectrum L.P.
From : Lewis A. Hurwitz, Esq., Harris Beach & Wiclox
Date : 9/9/97
Re : Wallingford, Sites 008 and 009
cc : Steve Crotty, Steve Kotfila, Christine Rosenthal, Jennifer Charland, Scott Chasse, Kate Peabody, Tom Flynn

Please be advised that on September 8, 1997, the Wallingford Zoning Board approved our applications to construct monopoles at Beaumont's Farm and the Suzio property. There were conditions in regard to the Beaumont Farm application, details of which will be supplied in the letter of approval. However, it should be noted that a second row of 20' trees is being required. In addition, the Board reserved the right to inform us as to what color to paint the tower. We should have a response from them in a very short period of time in regard to this issue.

This was a very difficult and hard fight. The Beaumont Farm vote was three to two and without the conditions I do not believe we would have prevailed.

End of Memo

Kotfila, Steve

From: Chasse, Scott
Sent: Monday, September 29, 1997 7:57 AM
To: Rosenthal, Christine
Cc: Kotfila, Steve
Subject: RE: 008 Lawsuit
Importance: High

PostHC is not necessary at this time. Lets accumulate information first.

From: Rosenthal, Christine
Sent: Monday, September 29, 1997 7:47 AM
To: Chasse, Scott
Cc: Charland, Jennifer
Subject: RE: 008 Lawsuit

At the public hearing, the change in the *application* was cited as being our agreement to maintain the trees as screening. Lew Hurwitz pointed out right then and there that that was a private matter and did not affect our *application* as it stood. Is that was you are asking about? You should bring Lew in on dissecting the lawsuit because he would know how defendable each point is. I don't think that we changed the site plan until after the entire application was heard and decided upon. Confirm with Jenn. Shall I organize a Post-Hearing Conference on this one?

From: Chasse, Scott
Sent: Monday, September 29, 1997 7:40 AM
To: Charland, Jennifer; Flynn, Tom; Johnson, Karen; Knuff, John; Rosenthal, Christine
Subject: 008 Lawsuit
Importance: High

One of the items in the lawsuit against us states that our site plan was changed at the Sept. 8, 1997 hearing. Was this due to the tower foundation size being larger than expected and therefore, necessitating that we move the tower within the compound? If so, at who's direction was this done **prior** to getting the zoning approval? Something as mundane as moving the tower within the compound should have waited until after the approval, then **amend** the site plans of record to conform with the realities of construction.

MEMORANDUM

TO: JEN CHARLAND

FROM: TOM FLYNN

RE: 03-008 BEAUMONT FARM

DATE: SEPT. 10, 1997

AS YOU KNOW, THE ABOVE NOTED SPECIAL PERMIT APPLICATION WAS APPROVED ON MONDAY, SEPTEMBER 8, 1997. THERE ARE SEVERAL CONDITIONS THAT WILL EFFECT THE PROCESS OF OBTAINING A BUILDING PERMIT.

1. THE TOWN HAS REQUIRED A $1000.00 SEDIMENTATION AND EROSION CONTROL BOND. THIS BOND MAY BE IN THE FORM OF CASH, A SURETY BOND OR LETTER OF CREDIT, WHICHEVER IS MOST CONVENIENT FOR SPRINT TO OBTAIN.

2. THE TOWN HAS REQUIRED A REVISED LANDSCAPE PLAN THAT SHOWS A LINE OF EVERGREEN TREES (3 DIFFERENT SPECIES AND AT LEAST 20' TALL AT PLANTING) ON THE PERIMETER OF THE LEASE AREA.

3. I WILL NEED A MYLAR FOR RECORDING AND 5 CLEAN COPIES OF THE PLANS, INCLUDING THE REVISED LANDSCAPE PLANS, FOR DELIVERY TO THE PLANNING OFFICE PRIOR TO ISSUANCE OF THE BUILDING PERMIT.

4. WE CAN MAKE APPLICATION FOR THE BUILDING PERMIT PRIOR THE END OF THE APPEAL PERIOD, BUT WILL NEED THE ABOVE NOTED ITEMS PRIOR TO ANY SIGN OFF BY THE PZC.

C\O
SPRINT PCS 9 BARNES INDUSTRIAL ROAD WALLINGFORD, CT. 06429 203-294-5620

Kotfila, Steve

From: Paisner, Steven
Sent: Thursday, November 20, 1997 2:04 PM
To: Lindblad, Ernest; Kotfila, Steve
Subject: Couple of Items

I spoke to Lew Hurwitz...

1). WESTBROOK - He agrees that any attorney that tries to exclude another attorney (i.e. Westbrook not allowing Lew to attend today) is up to something no good and non attendance is the way to go.

2). WALLINGFORD - Beaumont appeal. KC agrees to stall as long as necessary and make it as tough as possbile/expensive on the citizen appeal. Hence, Lew has filed to transfer the case from Superior court to Federal Distrcit court...probably the first of several such requests. In the meantime, we are on the air...Ok aside from having to pay more legal bills ourselves.

Kotfila, Steve

From: Kotfila, Steve
Sent: Friday, May 22, 1998 7:05 AM
To: Carrozzella, Bill
Cc: Cashin, Julie; Gelinas, Chris
Subject: RE: Wallingford # 008 - Beaumont
Importance: High

So long as this language does not prohibit us from doing a structural replacement. For that to take place there will be a short period where there would be 2 towers in the compound, but only long enough to effect the swap over of antennas, pulling of a demo permit and dismantling of the old tower. 90 days should cover this evolution.

From: Carrozzella, Bill
Sent: Thursday, May 21, 1998 11:03 AM
To: Kotfila, Steve
Cc: Cashin, Julie; Gelinas, Chris
Subject: Wallingford # 008 - Beaumont

In my discussions with Bill Beaumont he has requested that Sprint not install a second tower within the lease area. Please let me know if it is OK to agree to that.

If we do I will have included in the lease amendment that Sprint still retains the right to replace the existing tower even with a taller tower.

Please advise.

PINNACLE
Site Development

Memo

To: Julie Cashin

From: Bill Carrozzella

CC: C. Gelinas; S. Kotfila

Date: May 20, 1998

Re: Wallingford - Beaumont Farm # 008

Julie, I have reviewed the Owner Consent and Lease Amendment for the Bell/SNET sublease. Can you please make the following revisions:

Owner Consent:

Can the references (and exhibits) to the BANM and SNET Subleases be eliminated ? These subleases may not be signed for several weeks or months in the case of Bell. I would like to have the landlord consent finalized ASAP so the additional rent does not go up while we wait for the Bell and SNET agreements to be signed.

Amendment to Lease:

Please add a temporary construction easement to this amendment. Bell and SNET may have to access the site for construction over other land owned by landlord as opposed to the existing access easement afforded Sprint. I'd suggest making this temp construction easement broad such as "Landlord shall grant to Subtenants a temporary access easement for the purposes of installing its equipment. This easement shall allow access to the Site through Landlord's adjacent land surrounding the Site in an area to be mutually agreed upon by Landlord and each Subtenant."

Please let me know if you have any questions.

Thanks for your help.

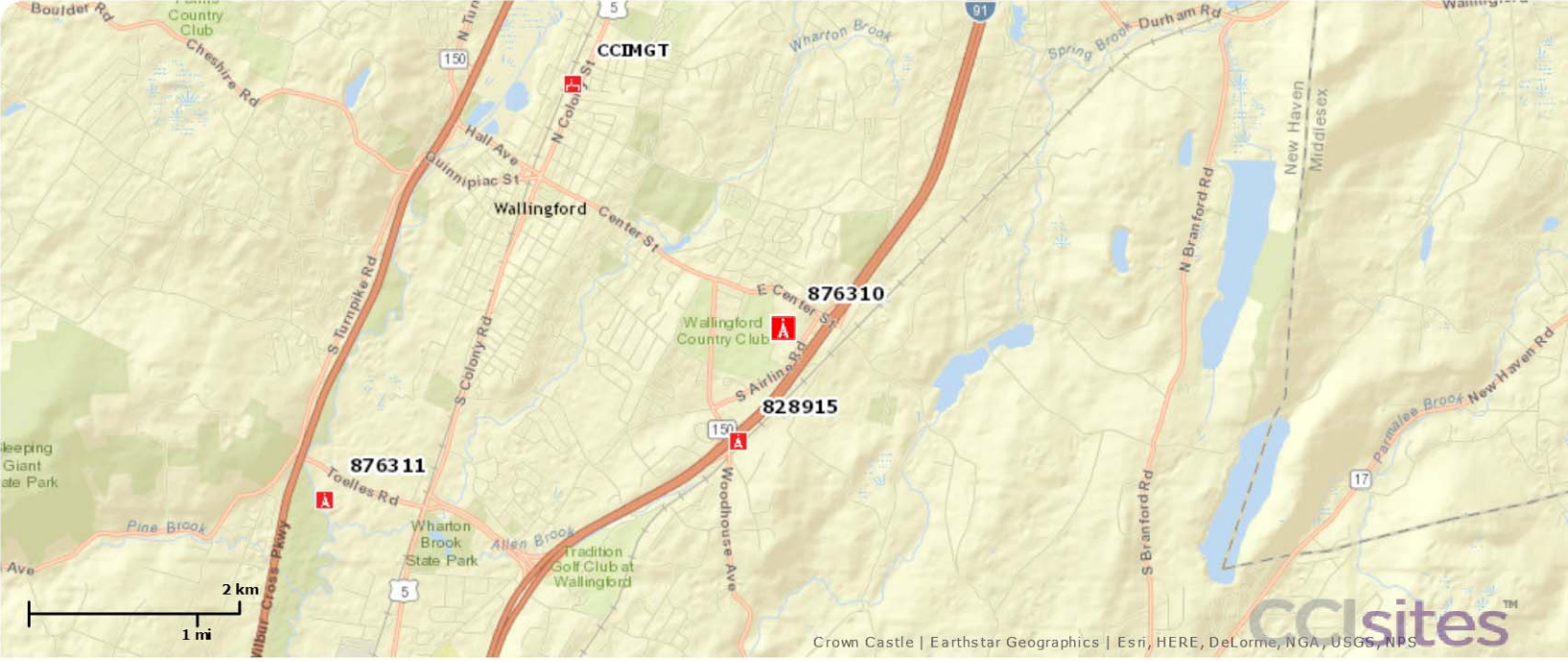

CCIMGT
876310
828915
876311
Wallingford
Wallingford Country Club
Tradition Golf Club at Wallingford
Wharton Brook State Park
Pine Brook
Allen Brook
Parmalee Brook
Spring Brook
Wharton Brook
Quinnipiac St
Hall Ave
Center St
E Center St
S Airline Rd
Toelles Rd
Cheshire Rd
Boulder Rd
Country Club
S Turnpike Rd
S Colony Rd
N Colony St
Woodhouse Ave
N Branford Rd
S Branford Rd
New Haven
Middlesex
New Haven Rd
Durham Rd
Wilbur Cross Pkwy
2 km
1 mi
Crown Castle | Earthstar Geographics | Esri, HERE, DeLorme, NGA, USGS, NPS
CCIsites™

Exhibit B

Property Card

945 East Center St; Wallingford, CT 06492

Legend

Location

Notes

2,198 0 1,099 2,198

Feet

1: 13,185

N

Property Location: 945 EAST CENTER ST | **MAP ID:** 151/ / 98/ / | **Bldg Name:** | **State Use:** 1010

Vision ID: 1293 | **Account #** B0226901 | **Bldg #:** 1 of 1 | **Sec #:** 1 of 1 | **Card** 1 of 3 | **Print Date:** 12/02/2016 11:27

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Style	03		Colonial
Model	01		Residential
Grade	B		
Stories	2		2 Stories
Occupancy	1		
Exterior Wall 1	14		Wood Shingle
Exterior Wall 2			
Roof Structure	04		Hip
Roof Cover	03		Asphalt
Interior Wall 1	03		Plastered
Interior Wall 2	05		Drywall
Interior Flr 1	12		Hardwood
Interior Flr 2	09		Pine/Soft Wood
Heat Fuel	02		Oil
Heat Type	05		Hot Water
AC Type	01		None
Total Bedrooms	06		6 Bedrooms
Total Bthrms	2		
Total Half Baths	0		
Total Xtra Fixtrs			
Total Rooms	12		
Bath Style	02		Average
Kitchen Style	02		Average
Whirlpool Tub			
Fireplaces	2		

CONSTRUCTION DETAIL (CONTINUED)

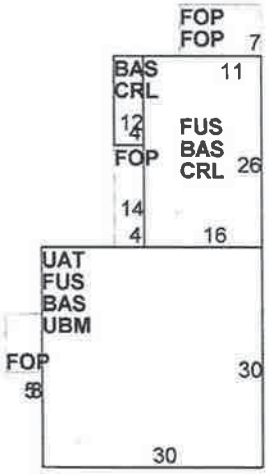
Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
1010	Single Family	100

COST/MARKET VALUATION

Adj. Base Rate:	92.63
	282,052
Net Other Adj:	20,400.00
Replace Cost	302,452
AYB	1840
Dep Code	P
Remodel Rating	
Year Remodeled	
Dep %	49
Functional Obslnc	
External Obslnc	
Cost Trend Factor	
Status	
% Complete	
Overall % Cond	51
Apprais Val	154,300
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	0
Cost to Cure Ovr Comment	



OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
GRN3	Pipe + Plastic		G5	L	2,400	4.00	1996	C		A	50	4,800
GRN3	Pipe + Plastic		G6	L	2,880	4.00	1996	C		F	30	3,500
IMP	Implement She			L	1,296	6.00	1940	C		A	50	3,900
SHD1	Shed Frame			L	1,008	10.00	1940	C		A	50	5,000
IMP	Implement She			L	840	6.00	1940	C		A	50	2,500
IMP	Implement She			L	720	6.00	1940	C		NV	0	0
IMP	Implement She		IMP 2-POLE H	L	840	6.00	1940	C		NV	0	0
IMP	Implement She			L	1,350	6.00	1940	C		NV	0	0
SHD1	Shed Frame		S7	L	100	10.00	1940	C		NV	0	0

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
BAS	First Floor	1,364	1,364	1,364	92.63	126,345
CRL	Crawl Space	0	464	0	0.00	0
FOP	Porch, Open	0	250	50	18.53	4,631
FUS	Upper Story, Finished	1,316	1,316	1,316	92.63	121,898
UAT	Attic, Unfinished	0	900	135	13.89	12,505
UBM	Basement, Unfinished	0	900	180	18.53	16,673
	Ttl Gross Liv/Lease Area	2,680	5,194	3,045		302,452

Property Location: 945 EAST CENTER ST | MAP ID: 151/ / 98/ / | Bldg Name: | State Use: 1010

Vision ID: 1293 | Account # B0226901 | Bldg #: 1 of 1 | Sec #: 1 of 1 | Card 1 of 3 | Print Date: 12/02/2016 11:27

CURRENT OWNER	TOPO.	UTILITIES	STRT./ROAD	LOCATION
BEAUMONT ALBERT WILLIAM	1 Level	2 Public Water	1 Paved	2 Suburban
945 E CENTER ST				
WALLINGFORD, CT 06492				
Additional Owners:				

SUPPLEMENTAL DATA

Other ID:	024001002	P/Z MAP #	
Census:	1759	ENG MAP #	
Old MBLU		Easement	
TC MAP #		Town Line?	
TC MAP #		IND PARKS	
Record Lot			
GIS ID: 151/98		ASSOC PID#	

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
RES LAND	1-1	110,400	77,300
RES EXCES	1-2	9,700	6,800
DWELLING	1-3	154,300	108,000
RES OUTBL	1-4	780,200	546,200
UTL LAND	4-1	100,000	70,000
FARM LAND	6-1	224,400	12,800
	Total	1,379,000	821,100

6148
WALLINGFORD, CT

VISION

RECORD OF OWNERSHIP	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
BEAUMONT ALBERT WILLIAM	724/ 18	03/13/1992			0	
BEAUMONT ALBERT J JR	626/ 650					

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2015	1-1	77,300	2014	1-1	77,300	2013	1-1	77,300
2015	1-2	6,800	2014	1-2	6,800	2013	1-2	6,800
2015	1-3	108,000	2014	1-3	108,000	2013	1-3	108,000
2015	1-4	546,200	2014	1-4	528,200	2013	1-4	496,100
2015	4-1	70,000	2014	4-1	70,000	2013	4-1	70,000
	Total:	821,100		Total:	797,900		Total:	765,800

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
110/A				

NOTES

1ST=1B,1BED,OTHER-6
2ND=2BED,1B,LR,K,OTHER-1
30X30 SECTION BAS NOT
LIVEABLE(5RMS) IF FUS/BAS IS
OCCUPIED CELL TOWER ON SIGHT
1ST FLR = CEILINGS/WALLS FALLING
DOWN=VP COND/2ND FLR = F. COND
CORRECTED FARM BUILDING SIZES FOR THE
2006 GRAND LIST 4 NEW FARM BUILDINGS
FOR 2007 GL
CELL TOWER VALUED ON 151/98/2

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	154,300
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	780,200
Appraised Land Value (Bldg)	220,100
Special Land Value	224,400
Total Appraised Parcel Value	1,379,000
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	1,379,000

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments
27234	11/13/2012	CM	Commercial	112,000	07/30/2013	100		4 GREENHOUSES
25068	10/12/2010	RS	Residential	3,500	08/22/2011	100		BARN ROOF
25067	10/12/2010	CM	Commercial	3,200	08/22/2011	100		HOUSE ROOF
24367	02/04/2010	CM	Commercial	6,000	07/23/2010	100	07/23/2010	RPL 6 ANTENNAS
24364	02/03/2010	CM	Commercial	20,000	07/23/2010	100	07/23/2010	MODIFY FACILITY
20744	07/06/2006	CM	Commercial	10,000	09/07/2006	100	09/07/2006	RPL 6 ANTENNAS/ADI

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result
11/06/2015	02	1	KC	63	Permit Check - No Measu
09/18/2015			V	29	Field Review
12/04/2014	02	1	KC	63	Permit Check - No Measu
09/05/2013	06		SJ	16	Letter Sent-Cost Informa
08/07/2013	06		SJ	16	Letter Sent-Cost Informa

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units		Unit Price	I. Factor	S.A.	Acre Disc	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing Spec Use		Special Pricing Spec Calc		S Adj Fact	Adj. Unit Price	Land Value
1	1010	Single Family	R18				18,000	SF	6.15	1.0000	5	1.0000	1.00	110	1.05				TF1	.95	.95	6.13	110,400
1	1010	Single Family	R18				0.92	AC	10,000.00	1.0000	0	1.0000	1.00	110	1.05						1.00	10,500.00	9,700
1	7120	Tillable C	R18				24.50	AC	10,000.00	1.0000	0	1.0000	0.75	110	1.05		490	670			1.00	7,875.00	192,900
1	7140	Orchards	R18				1.00	AC	10,000.00	1.0000	0	1.0000	1.00	110	1.05		490	1390			1.00	10,500.00	10,500
1	7170	Woodland	R18				2.00	AC	10,000.00	1.0000	0	1.0000	1.00	110	1.05		490	240			1.00	10,500.00	21,000

Total Card Land Units: 28.83 AC | Parcel Total Land Area: 29 AC | Total Land Value: 344,500

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description

CONSTRUCTION DETAIL (CONTINUED)

Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
1010	Single Family	100

COST/MARKET VALUATION

Cost Trend Factor

OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
SHD1	Shed Frame			L	270	10.00	1940	C		A	50	1,400
BRN4	1 Stry Loft & E		B1-RED BARN	L	1,500	38.00	1940	C		A	50	28,500
BRN1	Barn 1 Stry		B2- GREY BA	L	1,632	22.00	1985	C		G	75	26,900
BRN1	Barn 1 Stry		B3- YELLOW	L	1,936	22.00	1920	C		A	50	21,300
SHD4	Pump Hse			L	8,000	54.00	1999	C		A	50	216,000
LNT	Lean-To			L	1,280	4.00	2007	C		A	50	2,600
FGR1	Garage-Avg			L	484	30.00	1996	C		A	50	7,300
GRN4	Com Plastic Gc			L	60,001	6.00	2013	C		E	90	324,000
GRN4	Com Plastic Gc			L	11,251	6.00	2012	C		E	90	60,800

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
	Ttl. Gross Liv/Lease Area:	0	0	0		302,452

No Photo On Record

Property Location: 945 EAST CENTER ST | MAP ID: 151/ / 98/ / | Bldg Name: | State Use: 1010
Vision ID: 1293 | Bldg #: 1 of 1 | Sec #: 1 of 1 | Card 2 of 3 | Print Date: 12/02/2016 11:27

CURRENT OWNER
BEAUMONT ALBERT WILLIAM

945 E CENTER ST

WALLINGFORD, CT 06492
Additional Owners:

TOPO.	UTILITIES	STRT./ROAD	LOCATION

SUPPLEMENTAL DATA
Other ID: 024001002

GIS ID: 151/98 ASSOC PID#

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
		Total	1,379,000	821,100

6148
WALLINGFORD, CT

VISION

RECORD OF OWNERSHIP	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
Total:			Total:			Total:		

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
110/A				

NOTES

APPRAISED VALUE SUMMARY

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BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units		Unit Price	I. Factor	S.A.	Acre Disc	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing Spec Use	Special Pricing Spec Calc	S Adj Fact	Adj. Unit Price	Land Value
1	431V	TEL REL TW M00	R18				1.00	BL	100,000.00	1.0000	0	1.0000	1.00		0.00	CELL SITE			1.00	100,000.00	100,000
1	8000	Frontage	R18				1,600.00	FF	0.00	1.0000	0	1.0000	1.00	110	1.05				.00	0.00	0
1	431V	TEL REL TW M00					7,350	SF	0.00	1.0000	0	1.0000	1.00		0.00	CELL SITE AREA	FF	0.01	.00	0.00	0

Total Card Land Units: 0.17 AC Parcel Total Land Area: 29 AC | Total Land Value: 100,000

Property Location: 945 EAST CENTER ST | MAP ID: 151/ / 98/ / | Bldg Name: | State Use: 1010

Vision ID: 1293 | Bldg #: 1 of 1 | Sec #: 1 of 1 | Card 3 of 3 | Print Date: 12/02/2016 11:27

CURRENT OWNER

BEAUMONT ALBERT WILLIAM

945 E CENTER ST

WALLINGFORD, CT 06492

Additional Owners:

TOPO.	UTILITIES	STRT./ROAD	LOCATION

SUPPLEMENTAL DATA

Other ID: 024001002

GIS ID: 151/98 ASSOC PID#

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
		Total	1,379,000	821,100

6148
WALLINGFORD, CT

VISION

RECORD OF OWNERSHIP

BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
Total:			Total:			Total:		

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
110/A				

NOTES

This signature acknowledges a visit by a Data Collector or Assessor

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	154,300
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	780,200
Appraised Land Value (Bldg)	220,100
Special Land Value	224,400
Total Appraised Parcel Value	1,379,000
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	1,379,000

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units	Unit Price	I. Factor	S.A.	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing Spec Use	Special Pricing Spec Calc	S Adj Fact	Adj. Unit Price	Land Value

Total Card Land Units: 0.00 AC Parcel Total Land Area: 29 AC

Total Land Value: 0

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description

CONSTRUCTION DETAIL (CONTINUED)

Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
1010	Single Family	100

COST/MARKET VALUATION

Cost Trend Factor

OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
GRN4	Com Plastic Gc			L	8,500	6.00	2014	C		E	90	45,900
GRN3	Pipe + Plastic			L	2,880	4.00	2015	C		G	75	8,600
GRN3	Pipe + Plastic			L	2,880	4.00	2015	C		G	75	8,600
GRN3	Pipe + Plastic			L	2,880	4.00	2015	C		G	75	8,600

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
	Tfl, Gross Liv/Lease Area	0	0	0		302,452

No Photo On Record

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOHVN00020A

DISH Wireless L.L.C. SITE ADDRESS:

945 EAST CENTER ST.
WALLINGFORD, CT 06492

CONNECTICUT 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:

CODE TYPE	CODE
BUILDING	2018 CT STATE BUILDING CODE/2015 IBC W/ CT AMENDMENTS
MECHANICAL	2018 CT STATE BUILDING CODE/2015 IMC W/ CT AMENDMENTS
ELECTRICAL	2018 CT STATE BUILDING CODE/2017 NEC W/ CT AMENDMENTS

SHEET INDEX

SCOPE OF WORK

THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:

TOWER SCOPE OF WORK:
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (1) PROPOSED TOWER PLATFORM MOUNT
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED METAL PLATFORM
- INSTALL (1) PROPOSED ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)
- INSTALL (1) PROPOSED METER SOCKET

SITE PHOTO

UNDERGROUND SERVICE ALERT CBYD 811
UTILITY NOTIFICATION CENTER OF CONNECTICUT
(800) 922-4455
WWW.CBYD.COM

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE. NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

SITE INFORMATION

PROPERTY OWNER:	AT&T WIRELESS PCS INC
ADDRESS:	C/O AT&T MOBILITY 754 PEACHTREE ST NE ATLANTA, GA 30308
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	876310
TOWER APP NUMBER:	553364
COUNTY:	NEW HAVEN
LATITUDE (NAD 83):	41° 26' 37.36" N 41.443711 N
LONGITUDE (NAD 83):	72° 47' 46.56" W 72.796267 W
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	R-18
PARCEL NUMBER:	151/98/2
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	WALLINGFORD ELECTRIC
TELEPHONE COMPANY:	CROWN CASTLE

PROJECT DIRECTORY

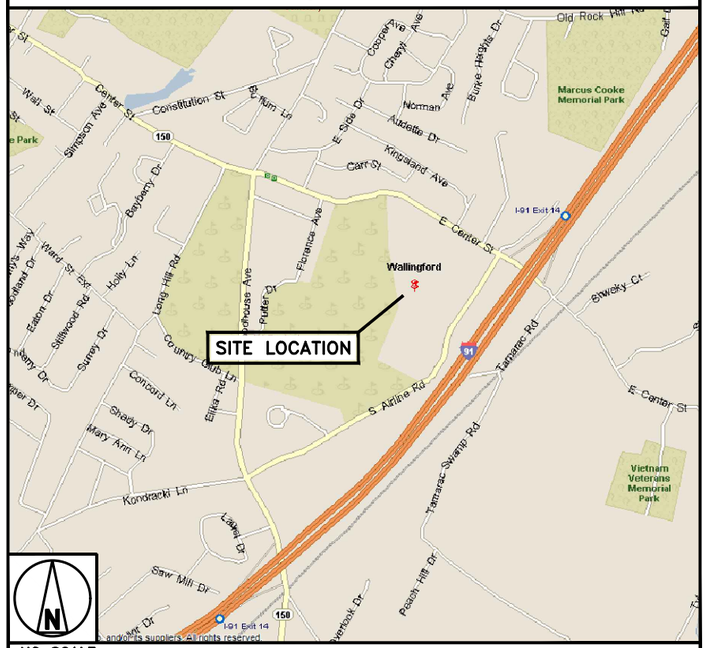
APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
SITE ACQUISITION:	SARAH PARSONS SARAH.PARSONS@CROWNCASTLE.COM
CONSTRUCTION MGR:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	SYED ZAIDI SYED.ZAIDI@DISH.COM

DIRECTIONS

DIRECTIONS FROM DISTRICT OFFICE:

FROM HARTFORD, TAKE 91 SOUTH TO EXIT 14, TAKE A RIGHT ONTO EAST CENTER STREET AND RIGHT ON S AIRLINE RD, GO PASS TWO PONDS AND THE ACCESS ROAD ON RIGHT.

VICINITY MAP



dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

CROWN CASTLE

2000 CORPORATE DRIVE
CANONSBURG, PA 15317

B+T GRP

1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

STATE OF CONNECTICUT — No. 23924 — LICENSED PROFESSIONAL ENGINEER

7/8/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	6/17/21	ISSUED FOR REVIEW
0	7/8/21	ISSUED FOR REVIEW

A&E PROJECT NUMBER

100049.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00020A
945 EAST CENTER ST
WALLINGFORD, CT 06492

SHEET TITLE

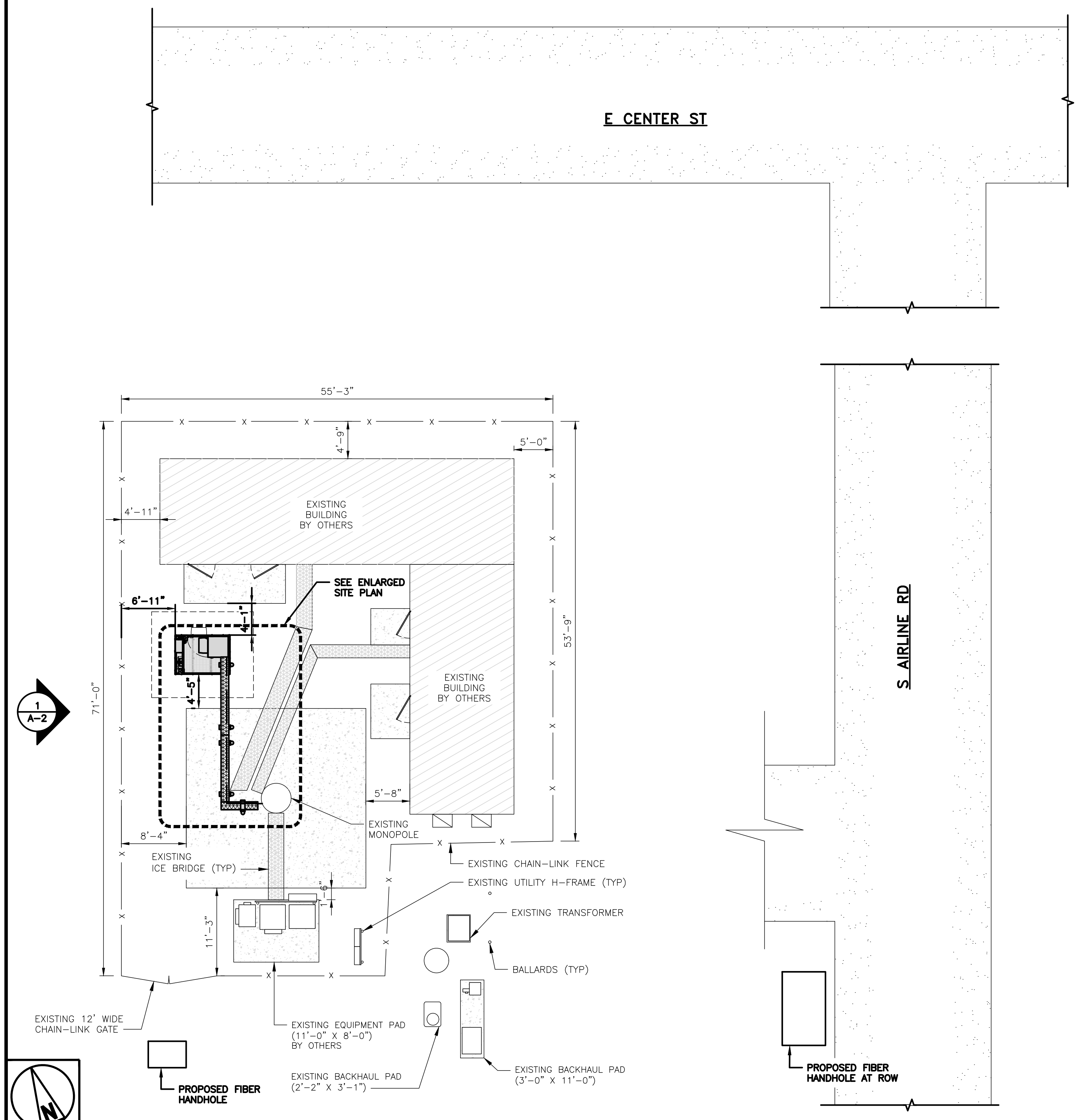
TITLE SHEET

SHEET NUMBER

T-1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



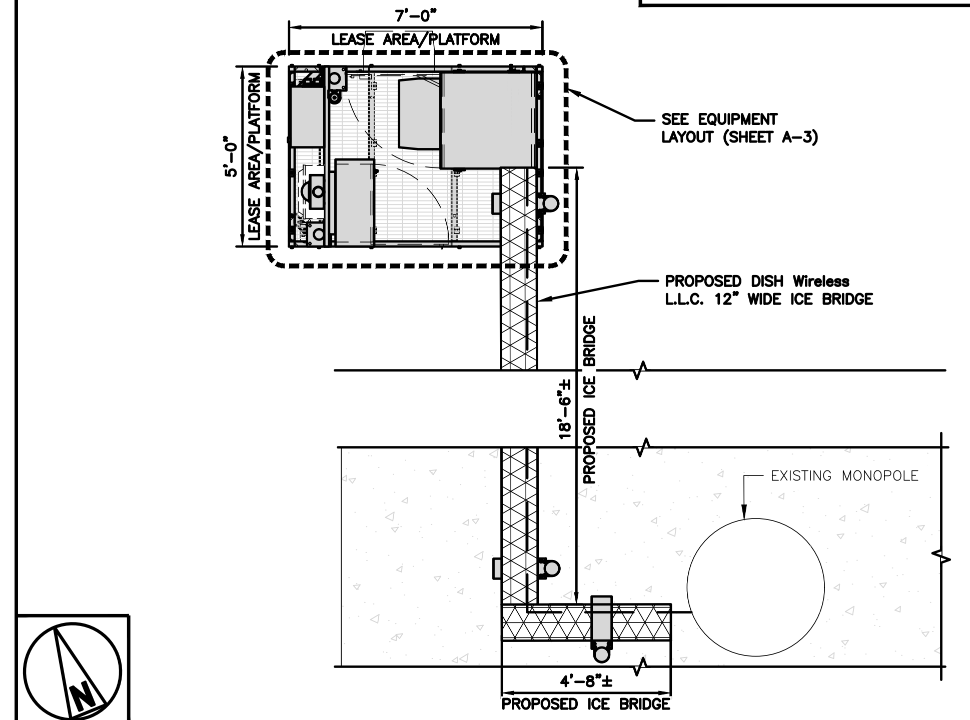
OVERALL SITE PLAN

8' 4' 0 8' 16'
1/8"=1'–0"

1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'–0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'–0"

2

OVERALL UTILITY PLAN

NO SCALE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
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www.btgrp.com

7/8/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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.

