George Latimer
County Executive

June 24, 2022

Nicole Engel, Chief of Staff
Town of Pound Ridge
179 Westchester Avenue
Pound Ridge, NY 10576

Dear Ms. Engel:

Thank you for the notification concerning the following proposed action:

Project Name/File Number: **Pound Ridge Golf Club — PDR 22-006**

Action: **Site Plan Amendment**

Location: **18 High Ridge Road**

We have reviewed this matter under the provisions of Section 239 L, M and N of the General Municipal Law and Section 277.61 of the County Administrative Code and find it be a matter for local determination in accordance with your community's planning and zoning policies.

Please inform us of the Town's decision so that we can make it a part of the record.

Thank you for calling this matter to our attention.

Respectfully,
WESTCHESTER COUNTY PLANNING BOARD

By: Norma V Drummond

Norma V. Drummond
Commissioner

NVD/LH

Town House, 179 Westchester Avenue, Pound Ridge, NY 10576

TO: Supervisor Hansan & the Town Board

FROM: Michele Rudolph, AIA, Chairperson

Christeen CB Dür, Administrator

Planning Board

DATE: June 2, 2022

SUBJECT: Pound Ridge Golf Club, 18 High Ridge Road, Block 9316, Lot 18.9

The Town of Pound Ridge Planning Board has received the application materials submitted by Eastwoods LLC, the owner of the Pound Ridge Golf Club located at 18 High Ridge Road, Block 9316 Lot 18.9 the R-3A Zoning District in the Town of Pound Ridge. This application has been referred to our Board as part of the Town Board's review of the Pound Ridge Golf Club's request to amend its approved Integrated Turfgrass Pest Management Plan (ITPMP), last amended in 2011. Compliance with the ITPMP is a condition of the Golf Club's site plan approval originally granted in 2002. The Pound Ridge Golf Club proposes to add fourteen (14) new chemicals to its list of chemicals approved for use on the site.

During the May 26, 2022 meeting, the Planning Board had the opportunity to review a presentation by the applicant and its consultants, including Gerri Tortorella, Esq. of Hocherman Tortorella & Wekstein, LLP and Dr. Stuart Z. Cohen, PhD, CGWP of Environmental & Turf Services, Inc, who prepared the Risk Evaluation of New Pesticides report assessing the safety of the proposed new chemicals.

At the meeting, members of the public whose residences adjoin the site expressed concern about the Golf Club's use of new chemicals, which the Planning Board heard and considered in our review. The Planning Board also heard the evaluation conducted by our Planning Board and Town Engineer Jason A. Pitingaro, PE of Pitingaro & Doetsch Consulting Engineers, P.C. We understand that Jason's firm was recently appointed as third-party auditor of the Golf Club on behalf of the Town, and we learned that his staff evaluated the Risk Evaluation of New Pesticides report, as well as other historical project documents and plans, and visited the site with the Golf Club's superintendent Branko Zdravkowski, a New York State licensed pesticide applicator, and hydrogeologist John Benvegna, PG, CPG of WSP USA. We understand that Jason inspected the Golf Club's operations and protocols for the storage, handling and application of pesticides.

We are currently planning our own site visit to review the Golf Club's current operations with regard to pesticide handling and storage.

The members of the Planning Board acknowledge that, while we have concerns about the safety of any of the chemicals (including pesticides) stored, handled and applied at the Golf Club site and their potential long-term effects on public health, we must rely on our Town's expert's evaluation of the application. Based on our review of the applicant's presentation and Jason's evaluation, we recommend that the Town Board declare itself lead agency with regard to SEQR and make a SEQR determination, conduct any GML 239 review required as part of the approval of the application and approve the Golf Club's request to amend the ITPMP.

At the same time, we request that the Town Board seek additional information from the applicant regarding the safety of the proposed new chemicals as well as a list of the chemicals to no longer be used on the site (either because they are no longer effective or because they are no longer approved by the EPA and/or available on the market). Specifically, we request that the applicant supply the MSDS and label information requested by Jason, any data released by Cornell regarding the EIQ method inputs for each chemical and any lifetime drinking water health advisory levels or EPA pesticide tolerance levels for each chemical. The Planning Board would like to be copied on all new correspondence and documents submitted.

We also ask that the Town continue to keep the Planning Board apprised of the Golf Club's application and diligently monitor the Golf Club's operations and testing of on- and off-site locations, including adjoining private drinking water wells, for the presence of pesticides.

