CONNECTICUT SITING COUNCIL

PETITION OF NEW CINGULAR WIRELESS PCS, LLC ("AT&T") TO THE CONNECTICUT SITING COUNCIL FOR A DECLARATORY RULING THAT NO CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED IS REQUIRED TO MODIFY AN EXISTING WIRELESS TELECOMMUNICATIONS FACILITY LOCATED AT 250 MERIDEN WATERBURY TURNPIKE, SOUTHINGTON, CONNECTICUT	)	**PETITION NO. _____**

PETITION FOR DECLARATORY RULING TO MODIFY AN EXISTING WIRELESS FACILITY
250 MERIDEN WATERBURY TURNPIKE, SOUTHINGTON, CONNECTICUT

I. Introduction

New Cingular Wireless PCS, LLC ("AT&T"), the "Petitioner", hereby petitions the Connecticut Siting Council ("Council") pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies ("R.C.S.A.") for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need ("Certificate") is required pursuant to Section 16-50k of the Connecticut General Statutes ("C.G.S.") to modify an existing wireless facility owned by Crown Castle located at 250 Meriden Waterbury Turnpike in Southington, Connecticut (the "Site"). Included in Attachment 1 is a July 19, 2018 letter from Crown Castle authorizing AT&T to file this Petition.

II. The Premises and Existing Wireless Facility

The approximately 1.2-acre Site is located on Meriden Waterbury Turnpike (aka Rt. 322) and is improved with a commercial building, associated outbuildings and a parking area. The Site is located within a business district with a mix of residential, commercial, and retail uses to the north and west. To the south and east, the surrounding area is characterized as a residential district with predominately residential uses. An aerial photo is provided in the enclosed drawings included in Attachment 2 on Sheet Number Z-2.

The existing wireless facility, owned by Crown Castle, is comprised of an 80-foot tall lattice tower with nine (9) AT&T antennas mounted at the top and six (6) Verizon Wireless antennas mounted at a height of approximately 60', with associated equipment

for both carriers located at grade in the AT&T equipment shelter and the Verizon equipment platform at the base of the lattice tower. In 1999, AT&T received Council approval to replace two (2) existing communications towers at the Site with a single 80-foot lattice tower and install its antennas at the top of the tower (TS-SCLP-131-990317). Subsequently, the Council approved several exempt modifications for AT&T and Verizon Wireless for upgrades to their facilities.

III. AT&T's Proposed Modification

AT&T is licensed by the Federal Communications Commission ("FCC") to provide wireless services in this area of the State of Connecticut. AT&T's proposed modification to the existing facility would consist of installing a 40-foot tall lattice extension to the existing tower, increasing the overall height of the tower to approximately 120' above grade level ("AGL"). An 11-foot tall lightning rod would be installed at the top of the lattice extension. AT&T is proposing to remove the existing nine (9) antennas and install a total of three (3) antennas on a new mount at the top of the lattice extension. The existing remote radio units ("RRU") would be relocated to a new mount at the top of the lattice extension. Minor equipment upgrades are being proposed inside AT&T's existing at-grade equipment shelter. No changes are proposed to Verizon Wireless' existing facility.

AT&T's proposed modification to the existing facility is detailed in the drawings included as Attachment 2 prepared by SAI Communications, Inc., dated April 2, 2018 and last revised April 30, 2018. Also, annexed hereto as Attachment 3 is a passing structural analysis prepared by Paul J. Ford & Company, dated March 16, 2018, concluding that the proposed extension will be designed to support AT&T's modification and Verizon Wireless' facility.

IV. The Proposal Will Not Have a Substantial Adverse Environmental Effect

A comparison of the existing and proposed conditions reveals no substantial or significant environmental impacts associated with AT&T's proposed modification to the existing facility. The lattice extension will be consistent with the existing lattice tower design, color, and material. Photosimulations depicting the existing and proposed facility at five surrounding locations are included in Attachment 4. These photosimulations demonstrate that visibility of the proposed lattice extension is mostly limited to the surrounding commercial area and views from the closest residential areas on Meriden Waterbury Turnpike and Orchard Lane are not substantial. While visibility from the surrounding residential areas will be minimally increased, it is respectfully submitted that this change will not adversely impact these properties.

Included in Attachment 5 is a copy of the summary of EBI Consulting's NEPA review for the proposed modification to the existing facility ("NEPA checklist"). The attached NEPA checklist further supports that AT&T's proposed modification will not have a substantial adverse environmental effect. Also enclosed in Attachment 6 is confirmation

that the proposed extension of the existing lattice tower will not require registration with the FAA.

A. Minimal Physical Impact

AT&T's proposed modifications will not result in any additional disturbance to the site as it will be a vertical extension of the existing tower. Existing access to the site will continue to be utilized and no tree removal or ground disturbance is necessary for these modifications. The facility is unmanned and requires no water or wastewater connections and generates no waste.

B. Compliance with MPE Limits

The operation of AT&T's antennas on the proposed extension along with the operation of Verizon Wireless' antennas will not increase the total radio frequency electromagnetic power density at the site to a level at or above applicable standards. A power density report is included in Attachment 7. The total radio frequency power density will be 25.16% of the allowable FCC established general public limit at ground level and well within standards adopted by the Connecticut Department of Energy & Environmental Protection as set forth in C.G.S. Section 22a-162.

V. AT&T's Need for the Proposed Modification to Provide Reliable Service

Included in Attachment 8 are AT&T radio frequency coverage maps which depict existing coverage at AT&T's current antenna height of approximately 80' and proposed coverage from the proposed modification antenna height of 120'. As shown in these maps, AT&T needs the proposed modification to provide reliable service within its network in this area of Southington. As such, while the Council does not have to find a public need for the facility as part of a ruling on this Petition, it is respectfully submitted that the enclosed information fully demonstrates the need for the proposed modification to provide reliable wireless services to the public.

VI. Notice of Petition Filing

Pursuant to R.C.S.A. Section 16-50j-40(a), notice of AT&T's intent to file this Petition was sent to each person appearing of record as an owner of property that abuts the site, as well as the appropriate municipal officials and government agencies as listed in Section 16-50e of the C.G.S. Certification of such notice, a copy of the notice and the list of property owners is included in Attachment 9 along with the map from the Town's GIS website used to identify abutting property owners. Attachment 9 also includes a certification of service to municipal officials and government agencies to whom notice was sent.

VII. Conclusion

As set forth herein, AT&T's proposed modifications to the existing wireless facility are wholly consistent with legislative findings outlined in C.G.S. Sections 16-50g and 16-50aa that seek to avoid the unnecessary proliferation of towers in the State. It is respectfully submitted that AT&T's facility does not present any significant adverse environmental effects as listed in Section 16-50p of the General Statutes. Therefore and for all the foregoing reasons, AT&T petitions the Connecticut Siting Council for a determination that the proposed wireless telecommunications facility does not require a Certificate of Environmental Compatibility and Public Need and that the Council issue an order approving same.

Respectfully Submitted,

Lucia Chiocchio, Esq.
On behalf of the Petitioner, AT&T
Cuddy & Feder, LLP
445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
(914) 761-1300

1

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

Crown Castle, does hereby authorize **AT&T Mobility** and its authorized contractors/agents to act as "Applicant" in the processing of all applications, permits, research and other related activities associated with the processing, planning, design review, permitting, entitlement and construction of additional equipment, antennas and site improvements for the Crown Castle existing wireless communications facility described as follows:

Customer Site Name:	**Southington Rogus**	**Crown Castle Site ID Number:**	**841298**
Site Address:	**250 Meriden Waterbury Turnpike, Southington, CT 06489**	**Crown Castle Site Name:**	**Southington Rogus**

This authorization is fully contingent upon **AT&T Mobility** authorized contractors/agents' compliance with the following conditions:

1. Crown Castle must review the application prior to submittal. Crown Castle must be provided all applications, narratives, drawings and attachments at least 72 hours in advance of their submittal to the locality. Use of email and electronic attachments is encouraged. A Crown Castle Zoning Subject Matter Expert (SME) will review and provide written comment to the customer within 48 hours of receipt of a complete set of application materials. If Crown Castle indicates that changes are required, submissions shall be altered in accordance with Crown Castle comments prior to submission to the locality. Verification of corrections should also be accomplished via emails and attachments.
2. In no event may **AT&T Mobility** encourage, suggest, participate in, or permit the imposition of any restrictions or additional obligations whatsoever on the tower site or Crown Castle's current or future use or ability to license space at the tower site as part of or in exchange for obtaining any approval, permit, exception or variance.
3. A copy of the final permit and/or a written summary of the zoning/entitlement decision rendered by the locality and any/all conditions placed on that decision shall be communicated in detail to Crown Castle well within the appeal period provided by the locality (typically 10-15 days).
4. All conditions of approval pertinent to the construction of the proposed project must be included in the construction drawings for the project. The conditions of approval pertinent to the construction of the project shall be copied verbatim from the zoning permit approval language, and shall be present in the drawings prior to submission for building permits and contractor bidding. Crown Castle shall verify the inclusion of appropriate conditions of approval in the construction drawing redline process.
5. Crown Castle will provide a Notice To Proceed (NTP) to construction to the customer upon receipt of the final approved zoning permit and the approved Building Permit.

By Crown Castle:

Signature: _____

Printed Name: Zachary Plummer

Title: Real Estate Specialist

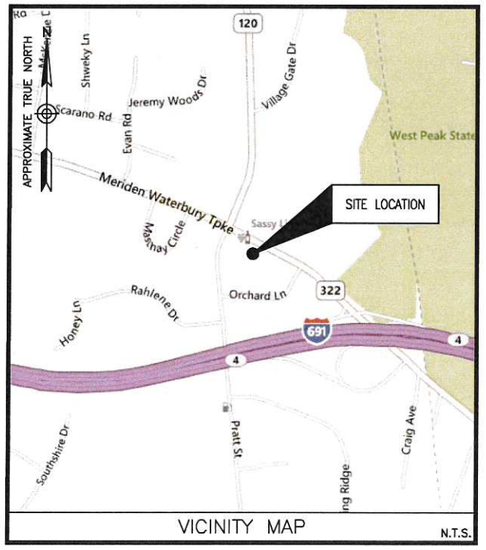
Date: July 19, 2018

2

CONNECTICUT SITING COUNCIL

at&t Mobility

SITE NAME: SOUTHINGTON ROGUS
SITE NUMBER: CT1033
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489



VICINITY MAP N.T.S.

DIRECTIONS FROM 500 ENTERPRISE DRIVE, ROCKY HILL, CT:

HEAD SOUTHEAST ON ENTERPRISE DR. TURN LEFT ONTO CAPITAL BLVD. USE THE LEFT 2 LANES TO TURN LEFT ONTO STATE HWY 411. TURN LEFT TO MERGE ONTO I-91 S. MERGE ONTO I-91 S. TAKE EXIT 18 FOR I-691 W TOWARD MERIDEN/WATERBURY. CONTINUE ONTO I-691 W. TAKE EXIT 4 FOR CT-322 TOWARD SOUTHINGTON. TURN RIGHT ONTO CT-322 W. THE SITE WILL BE ON THE LEFT.

SITE COORDINATES:
LATITUDE: 41°-33'-24.56" N
LONGITUDE: 72°-51'-10.73" W
(PER FAA 1-A SURVEY)

ELEVATION DATA:
GRADE ELEVATION AT TOWER = 343'± A.M.S.L.
(PER FAA 1-A SURVEY)

MONOPOLE ELEVATION (TO TOP OF EXTENSION):
ELEVATION = 120'-0"± A.G.L.

ANTENNA ELEVATION (TO TOP OF ANTENNA):
ELEVATION = 123'-0"± A.G.L.

SITE INFORMATION

THE PROJECT CONSISTS OF THE INSTALLATION OF A PROPOSED 40'-0"± TALL LATTICE TOWER EXTENSION ON AN EXISTING 80'-0"± TALL LATTICE TOWER FOR A TOTAL HEIGHT OF 120'-0"± A.G.L., ALONG WITH THE INSTALLATION OF (3) SECTORS OF (1) PANEL ANTENNA PER SECTOR MOUNTED ON THE LATTICE TOWER AT A PROPOSED CENTERLINE OF 120'-0"± A.G.L.

THE PROPOSED USE DOES NOT REQUIRE FULL-TIME OR PART-TIME EMPLOYEES AT THE SITE. IT WILL BE TYPICALLY VISITED ONCE OR TWICE PER MONTH FOR MAINTENANCE. THE FACILITY IS NOT EXPECTED TO GENERATE ADDITIONAL NOISE, FUMES OR VIBRATIONS. POWER & TELCO SERVICES WILL BE TAKEN FROM THE EXISTING BUILDING. NO WATER OR SEWER SERVICES ARE NEEDED.

PROJECT DESCRIPTION

SITE NAME:
SOUTHINGTON ROGUS

SITE NUMBER:
CT1033

LOCATION:
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489

TAX MAP DESIGNATION:
PARCEL ID: 015080 ACCOUNT #: 10848

PROPERTY OWNER:
JOHN ROGUS
250 MERIDEN WATERBURY TPKE
SOUTHINGTON, CT 06489

TOWER OWNER:
CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

APPLICANT/LESSEE:
AT&T MOBILITY
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

PROJECT INFORMATION

THIS DOCUMENT WAS DEVELOPED TO REFLECT A SPECIFIC SITE AND ITS SITE CONDITIONS AND IS NOT TO BE USED FOR ANOTHER SITE OR WHEN OTHER CONDITIONS PERTAIN. REUSE OF THIS DOCUMENT IS AT THE SOLE RISK OF THE USER.

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

SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
Z-1	PERIMETER PLAN & ABUTTERS LIST
Z-2	AERIAL PLAN
Z-3	COMPOUND PLAN & ELEVATION
Z-4	CONSTRUCTION DETAILS

SHEET INDEX

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

SAI
27 NORTHWESTERN DRIVE
SALEM, NH 03079

CT1033
SOUTHINGTON
ROGUS

CERTIFICATE DRAWINGS

D	05/02/18	ISSUED AS FINAL
B	04/30/18	REVISED PER COMMENTS
A	04/02/18	PRELIMINARY SUBMISSION

Dewberry®
Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

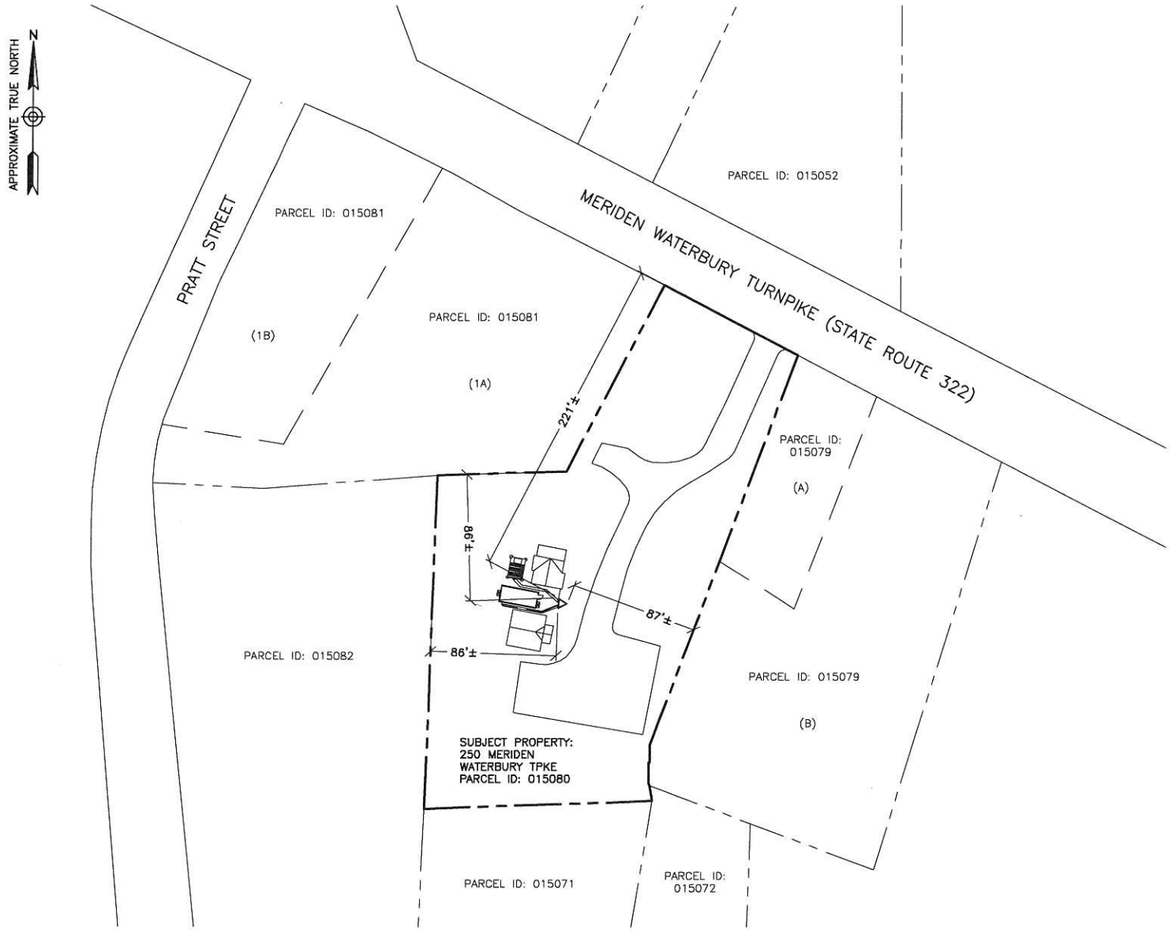
JIANG YU, P.E.
CT LICENSE NO. 0023222

DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50055106
JOB NUMBER:	50065689

SITE ADDRESS:
250 MERIDEN WATERBURY TURNPIKE, SOUTHINGTON, CT 06489
HARTFORD COUNTY

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



NOTES:

1. ABUTTERS LIST CONSISTS OF PARCELS PHYSICALLY TOUCHING THE SUBJECT PROPERTY OR ABUT ACROSS THE STREET FROM THE SUBJECT PROPERTY.
2. PERIMETER PLAN DATA & ABUTTERS INFORMATION WAS COMPILED FROM INFORMATION OBTAINED FROM THE TOWN OF SOUGHTINGTON'S GIS WEBSITE.

PERIMETER PLAN (1)
SCALE: 1"=100' FOR 11"x17"
1"=50' FOR 22"x34"

0' 50' 100'

ABUTTERS LIST

PARCEL ID	ACCOUNT #	PROPERTY LOCATION	OWNER	MAILING ADDRESS
015081	11092	264 MERIDEN WATERBURY TPKE	SALS SUPER MARKET INC	C/O KATHLEEN MICHALAK, SOUTHINGTON, CT 06489
015079	2385	230 MERIDEN WATERBURY TPKE	CAMMUSO PETER & LORI A	230 MERIDEN WATERBURY TPKE, SOUTHINGTON, CT 06489
015072	7275	71 ORCHARD LN	SULLIVAN JOSEPH	71 ORCHARD LN, SOUTHINGTON, CT 06489
015071	1799	81 ORCHARD LN	CAPRISTO DEBORAH G	81 ORCHARD LN, PLANTSVILLE, CT 06479
015082	2026	47 PRATT ST	CELENTANO ROBERT J & KATHLEEN R	47 PRATT ST, SOUTHINGTON, CT 06489
015052	1494	247 MERIDEN WATERBURY TPKE	LARKIN EVACLARE	20 VILLAGE RD, SOUTHINGTON, CT 06489

GENERAL NOTES

1. SUBJECT PROPERTY KNOWN AS PARCEL ID 015080 & ACCOUNT 10848 AS SHOWN ON THE TOWN OF SOUTHINGTON'S GIS WEBSITE.
2. APPLICANT: AT&T MOBILITY
500 ENTERPRISE DRIVE SUITE 3A
ROCKY HILL, CT 06067
3. PROPERTY OWNER: JOHN ROGUS
250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CT 06489
4. TOWER OWNER: CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277
5. PERIMETER PLAN DATA & ABUTTERS INFORMATION WAS COMPILED FROM INFORMATION OBTAINED FROM THE TOWN OF SOUTHINGTON'S GIS WEBSITE.
6. PARCEL AREA = 1.22± ACRES BASED ON INFORMATION OBTAINED FROM THE TOWN OF SOUTHINGTON'S GIS WEBSITE.
7. ACCORDING TO THE FLOOD INSURANCE RATE MAP, THIS PROPERTY IS LOCATED IN AN AREA DESIGNATED AS ZONE X – "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN," PER MAP NUMBER 09003C0611G, PANEL 0611 OF 0675, HARTFORD COUNTY, CONNECTICUT (ALL JURISDICTIONS), MAP REVISED DATE: MAY 16, 2017.
8. BASED ON THE U.S. FISH & WILDLIFE SERVICE, NATIONAL WETALNDS INVENTORY, WETLANDS MAPPER, THE CLOSEST WETLAND TO THE EXISTING TOWER LOCATION IS 1,155'±.
9. BASED ON THE TOWN OF SOUTHINGTON'S GIS WEBSITE, THERE ARE 72 HOMES WITHIN 1,000' OF THE EXISTING TOWER. THE CLOSEST RESIDENCE TO THE EXISTING TOWER IS 10'± AND IS LOCATED ON THE SUBJECT PARCEL. THE CLOSEST RESIDENCE TO THE EXISTING TOWER OFF THE SUBJECT PARCEL IS 200'± AND IS LOCATED AT 81 ORCHARD LN.
10. BASED ON THE TOWN OF SOUTHINGTON'S GIS WEBSITE, THE DISTANCE FROM THE EXISTING TOWER TO THE NEAREST PROPERTY LINE IS 86'±.
11. BASED ON THE TOWN OF SOUTHINGTON'S GIS WEBSITE, THE DISTANCE FROM THE EXISTING TOWER TO THE CITY OF MERIDEN IS 8,270'±.
12. BASED ON THE TOWN OF SOUTHINGTON GIS WEBSITE, THERE ARE NO SCHOOLS OR CHILD DAY CARE CENTERS WITHIN 1,000' OF THE EXISTING TOWER LOCATION. THE NEAREST SCHOOL IS SOUTH END ELEMENTARY SCHOOL WHICH IS 8,270'± FROM THE EXISTING TOWER LOCATION.
13. NO TREES WILL BE REMOVED DUE TO THE PROPOSED INSTALLATION.
14. THE PROPOSED USE IS FOR TELECOMMUNICATIONS AND IS NOT INTENDED FOR PERMANENT EMPLOYEE OCCUPANCY. THEREFORE, POTABLE WATER, SANITARY SEWER AND ADDITIONAL ON-SITE PARKING ARE NOT REQUIRED.
15. FACILITY SHALL BE VISITED ON THE AVERAGE OF ONCE A MONTH FOR MAINTENANCE AND SHALL BE CONTINUOUSLY MONITORED FROM A REMOTE FACILITY.
16. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH AT&T MOBILITY SPECIFICATIONS.
17. CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" (1-800-922-4455) FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
18. NO LIGHTING AT THE TOWER IS PROPOSED OR REQUIRED BY THE FCC OR FAA.
19. THERE WILL NOT BE ANY SIGNS OR ADVERTISING ON THE ANTENNAS OR EQUIPMENT.

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

SAI
27 NORTHWESTERN DRIVE
SALEM, NH 03079

CT1033
SOUTHINGTON
ROGUS

CERTIFICATE DRAWINGS		
0	05/02/18	ISSUED AS FINAL
B	04/30/18	REVISED PER COMMENTS
A	04/02/18	PRELIMINARY SUBMISSION

Dewberry®
Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

JIANG YU, P.E.
CT LICENSE NO. 0023222

DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50055106
JOB NUMBER:	50065689

SITE ADDRESS:
250 MERIDEN
WATERBURY TURNPIKE,
SOUTHINGTON, CT 06489
HARTFORD COUNTY

SHEET TITLE
PERIMETER PLAN &
ABUTTERS LIST

SHEET NUMBER
Z-1

APPROXIMATE TRUE NORTH N

NOTE:

1. AERIAL PLAN BASED ON GOOGLE MAPS.

AERIAL PLAN (1)

SCALE: 1"=100' FOR 11"x17"
1"=50' FOR 22"x34"

0' 50' 100'

at&t

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

SAI

27 NORTHWESTERN DRIVE
SALEM, NH 03079

CT1033
SOUTHINGTON
ROGUS

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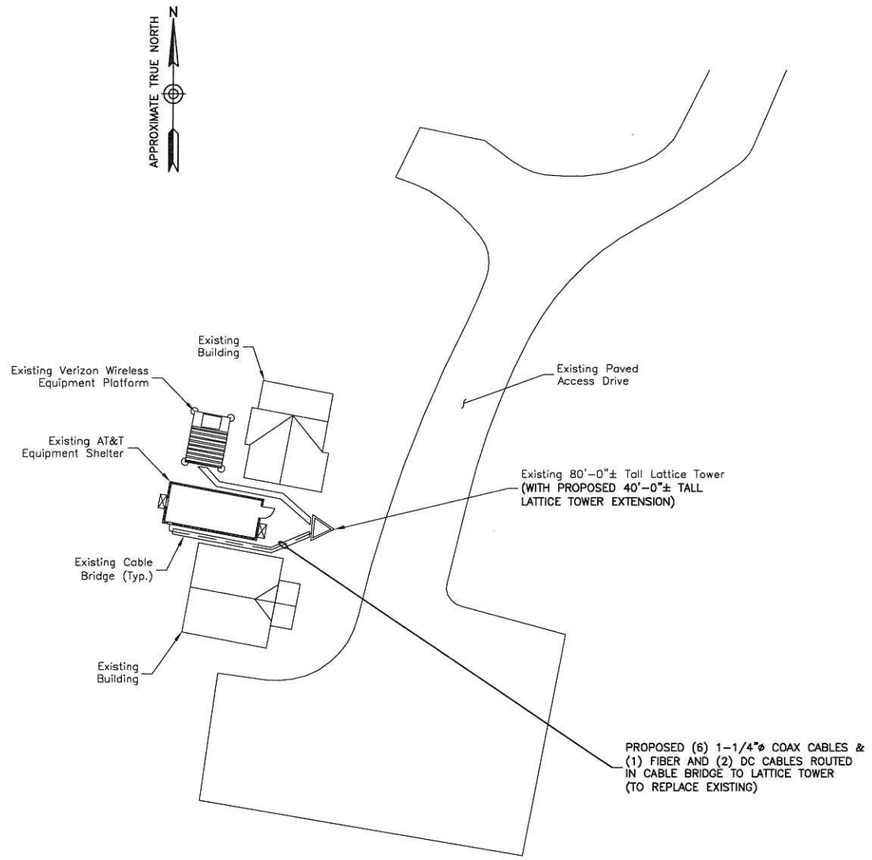
250 MERIDEN
WATERBURY TURNPIKE,
SOUTHINGTON, CT 06489
HARTFORD COUNTY

SHEET TITLE

AERIAL PLAN

SHEET NUMBER

Z-2

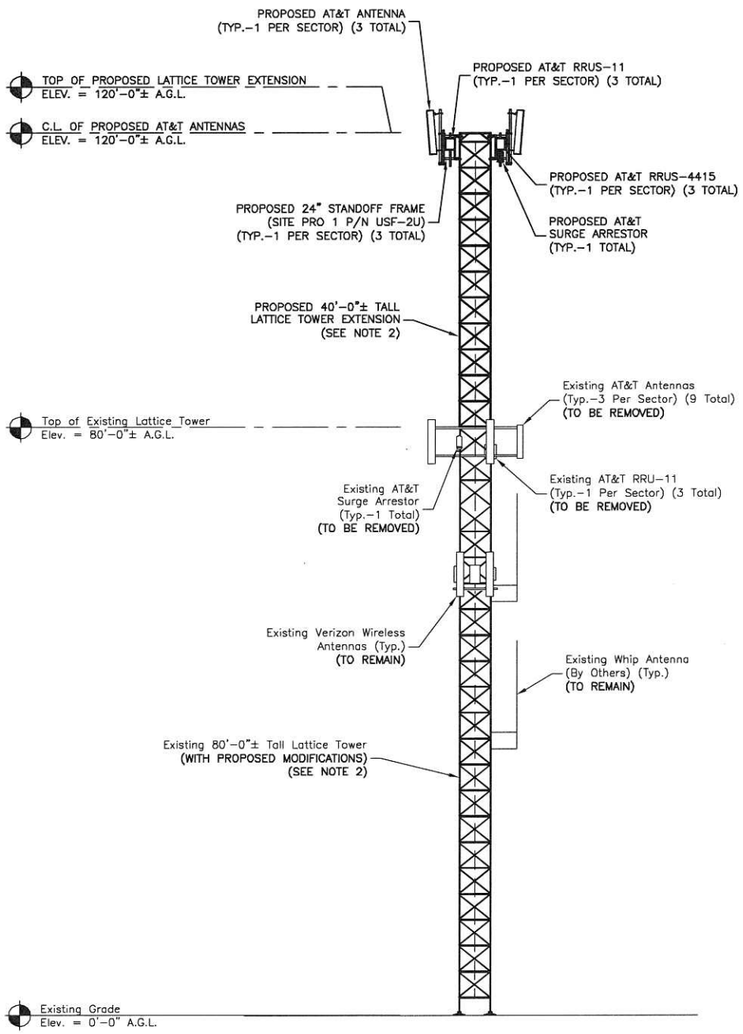


SITE PLAN (1)
SCALE: 1"=40' FOR 11"x17"
1"=20' FOR 22"x34"

0' 20' 40'

NOTES:

1. NORTH SHOWN AS APPROXIMATE.
2. NOT ALL INFORMATION IS SHOWN FOR CLARITY.
3. COMPOUND PLAN INFORMATION BASED ON EXISTING PLANS PREPARED BY DEWBERRY ENGINEERS INC. DATED 04/21/14 & FIELD MEASUREMENTS TAKEN BY DEWBERRY ENGINEERS INC. ON 02/01/17.
4. MODIFICATIONS TO EXISTING LATTICE TOWER & PROPOSED LATTICE TOWER EXTENSIONS ARE SHOWN AS CONCEPTUAL. FINAL DESIGN SHALL BE COMPLETED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS & MODIFICATION DRAWINGS COMPLETED BY PAUL J. FORD & COMPANY DATED 03/19/18.



NOTES:

1. ELEVATION INFORMATION BASED ON EXISTING PLANS PREPARED BY DEWBERRY ENGINEERS INC. DATED 04/21/14 & FIELD MEASUREMENTS TAKEN BY DEWBERRY ENGINEERS INC. ON 02/01/17.
2. MODIFICATIONS TO EXISTING LATTICE TOWER & PROPOSED LATTICE TOWER EXTENSION ARE SHOWN AS CONCEPTUAL. FINAL DESIGN SHALL BE COMPLETED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS & MODIFICATION DRAWINGS COMPLETED BY PAUL J. FORD & COMPANY DATED 03/19/18.