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER
100049.002.01

DISH Wireless L.L.C. PROJECT INFORMATION

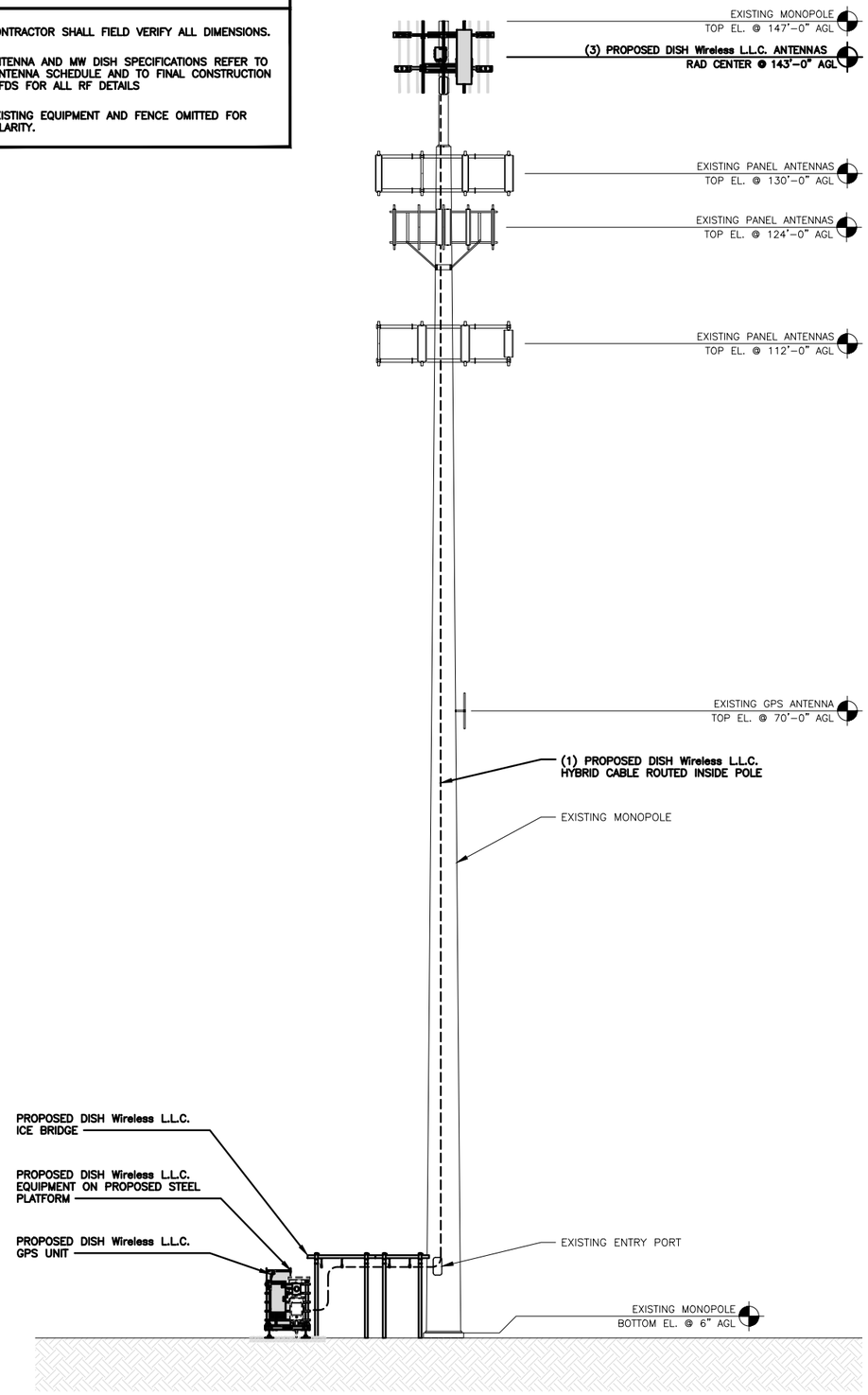
BOHVN00020A
945 EAST CENTER ST
WALLINGFORD, CT 06492

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER
A-1

NOTES

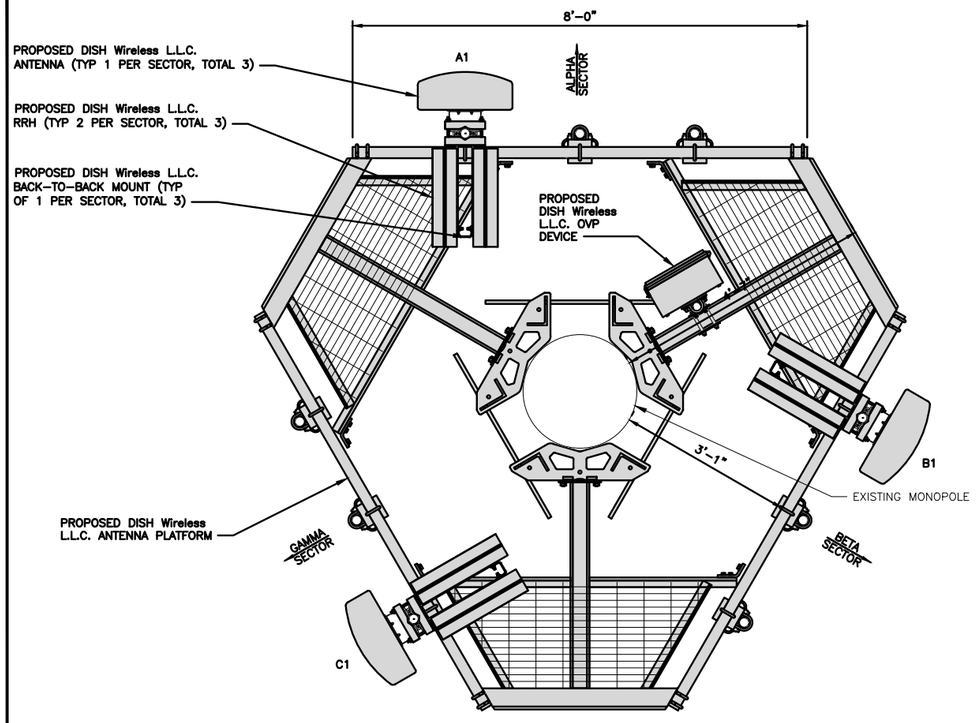
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED WEST ELEVATION

8' 4' 0 8' 16'
1/8"=1'-0"

1



ANTENNA LAYOUT

12" 6" 0 1' 2' 3'
3/4"=1'-0"

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72.00" x 20.0"	0°	143'–0"	(1) HIGH–CAPACITY HYBRID CABLE (190' LONG)
BETA	B1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72.00" x 20.0"	120°	143'–0"	
GAMMA	C1	PROPOSED	JMA WIRELESS–MX08FRO665–21	5G	72.00" x 20.0"	240°	143'–0"	

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	FUJITSU – TA08025–B605	5G
	A1	FUJITSU – TA08025–B604	5G
BETA	B1	FUJITSU – TA08025–B605	5G
	B1	FUJITSU – TA08025–B604	5G
GAMMA	C1	FUJITSU – TA08025–B605	5G
	C1	FUJITSU – TA08025–B604	5G

NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.

ANTENNA SCHEDULE

NO SCALE

3

dish wireless.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 0

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DISH Wireless L.L.C.
PROJECT INFORMATION

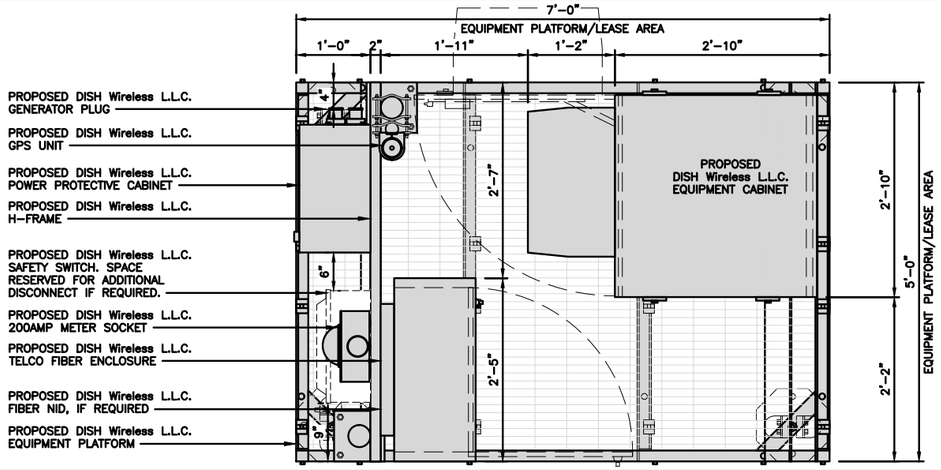
BOHVN00020A
945 EAST CENTER ST
WALLINGFORD, CT 06492

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



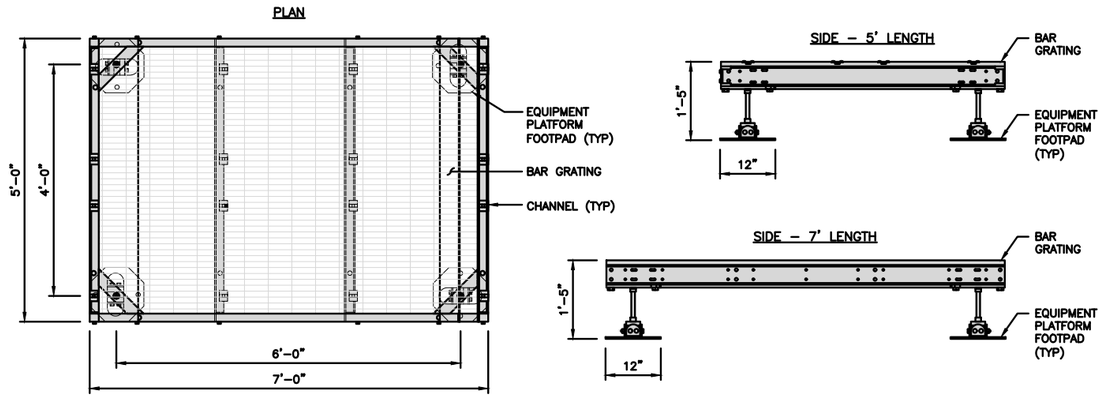
PLATFORM EQUIPMENT PLAN

12" 9" 6" 3" 0 1' 2'
1"=1'-0"

1

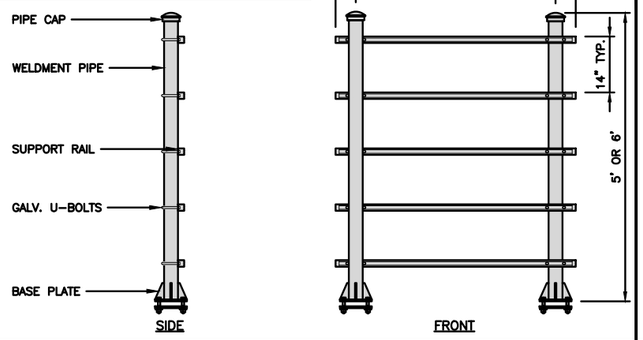
COMMSCOPE MTC4045LP 5X7 PLATFORM	
DIMENSIONS (HxWxD)	16"x84"x60"
TOTAL WEIGHT	423 LBS

NOTE:
GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"



PLATFORM DETAIL | NO SCALE | 2

COMMSCOPE MTC4045HFLD H-FRAME	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs

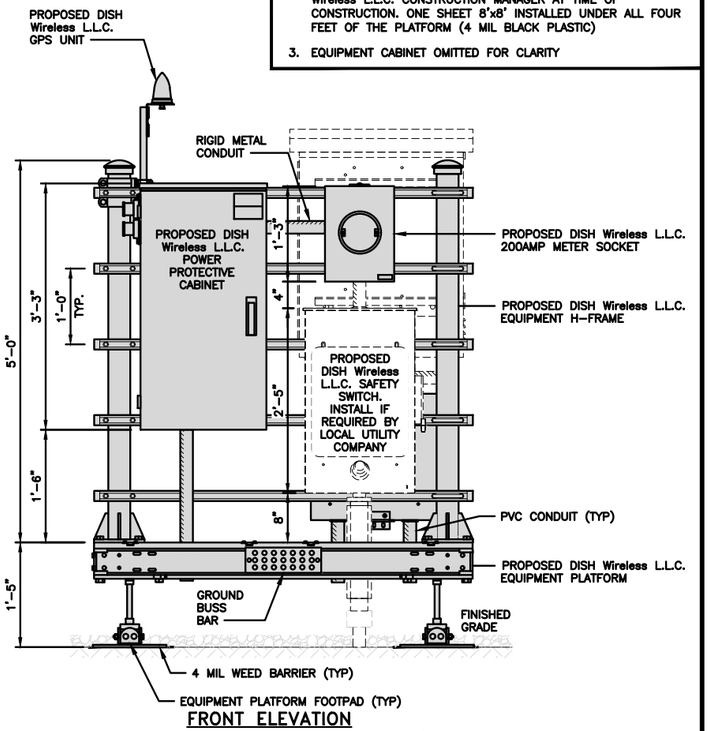


H-FRAME DETAIL | NO SCALE | 3

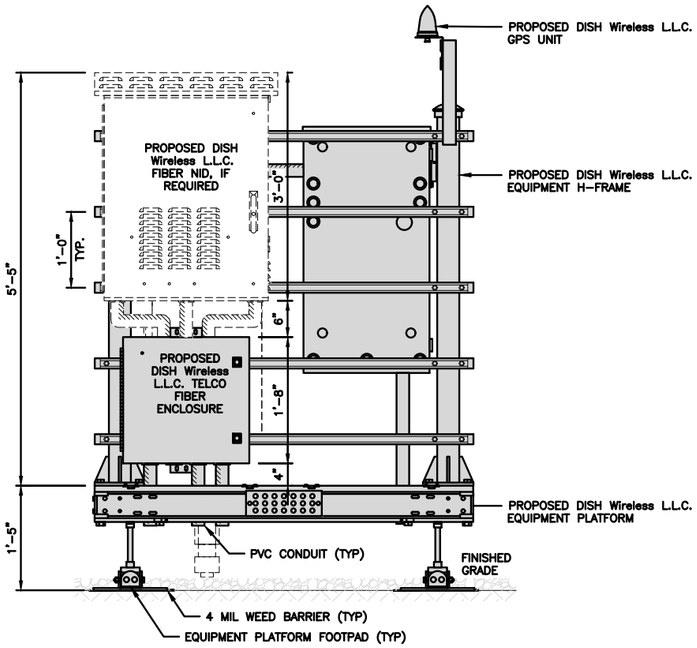
NOT USED | NO SCALE | 4

NOTES

1. CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
2. WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH Wireless L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
3. EQUIPMENT CABINET OMITTED FOR CLARITY



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION | 12" 9" 6" 3" 0 1' 2' 1"=1'-0" | 5

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COMMONWEALTH OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
7/8/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER
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DISH Wireless L.L.C.
PROJECT INFORMATION
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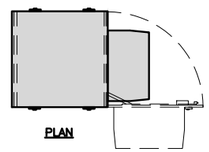
945 EAST CENTER ST
WALLINGFORD, CT 06492

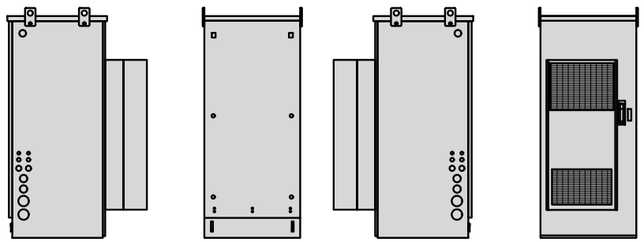
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4

DIMENSIONS (HxWxD):	74"x32"x32"
POWER PLANT:	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 LBS

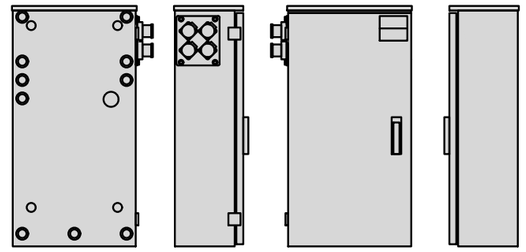




CABINET DETAIL | NO SCALE | 1

RAYCAP PPC RDIAC–2465–P–240–MTS

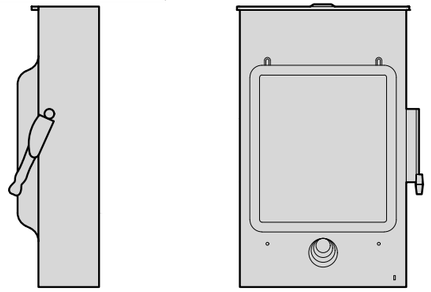
ENCLOSURE DIMENSIONS (HxWxD):	39"x22.855"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G



POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

SQUARE D SAFETY SWITCHES D224NRB

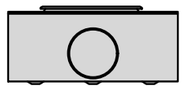
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E–2875

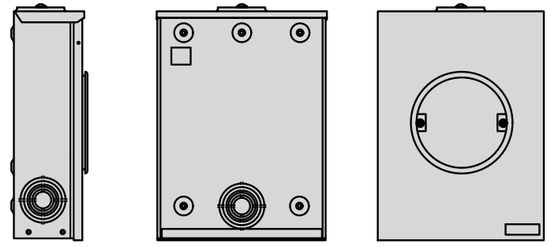


SAFETY SWITCH DETAIL | NO SCALE | 3

EATON METER SOCKET UNRRS213BEUSE

METER SOCKET TYPE	RING
ENCLOSURE DIM (HxWxD)	16"x12"x6"
MAIN AMPERE RATING	200A
WEIGHT	18 LBS

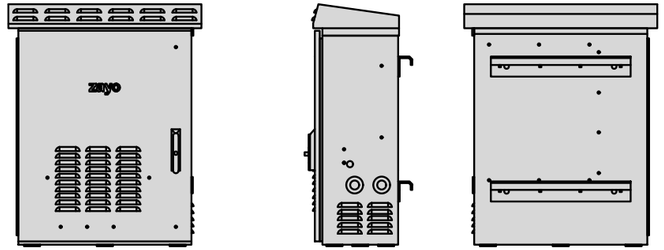




METER SOCKET DETAIL | NO SCALE | 4

ZAYO 5RU CABINET LEFT SWING DOOR ("LIT" SITES)

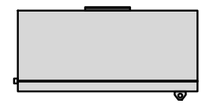
DIMENSIONS (HxWxD)	36.115"x29"x12.9"
WEIGHT	85 LBS
POWER INPUT	20A, –48VDC

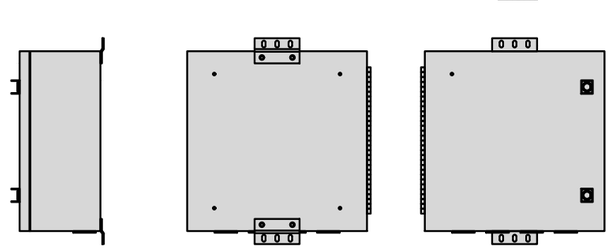


NETWORK INTERFACE UNIT DETAIL | NO SCALE | 5

CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE

ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



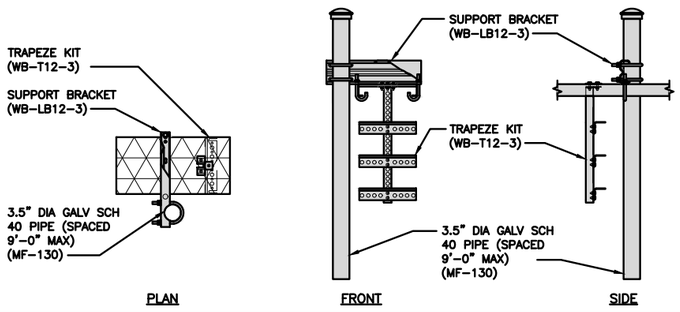


FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

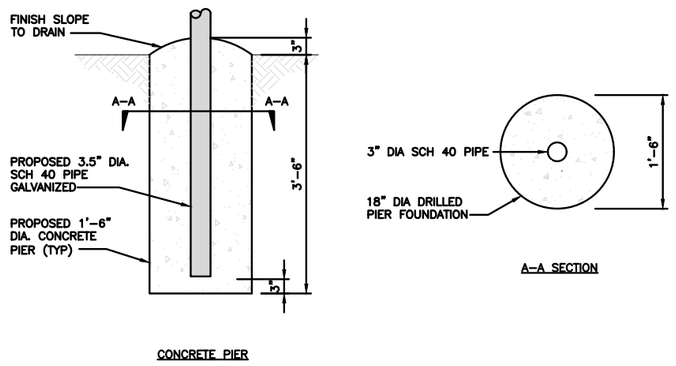
COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT

DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

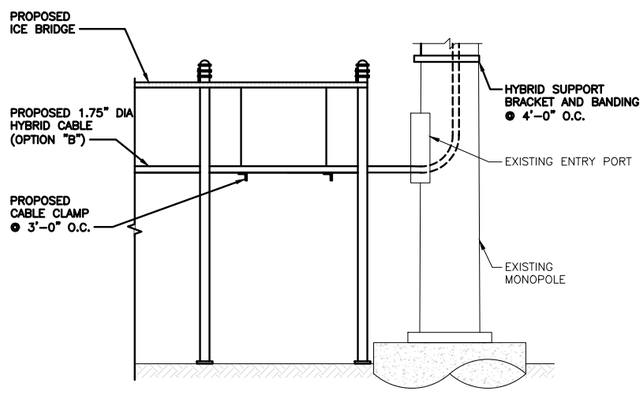
INCLUDED PRODUCTS:
- WB–T12–3 TRAPEZE KIT, 3 RUNGS
- WB–LB12–3 SUPPORT BRACKET
- MF–130 DIRECT BURIAL PIPE COLUMN, 13'–4"



ICE BRIDGE DETAIL | NO SCALE | 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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STATE OF CONNECTICUT — No. 23924 — LICENSED PROFESSIONAL ENGINEER — 7/8/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	6/17/21	ISSUED FOR REVIEW
0	7/8/21	ISSUED FOR REVIEW

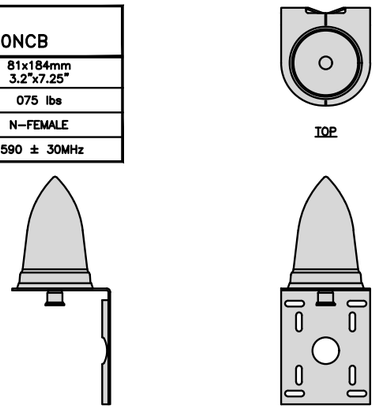
A&E PROJECT NUMBER
100049.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00020A
945 EAST CENTER ST
WALLINGFORD, CT 06492

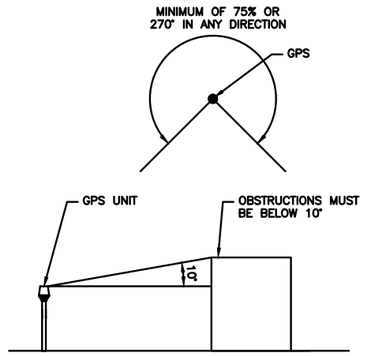
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

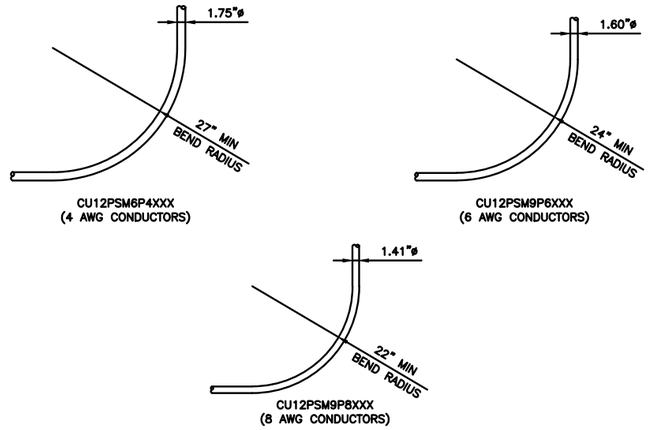
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1

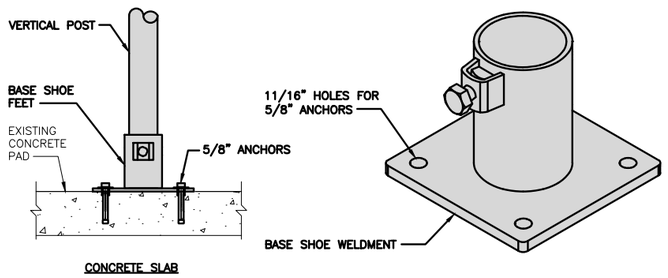


GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



CABLES UNLIMITED HYBRID CABLE
MINIMUM BEND RADIUSES | NO SCALE | 3

SITEPRO1 BSF35 BASE SHOE FEET	
DIMENSIONS (HxWxL)	8"x8"x1/2"
WEIGHT	15.0 LBS
POST SIZE:	2-7/8" OR 3-1/2"



ICE BRIDGE PIPE MOUNT DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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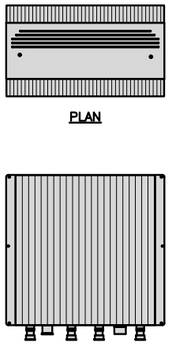
SHEET TITLE

EQUIPMENT DETAILS

SHEET NUMBER

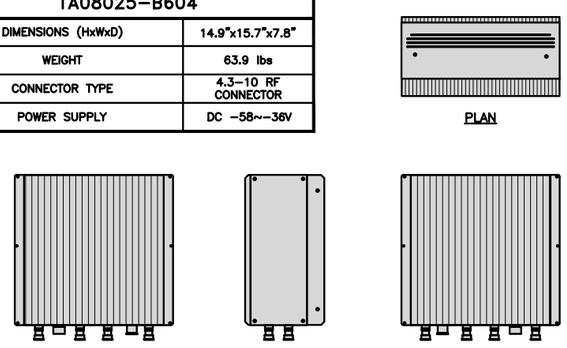
A-5

FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



RRH DETAIL | NO SCALE | 1

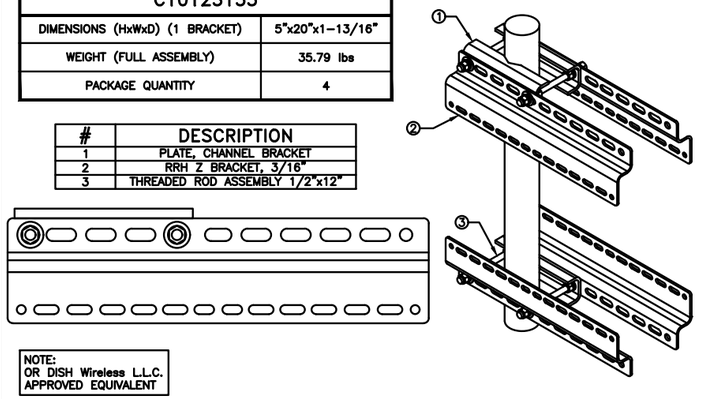
FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



RRH DETAIL | NO SCALE | 2

SABRE DOUBLE Z-BRACKET C10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

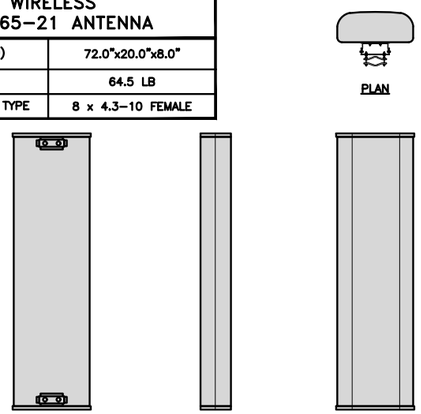
#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

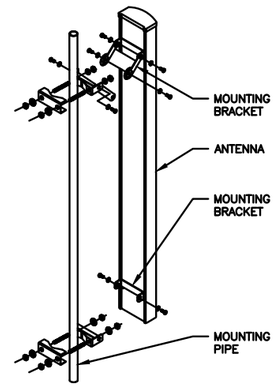
JMA WIRELESS MX08FRO665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	64.5 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE



ANTENNA DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

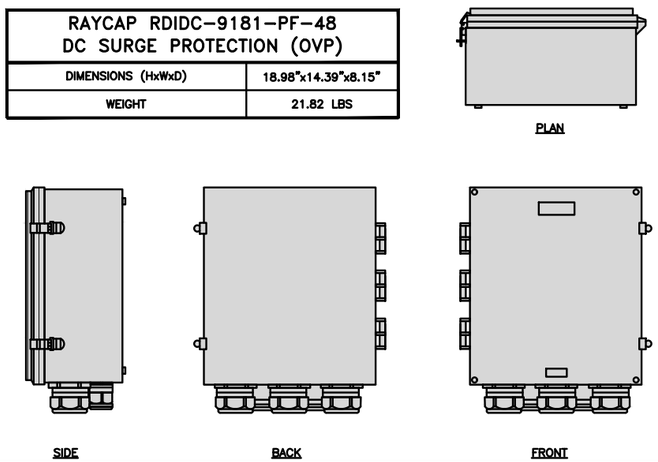
M04 MOUNTING BRACKET HPA-33R-BUU-H4-K	
WIDTH	5"
DEPTH	2"
HEIGHT	8"
TOTAL WEIGHT	1.5 lbs
HOUSING MATERIAL	ASA/ABS/ALUMINUM
RADOME COLOR	LIGHT GRAY
CONNECTOR	1x8-PIN DAISY CHAIN



NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA MOUNTING DETAIL | NO SCALE | 6

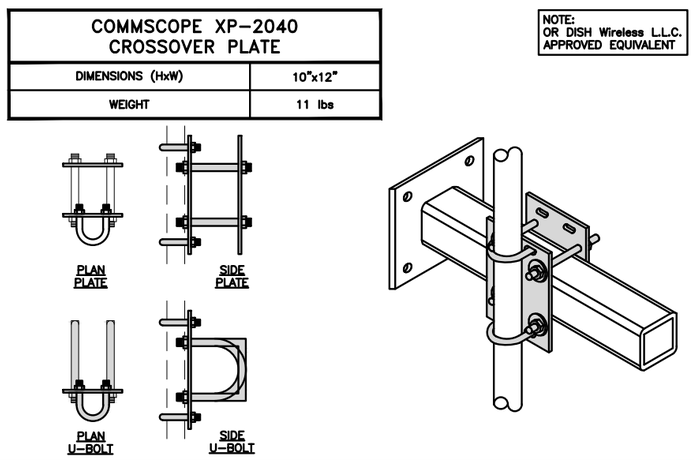
RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

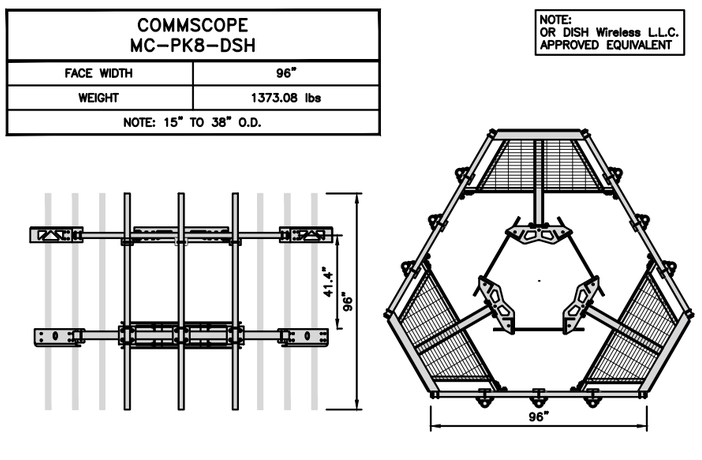
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



RRH/OVP MOUNT DETAIL | NO SCALE | 8

COMMSCOPE MC-PK8-DSH	
FACE WIDTH	96"
WEIGHT	1373.08 lbs
NOTE: 15" TO 38" O.D.	

NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



ANTENNA PLATFORM DETAIL | NO SCALE | 9

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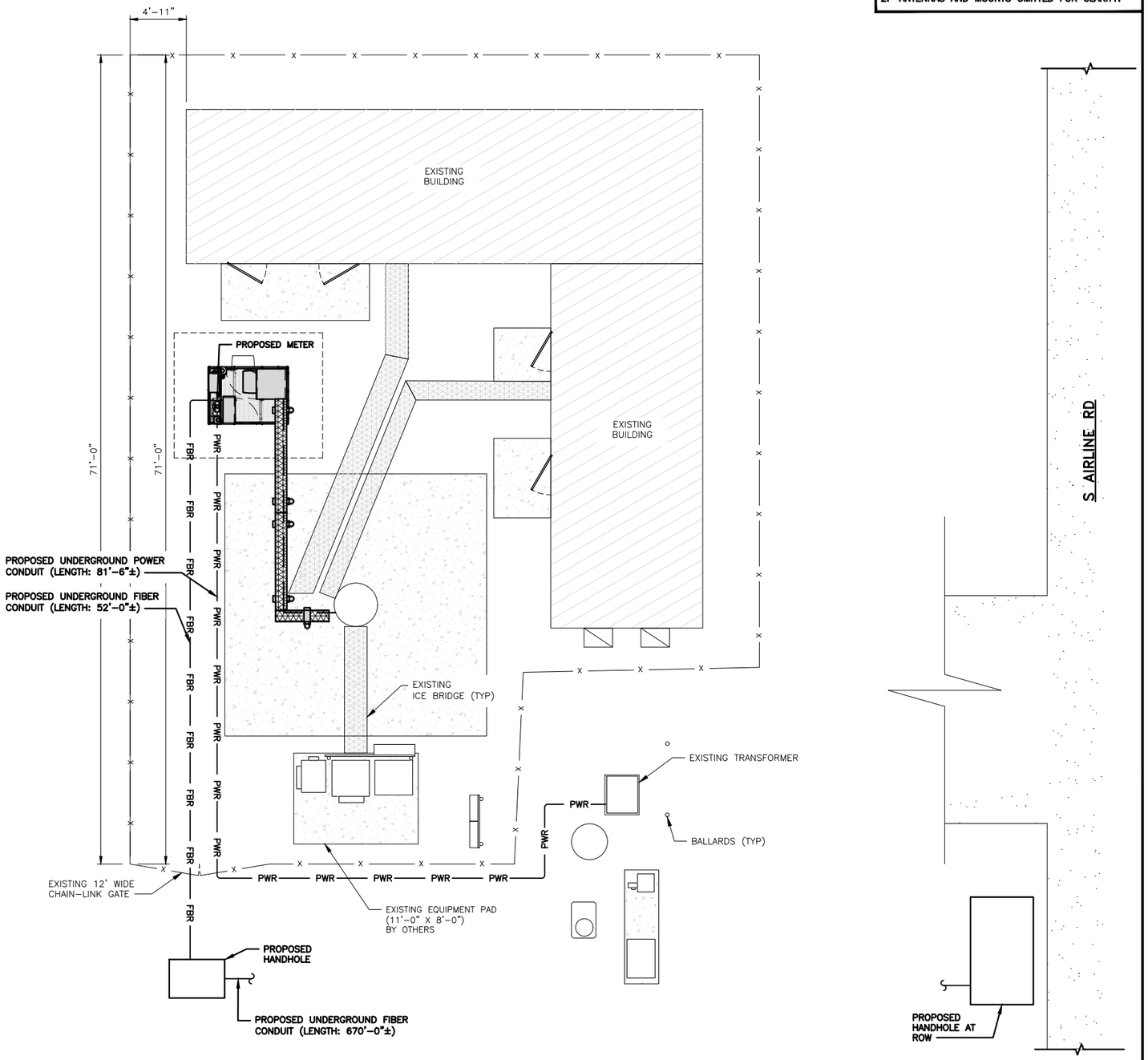
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6



NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.

DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND -48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY -48V.

1. CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING A BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTOR'S FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
2. ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT NATIONAL ELECTRICAL CODES AND ALL STATE AND LOCAL CODES, LAWS, AND ORDINANCES. PROVIDE ALL COMPONENTS AND WIRING SIZES AS REQUIRED TO MEET NEC STANDARDS.
3. LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO CONSTRUCTION.
4. CONDUIT ROUGH-IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION CONFLICTS. VERIFY WITH THE MECHANICAL EQUIPMENT CONTRACTOR AND COMPLY AS REQUIRED.
5. CONTRACTOR SHALL PROVIDE ALL BREAKERS, CONDUITS AND CIRCUITS AS REQUIRED FOR A COMPLETE SYSTEM.
6. CONTRACTOR SHALL PROVIDE PULL BOXES AND JUNCTION BOXES AS REQUIRED BY THE NEC ARTICLE 314.
7. CONTRACTOR SHALL PROVIDE ALL STRAIN RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
8. ALL DISCONNECTS AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED PHENOLIC NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON, AND PANEL FIELD LOCATIONS FED FROM.
9. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC 250. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULL BOXES, AND ALL DISCONNECT SWITCHES, AND EQUIPMENT CABINETS.
10. ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
11. PANEL SCHEDULE LOADING AND CIRCUIT ARRANGEMENTS REFLECT POST-CONSTRUCTION EQUIPMENT.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR AS-BUILT PANEL SCHEDULE AND SITE DRAWINGS.
13. ALL TRENCHES IN COMPOUND TO BE HAND DUG

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STATE OF CONNECTICUT — No. 23924 — LICENSED PROFESSIONAL ENGINEER
7/8/21

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DRAWN BY:	CHECKED BY:	APPROVED BY:
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DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00020A
945 EAST CENTER ST
WALLINGFORD, CT 06492

SHEET TITLE
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

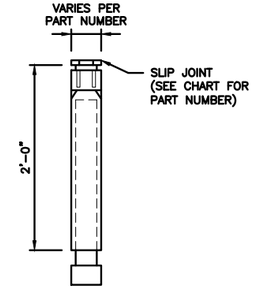
SHEET NUMBER
E-1

UTILITY ROUTE PLAN | 6' 4' 2' 0 5' 10' | 3/16"=1'-0" | 1

ELECTRICAL NOTES | NO SCALE | 2

CARLON EXPANSION FITTINGS

COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N	E945NX	4"	5	8"
E945P	E945PX	5"	1	8"
E945R	E945RX	6"	1	8"

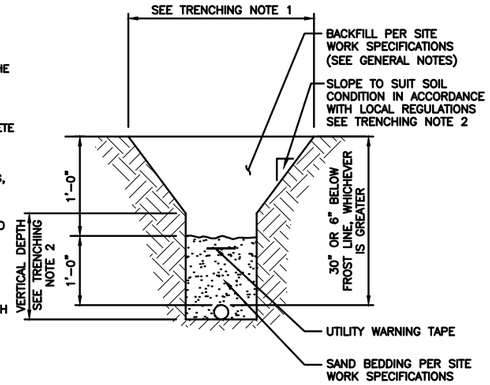


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

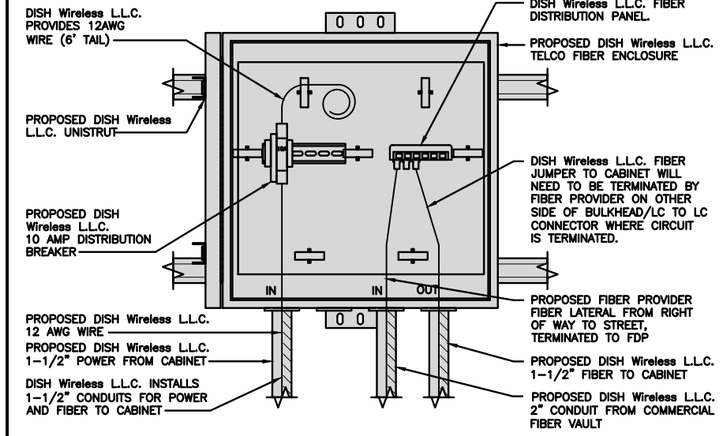
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

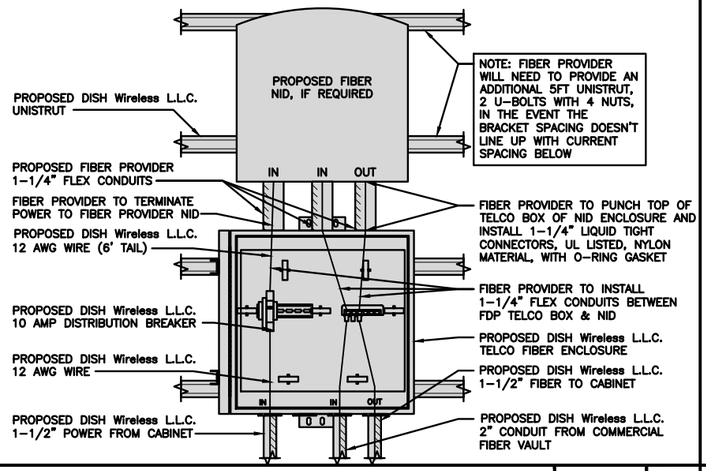
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
3. ALL CONDUITS SHALL BE INSTALLED IN COMPLIANCE WITH THE CURRENT NATIONAL ELECTRIC CODE (NEC) OR AS REQUIRED BY THE LOCAL JURISDICTION, WHICHEVER IS THE MOST STRINGENT.



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



DARK TELCO BOX – INTERIOR WIRING LAYOUT | NO SCALE | 3



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL) | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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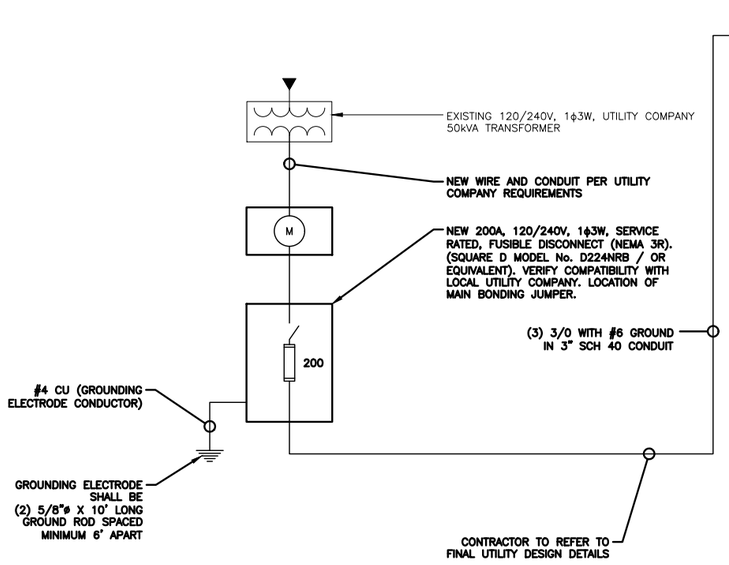
945 EAST CENTER ST
WALLINGFORD, CT 06492

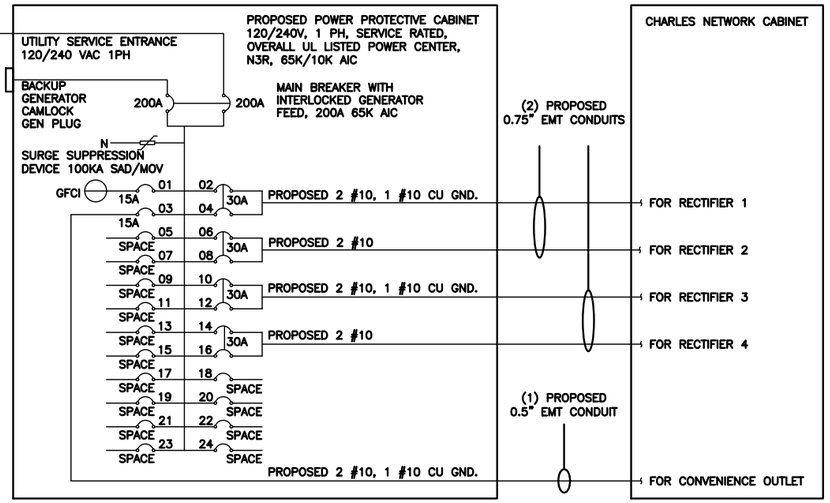
SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2





NOTE:
BRANCH CIRCUIT WIRING SUPPLYING RECTIFIERS ARE TO BE RATED UL1015, 105°C, 600V, AND PVC INSULATED, IN THE SIZES SHOWN IN THE ONE-LINE DIAGRAM. CONTRACTOR MAY SUBSTITUTE UL1015 WIRE FOR THWN-2 FOR CONVENIENCE OUTLET BRANCH CIRCUIT.

BREAKERS REQUIRED:
(4) 30A, 2P BREAKER - SQUARE D P/N:QO230
(1) 15A, 1P BREAKER - SQUARE D P/N:QO115

NOTES

THE (2) CONDUITS WITH (4) CURRENT CARRYING CONDUCTORS EACH, SHALL APPLY THE ADJUSTMENT FACTOR OF 80% PER 2014/17 NEC TABLE 310.15(B)(3)(a) OR 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE.

#12 FOR 15A-20A/1P BREAKER: 0.8 x 30A = 24.0A
#10 FOR 25A-30A/2P BREAKER: 0.8 x 40A = 32.0A
#8 FOR 35A-40A/2P BREAKER: 0.8 x 55A = 44.0A
#6 FOR 45A-60A/2P BREAKER: 0.8 x 75A = 60.0A

CONDUIT SIZING: AT 40% FILL PER NEC CHAPTER 9, TABLE 4, ARTICLE 358.
0.5" CONDUIT - 0.122 SQ. IN AREA
0.75" CONDUIT - 0.213 SQ. IN AREA
2.0" CONDUIT - 1.316 SQ. IN AREA
3.0" CONDUIT - 2.907 SQ. IN AREA

CABINET CONVENIENCE OUTLET CONDUCTORS (1 CONDUIT): USING THWN-2, CU.

#10 - 0.0211 SQ. IN X 2 = 0.0422 SQ. IN
#10 - 0.0211 SQ. IN X 1 = 0.0211 SQ. IN <GROUND
TOTAL = 0.0633 SQ. IN

0.5" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (3) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

RECTIFIER CONDUCTORS (2 CONDUITS): USING UL1015, CU.

#10 - 0.0266 SQ. IN X 4 = 0.1064 SQ. IN
#10 - 0.0082 SQ. IN X 1 = 0.0082 SQ. IN <BARE GROUND
TOTAL = 0.1146 SQ. IN

0.75" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (5) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, CU.

3/0 - 0.2679 SQ. IN X 3 = 0.8037 SQ. IN
#6 - 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND
TOTAL = 0.8544 SQ. IN

3.0" SCH 40 PVC CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (4) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

PPC ONE-LINE DIAGRAM

NO SCALE | 1

PROPOSED CHARLES PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	30A	2880		ABB/GE INFINITY RECTIFIER 1
CHARLES GFCI OUTLET		180	15A	3	B	4			2880	
-SPACE-				5	A	6	30A	2880		ABB/GE INFINITY RECTIFIER 2
-SPACE-				7	B	8			2880	
-SPACE-				9	A	10	30A	2880		ABB/GE INFINITY RECTIFIER 3
-SPACE-				11	B	12			2880	
-SPACE-				13	A	14	30A	2880		ABB/GE INFINITY RECTIFIER 4
-SPACE-				15	B	16			2880	
-SPACE-				17	A	18				-SPACE-
-SPACE-				19	B	20				-SPACE-
-SPACE-				21	A	22				-SPACE-
-SPACE-				23	B	24				-SPACE-
VOLTAGE AMPS	180	180						11520	11520	
200A MCB, 1ϕ, 24 SPACE, 120/240V			L1		L2					
MB RATING: 65,000 AIC			11700		11700		VOLTAGE AMPS			
			98		98		AMPS			
			98				MAX AMPS			
			123				MAX 125%			

PANEL SCHEDULE

NO SCALE | 2

NOT USED

NO SCALE | 3

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PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

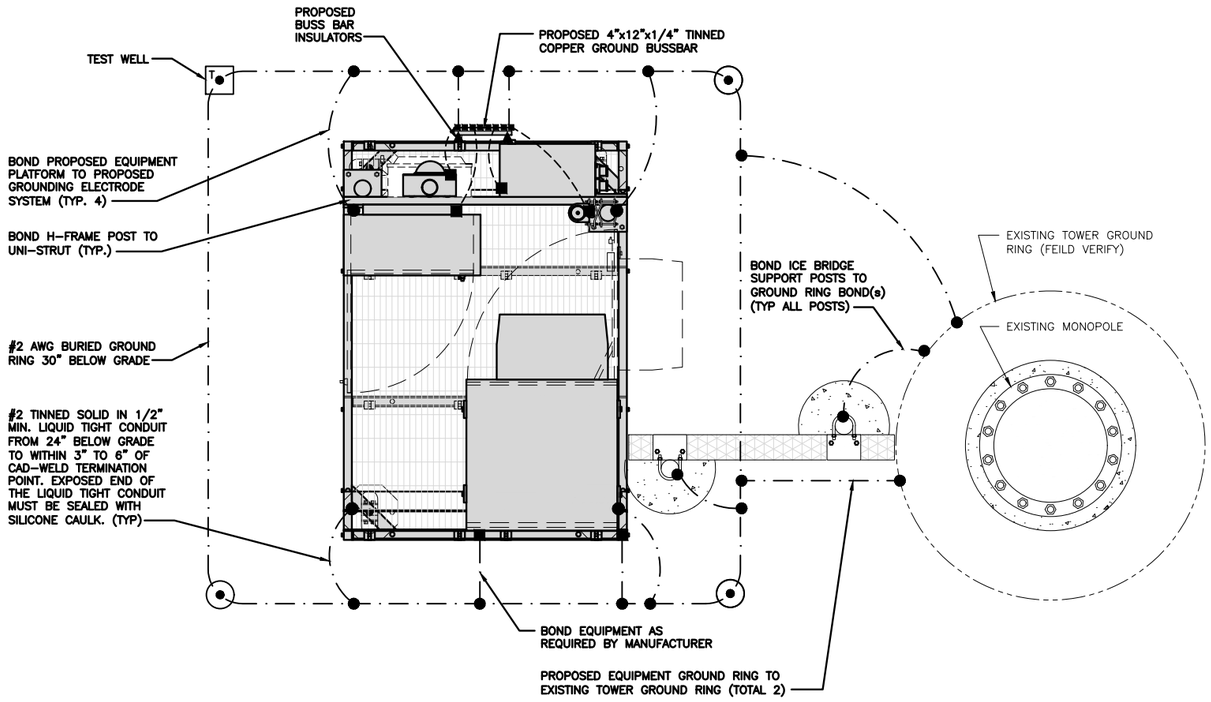
REV	DATE	DESCRIPTION
A	6/17/21	ISSUED FOR REVIEW
0	7/8/21	ISSUED FOR REVIEW

A&E PROJECT NUMBER
100049.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00020A
945 EAST CENTER ST
WALLINGFORD, CT 06492

SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

SHEET NUMBER
E-3

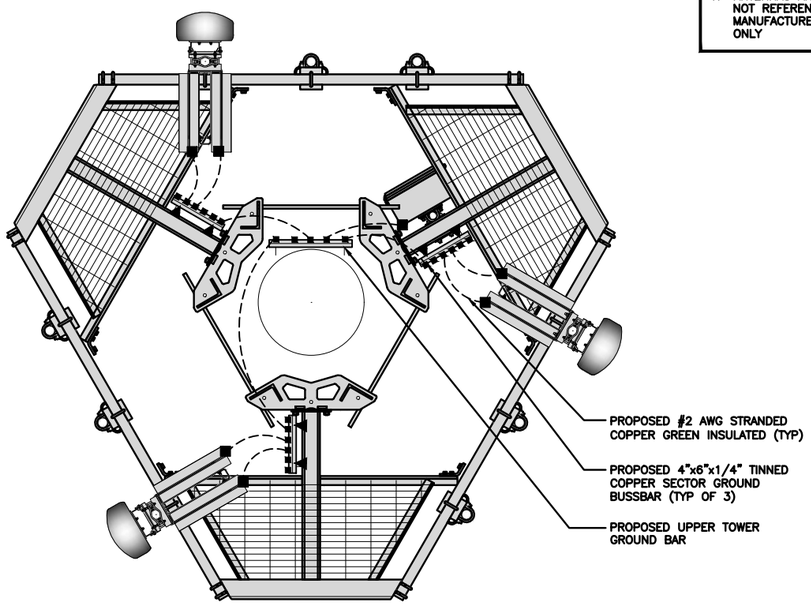


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1

NOTES

1. ANTENNAS AND OVP SHOWN ARE GENERIC AND NOT REFERENCING TO A SPECIFIC MANUFACTURER. THIS LAYOUT IS FOR REFERENCE ONLY



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

EXOTHERMIC CONNECTION
MECHANICAL CONNECTION
GROUND BUS BAR
GROUND ROD
TEST GROUND ROD WITH INSPECTION SLEEVE
#6 AWG STRANDED & INSULATED
#2 AWG SOLID COPPER TINNED
BUSS BAR INSULATOR

GROUNDING LEGEND

1. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
2. CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND DISH Wireless L.L.C. GROUNDING AND BONDING REQUIREMENTS AND MANUFACTURER'S SPECIFICATIONS.
3. ALL GROUND CONDUCTORS SHALL BE COPPER; NO ALUMINUM CONDUCTORS SHALL BE USED.

GROUNDING KEY NOTES

(A) EXTERIOR GROUND RING: #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.

(B) TOWER GROUND RING: THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.

(C) INTERIOR GROUND RING: #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.

(D) BOND TO INTERIOR GROUND RING: #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.

(E) GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 1/2" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.

(F) CELL REFERENCE GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.

(G) HATCH PLATE GROUND BAR: BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.

(H) EXTERIOR CABLE ENTRY PORT GROUND BARS: LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.

(I) TELCO GROUND BAR: BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.

(J) FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.

(K) INTERIOR UNIT BONDS: METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.

(L) FENCE AND GATE GROUNDING: METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS.

(M) EXTERIOR UNIT BONDS: METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE

(N) ICE BRIDGE SUPPORTS: EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING.

(O) DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR

(P) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR.

REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE | 3

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STATE OF CONNECTICUT — No. 23924 — LICENSED PROFESSIONAL ENGINEER — 7/8/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 0

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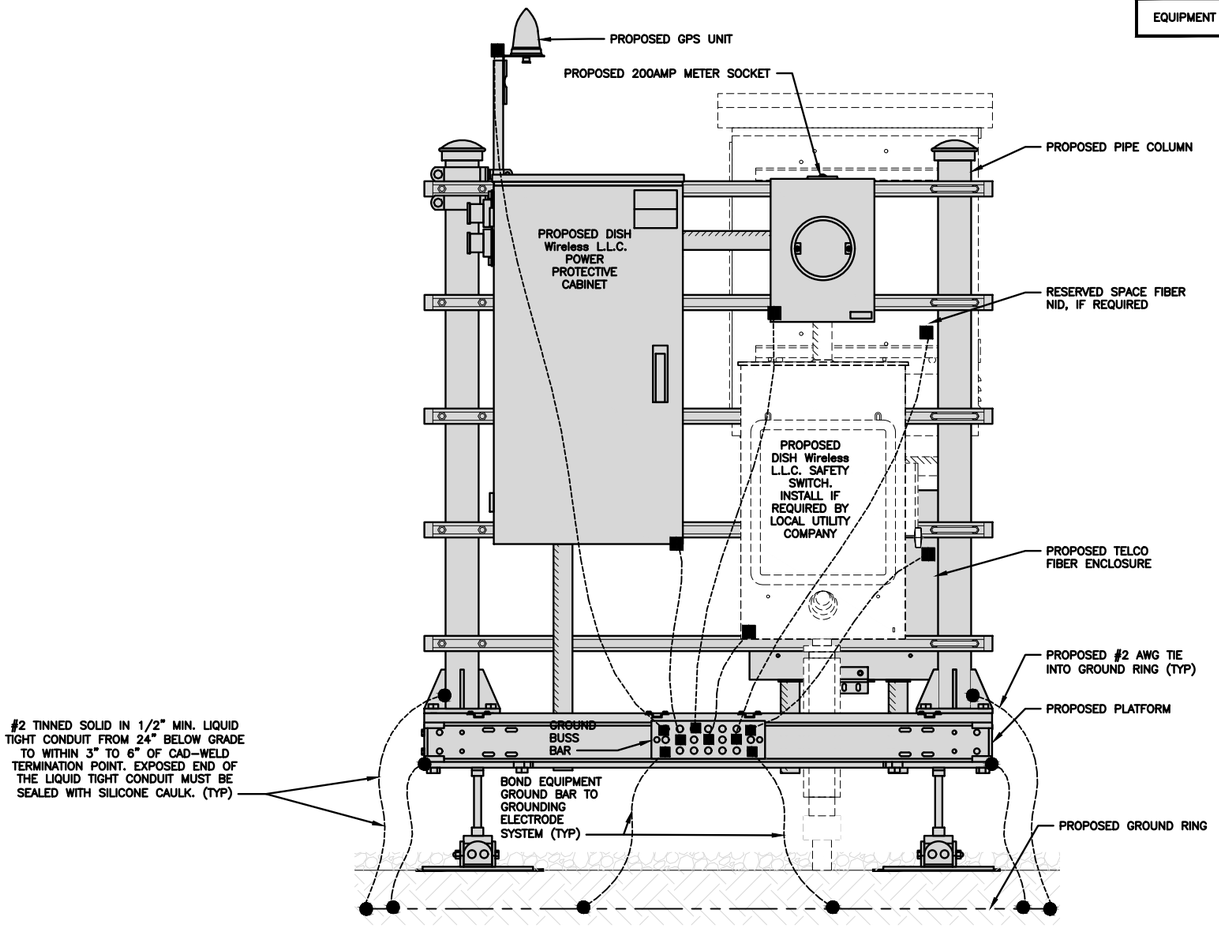
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00020A
945 EAST CENTER ST
WALLINGFORD, CT 06492

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

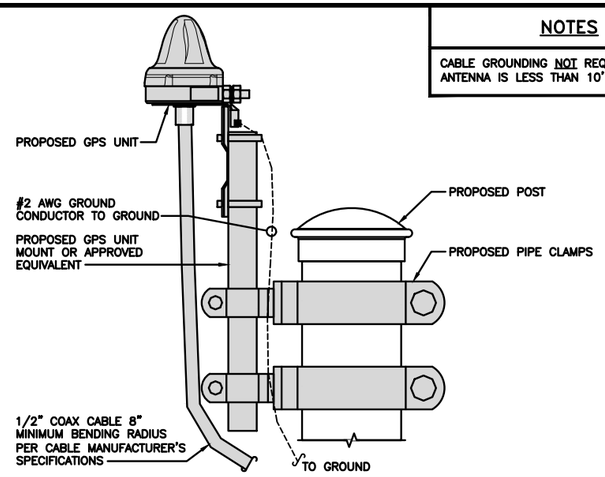
EQUIPMENT CABINET OMITTED FOR CLARITY



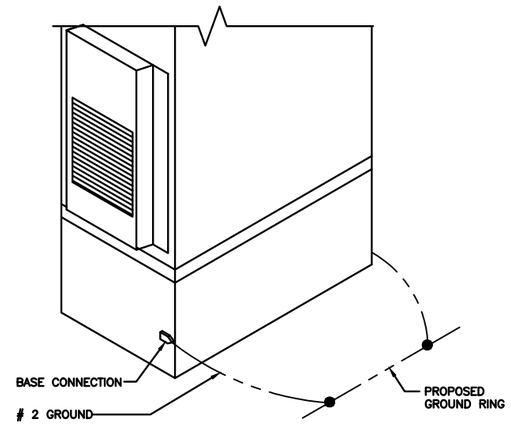
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