HTW HOCHERMAN TORTORELLA & WEKSTEIN LLP

Attorneys at Law
Geraldine N. Tortorella (NY, CT)
Adam L. Wekstein (NY)
Noelle C. Wolfson (NY, CT)

Henry M. Hocherman, Retired

April 6, 2022

Via Federal Express Delivery and Electronic Mail

Hon. Kevin Hansan, Supervisor
and Members of the Town Board
Town of Pound Ridge
179 Westchester Avenue
Pound Ridge, New York 10576

Re: Pound Ridge Golf Club – Additional Chemicals for Use on Golf Course

Dear Supervisor Hansan and Members of the Town Board:

This firm represents Eastwoods LLC, owner of the Pound Ridge Golf Club (the "Golf Course"). The approvals for the Golf Course included approval of a Groundwater, Surface Water and Stormwater Monitoring Plan (the "Monitoring Plan") and, as part of the Monitoring Plan, an Integrated Turfgrass Pest Management Plan (the "ITPMP") (prepared by A. Martin Petrovic, Ph.D., dated December 11, 1998 and last revised April 15, 2002). The ITPMP is Appendix I to the Monitoring Plan. (One hard copy of the Monitoring Plan with the ITPMP is enclosed for the Board's convenience.) I am writing because the Golf Course desires to update the ITPMP to expand the list of chemicals approved for use on the Golf Course.

The ITPMP prepared by Dr. Petrovic serves as a "maintenance blueprint" for achieving a healthy, pest-resistant, golf-playing surface with minimal impact on the environment, including water resources. Among other things, the ITPMP outlines a program of fertilizer and pest control options and other maintenance practices to be followed on the Golf Course. The ITPMP also identifies specific chemicals that may be applied to the greens, tees and fairways. In 2011, the Golf Course obtained approval to amend the list of approved chemicals to add and remove a few items.

The introduction to the ITPMP approved by the Town states that "a fertilizer and pest control program must show flexibility to deal with two very important variables, weather and nature." (ITPMP, page 3). It is an accepted maxim among golf course superintendents that a healthy turf is dependent on a dynamic and flexible ITPMP. Insect, weed and disease pests can develop a tolerance to chemicals, similar to the way in which bacteria have developed resistance to antibiotics. Turfgrass can be irreparably damaged in a matter of days by a fast-spreading or aggressive insect or disease. A golf course superintendent must be vigilant in monitoring and scouting the tees, greens and fairways, sometimes on a daily or more often basis, for these pests, or conditions conducive to their emergence or spread, and have ready access to a comprehensive suite of insecticides, fungicides and herbicides that he/she can swiftly apply to contain such threats.

The importance of a healthy turf cannot be overstated. Diseased turf poses a threat to the environment by reducing the stability of soils, increasing the potential for erosion and the need for more fertilizers and/or pesticides to be applied to reverse the condition. Still further, damaged turf impairs the playability of the Course and jeopardizes the very essence of the business.

In recent years, the Pound Ridge Golf Course Superintendent, Mr. Branko Zdravkoski, has had diminishing success with the chemicals that have been approved for use on the Golf Course. Among other things, he has had to apply certain chemicals more frequently than in prior years due, in part, to the persistence of insects, weeds and diseases. More applications mean the use of more product. (Not surprisingly, the ITPMP and sound business practices favor minimizing the number of chemical applications.) These are tell-tale indicators that the chemicals are declining in their effectiveness and that pests may be developing a tolerance to them. To address the situation, Superintendent Zdravkoski has identified alternative chemistries that he would like to use on the Golf Course, which he believes will more effectively and efficiently address the insects and diseases and relieve stress on the turf.

We have consulted chemistry and agronomy experts regarding the challenges being encountered by Superintendent Zdravkoski and whether the chemicals he proposes to add to his toolbox are suitable for the Course and the environment, namely environmental chemist Stuart Cohen, Ph.D., CGWP, President of Environmental & Turf Services, Inc.,[1] and agronomist and environmental scientist Steve McDonald, President of Turfgrass Disease Solutions. Dr. Cohen and Mr. McDonald agree that the chemicals currently approved for use are unnecessarily underinclusive, that limiting the chemicals that may be used on the Course is the antithesis to current day integrated pest management best practices and that expanding the chemicals that can be used on the Course will strengthen the ITPMP and Mr. Zdravkoski's ability to continue to address conditions on the Golf Course in a manner that poses little, if any, risk to the environment. Submitted herewith is a Table of new chemicals the Golf Course would like to have the flexibility to use on the Course. All of the pesticides in the Table have been approved by the United States Environmental Protection Agency ("US EPA") following an extensive and intensive review of the toxicological, ecological and chemistry data,[2] as well as by the New York State Department of Environmental Conservation ("NYSDEC") following its review and approval.