ELEVATION (2)
SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"

0' 10' 20'

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

SAI
27 NORTHWESTERN DRIVE
SALEM, NH 03079

CT1033
SOUTHINGTON
ROGUS

CERTIFICATE DRAWINGS

0	05/02/18	ISSUED AS FINAL
B	04/30/18	REVISED PER COMMENTS
A	04/02/18	PRELIMINARY SUBMISSION

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Dewberry Engineers Inc.
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SUITE 301
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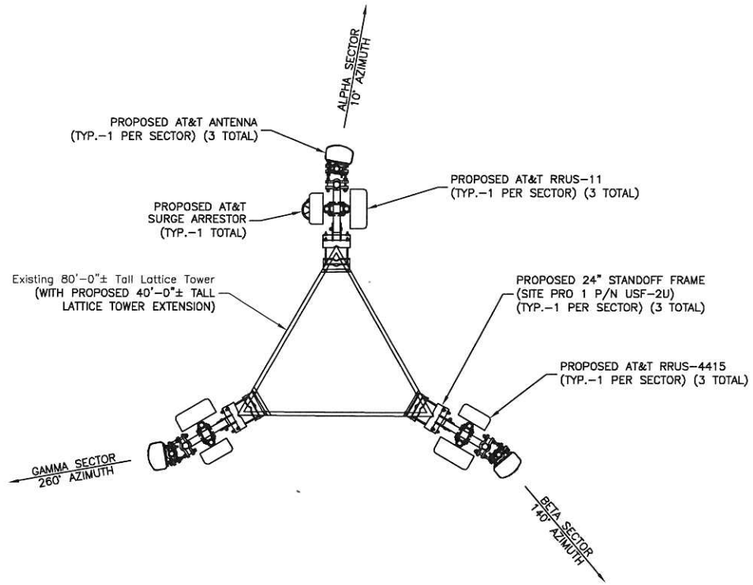
JIANG YU, P.E.
CT LICENSE NO. 0023222

DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50055106
JOB NUMBER:	50065689

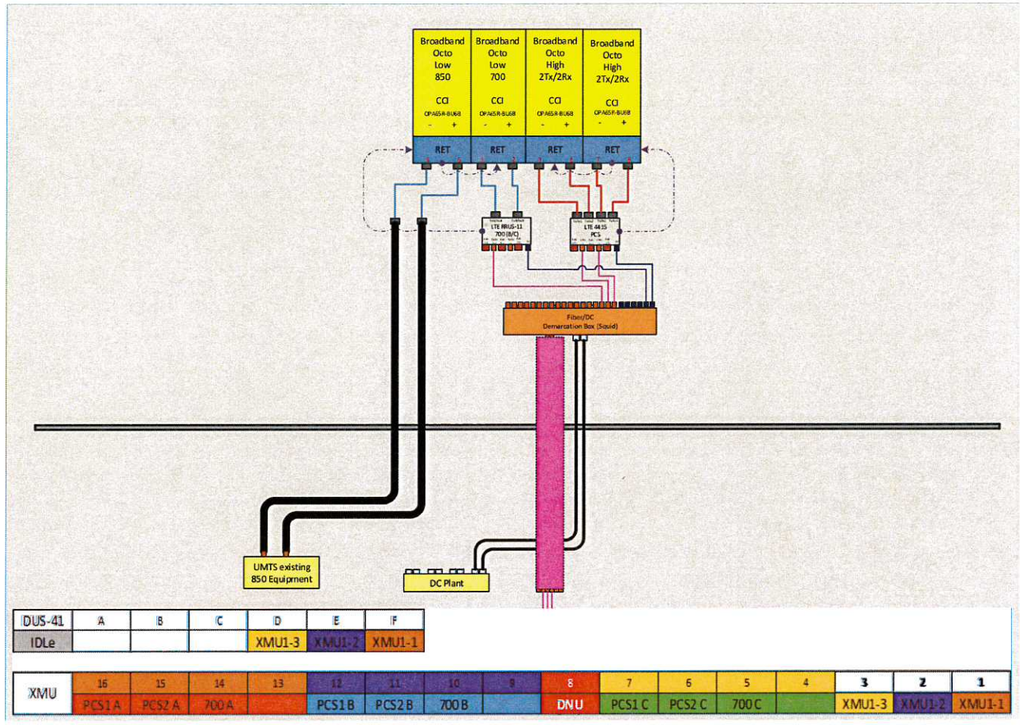
SITE ADDRESS:
250 MERIDEN
WATERBURY TURNPIKE,
SOUTHINGTON, CT 06489
HARTFORD COUNTY

SHEET TITLE
SITE PLAN & ELEVATION

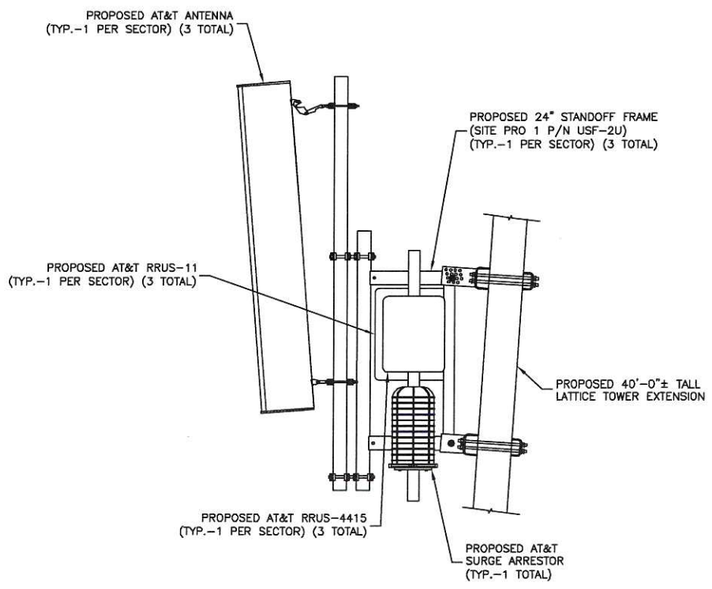
SHEET NUMBER
Z-3



PROPOSED ANTENNA LAYOUT 1
SCALE: N.T.S.



PROPOSED PLUMBING DIAGRAM 2
SCALE: N.T.S.



ANTENNA MOUNTING DETAIL 3
SCALE: N.T.S.

ANTENNA B.O.M.

	#	ANTENNA MODEL	ANTENNA SIZE (HxWxD, WEIGHT)	TECHNOLOGY	ANTENNA AZIMUTH	MECHANICAL DOWNTILT	CABLES	RRH'S	OVP BOXES
ALPHA	A1	CCI OPA-65R-LCUU-H6	72.3"x14.4"x7.3", 56.9 LBS	700/850/1900	10°	0°	(6) 1-1/4"ø COAX CABLES (1) FIBER CABLES & (2) DC CABLES HOUSED IN (1) 2"ø FLEX INNERDUCT	(3) ERICSSON RRUS-11 (19.7"x17.0"x7.2", 55.0 LBS) (3) ERICSSON RRUS-4415 (16.5"x13.4"x5.9", 46.0 LBS)	(1) RAYCAP DC6-48-60-18-8F (23.5"x9.7"ø, 20.0 LBS)
BETA	B1	CCI OPA-65R-LCUU-H6	72.3"x14.4"x7.3", 56.9 LBS	700/850/1900	140°	0°			
GAMMA	C1	CCI OPA-65R-LCUU-H6	72.3"x14.4"x7.3", 56.9 LBS	700/850/1900	260°	0°			

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

SAI
27 NORTHWESTERN DRIVE
SALEM, NH 03079

CT1033
SOUTHINGTON
ROGUS

CERTIFICATE DRAWINGS

0	05/02/18	ISSUED AS FINAL
B	04/30/18	REVISED PER COMMENTS
A	04/02/18	PRELIMINARY SUBMISSION

Dewberry®
Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

JIANG YU, P.E.
CT LICENSE NO. 0023222

DRAWN BY:	JC
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50055106
JOB NUMBER:	50065689

SITE ADDRESS:

250 MERIDEN
WATERBURY TURNPIKE,
SOUTHINGTON, CT 06489
HARTFORD COUNTY

SHEET TITLE

CONSTRUCTION
DETAILS

SHEET NUMBER

Z-4

3

PAUL J. FORD & COMPANY

Date: **March 16, 2018**

Jay Patton
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
kswarts@pjfweb.com

Subject: **Structural Modification Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT1033
	Carrier Site Name:	SOUTHINGTON
ROGUS		
Crown Castle Designation:	**Crown Castle BU Number:**	841298
	Crown Castle Site Name:	SOUTHINGTON ROGUS
	Crown Castle JDE Job Number:	482771
	Crown Castle Work Order Number:	1537529
	Crown Castle Order Number:	424357 Rev. 1
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37518-0484.002.8800

Site Data: **250 MERIDEN WATERBURY TURNPIKE, SOUTHINGTON, Hartford County, CT**
Latitude *41° 33' 24.54"*, Longitude *-72° 51' 10.84"*
120 Foot - Self Support Tower

Dear Jay Patton,

Paul J. Ford and Company is pleased to submit this **"Structural Modification Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1152645, in accordance with order 424357, revision 1.

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:

LC4.5: Modified Structure w/ Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 123 mph converted to a nominal 3-second gust wind speed of 95 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category B and Topographic Category 1 were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Paul J. Ford and Company* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Kurt J. Swarts, P.E.
Project Manager MRB

tnxTower Report - version 7.0.5.1

STATE OF CONNECTICUT
JOSEPH PACHICARAN JACOBS
No. PEN 22731
LICENSED PROFESSIONAL ENGINEER

MAR 19 2018

PAUL J. FORD & COMPANY

Date: **March 16, 2018**

Jay Patton
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

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Respectfully submitted by:

Kurt J. Swarts, P.E.
Project Manager

tnxTower Report - version 7.0.5.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 120-ft Self Support tower designed by Pirod and mapped by GPD in April of 2014. The original design standard and wind speed are not known at the time of the analysis. The tower has been modified multiple times in the past to accommodate additional loading.

The tower has been analyzed with proposed modifications to the existing structure and a 40-ft extension. See attached modification drawings for details.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 123 mph converted to a nominal 3-second gust wind speed of 95 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category B and Topographic Category 1 were used in this analysis.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
119.0	120.0	3	cci antennas	OPA65R-BU6BA-K w/ Mount Pipe	6 2 1	1-1/4 3/4 3/8	-
		3	ericsson	RRUS 11			
		3	ericsson	RRUS 4415 B25			
		1	raycap	DC6-48-60-18-8C			
	119.0	6	tower mounts	5' x 2' Pipe Mount			
		1	tower mounts	Side Arm Mount [SO 304-3]			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
119.0	127.0	1	scala	OGB6-900	3	7/8	1
	123.0	1	rfs celwave	BA1012-0			
	122.0	1	pctel	MFB9157			
80.0	88.0	1	scala	OGB6-900	3	7/8	2
	84.0	1	rfs celwave	BA1012-0			
	83.0	1	pctel	MFB9157			
76.0	78.0	3	adc	DD700/DD1900	12 2	7/8 3/4	3
		3	cci antennas	DTMABP0721VG12A			
		4	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe			
		2	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe			
		2	ericsson	RRU-11			
		3	ericsson	RRU-12			
		1	ericsson	RRUL-11			
		2	ericsson	RRUS 32 B30			
		3	ericsson	RRUS A2 MODULE			
		3	ericsson	RRUS E2 B29			
		1	ericsson	RRUS-32 B30			
		3	kathrein	800 10121 w/ Mount Pipe			
		3	raycap	DC6-48-60-18-8F			
	76.0	1	tower mounts	Sector Mount [SM 1306-3]			
58.0	60.0	3	alcatel lucent	B13 RRH4X30-4R	2	1-1/4	1
		3	alcatel lucent	B66A RRH4X45			
		6	commscope	SBNHH-1D65B w/ Mount Pipe			
		2	rfs celwave	DB-T1-6Z-8AB-0Z			
	58.0	1	tower mounts	Sector Mount [SM 402-3]			
58.0	65.0	1	rfs celwave	BA1012-0	2	7/8	1
		1	scala	OGD6-905/945			
	58.0	2	tower mounts	Side Arm Mount [SO 305-1]			
50.0	60.0	1	scala	OGD6-905/945	1 1	7/8 1/2	1
	56.0	1	scala	OGB9-900-DT3			
	50.0	2	tower mounts	Side Arm Mount [SO 305-1]			
42.0	46.0	2	empty	EMPTY_MOUNT w/ Mount Pipe	-	-	1

Notes:
1) Existing Equipment
2) Existing Equipment and feedlines relocated to 119-ft.
3) Equipment To Be Removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	GPD: 2014723.59347.01: 4/4/2014	5114302	CCISITES
4-POST-MODIFICATION INSPECTION	TEP: 55617_27883:3/23/2015	6175357	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	GPD: 2014723.59347.01: 4/4/2014	5114267	CCISITES
4-TOWER MANUFACTURER DRAWINGS	GPD: 2014723.21.59347.01: 41/4/2014	5114299	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Jacobs: 1080709:7/20/2015	6175374	CCISITES
PROPOSED MODIFICATION DESIGN DRAWINGS	PJF: 37518-0484.002.8800:3/16/2018	-	-

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Foundation steel reinforcement was not provided at the time of the analysis. Minimum steel has been assumed in the analysis
5) Existing tower and foundation material grades were not known at the time of the analysis. The material grades used in this analysis have been assumed, based on knowledge of the material grades commonly used by Pirod.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the 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
T1	120 - 100	Leg	1 1/2	3	-14.19	52.90	26.8	Pass
T2	100 - 80	Leg	1 1/2	87	-34.40	52.90	65.0	Pass
T3	80 - 60	Leg	1 1/2	173	-52.30	52.89	98.9	Pass
T4	60 - 40	Leg	(37518-0484) 1.75" SR w_2.375" x 0.154" half pipe sleeve	252	-82.75	93.68	88.3	Pass
T5	40 - 20	Leg	(37518-0484) 2" SR	330	-111.27	150.13	74.1	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
			w_2.875" x 0.276" half pipe sleeve					
T6	20 - 0	Leg	(37518-0484) 2 1/4" SR w_2.875" x 0.276" half pipe sleeve	408	-138.58	186.03	74.5	Pass
T1	120 - 100	Diagonal	5/8	14	-1.34	4.32	31.0	Pass
T2	100 - 80	Diagonal	5/8	101	-1.89	4.32	43.8	Pass
T3	80 - 60	Diagonal	5/8	186	-1.64	3.53	46.5	Pass
T4	60 - 40	Diagonal	3/4	262	-2.70	6.16	43.8	Pass
T5	40 - 20	Diagonal	7/8	403	-3.16	10.37	30.4	Pass
T6	20 - 0	Diagonal	7/8	419	-2.90	8.06	35.9	Pass
T1	120 - 100	Horizontal	3/4	27	-0.30	5.98	5.0	Pass
T2	100 - 80	Horizontal	3/4	115	-0.84	5.98	14.1	Pass
T3	80 - 60	Horizontal	3/4	198	-1.17	4.73	24.7	Pass
T4	60 - 40	Horizontal	3/4	277	-1.09	3.69	29.6	Pass
T5	40 - 20	Horizontal	7/8	400	-1.56	6.26	24.9	Pass
T6	20 - 0	Horizontal	7/8	478	-1.38	4.90	28.2	Pass
T1	120 - 100	Secondary Horizontal	5/8	86	0.00	13.81	0.7	Pass
T2	100 - 80	Secondary Horizontal	5/8	172	0.00	13.81	0.6	Pass
T1	120 - 100	Top Girt	1	4	-0.18	15.57	1.1	Pass
T2	100 - 80	Top Girt	1	91	-0.23	15.57	1.4	Pass
T3	80 - 60	Top Girt	1	177	-0.29	15.48	1.8	Pass
T4	60 - 40	Top Girt	1	256	-0.21	13.22	1.6	Pass
T5	40 - 20	Top Girt	1	333	-0.37	10.90	3.4	Pass
T6	20 - 0	Top Girt	1	412	-0.32	8.59	3.7	Pass
T1	120 - 100	Bottom Girt	3/4	9	-0.72	5.98	12.0	Pass
T2	100 - 80	Bottom Girt	3/4	95	-1.14	5.98	19.1	Pass
T3	80 - 60	Bottom Girt	3/4	180	-1.24	4.41	28.0	Pass
T4	60 - 40	Bottom Girt	1	259	-1.76	10.86	16.2	Pass
T5	40 - 20	Bottom Girt	1	337	-1.70	8.73	19.5	Pass
T6	20 - 0	Bottom Girt	1	415	-1.64	6.98	23.4	Pass
							Summary	
						Leg (T3)	98.9	Pass
						Diagonal (T3)	46.5	Pass
						Horizontal (T4)	29.6	Pass
						Secondary Horizontal (T1)	0.7	Pass
						Top Girt (T6)	3.7	Pass
						Bottom Girt (T3)	28.0	Pass
						Bolt Checks	66.6	Pass
						Rating =	98.9	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	50.6	Pass
1	Base Foundation	0	13.4	Pass
1	Base Foundation Soil Interaction	0	54.1	Pass

Structure Rating (max from all components) =	98.9%

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

4.1) Recommendations

The tower and its foundation will have sufficient capacity to carry the proposed loading configuration once the proposed modifications are installed.

- Install the proposed 40-ft tower extension.

APPENDIX A

TNXTOWER OUTPUT

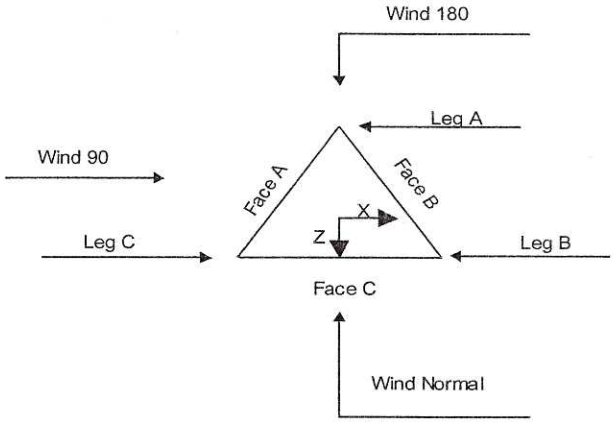
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 120.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.00 ft at the top and 5.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 95.00 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.00 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50.00 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60.00 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
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-G Bracing Resist. Exemption
√ Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G 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		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	120.00-100.00			3.00	1	20.00
T2	100.00-80.00			3.00	1	20.00
T3	80.00-60.00			3.00	1	20.00
T4	60.00-40.00			3.50	1	20.00
T5	40.00-20.00			4.00	1	20.00
T6	20.00-0.00			4.50	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	120.00-100.00	2.33	X Brace	No	Yes+Steps	8.00	8.00
T2	100.00-80.00	2.33	X Brace	No	Yes+Steps	8.00	8.00
T3	80.00-60.00	2.33	X Brace	No	Yes	8.00	8.00
T4	60.00-40.00	2.33	X Brace	No	Yes	8.00	8.00
T5	40.00-20.00	2.33	X Brace	No	Yes	8.00	8.00
T6	20.00-0.00	2.33	X Brace	No	Yes	8.00	8.00

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 120.00-100.00	Solid Round	1 1/2	A572-50 (50 ksi)	Solid Round	5/8	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T2 100.00-80.00	Solid Round	1 1/2	A572-50 (50 ksi)	Solid Round	5/8	A36 (36 ksi)
T3 80.00-60.00	Arbitrary Shape	(37518-0484) 1.5" SR w_1.9" x 0.188" half pipe sleeve	A572-50 (50 ksi)	Solid Round	5/8	A36 (36 ksi)
T4 60.00-40.00	Arbitrary Shape	(37518-0484) 1.75" SR w_2.375" x 0.154" half pipe sleeve	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T5 40.00-20.00	Arbitrary Shape	(37518-0484) 2" SR w_2.875" x 0.276" half pipe sleeve	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 20.00-0.00	Arbitrary Shape	(37518-0484) 2 1/4" SR w_2.875" x 0.276" half pipe sleeve	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 120.00-100.00	Solid Round	1	A36 (36 ksi)	Solid Round	3/4	A36 (36 ksi)
T2 100.00-80.00	Solid Round	1	A36 (36 ksi)	Solid Round	3/4	A36 (36 ksi)
T3 80.00-60.00	Solid Round	1	A36 (36 ksi)	Solid Round	3/4	A36 (36 ksi)
T4 60.00-40.00	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T5 40.00-20.00	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T6 20.00-0.00	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Solid Round	3/4	A36 (36 ksi)
T2 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Solid Round	3/4	A36 (36 ksi)
T3 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Solid Round	3/4	A36 (36 ksi)
T4 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Solid Round	3/4	A36 (36 ksi)
T5 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 20.00-0.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 120.00-100.00	Solid Round	5/8	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T2 100.00-80.00	Solid Round	5/8	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

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
T1 120.00-100.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T2 100.00-80.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T3 80.00-60.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T4 60.00-40.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T5 40.00-20.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T6 20.00-0.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 120.00-100.00	No	No	1	0.9 0.9	1	1	0.7 0.7	0.7 0.7	1	1 1
T2 100.00-80.00	No	No	1	0.9 0.9	1	1	0.7 0.7	0.7 0.7	1	1 1
T3 80.00-60.00	No	No	1	0.9 0.9	1	1	0.7 0.7	0.7 0.7	1	1 1
T4 60.00-40.00	No	No	1	0.9 0.9	1	1	0.7 0.7	0.7 0.7	1	1 1
T5 40.00-20.00	No	No	1	0.9 0.9	1	1	0.7 0.7	0.7 0.7	1	1 1
T6 20.00-0.00	No	No	1	0.9 0.9	1	1	0.7 0.7	0.7 0.7	1	1 1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 120.00-100.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	0.75	0.00	1	0.00	0.75
T2 100.00-80.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	0.75	0.00	1	0.00	0.75
T3 80.00-60.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	0.75	0.00	1	0.00	0.75
T4 60.00-40.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	0.75	0.00	1	0.00	0.75
T5 40.00-20.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	0.75	0.00	1	0.00	0.75
T6 20.00-0.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	0.75	0.00	1	0.00	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 120.00-100.00	Flange	0.63 A325N	4	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T2 100.00-80.00	Flange	0.63 A325N	4	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T3 80.00-60.00	Sleeve DS	0.63 A325N	8	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T4 60.00-40.00	Sleeve DS	0.63 A325N	10	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T5 40.00-20.00	Sleeve DS	0.75 A325N	10	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T6 20.00-0.00	Flange	0.75 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8 ****	B	No	Ar (CaAa)	120.00 - 8.00	0.00	0	1	1	0.38	0.38		0.22
LDF6-50A(1-1/4)	A	No	Ar (CaAa)	119.00 - 8.00	0.00	-0.25	6	3	1.00 0.50	1.55		0.60
FB-L98B-034-XXX(3/8)	A	No	Ar (CaAa)	119.00 - 8.00	0.00	-0.35	1	1	0.39	0.39		0.06
WR-VG86ST-BRD(3/4) ****	A	No	Ar (CaAa)	119.00 - 8.00	0.00	-0.38	2	2	0.80	0.80		0.58
T-Brackets (Af)	C	No	Af (CaAa)	80.00 - 8.00	0.00	-0.4	1	1	1.00	1.00		8.40
FLC 78-50J(7/8)	C	No	Ar (CaAa)	119.00 - 8.00	0.00	-0.4	3	3	1.11	1.11		0.40
FLC 78-50J(7/8)	C	No	Ar (CaAa)	60.00 - 8.00	0.00	-0.3	2	1	1.11	1.11		0.40
FLC 12-	C	No	Ar (CaAa)	58.00 - 8.00	0.00	-0.28	1	1	0.64	0.64		0.17

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
50J(1/2) FLC 78-50J(7/8)	C	No	Ar (CaAa)	58.00 - 8.00	0.00	-0.26	1	1	1.11	1.11		0.40
LDF4-50A(1/2)	C	No	Ar (CaAa)	42.00 - 8.00	0.00	-0.25	1	1	0.63	0.63		0.15

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
T1	120.00-100.00	A	0.000	0.000	21.439	0.000	0.09
		B	0.000	0.000	0.750	0.000	0.00
		C	0.000	0.000	6.338	0.000	0.02
T2	100.00-80.00	A	0.000	0.000	22.567	0.000	0.10
		B	0.000	0.000	0.750	0.000	0.00
		C	0.000	0.000	6.672	0.000	0.02
T3	80.00-60.00	A	0.000	0.000	22.567	0.000	0.10
		B	0.000	0.000	0.750	0.000	0.00
		C	0.000	0.000	10.005	0.000	0.19
T4	60.00-40.00	A	0.000	0.000	22.567	0.000	0.10
		B	0.000	0.000	0.750	0.000	0.00
		C	0.000	0.000	17.732	0.000	0.22
T5	40.00-20.00	A	0.000	0.000	22.567	0.000	0.10
		B	0.000	0.000	0.750	0.000	0.00
		C	0.000	0.000	19.207	0.000	0.22
T6	20.00-0.00	A	0.000	0.000	13.540	0.000	0.06
		B	0.000	0.000	0.450	0.000	0.00
		C	0.000	0.000	11.524	0.000	0.13

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
T1	120.00-100.00	A	2.256	0.000	0.000	62.758	0.000	0.98
		B		0.000	0.000	9.774	0.000	0.15
		C		0.000	0.000	27.397	0.000	0.37
T2	100.00-80.00	A	2.211	0.000	0.000	65.255	0.000	1.00
		B		0.000	0.000	9.594	0.000	0.14
		C		0.000	0.000	28.534	0.000	0.38
T3	80.00-60.00	A	2.156	0.000	0.000	64.268	0.000	0.97
		B		0.000	0.000	9.375	0.000	0.14
		C		0.000	0.000	40.119	0.000	0.74
T4	60.00-40.00	A	2.085	0.000	0.000	62.985	0.000	0.94
		B		0.000	0.000	9.089	0.000	0.13
		C		0.000	0.000	81.418	0.000	1.35
T5	40.00-20.00	A	1.981	0.000	0.000	61.118	0.000	0.89
		B		0.000	0.000	8.674	0.000	0.12
		C		0.000	0.000	88.979	0.000	1.41
T6	20.00-0.00	A	1.775	0.000	0.000	34.449	0.000	0.47
		B		0.000	0.000	4.710	0.000	0.06
		C		0.000	0.000	49.715	0.000	0.74

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	120.00-100.00	-1.34	0.73	-0.13	0.13
T2	100.00-80.00	-1.36	0.75	-0.14	0.15
T3	80.00-60.00	-1.02	0.94	0.55	0.69
T4	60.00-40.00	-0.50	1.35	0.86	1.07
T5	40.00-20.00	-0.43	1.48	0.97	1.25
T6	20.00-0.00	-0.36	1.29	0.77	1.10

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	Safety Line 3/8	100.00 - 120.00	0.6000	0.1946
T1	3	LDF6-50A(1-1/4)	100.00 - 119.00	0.6000	0.1946
T1	4	FB-L98B-034-XXX(3/8)	100.00 - 119.00	0.6000	0.1946
T1	5	WR-VG86ST-BRD(3/4)	100.00 - 119.00	0.6000	0.1946
T1	8	FLC 78-50J(7/8)	100.00 - 119.00	0.6000	0.1946
T2	1	Safety Line 3/8	80.00 - 100.00	0.6000	0.2062
T2	3	LDF6-50A(1-1/4)	80.00 - 100.00	0.6000	0.2062
T2	4	FB-L98B-034-XXX(3/8)	80.00 - 100.00	0.6000	0.2062
T2	5	WR-VG86ST-BRD(3/4)	80.00 - 100.00	0.6000	0.2062
T2	8	FLC 78-50J(7/8)	80.00 - 100.00	0.6000	0.2062
T3	1	Safety Line 3/8	60.00 - 80.00	0.6000	0.2292
T3	3	LDF6-50A(1-1/4)	60.00 - 80.00	0.6000	0.2292
T3	4	FB-L98B-034-XXX(3/8)	60.00 - 80.00	0.6000	0.2292
T3	5	WR-VG86ST-BRD(3/4)	60.00 - 80.00	0.6000	0.2292
T3	7	T-Brackets (Af)	60.00 - 80.00	0.6000	0.2292
T3	8	FLC 78-50J(7/8)	60.00 - 80.00	0.6000	0.2292
T4	1	Safety Line 3/8	40.00 - 60.00	0.6000	0.2633
T4	3	LDF6-50A(1-1/4)	40.00 - 60.00	0.6000	0.2633
T4	4	FB-L98B-034-XXX(3/8)	40.00 - 60.00	0.6000	0.2633
T4	5	WR-VG86ST-BRD(3/4)	40.00 - 60.00	0.6000	0.2633
T4	7	T-Brackets (Af)	40.00 - 60.00	0.6000	0.2633
T4	8	FLC 78-50J(7/8)	40.00 - 60.00	0.6000	0.2633
T4	9	FLC 78-50J(7/8)	40.00 - 60.00	0.6000	0.2633
T4	10	FLC 12-50J(1/2)	40.00 - 58.00	0.6000	0.2633
T4	11	FLC 78-50J(7/8)	40.00 - 58.00	0.6000	0.2633
T4	12	LDF4-50A(1/2)	40.00 -	0.6000	0.2633

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	1	Safety Line 3/8	42.00 20.00 - 40.00	0.6000	0.2950
T5	3	LDF6-50A(1-1/4)	20.00 - 40.00	0.6000	0.2950
T5	4	FB-L98B-034-XXX(3/8)	20.00 - 40.00	0.6000	0.2950
T5	5	WR-VG86ST-BRD(3/4)	20.00 - 40.00	0.6000	0.2950
T5	7	T-Brackets (Af)	20.00 - 40.00	0.6000	0.2950
T5	8	FLC 78-50J(7/8)	20.00 - 40.00	0.6000	0.2950
T5	9	FLC 78-50J(7/8)	20.00 - 40.00	0.6000	0.2950
T5	10	FLC 12-50J(1/2)	20.00 - 40.00	0.6000	0.2950
T5	11	FLC 78-50J(7/8)	20.00 - 40.00	0.6000	0.2950
T5	12	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.2950
T6	1	Safety Line 3/8	8.00 - 20.00	0.6000	0.4059
T6	3	LDF6-50A(1-1/4)	8.00 - 20.00	0.6000	0.4059
T6	4	FB-L98B-034-XXX(3/8)	8.00 - 20.00	0.6000	0.4059
T6	5	WR-VG86ST-BRD(3/4)	8.00 - 20.00	0.6000	0.4059
T6	7	T-Brackets (Af)	8.00 - 20.00	0.6000	0.4059
T6	8	FLC 78-50J(7/8)	8.00 - 20.00	0.6000	0.4059
T6	9	FLC 78-50J(7/8)	8.00 - 20.00	0.6000	0.4059
T6	10	FLC 12-50J(1/2)	8.00 - 20.00	0.6000	0.4059
T6	11	FLC 78-50J(7/8)	8.00 - 20.00	0.6000	0.4059
T6	12	LDF4-50A(1/2)	8.00 - 20.00	0.6000	0.4059