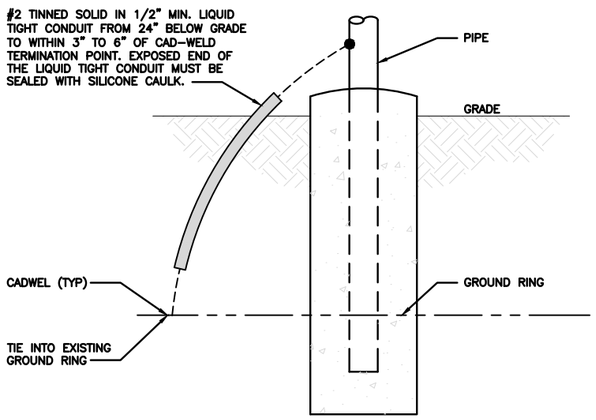
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



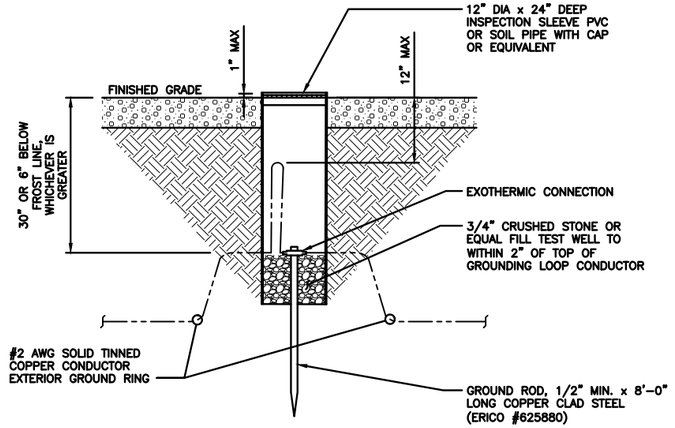
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



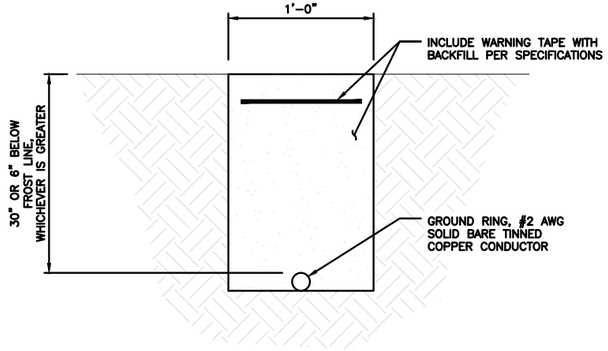
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE | NO SCALE | 5



TYPICAL GROUND RING TRENCH | NO SCALE | 6

DISH Wireless L.L.C. TEMPLATE VERSION 34 – 06/11/2021

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PROJECT INFORMATION

BOHVN00020A
945 EAST CENTER ST
WALLINGFORD, CT 06492

SHEET TITLE

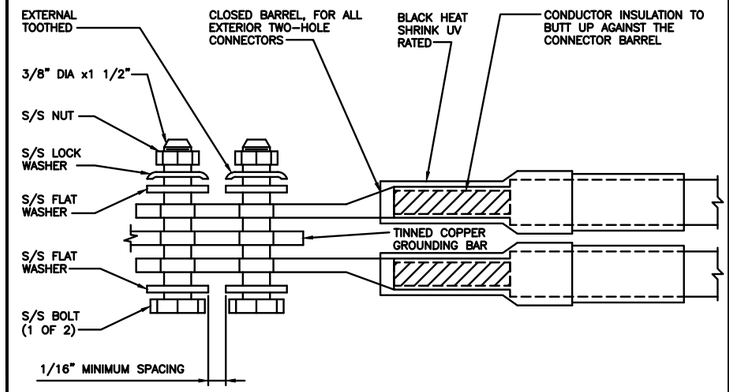
GROUNDING DETAILS

SHEET NUMBER

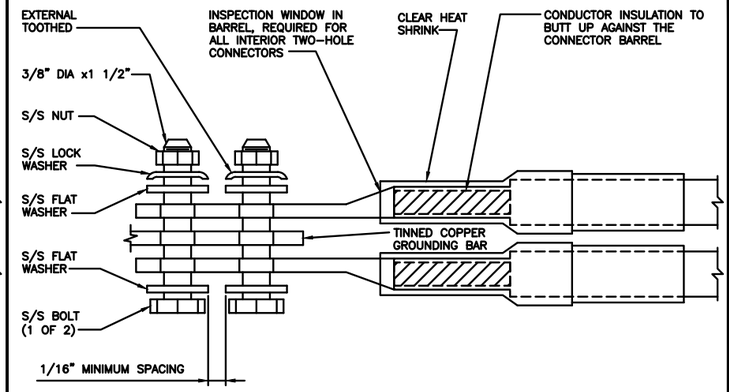
G-2

1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND BAR, ROUTE CONDUCTORS TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. ALL EXTERIOR GROUNDING HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
3. FOR GROUND BOND TO STEEL ONLY: COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
4. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS.
5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE.
6. ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED.
8. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).

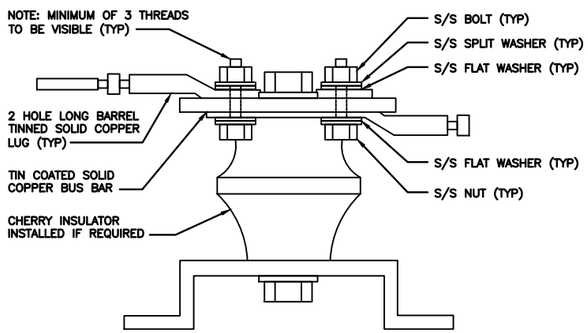
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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SHEET TITLE
GROUNDING DETAILS

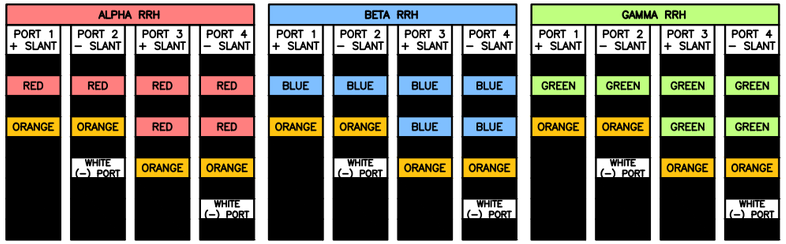
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

3/4" TAPE WIDTHS WITH 3/4" SPACING

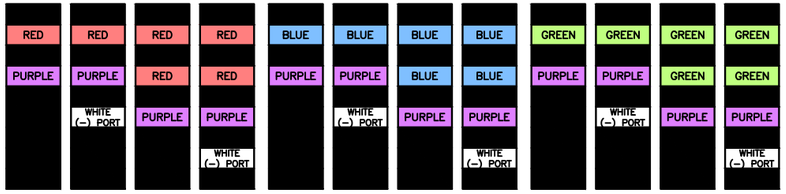
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

ADD FREQUENCY COLOR TO SECTOR BAND
(CBRS WILL USE YELLOW BANDS)



MID-BAND RRH –
(AWS BANDS N66+N70)

ADD FREQUENCY COLOR TO SECTOR BAND
(CBRS WILL USE YELLOW BANDS)

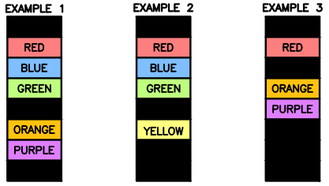


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

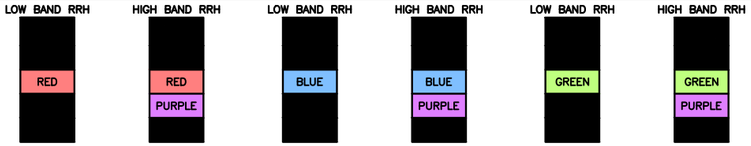
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS
CBRS ONLY, ALL SECTORS



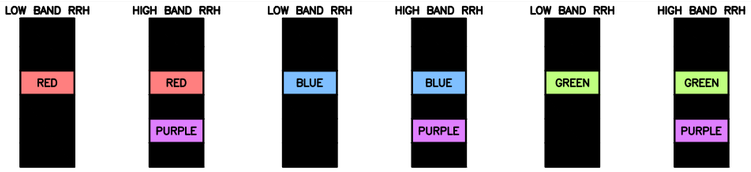
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

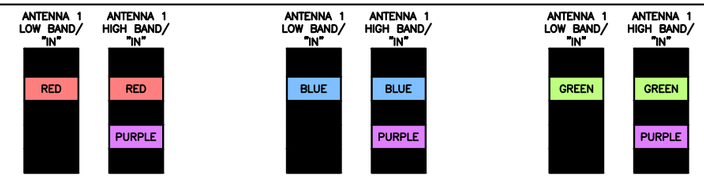


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



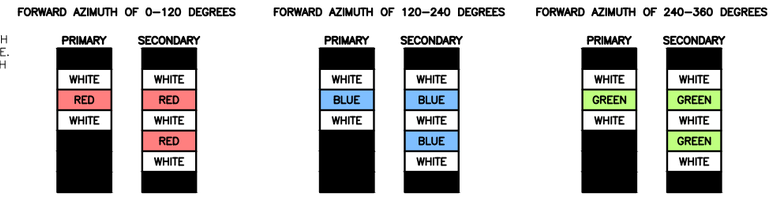
RET MOTORS AT ANTENNAS



MICROWAVE RADIO LINKS

LINKS WILL HAVE A 1.5-2 INCH WHITE WRAP WITH
THE AZIMUTH COLOR OVERLAPPING IN THE MIDDLE.
ADD ADDITIONAL SECTOR COLOR BANDS FOR EACH
ADDITIONAL MW RADIO.

MICROWAVE CABLES WILL REQUIRE P-TOUCH
LABELS INSIDE THE CABINET TO IDENTIFY THE
LOCAL AND REMOTE SITE ID'S



RF CABLE COLOR CODES	NO SCALE	1

LOW BANDS (N71+N26)
OPTIONAL – (N29)
ORANGE

AWS
(N66+N70+H-BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER	NO SCALE	2

NOT USED	NO SCALE	3

NOT USED	NO SCALE	4

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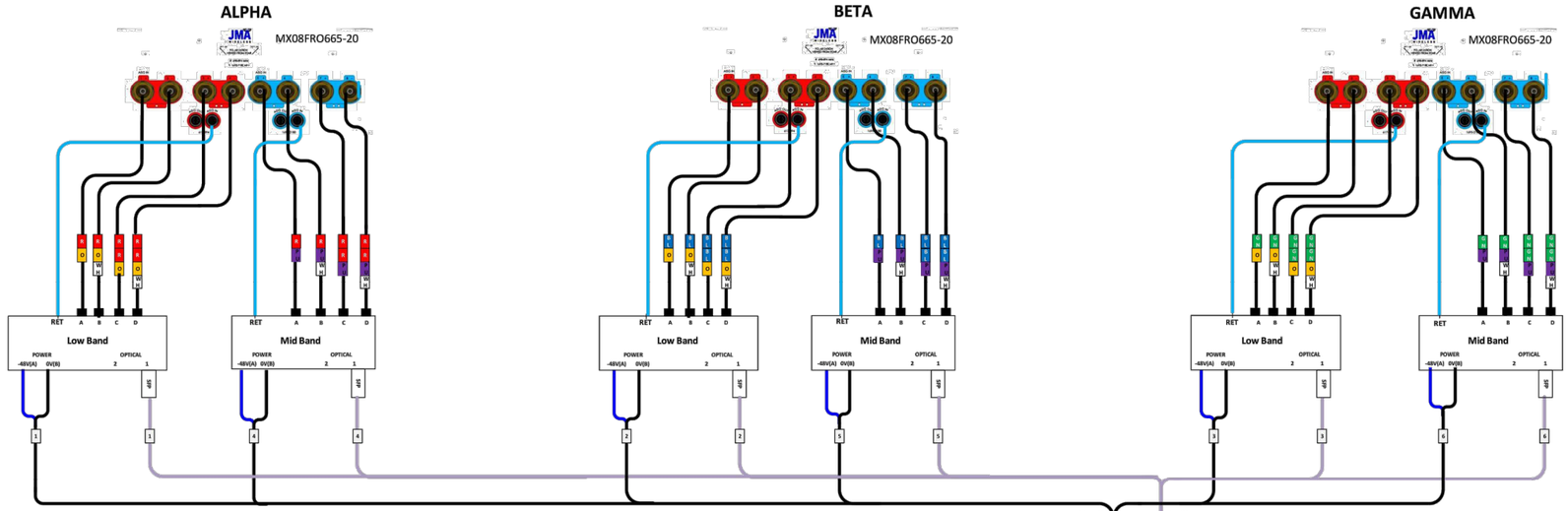
WALLINGFORD, CT 06492

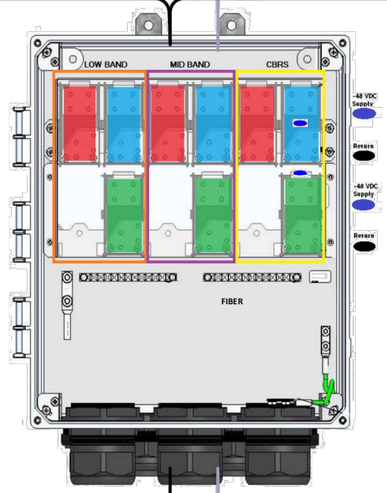
SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1



Fiber Patch Panel

Bottom Row	Pair 1	Pair 2	Pair 3	Pair 10	Open	Open
Middle Row	Pair 4	Pair 5	Pair 6	Pair 11	Open	Open
Top Row	Pair 7	Pair 8	Pair 9	Pair 12	Open	Open



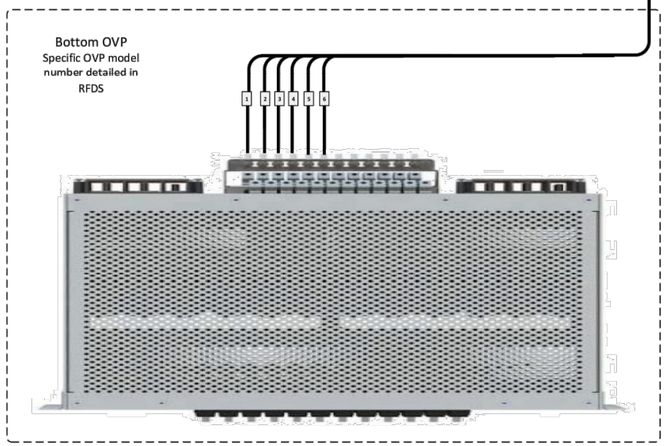
CSR NCS540		
Port	Interface	Description
0	Gi0/0/0/0	SiteBoss
1	Gi0/0/0/1	CBRS - Alpha
2	Gi0/0/0/2	CBRS - Beta
3	Gi0/0/0/3	CBRS - Gamma
4	Te0/0/0/4	Fujitsu Low-Band RU - Alpha
5	Te0/0/0/5	Fujitsu Mid-Band RU - Alpha
6	Te0/0/0/6	Fujitsu Low-Band RU - Beta
7	Te0/0/0/7	Fujitsu Mid-Band RU - Beta
8	Te0/0/0/8	Fujitsu Low-Band RU - Gamma
9	Te0/0/0/9	Fujitsu Mid-Band RU - Gamma
10	Te0/0/0/10	Fixed Wifi
11	Te0/0/0/11	Fixed Wifi
12	Te0/0/0/12	Fixed Wifi
13	Te0/0/0/13	Fixed Wifi
14	Te0/0/0/14	CBRS1
15	Te0/0/0/15	CBRS2
16	Te0/0/0/16	CBRS3
17	Gi0/0/0/17	SM1 - BMC
18	Gi0/0/0/18	SM2 - BMC
19	Te0/0/0/19	SM1 - Data 1
20	Te0/0/0/20	SM1 - Data 2
21	Te0/0/0/21	SM2 - Data 1
22	Te0/0/0/22	SM2 - Data 2
23	Te0/0/0/23	Reserved Uplink (EDC, LDC)
24	Te0/0/0/24	Blank/Future
25	Te0/0/0/25	Blank/Future
26	Te0/0/0/26	Fiber NIU
27	Te0/0/0/27	Fiber NIU
28	Te0/0/0/28	Blank/Future
29	Te0/0/0/29	Blank/Future

top

bottom

Bottom OVP Layout

Circuit 1	Alpha Low Band
Circuit 2	Beta Low Band
Circuit 3	Gamma Low Band
Circuit 4	Alpha Mid Band
Circuit 5	Beta Mid Band
Circuit 6	Gamma Mid Band
Circuit 7	Alpha CBRS
Circuit 8	Beta CBRS
Circuit 9	Gamma CBRS
Circuit 10	Open
Circuit 11	Open
Circuit 12	Open



Quan Liu	5G plumbing diagram JMA MX08FRO665-20 2-2-2(LB+MB)	
5- Jan- 2021	SIZE / FSCM NO / DWG NO / REV 3	SCALE None / SHEET

PLUMBING DIAGRAM

NO SCALE

1

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DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

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CONSTRUCTION DOCUMENTS

SUBMITTALS

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0	7/8/21	ISSUED FOR REVIEW

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00020A
945 EAST CENTER ST
WALLINGFORD, CT 06492

SHEET TITLE

RF
PLUMBING DIAGRAM

SHEET NUMBER

RF-2

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8 — F

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW LED–1–25A400/51K–SR4–120–PE–DDBTXD

CHAIN LINK FENCE — X — X — X — X

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

UNDERGROUND POWER — UGP — UGP — UGP — UGP — UGP

UNDERGROUND TELCO — UGT — UGT — UGT — UGT — UGT

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

UNDERGROUND TELCO/POWER — UGT/P — UGT/P — UGT/P — UGT/P

ABOVE GROUND POWER — AGP — AGP — AGP — AGP — AGP

ABOVE GROUND TELCO — AGT — AGT — AGT — AGT — AGT

ABOVE GROUND TELCO/POWER — AGT/P — AGT/P — AGT/P — AGT/P

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

AB	ANCHOR BOLT
ABV	ABOVE
AC	ALTERNATING CURRENT
ADDL	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AGL	ABOVE GROUND LEVEL
AIC	AMPERAGE INTERRUPTION CAPACITY
ALUM	ALUMINUM
ALT	ALTERNATE
ANT	ANTENNA
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BTC	BARE TINNED COPPER CONDUCTOR
BOF	BOTTOM OF FOOTING
CAB	CABINET
CANT	CANTILEVERED
CHG	CHARGING
CLG	CEILING
CLR	CLEAR
COL	COLUMN
COMM	COMMON
CONC	CONCRETE
CONSTR	CONSTRUCTION
DBL	DOUBLE
DC	DIRECT CURRENT
DEPT	DEPARTMENT
DF	DOUGLAS FIR
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DWG	DRAWING
DWL	DOWEL
EA	EACH
EC	ELECTRICAL CONDUCTOR
EL.	ELEVATION
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ENG	ENGINEER
EQ	EQUAL
EXP	EXPANSION
EXT	EXTERIOR
EW	EACH WAY
FAB	FABRICATION
FF	FINISH FLOOR
FG	FINISH GRADE
FIF	FACILITY INTERFACE FRAME
FIN	FINISH(ED)
FLR	FLOOR
FDN	FOUNDATION
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FOW	FACE OF WALL
FS	FINISH SURFACE
FT	FOOT
FTG	FOOTING
GA	GAUGE
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GLB	GLUE LAMINATED BEAM
GLV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
GSM	GLOBAL SYSTEM FOR MOBILE
HDG	HOT DIPPED GALVANIZED
HDR	HEADER
HGR	HANGER
HVAC	HEAT/VENTILATION/AIR CONDITIONING
HT	HEIGHT
IGR	INTERIOR GROUND RING
IN	INCH
INT	INTERIOR
LB(S)	POUND(S)
LF	LINEAR FEET
LTE	LONG TERM EVOLUTION
MAS	MASONRY
MAX	MAXIMUM
MB	MACHINE BOLT
MECH	MECHANICAL
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL
MTS	MANUAL TRANSFER SWITCH
MW	MICROWAVE
NEC	NATIONAL ELECTRIC CODE
NM	NEWTON METERS
NO.	NUMBER
#	NUMBER
NTS	NOT TO SCALE
OC	ON–CENTER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OPNG	OPENING
P/C	PRECAST CONCRETE
PCS	PERSONAL COMMUNICATION SERVICES
PCU	PRIMARY CONTROL UNIT
PRC	PRIMARY RADIO CABINET
PP	POLARIZING PRESERVING
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
PWR	POWER CABINET
QTY	QUANTITY
RAD	RADIUS
RECT	RECTIFIER
REF	REFERENCE
REINF	REINFORCEMENT
REQ'D	REQUIRED
RET	REMOTE ELECTRIC TILT
RF	RADIO FREQUENCY
RMC	RIGID METALLIC CONDUIT
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
RWY	RACEWAY
SCH	SCHEDULE
SHT	SHEET
SIAD	SMART INTEGRATED ACCESS DEVICE
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
TEMP	TEMPORARY
THK	THICKNESS
TMA	TOWER MOUNTED AMPLIFIER
TN	TOE NAIL
TOA	TOP OF ANTENNA
TOC	TOP OF CURB
TOF	TOP OF FOUNDATION
TOP	TOP OF PLATE (PARAPET)
TOS	TOP OF STEEL
TOW	TOP OF WALL
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
UPS	UNITERRUPTIBLE POWER SYSTEM (DC POWER PLANT)
VIF	VERIFIED IN FIELD
W	WIDE
W/	WITH
WD	WOOD
WP	WEATHERPROOF
WT	WEIGHT

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PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
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CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER

100049.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00020A
945 EAST CENTER ST
WALLINGFORD, CT 06492

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH Wireless L.L.C. AND TOWER OWNER NOC & THE DISH Wireless L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.

2. "LOOK UP" – DISH Wireless L.L.C. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:

THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR DISH Wireless L.L.C. AND DISH Wireless L.L.C. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.

3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.

4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH Wireless L.L.C. AND TOWER OWNER STANDARDS, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).

5. ALL SITE WORK TO COMPLY WITH DISH Wireless L.L.C. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH Wireless L.L.C. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."

6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH Wireless L.L.C. AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.

7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.

10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.

11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.

12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF DISH Wireless L.L.C. AND TOWER OWNER, AND/OR LOCAL UTILITIES.

14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.

15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.

16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.

17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.

18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS AND RADIOS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1.FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.

3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.

4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.

5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.

6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CARRIER POC AND TOWER OWNER.

7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.

11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.

12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF DISH Wireless L.L.C. AND TOWER OWNER

13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

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dish wireless.

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7/8/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 0

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00020A
945 EAST CENTER ST
WALLINGFORD, CT 06492

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.

2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.

3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.

4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.

5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

- CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
- CONCRETE EXPOSED TO EARTH OR WEATHER:
- #6 BARS AND LARGER 2"
- #5 BARS AND SMALLER 1-1/2"
- CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
- SLAB AND WALLS 3/4"
- BEAMS AND COLUMNS 1-1/2"

7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.

2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.

3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.

4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.

4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.

4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.

5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.

6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).

7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.

8. TIE WRAPS ARE NOT ALLOWED.

9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.

12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).

14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.

18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.

20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.

21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).

22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).

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

24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.

25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.

26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.

27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH Wireless L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.

29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C.".

30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

dish wireless.

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CROWN CASTLE

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CANONSBURG, PA 15317

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7/8/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

DRAWN BY:	CHECKED BY:	APPROVED BY:
JJR	JJR	MDW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	6/17/21	ISSUED FOR REVIEW
0	7/8/21	ISSUED FOR REVIEW

A&E PROJECT NUMBER

100049.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00020A
945 EAST CENTER ST
WALLINGFORD, CT 06492

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.

4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.

7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.

8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.

11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.

13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.

14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.

15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.

17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.

19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).

21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). DO NOT ATTACH GROUNDING TO FIRE SPRINKLER SYSTEM PIPES.

dish wireless.

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A&E PROJECT NUMBER

100049.002.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00020A
945 EAST CENTER ST
WALLINGFORD, CT 06492

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Date: **June 10, 2021**

Crown Castle
2000 Corporate Drive
Canonsburg. PA 15317
(724) 416-2000

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOHVN00020A
	Site Name:	CT-CCI-T-876310
Crown Castle Designation:	**BU Number:**	876310
	Site Name:	BEAUMONT FARM
	JDE Job Number:	645170
	Work Order Number:	1966259
	Order Number:	553364 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	1966259
Site Data:	**945 East Center St., Wallingford, NEW HAVEN County, CT** **Latitude *41° 26' 37.36"*, Longitude *-72° 47' 46.56"*** **147 Foot - Monopole Tower**	

Crown Castle is 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-93.4%**

This analysis utilizes an ultimate 3-second gust wind speed of 125 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: Kibreab Gebremariam

Respectfully submitted by:

STATE OF CONNECTICUT
TERRY P. STYRAN
31522
LICENSED
PROFESSIONAL ENGINEER

Terry P Styran
2021.06.10
12:08:02 -04'00'

Terry P. Styran, P.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 147 ft Monopole tower designed by SUMMIT.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 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)
143.0	143.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

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)
130.0	132.0	1	andrew	VHLP1-23	6 3 1 3	5/16 7983A 7/8 1-1/4
		1	andrew	VHLP2-23		
		1	andrew	VHLP2.5-23		
	130.0	3	alcatel lucent	1900MHZ RRH (65MHZ)		
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER		
		3	alcatel lucent	800MHZ RRH		
		3	alcatel lucent	TD-RRH8X20-25		
		3	argus technologies	LLPX310R-V1 w/ Mount Pipe		
		9	rfs celwave	ACU-A20-N		
		1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe		
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe		
		3	samsung telecommunications	RRH-2WB		
		1	tower mounts	Miscellaneous [NA 510-3]		
		1	tower mounts	Platform Mount [LP 1201-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
124.0	126.0	2	raycap	RRFDC-3315-PF-48	14	1-5/8
	124.0	3	alcatel lucent	B13 RRH 4X30		
		2	antel	BXA-70063/6CFx2 w/ Mount Pipe		
		1	antel	BXA-70063/6CFx4 w/ Mount Pipe		
		2	antel	LPA-80063/6CF w/ Mount Pipe		
		4	antel	LPA-80080-6CF-EDIN w/ Mount Pipe		
		6	commscope	SBNHH-1D65B w/ Mount Pipe		
		3	nokia	B25 RRH4X30 (UHFA)		
		3	nokia	B66A RRH4X45 (UHIE)		
		1	tower mounts	Platform Mount [LP 1201-1_KCKR-HR-1]		
111.0	112.0	3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe	2 4 12	3/8 3/4 1-1/4
		3	ericsson	RRUS 32		
		3	ericsson	RRUS 4426 B66		
		3	ericsson	RRUS-11		
		3	ericsson	RRUS12/RRUS A2		
		3	kaelus	DBCT108F1V92-1		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		6	powerwave technologies	LGP21401		
		3	quintel technology	QS66512-2 w/ Mount Pipe		
		2	raycap	DC6-48-60-18-8F		
	111.0	1	tower mounts	Platform Mount [LP 1201-1]		
70.0	70.0	1	kathrein	OG-860/1920/GPS-A	1	1/2
		1	tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1531484	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1855118	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1855980	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2015154	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.9.0), 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. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

3.2) Assumptions

1) Tower and structures were maintained in accordance with the TIA-222 Standard.
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. Crown Castle 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	147 - 133	Pole	TP12.75x12.75x0.5	1	-3662.96	636437.52	22.3	Pass
L2	133 - 85.5	Pole	TP29.418x19.537x0.313	2	-22101.70	1750759.42	79.3	Pass
L3	85.5 - 42.75	Pole	TP37.687x27.477x0.375	3	-32311.90	2690099.88	93.4	Pass
L4	42.75 - 0	Pole	TP45.83x35.894x0.438	4	-47952.00	3927923.82	90.1	Pass
							Summary	
						Pole (L3)	93.4	Pass
						Rating =	93.4	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	80.0	Pass
1	Base Plate	0	82.4	Pass
1	Base Foundation (Structure)	0	26.2	Pass
1	Base Foundation (Soil Interaction)	0	88.9	Pass
1	Flange Connection	133.0	51.8	Pass

Structure Rating (max from all components) =	93.4%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4
Length (ft)	14.00	47.50	46.50	47.50
Number of Sides	1	12	12	12
Thickness (in)	0.500	0.313	0.375	0.438
Socket Length (ft)		3.75	4.75	
Top Dia (in)	12.750	19.537	27.477	35.894
Bot Dia (in)	12.750	29.418	37.687	45.830
Grade	A53-B-35		A607-65	
Weight (K)	0.9	3.9	6.2	9.2

Total Weight (K): 20.2

ALL REACTIONS ARE FACTORED

AXIAL 78 K
SHEAR 9 K
MOMENT 1069 kip-ft
TORQUE 1 kip-ft
50 mph WIND - 1.500 in ICE

AXIAL 48 K
SHEAR 34 K
MOMENT 3742 kip-ft
TORQUE 3 kip-ft
REACTIONS - 125 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A607-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 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: 93.4%

CROWN CASTLE
The pathway to Possible

Crown Castle
2000 Corporate Drive
Canonsburg. PA 15317
Phone: (724) 416-2000
FAX:

Job: ***BU 876310***			
Project:			
Client: Crown Castle	Drawn by: KGebremariam		App'd:
Code: TIA-222-H	Date: 06/10/21		Scale: NTS
Path: C:\Users\KGebremariam\Desktop\Work Area\876310\WO 1966259 - SA\Prod\876310 update.er			Dwg No. E-1

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

- Tower is located in New Haven County, Connecticut.
- Tower base elevation above sea level: 244.00 ft.
- Basic wind speed of 125 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.500 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- 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		Retension 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 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	147.00-133.00	14.00	0.000	Round	12.750	12.750	0.500		A53-B-35 (35 ksi)
L2	133.00-85.50	47.50	3.750	12	19.537	29.418	0.313	1.250	A607-65 (65 ksi)
L3	85.50-42.75	46.50	4.750	12	27.477	37.687	0.375	1.500	A607-65 (65 ksi)
L4	42.75-0.00	47.50		12	35.894	45.830	0.438	1.750	A607-65 (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	12.750	19.242	361.544	4.335	6.375	56.713	723.088	9.615	0.000	0
	12.750	19.242	361.544	4.335	6.375	56.713	723.088	9.615	0.000	0
L2	20.116	19.345	912.551	6.882	10.120	90.172	1849.075	9.521	4.398	14.075
	30.346	29.287	3166.774	10.420	15.239	207.814	6416.742	14.414	7.047	22.549
L3	29.167	32.726	3068.189	9.703	14.233	215.567	6216.983	16.107	6.359	16.957
	38.884	45.054	8006.057	13.358	19.522	410.107	16222.442	22.174	9.095	24.254
L4	38.035	49.949	8015.109	12.693	18.593	431.079	16240.785	24.584	8.447	19.308
	47.292	63.947	16817.916	16.251	23.740	708.423	34077.658	31.473	11.110	25.394