As currently written, the ITPMP requires that new chemicals to be used on the Golf Course undergo a risk assessment pursuant to a currently accepted methodology. To satisfy this requirement, Dr. Cohen and his staff screened the new chemicals in the Table for their risk to water resources by calculating the "Field Environmental Impact Quotient" ("FEIQ") for each one using the "Environmental Impact Quotient ("EIQ") calculator." The EIQ calculator is a screening-methodology used to evaluate a pesticide's potential impacts to the environment and human health. Each chemical in the Table has a low or very low FEIQ score, meaning that it does not pose a significant risk to the environment or human health. On that basis, Dr.

[1] Dr. Cohen has joined the Golf Course Consultant Team because Dr. Petrovic is semi-retired and declined to work on this application because of the potential need for long distance travel to meetings.
[2] According to Dr. Cohen, typically, the US EPA approves pesticides for use only after 50-120 studies are conducted and reviewed by the EPA, and after potential risks have been assessed.

Cohen has concluded that the chemicals in the Table are suitable for use on the Golf Course. A copy of Dr. Cohen's report, which describes the screening methodology and the results of his analysis, is submitted herewith.

Importantly, we know of no prohibition on the use of the chemicals in the Table by any other property or business owner in Pound Ridge, including the Rockrimmon Golf Club, or any other golf course in Northern Westchester. (In fact, representatives of NYSDEC have specifically stated to Superintendent Zdravkoski and his predecessor, former Superintendent Will Heintz, that no agency or body other than NYSDEC has jurisdiction to regulate the use and application of pesticides in New York State.) The only limitations on the use of the chemicals of which we are aware are that the chemicals must be applied at the rates and under the conditions set forth on the manufacturer's product labeling, limitations established by the US EPA and the NYSDEC that apply uniformly to all users of the products.

In the course of identifying new chemicals for use on the Golf Course, Superintendent Zdravkoski has reassessed the utility of currently approved chemicals. He has determined he will no longer use several of them because they are obsolete, more environmentally sensitive products have become available and/or they have not been effective in combating insects and disease on the Course. Therefore, based on the Superintendent's assessment, the Golf Course proposes to discontinue use of the following chemicals previously approved for use: benefluralin, benefin, bensulide, fenoxaprop, MSMA, trifluralin, acephate, bendiocarb, chlorpyrifos, isofenphos, indoxacarb, chloroneb, cyproconazole, etridiazole, flutolanil, fosetyl-al, thiophanatemethyl, bacillus licheniformis, cyfluthrin, ethofumesate, fluroxypyr, MCPA, MCPP, sulfentrazone, topramezone, and triclopyr.[3] Dr. Cohen and Mr. McDonald concur that effective alternatives to these chemicals are available and should be used.

The Golf Course will continue to analyze groundwater, surface water and stormwater samples annually pursuant to the Monitoring Plan.

The Monitoring Plan and ITPMP were approved more than fifteen years ago. The Golf Course has learned a lot and much has changed in that time. We believe those documents warrant further discussion and review. In the spirit of transparency, we want to let the Board know that we plan to make a separate submission regarding further amendments to the Monitoring Plan and ITPMP to reconcile inconsistencies with NYSDEC jurisdiction and bring the Monitoring Plan and ITPMP in line with prevailing practices and procedures in the industry and among golf courses in the Westchester County Region, including in Pound Ridge, in the near future.

[3] To avoid confusion, once the Board has acted on this request, we will develop an updated, comprehensive schedule of all chemicals that may be used on the Golf Course.

Kindly schedule this request to expand the chemicals approved for use on the Golf Course to include the pesticides on the enclosed Table for discussion at the next available Town Board meeting. (We can be available for the Board's April 12, 2022 meeting if that works for the Board.) Our team looks forward to discussing this request further with the Board at that time.

Respectfully yours,

Hocherman Tortorella & Wekstein, LLP

By: _____
Geraldine N. Tortorella

GNT:mc
Enclosures
cc: *Via Electronic Mail (with enclosures)*
Les Maron, Esq., Deputy Supervisor
William P. Harrington, Esq.
Jason Pitingaro, P.E.
Mr. Darren Wang
Stuart Cohen, Ph.D., CGWP
Mr. Steve McDonald
Mr. Branko Zdravkoski
John Benvegna, PG(NY), CPG

S:\# MATTERS\Eastwoods 0101\Pound Ridge Golf Club 001\Letters\Town Board Chemicals List 4-6-22.docx