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
OPA65R-BU6BA-K w/ Mount Pipe	A	From Leg	2.00 0 1	0.000	119.00	No Ice 1/2" Ice 1" Ice	8.09 8.64 9.16	7.65 8.83 9.71	0.08 0.15 0.23
RRUS 11	A	From Leg	2.00 0 1	0.000	119.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	0.05 0.07 0.10
RRUS 4415 B25	A	From Leg	2.00 0 1	0.000	119.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.04 0.06 0.07
DC6-48-60-18-8C	A	From Leg	2.00 0 1	0.000	119.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.20	2.74 2.96 3.20	0.03 0.05 0.08
OPA65R-BU6BA-K w/ Mount Pipe	B	From Leg	2.00 0 1	0.000	119.00	No Ice 1/2" Ice 1" Ice	8.09 8.64 9.16	7.65 8.83 9.71	0.08 0.15 0.23
RRUS 11	B	From Leg	2.00	0.000	119.00	No Ice	2.79	1.19	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0			1/2"	3.00	1.34	0.07
			1			Ice	3.21	1.50	0.10
						1" Ice			
RRUS 4415 B25	B	From Leg	2.00	0.000	119.00	No Ice	1.64	0.68	0.04
			0			1/2"	1.80	0.79	0.06
			1			Ice	1.97	0.91	0.07
						1" Ice			
OPA65R-BU6BA-K w/ Mount Pipe	C	From Leg	2.00	0.000	119.00	No Ice	8.09	7.65	0.08
			0			1/2"	8.64	8.83	0.15
			1			Ice	9.16	9.71	0.23
						1" Ice			
RRUS 11	C	From Leg	2.00	0.000	119.00	No Ice	2.79	1.19	0.05
			0			1/2"	3.00	1.34	0.07
			1			Ice	3.21	1.50	0.10
						1" Ice			
RRUS 4415 B25	C	From Leg	2.00	0.000	119.00	No Ice	1.64	0.68	0.04
			0			1/2"	1.80	0.79	0.06
			1			Ice	1.97	0.91	0.07
						1" Ice			
(2) 5' x 2' Pipe Mount	A	From Leg	1.00	0.000	119.00	No Ice	1.00	1.00	0.03
			0			1/2"	1.39	1.39	0.04
			0			Ice	1.70	1.70	0.05
						1" Ice			
(2) 5' x 2' Pipe Mount	B	From Leg	1.00	0.000	119.00	No Ice	1.00	1.00	0.03
			0			1/2"	1.39	1.39	0.04
			0			Ice	1.70	1.70	0.05
						1" Ice			
(2) 5' x 2' Pipe Mount	C	From Leg	1.00	0.000	119.00	No Ice	1.00	1.00	0.03
			0			1/2"	1.39	1.39	0.04
			0			Ice	1.70	1.70	0.05
						1" Ice			
Side Arm Mount [SO 304-3]	C	None		0.000	119.00	No Ice	1.76	1.76	0.07
						1/2"	2.75	2.75	0.10
						Ice	3.74	3.74	0.12
						1" Ice			
****									
OGB6-900	A	From Leg	4.00	0.000	119.00	No Ice	1.18	1.18	0.01
			0			1/2"	1.77	1.77	0.02
			8			Ice	2.13	2.13	0.03
						1" Ice			
BA1012-0	B	From Leg	4.00	0.000	119.00	No Ice	0.47	0.47	0.00
			0			1/2"	0.96	0.96	0.01
			4			Ice	1.31	1.31	0.01
						1" Ice			
MFB9157	C	From Leg	4.00	0.000	119.00	No Ice	1.20	1.20	0.00
			0			1/2"	2.02	2.02	0.01
			3			Ice	2.86	2.86	0.03
						1" Ice			
****									
****									
BA1012-0	B	From Leg	3.00	0.000	58.00	No Ice	0.47	0.47	0.00
			0			1/2"	0.96	0.96	0.01
			7			Ice	1.31	1.31	0.01
						1" Ice			
OGD6-905/945	A	From Leg	3.00	0.000	58.00	No Ice	2.51	2.51	0.03
			0			1/2"	3.74	3.74	0.04
			7			Ice	4.98	4.98	0.07
						1" Ice			
Side Arm Mount [SO 305-1]	A	From Leg	1.50	0.000	58.00	No Ice	0.94	1.41	0.03
			0			1/2"	1.48	2.17	0.04
			0			Ice	2.02	2.93	0.06
						1" Ice			
Side Arm Mount [SO 305-1]	B	From Leg	1.50	0.000	58.00	No Ice	0.94	1.41	0.03
			0			1/2"	1.48	2.17	0.04
			0			Ice	2.02	2.93	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
****									
B13 RRH4X30-4R	A	From Leg	4.00 0 2	0.000	58.00	No Ice 1/2" Ice 1" Ice	2.16 2.35 2.55	1.62 1.79 1.97	0.06 0.08 0.10
B66A RRH4X45	A	From Leg	4.00 0 2	0.000	58.00	No Ice 1/2" Ice 1" Ice	2.58 2.79 3.01	1.63 1.81 2.00	0.07 0.09 0.11
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 0 2	0.000	58.00	No Ice 1/2" Ice 1" Ice	8.40 8.96 9.49	7.07 8.26 9.18	0.07 0.14 0.21
DB-T1-6Z-8AB-0Z	A	From Leg	4.00 0 2	0.000	58.00	No Ice 1/2" Ice 1" Ice	4.80 5.07 5.35	2.00 2.19 2.39	0.04 0.08 0.12
B13 RRH4X30-4R	B	From Leg	4.00 0 2	0.000	58.00	No Ice 1/2" Ice 1" Ice	2.16 2.35 2.55	1.62 1.79 1.97	0.06 0.08 0.10
B66A RRH4X45	B	From Leg	4.00 0 2	0.000	58.00	No Ice 1/2" Ice 1" Ice	2.58 2.79 3.01	1.63 1.81 2.00	0.07 0.09 0.11
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 0 2	0.000	58.00	No Ice 1/2" Ice 1" Ice	8.40 8.96 9.49	7.07 8.26 9.18	0.07 0.14 0.21
DB-T1-6Z-8AB-0Z	B	From Leg	4.00 0 2	0.000	58.00	No Ice 1/2" Ice 1" Ice	4.80 5.07 5.35	2.00 2.19 2.39	0.04 0.08 0.12
B13 RRH4X30-4R	C	From Leg	4.00 0 2	0.000	58.00	No Ice 1/2" Ice 1" Ice	2.16 2.35 2.55	1.62 1.79 1.97	0.06 0.08 0.10
B66A RRH4X45	C	From Leg	4.00 0 2	0.000	58.00	No Ice 1/2" Ice 1" Ice	2.58 2.79 3.01	1.63 1.81 2.00	0.07 0.09 0.11
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 0 2	0.000	58.00	No Ice 1/2" Ice 1" Ice	8.40 8.96 9.49	7.07 8.26 9.18	0.07 0.14 0.21
Sector Mount [SM 402-3]	C	None		0.000	58.00	No Ice 1/2" Ice 1" Ice	18.91 26.78 34.65	18.91 26.78 34.65	0.85 1.23 1.62
****									
OGB9-900-DT3	A	From Leg	4.00 0 6	0.000	50.00	No Ice 1/2" Ice 1" Ice	1.94 2.94 3.95	1.94 2.94 3.95	0.02 0.03 0.05
OGD6-905/945	B	From Leg	4.00 0 10	0.000	50.00	No Ice 1/2" Ice 1" Ice	2.51 3.74 4.98	2.51 3.74 4.98	0.03 0.04 0.07
Side Arm Mount [SO 305-1]	A	From Leg	4.00 0 0	0.000	50.00	No Ice 1/2" Ice 1" Ice	0.94 1.48 2.02	1.41 2.17 2.93	0.03 0.04 0.06
Side Arm Mount [SO 305-1]	B	From Leg	4.00 0	0.000	50.00	No Ice 1/2"	0.94 1.48	1.41 2.17	0.03 0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment ° ft	Placement		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0			Ice 1" Ice	2.02	2.93	0.06
****									
(2) EMPTY_MOUNT w/ Mount Pipe	A	From Leg	4.00 0 4	0.000	42.00	No Ice 1/2" Ice 1" Ice	0.15 0.23 0.32	0.15 0.23 0.32	0.00 0.00 0.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 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

Comb. No.	Description
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 K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	120 - 100	Leg	Max Tension	23	13.00	-0.41	-0.26
			Max. Compression	2	-14.17	0.00	0.01
			Max. Mx	8	-0.69	0.51	0.00
			Max. My	14	-7.39	0.01	0.50
			Max. Vy	8	0.78	-0.01	0.00
			Max. Vx	14	0.76	0.00	-0.01
		Diagonal	Max Tension	4	1.32	0.00	0.00
			Max. Compression	4	-1.34	0.00	0.00
			Max. Mx	36	0.49	-0.00	0.00
			Max. My	32	0.16	-0.00	0.00
			Max. Vy	36	0.01	-0.00	0.00
			Max. Vx	32	0.00	0.00	0.00
		Horizontal	Max Tension	6	0.36	0.00	0.00
			Max. Compression	3	-0.30	0.00	0.00
			Max. Mx	26	0.12	0.01	0.00
			Max. My	18	0.03	0.00	0.00
			Max. Vy	26	-0.02	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	36	0.00	0.00	0.00
			Max. Compression	8	-0.00	0.00	0.00
			Max. Mx	27	0.00	0.00	0.00
			Max. My	20	0.00	0.00	-0.00
			Max. Vy	36	-0.05	0.00	0.00
			Max. Vx	38	-0.00	0.00	0.00
		Top Girt	Max Tension	10	0.18	0.00	0.00
			Max. Compression	15	-0.18	0.00	0.00
			Max. Mx	26	0.03	0.01	0.00
			Max. My	18	-0.07	0.00	0.00
			Max. Vy	26	-0.02	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00
		Bottom Girt	Max Tension	6	0.70	0.00	0.00
			Max. Compression	11	-0.72	0.00	0.00
			Max. Mx	29	0.44	0.01	0.00
			Max. My	20	0.11	0.00	-0.00
			Max. Vy	29	-0.02	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
T2	100 - 80	Leg	Max Tension	22	32.38	-0.45	-0.27
			Max. Compression	18	-34.23	0.22	-0.14
			Max. Mx	8	-0.70	-0.53	-0.00
			Max. My	2	-34.19	0.04	-0.52
			Max. Vy	20	-1.06	0.22	-0.07
			Max. Vx	2	-1.18	-0.01	0.27
		Diagonal	Max Tension	6	1.79	0.00	0.00
			Max. Compression	18	-1.83	0.00	0.00
			Max. Mx	35	0.42	-0.00	-0.00
			Max. My	32	0.03	-0.00	0.00
			Max. Vy	34	0.01	-0.00	0.00
			Max. Vx	32	0.00	0.00	0.00
		Horizontal	Max Tension	14	0.93	0.00	0.00
			Max. Compression	11	-0.83	0.00	0.00
			Max. Mx	29	0.51	0.01	0.00
			Max. My	20	0.04	0.00	-0.00
			Max. Vy	29	0.01	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	36	0.00	0.00	0.00
			Max. Compression	8	-0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	27	0.00	0.00	0.00
			Max. My	6	-0.00	0.00	-0.00
			Max. Vy	36	-0.05	0.00	0.00
			Max. Vx	38	-0.00	0.00	0.00
		Top Girt	Max Tension	10	0.33	0.00	0.00
			Max. Compression	9	-0.23	0.00	0.00
			Max. Mx	29	-0.07	0.01	0.00
			Max. My	18	-0.18	0.00	0.00
			Max. Vy	29	-0.02	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00
		Bottom Girt	Max Tension	14	1.02	0.00	0.00
			Max. Compression	10	-1.08	0.00	0.00
			Max. Mx	26	0.15	0.01	0.00
			Max. My	20	0.22	0.00	-0.00
			Max. Vy	26	-0.01	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
T3	80 - 60	Leg	Max Tension	15	49.76	0.43	0.03
			Max. Compression	18	-52.50	0.20	-0.01
			Max. Mx	6	33.37	-0.69	0.04
			Max. My	8	-1.00	-0.01	0.74
			Max. Vy	2	-0.99	0.20	0.01
			Max. Vx	8	-0.92	-0.01	0.74
		Diagonal	Max Tension	6	1.62	0.00	0.00
			Max. Compression	18	-1.73	0.00	0.00
			Max. Mx	35	0.41	-0.00	-0.00
			Max. My	16	-1.59	0.00	0.00
			Max. Vy	33	-0.01	-0.00	-0.00
			Max. Vx	32	0.00	0.00	0.00
		Horizontal	Max Tension	14	1.18	0.00	0.00
			Max. Compression	11	-1.08	0.00	0.00
			Max. Mx	26	0.26	0.01	0.00
			Max. My	32	0.22	0.00	0.00
			Max. Vy	26	-0.02	0.00	0.00
			Max. Vx	8	0.00	0.00	0.00
		Top Girt	Max Tension	10	0.37	0.00	0.00
			Max. Compression	11	-0.29	0.00	0.00
			Max. Mx	26	0.10	0.01	0.00
			Max. My	8	-0.22	0.00	-0.00
			Max. Vy	26	0.02	0.00	0.00
			Max. Vx	8	0.00	0.00	0.00
		Bottom Girt	Max Tension	14	1.08	0.00	0.00
			Max. Compression	19	-1.10	0.00	0.00
			Max. Mx	26	0.15	0.01	0.00
			Max. My	32	0.20	0.00	0.00
			Max. Vy	26	-0.02	0.00	0.00
			Max. Vx	32	-0.00	0.00	0.00
T4	60 - 40	Leg	Max Tension	7	77.69	0.78	-0.03
			Max. Compression	10	-83.10	0.39	0.03
			Max. Mx	2	-52.39	0.83	0.05
			Max. My	8	-1.38	-0.01	0.78
			Max. Vy	2	-1.82	0.39	-0.01
			Max. Vx	20	1.67	-0.00	-0.33
		Diagonal	Max Tension	23	2.64	0.00	0.00
			Max. Compression	10	-2.71	0.00	0.00
			Max. Mx	31	0.51	-0.01	-0.00
			Max. My	4	-1.98	0.00	-0.00
			Max. Vy	31	0.01	-0.01	0.00
			Max. Vx	4	0.00	0.00	-0.00
		Horizontal	Max Tension	6	1.25	0.00	0.00
			Max. Compression	11	-1.10	0.00	0.00
			Max. Mx	26	0.34	0.02	0.00
			Max. My	32	0.30	0.00	0.00
			Max. Vy	26	0.02	0.00	0.00
			Max. Vx	32	-0.00	0.00	0.00
		Top Girt	Max Tension	31	0.25	0.00	0.00
			Max. Compression	3	-0.17	0.00	0.00
			Max. Mx	26	0.15	0.02	0.00
			Max. My	32	0.06	0.00	0.00
			Max. Vy	26	0.02	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	32	0.00	0.00	0.00
		Bottom Girt	Max Tension	14	1.73	0.00	0.00
			Max. Compression	11	-1.77	0.00	0.00
			Max. Mx	26	0.22	0.02	0.00
			Max. My	32	0.29	0.00	0.00
			Max. Vy	26	0.02	0.00	0.00
			Max. Vx	32	0.00	0.00	0.00
T5	40 - 20	Leg	Max Tension	15	104.94	0.96	-0.03
			Max. Compression	10	-111.80	0.31	0.01
			Max. Mx	2	-82.88	1.55	-0.06
			Max. My	20	-2.88	-0.02	-1.45
			Max. Vy	2	-1.99	0.31	-0.01
			Max. Vx	20	1.67	-0.02	-1.45
		Diagonal	Max Tension	23	2.94	0.00	0.00
			Max. Compression	10	-3.18	0.00	0.00
			Max. Mx	31	0.61	-0.01	-0.00
			Max. My	24	-3.04	0.00	0.00
			Max. Vy	31	0.01	-0.01	-0.00
			Max. Vx	24	-0.00	0.00	0.00
		Horizontal	Max Tension	14	1.73	0.00	0.00
			Max. Compression	11	-1.57	0.00	0.00
			Max. Mx	26	0.32	0.02	0.00
			Max. My	33	-0.10	0.00	-0.00
			Max. Vy	26	0.02	0.00	0.00
			Max. Vx	33	0.00	0.00	0.00
		Top Girt	Max Tension	2	0.52	0.00	0.00
			Max. Compression	11	-0.38	0.00	0.00
			Max. Mx	26	0.16	0.02	0.00
			Max. My	32	0.09	0.00	0.00
			Max. Vy	26	-0.02	0.00	0.00
			Max. Vx	32	-0.00	0.00	0.00
		Bottom Girt	Max Tension	14	1.71	0.00	0.00
			Max. Compression	11	-1.71	0.00	0.00
			Max. Mx	26	0.21	0.03	0.00
			Max. Vy	26	0.02	0.00	0.00
T6	20 - 0	Leg	Max Tension	15	130.72	1.35	-0.03
			Max. Compression	10	-139.24	0.00	-0.00
			Max. Mx	2	-111.41	1.60	-0.05
			Max. My	20	-3.60	-0.01	-1.35
			Max. Vy	2	-2.20	0.00	-0.00
			Max. Vx	20	1.67	-0.01	-1.35
		Diagonal	Max Tension	25	2.92	0.00	0.00
			Max. Compression	10	-3.07	0.00	0.00
			Max. Mx	31	0.44	-0.01	0.00
			Max. My	24	-2.97	0.00	0.00
			Max. Vy	31	0.01	-0.01	-0.00
			Max. Vx	24	-0.00	0.00	0.00
		Horizontal	Max Tension	14	1.55	0.00	0.00
			Max. Compression	11	-1.39	0.00	0.00
			Max. Mx	26	0.03	0.02	0.00
			Max. Vy	26	0.02	0.00	0.00
		Top Girt	Max Tension	2	0.45	0.00	0.00
			Max. Compression	19	-0.32	0.00	0.00
			Max. Mx	26	0.14	0.02	0.00
			Max. Vy	26	0.02	0.00	0.00
		Bottom Girt	Max Tension	14	1.61	0.00	0.00
			Max. Compression	11	-1.65	0.00	0.00
			Max. Mx	26	0.73	0.03	0.00
			Max. Vy	26	-0.02	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	138.35	3.13	-1.83
	Max. H_x	18	138.35	3.13	-1.83
	Max. H_z	5	-111.63	-2.75	2.72
	Min. Vert	7	-130.34	-3.80	2.23
	Min. H_x	7	-130.34	-3.80	2.23
	Min. H_z	16	119.34	2.44	-2.10
Leg B	Max. Vert	10	139.21	-3.12	-1.87
	Max. H_x	23	-130.28	3.78	2.27
	Max. H_z	25	-111.61	2.73	2.79
	Min. Vert	23	-130.28	3.78	2.27
	Min. H_x	10	139.21	-3.12	-1.87
	Min. H_z	12	120.26	-2.41	-2.16
Leg A	Max. Vert	2	138.73	0.04	3.64
	Max. H_x	21	3.34	1.65	0.02
	Max. H_z	2	138.73	0.04	3.64
	Min. Vert	15	-130.65	-0.05	-4.42
	Min. H_x	11	-64.03	-1.67	-2.13
	Min. H_z	15	-130.65	-0.05	-4.42

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	10.86	0.00	0.00	0.52	-1.08	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	13.03	-0.01	-8.50	-581.92	-0.47	0.35
0.9 Dead+1.6 Wind 0 deg - No Ice	9.77	-0.01	-8.50	-579.77	-0.13	0.35
1.2 Dead+1.6 Wind 30 deg - No Ice	13.03	4.16	-7.24	-498.99	-288.79	0.06
0.9 Dead+1.6 Wind 30 deg - No Ice	9.77	4.16	-7.24	-497.22	-287.35	0.06
1.2 Dead+1.6 Wind 60 deg - No Ice	13.03	7.26	-4.19	-289.43	-503.72	-0.27
0.9 Dead+1.6 Wind 60 deg - No Ice	9.77	7.26	-4.19	-288.47	-501.45	-0.27
1.2 Dead+1.6 Wind 90 deg - No Ice	13.03	8.35	0.01	1.48	-577.73	-0.50
0.9 Dead+1.6 Wind 90 deg - No Ice	9.77	8.35	0.01	1.32	-575.18	-0.51
1.2 Dead+1.6 Wind 120 deg - No Ice	13.03	7.36	4.26	292.64	-505.39	-0.57
0.9 Dead+1.6 Wind 120 deg - No Ice	9.77	7.36	4.26	291.36	-503.12	-0.57
1.2 Dead+1.6 Wind 150 deg - No Ice	13.03	4.19	7.25	501.10	-290.26	-0.53
0.9 Dead+1.6 Wind 150 deg - No Ice	9.77	4.19	7.25	499.02	-288.81	-0.53
1.2 Dead+1.6 Wind 180 deg - No Ice	13.03	0.01	8.41	582.23	-2.17	-0.36
0.9 Dead+1.6 Wind 180 deg - No Ice	9.77	0.01	8.41	579.83	-1.83	-0.36
1.2 Dead+1.6 Wind 210 deg - No Ice	13.03	-4.16	7.24	500.25	286.16	-0.06
0.9 Dead+1.6 Wind 210 deg - No Ice	9.77	-4.16	7.24	498.17	285.38	-0.06
1.2 Dead+1.6 Wind 240 deg - No Ice	13.03	-7.35	4.24	291.17	501.91	0.26
0.9 Dead+1.6 Wind 240 deg - No Ice	9.77	-7.35	4.24	289.89	500.30	0.26
1.2 Dead+1.6 Wind 270 deg - No Ice	13.03	-8.35	-0.01	-0.22	575.11	0.51
0.9 Dead+1.6 Wind 270 deg - No Ice	9.77	-8.35	-0.01	-0.37	573.16	0.51

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.6 Wind 300 deg - No Ice	13.03	-7.28	-4.22	-290.91	501.94	0.58
0.9 Dead+1.6 Wind 300 deg - No Ice	9.77	-7.28	-4.22	-289.91	500.28	0.58
1.2 Dead+1.6 Wind 330 deg - No Ice	13.03	-4.19	-7.25	-499.84	287.63	0.53
0.9 Dead+1.6 Wind 330 deg - No Ice	9.77	-4.19	-7.25	-498.02	286.82	0.53
1.2 Dead+1.0 Ice+1.0 Temp	46.68	-0.00	-0.00	4.84	-2.76	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	46.68	0.00	-3.93	-285.73	-2.80	0.43
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	46.68	1.95	-3.38	-245.89	-147.02	0.29
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	46.68	3.37	-1.95	-139.46	-251.90	0.07
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	46.68	3.90	-0.00	4.96	-291.25	-0.16
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	46.68	3.40	1.96	150.29	-253.47	-0.35
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	46.68	1.95	3.38	255.80	-147.03	-0.45
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	46.68	-0.00	3.89	293.82	-2.81	-0.43
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	46.68	-1.95	3.38	255.79	141.41	-0.29
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	46.68	-3.40	1.96	150.27	247.86	-0.08
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	46.68	-3.90	0.00	4.94	285.64	0.16
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	46.68	-3.37	-1.95	-139.48	246.30	0.35
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	46.68	-1.95	-3.38	-245.90	141.42	0.45
Dead+Wind 0 deg - Service	10.86	-0.00	-2.12	-144.35	-0.88	0.09
Dead+Wind 30 deg - Service	10.86	1.04	-1.80	-123.72	-72.58	0.01
Dead+Wind 60 deg - Service	10.86	1.81	-1.05	-71.61	-126.04	-0.07
Dead+Wind 90 deg - Service	10.86	2.08	0.00	0.74	-144.44	-0.13
Dead+Wind 120 deg - Service	10.86	1.83	1.06	73.15	-126.45	-0.14
Dead+Wind 150 deg - Service	10.86	1.04	1.81	124.99	-72.95	-0.13
Dead+Wind 180 deg - Service	10.86	0.00	2.10	145.16	-1.31	-0.09
Dead+Wind 210 deg - Service	10.86	-1.04	1.80	124.78	70.40	-0.01
Dead+Wind 240 deg - Service	10.86	-1.83	1.06	72.78	124.05	0.06
Dead+Wind 270 deg - Service	10.86	-2.08	-0.00	0.31	142.26	0.13
Dead+Wind 300 deg - Service	10.86	-1.81	-1.05	-71.98	124.06	0.15
Dead+Wind 330 deg - Service	10.86	-1.04	-1.81	-123.94	70.76	0.13

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-10.86	0.00	-0.00	10.86	-0.00	0.000%
2	-0.01	-13.03	-8.51	0.01	13.03	8.50	0.014%
3	-0.01	-9.77	-8.51	0.01	9.77	8.50	0.021%
4	4.16	-13.03	-7.24	-4.16	13.03	7.24	0.014%
5	4.16	-9.77	-7.24	-4.16	9.77	7.24	0.017%
6	7.27	-13.03	-4.19	-7.26	13.03	4.19	0.014%
7	7.27	-9.77	-4.19	-7.26	9.77	4.19	0.017%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
8	8.35	-13.03	0.01	-8.35	13.03	-0.01	0.014%
9	8.35	-9.77	0.01	-8.35	9.77	-0.01	0.017%
10	7.36	-13.03	4.26	-7.36	13.03	-4.26	0.015%
11	7.36	-9.77	4.26	-7.36	9.77	-4.26	0.017%
12	4.19	-13.03	7.25	-4.19	13.03	-7.25	0.014%
13	4.19	-9.77	7.25	-4.19	9.77	-7.25	0.017%
14	0.01	-13.03	8.41	-0.01	13.03	-8.41	0.014%
15	0.01	-9.77	8.41	-0.01	9.77	-8.41	0.017%
16	-4.16	-13.03	7.24	4.16	13.03	-7.24	0.014%
17	-4.16	-9.77	7.24	4.16	9.77	-7.24	0.016%
18	-7.35	-13.03	4.24	7.35	13.03	-4.24	0.014%
19	-7.35	-9.77	4.24	7.35	9.77	-4.24	0.016%
20	-8.35	-13.03	-0.01	8.35	13.03	0.01	0.014%
21	-8.35	-9.77	-0.01	8.35	9.77	0.01	0.021%
22	-7.28	-13.03	-4.22	7.28	13.03	4.22	0.014%
23	-7.28	-9.77	-4.22	7.28	9.77	4.22	0.021%
24	-4.19	-13.03	-7.25	4.19	13.03	7.25	0.014%
25	-4.19	-9.77	-7.25	4.19	9.77	7.25	0.021%
26	0.00	-46.68	0.00	0.00	46.68	0.00	0.001%
27	0.00	-46.68	-3.93	-0.00	46.68	3.93	0.002%
28	1.95	-46.68	-3.38	-1.95	46.68	3.38	0.003%
29	3.37	-46.68	-1.95	-3.37	46.68	1.95	0.003%
30	3.91	-46.68	-0.00	-3.90	46.68	0.00	0.003%
31	3.40	-46.68	1.96	-3.40	46.68	-1.96	0.003%
32	1.95	-46.68	3.38	-1.95	46.68	-3.38	0.003%
33	-0.00	-46.68	3.89	0.00	46.68	-3.89	0.002%
34	-1.95	-46.68	3.38	1.95	46.68	-3.38	0.003%
35	-3.40	-46.68	1.96	3.40	46.68	-1.96	0.003%
36	-3.91	-46.68	0.00	3.90	46.68	-0.00	0.003%
37	-3.37	-46.68	-1.95	3.37	46.68	1.95	0.003%
38	-1.95	-46.68	-3.38	1.95	46.68	3.38	0.003%
39	-0.00	-10.86	-2.12	0.00	10.86	2.12	0.005%
40	1.04	-10.86	-1.80	-1.04	10.86	1.80	0.005%
41	1.81	-10.86	-1.05	-1.81	10.86	1.05	0.005%
42	2.08	-10.86	0.00	-2.08	10.86	-0.00	0.005%
43	1.84	-10.86	1.06	-1.83	10.86	-1.06	0.005%
44	1.04	-10.86	1.81	-1.04	10.86	-1.81	0.005%
45	0.00	-10.86	2.10	-0.00	10.86	-2.10	0.005%
46	-1.04	-10.86	1.80	1.04	10.86	-1.80	0.005%
47	-1.83	-10.86	1.06	1.83	10.86	-1.06	0.005%
48	-2.08	-10.86	-0.00	2.08	10.86	0.00	0.005%
49	-1.81	-10.86	-1.05	1.81	10.86	1.05	0.005%
50	-1.04	-10.86	-1.81	1.04	10.86	1.81	0.005%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	24	0.00009712	0.00012180
3	Yes	22	0.00011999	0.00015000
4	Yes	24	0.00009764	0.00012237
5	Yes	23	0.00009321	0.00011677
6	Yes	24	0.00009812	0.00012289
7	Yes	23	0.00009376	0.00011741
8	Yes	24	0.00009824	0.00012308
9	Yes	23	0.00009397	0.00011770
10	Yes	24	0.00009820	0.00012304
11	Yes	23	0.00009396	0.00011771
12	Yes	24	0.00009825	0.00012307
13	Yes	23	0.00009398	0.00011770
14	Yes	24	0.00009814	0.00012290
15	Yes	23	0.00009379	0.00011743
16	Yes	24	0.00009764	0.00012237
17	Yes	23	0.00009321	0.00011678

18	Yes	24	0.00009713	0.00012184
19	Yes	23	0.00009264	0.00011614
20	Yes	24	0.00009705	0.00012181
21	Yes	22	0.00011986	0.00014994
22	Yes	24	0.00009708	0.00012183
23	Yes	22	0.00011987	0.00014995
24	Yes	24	0.00009701	0.00012175
25	Yes	22	0.00011981	0.00014986
26	Yes	16	0.00000001	0.00013761
27	Yes	31	0.00012562	0.00013018
28	Yes	30	0.00012594	0.00014726
29	Yes	30	0.00011793	0.00013732
30	Yes	30	0.00011332	0.00013206
31	Yes	30	0.00011759	0.00013728
32	Yes	30	0.00012570	0.00014676
33	Yes	31	0.00010384	0.00011955
34	Yes	30	0.00012589	0.00014754
35	Yes	30	0.00011772	0.00013843
36	Yes	30	0.00011316	0.00013323
37	Yes	30	0.00011743	0.00013780
38	Yes	30	0.00012563	0.00014686
39	Yes	23	0.00000001	0.00012964
40	Yes	23	0.00000001	0.00012967
41	Yes	23	0.00000001	0.00012965
42	Yes	23	0.00000001	0.00012954
43	Yes	23	0.00000001	0.00012946
44	Yes	23	0.00000001	0.00012952
45	Yes	23	0.00000001	0.00012963
46	Yes	23	0.00000001	0.00012967
47	Yes	23	0.00000001	0.00012966
48	Yes	23	0.00000001	0.00012971
49	Yes	23	0.00000001	0.00012973
50	Yes	23	0.00000001	0.00012968

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	120 - 100	6.85	43	0.458	0.047
T2	100 - 80	4.93	43	0.439	0.037
T3	80 - 60	3.17	43	0.367	0.023
T4	60 - 40	1.78	43	0.273	0.016
T5	40 - 20	0.79	43	0.173	0.010
T6	20 - 0	0.21	43	0.085	0.004

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
119.00	OPA65R-BU6BA-K w/ Mount Pipe	43	6.75	0.458	0.047	139411
58.00	BA1012-0	43	1.66	0.263	0.015	11821
50.00	OGB9-900-DT3	43	1.23	0.222	0.013	12004
42.00	(2) EMPTY_MOUNT w/ Mount Pipe	43	0.87	0.182	0.010	12172

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	120 - 100	27.46	10	1.842	0.193
T2	100 - 80	19.74	10	1.763	0.152
T3	80 - 60	12.67	10	1.471	0.092
T4	60 - 40	7.10	10	1.090	0.063
T5	40 - 20	3.17	10	0.691	0.039
T6	20 - 0	0.85	10	0.339	0.015

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
119.00	OPA65R-BU6BA-K w/ Mount Pipe	10	27.07	1.840	0.191	35247
58.00	BA1012-0	10	6.64	1.050	0.062	2945
50.00	OGB9-900-DT3	10	4.94	0.888	0.054	2997
42.00	(2) EMPTY_MOUNT w/ Mount Pipe	10	3.49	0.729	0.042	3045

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	120	Leg	A325N	0.63	4	3.25	20.71	0.157	1	Bolt Tension
T2	100	Leg	A325N	0.63	4	8.10	20.71	0.391	1	Bolt Tension
T3	80	Leg	A325N	0.63	8	13.12	24.85	0.528	1	Bolt DS
T4	60	Leg	A325N	0.63	10	16.62	24.85	0.669	1	Bolt DS
T5	40	Leg	A325N	0.75	10	22.36	35.78	0.625	1	Bolt DS

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	1 1/2	20.00	2.33	74.7 K=1.00	1.77	-14.17	52.90	0.268 [1]
T2	100 - 80	1 1/2	20.00	2.33	74.7 K=1.00	1.77	-34.23	52.90	0.647 [1]
T3	80 - 60	(37518-0484) 1.5" SR w_1.9" x 0.188" half pipe sleeve	20.00	2.33	88.6 K=1.00	2.27	-52.50	57.62	0.911 [1]
T4	60 - 40	(37518-0484) 1.75" SR w_2.375" x 0.154" half pipe sleeve	20.00	2.33	68.8 K=1.00	2.94	-83.10	93.68	0.887 [1]
T5	40 - 20	(37518-0484) 2" SR w_2.875" x 0.276" half pipe sleeve	20.00	2.33	58.1 K=1.00	4.27	-111.80	150.13	0.745 [1]
T6	20 - 0	(37518-0484) 2 1/4" SR w_2.875" x 0.276" half	20.00	2.33	53.7 K=1.00	5.10	-139.24	186.03	0.748 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
		pipe sleeve							

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	5/8	3.80	1.82	125.9 K=0.90	0.31	-1.34	4.32	0.310 [1]
T2	100 - 80	5/8	3.80	1.82	125.9 K=0.90	0.31	-1.83	4.32	0.423 [1]
T3	80 - 60	5/8	4.17	2.01	138.7 K=0.90	0.31	-1.61	3.60	0.447 [1]
T4	60 - 40	3/4	4.59	2.20	126.6 K=0.90	0.44	-2.71	6.16	0.441 [1]
T5	40 - 20	7/8	4.67	2.22	109.4 K=0.90	0.60	-3.18	10.37	0.306 [1]
T6	20 - 0	7/8	5.48	2.62	129.4 K=0.90	0.60	-2.91	8.06	0.361 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	3/4	3.00	2.88	128.8 K=0.70	0.44	-0.30	5.98	0.050 [1]
T2	100 - 80	3/4	3.00	2.88	128.8 K=0.70	0.44	-0.83	5.98	0.138 [1]
T3	80 - 60	3/4	3.37	3.21	143.7 K=0.70	0.44	-0.92	4.83	0.191 [1]
T4	60 - 40	3/4	3.87	3.67	164.4 K=0.70	0.44	-1.10	3.69	0.297 [1]
T5	40 - 20	7/8	4.08	3.84	147.3 K=0.70	0.60	-1.57	6.26	0.250 [1]
T6	20 - 0	7/8	4.58	4.34	166.5 K=0.70	0.60	-1.39	4.90	0.284 [1]