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 147.00-133.00				1	1	1			
L2 133.00-85.50				1	1	1			
L3 85.50-42.75				1	1	1			
L4 42.75-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Misc										
Safety Line 3/8	A	No	Surface Ar (CaAa)	133.00 - 0.00	1	1	-0.250 -0.250	0.375		0.220
Step Pegs (5/8" SR) 7-in. w/30" step	A	No	Surface Ar (CaAa)	147.00 - 0.00	1	1	-0.250 -0.250	0.350		0.487

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
130									
7983A(ELLIPTICAL)	C	No	No	Inside Pole	130.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.084 0.084 0.084

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							2" Ice	0.00	0.084
9207(5/16")	C	No	No	Inside Pole	130.00 - 0.00	6	No Ice	0.00	0.600
							1/2" Ice	0.00	0.600
							1" Ice	0.00	0.600
							2" Ice	0.00	0.600
HB114-08U3M12-xxxF(7/8")	C	No	No	Inside Pole	130.00 - 0.00	1	No Ice	0.00	0.683
							1/2" Ice	0.00	0.683
							1" Ice	0.00	0.683
							2" Ice	0.00	0.683
HB114-1-0813U4-M5J(1 1/4")	C	No	No	Inside Pole	130.00 - 0.00	3	No Ice	0.00	1.200
							1/2" Ice	0.00	1.200
							1" Ice	0.00	1.200
							2" Ice	0.00	1.200
2" Flexible Conduit	C	No	No	Inside Pole	130.00 - 0.00	1	No Ice	0.00	0.340
							1/2" Ice	0.00	0.340
							1" Ice	0.00	0.340
							2" Ice	0.00	0.340
121 FLC 158-50J(1-5/8")	A	No	No	Inside Pole	124.00 - 0.00	12	No Ice	0.00	0.920
							1/2" Ice	0.00	0.920
							1" Ice	0.00	0.920
							2" Ice	0.00	0.920
HB158-1-08U8-S8J18(1-5/8")	A	No	No	Inside Pole	124.00 - 0.00	2	No Ice	0.00	1.300
							1/2" Ice	0.00	1.300
							1" Ice	0.00	1.300
							2" Ice	0.00	1.300
111 FLC 114-50J(1-1/4")	C	No	No	Inside Pole	111.00 - 0.00	12	No Ice	0.00	0.700
							1/2" Ice	0.00	0.700
							1" Ice	0.00	0.700
							2" Ice	0.00	0.700
WR-VG86ST-BRD(3/4")	C	No	No	Inside Pole	111.00 - 0.00	4	No Ice	0.00	0.584
							1/2" Ice	0.00	0.584
							1" Ice	0.00	0.584
							2" Ice	0.00	0.584
FB-L98B-002-75000(3/8")	C	No	No	Inside Pole	111.00 - 0.00	2	No Ice	0.00	0.059
							1/2" Ice	0.00	0.059
							1" Ice	0.00	0.059
							2" Ice	0.00	0.059
70 LDF4-50A(1/2")	C	No	No	Inside Pole	70.00 - 0.00	1	No Ice	0.00	0.150
							1/2" Ice	0.00	0.150
							1" Ice	0.00	0.150
							2" Ice	0.00	0.150
*** CU12PSM9P6XXX (1-1/2)	C	No	No	Inside Pole	143.00 - 0.00	1	No Ice	0.00	2.350
							1/2" Ice	0.00	2.350
							1" Ice	0.00	2.350
							2" Ice	0.00	2.350

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	147.00-133.00	A	0.000	0.000	0.490	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L2	133.00-85.50	A	0.000	0.000	3.444	0.000	0.56
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.77
L3	85.50-42.75	A	0.000	0.000	3.099	0.000	0.61

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.93
L4	42.75-0.00	A	0.000	0.000	3.099	0.000	0.61
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.93

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_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	147.00-133.00	A	1.473	0.000	0.000	4.615	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.02
L2	133.00-85.50	A	1.435	0.000	0.000	30.716	0.000	0.86
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.77
L3	85.50-42.75	A	1.361	0.000	0.000	27.644	0.000	0.88
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.93
L4	42.75-0.00	A	1.221	0.000	0.000	26.376	0.000	0.86
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.93

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	147.00-133.00	-0.447	0.000	-1.221	0.000
L2	133.00-85.50	-0.484	0.000	-2.323	0.000
L3	85.50-42.75	-0.487	0.000	-2.496	0.000
L4	42.75-0.00	-0.489	0.000	-2.510	0.000

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	19	Step Pegs (5/8" SR) 7-in. w/30" step	133.00 - 147.00	1.0000	1.0000
L2	18	Safety Line 3/8	85.50 - 133.00	1.0000	1.0000
L2	19	Step Pegs (5/8" SR) 7-in. w/30" step	85.50 - 133.00	1.0000	1.0000
L3	18	Safety Line 3/8	42.75 - 85.50	1.0000	1.0000
L3	19	Step Pegs (5/8" SR) 7-in. w/30" step	42.75 - 85.50	1.0000	1.0000
L4	18	Safety Line 3/8	0.00 - 42.75	1.0000	1.0000
L4	19	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 42.75	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
130					
LLPX310R-V1 w/ Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	130.00
LLPX310R-V1 w/ Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	130.00
LLPX310R-V1 w/ Mount Pipe	C	From Leg	4.00 0.000 0.000	0.000	130.00
APXV9ERR18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.000 0.000	0.000	130.00
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	130.00
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	130.00
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	130.00
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	130.00
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00 0.000 0.000	0.000	130.00
1900MHZ RRH (65MHZ)	A	From Leg	4.00 0.000 0.000	0.000	130.00
1900MHZ RRH (65MHZ)	B	From Leg	4.00 0.000 0.000	0.000	130.00
1900MHZ RRH (65MHZ)	C	From Leg	4.00 0.000 0.000	0.000	130.00
800 EXTERNAL NOTCH FILTER	A	From Leg	4.00 0.000 0.000	0.000	130.00
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00 0.000 0.000	0.000	130.00
800 EXTERNAL NOTCH FILTER	C	From Leg	4.00 0.000 0.000	0.000	130.00
800MHZ RRH	A	From Leg	4.00 0.000 0.000	0.000	130.00
800MHZ RRH	B	From Leg	4.00 0.000 0.000	0.000	130.00
800MHZ RRH	C	From Leg	4.00 0.000 0.000	0.000	130.00
TD-RRH8X20-25	A	From Leg	4.00 0.000	0.000	130.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
TD-RRH8X20-25	B	From Leg	0.000 4.00 0.000 0.000	0.000	130.00
TD-RRH8X20-25	B	From Leg	0.000 4.00 0.000 0.000	0.000	130.00
(3) ACU-A20-N	A	From Leg	0.000 4.00 0.000 0.000	0.000	130.00
(3) ACU-A20-N	B	From Leg	0.000 4.00 0.000 0.000	0.000	130.00
(3) ACU-A20-N	C	From Leg	0.000 4.00 0.000 0.000	0.000	130.00
RRH-2WB	A	From Leg	0.000 4.00 0.000 0.000	0.000	130.00
RRH-2WB	B	From Leg	0.000 4.00 0.000 0.000	0.000	130.00
RRH-2WB	C	From Leg	0.000 4.00 0.000 0.000	0.000	130.00
**					
Platform Mount [LP 1201-1]	C	None		0.000	130.00
Miscellaneous [NA 510-3]	C	None		0.000	130.00
121					
BXA-70063/6CFx2 w/ Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	124.00
BXA-70063/6CFx2 w/ Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	124.00
BXA-70063/6CFx4 w/ Mount Pipe	C	From Leg	4.00 0.000 0.000	0.000	124.00
(2) LPA-80080-6CF-EDIN w/ Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	124.00
(2) LPA-80080-6CF-EDIN w/ Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	124.00
(2) LPA-80063/6CF w/ Mount Pipe	C	From Leg	4.00 0.000 0.000	0.000	124.00
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	124.00
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	124.00
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 0.000 0.000	0.000	124.00
B13 RRH 4X30	A	From Leg	4.00 0.000 0.000	0.000	124.00
B13 RRH 4X30	B	From Leg	4.00 0.000 0.000	0.000	124.00
B13 RRH 4X30	C	From Leg	4.00 0.000 0.000	0.000	124.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
(2) FD9R6004/2C-3L	A	From Leg	4.00 -7.000 0.000	30.000	121.00
(2) FD9R6004/2C-3L	C	From Leg	4.00 0.000 0.000	30.000	121.00
(2) FD9R6004/2C-3L	B	From Leg	4.00 -7.000 0.000	30.000	121.00
B66A RRH4X45 (UHIE)	A	From Leg	4.00 0.000 0.000	0.000	124.00
B66A RRH4X45 (UHIE)	B	From Leg	4.00 0.000 0.000	0.000	124.00
B66A RRH4X45 (UHIE)	C	From Leg	4.00 0.000 0.000	0.000	124.00
B25 RRH4X30 (UHFA)	A	From Leg	4.00 0.000 0.000	0.000	124.00
B25 RRH4X30 (UHFA)	B	From Leg	4.00 0.000 0.000	0.000	124.00
B25 RRH4X30 (UHFA)	C	From Leg	4.00 0.000 0.000	0.000	124.00
RRFDC-3315-PF-48	A	From Leg	4.00 0.000 2.000	0.000	124.00
RRFDC-3315-PF-48	A	From Leg	4.00 0.000 2.000	0.000	124.00
Platform Mount [LP 1201-1_KCKR-HR-1] **119** **111**	C	None		0.000	124.00
7770.00 w/ Mount Pipe	A	From Leg	4.00 0.000 1.000	0.000	111.00
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.000 1.000	0.000	111.00
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.000 1.000	0.000	111.00
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.00 0.000 1.000	0.000	111.00
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	4.00 0.000 1.000	0.000	111.00
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.00 0.000 1.000	0.000	111.00
QS66512-2 w/ Mount Pipe	A	From Leg	4.00 0.000 1.000	0.000	111.00
QS66512-2 w/ Mount Pipe	B	From Leg	4.00 0.000 1.000	0.000	111.00
QS66512-2 w/ Mount Pipe	C	From Leg	4.00 0.000 1.000	0.000	111.00
(2) LGP21401	A	From Leg	4.00 0.000	0.000	111.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	ft	Azimuth Adjustment °	Placement ft
(2) LGP21401	B	From Leg	1.000 4.00	0.000		0.000	111.00
(2) LGP21401	C	From Leg	1.000 4.00	0.000		0.000	111.00
DBCT108F1V92-1	A	From Leg	1.000 4.00	0.000		0.000	111.00
DBCT108F1V92-1	B	From Leg	1.000 4.00	0.000		0.000	111.00
DBCT108F1V92-1	C	From Leg	1.000 4.00	0.000		0.000	111.00
RRUS 4426 B66	A	From Leg	1.000 4.00	0.000		0.000	111.00
RRUS 4426 B66	B	From Leg	1.000 4.00	0.000		0.000	111.00
RRUS 4426 B66	C	From Leg	1.000 4.00	0.000		0.000	111.00
RRUS 32	A	From Leg	1.000 4.00	0.000		0.000	111.00
RRUS 32	B	From Leg	1.000 4.00	0.000		0.000	111.00
RRUS 32	C	From Leg	1.000 4.00	0.000		0.000	111.00
RRUS-11	A	From Leg	1.000 4.00	0.000		0.000	111.00
RRUS-11	B	From Leg	1.000 4.00	0.000		0.000	111.00
RRUS-11	C	From Leg	1.000 4.00	0.000		0.000	111.00
RRUS12/RRUS A2	A	From Leg	1.000 4.00	0.000		0.000	111.00
RRUS12/RRUS A2	B	From Leg	1.000 4.00	0.000		0.000	111.00
RRUS12/RRUS A2	C	From Leg	1.000 4.00	0.000		0.000	111.00
DC6-48-60-18-8F	A	From Leg	1.000 4.00	0.000		0.000	111.00
DC6-48-60-18-8F	A	From Leg	1.000 4.00	0.000		0.000	111.00
2.4" Dia. x 6' Mount Pipe	A	From Leg	1.000 4.00	0.000		0.000	111.00
2.4" Dia. x 6' Mount Pipe	B	From Leg	0.000 4.00	0.000		0.000	111.00
2.4" Dia. x 6' Mount Pipe	C	From Leg	0.000 4.00	0.000		0.000	111.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.000 0.000		
3.5" pipe x 15-ft	A	From Leg	4.00 0.000 0.000	0.000	113.50
3.5" pipe x 15-ft	B	From Leg	4.00 0.000 0.000	0.000	113.50
3.5" pipe x 15-ft	C	From Leg	4.00 0.000 0.000	0.000	113.50
3.5" Dia. x 3-ft Pipe	A	From Leg	2.00 0.000 0.000	0.000	113.50
3.5" Dia. x 3-ft Pipe	B	From Leg	2.00 0.000 0.000	0.000	113.50
3.5" Dia. x 3-ft Pipe	C	From Leg	2.00 0.000 0.000	0.000	113.50
3.5" Dia. x 3-ft Pipe	A	From Leg	2.00 0.000 0.000	0.000	113.50
3.5" Dia. x 3-ft Pipe	B	From Leg	2.00 0.000 0.000	0.000	113.50
3.5" Dia. x 3-ft Pipe	C	From Leg	2.00 0.000 0.000	0.000	113.50
Side Arm Mount [SO 102-3]	C	None		0.000	113.50
Platform Mount [LP 1201-1]	C	None		0.000	111.00
70					
OG-860/1920/GPS-A	C	From Face	3.00 0.000 0.000	0.000	70.00
Side Arm Mount [SO 701-1]	C	From Face	1.50 0.000 0.000	0.000	70.00
*****					
Commscope MC-PK8-DSH	C	None		0.000	143.00
(2) 8' x 2" Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	143.00
(2) 8' x 2" Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	143.00
(2) 8' x 2" Mount Pipe	C	From Leg	4.00 0.000 0.000	0.000	143.00
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	143.00
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	143.00
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.000 0.000	0.000	143.00
TA08025-B604	A	From Leg	4.00 0.000 0.000	0.000	143.00
TA08025-B604	B	From Leg	4.00 0.000 0.000	0.000	143.00
TA08025-B604	C	From Leg	4.00	0.000	143.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft
			0.000 0.000		
TA08025-B605	A	From Leg	4.00 0.000 0.000	0.000	143.00
TA08025-B605	B	From Leg	4.00 0.000 0.000	0.000	143.00
TA08025-B605	C	From Leg	4.00 0.000 0.000	0.000	143.00
RDIDC-9181-PF-48	A	From Leg	4.00 0.000 0.000	0.000	143.00
*********					

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft
130								
VHLP1-23	A	Paraboloid w/Shroud (HP)	From Leg	4.00 0.000 2.000	20.000		130.00	1.27
VHLP2-23	C	Paraboloid w/Shroud (HP)	From Leg	4.00 0.000 2.000	-90.000		130.00	2.18
VHLP2.5-23	C	Paraboloid w/Shroud (HP)	From Leg	4.00 0.000 2.000	-45.000		130.00	2.92
***								

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
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

Comb. No.	Description
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 Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	147 - 133	Pole	Max Tension	39	0.14	-1.17	-0.01
			Max. Compression	26	-7476.65	35.95	462.69
			Max. Mx	20	-3679.28	44122.48	65.01
			Max. My	2	-3662.96	5.37	44740.33
			Max. Vy	20	-4566.78	44122.48	65.01
			Max. Vx	2	-4617.49	5.37	44740.33
			Max. Torque	20			-267.73
L2	133 - 85.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48950.29	921.95	2570.03
			Max. Mx	20	-22168.24	943446.52	-2984.36
			Max. My	2	-22108.52	-3774.14	956356.76
			Max. Vy	20	-27174.62	943446.52	-2984.36
			Max. Vx	2	-27420.71	-3774.14	956356.76
			Max. Torque	4			2851.25
L3	85.5 - 42.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60704.56	1347.70	2512.52
			Max. Mx	20	-32342.42	2155342.99	-7937.63
			Max. My	2	-32316.35	-8316.73	2177188.57
			Max. Vy	20	-30827.34	2155342.99	-7937.63
			Max. Vx	2	-31023.33	-8316.73	2177188.57
			Max. Torque	4			2833.92
L4	42.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78319.62	1811.78	2779.88
			Max. Mx	20	-47952.64	3706766.9	-13116.88

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	2	-47952.06	-13312.28	3737554.60
			Max. Vy	20	-34245.40	3706766.92	-13116.88
			Max. Vx	2	-34425.54	-13312.28	3737554.60
			Max. Torque	4			2667.98

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	27	78319.62	-15.39	8779.47
	Max. H_x	20	47995.13	34185.83	-105.94
	Max. H_z	2	47995.13	-102.53	34365.47
	Max. M_x	2	3737554.60	-102.53	34365.47
	Max. M_z	8	3704070.52	-34165.35	157.19
	Max. Torsion	4	2660.30	-17122.69	29848.81
	Min. Vert	7	35996.35	-29635.34	17354.42
	Min. H_x	8	47995.13	-34165.35	157.19
	Min. H_z	14	47995.13	102.09	-34240.86
	Min. M_x	14	-3718865.19	102.09	-34240.86
	Min. M_z	20	-3706766.92	34185.83	-105.94
	Min. Torsion	16	-2048.75	17134.46	-29741.36

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	39995.94	0.00	0.00	-367.82	-70.82	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	47995.13	102.53	-34365.47	-3737554.60	-13313.09	-2249.20
0.9 Dead+1.0 Wind 0 deg - No Ice	35996.35	102.53	-34365.46	-3663658.89	-12992.09	-2252.66
1.2 Dead+1.0 Wind 30 deg - No Ice	47995.13	17122.69	-29848.81	-3248586.11	-1856366.23	-2660.30
0.9 Dead+1.0 Wind 30 deg - No Ice	35996.35	17122.69	-29848.81	-3184326.38	-1819756.29	-2658.09
1.2 Dead+1.0 Wind 60 deg - No Ice	47995.13	29635.34	-17354.42	-1892284.37	-3213665.62	-2102.57
0.9 Dead+1.0 Wind 60 deg - No Ice	35996.35	29635.34	-17354.42	-1854776.14	-3150306.88	-2094.81
1.2 Dead+1.0 Wind 90 deg - No Ice	47995.13	34165.35	-157.19	-21439.97	-3704070.52	-941.24
0.9 Dead+1.0 Wind 90 deg - No Ice	35996.35	34165.34	-157.19	-20865.27	-3631056.14	-930.14
1.2 Dead+1.0 Wind 120 deg - No Ice	47995.13	29486.44	17106.79	1858688.84	-3194135.44	473.06
0.9 Dead+1.0 Wind 120 deg - No Ice	35996.35	29486.44	17106.79	1822123.13	-3131171.33	484.10
1.2 Dead+1.0 Wind 150 deg - No Ice	47995.13	16893.21	29653.78	3221513.52	-1826332.76	1211.50
0.9 Dead+1.0 Wind 150 deg - No Ice	35996.35	16893.21	29653.78	3158063.88	-1790341.95	1218.62
1.2 Dead+1.0 Wind 180 deg - No Ice	47995.13	-102.09	34240.86	3718865.19	12891.02	1752.49
0.9 Dead+1.0 Wind 180 deg - No Ice	35996.35	-102.09	34240.86	3645633.63	12677.96	1754.46

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 210 deg - No Ice	47995.13	-17134.46	29741.36	3232366.81	1857761.46	2048.75
0.9 Dead+1.0 Wind 210 deg - No Ice	35996.35	-17134.46	29741.36	3168699.11	1821212.84	2045.73
1.2 Dead+1.0 Wind 240 deg - No Ice	47995.13	-29594.33	17330.13	1887936.29	3207572.84	1949.74
0.9 Dead+1.0 Wind 240 deg - No Ice	35996.35	-29594.33	17330.13	1850753.73	3144420.80	1942.54
1.2 Dead+1.0 Wind 270 deg - No Ice	47995.13	-34185.83	105.94	13117.09	3706766.92	601.05
0.9 Dead+1.0 Wind 270 deg - No Ice	35996.35	-34185.82	105.94	12980.37	3633752.35	589.81
1.2 Dead+1.0 Wind 300 deg - No Ice	47995.13	-29505.56	-17156.51	-1866849.55	3196587.05	-577.88
0.9 Dead+1.0 Wind 300 deg - No Ice	35996.35	-29505.56	-17156.51	-1829828.37	3133637.80	-589.54
1.2 Dead+1.0 Wind 330 deg - No Ice	47995.13	-16910.00	-29760.05	-3237688.25	1828360.29	-1539.85
0.9 Dead+1.0 Wind 330 deg - No Ice	35996.35	-16910.00	-29760.05	-3173610.65	1792414.45	-1548.65
1.2 Dead+1.0 Ice+1.0 Temp	78319.62	-0.01	-0.03	-2779.88	1811.78	0.02
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	78319.62	15.39	-8779.47	-1069425.53	-219.05	-449.41
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	78319.62	4375.51	-7618.00	-928712.07	-528083.15	-570.45
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	78319.62	7579.10	-4418.90	-540511.39	-916432.04	-484.28
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	78319.62	8743.64	-25.94	-6726.83	-1057422.94	-267.82
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	78319.62	7554.61	4378.79	528832.00	-912883.20	20.34
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	78319.62	4338.64	7585.30	917982.65	-522802.35	200.27
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	78319.62	-15.61	8756.31	1059895.71	4062.10	349.58
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	78319.62	-4378.26	7598.16	919709.01	532325.61	451.61
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	78319.62	-7571.51	4415.16	534039.25	919056.95	460.84
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	78319.62	-8747.56	16.25	-690.33	1061861.42	202.49
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	78319.62	-7558.51	-4388.63	-536277.98	917312.85	-43.18
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	78319.62	-4342.22	-7605.10	-926991.72	527174.34	-267.78
Dead+Wind 0 deg - Service	39995.94	22.25	-7465.06	-804800.40	-2911.85	-505.54
Dead+Wind 30 deg - Service	39995.94	3719.50	-6483.90	-699579.00	-399646.65	-601.23
Dead+Wind 60 deg - Service	39995.94	6437.58	-3769.78	-407615.86	-691797.09	-478.66
Dead+Wind 90 deg - Service	39995.94	7421.64	-34.11	-4923.03	-797292.20	-220.29
Dead+Wind 120 deg - Service	39995.94	6405.27	3716.05	399734.32	-687552.21	95.93
Dead+Wind 150 deg - Service	39995.94	3669.70	6441.58	693071.60	-393165.89	263.96
Dead+Wind 180 deg - Service	39995.94	-22.15	7438.02	800123.75	2715.48	391.30
Dead+Wind 210 deg - Service	39995.94	-3722.05	6460.58	695432.29	399826.81	465.09
Dead+Wind 240 deg - Service	39995.94	-6428.68	3764.51	406028.32	690356.42	448.26
Dead+Wind 270 deg - Service	39995.94	-7426.08	22.99	2502.88	797744.93	146.84
Dead+Wind 300 deg - Service	39995.94	-6409.41	-3726.84	-402110.78	687961.90	-120.66
Dead+Wind 330 deg - Service	39995.94	-3673.34	-6464.64	-697187.32	393500.85	-341.62

Solution Summary

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
1	0.00	-39995.94	0.00	0.00	39995.94	0.00	0.000%
2	102.53	-47995.13	-34365.46	-102.53	47995.13	34365.47	0.000%
3	102.53	-35996.35	-34365.46	-102.53	35996.35	34365.46	0.000%
4	17122.69	-47995.13	-29848.81	-17122.69	47995.13	29848.81	0.000%
5	17122.69	-35996.35	-29848.81	-17122.69	35996.35	29848.81	0.000%
6	29635.34	-47995.13	-17354.42	-29635.34	47995.13	17354.42	0.000%
7	29635.34	-35996.35	-17354.42	-29635.34	35996.35	17354.42	0.000%
8	34165.34	-47995.13	-157.19	-34165.35	47995.13	157.19	0.000%
9	34165.34	-35996.35	-157.19	-34165.34	35996.35	157.19	0.000%
10	29486.44	-47995.13	17106.79	-29486.44	47995.13	-17106.79	0.000%
11	29486.44	-35996.35	17106.79	-29486.44	35996.35	-17106.79	0.000%
12	16893.21	-47995.13	29653.78	-16893.21	47995.13	-29653.78	0.000%
13	16893.21	-35996.35	29653.78	-16893.21	35996.35	-29653.78	0.000%
14	-102.09	-47995.13	34240.85	102.09	47995.13	-34240.86	0.000%
15	-102.09	-35996.35	34240.85	102.09	35996.35	-34240.86	0.000%
16	-17134.46	-47995.13	29741.36	17134.46	47995.13	-29741.36	0.000%
17	-17134.46	-35996.35	29741.36	17134.46	35996.35	-29741.36	0.000%
18	-29594.33	-47995.13	17330.13	29594.33	47995.13	-17330.13	0.000%
19	-29594.33	-35996.35	17330.13	29594.33	35996.35	-17330.13	0.000%
20	-34185.82	-47995.13	105.94	34185.83	47995.13	-105.94	0.000%
21	-34185.82	-35996.35	105.94	34185.82	35996.35	-105.94	0.000%
22	-29505.56	-47995.13	-17156.51	29505.56	47995.13	17156.51	0.000%
23	-29505.56	-35996.35	-17156.51	29505.56	35996.35	17156.51	0.000%
24	-16910.00	-47995.13	-29760.05	16910.00	47995.13	29760.05	0.000%
25	-16910.00	-35996.35	-29760.05	16910.00	35996.35	29760.05	0.000%
26	0.00	-78319.62	0.00	0.01	78319.62	0.03	0.000%
27	15.39	-78319.62	-8779.29	-15.39	78319.62	8779.47	0.000%
28	4375.42	-78319.62	-7617.85	-4375.51	78319.62	7618.00	0.000%
29	7578.95	-78319.62	-4418.81	-7579.10	78319.62	4418.90	0.000%
30	8743.47	-78319.62	-25.94	-8743.64	78319.62	25.94	0.000%
31	7554.46	-78319.62	4378.71	-7554.61	78319.62	-4378.79	0.000%
32	4338.56	-78319.62	7585.15	-4338.64	78319.62	-7585.30	0.000%
33	-15.61	-78319.62	8756.14	15.61	78319.62	-8756.31	0.000%
34	-4378.17	-78319.62	7598.01	4378.26	78319.62	-7598.16	0.000%
35	-7571.36	-78319.62	4415.07	7571.51	78319.62	-4415.16	0.000%
36	-8747.39	-78319.62	16.25	8747.56	78319.62	-16.25	0.000%
37	-7558.36	-78319.62	-4388.54	7558.51	78319.62	4388.63	0.000%
38	-4342.13	-78319.62	-7604.95	4342.22	78319.62	7605.10	0.000%
39	22.25	-39995.94	-7465.05	-22.25	39995.94	7465.06	0.000%
40	3719.50	-39995.94	-6483.90	-3719.50	39995.94	6483.90	0.000%
41	6437.57	-39995.94	-3769.78	-6437.58	39995.94	3769.78	0.000%
42	7421.62	-39995.94	-34.11	-7421.64	39995.94	34.11	0.000%
43	6405.26	-39995.94	3716.04	-6405.27	39995.94	-3716.05	0.000%
44	3669.70	-39995.94	6441.58	-3669.70	39995.94	-6441.58	0.000%
45	-22.15	-39995.94	7438.01	22.15	39995.94	-7438.02	0.000%
46	-3722.05	-39995.94	6460.58	3722.05	39995.94	-6460.58	0.000%
47	-6428.68	-39995.94	3764.51	6428.68	39995.94	-3764.51	0.000%
48	-7426.07	-39995.94	22.99	7426.08	39995.94	-22.99	0.000%
49	-6409.41	-39995.94	-3726.84	6409.41	39995.94	3726.84	0.000%
50	-3673.34	-39995.94	-6464.64	3673.34	39995.94	6464.64	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00065260
3	Yes	5	0.00000001	0.00030255
4	Yes	7	0.00000001	0.00011268
5	Yes	6	0.00000001	0.00038357
6	Yes	7	0.00000001	0.00012166
7	Yes	6	0.00000001	0.00041726

8	Yes	5	0.00000001	0.00059635
9	Yes	5	0.00000001	0.00026254
10	Yes	7	0.00000001	0.00011725
11	Yes	6	0.00000001	0.00040201
12	Yes	7	0.00000001	0.00011384
13	Yes	6	0.00000001	0.00038931
14	Yes	5	0.00000001	0.00078192
15	Yes	5	0.00000001	0.00035463
16	Yes	7	0.00000001	0.00012144
17	Yes	6	0.00000001	0.00041707
18	Yes	7	0.00000001	0.00011371
19	Yes	6	0.00000001	0.00038766
20	Yes	5	0.00000001	0.00009320
21	Yes	5	0.00000001	0.00003258
22	Yes	7	0.00000001	0.00011545
23	Yes	6	0.00000001	0.00039473
24	Yes	7	0.00000001	0.00012003
25	Yes	6	0.00000001	0.00041223
26	Yes	4	0.00000001	0.00004066
27	Yes	6	0.00004717	0.00030897
28	Yes	6	0.00004664	0.00079581
29	Yes	6	0.00004663	0.00084386
30	Yes	6	0.00004719	0.00030296
31	Yes	6	0.00004667	0.00079235
32	Yes	6	0.00004667	0.00078117
33	Yes	6	0.00004717	0.00030378
34	Yes	6	0.00004664	0.00082737
35	Yes	6	0.00004664	0.00079142
36	Yes	6	0.00004718	0.00030265
37	Yes	6	0.00004664	0.00081846
38	Yes	6	0.00004665	0.00082884
39	Yes	4	0.00000001	0.00073083
40	Yes	5	0.00000001	0.00020325
41	Yes	5	0.00000001	0.00024933
42	Yes	4	0.00000001	0.00056483
43	Yes	5	0.00000001	0.00022192
44	Yes	5	0.00000001	0.00020452
45	Yes	4	0.00000001	0.00066778
46	Yes	5	0.00000001	0.00024505
47	Yes	5	0.00000001	0.00020642
48	Yes	4	0.00000001	0.00051635
49	Yes	5	0.00000001	0.00021434
50	Yes	5	0.00000001	0.00023736

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147 - 133	35.157	40	2.036	0.007
L2	133 - 85.5	29.218	40	1.997	0.006
L3	89.25 - 42.75	12.831	40	1.443	0.002
L4	47.5 - 0	3.440	40	0.682	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
143.00	Commscope MC-PK8-DSH	40	33.451	2.029	0.008	30774
132.00	VHLP1-23	40	28.800	1.992	0.008	10421
130.00	LLPX310R-V1 w/ Mount Pipe	40	27.966	1.981	0.008	9327
124.00	BXA-70063/6CFx2 w/ Mount Pipe	40	25.498	1.935	0.007	7151

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.00	(2) FD9R6004/2C-3L	40	24.285	1.906	0.007	6405
113.50	3.5" pipe x 15-ft	40	21.332	1.821	0.006	5080
111.00	7770.00 w/ Mount Pipe	40	20.375	1.789	0.006	4752
70.00	OG-860/1920/GPS-A	40	7.619	1.088	0.001	2954

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147 - 133	163.023	2	9.465	0.031
L2	133 - 85.5	135.518	2	9.289	0.029
L3	89.25 - 42.75	59.575	4	6.714	0.010
L4	47.5 - 0	15.985	4	3.170	0.003