HTW HOCHERMAN TORTORELLA & WEKSTEIN LLP

Attorneys at Law
Geraldine N. Tortorella (NY, CT)
Adam L. Wekstein (NY)
Noelle C. Wolfson (NY, CT)

Henry M. Hocherman, Retired

April 7, 2022

Via Electronic Mail (chiefofstaff@townofpoundridge.com)

Nicole Engel, Chief of Staff
Town of Pound Ridge
179 Westchester Avenue
Pound Ridge, New York 10576

Re: Pound Ridge Golf Club – Additional Chemicals for Use on Golf Course

Dear Nicole:

Enclosed is a short Environmental Assessment Form that relates to the materials we submitted to the Town Board yesterday regarding the Pound Ridge Golf Club. Kindly add it to yesterday's submission. Thank you.

Respectfully yours,

Hocherman Tortorella & Wekstein, LLP

By: Geraldine N. Tortorella

GNT:mc
Enclosure
cc: *Via Electronic Mail (with enclosure)*
Hon. Kevin Hansan, Supervisor
Les Maron, Esq., Deputy Supervisor
William P. Harrington, Esq.
Jason Pitingaro, P.E.
Mr. Darren Wang
Stuart Cohen, Ph.D., CGWP
Mr. Steve McDonald
Mr. Branko Zdravkoski
John Benvegna, PG(NY), CPG

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Short Environmental Assessment Form
Part 1 - Project Information

Instructions for Completing

Part 1 – Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 – Project and Sponsor Information

Eastwoods LLC -- Pound Ridge Golf Club

Name of Action or Project:

Amendment of Integrated Turfgrass Pest Management Plan to add pesticides to the approved list for use on the Pound Ridge Golf Club.

Project Location (describe, and attach a location map):

18 High Ridge Road. West side of High Ridge Road south of Upper Shad Rd. and north of the Connecticut border. Tax Id - 9316-18.9

Brief Description of Proposed Action:

Approvals issued for the Pound Ridge Golf Club are conditioned upon compliance with a Groundwater, Surface Water and Stormwater Monitoring Plan of which an Integrated Turfgrass Pest Management Plan (ITPMP) is a part. Eastwoods LLC would like to add pesticides to the list of chemicals that can be applied on the Golf Course pursuant to the ITPMP. The ITPMP, as currently written, requires that new chemicals be screened according to an accepted methodology. Eastwoods is submitting the screening results, performed by environmental chemist Stuart Cohen, Ph.D., CGWP, and seeking amendment of the ITPMP to include the new pesticides.

No construction or other form of land disturbance is proposed.

Name of Applicant or Sponsor:	Telephone: 914-421-1800, Ext 1
Eastwoods LLC, c/o Hocherman Tortorella & Wekstein, LLP (Geraldine N. Tortorella, Esq.)	E-Mail: g.tortorella@htwlegal.com

Address:

One North Broadway, Suite 400

City/PO:	State:	Zip Code:
White Plains	NY	10601

	NO	YES
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.	☑	☐
2. Does the proposed action require a permit, approval or funding from any other government Agency? If Yes, list agency(s) name and permit or approval: Potentially – Planning Board, Water Control Commission	☐	☑

3. a. Total acreage of the site of the proposed action? +/- 170 acres
   b. Total acreage to be physically disturbed? 0.00 acres
   c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? +/-170 acres

4. Check all land uses that occur on, are adjoining or near the proposed action:

5. ☐ Urban ☐ Rural (non-agriculture) ☐ Industrial ☑ Commercial ☑ Residential (suburban)
   ☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other(Specify):
   ☐ Parkland

	NO	YES	N/A
5. Is the proposed action,			
a. A permitted use under the zoning regulations?	☐	☑	☐
b. Consistent with the adopted comprehensive plan?	☐	☑	☐

	NO	YES
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	☐	☑

	NO	YES
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area?		
If Yes, identify:	☑	☐

	NO	YES
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	☑	☐
b. Are public transportation services available at or near the site of the proposed action?	☑	☐
c. Are any pedestrian accommodations or bicycle routes available on or near the site of the proposed action?	☑	☐

	NO	YES
9. Does the proposed action meet or exceed the state energy code requirements?		
If the proposed action will exceed requirements, describe design features and technologies:		
N/A	☐	☐

	NO	YES
10. Will the proposed action connect to an existing public/private water supply?		
If No, describe method for providing potable water:		
N/A -- Existing water supply will not change	☐	☐

	NO	YES
11. Will the proposed action connect to existing wastewater utilities?		
If No, describe method for providing wastewater treatment:		
N/A -- Existing form of wastewater treatment will not change.	☐	☐