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	5/8	1.50	1.44	110.4 K=1.00	0.31	-0.00	5.66	0.000 [1]
T2	100 - 80	5/8	1.50	1.44	110.4 K=1.00	0.31	-0.00	5.66	0.000 [1]

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	120 - 100	1	3.00	2.88	96.6 K=0.70	0.79	-0.18	15.57	0.011 [1]
T2	100 - 80	1	3.00	2.88	96.6 K=0.70	0.79	-0.23	15.57	0.014 [1]
T3	80 - 60	1	3.02	2.86	96.0 K=0.70	0.79	-0.29	15.66	0.018 [1]
T4	60 - 40	1	3.52	3.32	111.5 K=0.70	0.79	-0.17	13.22	0.013 [1]
T5	40 - 20	1	4.02	3.78	126.9 K=0.70	0.79	-0.38	10.90	0.034 [1]
T6	20 - 0	1	4.52	4.28	143.7 K=0.70	0.79	-0.32	8.59	0.037 [1]

[1] $P_u / \phi P_n$ controls

Bottom Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	120 - 100	3/4	3.00	2.88	128.8 K=0.70	0.44	-0.72	5.98	0.120 [1]
T2	100 - 80	3/4	3.00	2.88	128.8 K=0.70	0.44	-1.08	5.98	0.181 [1]
T3	80 - 60	3/4	3.48	3.33	149.0 K=0.70	0.44	-1.10	4.50	0.245 [1]
T4	60 - 40	1	3.98	3.79	127.2 K=0.70	0.79	-1.77	10.86	0.163 [1]
T5	40 - 20	1	4.48	4.24	142.6 K=0.70	0.79	-1.71	8.73	0.196 [1]
T6	20 - 0	1	4.98	4.74	159.4 K=0.70	0.79	-1.65	6.98	0.236 [1]

[1] $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	120 - 100	1 1/2	20.00	2.33	74.7	1.77	13.00	79.52	0.164 [1]
T2	100 - 80	1 1/2	20.00	2.33	74.7	1.77	32.38	79.52	0.407 [1]
T3	80 - 60	(37518-0484) 1.5" SR w_1.9" x 0.188" half pipe sleeve	20.00	2.33	88.6	2.27	49.76	102.27	0.487 [1]
T4	60 - 40	(37518-0484) 1.75" SR w_2.375" x 0.154" half	20.00	2.33	68.8	2.94	77.69	132.41	0.587 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T5	40 - 20	pipe sleeve (37518-0484) 2" SR w_2.875" x 0.276" half pipe sleeve	20.00	2.33	58.1	4.27	104.94	192.08	0.546 [1]
T6	20 - 0	(37518-0484) 2 1/4" SR w_2.875" x 0.276" half pipe sleeve	20.00	2.33	53.7	5.10	130.72	229.63	0.569 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	5/8	3.80	1.82	139.9	0.31	1.32	9.94	0.132 [1]
T2	100 - 80	5/8	3.80	1.82	139.9	0.31	1.79	9.94	0.180 [1]
T3	80 - 60	5/8	3.84	1.84	141.4	0.31	1.62	9.94	0.163 [1]
T4	60 - 40	3/4	4.59	2.20	140.7	0.44	2.64	14.31	0.184 [1]
T5	40 - 20	7/8	4.67	2.22	121.6	0.60	2.94	19.48	0.151 [1]
T6	20 - 0	7/8	5.48	2.62	143.8	0.60	2.92	19.48	0.150 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	3/4	3.00	2.88	184.0	0.44	0.36	14.31	0.025 [1]
T2	100 - 80	3/4	3.00	2.88	184.0	0.44	0.93	14.31	0.065 [1]
T3	80 - 60	3/4	3.08	2.92	186.7	0.44	1.18	14.31	0.083 [1]
T4	60 - 40	3/4	3.87	3.67	234.8	0.44	1.25	14.31	0.088 [1]
T5	40 - 20	7/8	4.08	3.84	210.4	0.60	1.73	19.48	0.089 [1]
T6	20 - 0	7/8	4.58	4.34	237.8	0.60	1.55	19.48	0.080 [1]

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	5/8	1.50	1.44	110.4	0.31	0.00	13.81	0.000 [1]
T2	100 - 80	5/8	1.50	1.44	110.4	0.31	0.00	13.81	0.000 [1]

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	1	3.00	2.88	138.0	0.79	0.18	25.45	0.007 [1]
T2	100 - 80	1	3.00	2.88	138.0	0.79	0.33	25.45	0.013 [1]
T3	80 - 60	1	3.02	2.86	137.2	0.79	0.37	25.45	0.014 [1]
T4	60 - 40	1	3.52	3.32	159.3	0.79	0.25	25.45	0.010 [1]
T5	40 - 20	1	4.02	3.78	181.3	0.79	0.52	25.45	0.021 [1]
T6	20 - 0	1	4.52	4.28	205.3	0.79	0.45	25.45	0.018 [1]

[1] $P_u / \phi P_n$ controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	3/4	3.00	2.88	184.0	0.44	0.70	14.31	0.049 [1]
T2	100 - 80	3/4	3.00	2.88	184.0	0.44	1.02	14.31	0.071 [1]
T3	80 - 60	3/4	3.48	3.33	212.8	0.44	1.08	14.31	0.075 [1]
T4	60 - 40	1	3.98	3.79	181.7	0.79	1.73	25.45	0.068 [1]
T5	40 - 20	1	4.48	4.24	203.7	0.79	1.71	25.45	0.067 [1]
T6	20 - 0	1	4.98	4.74	227.7	0.79	1.61	25.45	0.063 [1]

[1] $P_u / \phi P_n$ controls

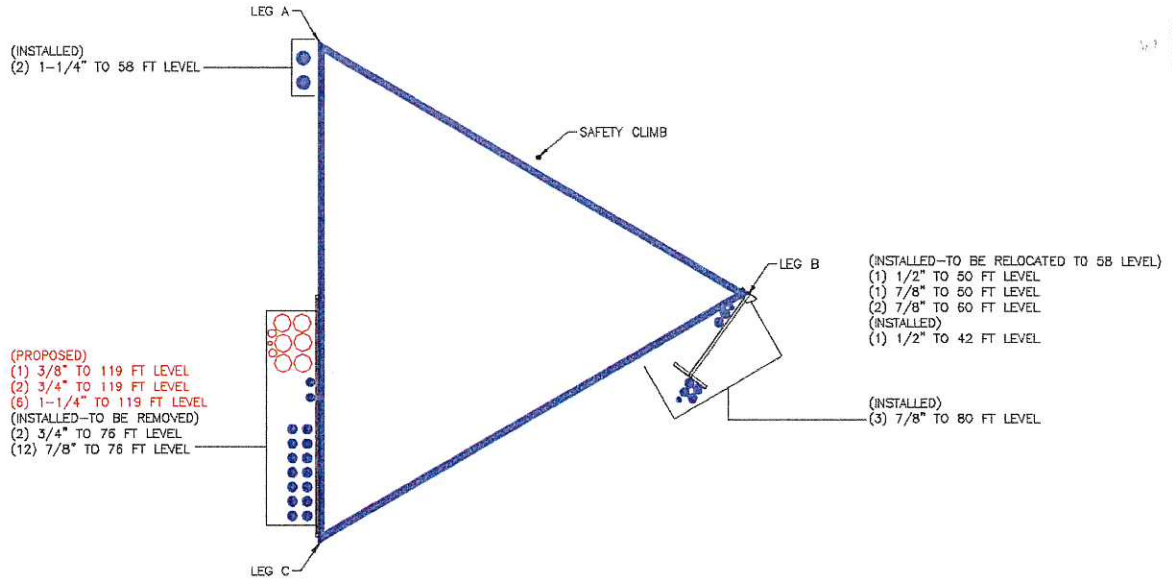
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	120 - 100	Leg	1 1/2	3	-14.17	52.90	26.8	Pass
T2	100 - 80	Leg	1 1/2	87	-34.23	52.90	64.7	Pass
T3	80 - 60	Leg	(37518-0484) 1.5" SR w_1.9" x 0.188" half pipe sleeve	173	-52.50	57.62	91.1	Pass
T4	60 - 40	Leg	(37518-0484) 1.75" SR w_2.375" x 0.154" half pipe sleeve	252	-83.10	93.68	88.7	Pass
T5	40 - 20	Leg	(37518-0484) 2" SR w_2.875" x 0.276" half pipe sleeve	330	-111.80	150.13	74.5	Pass
T6	20 - 0	Leg	(37518-0484) 2 1/4" SR w_2.875" x 0.276" half pipe sleeve	408	-139.24	186.03	74.8	Pass
T1	120 - 100	Diagonal	5/8	14	-1.34	4.32	31.0	Pass
T2	100 - 80	Diagonal	5/8	101	-1.83	4.32	42.3	Pass
T3	80 - 60	Diagonal	5/8	186	-1.61	3.60	44.7	Pass
T4	60 - 40	Diagonal	3/4	262	-2.71	6.16	44.1	Pass
T5	40 - 20	Diagonal	7/8	403	-3.18	10.37	30.6	Pass
T6	20 - 0	Diagonal	7/8	419	-2.91	8.06	36.1	Pass
T1	120 - 100	Horizontal	3/4	27	-0.30	5.98	5.0	Pass
T2	100 - 80	Horizontal	3/4	115	-0.83	5.98	13.8	Pass
T3	80 - 60	Horizontal	3/4	198	-0.92	4.83	19.1	Pass
T4	60 - 40	Horizontal	3/4	277	-1.10	3.69	29.7	Pass
T5	40 - 20	Horizontal	7/8	400	-1.57	6.26	25.0	Pass
T6	20 - 0	Horizontal	7/8	478	-1.39	4.90	28.4	Pass
T1	120 - 100	Secondary Horizontal	5/8	86	0.00	13.81	0.6	Pass
T2	100 - 80	Secondary Horizontal	5/8	172	0.00	13.81	0.6	Pass
T1	120 - 100	Top Girt	1	4	-0.18	15.57	1.1	Pass
T2	100 - 80	Top Girt	1	91	-0.23	15.57	1.4	Pass
T3	80 - 60	Top Girt	1	177	-0.29	15.66	1.8	Pass
T4	60 - 40	Top Girt	1	256	-0.17	13.22	1.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T5	40 - 20	Top Girt	1	333	-0.38	10.90	3.4	Pass
T6	20 - 0	Top Girt	1	412	-0.32	8.59	3.7	Pass
T1	120 - 100	Bottom Girt	3/4	9	-0.72	5.98	12.0	Pass
T2	100 - 80	Bottom Girt	3/4	95	-1.08	5.98	18.1	Pass
T3	80 - 60	Bottom Girt	3/4	180	-1.10	4.50	24.5	Pass
T4	60 - 40	Bottom Girt	1	259	-1.77	10.86	16.3	Pass
T5	40 - 20	Bottom Girt	1	337	-1.71	8.73	19.6	Pass
T6	20 - 0	Bottom Girt	1	415	-1.65	6.98	23.6	Pass
							Summary	
						Leg (T3)	91.1	Pass
						Diagonal (T3)	44.7	Pass
						Horizontal (T4)	29.7	Pass
						Secondary Horizontal (T1)	0.6	Pass
						Top Girt (T6)	3.7	Pass
						Bottom Girt (T3)	24.5	Pass
						Bolt Checks	66.9	Pass
						RATING =	**91.1**	**Pass**

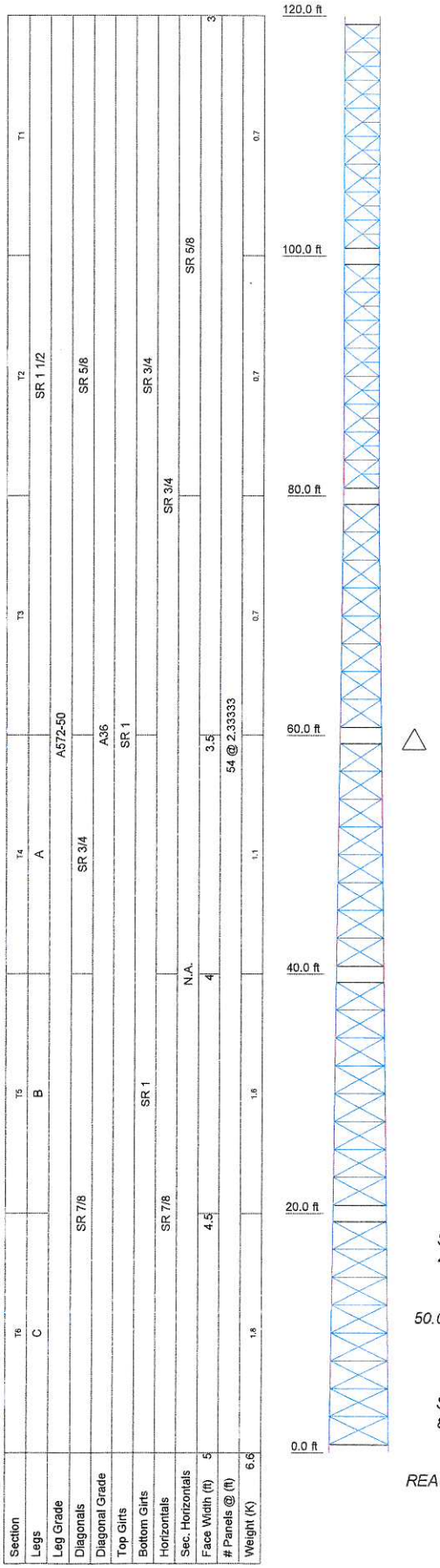
APPENDIX B

BASE LEVEL DRAWING



APPENDIX C

ADDITIONAL CALCULATIONS



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
OPA65R-BU6BA-K w/ Mount Pipe	119	Side Arm Mount [SO 305-1]	58
RRUS 11	119	Side Arm Mount [SO 305-1]	58
RRUS 4415 B25	119	B13 RRH4X30-4R	58
DC6-48-60-18-8C	119	B66A RRH4X45	58
OPA65R-BU6BA-K w/ Mount Pipe	119	(2) SBNHH-1D65B w/ Mount Pipe	58
RRUS 11	119	DB-T1-6Z-8AB-0Z	58
RRUS 4415 B25	119	B13 RRH4X30-4R	58
OPA65R-BU6BA-K w/ Mount Pipe	119	B66A RRH4X45	58
RRUS 11	119	(2) SBNHH-1D65B w/ Mount Pipe	58
RRUS 4415 B25	119	DB-T1-6Z-8AB-0Z	58
(2) 5' x 2' Pipe Mount	119	B13 RRH4X30-4R	58
(2) 5' x 2' Pipe Mount	119	B66A RRH4X45	58
(2) 5' x 2' Pipe Mount	119	(2) SBNHH-1D65B w/ Mount Pipe	58
Side Arm Mount [SO 304-3]	119	Sector Mount [SM 402-3]	58
OGB6-900	119	OGB9-900-DT3	50
BA1012-0	119	OGD6-905/945	50
MFB9157	119	Side Arm Mount [SO 305-1]	50
BA1012-0	58	Side Arm Mount [SO 305-1]	50
OGD6-905/945	58	(2) EMPTY_MOUNT w/ Mount Pipe	42

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	(37518-0484) 1.75" SR w_2.375" x 0.154" half pipe sleeve	C	(37518-0484) 2 1/4" SR w_2.875" x 0.276" half pipe sleeve
B	(37518-0484) 2" SR w_2.875" x 0.276" half pipe sleeve		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 95.00 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.00 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 98.9%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 139 K
SHEAR: 4 K

UPLIFT: -130 K
SHEAR: 4 K

AXIAL 47 K
SHEAR 4 K *MOMENT 295 kip-ft*

TORQUE 0 kip-ft
50.00 mph WIND - 1.00 in ICE

AXIAL 13 K
SHEAR 8 K *MOMENT 581 kip-ft*

TORQUE 1 kip-ft
REACTIONS - 95.00 mph WIND

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
Phone: (614) 221-6679
FAX:

Job: *80-Ft Self-Support Tower w/ 40-Ft Extension: Southington, C*		
Project: *BU841298 (37518-0484.001.8700)*		
Client: Crown Castle	Drawn by: kswarts	App'd:
Code: TIA-222-G	Date: 03/19/18	Scale: NTS
Path:		Dwg No. E-1

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

Job Number: 37518-0484.002.8800
Site Number: 841298
Site Name: Southington Rogus
By: KJS

Date: 3/19/2018
Version: v0.1
Effective: 3/5/2015

PiRod Leg Splice Connections - LRFD

Elevation =	60	ft
Leg Tension =	49.65	
Leg Compression =	52.3	
Yield strength of steel = F_y =	50	ksi
Tensile strength of steel = F_u =	65	ksi
Leg Diameter Above Splice = Dia =	1.5	in
Leg Diameter Below Splice= Dia =	1.75	in
Bolt Diameter =	0.625	inch
Number of bolts =	4	

Threads included on one side, excluded on the opposite side. A325N & A325X

Ag = 1.767
Ag = 2.405
h= 0.531
s= 1.609

U =	1	(U = 1 when load is transmitted directly thru the cross-section)
ϕ_t =	0.9	For tension yielding in the gross section
ϕ_t =	0.75	For tension rupture in the effective net section

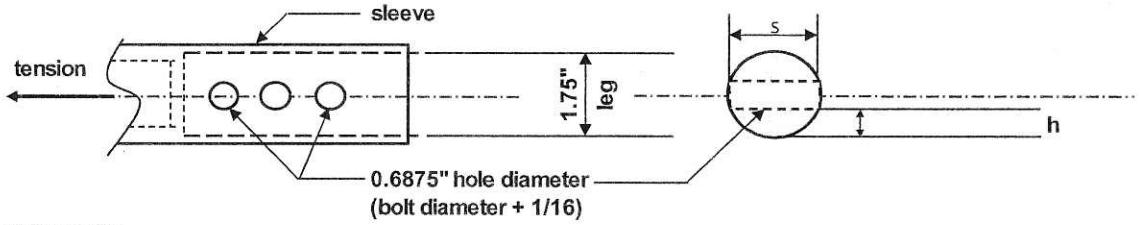
Tension:

1.5 inch diameter leg above splice

Gross allowable tension = (0.9)(Fy)(Ag) =(0.9)(50 ksi)(1.7671 in2) = 79.52 kips (at connection)

1.75 inch diameter leg below splice

An = net area =2((h/6s)(3h²+4s²)) = 1.23 in²
Gross allowable tension = (0.9)(Fy)(Ag) =(0.9)(50 ksi)(2.4053 in2) = 108.24 kips
Net allowable tension = (0.75)(U)(Fu)(Aen) =(0.75) (1) (65 ksi) (1.2331 in2) = 60.11 kips (at connection)



Bolt Capacity

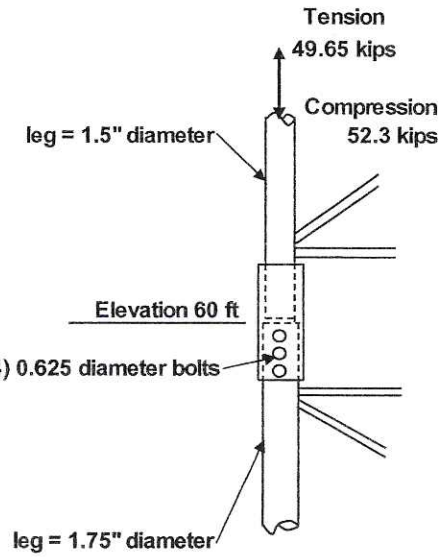
Gross area of one bolt = 0.307

Allowable load = (0.75) (phi) (Fub)(bolt area)(number of bolts)(shear planes)
Allowable load = (0.75)(0.55)(120 ksi)(0.307 in2)(4)(1)= 60.75 kips A325X
Allowable load = (0.75)(0.45)(120 ksi)(0.307 in2)(4)(1)= 49.7 kips A325N

Summary:

tension capacity =	79.52	(leg above splice) kips
tension capacity =	60.11	(leg below splice) kips
bolt capacity =	60.75	kips using A325X bolts one end
bolt capacity =	49.70	kips using A325N bolts on threaded end
total bolt capacity =	110.45	kips (325N one end; A325X other end)

Leg Above Tension =	49.65	< 79.52 Okay	stress ratio = 0.624
Leg Below Tension =	49.65	< 60.11 Okay	stress ratio = 0.826
Leg Compression =	52.3	< 110.45 Okay	stress ratio = 0.474
Leg Splice Bolts =	52.30	< 110.45 Okay	stress ratio = 0.474



PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

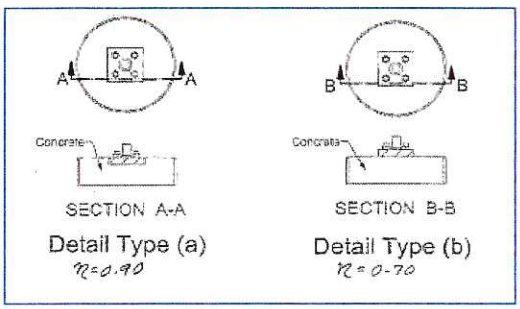
Existing and Post-Installed Anchor Rod Capacity

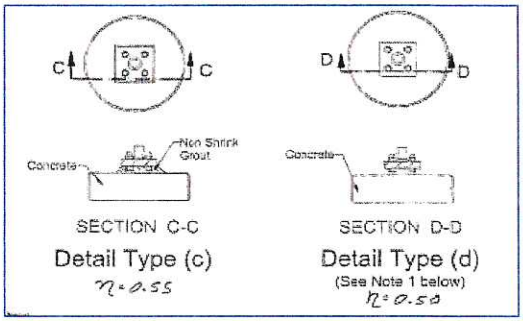
Loads

Compression:	139	kips	1.00	Maximum Ratio
Shear :	4	kips		

Existing Anchor Rods			Post-Installed Anchor Rods		
Anchor Rod Condition (n) :	0.5		Anchors Take Shear Load :	No	
Anchor Rod ø :	1 3/4	in	Anchor Rod ø :	1 1/4	in
Anchor Rod Quantity :	2		Anchor Rod Quantity :	2	
Anchor Rod Grade :	A572 Gr. 50		Anchor Rod Grade :	A193 Gr B7	
F_y :	50	ksi	F_y :	105	ksi
F_u :	65	ksi	F_u :	125	ksi
Threads per Inch :	5		Threads per Inch :	7	
Total Net Area :	3.80	in^2	Total Net Area :	1.94	in^2
Applied Compressive Load :	92.04	kip	Applied Compressive Load :	46.96	kip
Applied Shear Load :	4.00	kip	Applied Shear Load :	0.00	kip
ϕ :	0.8		ϕ :	0.8	
Total Anchor Rod Capacity ϕRnt :	197.54	kip	Total Anchor Rod Capacity ϕRnt :	193.82	kip
Existing Anchor Rod Ratio :	0.506		Post-Installed Anchor Rod Ratio :	0.242	
l_{ar} :	1.75	inches	l_{ar} :	1.25	inches
Moment :	2.28	k-in	Moment :	0.00	k-in
ϕR_{nv} :	52.77	kips	ϕR_{nv} :	51.77	kips
ϕR_{nt} :	98.77	kips	ϕR_{nt} :	96.91	kips
ϕR_{nm} :	26.59	k-in	ϕR_{nm} :	20.35	k-in
Interaction Ratio :			Interaction Ratio :		

Governing Stress Ratio : 0.506





PAUL J. FORD & COMPANY
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Phone 614.221.6679 www.pauljford.com

By KJS Date 3/19/2018
Project # 37518-0484

Anchor Rod Bracket Plate Analysis

Existing Leg Outer Diameter :	2.25	inches	Pipe Leg?:	No
Existing Pipe Leg Wall Thickness :		inches		
Existing Pipe Leg F_y :		ksi		
Existing Pipe Leg Load :		kip		
Anchor CL to Structure Face:	9.1875	inches		
Anchor Type :	Anchor Rod			
Anchor Size :	1.25" A193 Gr. B7			
Anchor Net Area :		in^2		
Anchor F_u :		ksi		
Anchor Design Tensile Capacity :		kip		
Anchor Analysis Tensile Load :	43.51	kip	1.00	Maximum Ratio
Tube Size :	Pipe 2.375 x 0.436 (XXS)			
Tube Grade:	A500 Gr. B (Fy=42)			
Tube F_y :	42	ksi		
Tube Unbraced Length :	6	inches	Analysis Ratio	
Tube Compressive Capacity :	93.07	kip	0.468	
Washer Plate Thickness :	1.25	inches		
Washer Plate F_y :	A572 Gr. 50		Analysis Ratio	
Washer Shear Capacity	212.06	kip	0.205	
Bracket Plate Thickness :	1.25	inches		
Bracket Plate Height :	16	inches		
Bracket Plate Width :	8	inches		
Bracket Plate Grade:	A572 Gr. 50			
Bracket Plate F_y :	50	ksi		
Bracket Moment Capacity :	3462	kip-in	Analysis Ratio	
Bracket Shear Capacity :	540.0	kip	0.141	
Tube to Bracket Weld Size :	5	/16 inch		
Tube to Bracket Weld Length :	14	inches	Analysis Ratio	
Tube to Bracket Weld Capacity :	97.91	kip	0.444	
Structure to Bracket Weld Size :	5	/16 inch		
Structure to Bracket Weld Length :	14	inches	Analysis Ratio	
Structure to Bracket Weld Capacity	97.91	kip	0.444	
Local Pipe Moment :	399.748	kip-in	Analysis Ratio	
Local Pipe Moment Capacity :	N/A	kip-in	N/A	*Not Pipe Leg*

SST Unit Base Foundation

BU # :	841298
Site Name:	Southington
App. Number:	424357 Rev 1

TIA-222 Revision: G

Tower Centroid Offset?:	☐
Block Foundation?:	☑

Superstructure Analysis Reactions		
Global Moment, **M**:	581	ft-kips
Global Axial, **P**:	13	kips
Global Shear, **V**:	8	kips
Leg Compression, P_{comp}:	139	kips
Leg Comp. Shear, V_{u_comp}:	4	kips
Leg Uplift, P_{uplift}:	130	kips
Leg Uplift. Shear, V_{u_uplift}:	4	kips
Tower Height, **H**:	120	ft
Base Face Width, **BW**:	5	ft
BP Dist. Above Fdn, bp_{dist}:	1.75	in
Anchor Bolt Circle, **BC**:	20.625	in

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating**	**Check**
Lateral (Sliding) (kips)	53.26	8.00	**15.0%**	**Pass**
Bearing Pressure (ksf)	3.75	1.58	**42.0%**	**Pass**
*Overturning (kip*ft)*	1156.75	626.17	**54.1%**	**Pass**
*Pad Flexure (kip*ft)*	1725.30	198.00	**11.5%**	**Pass**
Pad Shear - 1-way (kips)	502.81	39.36	**7.8%**	**Pass**
Pad Shear - 2-way (ksi)	0.16	0.02	**13.4%**	**Pass**

Soil Rating:	**54.1%**
Structural Rating:	**13.4%**

Pad Properties		
Depth, **D**:	5.50	ft
Pad Width, **W**:	16.00	ft
Pad Thickness, **T**:	3.25	ft
Pad Rebar Size (Bottom), **Sp**:	6	
Pad Rebar Quantity (Bottom), **mp**:	28	
Pad Clear Cover, cc_{pad}:	6	in

Material Properties		
Rebar Grade, **Fy**:	60000	psi
Concrete Compressive Strength, **F'c**:	3000	psi
Dry Concrete Density, δc:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	110	pcf
Ultimate Gross Bearing, Qult:	5.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:		degrees
SPT Blow Count, N_{blows}:	7	
Base Friction, μ:	0.35	
Neglected Depth, **N**:	3.3	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	None	ft

<-- Toggle between Gross and Net

Version 2.6.4

MODIFIED 80' (EXTENDED TO 120') SELF SUPPORT TOWER

BU #841298; SOUTHINGTON ROGUS

250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CONNECTICUT 06489
HARTFORD COUNTY
LAT: 41° 33' 24.54"; LONG: -72° 51' 10.84"
ORDER: 424357 REV. 1; WO: 1537529

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 · Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

PROJECT CONTACTS

STRUCTURE OWNER:
CROWN CASTLE
MOD PM: DAN VADNEY AT DAN.VADNEY@CROWNCASTLE.COM
PH: (518) 373-3510
MOD CM: JASON D'AMICO AT JASON.D'AMICO@CROWNCASTLE.COM
PH: (860) 209-0104

ENGINEER OF RECORD:
PJFMOD@PJFWEB.COM

THIS PROJECT INCLUDES THE FOLLOWING ITEMS
ADD TOWER EXTENSION TO TOP OF EXISTING TOWER
EXTEND SAFETY CLIMB TO NEW TOP OF TOWER
COORDINATE WITH CROWN CASTLE TO RELOCATE EXISTING ANTENNA FROM 80'± TO 126'±

SHEET INDEX	
SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
MI-1	MI CHECKLIST AND NOTES
N-1	GENERAL NOTES
S-1	TOWER ELEVATION
S-2	TOP OF TOWER FLANGE PLATE DETAIL
S-5	NEW TOWER SECTION DETAILS

WIND DESIGN DATA	
REFERENCE STANDARD	ANSI/TIA-222-G-2-2009
LOCAL CODE	2016 CONNECTICUT BUILDING CODE
ULTIMATE WIND SPEED (3-SECOND GUST)	123 MPH
CONVERTED NOMINAL WIND SPEED (3-SECOND GUST)	95 MPH
ICE THICKNESS	1.0 IN
ICE WIND SPEED	50 MPH
SERVICE WIND SPEED	60 MPH
RISK CATEGORY	II
EXPOSURE CATEGORY	B
Kzt	1.0

TOWER MANUFACTURER: PIROD
CCISITES DOC #: 5114299

QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM PAUL J. FORD AND COMPANY TO ASSIST CONTRACTORS IN CLASS IV RIGGING PLAN REVIEWS. FOR REQUESTED QUALIFIED ENGINEERING SERVICES, PLEASE CONTACT US AT RIGGING@PJFWEB.COM.

ATTENTION ALL CONTRACTORS, ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT (800) 788-7011.