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
143.00	Commscope MC-PK8-DSH	2	155.122	9.434	0.036	7028
132.00	VHLP1-23	2	133.580	9.265	0.034	2373
130.00	LLPX310R-V1 w/ Mount Pipe	2	129.718	9.211	0.034	2120
124.00	BXA-70063/6CFx2 w/ Mount Pipe	2	118.284	8.999	0.032	1616
121.00	(2) FD9R6004/2C-3L	2	112.667	8.868	0.030	1444
113.50	3.5" pipe x 15-ft	2	98.982	8.472	0.026	1140
111.00	7770.00 w/ Mount Pipe	2	94.549	8.321	0.024	1064
70.00	OG-860/1920/GPS-A	4	35.402	5.061	0.006	645

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	147 - 133 (1)	TP12.75x12.75x0.5	14.00	0.00	0.0	19.242	-3662.96	606131.00	0.006
L2	133 - 85.5 (2)	TP29.418x19.537x0.313	47.50	0.00	0.0	28.503	-22101.70	1667390.00	0.013
L3	85.5 - 42.75 (3)	TP37.687x27.477x0.375	46.50	0.00	0.0	43.795	-32311.90	2562000.00	0.013
L4	42.75 - 0 (4)	TP45.83x35.894x0.438	47.50	0.00	0.0	63.947	-47952.00	3740880.00	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	147 - 133 (1)	TP12.75x12.75x0.5	44740.33	197066.67	0.227	0.00	197066.67	0.000
L2	133 - 85.5 (2)	TP29.418x19.537x0.313	956375.00	1171591.67	0.816	0.00	1171591.67	0.000

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L3	85.5 - 42.75 (3)	TP37.687x27.477x0.375	2179016.67	2255016.67	0.966	0.00	2255016.67	0.000
L4	42.75 - 0 (4)	TP45.83x35.894x0.438	3741575.00	4014483.33	0.932	0.00	4014483.33	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	147 - 133 (1)	TP12.75x12.75x0.5	4617.50	181839.00	0.025	0.03	195840.83	0.000
L2	133 - 85.5 (2)	TP29.418x19.537x0.313	27458.30	500218.00	0.055	2837.12	1246333.33	0.002
L3	85.5 - 42.75 (3)	TP37.687x27.477x0.375	31070.80	768600.00	0.040	2669.88	2452091.67	0.001
L4	42.75 - 0 (4)	TP45.83x35.894x0.438	34471.40	1122260.00	0.031	2660.26	4481041.67	0.001

Pole Interaction Design Data

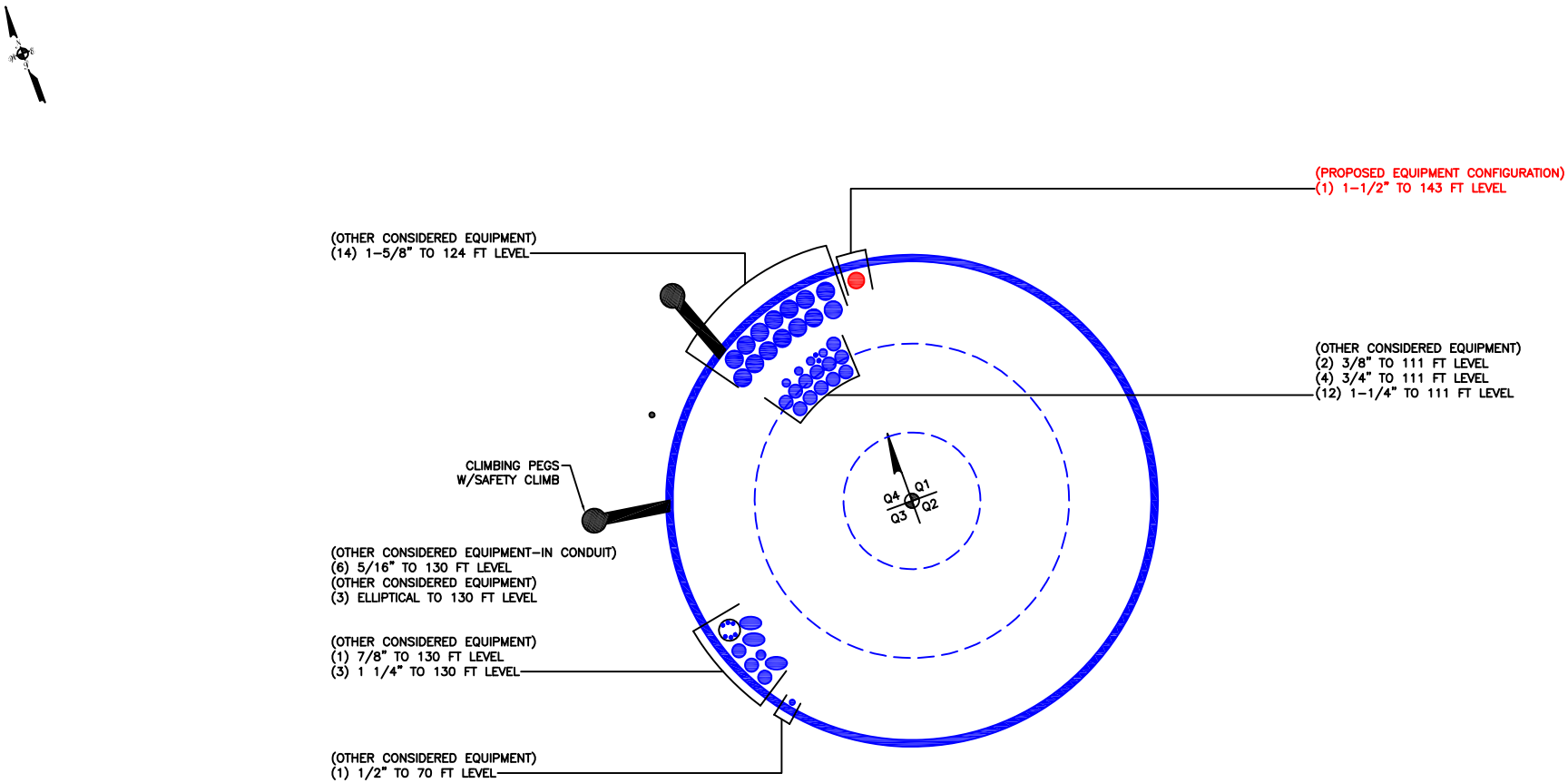
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	147 - 133 (1)	0.006	0.227	0.000	0.025	0.000	0.234	1.050	4.8.2
L2	133 - 85.5 (2)	0.013	0.816	0.000	0.055	0.002	0.833	1.050	4.8.2
L3	85.5 - 42.75 (3)	0.013	0.966	0.000	0.040	0.001	0.981	1.050	4.8.2
L4	42.75 - 0 (4)	0.013	0.932	0.000	0.031	0.001	0.946	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	147 - 133	Pole	TP12.75x12.75x0.5	1	-3662.96	636437.52	22.3	Pass
L2	133 - 85.5	Pole	TP29.418x19.537x0.313	2	-22101.70	1750759.42	79.3	Pass
L3	85.5 - 42.75	Pole	TP37.687x27.477x0.375	3	-32311.90	2690099.88	93.4	Pass
L4	42.75 - 0	Pole	TP45.83x35.894x0.438	4	-47952.00	3927923.82	90.1	Pass
							Summary	
						Pole (L3)	93.4	Pass
						RATING =	**93.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 143 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(14) 1-5/8" TO 124 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 3/8" TO 111 FT LEVEL
(4) 3/4" TO 111 FT LEVEL
(12) 1-1/4" TO 111 FT LEVEL
CLIMBING PEGS
W/SAFETY CLIMB
Q4
Q1
Q3
Q2
(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(6) 5/16" TO 130 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(3) ELLIPTICAL TO 130 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 130 FT LEVEL
(3) 1 1/4" TO 130 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 70 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Monopole Flange Plate Connection

Elevation = 133 ft.

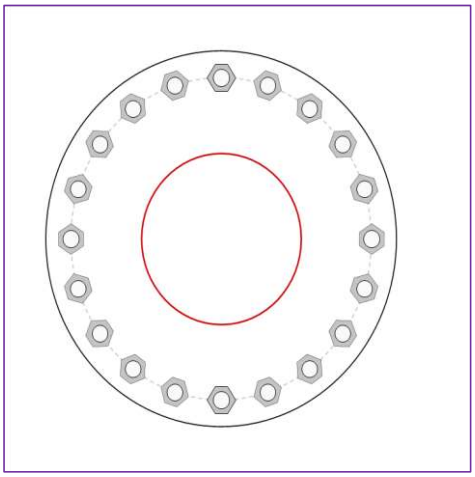
BU #	876310
Site Name	
Order #	553364

TIA-222 Revision	H

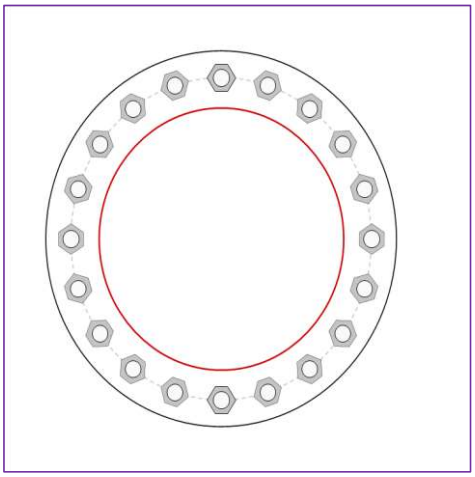
Applied Loads	
Moment (kip-ft)	44.74
Axial Force (kips)	3.66
Shear Force (kips)	4.62

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(20) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=120 ksi) on 24" BC

Top Plate Data

28" OD x 1" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Bottom Plate Data

28" OD x 1" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

12.75" x 0.5" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bottom Pole Data

19.537" x 0.3125" 12-sided pole (A607-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	4.29	
Allowable (kips)	87.21	
Stress Rating:	**4.7%**	Pass

Top Plate Capacity

Max Stress (ksi):	19.76	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	**41.8%**	Pass
Tension Side Stress Rating:	**51.8%**	Pass

Bottom Plate Capacity

Max Stress (ksi):	7.71	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	**16.3%**	Pass
Tension Side Stress Rating:	**9.3%**	Pass

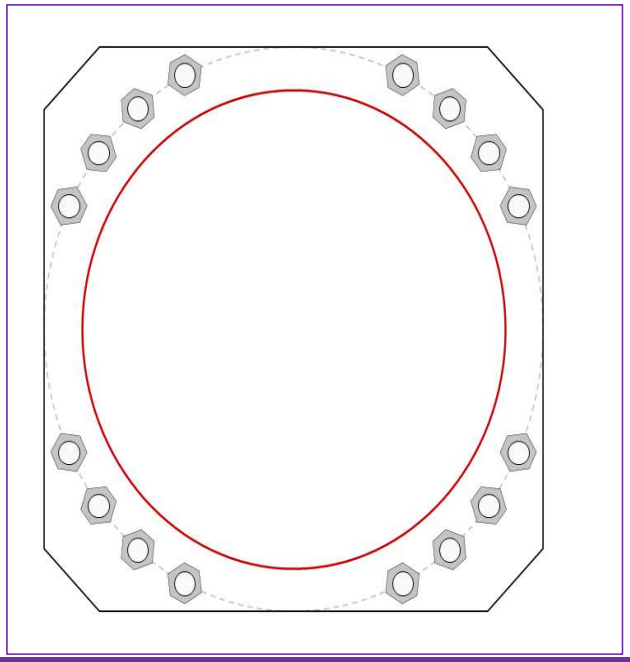
Monopole Base Plate Connection

Site Info	
BU #	876310
Site Name	
Order #	553364

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0

Applied Loads	
Moment (kip-ft)	3741.58
Axial Force (kips)	47.95
Shear Force (kips)	34.47

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 54" BC

Anchor Spacing: 6 in

Base Plate Data

54" W x 3" Plate (A572-50; Fy=50 ksi, Fu=65 ksi); Clip: 6 in

Stiffener Data

N/A

Pole Data

45.83" x 0.4375" 12-sided pole (A607-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

Pu_t = 204.72	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.15	ϕVn = 149.1	**80.0%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	38.92	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**82.4%**	**Pass**

Pier and Pad Foundation

BU # :	876310
Site Name:	
App. Number:	553364

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	48	kips
Base Shear, Vu_comp:	34	kips
Moment, M_u:	3742	ft-kips
Tower Height, **H**:	147	ft
BP Dist. Above Fdn, bp_{dist}:	2.5	in
Bolt Circle / Bearing Plate Width, **BC**:	54	in

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating***	**Check**
Lateral (Sliding) (kips)	193.76	34.00	**16.7%**	**Pass**
Bearing Pressure (ksf)	30.00	7.22	**24.1%**	**Pass**
*Overturning (kip*ft)*	4409.33	3919.08	**88.9%**	**Pass**
*Pad Flexure (kip*ft)*	8614.79	2370.49	**26.2%**	**Pass**
Pad Shear - 1-way (kips)	1244.56	320.48	**24.5%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.000	**0.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	11050.07	0.00	**0.0%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Structural Rating*:	**26.2%**
Soil Rating*:	**88.9%**

Pad Properties		
Depth, **D**:	4.5	ft
Pad Width, W_1:	23	ft
Pad Thickness, **T**:	5	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	11	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	23	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δc:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	165	pcf
Ultimate Gross Bearing, Qult:	40.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:	74	
Base Friction, μ:		
Neglected Depth, **N**:		ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	N/A	ft

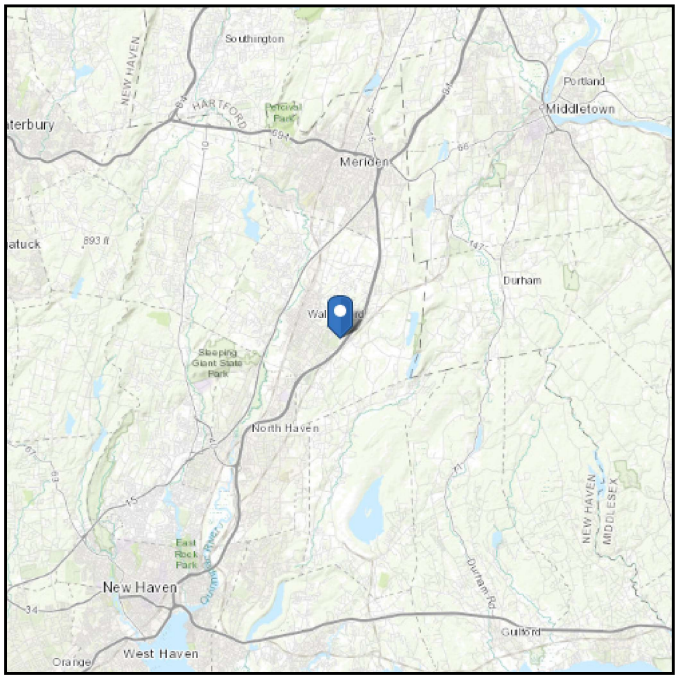
<--Toggle between Gross and Net

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 243.75 ft (NAVD 88)
Latitude: 41.443711
Longitude: -72.796267



Wind

Results:

Wind Speed:	125 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	94 Vmph
100-year MRI	102 Vmph

Data Accessed: Fri May 21 2021

Date Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

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.

Ice

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:	Fri May 21 2021

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.

CROWN CASTLE

BU:	876310	Structure:	A
WO:	1966259		
Order:	553364	Rev:	1

Location

	Decimal Degrees		Deg	Min	Sec
Lat:	41.443711	+	41	26	37.36
Long:	-72.796267	-	72	47	46.56

Code and Site Parameters

Seismic Design Code:	ASCE 7-10	
Site Soil:	D	Stiff Soil (Default)
Risk Category:	II	

USGS Seismic Reference			
	S_S:	0.1830	g
	S_1:	0.0630	g
	T_L:	6	s

Seismic Design Category Determination

Importance Factor, I_e:	1	
Acceleration-based site coefficient, F_a:	1.6000	
Velocity-based site coefficient, F_v:	2.4000	
Design spectral response acceleration short period, S_{DS}:	0.1952	g
Design spectral response acceleration 1 s period, S_{D1}:	0.1008	g
Seismic Design Category Based on S_{DS}:	B	
Seismic Design Category Based on S_{D1}:	B	
Seismic Design Category Based on S_1:	N/A	
Controlling Seismic Design Category:	B	

Exhibit E

Mount Analysis

Date: **July 30, 2021**

Darcy Tarr
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
704-405-6589

Trylon
1825 W. Walnut Hill Lane,
Suite 302
Irving, TX 75038
214-930-1730

Subject:	**Mount Replacement Analysis Report**	
Carrier Designation:	**Dish Network Equipment Change Out**	
	Carrier Site Number:	BOHVN00020A
	Carrier Site Name:	CT-CCI-T-876310
Crown Castle Designation:	**Crown Castle BU Number:**	876310
	Crown Castle Site Name:	BEAUMONT FARM
	Crown Castle JDE Job Number:	645170
	Crown Castle Order Number:	553364 Rev. 1
Engineering Firm Designation:	**Trylon Report Designation:**	189036
Site Data:	**945 East Center Street, Wallingford, New Haven County, CT, 06492 Latitude 41°26'37.36" Longitude -72°47'46.56"**	
Structure Information:	**Tower Height & Type:**	**147.0 ft Monopole**
	Mount Elevation:	**143.0 ft**
	Mount Type:	**8.0 ft Platform**

Dear Darcy Tarr,

Trylon is pleased to submit this **"Mount Replacement Analysis Report"** to determine the structural integrity of Dish Network's 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 for fall protection or rigging is not part of this document.

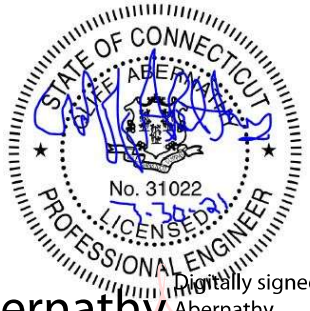
The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Platform **Sufficient**
***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Steve Mustaro, P.E.

Respectfully Submitted by:
Cliff Abernathy, P.E.



Cliff Abernathy Digitally signed by Cliff Abernathy
Date: 2021.07.30 16:16:43 -04'00'

TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed three sector 8.0 ft Platform, designed by Commscope.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 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
Seismic S_s:	0.183
Seismic S_1:	0.063
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
143.0	143.0	3	JMA WIRELESS	MX08FRO665-21	8.0 ft Platform [Commscope MC-PK8-DSH]
		3	FUJITSU	TA08025-B604	
		3	FUJITSU	TA08025-B605	
		1	RAYCAP	RDIDC-9181-PF-48	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	Dish Network Application	553364 Rev. 1	CCI Sites
Mount Manufacturer Drawings	Commscope	MC-PK8-DSH	Trylon

3.1) Analysis Method

RISA-3D (Version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A tool internally developed, using Microsoft Excel, by Trylon was used to calculate wind loading on all appurtenances, dishes, and mount members for various load cases. Selected output from the analysis is included in Appendix B.

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

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) The 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) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Platform, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Mount Pipe(s)	MP1	143.0	35.3	Pass
	Horizontal(s)	H3		11.8	Pass
	Standoff(s)	M2		49.0	Pass
	Bracing(s)	M1		37.9	Pass
	Handrail(s)	M22		14.7	Pass
	Mount Connection(s)	-		17.5	Pass

Structure Rating (max from all components) =	49.0%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) Rating per TIA-222-H, Section 15.5

4.1) Recommendations

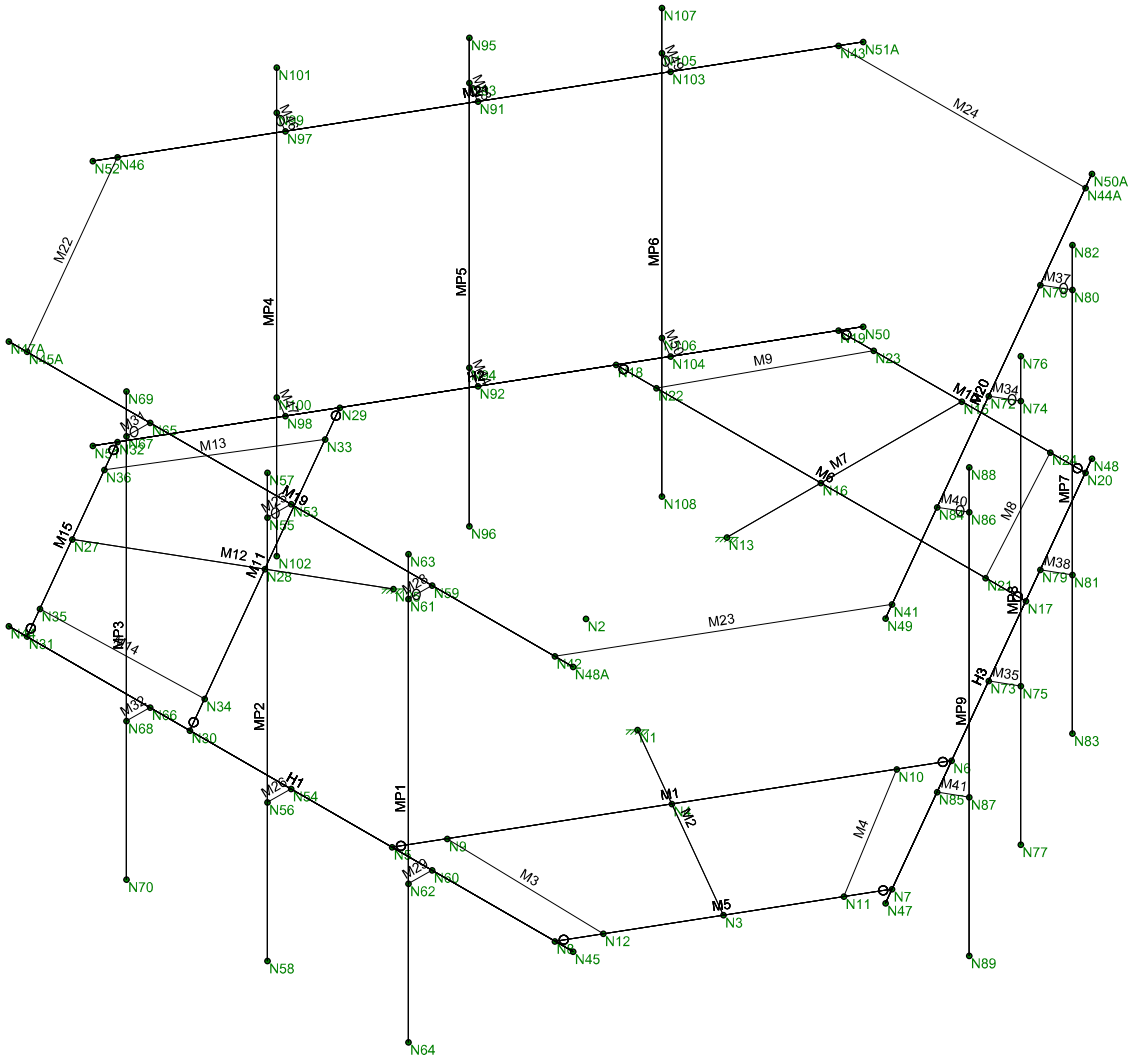
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope MC-PK8-DSH.

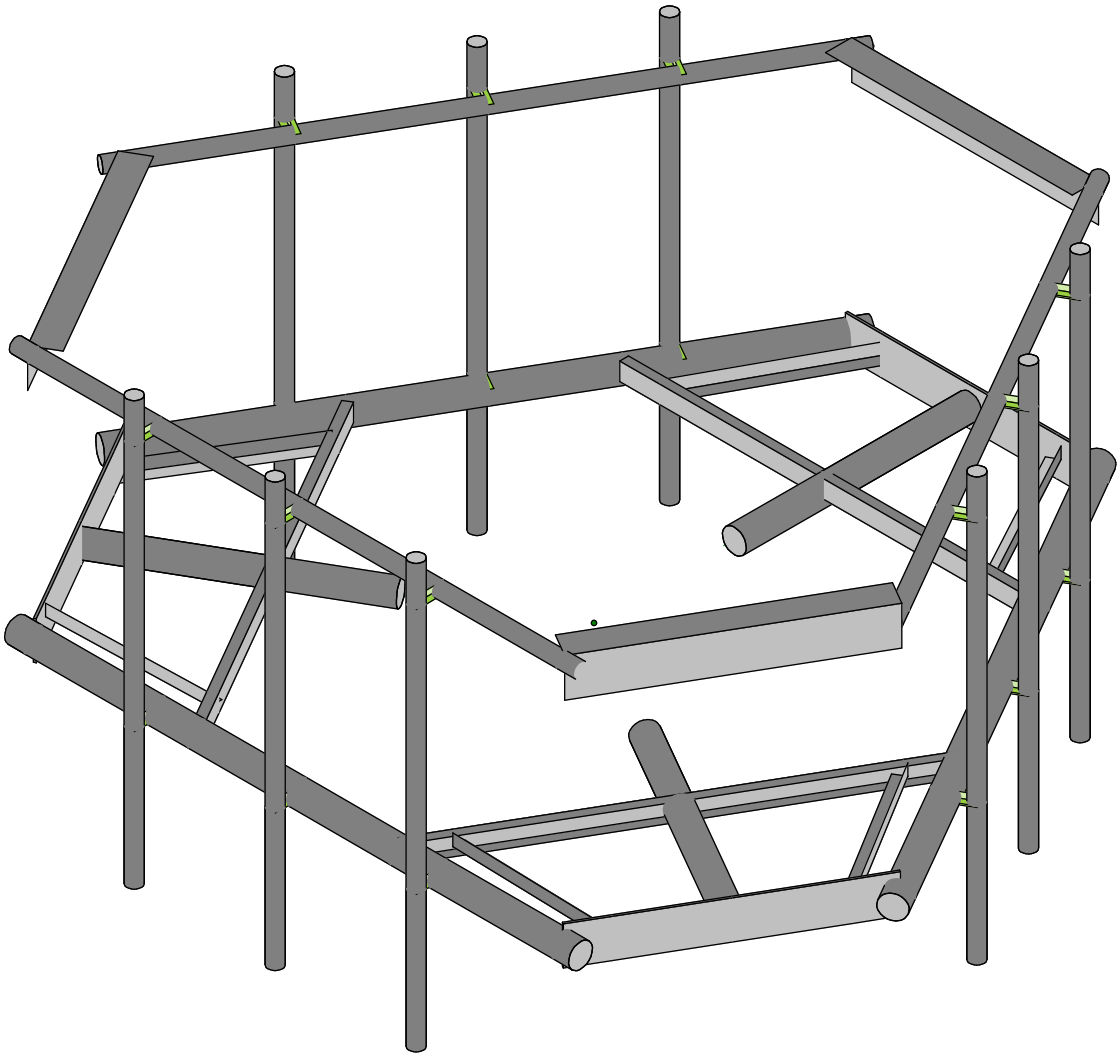
No structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Trylon	876310	Wireframe
SMM		July 30, 2021 at 10:27 AM
189036		876310_loaded.r3d



Trylon	876310	Render
SMM		July 30, 2021 at 10:27 AM
189036		876310_loaded.r3d

APPENDIX B

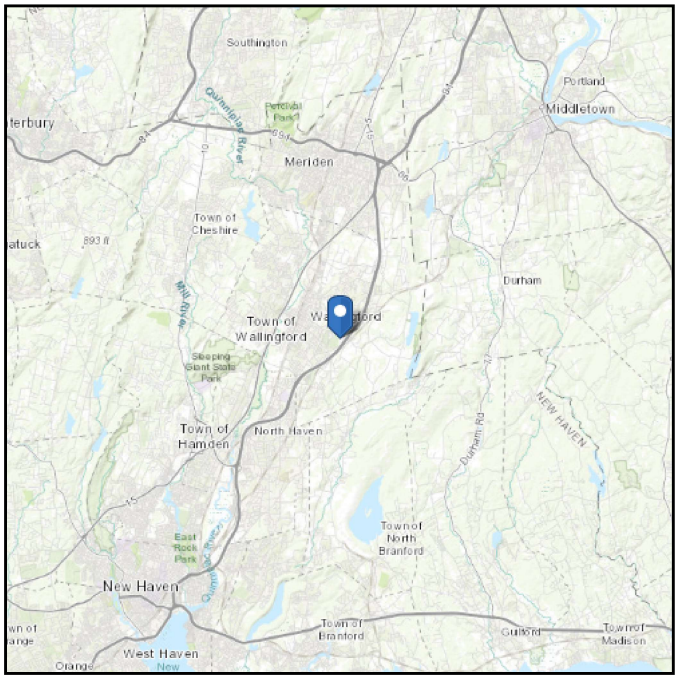
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 243.75 ft (NAVD 88)
Latitude: 41.443711
Longitude: -72.796267



Ice

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: Fri Jul 30 2021

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.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

CONNECTICUT DESIGN CRITERIA - STATE

Revison: R-397 7/2/2021

CT is NOT a Home Rule State; Tab added only for Design Criteria

(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS

				Wind Design Parameters								
Municipality	**Ground Snow Load**	**MCE Spectral Accelerations** (%g)		**Ultimate Design Wind Speeds,** V_{ult} (mph)			**Nominal Design Wind Speeds,** V_{asd} (mph)			**Wind-Borne Debris Regions**[1]		**Hurricane-Prone Regions**
		S_s	S_1	Risk Cat.I	Risk Cat.II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV	Risk Cat. II & III except Occup I-2	Risk Cat III Occup I-2 & Risk Cat. IV	
Wallingford	30	0.183	0.063	115	125	135	89	97	105			Yes

1. Wind-Borne Debris Regions:

Type A: Full Municipality.

Type B: Areas south of Interstate 95.

Exception: Areas that are more than one mile from the coastal mean high-water line as certified by a registered design professional may be classified as being outside a wind-borne debris region.

Type C: Areas south of Metro North/Amtrak Railroad to the west of the Quinnipiac River and areas south of Interstate 95 to the east of the Quinnipiac River.

Exception: Areas that are more than one mile from the coastal mean high-water line as certified by a registered design professional may be classified as being outside a wind-borne debris region.

Trylon
1825 W. Walnut Hill Lane Suite 120
Irving, TX 75038

TIA LOAD CALCULATOR 2.0

PROJECT DATA	
Job Code:	189036
Carrier Site ID:	BU# 876310
Carrier Site Name:	BEAUMONT FARM

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	2018 CSBC
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	143.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	147.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Default	--
Ground Elevation:	243.75	ft.