	NO	YES
12. a. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places?	☑	☐
b. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? No construction or land disturbance is proposed.	☐	☑

	NO	YES
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	☐	☑
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody?	☑	☐
If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres:		

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply:

☐ Shoreline ☑ Forest ☐ Agricultural/grasslands ☐ Early mid-successional

☑ Wetland ☐ Urban ☑ Suburban

	NO	YES
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	☑	☐
16. Is the project site located in the 100-year flood plan?	☑	☐
17. Will the proposed action create storm water discharge, either from point or non-point sources?	☑	☐
If Yes,		
a. Will storm water discharges flow to adjacent properties?	☐	☐
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)?	☐	☐
If Yes, briefly describe:		
18. Does the proposed action include construction or other activities that would result in the impoundment of water or other liquids (e.g., retention pond, waste lagoon, dam)?	☑	☐
If Yes, explain the purpose and size of the impoundment:		
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility?	☑	☐
If Yes, describe:		
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste?	☑	☐
If Yes, describe:		

I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

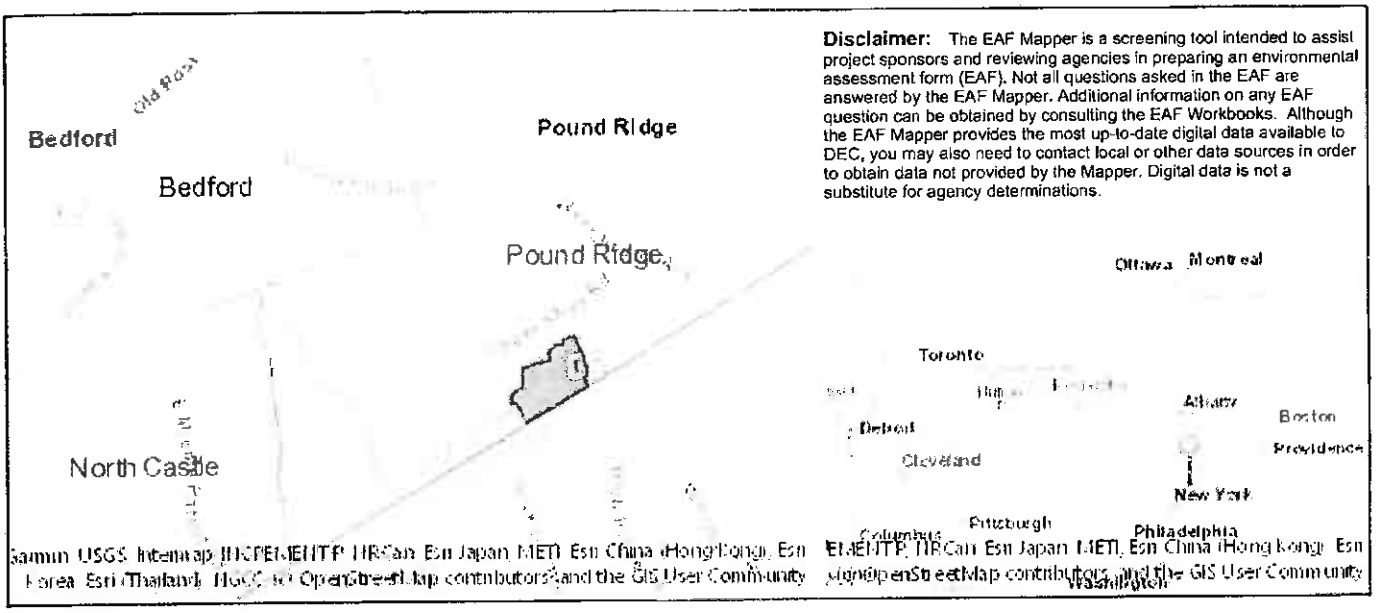
Applicant/sponsor/name: Geraldine N. Tortorella, Esq., attorney for Eastwoods LLC Date: April 6, 2022

Signature: Geraldine N. Tortorella Title: Attorney

PRINT FORM

EAF Mapper Summary Report

Thursday, April 7, 2022 9:56 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

Part 1 / Question 7 [Critical Environmental Area]	No
Part 1 / Question 12a [National or State Register of Historic Places or State Eligible Sites]	No
Part 1 / Question 12b [Archeological Sites]	Yes
Part 1 / Question 13a [Wetlands or Other Regulated Waterbodies]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
Part 1 / Question 15 [Threatened or Endangered Animal]	No
Part 1 / Question 16 [100 Year Flood Plain]	No
Part 1 / Question 20 [Remediation Site]	No