REV	DATE	DESCRIPTION

BU #841298; SOUTHINGTON ROGUS
SOUTHINGTON, CONNECTICUT
MODIFIED 80' (EXTENDED TO 120') SELF SUPPORT TOWER

PROJECT No:	37518-0484.002.8800
DRAWN BY:	TAN
DESIGNED BY:	KJS
CHECKED BY:	
DATE:	3-19-2018

TITLE SHEET

T-1

37518-0484.002.DWG

POST-MODIFICATION CHECKLIST

REQUIRED	SECTION	REPORT ITEM	BRIEF DESCRIPTION (SEE ENG-SOW-10007)
		PRE-CONSTRUCTION	
X	6.1.1	MI CHECKLIST DRAWING	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT
X	6.1.2	EOR APPROVED SHOP DRAWINGS	FABRICATION DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW. THE CONTRACTOR SHALL PROVIDE THE APPROVED SHOP DRAWINGS TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	6.1.3	FABRICATION INSPECTION	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	6.1.4	FABRICATOR CERTIFIED WELD INSPECTION	CRITICAL SHOP WELDS THAT REQUIRE TESTING (PER ENG-STD-10069) ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED WELD INSPECTOR SHALL PERFORM NON-DESTRUCTIVE TESTING AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	6.1.5	MATERIAL TEST REPORT (MTR)	MILL CERTIFICATION SHALL BE PROVIDED FOR ALL STEEL WITH A YIELD STRENGTH GREATER THAN 36 KSI AND THIS DOCUMENTATION SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	6.1.6	FABRICATOR NDE INSPECTION	A VISUAL OBSERVATION OF A PORTION OF THE EXISTING STRUCTURE (AS NOTED ON THESE DRAWINGS) IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	6.1.7	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)	A VISUAL OBSERVATION OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	6.1.8	PACKING SLIPS	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
		CONSTRUCTION	
X	6.2.1	CONSTRUCTION INSPECTIONS	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	6.2.2	FOUNDATION INSPECTIONS	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	6.2.3	CONCRETE COMP. STRENGTH AND SLUMP TESTS	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	6.2.4	POST INSTALLED ANCHOR ROD VERIFICATION	ANCHOR ROD INSTALLATION SHALL INCLUDE VERIFICATION BY LETTER AND PHOTOGRAPHIC DOCUMENTATION.
NA	6.2.5	BASE PLATE GROUT VERIFICATION	A LETTER FROM THE GENERAL CONTRACTOR SHALL BE PROVIDED TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS INSTALLED IN ACCORDANCE WITH CROWN ENG-PRC-10012 FOR INCLUSION IN THE MI REPORT.
X	6.2.6	CONTRACTOR'S CERTIFIED WELD INSPECTION	A CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST AS NECESSARY ALL FIELD WELDS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT. PRE, DURING AND POST WELD INSPECTION IS REQUIRED PER CROWN SOW AND DOCUMENT #ENG-SOW-10007.
NA	6.2.7	EARTHWORK: LIFT AND DENSITY	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	6.2.8	ON SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED IN ACCORDANCE WITH ENG-BUL-10149.
NA	6.2.9	GUY WIRE TENSION REPORT	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT TO THE MI INSPECTOR INDICATING THE TEMPERATURE AND TENSION IN EVERY GUY CABLE FOR INCLUSION IN THE MI REPORT.
X	6.2.10	GC AS-BUILT DOCUMENTS	THE GENERAL CONTRACTOR SHALL SUBMIT A COPY OF THE CONTRACT DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD DUE TO FIELD CONDITIONS.
NA	-	MAGNI 565 COATING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY MAGNI 565 COATING WAS APPLIED IN ACCORDANCE PER ASTM F1136.
NA	-	MICROPILE / ROCK ANCHOR	THE GENERAL CONTRACTOR SHALL PROVIDE INSTALLER'S DRILLING AND INSTALLATION LOGS AND QA/QC DOCUMENTATION TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
		POST-CONSTRUCTION	
X	6.3.1	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTORS REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
NA	6.3.2	POST INSTALLED ANCHOR ROD PULL TESTING	POST INSTALLED ANCHOR RODS SHALL BE TESTED IN ACCORDANCE WITH ENG-PRC-10119 AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	6.3.3	PHOTOGRAPHS	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI WHICH DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
NA	-	POST INSTALLED MICROPILE / ROCK ANCHOR TESTING	POST INSTALLED ANCHORS SHALL BE TESTED AND INSPECTED IN ACCORDANCE WITH SPECIFICATION STATED ON MICROPILE/ROCK ANCHOR NOTES.

NOTE: X DENOTES A DOCUMENT NEEDED FROM THE CONTRACTOR FOR THE MI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT

MODIFICATION INSPECTION NOTES:

GENERAL
THE MODIFICATION INSPECTION (MI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.

ALL MI'S SHALL BE CONDUCTED BY A CROWN ENGINEERING VENDOR (AEV) OR ENGINEERING SERVICE VENDOR (AESV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN. SEE ENG-BUL-10173 LIST OF APPROVED MI VENDORS.

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR CROWN POINT OF CONTACT (POC).

REFER TO ENG-SOW-10007 : MODIFICATION INSPECTION SOW FOR FURTHER DETAILS AND REQUIREMENTS.

MI INSPECTOR
THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS

THE MI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MI REPORT TO CROWN.

GENERAL CONTRACTOR
THE GC IS REQUIRED TO CONTACT THE MI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
- BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AN DENG-SOW-10007.

RECOMMENDATIONS
THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING A MI REPORT:

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLE 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS
- IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CANCELLATION OR DELAYS IN SCHEDULED MI
IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CROWN SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). IF CROWN CONTRACTS DIRECTLY FOR A THIRD PARTY MI, EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

CORRECTION OF FAILING MI'S
IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH CROWN TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:

- CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MI.
- OR, WITH CROWN'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION

MI VERIFICATION INSPECTIONS
CROWN RESERVES THE RIGHT TO CONDUCT A MI VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MI INSPECTION(S) ON TOWER MODIFICATION PROJECTS.

ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH ENG-SOW-10007.

VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT AEV/AESV FIRM AFTER A MODIFICATION PROJECT IS COMPLETED, AS MARKED BY THE DATE OF AN ACCEPTED "PASSING MI" OR "PASS AS NOTED MI" REPORT FOR THE ORIGINAL PROJECT.

PHOTOGRAPHS
BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
  - RAW MATERIALS
  - PHOTOS OF ALL CRITICAL DETAILS
  - FOUNDATION MODIFICATIONS
  - WELD PREPARATION
  - BOLT INSTALLATION AND TORQUE
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
  - FINAL INFIELD CONDITION

PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO ENG-SOW-10007.

REV	DATE	DESCRIPTION

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CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #841298; SOUTHINGTON ROGUS
SOUTHINGTON, CONNECTICUT
MODIFIED 80' (EXTENDED TO 120') SELF SUPPORT TOWER

PROJECT No:	37518-0484.002.8800
DRAWN BY:	TAN
DESIGNED BY:	KJS
CHECKED BY:	
DATE:	3-19-2018

MI CHECKLIST AND NOTES

MI-1

37518-0484.002.DWG

GENERAL NOTES:

1. THIS TOWER MODIFICATION DRAWING IS BASED UPON A STRUCTURAL ANALYSIS PERFORMED BY PAUL J. FORD AND COMPANY DATED 3-19-2018.

2. PAUL J. FORD AND COMPANY HAS NOT PERFORMED A FIELD VISIT TO VERIFY THE EXISTING TOWER MEMBER SIZES AND DIMENSIONS. THE MODIFICATIONS SHOWN ON THESE PAGES WERE DEVELOPED USING INFORMATION PROVIDED TO US BY CROWN-CASTLE.

3. THE CONTRACTOR IS EXPECTED TO PERFORM A SITE VISIT BEFORE FABRICATING ANY MATERIAL. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT AS REPRESENTED ON THESE DRAWINGS, PAUL J. FORD AND COMPANY SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE STRUCTURAL SIGNIFICANCE OF THE DEVIATION.

4. PAUL J. FORD AND COMPANY WAS NOT PROVIDED WITH THE EXACT LOCATION OF EVERY EXISTING APPURTENANCE THAT COULD POTENTIALLY INTERFERE WITH THE MODIFICATIONS AS INDICATED ON THESE DRAWINGS. IT IS IMPORTANT THAT THE MODIFICATION MATERIAL BE PLACED IN THE PROPER LOCATION TO BE EFFECTIVE. THIS MAY REQUIRE THE REPOSITIONING OF SOME EXISTING NON-STRUCTURAL ITEMS CURRENTLY ATTACHED TO THE TOWER.

5. THE CONTRACTOR MUST BE EXPERIENCED IN THE PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED ON THESE DRAWINGS. BY ACCEPTANCE OF THIS PROJECT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED TO DO THIS WORK IN THE JURISDICTION IN WHICH THE WORK IS TO BE PERFORMED.

6. THE STRUCTURAL DESIGN OF THE MODIFICATIONS INDICATED ON THESE DRAWINGS IS FOR THE COMPLETED CONDITION ONLY. THE CONTRACTOR SHALL MAKE ADEQUATE PROVISIONS FOR CONSTRUCTION STRESSES AND PROVIDE SUFFICIENT TEMPORARY SHORING AND BRACING AS REQUIRED.

7. INSPECTIONS SHALL BE COMPLETED IN ACCORDANCE WITH LOCAL BUILDING CODES.

8. 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 CROWN STANDARD CED-STD-10253 INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH THE ANSI/TIA-322 (LATEST EDITION).

9. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE ENGINEER OF RECORD.

10. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GC AND/OR FABRICATOR.

CONSTRUCTION NOTES:

1. PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY, AND SHALL NOT BE USED FOR FABRICATION.

2. REFER TO CCI DOC ENG-PLN-10015 FOR CUTTING AND WELDING SAFETY PLAN.

REV	DATE	DESCRIPTION

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SOUTHINGTON, CONNECTICUT
MODIFIED 80' (EXTENDED TO 120') SELF SUPPORT TOWER

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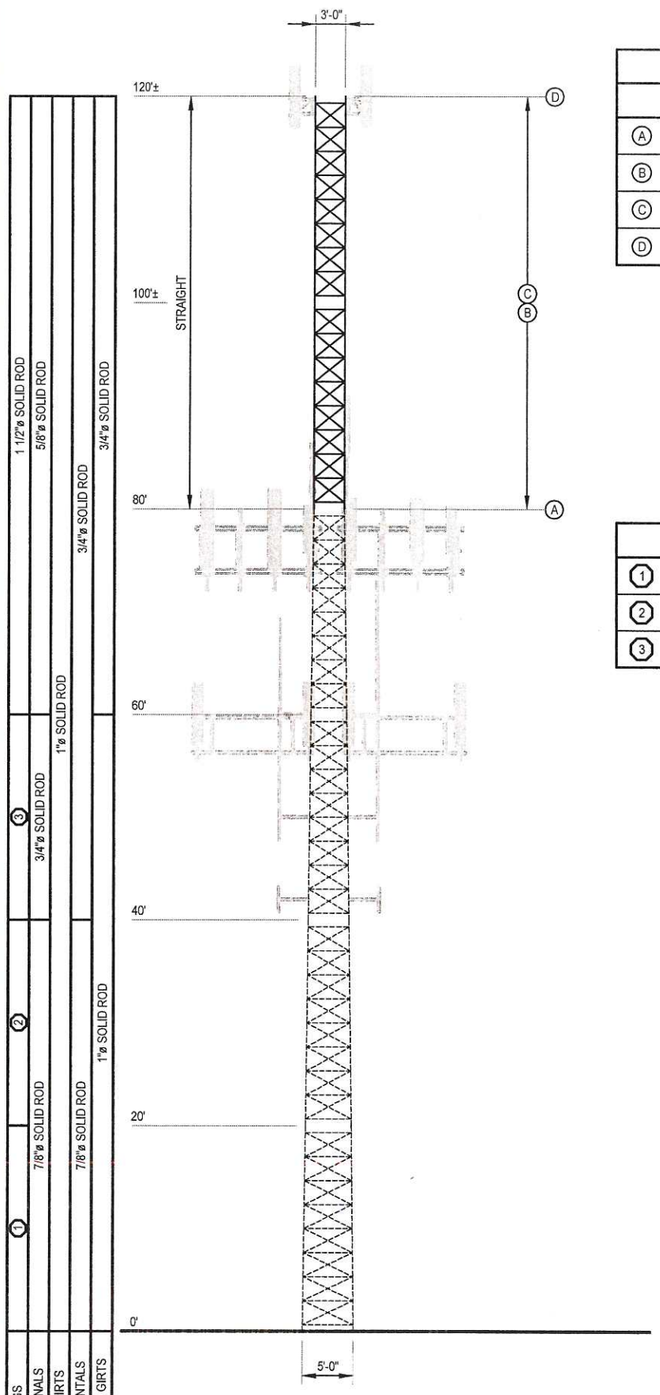
GENERAL NOTES

N-1

37518-0484.002.DWG

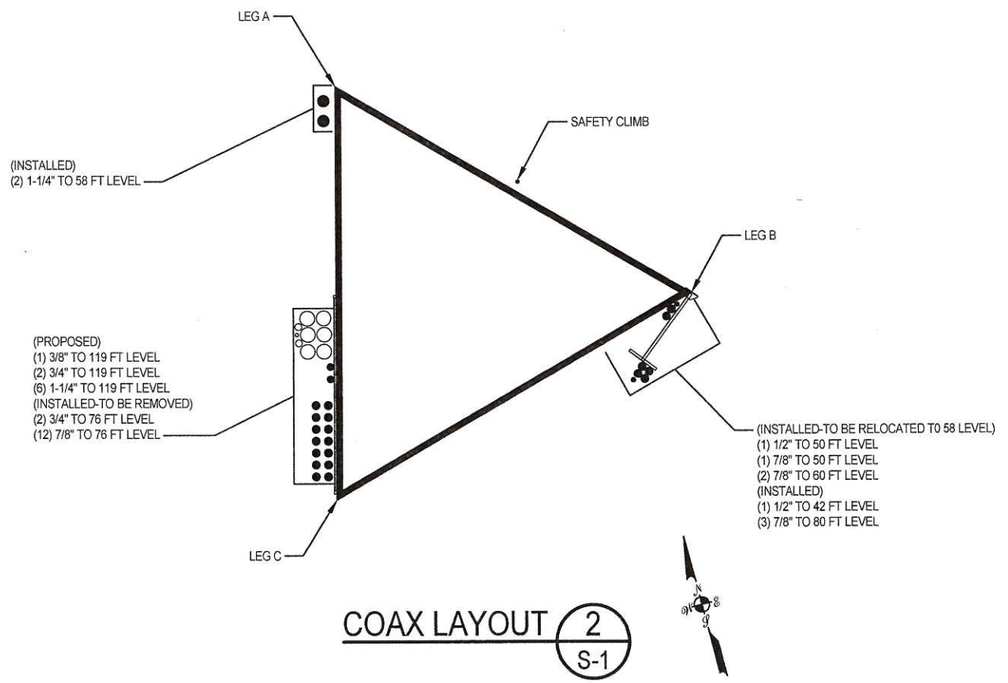


TOWER ELEVATION 1 S-1

TOWER MODIFICATION SCHEDULE

	ELEVATION	TOWER MODIFICATION DESCRIPTION	REFERENCE SHEETS
A	80'±	WELD NEW FLANGE PLATES TO TOP OF EXISTING TOWER	S-2
B	80'± TO 120'±	ADD TOWER EXTENSIONS TO TOP OF EXISTING TOWER	S-3
C	80'± TO 120'±	EXTEND SAFETY CLIMB TO TOP OF NEW TOWER	S-1
D	126'±	COORDINATE WITH CROWN CASTLE TO RELOCATE EXISTING ANTENNA FROM 80'± TO 126'±	S-1

	EXISTING TOWER MEMBER
1	2 1/4"ø SOLID ROD W/ 2.875" OD x 0.276" THK HALF SLEEVE
2	2"ø SOLID ROD W/ 2.875" OD x 0.276" THK HALF SLEEVE
3	1 3/4"ø SOLID ROD W/ 2.375" OD x 0.154" THK HALF SLEEVE



COAX LAYOUT 2 S-1

REV	DATE	DESCRIPTION

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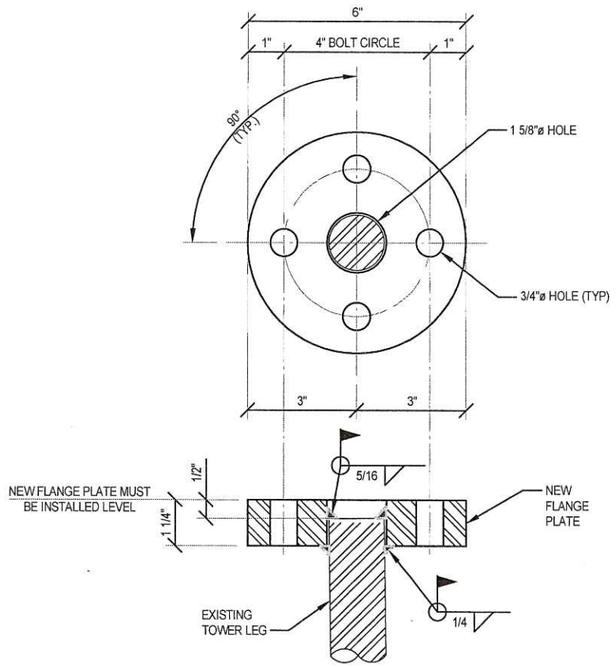
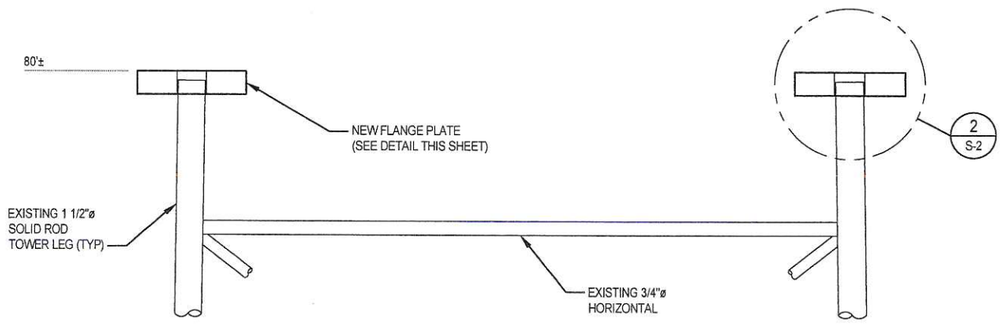
TOWER ELEVATION

S-1

37518-0484.002.DWG



FLANGE DETAIL 2 / S-2



A TOP OF EXISTING TOWER 1 / S-2

MATERIAL LIST

ELEVATION	QTY	MATERIAL	LENGTH
80'±	3	FLANGE PLATE 1 1/4" x 6"ø	

MATERIAL NOTES:

1. PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY, AND SHALL NOT BE USED FOR FABRICATION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROPER FIT AND CLEARANCE OF THE REINFORCING MATERIAL IN THE FIELD. THE CONTRACTOR IS EXPECTED TO PERFORM A SITE VISIT BEFORE FABRICATING ANY MATERIAL.

2. ALL STEEL SHALL CONFORM TO THE FOLLOWING (U.N.O.):
   A. FLANGE PLATES: ASTM A572 GR 50 (50 KSI YIELD POINT MATERIAL)

3. ALL MATERIAL GRADES GREATER THAN 36 KSI WILL REQUIRE MATERIAL TEST REPORTS.

4. ALL NEW STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH THE "SPECIFICATION FOR ZINC (HOT GALVANIZED) COATING ON PRODUCTS FABRICATED FROM ROLLED, PRESSED AND FORGED STEEL SHAPES, PLATES BAR, AND STRIP" ASTM A123.

5. FIELD DRILLED OR CUT MATERIAL OR ANY GALVANIZED SURFACE THAT IS SCRATCHED OR DAMAGED DUE TO THE CONTRACTORS EFFORTS, TO BE COATED WITH TWO BRUSH COATS OF CROWN APPROVED ZINC RICH PAINT IN ACCORDANCE WITH ENG-BUL-10149.

6. REFER TO CCI DOC ENG-PLN-10015 FOR CUTTING AND WELDING SAFETY PLAN.

7. SHOP OR FIELD-WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY AWS D1.1 USING E70XX ELECTRODES. ANY FIELD-WELDING SPECIFIED ON THESE DRAWINGS MUST BE ACCOMPLISHED IN STRICT CONFORMANCE WITH DOCUMENT ENG-PLN-10015 "CROWN-CASTLE FIELD CUTTING AND WELDING PROCEDURE".

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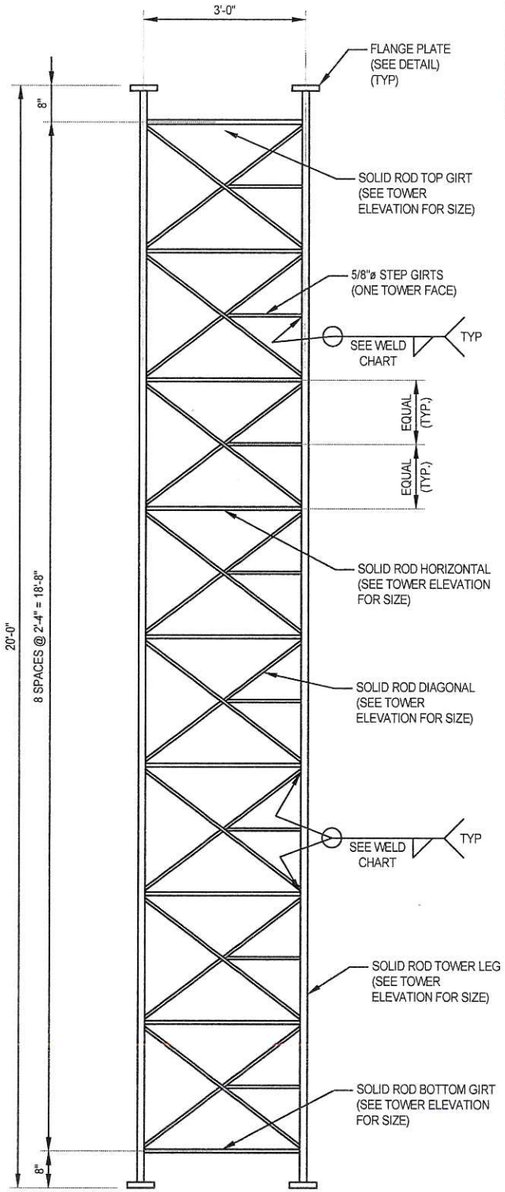
TOP OF TOWER FLANGE PLATE DETAIL

S-2

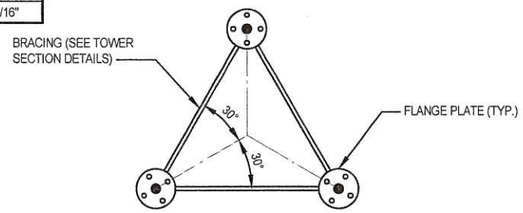
REV	DATE	DESCRIPTION

37518-0484.002.DWG

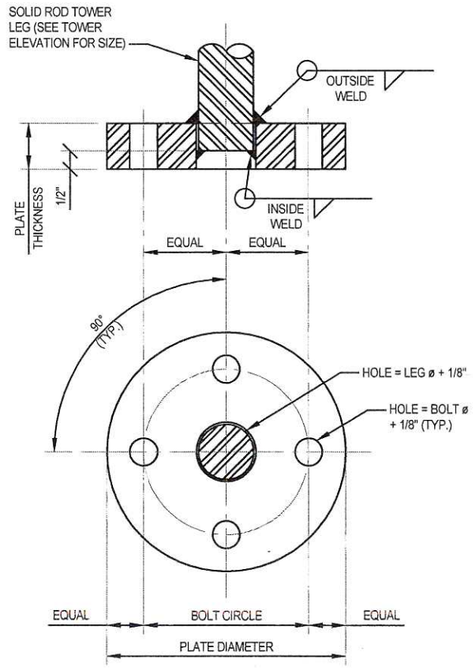


B NEW TOWER SECTION 1 S-3

WELD CHART	
SOLID ROD SIZE	WELD SIZE
5/8"ø	1/4"
3/4"ø	1/4"
1"ø	5/16"



PLAN VIEW



FLANGE DETAIL
SEE CHART

FLANGE PLATES					
ELEVATION	PLATE	BOLT CIRCLE	BOLT	OUTSIDE WELD	INSIDE WELD
120'±	1 1/4" THK x 6"ø	4"ø	(4) 5/8"ø	1/4"	5/16"
100'±	1 1/4" THK x 6"ø	4"ø	(4) 5/8"ø	1/4"	5/16"
80'±	1 1/4" THK x 6"ø	4"ø	(4) 5/8"ø	1/4"	5/16"

MATERIAL LIST			
ELEVATION	QTY	MATERIAL	LENGTH
100'± TO 120'±	3	TOWER LEG 1 1/2"ø SOLID ROD	20'-0"±
	6	FLANGE PLATE 1 1/4" x 6"ø	
	3	TOP GIRT 1"ø SOLID ROD	2'-11"±
	48	DIAGONALS 5/8"ø SOLID ROD	3'-8"±
	21	HORIZONTALS 3/4"ø SOLID ROD	2'-11"±
	3	BOTTOM GIRT 3/4"ø SOLID ROD	2'-11"±
	8	STEP RUNGS 5/8"ø SOLID ROD	1'-5"±
	12	5/8"ø BOLTS	3 3/4"
80'± TO 100'±	3	TOWER LEG 1 1/2"ø SOLID ROD	20'-0"±
	6	FLANGE PLATE 1 1/4" x 6"ø	
	3	TOP GIRT 1"ø SOLID ROD	2'-11"±
	48	DIAGONALS 5/8"ø SOLID ROD	3'-8"±
	21	HORIZONTALS 3/4"ø SOLID ROD	2'-11"±
	3	BOTTOM GIRT 3/4"ø SOLID ROD	2'-11"±
	8	STEP RUNGS 5/8"ø SOLID ROD	1'-5"±
	12	5/8"ø BOLTS	3 3/4"

MATERIAL NOTES:

1. PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY, AND SHALL NOT BE USED FOR FABRICATION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROPER FIT AND CLEARANCE OF THE REINFORCING MATERIAL IN THE FIELD. THE CONTRACTOR IS EXPECTED TO PERFORM A SITE VISIT BEFORE FABRICATING ANY MATERIAL.

2. ALL STEEL SHALL CONFORM TO THE FOLLOWING (U.N.O.):
   A. SOLID RODS: ASTM A572 GR 50 (50 KSI YIELD POINT MATERIAL)
   B. FLANGE PLATES: ASTM A572 GR 50 (50 KSI YIELD POINT MATERIAL)

3. ALL MATERIAL GRADES GREATER THAN 36 KSI WILL REQUIRE MATERIAL TEST REPORTS.

4. ALL NEW STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH THE "SPECIFICATION FOR ZINC (HOT GALVANIZED) COATING ON PRODUCTS FABRICATED FROM ROLLED, PRESSED AND FORGED STEEL SHAPES, PLATES BAR, AND STRIP" ASTM A123.

5. ALL BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325. USE BEARING TYPE CONNECTIONS, TIGHTEN TO A SNUG TIGHT CONNECTION, UNO.

6. ALL BOLTS SHALL BE PROVIDED WITH LOCK-WASHERS, OR LOCK-NUTS, OR PAL-NUTS AND SHALL BE GALVANIZED ACCORDING TO ASTM A153/ASTM153M.

7. ANY GALVANIZED SURFACE THAT IS SCRATCHED OR DAMAGED DUE TO THE CONTRACTORS EFFORTS, TO BE COATED WITH TWO BRUSH COATS OF CROWN APPROVED ZINC RICH PAINT IN ACCORDANCE WITH ENG-BUL-10149.

8. REFER TO CCI DOC ENG-PLN-10015 FOR CUTTING AND WELDING SAFETY PLAN.

9. SHOP OR FIELD-WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY AWS D1.1 USING E70XX ELECTRODES. ANY FIELD-WELDING SPECIFIED ON THESE DRAWINGS MUST BE ACCOMPLISHED IN STRICT CONFORMANCE WITH DOCUMENT ENG-PLN-10015 "CROWN-CASTLE FIELD CUTTING AND WELDING PROCEDURE".

PJF PAUL J. FORD & COMPANY
250 E Broad St. Ste 600 · Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #841298; SOUTHINGTON ROGUS
SOUTHINGTON, CONNECTICUT
MODIFIED 80' (EXTENDED TO 120') SELF SUPPORT TOWER

PROJECT No:	37518-0484.002.8800
DRAWN BY:	TAN
DESIGNED BY:	KJS
CHECKED BY:	
DATE:	3-19-2018

NEW TOWER SECTION DETAILS

S-3

REV	DATE	DESCRIPTION

37518-0484.002.DWG

MODIFIED 80' (EXTENDED TO 120') SELF SUPPORT TOWER

BU #841298; SOUTHINGTON ROGUS

250 MERIDEN WATERBURY TURNPIKE
SOUTHINGTON, CONNECTICUT 06489
HARTFORD COUNTY
LAT: 41° 33' 24.54"; LONG: -72° 51' 10.84"
ORDER: 424357 REV. 1; WO: 1537529

PROJECT CONTACTS

STRUCTURE OWNER:
CROWN CASTLE
MOD PM: DAN VADNEY AT DAN.VADNEY@CROWNCASTLE.COM
PH: (518) 373-3510
MOD CM: JASON D'AMICO AT JASON.D'AMICO@CROWNCASTLE.COM
PH: (860) 209-0104

ENGINEER OF RECORD:
PJFMOD@PJFWEB.COM

THIS PROJECT INCLUDES THE FOLLOWING ITEMS
ADD TOWER EXTENSION TO TOP OF EXISTING TOWER
EXTEND SAFETY CLIMB TO NEW TOP OF TOWER
COORDINATE WITH CROWN CASTLE TO RELOCATE EXISTING ANTENNA FROM 80'± TO 126'±

SHEET INDEX

WIND DESIGN DATA	
REFERENCE STANDARD	ANSI/TIA-222-G-2-2009
LOCAL CODE	2016 CONNECTICUT BUILDING CODE
ULTIMATE WIND SPEED (3-SECOND GUST)	123 MPH
CONVERTED NOMINAL WIND SPEED (3-SECOND GUST)	95 MPH
ICE THICKNESS	1.0 IN
ICE WIND SPEED	50 MPH
SERVICE WIND SPEED	60 MPH
RISK CATEGORY	II
EXPOSURE CATEGORY	B
Kzt	1.0

TOWER MANUFACTURER: PIROD
CCISITES DOC #: 5114299

QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM PAUL J. FORD AND COMPANY TO ASSIST CONTRACTORS IN CLASS IV RIGGING PLAN REVIEWS. FOR REQUESTED QUALIFIED ENGINEERING SERVICES, PLEASE CONTACT US AT RIGGING@PJFWEB.COM.

ATTENTION ALL CONTRACTORS, ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT (800) 788-7011.

STATE OF CONNECTICUT
JOSEPH PACHICARAH JACOBS
No. PEN 22731
LICENSED PROFESSIONAL ENGINEER

MAR 19 2018

REV	DATE	DESCRIPTION

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DATE:	3-19-2018

TITLE SHEET

T-1

37518-0484.002.DWG

POST-MODIFICATION CHECKLIST

REQUIRED	SECTION	REPORT ITEM	BRIEF DESCRIPTION (SEE ENG-SOW-10007)
		PRE-CONSTRUCTION	
X	6.1.1	MI CHECKLIST DRAWING	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT
X	6.1.2	EOR APPROVED SHOP DRAWINGS	FABRICATION DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW. THE CONTRACTOR SHALL PROVIDE THE APPROVED SHOP DRAWINGS TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	6.1.3	FABRICATION INSPECTION	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	6.1.4	FABRICATOR CERTIFIED WELD INSPECTION	CRITICAL SHOP WELDS THAT REQUIRE TESTING (PER ENG-STD-10069) ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED WELD INSPECTOR SHALL PERFORM NON-DESTRUCTIVE TESTING AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	6.1.5	MATERIAL TEST REPORT (MTR)	MILL CERTIFICATION SHALL BE PROVIDED FOR ALL STEEL WITH A YIELD STRENGTH GREATER THAN 36 KSI AND THIS DOCUMENTATION SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	6.1.6	FABRICATOR NDE INSPECTION	A VISUAL OBSERVATION OF A PORTION OF THE EXISTING STRUCTURE (AS NOTED ON THESE DRAWINGS) IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	6.1.7	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)	A VISUAL OBSERVATION OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	6.1.8	PACKING SLIPS	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
		CONSTRUCTION	
X	6.2.1	CONSTRUCTION INSPECTIONS	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	6.2.2	FOUNDATION INSPECTIONS	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	6.2.3	CONCRETE COMP. STRENGTH AND SLUMP TESTS	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	6.2.4	POST INSTALLED ANCHOR ROD VERIFICATION	ANCHOR ROD INSTALLATION SHALL INCLUDE VERIFICATION BY LETTER AND PHOTOGRAPHIC DOCUMENTATION.
NA	6.2.5	BASE PLATE GROUT VERIFICATION	A LETTER FROM THE GENERAL CONTRACTOR SHALL BE PROVIDED TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS INSTALLED IN ACCORDANCE WITH CROWN ENG-PRC-10012 FOR INCLUSION IN THE MI REPORT.
X	6.2.6	CONTRACTOR'S CERTIFIED WELD INSPECTION	A CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST AS NECESSARY ALL FIELD WELDS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT. PRE, DURING AND POST WELD INSPECTION IS REQUIRED PER CROWN SOW AND DOCUMENT #ENG-SOW-10007.
NA	6.2.7	EARTHWORK: LIFT AND DENSITY	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	6.2.8	ON SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED IN ACCORDANCE WITH ENG-BUL-10149.
NA	6.2.9	GUY WIRE TENSION REPORT	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT TO THE MI INSPECTOR INDICATING THE TEMPERATURE AND TENSION IN EVERY GUY CABLE FOR INCLUSION IN THE MI REPORT.
X	6.2.10	GC AS-BUILT DOCUMENTS	THE GENERAL CONTRACTOR SHALL SUBMIT A COPY OF THE CONTRACT DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD DUE TO FIELD CONDITIONS.
NA	-	MAGNI 565 COATING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY MAGNI 565 COATING WAS APPLIED IN ACCORDANCE PER ASTM F1136.
NA	-	MICROPILE / ROCK ANCHOR	THE GENERAL CONTRACTOR SHALL PROVIDE INSTALLER'S DRILLING AND INSTALLATION LOGS AND QA/QC DOCUMENTATION TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
		POST-CONSTRUCTION	
X	6.3.1	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTORS REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
NA	6.3.2	POST INSTALLED ANCHOR ROD PULL TESTING	POST INSTALLED ANCHOR RODS SHALL BE TESTED IN ACCORDANCE WITH ENG-PRC-10119 AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	6.3.3	PHOTOGRAPHS	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI WHICH DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
NA	-	POST INSTALLED MICROPILE / ROCK ANCHOR TESTING	POST INSTALLED ANCHORS SHALL BE TESTED AND INSPECTED IN ACCORDANCE WITH SPECIFICATION STATED ON MICROPILE/ROCK ANCHOR NOTES.