TOPOGRAPHIC DATA		
Topographic Category:	1.00	--
Topographic Feature:	N/A	--
Crest Point Elevation:	0.00	ft.
Base Point Elevation:	0.00	ft.
Crest to Mid-Height (L/2):	0.00	ft.
Distance from Crest (x):	0.00	ft.
Base Topo Factor (K_{zt}):	1.00	--
Mount Topo Factor (K_{zt}):	1.00	--

WIND PARAMETERS		
Design Wind Speed:	125	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.36	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	51.40	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	1.50	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	51.40	psf
Mount Ice Thickness (t_{iz}):	1.74	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	92.52	psf
Round Member Pressure:	55.51	psf
Ice Wind Pressure:	7.54	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.18	g
1 Second Accel (S_1):	0.06	g
Short Period Des. (S_{DS}):	0.20	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.10	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

#	Description
1	1.4DL
2	1.2DL + 1WL 0 AZI
3	1.2DL + 1WL 30 AZI
4	1.2DL + 1WL 45 AZI
5	1.2DL + 1WL 60 AZI
6	1.2DL + 1WL 90 AZI
7	1.2DL + 1WL 120 AZI
8	1.2DL + 1WL 135 AZI
9	1.2DL + 1WL 150 AZI
10	1.2DL + 1WL 180 AZI
11	1.2DL + 1WL 210 AZI
12	1.2DL + 1WL 225 AZI
13	1.2DL + 1WL 240 AZI
14	1.2DL + 1WL 270 AZI
15	1.2DL + 1WL 300 AZI
16	1.2DL + 1WL 315 AZI
17	1.2DL + 1WL 330 AZI
18	0.9DL + 1WL 0 AZI
19	0.9DL + 1WL 30 AZI
20	0.9DL + 1WL 45 AZI
21	0.9DL + 1WL 60 AZI
22	0.9DL + 1WL 90 AZI
23	0.9DL + 1WL 120 AZI
24	0.9DL + 1WL 135 AZI
25	0.9DL + 1WL 150 AZI
26	0.9DL + 1WL 180 AZI
27	0.9DL + 1WL 210 AZI
28	0.9DL + 1WL 225 AZI
29	0.9DL + 1WL 240 AZI
30	0.9DL + 1WL 270 AZI
31	0.9DL + 1WL 300 AZI
32	0.9DL + 1WL 315 AZI
33	0.9DL + 1WL 330 AZI
34	1.2DL + 1DLi + 1WLi 0 AZI
35	1.2DL + 1DLi + 1WLi 30 AZI
36	1.2DL + 1DLi + 1WLi 45 AZI
37	1.2DL + 1DLi + 1WLi 60 AZI
38	1.2DL + 1DLi + 1WLi 90 AZI
39	1.2DL + 1DLi + 1WLi 120 AZI
40	1.2DL + 1DLi + 1WLi 135 AZI
41	1.2DL + 1DLi + 1WLi 150 AZI

#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 1.0E 30 AZI
52	(1.2+0.2Sds) + 1.0E 45 AZI
53	(1.2+0.2Sds) + 1.0E 60 AZI
54	(1.2+0.2Sds) + 1.0E 90 AZI
55	(1.2+0.2Sds) + 1.0E 120 AZI
56	(1.2+0.2Sds) + 1.0E 135 AZI
57	(1.2+0.2Sds) + 1.0E 150 AZI
58	(1.2+0.2Sds) + 1.0E 180 AZI
59	(1.2+0.2Sds) + 1.0E 210 AZI
60	(1.2+0.2Sds) + 1.0E 225 AZI
61	(1.2+0.2Sds) + 1.0E 240 AZI
62	(1.2+0.2Sds) + 1.0E 270 AZI
63	(1.2+0.2Sds) + 1.0E 300 AZI
64	(1.2+0.2Sds) + 1.0E 315 AZI
65	(1.2+0.2Sds) + 1.0E 330 AZI
66	(0.9-0.2Sds) + 1.0E 0 AZI
67	(0.9-0.2Sds) + 1.0E 30 AZI
68	(0.9-0.2Sds) + 1.0E 45 AZI
69	(0.9-0.2Sds) + 1.0E 60 AZI
70	(0.9-0.2Sds) + 1.0E 90 AZI
71	(0.9-0.2Sds) + 1.0E 120 AZI
72	(0.9-0.2Sds) + 1.0E 135 AZI
73	(0.9-0.2Sds) + 1.0E 150 AZI
74	(0.9-0.2Sds) + 1.0E 180 AZI
75	(0.9-0.2Sds) + 1.0E 210 AZI
76	(0.9-0.2Sds) + 1.0E 225 AZI
77	(0.9-0.2Sds) + 1.0E 240 AZI
78	(0.9-0.2Sds) + 1.0E 270 AZI
79	(0.9-0.2Sds) + 1.0E 300 AZI
80	(0.9-0.2Sds) + 1.0E 315 AZI
81	(0.9-0.2Sds) + 1.0E 330 AZI
82-88	1.2D + 1.5 Lv1

#	Description
89	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP1
90	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP1
91	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP1
92	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP1
93	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP1
94	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP1
95	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP1
96	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP1
97	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP1
98	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP1
99	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP1
100	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP1
101	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP1
102	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP1
103	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP1
104	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP1
105	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP2
106	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP2
107	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP2
108	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP2
109	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP2
110	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP2
111	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP2
112	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP2
113	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP2
114	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP2
115	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP2
116	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP2
117	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP2
118	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP2
119	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP2
120	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP2

#	Description
121	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP3
122	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP3
123	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP3
124	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP3
125	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP3
126	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP3
127	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP3
128	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP3
129	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP3
130	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP3
131	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP3
132	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP3
133	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP3
134	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP3
135	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP3
136	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP3
137	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP4
138	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP4
139	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP4
140	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP4
141	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP4
142	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP4
143	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP4
144	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP4
145	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP4
146	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP4
147	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP4
148	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP4
149	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP4
150	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP4
151	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP4
152	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP4

*This page shows an example of maintenance loads for (4) pipes, the number of mount pipe LCs may vary per site

EQUIPMENT LOADING

Appurtenance Name/Location	Qty.	Elevation [ft]	--	EPA_N (ft2)	EPA_T (ft2)	Weight (lbs)
MX08FRO665-21	3	143	No Ice	8.01	3.21	82.50
MP1/MP4/MP7, 0/120/240	--	--	w/ Ice	9.62	4.62	285.43
TA08025-B604	3	143	No Ice	1.96	0.98	63.90
MP1/MP4/MP7, 0/120/240	--	--	w/ Ice	2.39	1.31	70.18
TA08025-B605	3	143	No Ice	1.96	1.13	75.00
MP1/MP4/MP7, 0/120/240	--	--	w/ Ice	2.39	1.47	74.76
RDIDC-9181-PF-48	1	143	No Ice	2.01	1.17	21.85
MP1, 0	--	--	w/ Ice	2.44	1.53	73.68
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
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EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
MX08FRO665-21	3	143	1.00	1.36	0.95	1.74	51.40	8.22
TA08025-B604	3	143	1.00	1.36	0.95	1.74	51.40	8.22
TA08025-B605	3	143	1.00	1.36	0.95	1.74	51.40	8.22
RDIDC-9181-PF-48	1	143	1.00	1.36	0.95	1.74	51.40	8.22

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
MX08FRO665-21	3	No Ice	370.54	204.00	315.03	148.49	315.03	204.00
MP1/MP4/MP7, 0/120/240	--	w/ Ice	71.21	43.47	61.96	34.22	61.96	43.47
TA08025-B604	3	No Ice	90.83	56.75	79.47	45.39	79.47	56.75
MP1/MP4/MP7, 0/120/240	--	w/ Ice	17.68	11.70	15.69	9.71	15.69	11.70
TA08025-B605	3	No Ice	90.83	61.89	81.18	52.25	81.18	61.89
MP1/MP4/MP7, 0/120/240	--	w/ Ice	17.68	12.61	15.99	10.91	15.99	12.61
RDIDC-9181-PF-48	1	No Ice	93.07	63.80	83.31	54.04	83.31	63.80
MP1, 0	--	w/ Ice	18.09	13.00	16.39	11.30	16.39	13.00
		No Ice						
--	--	w/ Ice						
		No Ice						
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		No Ice						
--	--	w/ Ice						

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	Weight [lbs]	F_p [lbs]
MX08FRO665-21	3	143	82.5	9.66
TA08025-B604	3	143	63.9	7.48
TA08025-B605	3	143	75	8.78
RDIDC-9181-PF-48	1	143	21.85	2.56

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(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 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: Strength
Aluminum Code	AA ADM1-10: LRFD - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme 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 7-10
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 (/1E5 F)	Density[k...	Yield[psi]	Ry	Fu[psi]	Rt
1	A992	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36000	1.5	58000	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50000	1.1	65000	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42000	1.4	58000	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46000	1.4	58000	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35000	1.6	60000	1.2
7	A1085	29000	11154	.3	.65	.49	50000	1.4	65000	1.3

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[psi]	Fu[psi]
1	A653 SS Gr33	29500	11346	.3	.65	.49	33000	45000
2	A653 SS Gr50/1	29500	11346	.3	.65	.49	50000	65000

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Plates	6.5"x0.37" Plate	Beam	RECT	A53 Gr.B	Typical	2.405	.027	8.468	.106
2	Grating Bracing	L2x2x3	Beam	Single An...	A36 Gr.36	Typical	.722	.271	.271	.009
3	Standoffs	PIPE 3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
4	Standoff Bracing	C3X5	Beam	Channel	A36 Gr.36	Typical	1.47	.241	1.85	.043
5	Handrails	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	Handrail Corners	L6 5/8x4 7/16x3/16	Beam	Single An...	A36 Gr.36	Typical	2.039	3.593	9.575	.023
7	Horizontals	PIPE_3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
8	Mount Pipes	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8C U1.25X0...	Beam	None	A653 SS Gr33	Typical	.581	.057	4.41	.00063

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	N25	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N13	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Self Weight	DL		-1			13		3	
2	Structure Wind Z	WLZ						33		
3	Structure Wind X	WLX						33		
4	Wind Load 0 AZI	WLZ					13			
5	Wind Load 30 AZI	None					26			
6	Wind Load 45 AZI	None					26			
7	Wind Load 60 AZI	None					26			
8	Wind Load 90 AZI	WLX					13			
9	Wind Load 120 AZI	None					26			
10	Wind Load 135 AZI	None					26			
11	Wind Load 150 AZI	None					26			
12	Ice Weight	OL1					13	33	3	
13	Ice Structure Wind Z	OL2						33		
14	Ice Structure Wind X	OL3						33		
15	Ice Wind Load 0 AZI	OL2					13			
16	Ice Wind Load 30 AZI	None					26			
17	Ice Wind Load 45 AZI	None					26			
18	Ice Wind Load 60 AZI	None					26			
19	Ice Wind Load 90 AZI	OL3					13			
20	Ice Wind Load 120 AZI	None					26			
21	Ice Wind Load 135 AZI	None					26			
22	Ice Wind Load 150 AZI	None					26			
23	Seismic Load Z	ELZ			-.117		13			
24	Seismic Load X	ELX	-.117				13			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
28	Live Load 4 (Lv)	None					1			
29	Live Load 5 (Lv)	None					1			
30	Live Load 6 (Lv)	None					1			
31	Live Load 7 (Lv)	None					1			
32	Live Load 8 (Lv)	None					1			
33	Live Load 9 (Lv)	None					1			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
34	Maintenance Load 1 (...	None					1			
35	Maintenance Load 2 (...	None					1			
36	Maintenance Load 3 (...	None					1			
37	Maintenance Load 4 (...	None					1			
38	Maintenance Load 5 (...	None					1			
39	Maintenance Load 6 (...	None					1			
40	Maintenance Load 7 (...	None					1			
41	Maintenance Load 8 (...	None					1			
42	Maintenance Load 9 (...	None					1			
43	BLC 1 Transient Area...	None						9		
44	BLC 12 Transient Are...	None						9		

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	1.4DL	Yes	Y		DL	1.4																		
2	1.2DL + 1WL 0 AZI	Yes	Y		DL	1.2	2	1	3		4	1												
3	1.2DL + 1WL 30 AZI	Yes	Y		DL	1.2	2	.866	3	.5	5	1												
4	1.2DL + 1WL 45 AZI	Yes	Y		DL	1.2	2	.707	3	.707	6	1												
5	1.2DL + 1WL 60 AZI	Yes	Y		DL	1.2	2	.5	3	.866	7	1												
6	1.2DL + 1WL 90 AZI	Yes	Y		DL	1.2	2		3	1	8	1												
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1												
8	1.2DL + 1WL 135 AZI	Yes	Y		DL	1.2	2	-.707	3	.707	10	1												
9	1.2DL + 1WL 150 AZI	Yes	Y		DL	1.2	2	-.866	3	.5	11	1												
10	1.2DL + 1WL 180 AZI	Yes	Y		DL	1.2	2	-1	3		4	-1												
11	1.2DL + 1WL 210 AZI	Yes	Y		DL	1.2	2	-.866	3	-.5	5	-1												
12	1.2DL + 1WL 225 AZI	Yes	Y		DL	1.2	2	-.707	3	-.707	6	-1												
13	1.2DL + 1WL 240 AZI	Yes	Y		DL	1.2	2	-.5	3	-.866	7	-1												
14	1.2DL + 1WL 270 AZI	Yes	Y		DL	1.2	2		3	-1	8	-1												
15	1.2DL + 1WL 300 AZI	Yes	Y		DL	1.2	2	.5	3	-.866	9	-1												
16	1.2DL + 1WL 315 AZI	Yes	Y		DL	1.2	2	.707	3	-.707	10	-1												
17	1.2DL + 1WL 330 AZI	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1												
18	0.9DL + 1WL 0 AZI	Yes	Y		DL	.9	2	1	3		4	1												
19	0.9DL + 1WL 30 AZI	Yes	Y		DL	.9	2	.866	3	.5	5	1												
20	0.9DL + 1WL 45 AZI	Yes	Y		DL	.9	2	.707	3	.707	6	1												
21	0.9DL + 1WL 60 AZI	Yes	Y		DL	.9	2	.5	3	.866	7	1												
22	0.9DL + 1WL 90 AZI	Yes	Y		DL	.9	2		3	1	8	1												
23	0.9DL + 1WL 120 AZI	Yes	Y		DL	.9	2	-.5	3	.866	9	1												
24	0.9DL + 1WL 135 AZI	Yes	Y		DL	.9	2	-.707	3	.707	10	1												
25	0.9DL + 1WL 150 AZI	Yes	Y		DL	.9	2	-.866	3	.5	11	1												
26	0.9DL + 1WL 180 AZI	Yes	Y		DL	.9	2	-1	3		4	-1												
27	0.9DL + 1WL 210 AZI	Yes	Y		DL	.9	2	-.866	3	-.5	5	-1												
28	0.9DL + 1WL 225 AZI	Yes	Y		DL	.9	2	-.707	3	-.707	6	-1												
29	0.9DL + 1WL 240 AZI	Yes	Y		DL	.9	2	-.5	3	-.866	7	-1												
30	0.9DL + 1WL 270 AZI	Yes	Y		DL	.9	2		3	-1	8	-1												
31	0.9DL + 1WL 300 AZI	Yes	Y		DL	.9	2	.5	3	-.866	9	-1												
32	0.9DL + 1WL 315 AZI	Yes	Y		DL	.9	2	.707	3	-.707	10	-1												
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1												
34	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	1	14		15	1										
35	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	.866	14	.5	16	1										
36	1.2DL + 1DLi + 1WL...	Yes	Y		DL	1.2	OL1	1	13	.707	14	.707	17	1										

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
37	1.2DL + 1DLi + 1W L..	Yes	Y		DL	1.2	OL1	1	13	.5	14	.866	18	1												
38	1.2DL + 1DLi + 1W L..	Yes	Y		DL	1.2	OL1	1	13		14	1	19	1												
39	1.2DL + 1DLi + 1W L..	Yes	Y		DL	1.2	OL1	1	13	-.5	14	.866	20	1												
40	1.2DL + 1DLi + 1W L..	Yes	Y		DL	1.2	OL1	1	13	-.707	14	.707	21	1												
41	1.2DL + 1DLi + 1W L..	Yes	Y		DL	1.2	OL1	1	13	-.866	14	.5	22	1												
42	1.2DL + 1DLi + 1W L..	Yes	Y		DL	1.2	OL1	1	13	-1	14		15	-1												
43	1.2DL + 1DLi + 1W L..	Yes	Y		DL	1.2	OL1	1	13	-.866	14	-.5	16	-1												
44	1.2DL + 1DLi + 1W L..	Yes	Y		DL	1.2	OL1	1	13	-.707	14	-.707	17	-1												
45	1.2DL + 1DLi + 1W L..	Yes	Y		DL	1.2	OL1	1	13	-.5	14	-.866	18	-1												
46	1.2DL + 1DLi + 1W L..	Yes	Y		DL	1.2	OL1	1	13		14	-1	19	-1												
47	1.2DL + 1DLi + 1W L..	Yes	Y		DL	1.2	OL1	1	13	.5	14	-.866	20	-1												
48	1.2DL + 1DLi + 1W L..	Yes	Y		DL	1.2	OL1	1	13	.707	14	-.707	21	-1												
49	1.2DL + 1DLi + 1W L..	Yes	Y		DL	1.2	OL1	1	13	.866	14	-.5	22	-1												
50	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	1	24																	
51	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	.866	24	.5																
52	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	.707	24	.707																
53	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	.5	24	.866																
54	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23		24	1																
55	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	-.5	24	.866																
56	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	-.707	24	.707																
57	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	-.866	24	.5																
58	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	-1	24																	
59	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	-.866	24	-.5																
60	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	-.707	24	-.707																
61	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	-.5	24	-.866																
62	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23		24	-1																
63	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	.5	24	-.866																
64	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	.707	24	-.707																
65	(1.2+0.2Sds)DL + 1...	Yes	Y		DL	1.2...	23	.866	24	-.5																
66	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23	1	24																	
67	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23	.866	24	.5																
68	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23	.707	24	.707																
69	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23	.5	24	.866																
70	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23		24	1																
71	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23	-.5	24	.866																
72	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23	-.707	24	.707																
73	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23	-.866	24	.5																
74	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23	-1	24																	
75	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23	-.866	24	-.5																
76	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23	-.707	24	-.707																
77	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23	-.5	24	-.866																
78	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23		24	-1																
79	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23	.5	24	-.866																
80	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23	.707	24	-.707																
81	(0.9-0.2Sds)DL + 1E..	Yes	Y		DL	.861	23	.866	24	-.5																
82	1.2DL + 1Lv1	Yes	Y		DL	1.2	25	1.5																		
83	1.2DL + 1Lv2	Yes	Y		DL	1.2	26	1.5																		
84	1.2DL + 1Lv3	Yes	Y		DL	1.2	27	1.5																		
85	1.2DL + 1Lv4	Yes	Y		DL	1.2	28	1.5																		
86	1.2DL + 1Lv5	Yes	Y		DL	1.2	29	1.5																		
87	1.2DL + 1Lv6	Yes	Y		DL	1.2	30	1.5																		
88	1.2DL + 1Lv7	Yes	Y		DL	1.2	31	1.5																		

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
89	1.2DL + 1Lv8	Yes	Y		DL	1.2	32	1.5																
90	1.2DL + 1Lv9	Yes	Y		DL	1.2	33	1.5																
91	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.058	3		4	.058										
92	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.05	3	.029	5	.058										
93	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.041	3	.041	6	.058										
94	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.029	3	.05	7	.058										
95	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2		3	.058	8	.058										
96	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-.029	3	.05	9	.058										
97	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-.041	3	.041	10	.058										
98	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-.05	3	.029	11	.058										
99	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-.058	3		4	-.058										
100	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-.05	3	-.029	5	-.058										
101	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-.041	3	-.041	6	-.058										
102	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	-.029	3	-.05	7	-.058										
103	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2		3	-.058	8	-.058										
104	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.029	3	-.05	9	-.058										
105	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.041	3	-.041	10	-.058										
106	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	34	1.5	2	.05	3	-.029	11	-.058										
107	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.058	3		4	.058										
108	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.05	3	.029	5	.058										
109	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.041	3	.041	6	.058										
110	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.029	3	.05	7	.058										
111	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2		3	.058	8	.058										
112	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-.029	3	.05	9	.058										
113	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-.041	3	.041	10	.058										
114	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-.05	3	.029	11	.058										
115	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-.058	3		4	-.058										
116	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-.05	3	-.029	5	-.058										
117	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-.041	3	-.041	6	-.058										
118	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	-.029	3	-.05	7	-.058										
119	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2		3	-.058	8	-.058										
120	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.029	3	-.05	9	-.058										
121	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.041	3	-.041	10	-.058										
122	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	35	1.5	2	.05	3	-.029	11	-.058										
123	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.058	3		4	.058										
124	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.05	3	.029	5	.058										
125	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.041	3	.041	6	.058										
126	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.029	3	.05	7	.058										
127	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2		3	.058	8	.058										
128	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-.029	3	.05	9	.058										
129	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-.041	3	.041	10	.058										
130	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-.05	3	.029	11	.058										
131	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-.058	3		4	-.058										
132	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-.05	3	-.029	5	-.058										
133	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-.041	3	-.041	6	-.058										
134	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	-.029	3	-.05	7	-.058										
135	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2		3	-.058	8	-.058										
136	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.029	3	-.05	9	-.058										
137	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.041	3	-.041	10	-.058										
138	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	36	1.5	2	.05	3	-.029	11	-.058										
139	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.058	3		4	.058										
140	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.05	3	.029	5	.058										

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
141	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.041	3	.041	6	.058												
142	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.029	3	.05	7	.058												
143	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2		3	.058	8	.058												
144	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-.029	3	.05	9	.058												
145	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-.041	3	.041	10	.058												
146	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-.05	3	.029	11	.058												
147	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-.058	3		4	-.058												
148	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-.05	3	-.029	5	-.058												
149	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-.041	3	-.041	6	-.058												
150	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	-.029	3	-.05	7	-.058												
151	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2		3	-.058	8	-.058												
152	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.029	3	-.05	9	-.058												
153	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.041	3	-.041	10	-.058												
154	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	37	1.5	2	.05	3	-.029	11	-.058												
155	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.058	3		4	.058												
156	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.05	3	.029	5	.058												
157	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.041	3	.041	6	.058												
158	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.029	3	.05	7	.058												
159	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2		3	.058	8	.058												
160	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-.029	3	.05	9	.058												
161	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-.041	3	.041	10	.058												
162	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-.05	3	.029	11	.058												
163	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-.058	3		4	-.058												
164	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-.05	3	-.029	5	-.058												
165	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-.041	3	-.041	6	-.058												
166	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	-.029	3	-.05	7	-.058												
167	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2		3	-.058	8	-.058												
168	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.029	3	-.05	9	-.058												
169	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.041	3	-.041	10	-.058												
170	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	38	1.5	2	.05	3	-.029	11	-.058												
171	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.058	3		4	.058												
172	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.05	3	.029	5	.058												
173	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.041	3	.041	6	.058												
174	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.029	3	.05	7	.058												
175	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2		3	.058	8	.058												
176	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-.029	3	.05	9	.058												
177	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-.041	3	.041	10	.058												
178	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-.05	3	.029	11	.058												
179	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-.058	3		4	-.058												
180	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-.05	3	-.029	5	-.058												
181	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-.041	3	-.041	6	-.058												
182	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	-.029	3	-.05	7	-.058												
183	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2		3	-.058	8	-.058												
184	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.029	3	-.05	9	-.058												
185	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.041	3	-.041	10	-.058												
186	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	39	1.5	2	.05	3	-.029	11	-.058												
187	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.058	3		4	.058												
188	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.05	3	.029	5	.058												
189	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.041	3	.041	6	.058												
190	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.029	3	.05	7	.058												
191	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2		3	.058	8	.058												
192	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-.029	3	.05	9	.058												

Load Combinations (Continued)

	Description	So..	P ...	S ...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
193	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-.041	3	.041	10	.058												
194	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-.05	3	.029	11	.058												
195	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-.058	3		4	-.058												
196	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-.05	3	-.029	5	-.058												
197	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-.041	3	-.041	6	-.058												
198	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	-.029	3	-.05	7	-.058												
199	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2		3	-.058	8	-.058												
200	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.029	3	-.05	9	-.058												
201	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.041	3	-.041	10	-.058												
202	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	40	1.5	2	.05	3	-.029	11	-.058												
203	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	.058	3		4	.058												
204	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	.05	3	.029	5	.058												
205	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	.041	3	.041	6	.058												
206	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	.029	3	.05	7	.058												
207	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2		3	.058	8	.058												
208	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	-.029	3	.05	9	.058												
209	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	-.041	3	.041	10	.058												
210	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	-.05	3	.029	11	.058												
211	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	-.058	3		4	-.058												
212	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	-.05	3	-.029	5	-.058												
213	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	-.041	3	-.041	6	-.058												
214	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	-.029	3	-.05	7	-.058												
215	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2		3	-.058	8	-.058												
216	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	.029	3	-.05	9	-.058												
217	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	.041	3	-.041	10	-.058												
218	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	41	1.5	2	.05	3	-.029	11	-.058												
219	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	.058	3		4	.058												
220	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	.05	3	.029	5	.058												
221	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	.041	3	.041	6	.058												
222	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	.029	3	.05	7	.058												
223	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2		3	.058	8	.058												
224	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	-.029	3	.05	9	.058												
225	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	-.041	3	.041	10	.058												
226	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	-.05	3	.029	11	.058												
227	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	-.058	3		4	-.058												
228	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	-.05	3	-.029	5	-.058												
229	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	-.041	3	-.041	6	-.058												
230	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	-.029	3	-.05	7	-.058												
231	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2		3	-.058	8	-.058												
232	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	.029	3	-.05	9	-.058												
233	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	.041	3	-.041	10	-.058												
234	1.2DL + 1.5Lm + 1...	Yes	Y		DL	1.2	42	1.5	2	.05	3	-.029	11	-.058												

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N25	max	1156.413	20	1896.373	39	1738.824	3	295.949	33	2065.355	19	185.859	31
2		min	-1161.147	12	22.395	31	-1732.663	27	-1947.338	130	-2068.415	11	-3477.948	39
3	N1	max	1030.556	8	1948.313	45	1825.21	17	292.211	19	2108.015	25	3401.66	45
4		min	-1022.551	32	31.536	21	-1823.094	25	-2326.925	43	-2112.506	17	-167.184	21
5	N13	max	1773.266	22	1851.355	34	464.639	18	3859.226	34	1738.808	30	751.965	167

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
6		min	-1776.181	14	-13.369	26	-473.12	10	-307.169	26	-1741.687	6	-616.885	223
7	Totals:	max	3346.322	22	5404.201	42	3579.912	18						
8		min	-3346.322	30	1345.794	66	-3579.913	10						

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

	Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc.....	L...		phi*Pn...	phi*Pn...	phi*Mn...	phi*Mn...	...	Eqn
1	M2	PIPE_3.5	.515	40	45	.182	40		9	75262....	78750	7953.75	7953.75	2...	H1-1b
2	M12	PIPE_3.5	.497	40	39	.174	40		3	75262....	78750	7953.75	7953.75	2...	H1-1b
3	M7	PIPE_3.5	.486	40	34	.159	40		14	75262....	78750	7953.75	7953.75	2...	H1-1b
4	M1	C3X5	.398	34.856	44	.138	63....	y	40	11202....	47628	981.263	4104	1...	H1-1b
5	M11	C3X5	.387	34.856	40	.137	63....	y	35	11202....	47628	981.263	4104	1...	H1-1b
6	M6	C3X5	.379	34.856	34	.132	63....	y	45	37027....	47628	981.263	4020.2...	1	H1-1b
7	MP1	PIPE_2.0	.371	48	16	.051	48		17	20866....	32130	1871.6...	1871.6...	2...	H1-1b
8	MP4	PIPE_2.0	.349	48	11	.053	48		11	20866....	32130	1871.6...	1871.6...	1...	H1-1b
9	MP3	PIPE_2.0	.329	48	5	.034	48		10	20866....	32130	1871.6...	1871.6...	2...	H1-1b
10	MP9	PIPE_2.0	.328	48	10	.030	48		3	20866....	32130	1871.6...	1871.6...	1...	H1-1b
11	MP7	PIPE_2.0	.328	48	10	.040	48		9	20866....	32130	1871.6...	1871.6...	1...	H1-1b
12	MP8	PIPE_2.0	.316	48	10	.040	48		10	20866....	32130	1871.6...	1871.6...	1...	H1-1b
13	MP2	PIPE_2.0	.315	48	5	.047	48		9	20866....	32130	1871.6...	1871.6...	2...	H1-1b
14	MP5	PIPE_2.0	.289	48	16	.046	48		3	20866....	32130	1871.6...	1871.6...	2...	H1-1b
15	MP6	PIPE_2.0	.285	48	15	.031	48		9	20866....	32130	1871.6...	1871.6...	2...	H1-1b
16	M10	6.5"x0.37...	.263	21	2	.094	21	y	48	3513.8...	75757.5	583.963	6358.9...	1...	H1-1b
17	M15	6.5"x0.37...	.260	21	7	.096	21	y	37	3513.8...	75757.5	583.963	6315.3...	1...	H1-1b
18	M5	6.5"x0.37...	.255	21	12	.100	21	y	42	3513.8...	75757.5	583.963	6615.0...	1...	H1-1b
19	M13	L2x2x3	.213	0	14	.027	0	z	43	18051....	23392.8	557.717	1239.29	2...	H2-1
20	M3	L2x2x3	.206	0	3	.027	0	z	49	18051....	23392.8	557.717	1239.29	2...	H2-1
21	M8	L2x2x3	.184	0	9	.026	0	z	38	18051....	23392.8	557.717	1239.29	2...	H2-1
22	M4	L2x2x3	.158	0	13	.029	0	y	41	18051....	23392.8	557.717	1239.29	2...	H2-1
23	M22	L6 5/8x4 ...	.154	0	21	.030	42	z	4	15453....	66065....	1040.5...	3031.0...	2...	H2-1
24	M19	PIPE_2.0	.145	72	10	.127	72		2	14916....	32130	1871.6...	1871.6...	1...	H1-1b
25	M23	L6 5/8x4 ...	.144	0	26	.030	42	y	17	15453....	66065....	1040.5...	3031.0...	1...	H2-1
26	M9	L2x2x3	.141	0	2	.028	0	y	46	18051....	23392.8	557.717	1239.29	2...	H2-1
27	M20	PIPE_2.0	.137	24	16	.119	72		8	14916....	32130	1871.6...	1871.6...	1...	H1-1b
28	M21	PIPE_2.0	.131	72	5	.120	72		13	14916....	32130	1871.6...	1871.6...	1...	H1-1b
29	M14	L2x2x3	.129	0	7	.029	0	y	35	18051....	23392.8	557.717	1239.29	2...	H2-1
30	M24	L6 5/8x4 ...	.124	6.563	33	.027	42	y	6	15453....	66065....	1040.5...	3031.0...	1...	H2-1
31	H3	PIPE_3.5	.124	31	10	.096	24		16	60666....	78750	7953.75	7953.75	1...	H1-1b
32	H1	PIPE_3.5	.120	31	5	.099	24		10	60666....	78750	7953.75	7953.75	1...	H1-1b
33	H2	PIPE_3.5	.116	31	15	.087	24		5	60666....	78750	7953.75	7953.75	1...	H1-1b

Envelope AISI S100-16: LRFD Cold Formed Steel Code Checks

Mem...	Shape	Code Check	Loc[in]	LC	She...	Lo...	...	...	phi*...	phi*T...	phi*...	phi*...	phi...	phi...	Cb	Eqn
No Data to Print ...																