POUND RIDGE GOLF CLUB

TABLE OF PROPOSED NEW PESTICIDES
(April 4, 2022)

FUNGICIDES (11)
Fluazinam
Fluopyram
Fluoxastrobin
Fluxapyroxad
Mandestrobin
Mefentrifluconazole
Metconazole
Myclobutanil
Polyoxin d zinc salt
Pydiflumetofen
Tebuconazole

INSECTICIDES (1)
Lambda-cyhalothrin

GROWTH REGULATORS (2)
Flurprimidol
Prohexadione-Ca

Environmental & Turf Services, Inc.
11510 Georgia Avenue, Suite 240
Wheaton, MD 20902
301.933.4700 ets@ets-md.com

April 4, 2022

QUANTITATIVE RISK EVALUATION OF POUND RIDGE GOLF CLUB NEW PESTICIDES

The Environmental Impact Quotient (EIQ) calculator was used to evaluate the potential risks to the environment and humans of the use of newly-proposed pesticides[1] on the Pound Ridge Golf Club. The new pesticides are listed in the table. All but one of the proposed pesticides have a field use EIQ ("FEIQ") rating of very low (i.e., "v. low"). (The risk rank for one fungicide is 'low'.) Based on their very low rating, all of the proposed pesticides are recommended for use on the golf course in accordance with the product labeling. The following narrative provides the background information on the EIQ methods and results.

Background

The EIQ calculator is the basis for the Tier 1 Field Use Environmental Impact Quotient (FEIQ) calculator, which was initially developed by the New York State's Integrated Pest Management Program (NYSIPM) in 1992 (Kovach et al., 1992).

The EIQ calculator is a generally accepted screening-level model that semi-quantitatively evaluates the potential for pesticide impacts to both the environment and human health. The EIQ is continuously maintained by the NYSIPM Program. The most recent update to the online calculator was in March of 2022. In addition, the NYSIPM Program added new pesticides, also in March of 2022, to the EIQ *Table 2*, which is a spreadsheet found on the NYSIPM website that provides EIQ ratings for newer products. However, the EIQ *Table 2* does not provide individual results for the three basic components that combine to form the EIQ, explained below. At the time we accessed the online calculator, not all of the new pesticides that are on the EIQ's *Table 2* spreadsheet were provided in the online calculator. Therefore, we had to request that the NYSIPM director provide the results for the basic components for a few of the proposed pesticides.

The results of the calculator are intended to semi-quantitatively identify pesticide impacts to both the environment and human health. The term "semi-quantitative," in this context, indicates the fact that although the calculations are done quantitatively, specific doses are not calculated.

[1] "Pesticides" is a generic term used to refer to any product that claims to kill or mitigate a pest: fungicides, herbicides, insecticides, disinfectants, growth regulators, etc.

The EIQ method for calculating pesticide impacts takes into account the following three basic components: consumer risk, farm worker risk, and ecological fate/risk. The consumer component includes exposure of the consumer to the pesticide, as well as any ground water effects (i.e., a leaching component). Farm worker risk includes the assessment of both applicator and picker exposure (i.e., farmer), which is equivalent to a golfer or athlete, as well as chronic toxicity. Lastly, ecological risk (which includes a runoff component) is assessed by examining the aquatic and terrestrial effects to fish, birds, bees, and arthropods.

The FEIQ calculator requires two types of user-provided information: percent active ingredient (% a.i.) and the application rate (e.g., oz/1000 ft^2). The EIQ equation is listed below (Kovach et al., 1992). This equation is based on the three basic components referred to above which are material factors that go into producing the EIQ rating; however, the formula cannot be used directly to quantify pesticide concentrations and risks because the variables are not presented in a quantitative (dose-specific) manner.

(eqn 1) $$EIQ=\{C[(DT*5)+(DT*P)]+[(C*((S+P)/2)*SY)+(L)]+[(F*R)+(D*((S+P)/2)*3)+(Z*P*3)+(B*P*5)]\}/3$$

Where DT = dermal toxicity, C = chronic toxicity, SY = systemicity, F = fish toxicity, L = leaching potential, R = surface loss potential, D = bird toxicity, S = soil half-life, Z = bee toxicity, B = beneficial arthropod toxicity, P = plant surface half-life.

Application of the FEIQ/EIQ to the Pound Ridge Club

The percent active ingredient and the rate of application are input into the EIQ calculator for a particular pesticide selected from the dropdown list on the website, one at a time. The results provide an overall field use rating value (i.e., FEIQ) for the pesticide, as well as risk ratings for the individual consumer, worker, and ecological components. The values for each component can then be compared in a semi-quantitative manner. The lower the value the lower the risk, e.g., a rating <25 implies very low risk, and a rating >200 implies very high risk.