NOTE: X DENOTES A DOCUMENT NEEDED FROM THE CONTRACTOR FOR THE MI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT

MODIFICATION INSPECTION NOTES:

GENERAL
THE MODIFICATION INSPECTION (MI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.

ALL MI'S SHALL BE CONDUCTED BY A CROWN ENGINEERING VENDOR (AEV) OR ENGINEERING SERVICE VENDOR (AESV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN. SEE ENG-BUL-10173 LIST OF APPROVED MI VENDORS.

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR CROWN POINT OF CONTACT (POC).

REFER TO ENG-SOW-10007 : MODIFICATION INSPECTION SOW FOR FURTHER DETAILS AND REQUIREMENTS.

MI INSPECTOR
THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS

THE MI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MI REPORT TO CROWN.

GENERAL CONTRACTOR
THE GC IS REQUIRED TO CONTACT THE MI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
- BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AN DENG-SOW-10007.

RECOMMENDATIONS
THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING A MI REPORT:

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLE 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS
- IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CANCELLATION OR DELAYS IN SCHEDULED MI
IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CROWN SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). IF CROWN CONTRACTS DIRECTLY FOR A THIRD PARTY MI, EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

CORRECTION OF FAILING MI'S
IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH CROWN TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:

- CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MI.
- OR, WITH CROWN'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION

MI VERIFICATION INSPECTIONS
CROWN RESERVES THE RIGHT TO CONDUCT A MI VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MI INSPECTION(S) ON TOWER MODIFICATION PROJECTS.

ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH ENG-SOW-10007.

VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT AEV/AESV FIRM AFTER A MODIFICATION PROJECT IS COMPLETED, AS MARKED BY THE DATE OF AN ACCEPTED "PASSING MI" OR "PASS AS NOTED MI" REPORT FOR THE ORIGINAL PROJECT.

PHOTOGRAPHS
BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
  - RAW MATERIALS
  - PHOTOS OF ALL CRITICAL DETAILS
  - FOUNDATION MODIFICATIONS
  - WELD PREPARATION
  - BOLT INSTALLATION AND TORQUE
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
  - FINAL INFIELD CONDITION

PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO ENG-SOW-10007.

STATE OF CONNECTICUT
JOSEPH PACHICARAH JACOBS
No. PEN 22731
LICENSED PROFESSIONAL ENGINEER

MAR 19 2018

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PROJECT No:	37518-0484.002.8800
DRAWN BY:	TAN
DESIGNED BY:	KJS
CHECKED BY:	
DATE:	3-19-2018

MI CHECKLIST AND NOTES

MI-1

37518-0484.002.DWG

GENERAL NOTES:

1. THIS TOWER MODIFICATION DRAWING IS BASED UPON A STRUCTURAL ANALYSIS PERFORMED BY PAUL J. FORD AND COMPANY DATED 3-19-2018.

2. PAUL J. FORD AND COMPANY HAS NOT PERFORMED A FIELD VISIT TO VERIFY THE EXISTING TOWER MEMBER SIZES AND DIMENSIONS. THE MODIFICATIONS SHOWN ON THESE PAGES WERE DEVELOPED USING INFORMATION PROVIDED TO US BY CROWN-CASTLE.

3. THE CONTRACTOR IS EXPECTED TO PERFORM A SITE VISIT BEFORE FABRICATING ANY MATERIAL. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT AS REPRESENTED ON THESE DRAWINGS, PAUL J. FORD AND COMPANY SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE STRUCTURAL SIGNIFICANCE OF THE DEVIATION.

4. PAUL J. FORD AND COMPANY WAS NOT PROVIDED WITH THE EXACT LOCATION OF EVERY EXISTING APPURTENANCE THAT COULD POTENTIALLY INTERFERE WITH THE MODIFICATIONS AS INDICATED ON THESE DRAWINGS. IT IS IMPORTANT THAT THE MODIFICATION MATERIAL BE PLACED IN THE PROPER LOCATION TO BE EFFECTIVE. THIS MAY REQUIRE THE REPOSITIONING OF SOME EXISTING NON-STRUCTURAL ITEMS CURRENTLY ATTACHED TO THE TOWER.

5. THE CONTRACTOR MUST BE EXPERIENCED IN THE PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED ON THESE DRAWINGS. BY ACCEPTANCE OF THIS PROJECT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED TO DO THIS WORK IN THE JURISDICTION IN WHICH THE WORK IS TO BE PERFORMED.

6. THE STRUCTURAL DESIGN OF THE MODIFICATIONS INDICATED ON THESE DRAWINGS IS FOR THE COMPLETED CONDITION ONLY. THE CONTRACTOR SHALL MAKE ADEQUATE PROVISIONS FOR CONSTRUCTION STRESSES AND PROVIDE SUFFICIENT TEMPORARY SHORING AND BRACING AS REQUIRED.

7. INSPECTIONS SHALL BE COMPLETED IN ACCORDANCE WITH LOCAL BUILDING CODES.

8. 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 CROWN STANDARD CED-STD-10253 INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH THE ANSI/TIA-322 (LATEST EDITION).

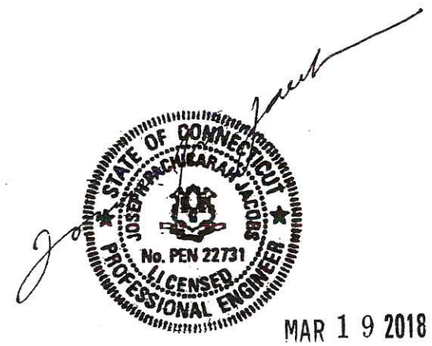
9. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE ENGINEER OF RECORD.

10. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GC AND/OR FABRICATOR.

CONSTRUCTION NOTES:

1. PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY, AND SHALL NOT BE USED FOR FABRICATION.

2. REFER TO CCI DOC ENG-PLN-10015 FOR CUTTING AND WELDING SAFETY PLAN.



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GENERAL NOTES

N-1

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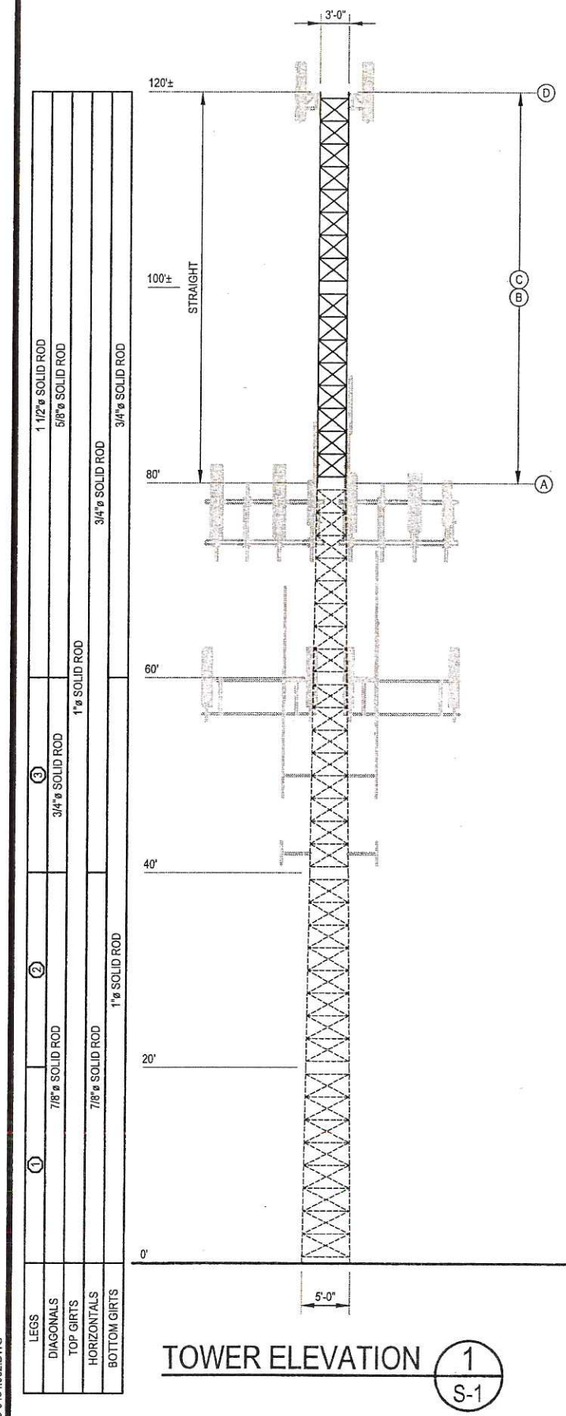
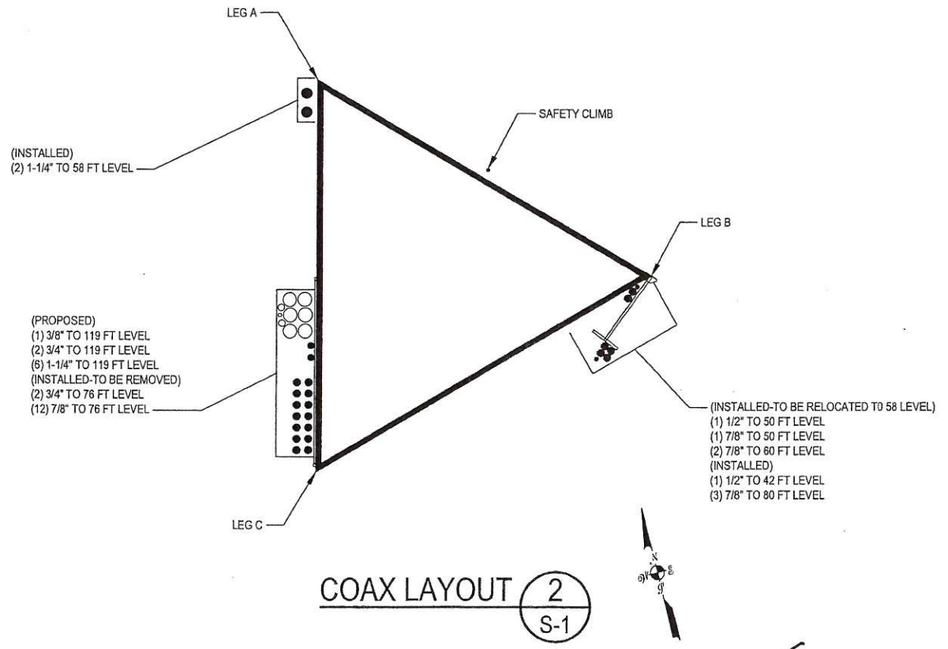


TOWER ELEVATION 1 / S-1

TOWER MODIFICATION SCHEDULE

	ELEVATION	TOWER MODIFICATION DESCRIPTION	REFERENCE SHEETS
A	80'±	WELD NEW FLANGE PLATES TO TOP OF EXISTING TOWER	S-2
B	80'± TO 120'±	ADD TOWER EXTENSIONS TO TOP OF EXISTING TOWER	S-3
C	80'± TO 120'±	EXTEND SAFETY CLIMB TO TOP OF NEW TOWER	S-1
D	126'±	COORDINATE WITH CROWN CASTLE TO RELOCATE EXISTING ANTENNA FROM 80'± TO 126'±	S-1

	EXISTING TOWER MEMBER
1	2 1/4"ø SOLID ROD W/ 2.875" OD x 0.276" THK HALF SLEEVE
2	2"ø SOLID ROD W/ 2.875" OD x 0.276" THK HALF SLEEVE
3	1 3/4"ø SOLID ROD W/ 2.375" OD x 0.154" THK HALF SLEEVE



COAX LAYOUT 2 / S-1

STATE OF CONNECTICUT
JOSEPH PACHECARAU JACOBS
No. PEN 22731
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TOWER ELEVATION

S-1

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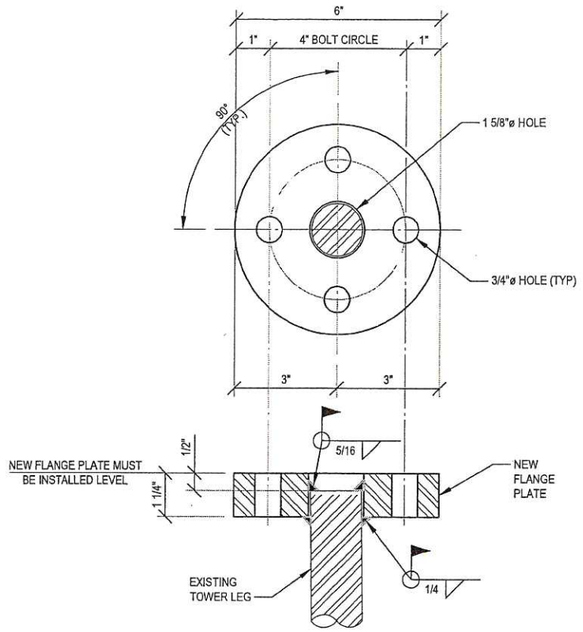
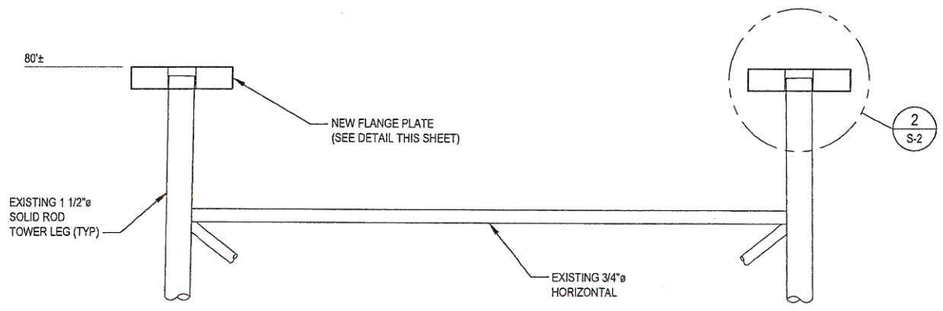


FLANGE DETAIL 2 / S-2



A TOP OF EXISTING TOWER 1 / S-2

MATERIAL LIST			
ELEVATION	QTY	MATERIAL	LENGTH
80'±	3	FLANGE PLATE 1 1/4" x 6"ø	

MATERIAL NOTES:

1. PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY, AND SHALL NOT BE USED FOR FABRICATION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROPER FIT AND CLEARANCE OF THE REINFORCING MATERIAL IN THE FIELD. THE CONTRACTOR IS EXPECTED TO PERFORM A SITE VISIT BEFORE FABRICATING ANY MATERIAL.

2. ALL STEEL SHALL CONFORM TO THE FOLLOWING (U.N.O.):
   A. FLANGE PLATES: ASTM A572 GR 50 (50 KSI YIELD POINT MATERIAL)

3. ALL MATERIAL GRADES GREATER THAN 36 KSI WILL REQUIRE MATERIAL TEST REPORTS.

4. ALL NEW STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH THE "SPECIFICATION FOR ZINC (HOT GALVANIZED) COATING ON PRODUCTS FABRICATED FROM ROLLED, PRESSED AND FORGED STEEL SHAPES, PLATES BAR, AND STRIP" ASTM A123.

5. FIELD DRILLED OR CUT MATERIAL OR ANY GALVANIZED SURFACE THAT IS SCRATCHED OR DAMAGED DUE TO THE CONTRACTORS EFFORTS, TO BE COATED WITH TWO BRUSH COATS OF CROWN APPROVED ZINC RICH PAINT IN ACCORDANCE WITH ENG-BUL-10149.

6. REFER TO CCI DOC ENG-PLN-10015 FOR CUTTING AND WELDING SAFETY PLAN.

7. SHOP OR FIELD-WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY AWS D1.1 USING E70XX ELECTRODES. ANY FIELD-WELDING SPECIFIED ON THESE DRAWINGS MUST BE ACCOMPLISHED IN STRICT CONFORMANCE WITH DOCUMENT ENG-PLN-10015 "CROWN-CASTLE FIELD CUTTING AND WELDING PROCEDURE".

MAR 1 9 2018

REV	DATE	DESCRIPTION

PJF PAUL J. FORD & COMPANY
250 E Broad St Ste 600 · Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

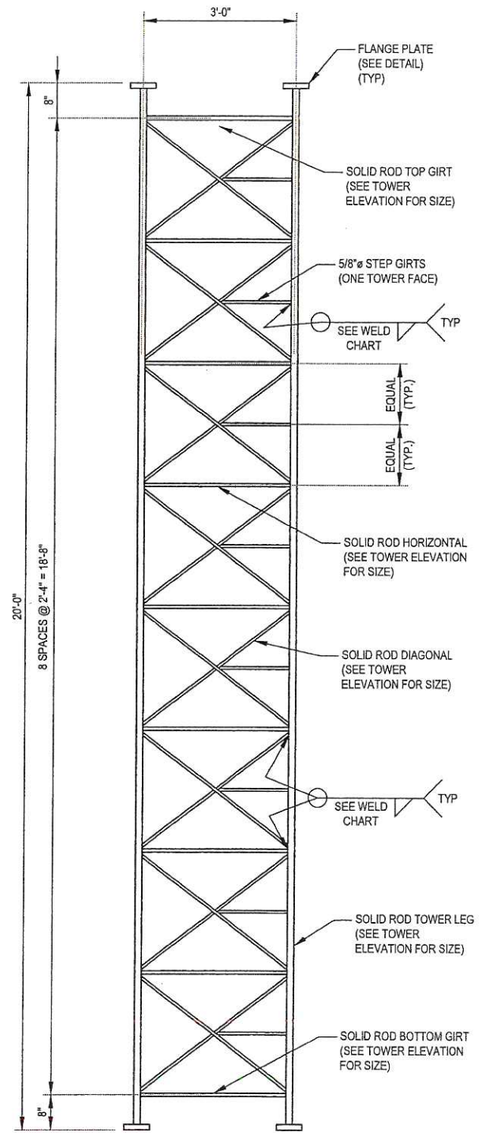
BU #841298; SOUTHINGTON ROGUS
SOUTHINGTON, CONNECTICUT
MODIFIED 80' (EXTENDED TO 120') SELF SUPPORT TOWER

PROJECT No:	37518-0484.002.8800
DRAWN BY:	TAN
DESIGNED BY:	KJS
CHECKED BY:	
DATE:	3-19-2018

TOP OF TOWER FLANGE PLATE DETAIL

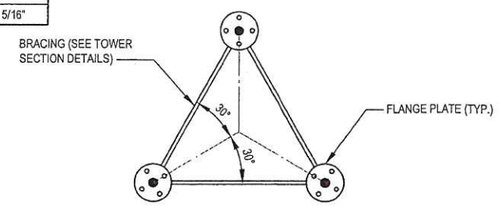
S-2

37518-0484.002.DWG

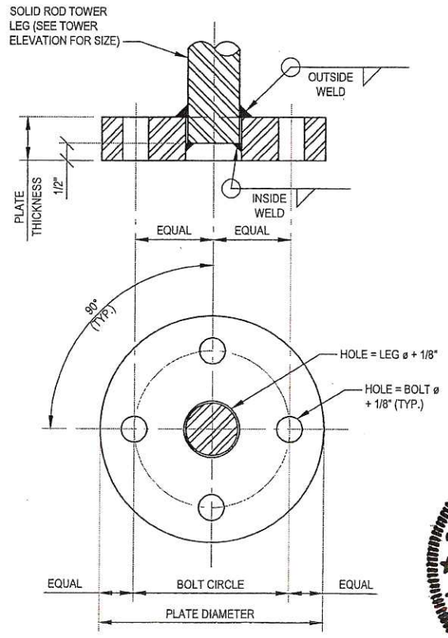


B NEW TOWER SECTION 1 S-3

WELD CHART	
SOLID ROD SIZE	WELD SIZE
5/8"ø	1/4"
3/4"ø	1/4"
1"ø	5/16"



PLAN VIEW



FLANGE DETAIL
SEE CHART

FLANGE PLATES					
ELEVATION	PLATE	BOLT CIRCLE	BOLT	OUTSIDE WELD	INSIDE WELD
120'±	1 1/4" THK x 6"ø	4"ø	(4) 5/8"ø	1/4"	5/16"
100'±	1 1/4" THK x 6"ø	4"ø	(4) 5/8"ø	1/4"	5/16"
80'±	1 1/4" THK x 6"ø	4"ø	(4) 5/8"ø	1/4"	5/16"

STATE OF CONNECTICUT
JOSEPH PACHICARAH JACOBS
No. PEN 22731
LICENSED PROFESSIONAL ENGINEER

MAR 19 2018

MATERIAL LIST			
ELEVATION	QTY	MATERIAL	LENGTH
100'± TO 120'±	3	TOWER LEG 1 1/2"ø SOLID ROD	20'-0"±
	6	FLANGE PLATE 1 1/4" x 6"ø	
	3	TOP GIRT 1"ø SOLID ROD	2'-11"±
	48	DIAGONALS 5/8"ø SOLID ROD	3'-8"±
	21	HORIZONTALS 3/4"ø SOLID ROD	2'-11"±
	3	BOTTOM GIRT 3/4"ø SOLID ROD	2'-11"±
	8	STEP RUNGS 5/8"ø SOLID ROD	1'-5"±
	12	5/8"ø BOLTS	3 3/4"
80'± TO 100'±	3	TOWER LEG 1 1/2"ø SOLID ROD	20'-0"±
	6	FLANGE PLATE 1 1/4" x 6"ø	
	3	TOP GIRT 1"ø SOLID ROD	2'-11"±
	48	DIAGONALS 5/8"ø SOLID ROD	3'-8"±
	21	HORIZONTALS 3/4"ø SOLID ROD	2'-11"±
	3	BOTTOM GIRT 3/4"ø SOLID ROD	2'-11"±
	8	STEP RUNGS 5/8"ø SOLID ROD	1'-5"±
	12	5/8"ø BOLTS	3 3/4"

MATERIAL NOTES:

1. PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY, AND SHALL NOT BE USED FOR FABRICATION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROPER FIT AND CLEARANCE OF THE REINFORCING MATERIAL IN THE FIELD. THE CONTRACTOR IS EXPECTED TO PERFORM A SITE VISIT BEFORE FABRICATING ANY MATERIAL.

2. ALL STEEL SHALL CONFORM TO THE FOLLOWING (U.N.O.):
   A. SOLID RODS: ASTM A572 GR 50 (50 KSI YIELD POINT MATERIAL)
   B. FLANGE PLATES: ASTM A572 GR 50 (50 KSI YIELD POINT MATERIAL)

3. ALL MATERIAL GRADES GREATER THAN 36 KSI WILL REQUIRE MATERIAL TEST REPORTS.

4. ALL NEW STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH THE "SPECIFICATION FOR ZINC (HOT GALVANIZED) COATING ON PRODUCTS FABRICATED FROM ROLLED, PRESSED AND FORGED STEEL SHAPES, PLATES BAR, AND STRIP" ASTM A123.

5. ALL BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325. USE BEARING TYPE CONNECTIONS, TIGHTEN TO A SNUG TIGHT CONNECTION, UNO.

6. ALL BOLTS SHALL BE PROVIDED WITH LOCK-WASHERS, OR LOCK-NUTS, OR PAL-NUTS AND SHALL BE GALVANIZED ACCORDING TO ASTM A153/ASTM153M.

7. ANY GALVANIZED SURFACE THAT IS SCRATCHED OR DAMAGED DUE TO THE CONTRACTORS EFFORTS, TO BE COATED WITH TWO BRUSH COATS OF CROWN APPROVED ZINC RICH PAINT IN ACCORDANCE WITH ENG-BUL-10149.

8. REFER TO CCI DOC ENG-PLN-10015 FOR CUTTING AND WELDING SAFETY PLAN.

9. SHOP OR FIELD-WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY AWS D1.1 USING E70XX ELECTRODES. ANY FIELD-WELDING SPECIFIED ON THESE DRAWINGS MUST BE ACCOMPLISHED IN STRICT CONFORMANCE WITH DOCUMENT ENG-PLN-10015 "CROWN-CASTLE FIELD CUTTING AND WELDING PROCEDURE".

REV	DATE	DESCRIPTION

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CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
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PROJECT No:	37518-0484.002.8800
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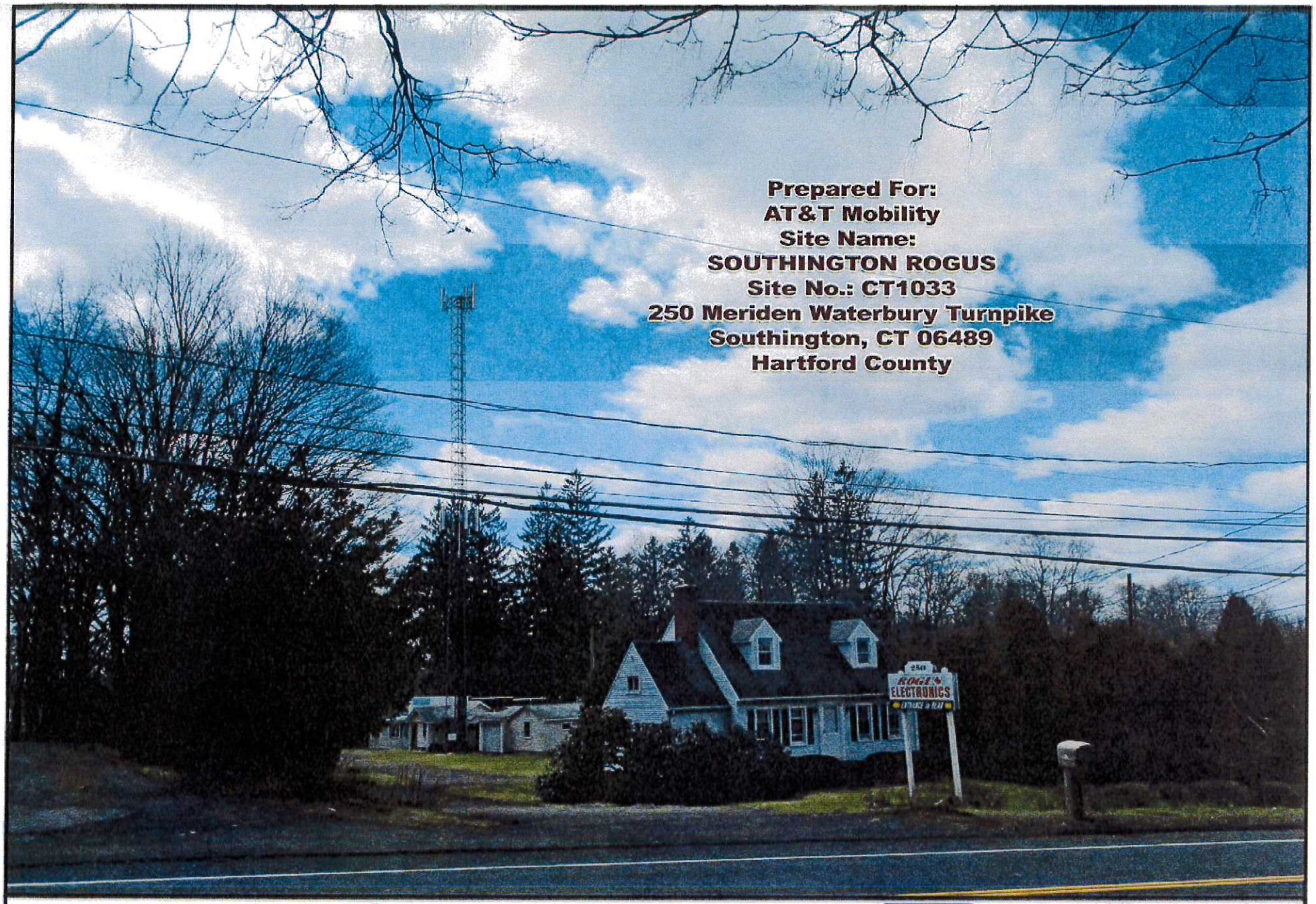
NEW TOWER SECTION DETAILS

S-3

37518-0484.002.DWG

4



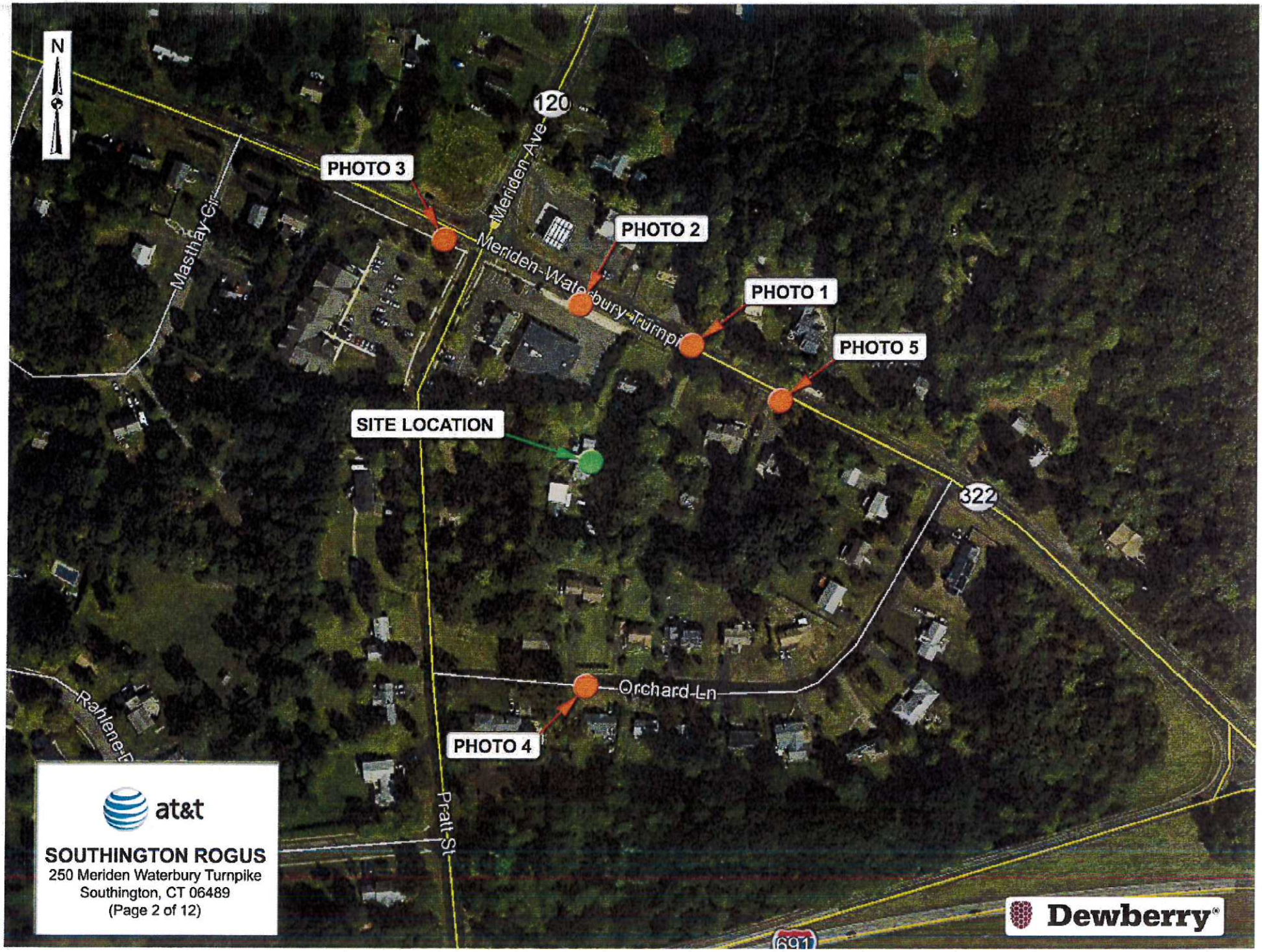
For visual reference only. Actual visibility is dependent upon weather conditions, season, sunlight, and viewer location.