APPENDIX D

ADDITIONAL CALCUATIONS

Trylon

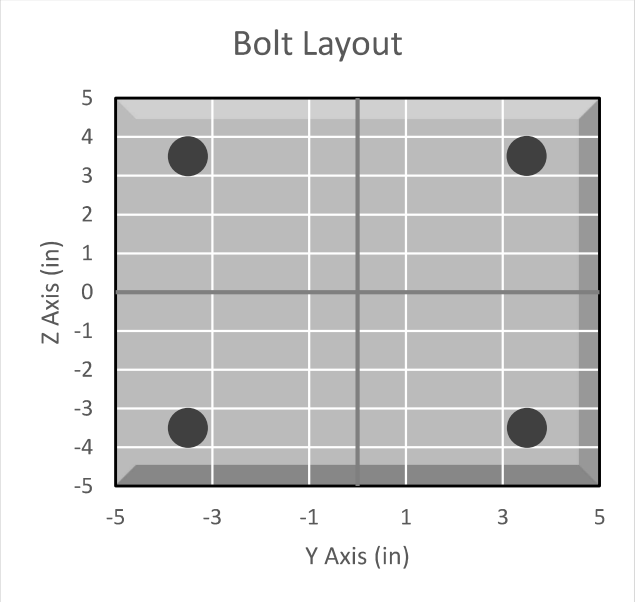
Analysis date: 7/30/2021

BOLT TOOL 1.5.2

Project Data	
Job Code:	189036
Carrier Site ID:	BU# 876310
Carrier Site Name:	BEAUMONT FARM

Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	TIA-222-H

Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in



Connection Description
Standoff to Collar Connection

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	3745.4	lbs
Shear Force (V_u):	690.7	lbs
Tension Usage:	17.5%	--
Shear Usage:	4.8%	--
Interaction:	17.5%	Pass
Controlling Member:	M2	--
Controlling LC:	42	--

**Rating per TIA-222-H Section 15.5*

1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

APPENDIX E

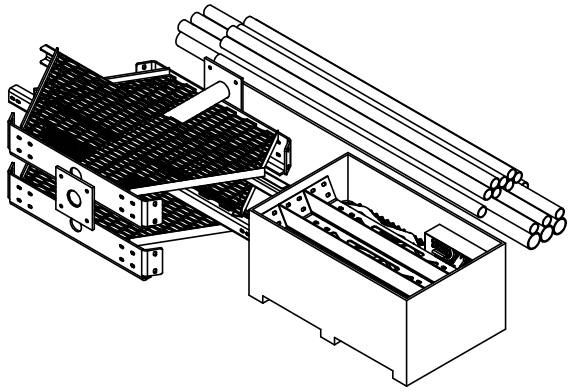
SUPPLEMENTAL DRAWINGS

ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT	NOTE NO.
1	MTC3006SB	STEEL BUNDLE FOR SNUB NOSE PLATFORM	1	402.64 LBS	
2	MCPK8CSB	PIPE STEEL BUNDLE FOR MC-PK8-C	1	464.27 LBS	
3	MCPK8CHWK	HARDWARE KIT FOR MC-PK8-C	1	543.22 LBS	

C

REVISIONS				
REV.	ECN	DESCRIPTION	BY	DATE
A		INITIAL RELEASE	DRR	12/27/11
B	8000005979	CHANGE NOSE CORNER BRKT, ADD GUB-4240	MSM	11/25/14
C	8000007579	NEW RINGMOUNT WELDMENT DESIGN	RJC	04/07/15

FOR BOM ENTRY ONLY

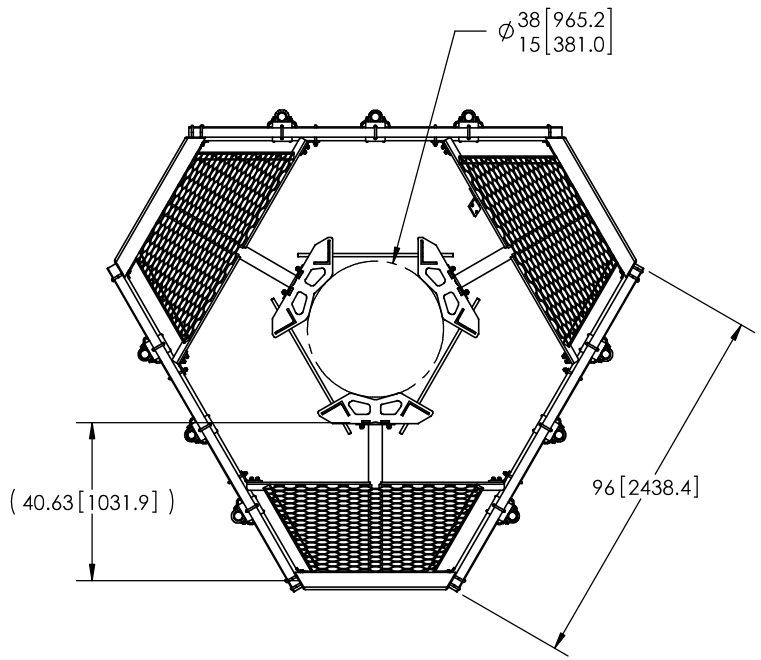


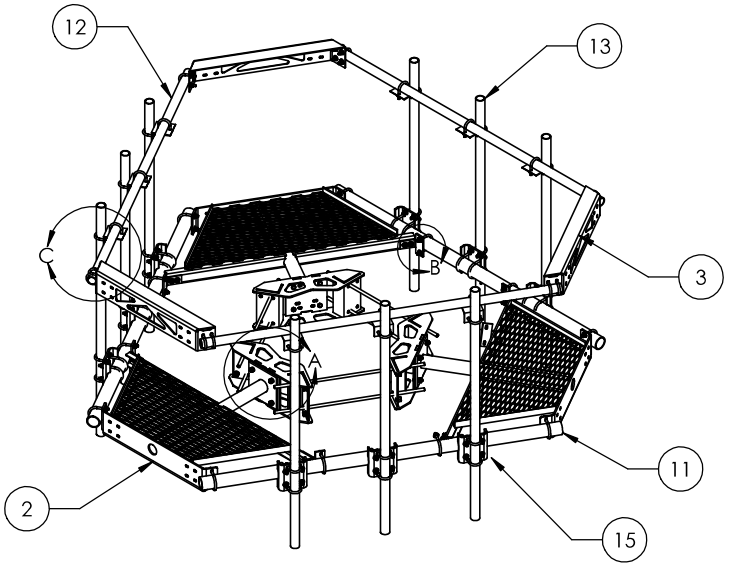
NOTES:
1. CUSTOMER ASSEMBLY SHEETS 2–3.

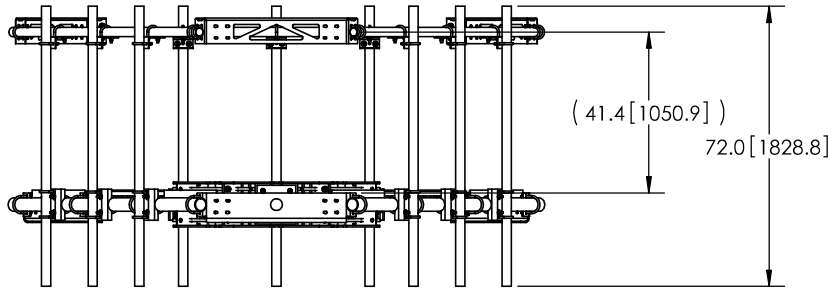
ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ± .12 ANGLES ±2°
.XX = ± .06 FRACTIONS ±1/32
.XXX= ± .03
REMOVE BURRS AND BREAK EDGES .005

DO NOT SCALE THIS PRINT

DRAWN BY: MSM	SHEET: 1 of 3	PART NUMBER: MC-PK8-C	
CHECKED BY: TP	SCALE: NTS	DESCRIPTION: LOW PROFILE PLATFORM KIT 8' FACE	
DATE: 10/18/11	MATERIAL: A36, A500	DRAWING TYPE: ASSEMBLY DRAWING	
REVISION: C	FINISH: GALV A123	WEIGHT: 1410.14 LBS	ANDREW® WESTCHESTER, IL. 60154 U.S.A.





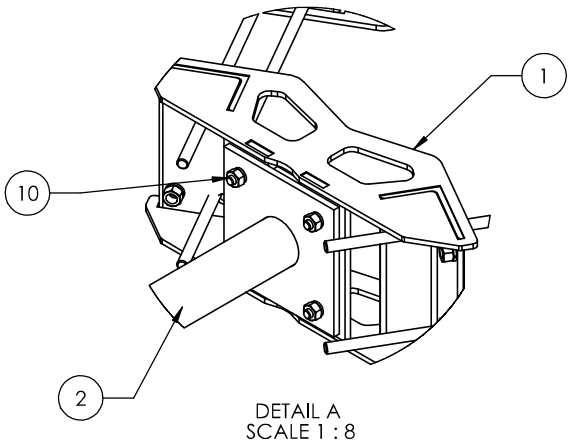


ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
C 1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1	230.42 LBS
2	MTC300601	Low Profile Co-Location Platform Snub Nose	3	134.21 LBS
3	MT195801	Corner Weldment Snub Nose Handrail	3	27.10 LBS
4	XA2020.01	CROSS OVER ANGLE	9	2.65 LBS
5	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT	18	0.82 LBS
6	GUB-4355	1/2" X 3-5/8" X 5" GALV U-BOLT	12	0.71 LBS
7	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	48	0.56 LBS
8	GB-04145	1/2" X 1-1/2" GALV BOLT KIT	12	0.13 LBS
9	GWF-04	1/2" GALV FLAT WASHER	24	0.03 LBS
10	GB-0520A	5/8" X 2" GALV BOLT KIT (A325)	12	0.27 LBS
11	MT54796	3.50" OD X 96" GALV PIPE	3	60.28 LBS
12	MT-651-96	Ø2.375" OD X 96" PIPE	3	29.07 LBS
13	MT-651	2.375" OD x 72" PIPE	9	21.80 LBS
14	MT19617	MT196 Pipe Mount Plate	6	2.49 LBS
15	MT21701	PIPE MOUNT PLATE	9	7.93 LBS

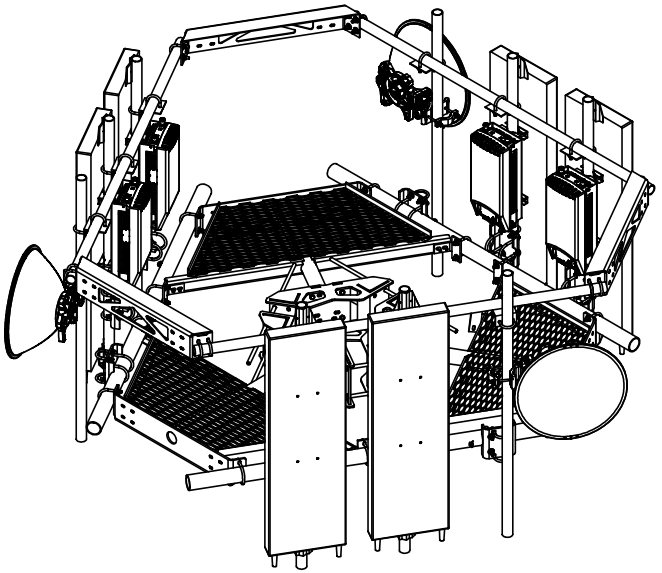
NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.
2. WILL FIT MONOPOLES 15"–38" OD.

ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ± .12 ANGLES ±2°
.XX = ± .06 FRACTIONS ±1/32
.XXX= ± .03
REMOVE BURRS AND BREAK EDGES .005
DO NOT SCALE THIS PRINT

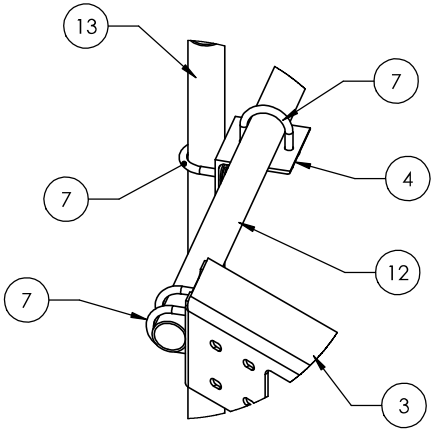
DRAWN BY: MSM	SHEET: 2 of 3	PART NUMBER: MC-PK8-C	
CHECKED BY: TP	SCALE: NTS	DESCRIPTION: 25" OD Snub Nose MT-196	
DATE: 10/18/11	MATERIAL: A36, A53	DRAWING TYPE: ASSEMBLY DRAWING	
REVISION: C	FINISH: GALV A123	WEIGHT: 1361.27 LBS	ANDREW® WESTCHESTER, IL. 60154 U.S.A.



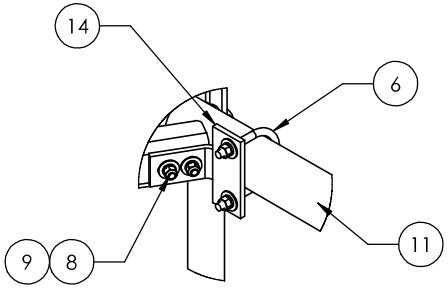
DETAIL A
SCALE 1 : 8



WITH ANTENNAS



DETAIL C
SCALE 1 : 8



DETAIL B
SCALE 1 : 8

NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.

ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ± .12 ANGLES ±2°
.XX = ± .06 FRACTIONS ±1/32
.XXX= ± .03
REMOVE BURRS AND BREAK EDGES .005
DO NOT SCALE THIS PRINT

DRAWN BY: MSM	SHEET: 3 of 3	PART NUMBER: MC-PK8-C
CHECKED BY: TP	SCALE: NTS	DESCRIPTION: 25" OD Snub Nose MT-196
DATE: 10/18/11	MATERIAL: A36, A53	DRAWING TYPE: ASSEMBLY DRAWING
REVISION: C	FINISH: GALV A123	
	WEIGHT: 1361.27 LBS	

ANDREW®
WESTCHESTER, IL. 60154
U.S.A.

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOHVN00020A

876310
945 East Center Street
Wallingford, Connecticut 06492

August 31, 2021

EBI Project Number: 6221004790

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**16.56%**

August 31, 2021

Dish Wireless

Emissions Analysis for Site: BOHVN00020A - 876310

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **945 East Center Street** in **Wallingford, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 945 East Center Street in Wallingford, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless 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 manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 4 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

3) 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

5) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative

estimate as gain reductions for these particular antennas are typically much higher in this direction.

6) The antennas used in this modeling are the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector A, the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector B, the JMA MX08FRO665-20 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antenna mounting height centerline of the proposed antennas is 143 feet above ground level (AGL).

8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-20	Make / Model:	JMA MX08FRO665-20	Make / Model:	JMA MX08FRO665-20
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd
Height (AGL):	143 feet	Height (AGL):	143 feet	Height (AGL):	143 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	5,236.31	ERP (W):	5,236.31	ERP (W):	5,236.31
Antenna A1 MPE %:	**1.26%**	Antenna B1 MPE %:	**1.26%**	Antenna C1 MPE %:	**1.26%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.26%
AT&T	7.31%
Verizon	6.66%
Clearwire	0.12%
Sprint	1.21%
Site Total MPE % :	16.56%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.26%
Dish Wireless Sector B Total:	1.26%
Dish Wireless Sector C Total:	1.26%
Site Total MPE % :	16.56%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	143.0	1.71	600 MHz n71	400	0.43%
Dish Wireless 1900 MHz n70	4	542.70	143.0	4.16	1900 MHz n70	1000	0.42%
Dish Wireless 2190 MHz n66	4	542.70	143.0	4.16	2190 MHz n66	1000	0.42%
						Total:	**1.26%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

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 Dish Wireless 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:

Dish Wireless Sector	Power Density Value (%)
Sector A:	1.26%
Sector B:	1.26%
Sector C:	1.26%
Dish Wireless Maximum MPE % (Sector A):	1.26%
Site Total:	16.56%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **16.56%** 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.

Exhibit G

Letter of Authorization

4545 E River Rd, Suite 320
West Henrietta, NY 14586

Phone: (585) 445-5896
Fax: (724) 416-4461
www.crowncastle.com

Crown Castle Letter of Authorization

CT - CONNECTICUT SITING COUNCIL
Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Tower Share Application
Crown Castle telecommunications site at:
945 EAST CENTER ST., WALLINGFORD, CT 06492

GLOBAL SIGNAL ACQUISITIONS II LLC ("Crown Castle") hereby authorizes DISH Wireless, LLC, including their Agent, to act as our Agent in the processing of all zoning applications, building permits and approvals through the CT - CONNECTICUT SITING COUNCIL for the existing wireless communications site described below:

Crown Site ID/Name: 876310/BEAUMONT FARM
Customer Site ID: BOHVN00020A/CT-CCI-T-876310
Site Address: 945 East Center St., Wallingford, CT 06492

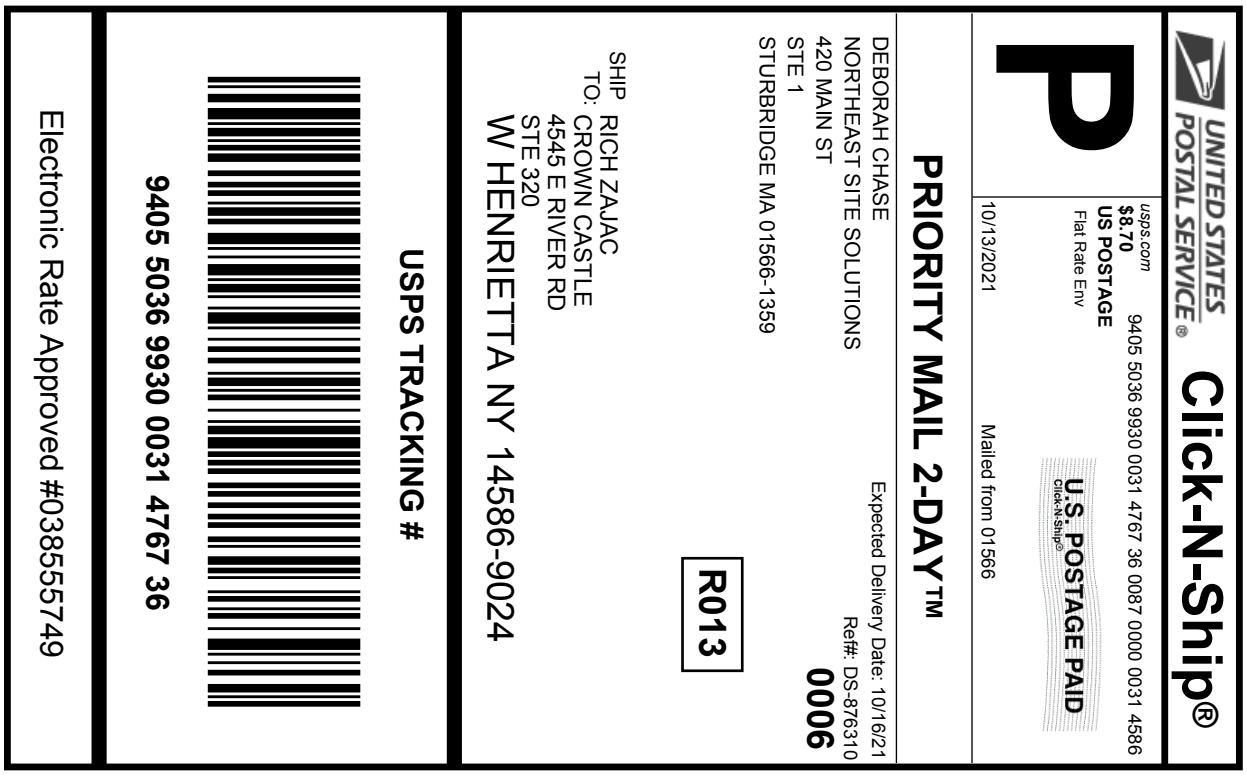
Crown Castle

By: _____ Date: 10/11/2021

Richard Zajac
Site Acquisition Specialist

Exhibit H

Recipient Mailings



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Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0031 4767 36

Trans. #:	545860100
Print Date:	10/13/2021
Ship Date:	10/13/2021
Expected Delivery Date:	10/16/2021

Priority Mail® Postage:	**$8.70**
Total:	**$8.70**

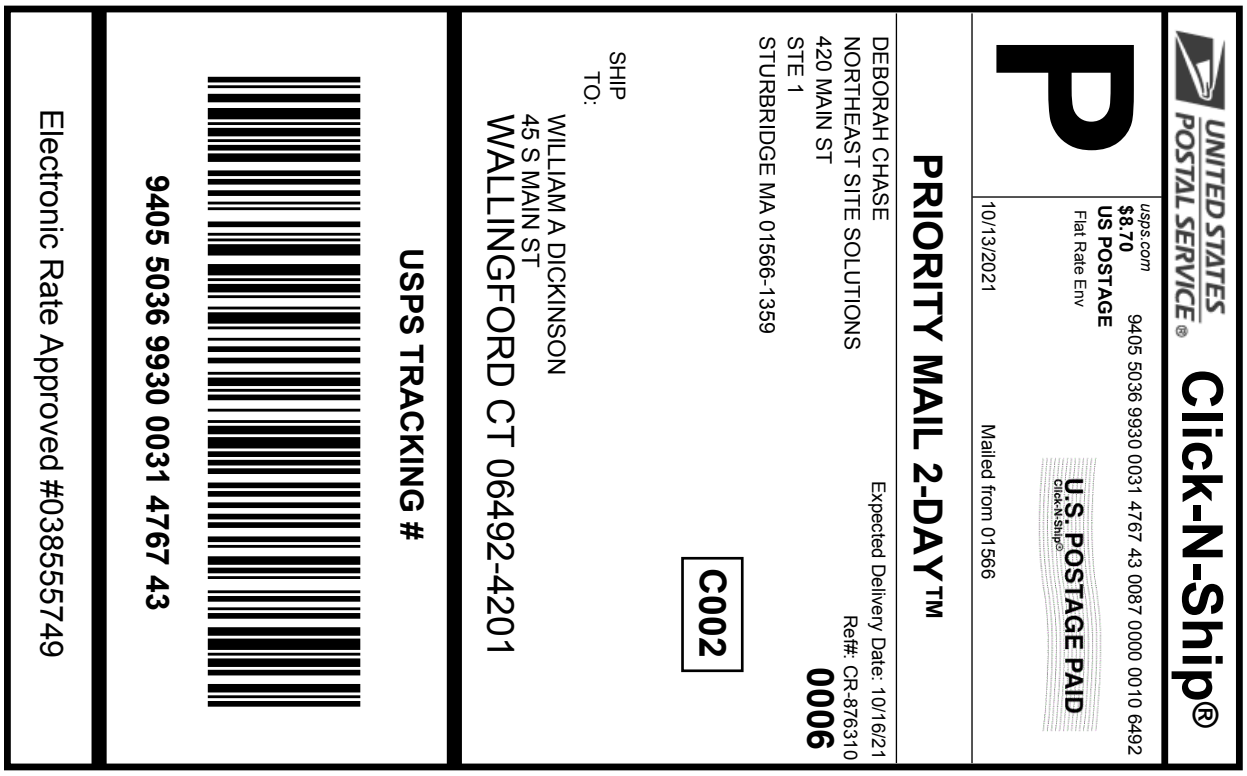
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-876310

To: RICH ZAJAC
CROWN CASTLE
4545 E RIVER RD
STE 320
W HENRIETTA NY 14586-9024

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



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Instructions

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2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0031 4767 43

Trans. #:	545860100
Print Date:	10/13/2021
Ship Date:	10/13/2021
Expected Delivery Date:	10/16/2021

Priority Mail® Postage:	**$8.70**
Total:	**$8.70**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: CR-876310

To: WILLIAM A DICKINSON
45 S MAIN ST
WALLINGFORD CT 06492-4201

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

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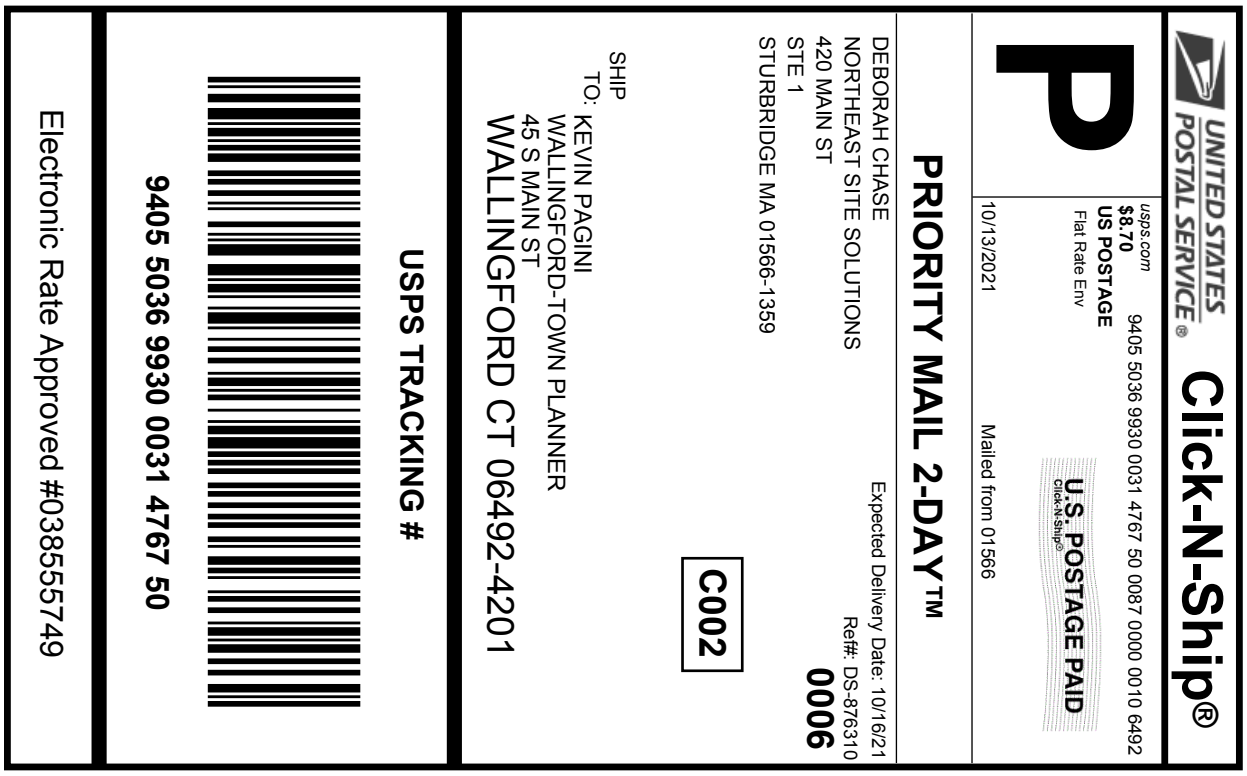

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Instructions

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2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0031 4767 50

Trans. #:	545860100
Print Date:	10/13/2021
Ship Date:	10/13/2021
Expected Delivery Date:	10/16/2021

Priority Mail® Postage:	**$8.70**
Total:	**$8.70**

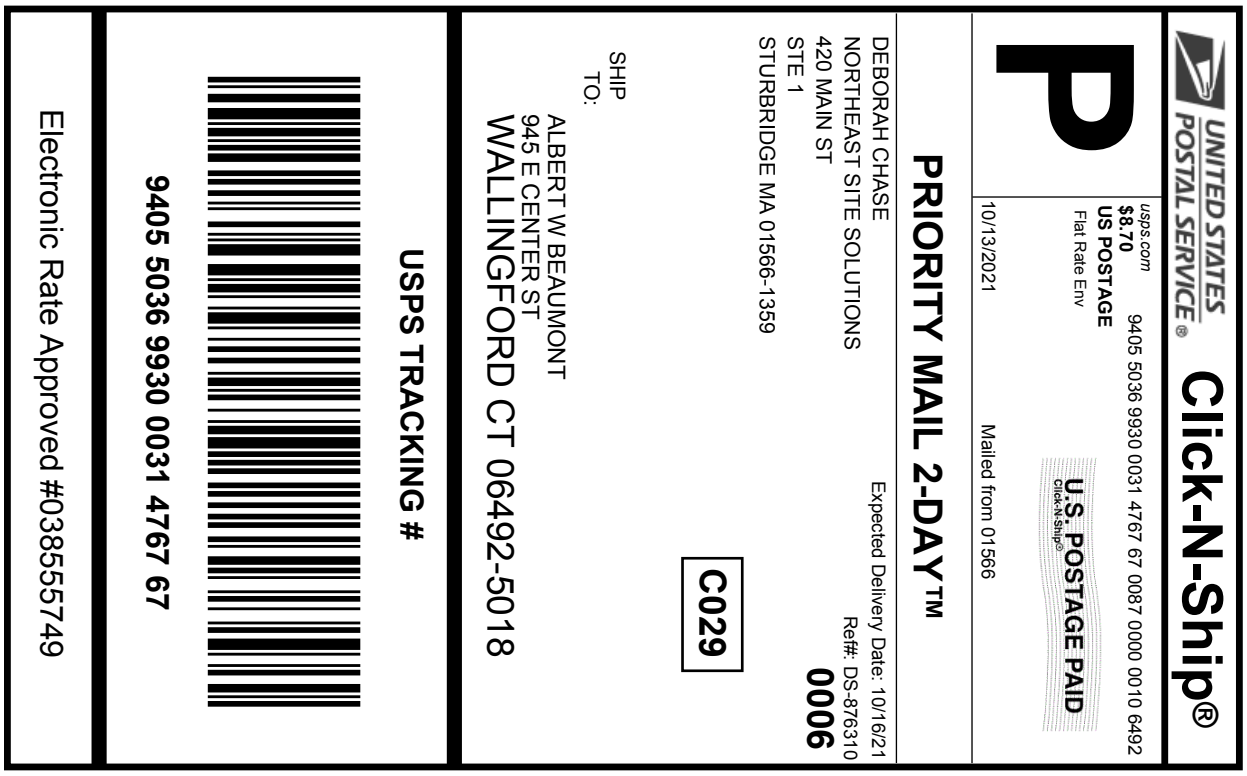
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-876310

To: KEVIN PAGINI
WALLINGFORD-TOWN PLANNER
45 S MAIN ST
WALLINGFORD CT 06492-4201

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

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2. **Place your label so it does not wrap around the edge of the package.**
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4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0031 4767 67

Trans. #:	545860100
Print Date:	10/13/2021
Ship Date:	10/13/2021
Expected Delivery Date:	10/16/2021

Priority Mail® Postage:	**$8.70**
Total:	**$8.70**

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Ref#: DS-876310

To: ALBERT W BEAUMONT
945 E CENTER ST
WALLINGFORD CT 06492-5018

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com

876310

UNITED STATES POSTAL SERVICE.

FARMINGTON
210 MAIN ST
FARMINGTON, CT 06032-9998
(800)275-8777

10/14/2021 03:52 PM

Product	Qty	Unit Price	Price
Prepaid Mail West Henrietta, NY 14586 Weight: 0 lb 2.00 oz Acceptance Date: Thu 10/14/2021 Tracking #: 9405 5036 9930 0031 4767 36	1		$0.00
Prepaid Mail Wallingford, CT 06492 Weight: 0 lb 11.70 oz Acceptance Date: Thu 10/14/2021 Tracking #: 9405 5036 9930 0031 4767 43	1		$0.00
Prepaid Mail Wallingford, CT 06492 Weight: 0 lb 11.60 oz Acceptance Date: Thu 10/14/2021 Tracking #: 9405 5036 9930 0031 4767 50	1		$0.00
Prepaid Mail Wallingford, CT 06492 Weight: 0 lb 11.70 oz Acceptance Date: Thu 10/14/2021 Tracking #: 9405 5036 9930 0031 4767 67	1		$0.00
Grand Total:			$0.00