The Field Use EIQ is determined by multiplying the EIQ by the percent active ingredient and the application rate (lb/A). Thus, the Field Use EIQ (FEIQ) can be used to guide the development of different management strategies.

(eqn 2) EIQ Field Use Rating (FEIQ) = EIQ x % active ingredient x Application Rate (lb/A)

Determination of the FEIQ

The Superintendent, Branko Zdravkoski, provided to Environmental & Turf Services, Inc. the percent active ingredient, the application rate, the number of applications, the areas of applications, and the target pests for each of the proposed-for-use pesticides (see the table below). There are 14 pesticides in the table that are proposed for use: 11 fungicides, one insecticide, and two growth regulators. All pesticides in the table were evaluated in order to obtain the FEIQ results.

We calculated the Field EIQ value for each pesticide in the table by multiplying the EIQ value by the percent active ingredient and the application rate (lb/A, see the formula above). The FEIQ values are associated with risk categories, e.g., v. low, low, etc. All of the proposed pesticides have a low to very low FEIQ risk ratings.

CONCLUSIONS AND RECOMMENDATIONS

We recommend all pesticides in the table for use in accordance with the product labeling. We further recommend that pesticides be rotated for use to help prevent pests from becoming immune/resistant to the pesticide, which in turn will help provide for healthy turf.

References:

Kovach, J., C. Petzoldt, J. Degni, and J. Tette. 1992. A Method to Measure the Environmental Impact of Pesticides. *New York's Food and Life Sciences Bulletin*, 139:1–8. Available at: www.nysipm.cornell.edu/publications/EIQ

Grant, J. A. 2010-2020. Calculator for Field Use EIQ (Environmental Impact Quotient). New York State Integrated Pest Management Program, Cornell Cooperative Extension, Cornell University. Available at: https://nysipm.cornell.edu/eiq/calculator-field-use-eiq/

Pesticides Proposed for Use at Pound Ridge GC - Environmental Impact Quotient (EIQ) and FEIQ

CHEMICAL	% Active Ingredient	Rate (oz/M)**	EIQ	Field EIQ[ϫ]	FEIQ Rating††
FUNGICIDES (11)					
Fluazinam	40	0.5	23.3	12.7	v. low
Fluopyram[§]	1.19	3	17.83	1.7	v. low
Fluoxastrobin	40.3	0.275	56.2	17	v. low
Fluxapyroxad[§]	14.33	0.47	23.16	4.2	v. low
Mandestrobin[§]	43.4	0.3	30.67	10.9	v. low
Mefentrifluconazole[§]	34.93	0.4 – 0.8	25.33	9.64 - 19.3[‡]	v. low
Metconazole	50	0.367	24.0	12.0	v. low
Myclobutanil	19.7	1.2 - 2.4	24.0	30.9	low
Polyoxin d zinc salt	2.5	4.04	24.6	6.8	v. low
Pydiflumetofen[§]	18.3	0.1	16.00	0.8	v. low
Tebuconazole	21.4	1.0	40.3	23.5	v. low
INSECTICIDES (1)					
Lambda-cyhalothrin	9.7	0.230	44.2	2.7	v. low
GROWTH REGULATORS (2)					
Flurprimidol	5.6	0.413	31.8	2.0	v. low
Prohexadione-Ca	27.5	0.092	8.7	0.6	v. low

**All application units were converted to oz/M (ounces/1000 sq ft) for simplicity of this table. If a range of applications were given both application rates were used for the assessment. Appendix A shows the label units and application rates provided by the superintendent.

[ϫ] The FEIQ can be calculated using the EIQ value: FEIQ = EIQ * % a.i. * rate (lb/A).

†† "Rating" in this context, means qualitative risk. The ratings are based on the values: <25 = very low (v. low); <50 = low; 50-99 = moderate (mod); 100-199 = high; and 200+ = very high (v. high)

[§] The EIQ values for these pesticides are listed in the *Table 2* spreadsheet on the NYSIPM website or were provided by the NYSIPM (i.e., mandestrobin).

[‡] The lower value (9.64) field EIQ for mefentrifluconazole is for the lowest application rate of 0.4 oz/M and the higher value (19.3) is for the higher application rate of 0.8 oz/M.