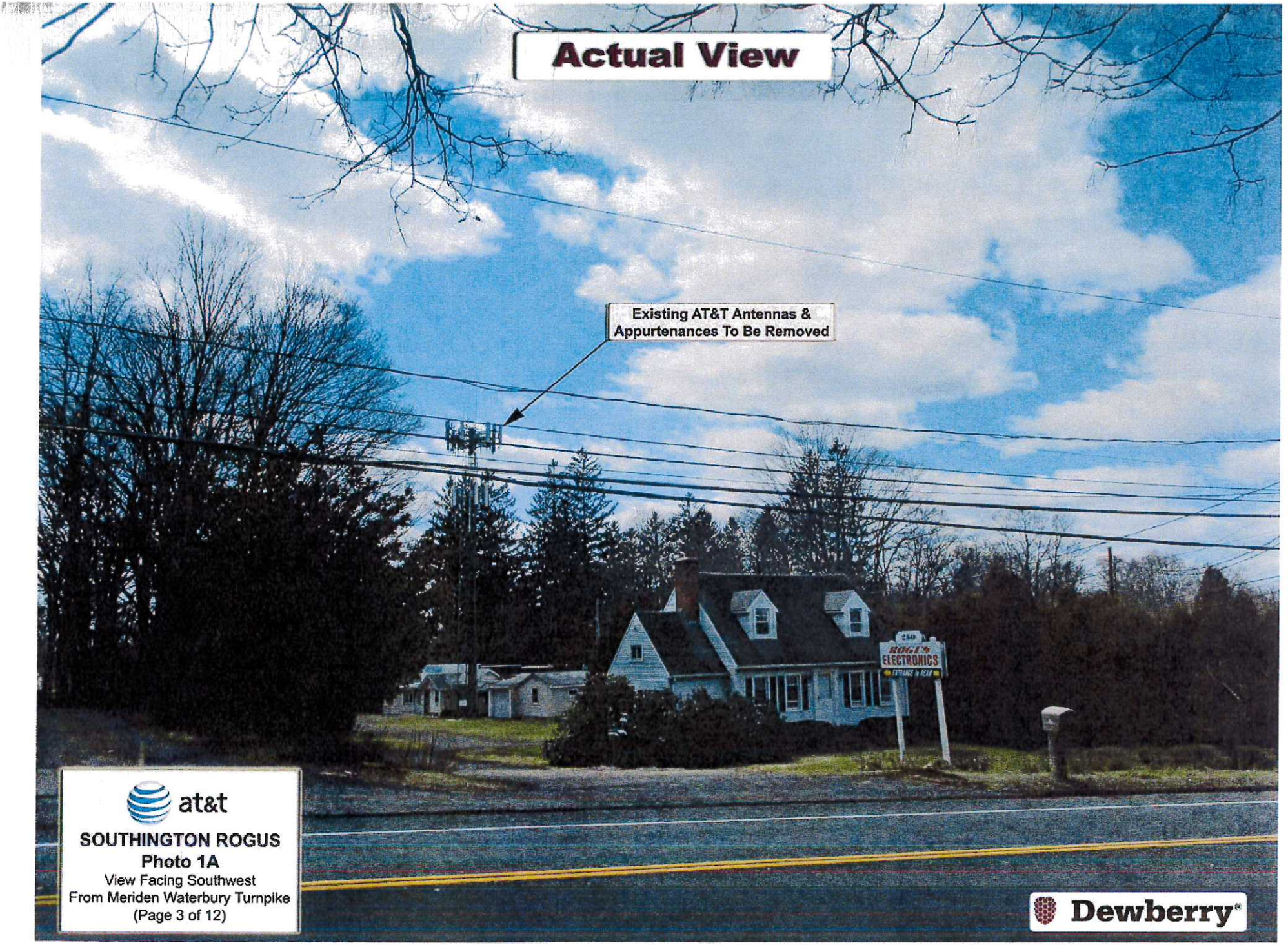
at&t
550 Enterprise Drive Suite 3A
Rocky Hill, CT 06067

SOUTHINGTON ROGUS
Site No.: CT1033
DEWBERRY NO. 50065689
(Page 1 of 12)

SAI
27 Northwestern Drive
Salem, NH 03079

Dewberry
Dewberry Engineers Inc.
600 Parsippany Road
Suite 301
Parsippany, NJ 07054


N
120
Meriden-Ave
PHOTO 3
PHOTO 2
PHOTO 1
PHOTO 5
Masthay-Cir
Meriden-Waterbury-Turnpi
SITE LOCATION
322
Orchard-Ln
PHOTO 4
Pratt-St
691
at&t
SOUTHINGTON ROGUS
250 Meriden Waterbury Turnpike
Southington, CT 06489
(Page 2 of 12)
Dewberry



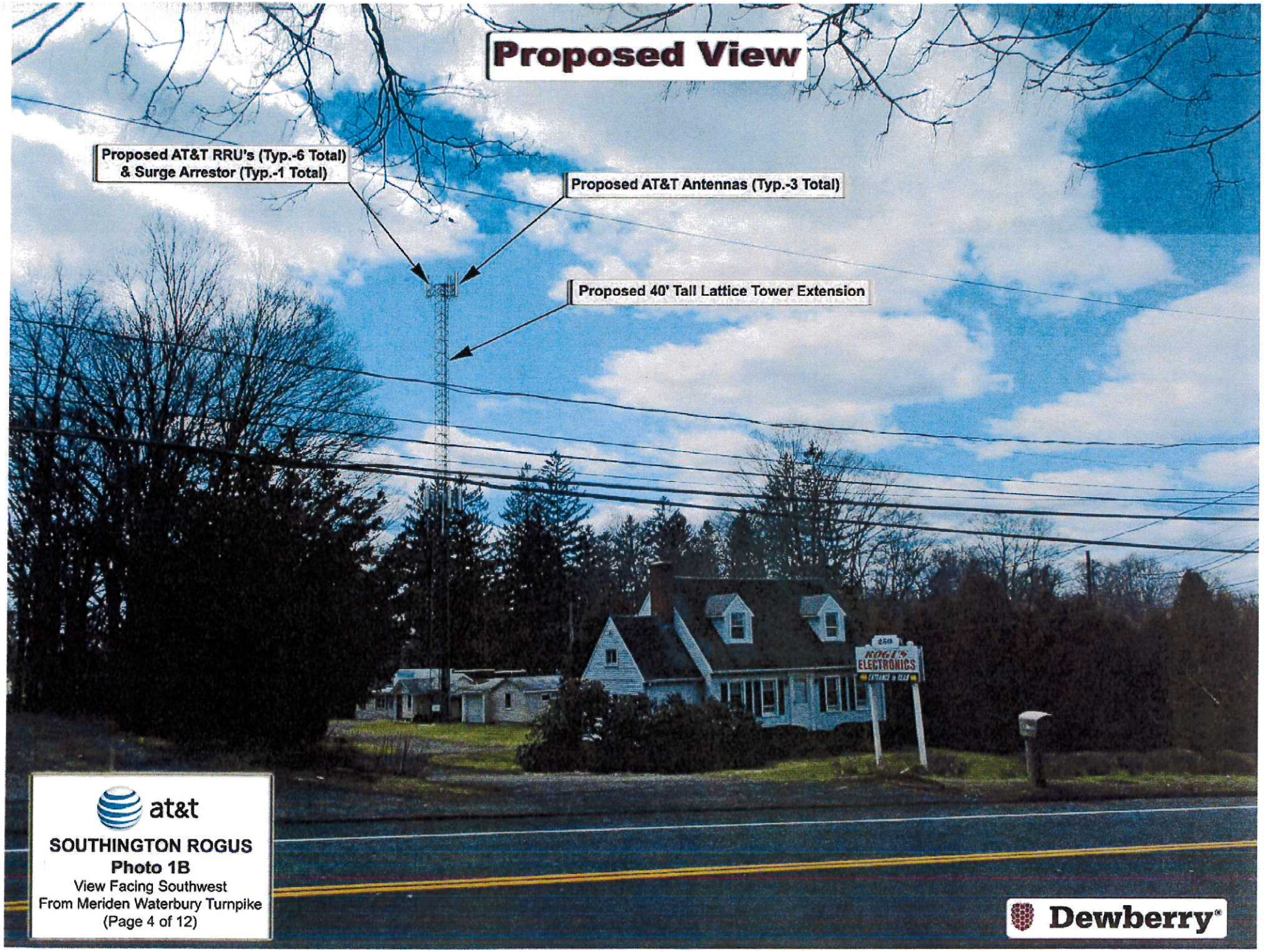
at&t

SOUTHINGTON ROGUS

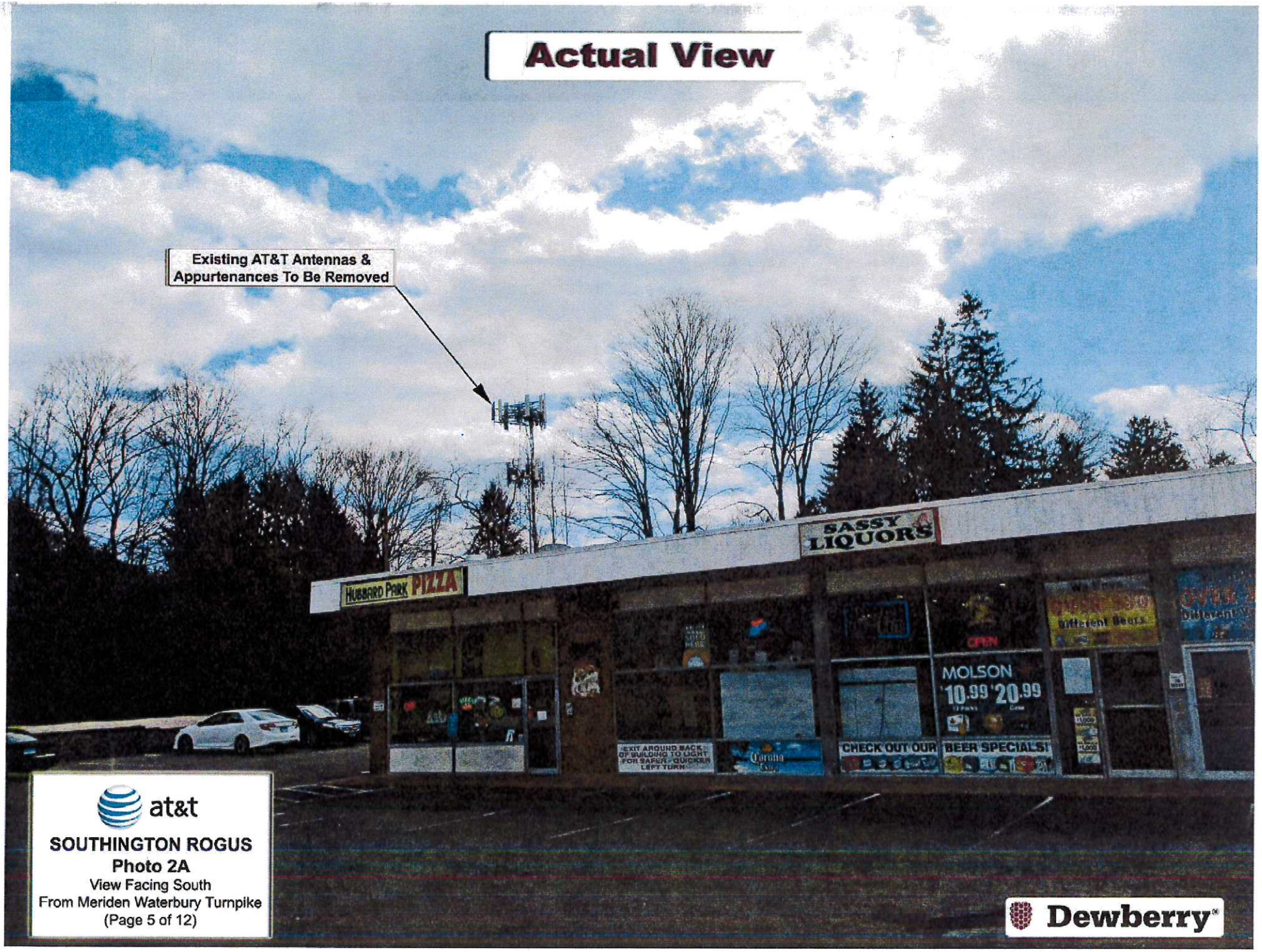
Photo 1A

View Facing Southwest
From Meriden Waterbury Turnpike
(Page 3 of 12)

Dewberry


Proposed View
Proposed AT&T RRU's (Typ.-6 Total)
& Surge Arrestor (Typ.-1 Total)
Proposed AT&T Antennas (Typ.-3 Total)
Proposed 40' Tall Lattice Tower Extension
ELECTRONICS
at&t
SOUTHINGTON ROGUS
Photo 1B
View Facing Southwest
From Meriden Waterbury Turnpike
(Page 4 of 12)
Dewberry

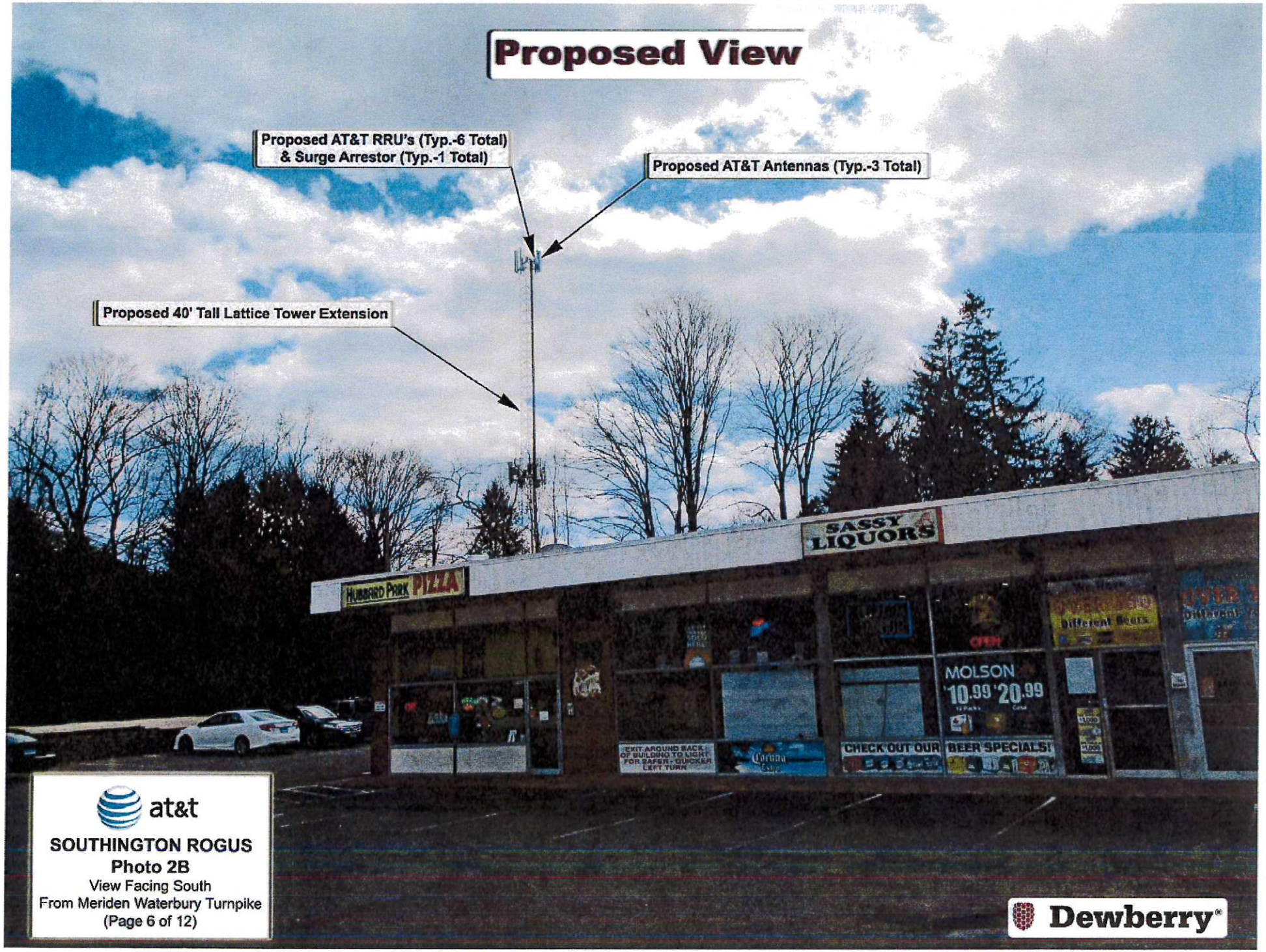
Actual View

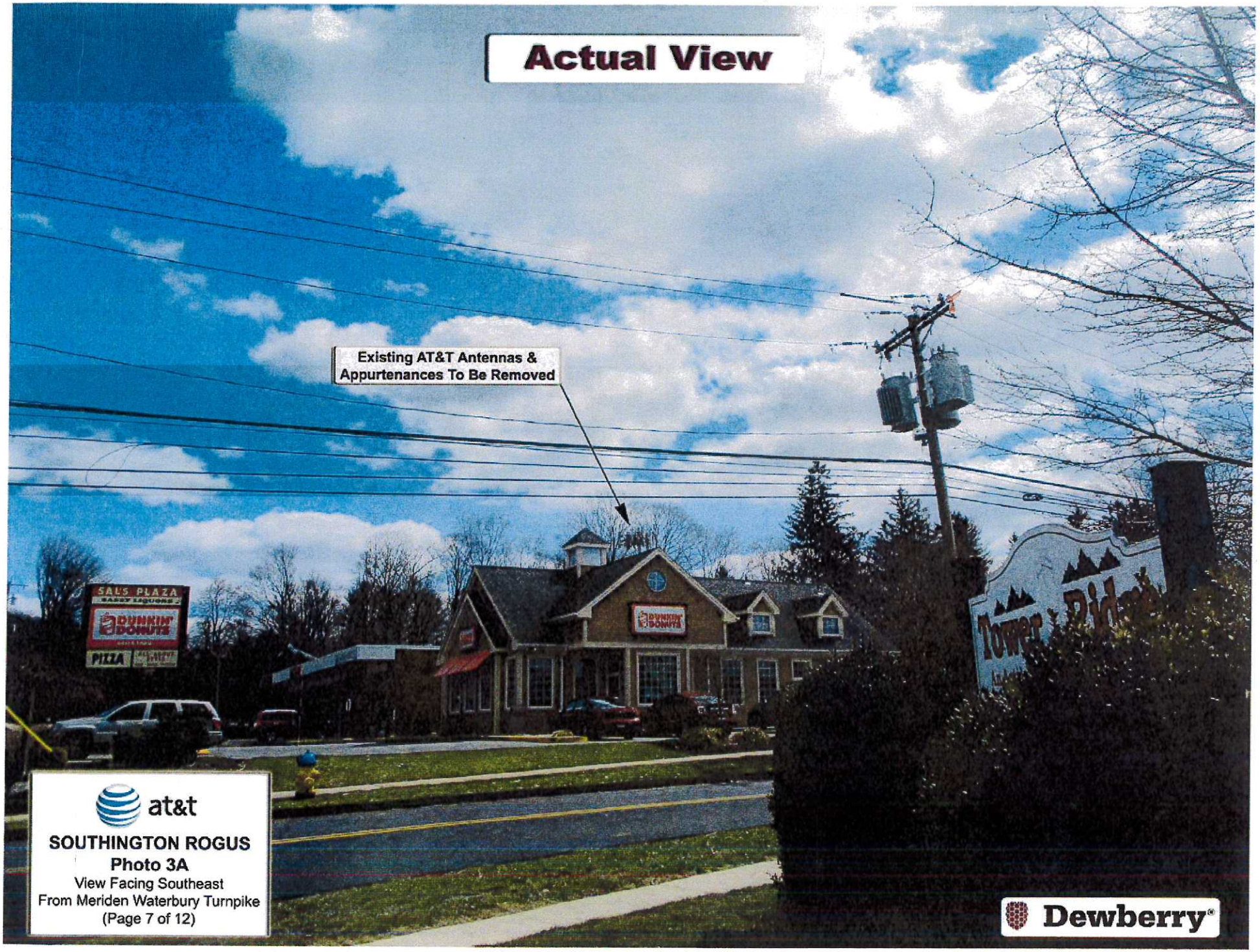


at&t

SOUTHINGTON ROGUS
Photo 2A
View Facing South
From Meriden Waterbury Turnpike
(Page 5 of 12)

Dewberry


Proposed View
Proposed AT&T RRU's (Typ.-6 Total)
& Surge Arrestor (Typ.-1 Total)
Proposed AT&T Antennas (Typ.-3 Total)
Proposed 40' Tall Lattice Tower Extension
SASSY LIQUORS
HUBBARD PARK PIZZA
MOLSON
$10.99 $20.99
CHECK OUT OUR BEER SPECIALS!
EXIT AROUND BACK OF BUILDING TO LIGHT FOR SAFER-QUICKER LEFT TURN
at&t
SOUTHINGTON ROGUS
Photo 2B
View Facing South
From Meriden Waterbury Turnpike
(Page 6 of 12)
Dewberry

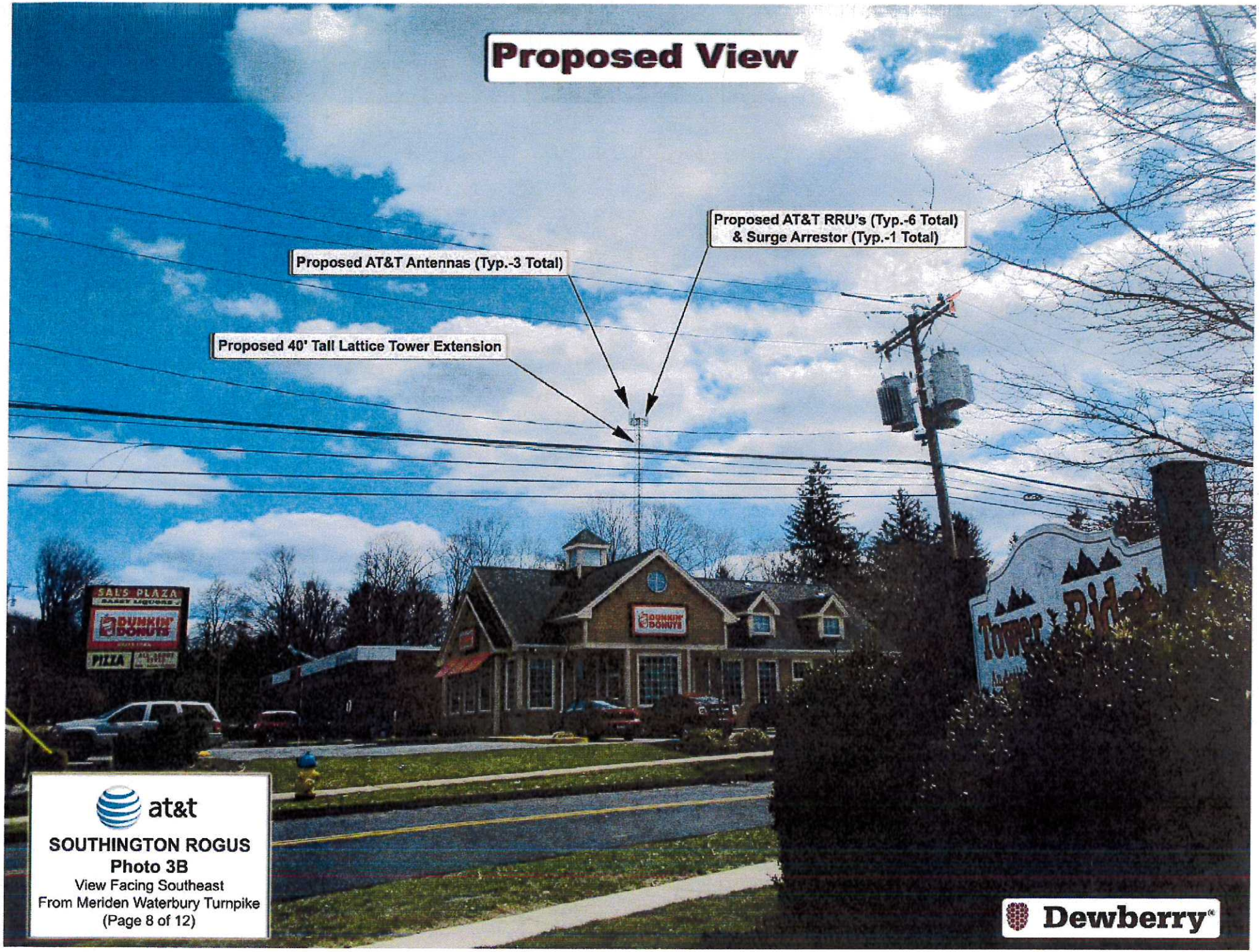


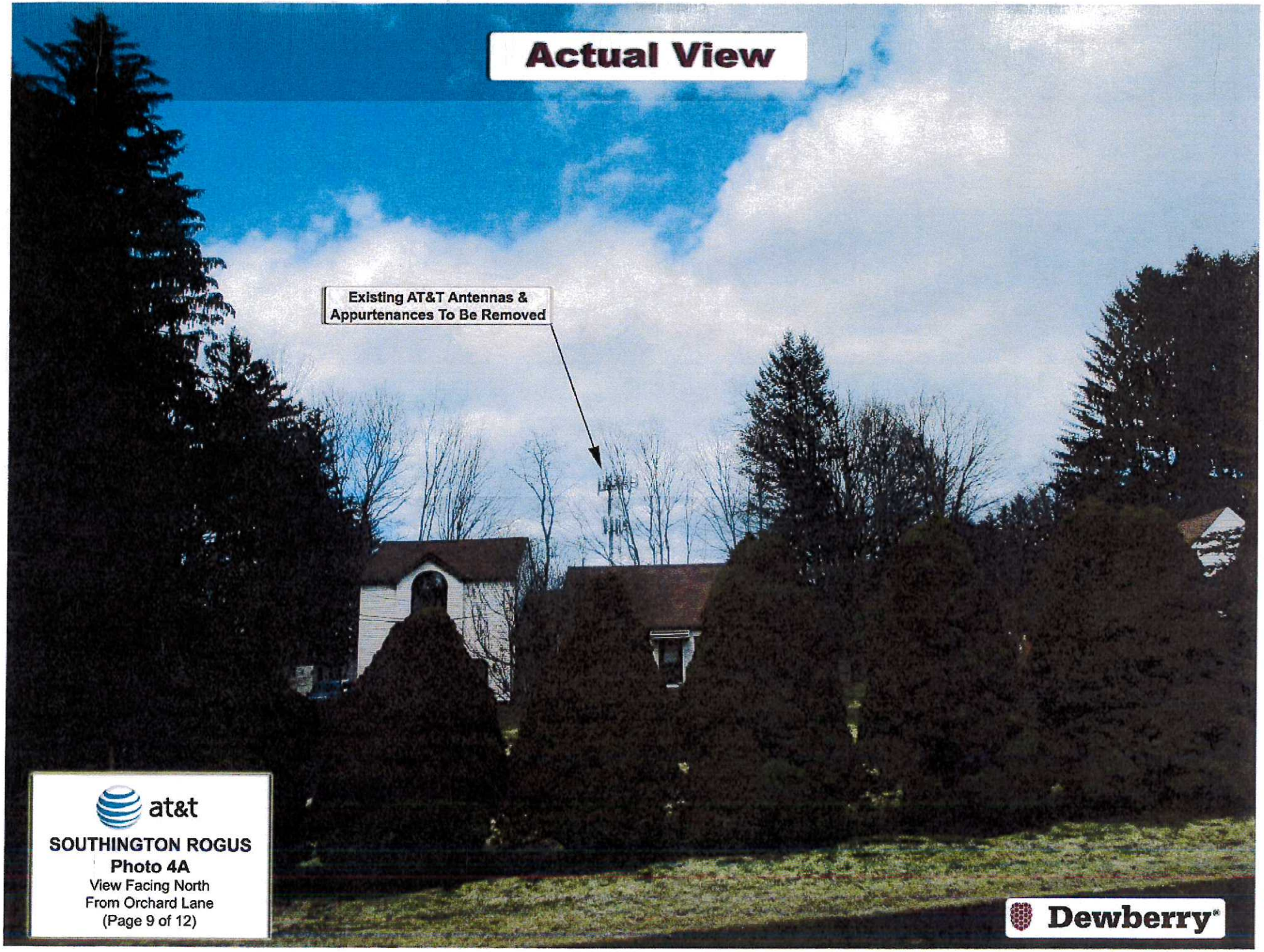
at&t

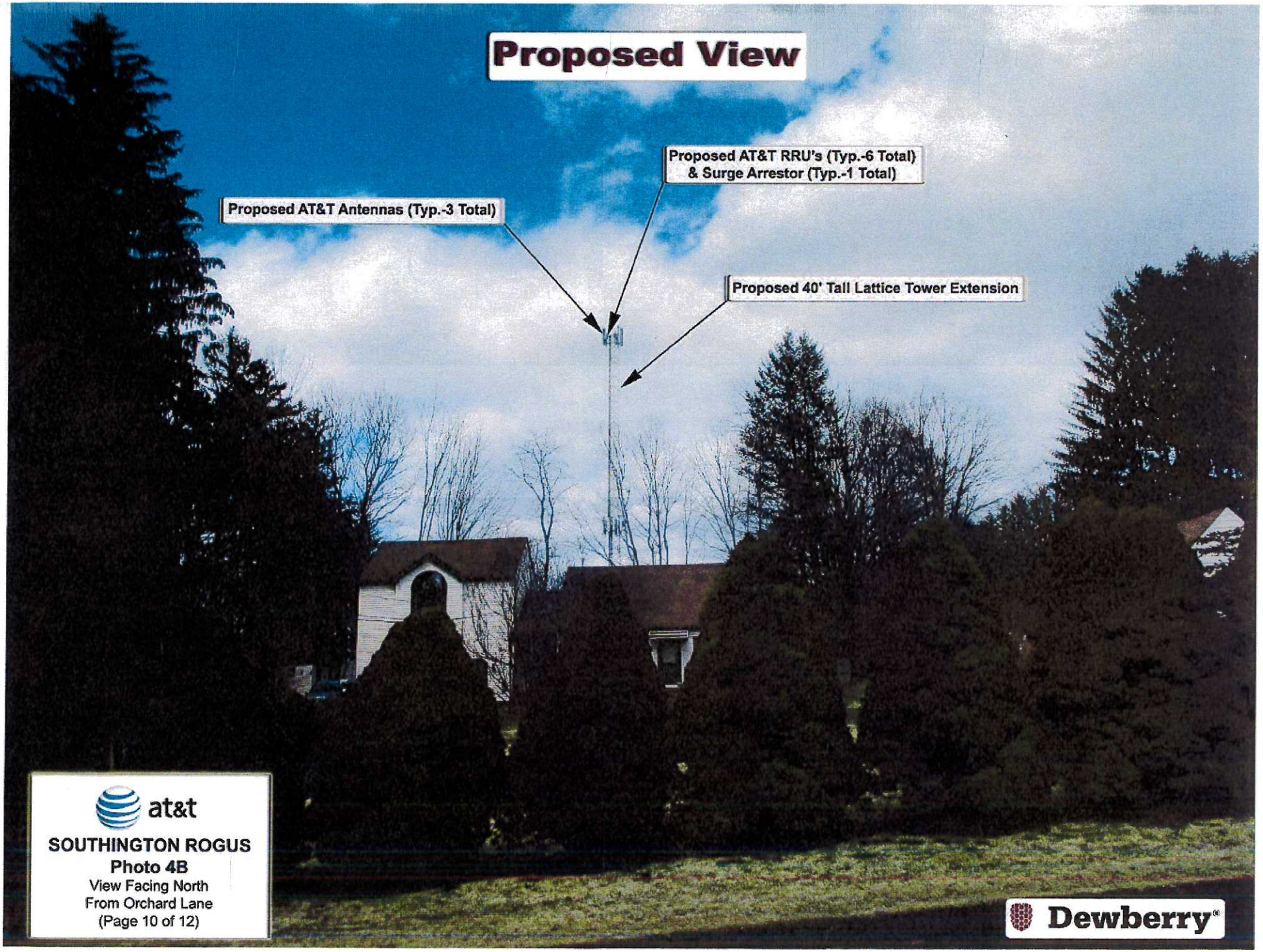
SOUTHINGTON ROGUS

Photo 3A

View Facing Southeast
From Meriden Waterbury Turnpike
(Page 7 of 12)


Proposed View
Proposed AT&T RRU's (Typ.-6 Total)
& Surge Arrestor (Typ.-1 Total)
Proposed AT&T Antennas (Typ.-3 Total)
Proposed 40' Tall Lattice Tower Extension
SAL'S PLAZA
DUNKIN' DONUTS
PIZZA
DUNKIN' DONUTS
Tower Rd
at&t
SOUTHINGTON ROGUS
Photo 3B
View Facing Southeast
From Meriden Waterbury Turnpike
(Page 8 of 12)
Dewberry


Actual View
Existing AT&T Antennas & Appurtenances To Be Removed
at&t
SOUTHINGTON ROGUS
Photo 4A
View Facing North
From Orchard Lane
(Page 9 of 12)
Dewberry


Proposed View
Proposed AT&T RRU's (Typ.-6 Total)
& Surge Arrestor (Typ.-1 Total)
Proposed AT&T Antennas (Typ.-3 Total)
Proposed 40' Tall Lattice Tower Extension
at&t
SOUTHINGTON ROGUS
Photo 4B
View Facing North
From Orchard Lane
(Page 10 of 12)
Dewberry


Actual View
Existing AT&T Antennas &
Appurtenances To Be Removed
at&t
SOUTHINGTON ROGUS
Photo 5A
View Facing Southwest
From Meriden Waterbury Turnpike
(Page 11 of 12)
Dewberry


Proposed View
Proposed AT&T Antennas (Typ.-3 Total)
Proposed AT&T RRU's (Typ.-6 Total)
& Surge Arrestor (Typ.-1 Total)
Proposed 40' Tall Lattice Tower Extension
at&t
SOUTHINGTON ROGUS
Photo 5B
View Facing Southwest
From Meriden Waterbury Turnpike
(Page 12 of 12)
Dewberry

5

EBI Consulting
environmental | engineering | due diligence

21 B Street
Burlington, MA 01803
Tel: (781) 273-2500
Fax: (781) 273-3311
www.ebiconsulting.com

July 30, 2018

Mr. Peter Crane
Crown Castle USA, Inc.
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

Subject: National Environmental Policy Act (NEPA) Screening Report
841298 / Southington Rogus
250 Meriden Waterbury Turnpike, Southington, Hartford County, Connecticut
EBI Project #6118002966

Dear Mr. Crane:

EBI Consulting (*EBI*) is pleased to provide you with this National Environmental Policy Act (NEPA) Screening Report (the *Report*) for the proposed communications installation at the address noted above (the Subject Property). The purpose of this *Report* is to determine if the proposed communications installation may have a significant environmental effect per 47 CFR §1.1307 of Federal Communications Commission (FCC) rules implementing NEPA, for which an Environmental Assessment (EA) must be prepared.

The Subject Property, known as 841298 / Southington Rogus, is an approximately 1.2-acre lot improved with Rogus Electronics and several small accessory buildings. As of the date of this *Report*, Crown Castle USA, Inc. proposes to modify an existing telecommunications tower at the Subject Property. The self-support lattice tower will be extended from an existing height of 80 feet above ground level (AGL) to a proposed height of 120 feet AGL (131 feet total including proposed lightning rod). Three antennas (one per sector) and three RRUs (one per sector) will be installed at a centerline height of 120 feet AGL. Utilities will be routed via replacement cables using the existing cable bridge and equipment shelter. No ground disturbance is planned for this installation. Please refer to the attached plans for complete details (see Appendix C).

Please find the attached NEPA and Nationwide Programmatic Agreement (NPA) checklists, summary report, and associated support documentation. Based upon the results of EBI's assessment, the proposed installation will not result in a significant environmental effect per the criteria outlined in §1.1307(a), Items (1) through (8). As such the preparation of an Environmental Assessment (EA) for these criteria is not required.

Please note regarding Item (4), the State Historic Preservation office (SHPO) has concurred with EBI's determination that 'the proposed undertaking will have no adverse effect to sites listed on or eligible for listing on the National Register of Historic Places, with the following conditions: 1. The antennas, RRUs, and associated equipment will be designed, painted to match adjacent materials, and installed to be as non-visible as possible, and 2. If not in use for six consecutive months, antennas, RRUs and all other equipment shall be removed by the telecommunications facility owner. This removal shall occur within 90 days of the end of such six-month period.'

The *Report* was completed according to the terms and conditions authorized by you. There are no intended or unintended third party beneficiaries to this *Report*, unless specifically named. EBI is an independent contractor, not an employee of either the property owner or the project proponent, and its compensation was not based on the findings or recommendations made in the *Report* or on the closing of any business transaction. Note that the

findings of this *Report* are based on the project specifications provided to EBI and described in this *Report*. In the event that the design or location of the installation changes, please contact EBI as additional review and/or consultation may be required.

Thank you for the opportunity to prepare this *Report*, and assist you with this project. Please call us if you have any questions or if we may be of further assistance.

Respectfully Submitted,

Ms. Kate Ritter
Author/Architectural Historian

Ms. Tiffany Skrobiszewski
Reviewer/Senior Scientist
Direct# (757) 582-3866

Mr. Gregory Ritter
Project Manager

Appendix A - NEPA Checklists
Appendix B - NEPA Summary Report
Appendix C - Figures
Appendix D - Natural Resource Review
Appendix E - Section 106 Review
Appendix F - Tribal Correspondence Documentation
Appendix G - Resumes of Signatories

CROWN CASTLE USA
FCC / NEPA ENVIRONMENTAL COMPLIANCE CHECKLIST

Site Name:	Southington Rogus	**Contact Person:**	Peter Crane
BU#:	841298	**Contact Number:**	(518) 433-6244

YES	NO	
☒	☐	1. A site inspection has been performed specifically for the information required in items 2-8 and 11.
☐	☒	2. Will the facility be located in an officially designated wilderness area?
☐	☒	3. Will the facility be located in an officially designated wildlife preserve?
☐	☒	4. Will the facility affect federally listed, threatened or endangered species or designated critical habitats or is the facility likely to jeopardize the continued existence of any federally proposed endangered or threatened species or likely to result in the destruction or adverse modification of federally proposed critical habitats?
☐	☒	5. Will the facility affect districts, sites, buildings, structures, objects or other cultural resources listed, or eligible for listing, in the National Register of Historic Places?
☐	☒	6. Will the facility affect Indian religious sites?
☐	☒	7. Will the facility be located in a 100-year flood plain? If yes, will equipment be installed 1 foot or more above the base flood plain elevation?
☐	☒	8. Will the construction of the facility involve a significant change in the surface features (e.g., wetland fill, deforestation, or water diversion)?
☐	☒	9. Will the antenna tower and/or supporting structure be equipped with high intensity white lights and be located in a residential neighborhood, as defined by local zoning laws?
☐	☒	10. Will the proposed facility fall outside the categorical exclusions contained in Table 1 of 47 CFR Section 1.1307(b) (1)?
☐	☒	11. Will the proposed facility be constructed within one (1) mile of the centerline of a National Scenic Trail and has the Trail Management Office indicated that the proposed construction will have a significant adverse effect?

A COPY OF A COMPLETED CROWN CASTLE INTERNATIONAL CORPORATION FCC ENVIRONMENTAL COMPLIANCE SURVEY DOCUMENTING THE PROCESS USED IN ARRIVING AT THE ABOVE ANSWERS MUST BE ATTACHED TO THIS FORM. IF ALL OF THE QUESTIONS ABOVE WERE ANSWERED "NO", NO FURTHER ACTION IS REQUIRED FOR FCC ENVIRONMENTAL PURPOSES.

IF ANY OF THE QUESTIONS WERE ANSWERED "YES" WITH THE EXCEPTION OF #1, AN ENVIRONMENTAL ASSESSMENT MUST BE PREPARED AND FILED WITH THE FCC.IN ACCORDANCE WITH APPLICABLE CROWN PROCEDURES. NO CONSTRUCTION MAY BEGIN UNTIL THE FCC HAS REVIEWED THE ASSESSMENT AND APPROVED THE PROPOSAL.

Kate Ritter
Name

July 30, 2018
Date

EBI Consulting
Company Name

CROWN CASTLE

6

ASAC SITE SPECIFIC EVALUATION
FOR
Site Name: Southington Rogus
Site Number:841298
Site Location: Meriden, CT.

Requestors Name: Peter Crane
Company Name: Crown Castle
Street Address: 3 Corporate Park Drive, Ste 101
City and Zip: Clifton Park, NY. 12065

This is an evaluation based on application of surfaces identified in Federal Aviation Regulation (FAR) Part 77 and Federal Communication Commission (FCC) Rules Part 17.

EXECUTIVE SUMMARY

- **The max height that can be built at this site without notice to the FAA is 200 feet AGL or 545 feet AMSL.**
- **The max No Extended Study height at this site is 499 AGL, or 844 AMSL.**
- **The max no hazard height at this site is 499 AGL, or 844 AMSL.**
- **The max no marking and lighting height at this site is 200 AGL, or 545 AMSL.**

SITE DATA

Structure Type: Antenna Tower

Coordinates of site:	**Lat:**	**41°33'24.54"**
	Long:	**72°51'10.84"**
	Datum:	**NAD 83**

Site ground elevation:	**345**
Total height above the ground of the entire structure (AGL):	**135**
Total height above mean sea level (AMSL):	**480**

AIRPORT/HELIPORT INFORMATION

Nearest public use or Government Use (DOD) facility: Meriden Markham Municipal.

This structure will be located 3.0 NM or 18714 FT from the airport on a bearing of 159 degrees true to the airport.

Nearest private use landing facility is: Meriden Wallingford Hospital.

This structure will be located 2.4 NM from the helipad on a bearing of 125 degrees true to the helipad.

STUDY FINDINGS

FAA FAR Part 77 paragraph 9 (FAR 77.9): (Construction or Alteration requiring notice.) (These are the imaginary surfaces that the FAA has implemented to provide general criteria for notification purposes.)

This structure does not require notification to the FAA.

FAA FAR Part 77 paragraph 17(FAR 77.17): (Standards for Determining Obstructions.)(These are the imaginary surfaces that the FAA has implemented to protect aircraft safety. If any of these surfaces are penetrated, the structure may pose a Hazard to Air Navigation.)

This structure does not exceed these surfaces.

FCC Notice Requirements:
(FCC Rules, Part 17)

This structure does not require notification to the FAA or FCC based on these rules.

FAA EMI:
(The FAA protects certain air navigational aids, radio transmitters, and RADAR facilities from possible interference. The distance and direction are dependent on the type of facility being evaluated. Some of these transmission and receiver facilities are listed in the National Flight Data Center (NFDC) database.)

This site would not affect any FAA air navigational aids or transmitters.

Military Airspace:
(This would include low level visual and instrument routes along with operations areas and special use airspace.)

This structure will not affect this airspace.

AM Facilities:
(The FCC protects AM radio stations from possible interference for a distance of 3.0 km for directional facilities, and 1.0 km for non-directional facilities. New changes to the FCC critical distances are calculated based on the AM transmission Movement Method Proof evaluation.)

This site was evaluated against the FCC's AM antenna database using the Movement Method proof calculations and no further action is required.

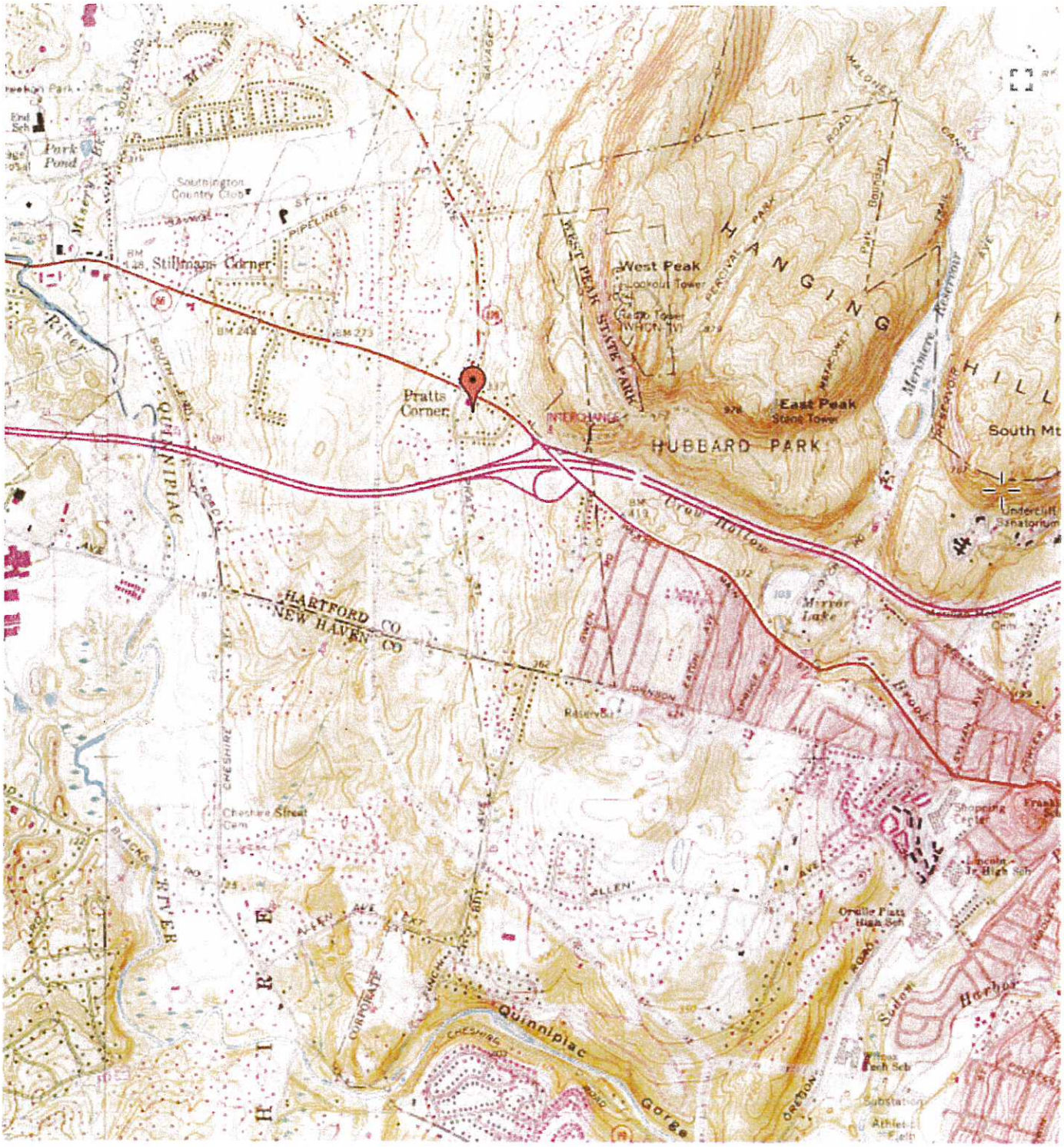
MARKING AND LIGHTING

FAA Advisory Circular 70/7460-1:

Marking and lighting is not required for this structure.

RECOMMENDATIONS

This site was evaluated in accordance with the requirements specified by the FAA under Federal Aviation Rules part 77, and found not to be a hazard to air navigation.



Gmap4 - Use at your own risk
mappingsupport.com
Google

7

Sanket Joshi
SAI Communications
12 Industrial Way
Salem, NH 03079
Sanket.Joshi@sai-comm.com

July 16, 2018

Connecticut Siting Council

Subject: AT&T Wireless, CT1033 – Southington, CT

Dear Connecticut Siting Council:

At the request of AT&T Wireless, SAI Comunications has performed an assessment of the RF Power Density at the proposed site located at 250 Meriden Waterbury Turnpike, Southington, CT.
Calculations were done in compliance with FCC OET Bulletin 65. This report provides an FCC compliance assessment based on a "worst-case" analysis that all transmitters are simultaneously operating at full power and pointing directly at the ground.

FCC OET Bulletin 65 formula:

$$S = \frac{2.56 * 1.64 * ERP}{4 * \pi * R^2}$$

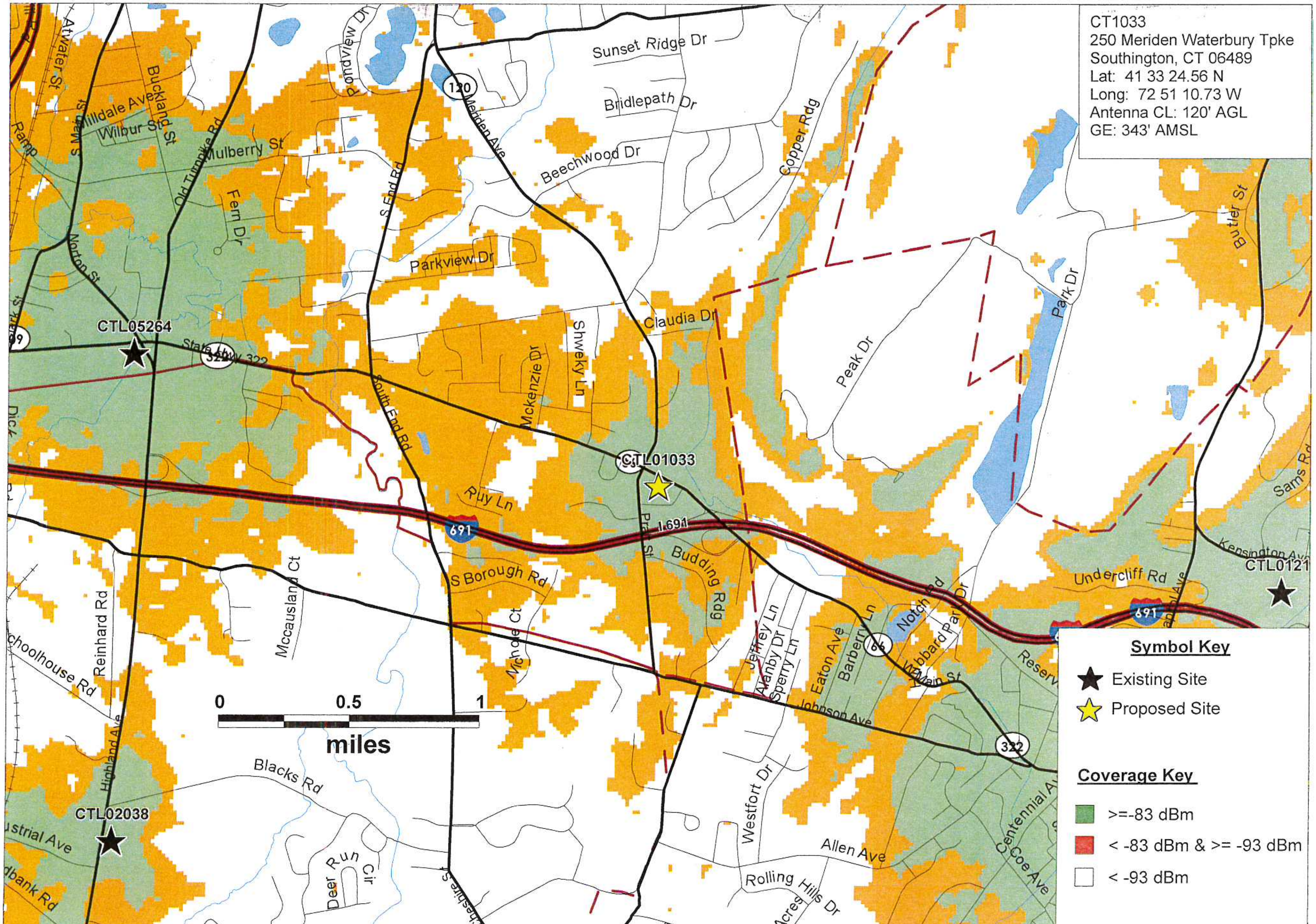
Transmission Mode	Antenna Centerline AGL (ft)	Frequency (MHz)	Number of Channels	Effective Radiated Power per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	% MPE (Uncontrolled/ General Public)
AT&T UMTS	120	850	1	1,054	0.0263	0.5667	4.65%
AT&T LTE	120	700	1	2,427	0.0606	0.4667	12.99%
Other carriers per CSC records							7.53%
Total							**25.16%**

Conclusion: AT&T's proposed antenna installation along with other carriers is calculated to be within 25.16% of FCC Standard for General Public/Uncontrolled Maximum Permissible Exposure (MPE).

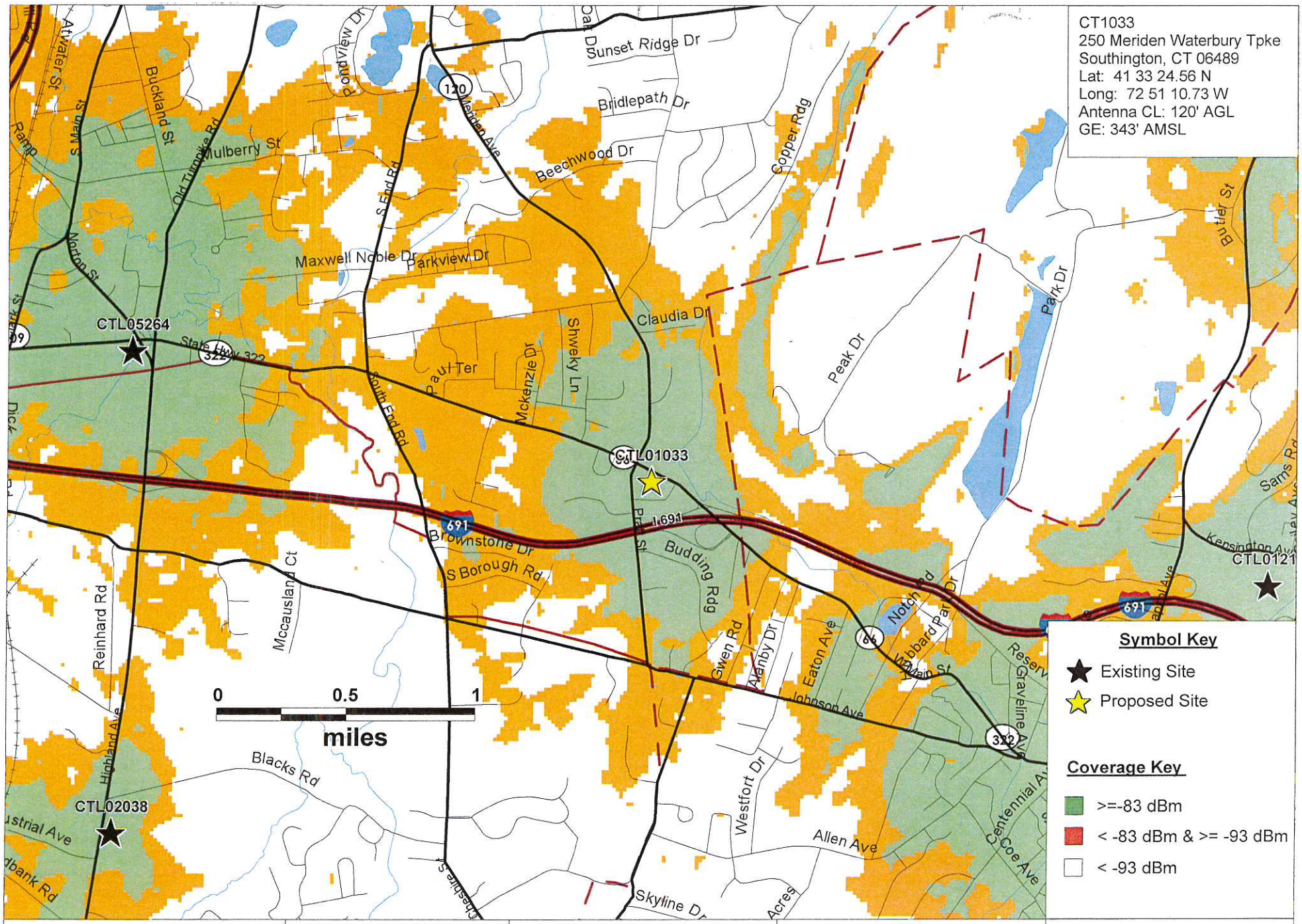
Sincerely,

Sanket Y Joshi
SAI Communications

8



Existing Coverage 700 MHz LTE	Southington	250 Meriden Waterbury Tpke Southington, CT 06489	at&t	PREPARED ON DATE: 08/28/2018	REV 0



Existing & Proposed 700 MHz LTE Coverage	Southington	250 Meriden Waterbury Tpke Southington, CT 06489	at&t	PREPARED ON DATE: 08/28/2018 REV 0

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NOTICE

Notice is hereby given, pursuant to Section 16-50j-40(a) of the Regulations of Connecticut State Agencies of a Petition being filed with the Connecticut Siting Council ("Siting Council") on or after August 31, 2018 by New Cingular Wireless PCS, LLC ("AT&T"). AT&T seeks a declaratory ruling that modification of an existing wireless facility does not have significant adverse environmental effects that might otherwise require a certificate of environmental compatibility and public need ("Certificate").

AT&T currently operates a co-located wireless facility on an existing 80-foot lattice tower located at 250 Meriden Waterbury Turnpike in Southington that is owned by Crown Castle. AT&T's facility includes nine AT&T antennas on the tower with associated equipment used to operate the antennas at the base of the tower. In order to upgrade its existing facility to provide reliable wireless service, AT&T proposes to add a 40-foot tall extension at the top of the existing tower, increasing the height to a total of 120 feet. AT&T proposes to remove its existing 6 antennas and place 3 new antennas to the top of the proposed extension.

The Petition will provide additional details of the proposal and explain why AT&T submits that this modification presents no significant adverse environmental effects. The location, height and other features of the proposal are subject to review and potential change under provisions Connecticut General Statutes Sections 16-50g et. seq.

Copies of the Petition will be available for review during normal business hours on or after August 31, 2018 at the following:

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Town Clerk of Southington
Kathy Larkin
75 Main Street
Southington, CT 06489

or the offices of the undersigned. All inquiries should be addressed to the Connecticut Siting Council or to the undersigned.

Lucia Chiocchio, Esq.
Cuddy & Feder LLP
445 Hamilton Ave, 14th Floor
White Plains, New York 10601
(914) 761-1300
Attorneys for the Petitioner

CERTIFICATION OF SERVICE

I hereby certify that on the 29th day of August 2018, a copy of the foregoing notice of the intended filing of a Petition with the Connecticut Siting Council for a declaratory ruling was sent by certified mail, return receipt requested, to the list below:

Dated: 8/29/18

Cuddy & Feder LLP
45 Hamilton Avenue, 14th Floor
White Plains, New York 10601
Attorneys for:
New Cingular Wireless PCS, LLC (AT&T)

Abutters List

John Rogus 250 Meriden Waterbury TPKE Southington, CT 06489	Joseph Sullivan 71 Orchard LN Southington, CT 06489
Sals Super Market Inc. 264 Meriden Waterbury TPKE C/O Kathleen Michalak Southington, CT 06489	Deborah G Capristo 81 Orchard LN Plantsville, CT 06479
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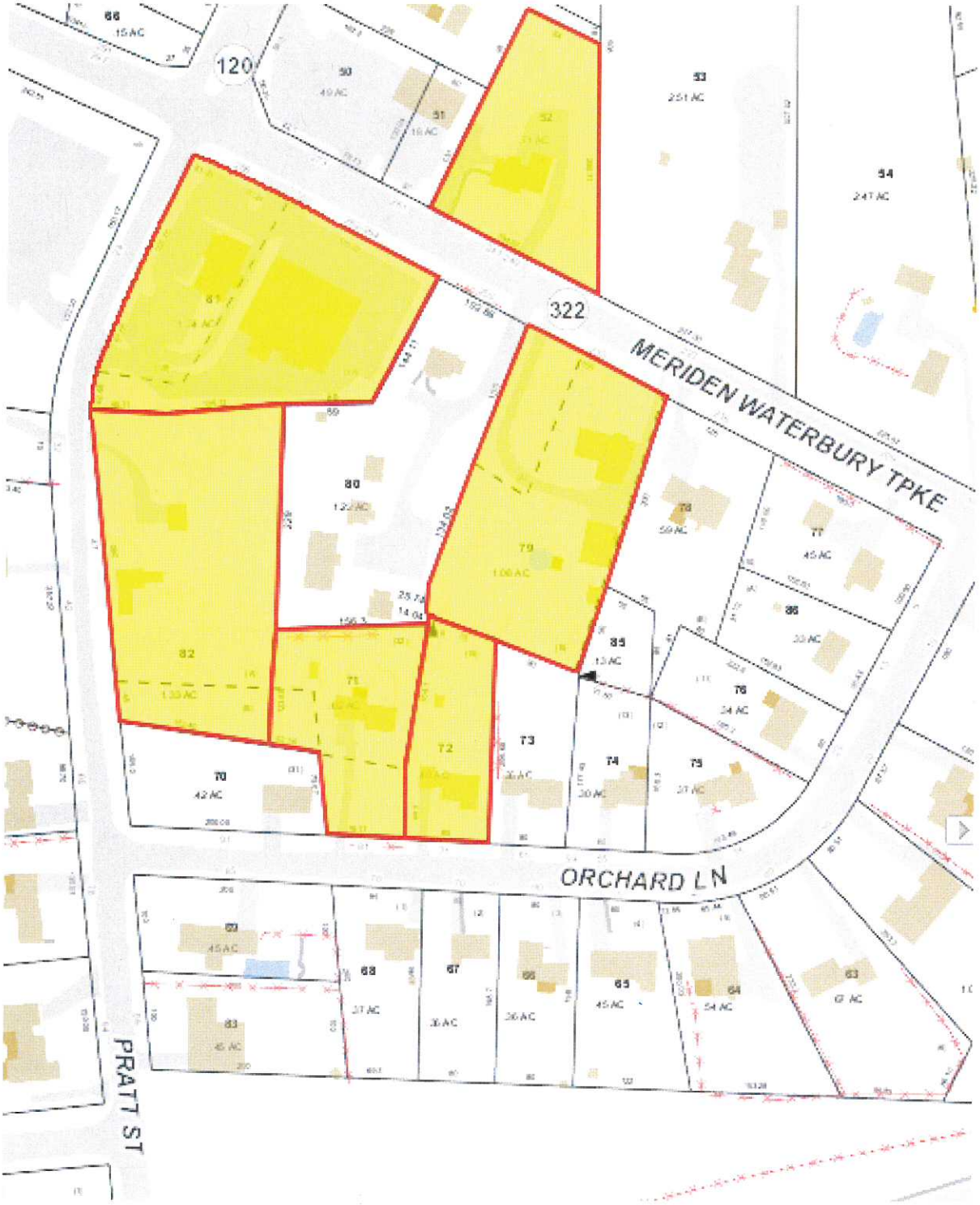
Evaclare Larkin 20 Village Road Southington, CT 06489	Evaclare Larkin 247 Meriden Waterbury TPKE Southington, CT 06489

Abutters Map



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Attorneys for:
New Cingular Wireless PCS, LLC (AT&T)

State and Regional

The Honorable George Jepsen Attorney General Office of the Attorney General 55 Elm Street Hartford, CT 06106	Department of Economic and Community Development Catherine Smith, Commissioner 450 Columbus Boulevard, Suite 5 Hartford, CT 06103
Department of Public Health Dr. Raul Pino, Commissioner 410 Capitol Avenue P.O. Box 340308 Hartford, CT 06134	Department of Energy and Environmental Protection Public Utilities Regulatory Authority Chair Katie Dykes Ten Franklin Square New Britain, CT 06051
Council on Environmental Quality Karl J. Wagener, Executive Director 79 Elm Street Hartford, CT 06106	Department of Transportation James P. Redeker, Commissioner 2800 Berlin Turnpike Newington, CT 06111