STUART Z. COHEN, Ph.D., CGWP

President, Senior Environmental Scientist

EDUCATION

Ph.D., Physical Organic Chemistry, George Washington University, Washington, DC, 1984 (dissertation research at NIADDK/National Institutes of Health).
B.A., Chemistry, University of Maryland, Baltimore County, 1975.
(Related graduate and undergraduate coursework at Johns Hopkins U., Georgetown U., and Furman U.)

At least 14 short courses in the CORMIX and iSTREEM point source surface water discharge models, habitat preservation/enhancement, chemical carcinogenesis (one full semester course, one short course), chemical engineering, golf course drainage, soil microbiology, contaminant hydrogeology, physical organic chemistry, endocrine disruptors, soil ingestion in risk assessment, nanotechnology risks, and golf course design. Trained in FIFRA Good Laboratory Practices (with a focus on field studies).

Foreign Language: Limited working proficiency in German.

CERTIFICATIONS

Certified Ground Water Professional #196522, National Ground Water Association (since 1992).
CPR and First Aid Training-Red Cross, 1993 & 1996.
NITON XRF Spectrum Analyzer -- Thermo Scientific, 1998 & 2008 (for heavy metals in soils).
Professional Fertilizer Applicator (PFA 0675), 2014-2015.

EXPERIENCE

1991 to Present: President, Environmental & Turf Services, Inc., Wheaton, MD.

Responsible for supervising and conducting field studies and risk assessments for pesticides and fertilizers used on turf and in agriculture (specializing in freshwater and coral reef systems and a variety of aquifer types); water quality monitoring studies; lead and arsenic contamination assessments and best management practices for firing ranges; environmental fate and effects issues under TSCA (including QSAR); carbon footprint analyses; drinking water Health Advisory Levels; environmental site assessments in real estate transactions; and expert testimony. Extensive experience with public risk communication. Disciplinary strengths include soil and aquatic metabolism, photochemical reactions, bioaccumulation assessment, hydrolysis reactions, and partitioning.

1994 to 1999: Instructor for the NRA on environmental management at shooting ranges. (See "Abstracts, Posters, and Presentations" below).

1986 to 1990: Manager, Ground Water and Environmental Programs, Biospherics Incorporated, Beltsville, MD.

Managed programs to evaluate ground water and environmental contamination by pesticides, lead, and hazardous wastes. Managed environmental programs for golf course environmental impact assessments and for real estate transactions, including study design, risk assessments, placement of monitoring wells, soil gas analysis, unsaturated zone modeling, etc. National Priority List site (Superfund) Project Manager.

1976 to 1986: Chemist and Ground-Water Team Leader, Office of Pesticides and Toxic Substances, Environmental Protection Agency, Washington, DC.

One of EPA's key scientists for the development and implementation of pesticides in ground water programs. Managed $1.4 million budget. Co-chaired the National Well-Water Survey Steering Committee. Senior physical scientist on all pesticides in ground water regulatory actions. Director of ground water studies. Main interagency and international contact on pesticides in ground water. Synthesized interdisciplinary risk assessments for several chemicals over a two-year period. Conducted DBCP and EDB ground water risk assessments, which led to bans of all soil uses in 1979 and 1983, respectively. Developed biorational pesticides testing guidelines. Exposure assessment of heptachlor in milk in Hawaii. Co-developed testing guidelines and regulations for new chemicals under TSCA§ 5.

1980 to 1987: Guest Worker in organic chemistry at the Laboratory of Chemistry, NIADDK, National Institutes of Health (NIH), Bethesda, MD. (One year full-time: '81-'82, part-time: '80-'81 and '82-'87.)

1975 to 1976: Research Technician, The Johns Hopkins University School of Medicine, Department of Immunology, Baltimore, MD. Prostaglandin and antibody radioimmunoassays.

HONORS & AWARDS

Society of Environmental Toxicology and Chemistry Presidential Citation for Exemplary Service, 2015. EPA Special Achievement Awards (two cash awards) for work in ground water contamination by pesticides, 1983-1985. EPA Bronze Medal for the ethylene dibromide ground water assessment, 1984. James Buchannan Duke Honor Scholarship, 1972.

PROFESSIONAL MEMBERSHIPS & ACTIVITIES

- Society of Environmental Toxicology and Chemistry (SETAC), North America (NA) and Chesapeake-Potomac Regional Chapter (CPRC). Chairman of the SETAC-NA TSCA Reform Dialog Group, 2014-2017. Co-Chair of Public Outreach Committee, 2014-2018.
- National Ground Water Association: Ground Water Protection and Management Committee, Chairman, 1991-1993; committee member 1989-1996.
- Int'l Union of Pure & Applied Chem. (IUPAC) commission member 1985-1995; Titular (voting) member, Commission on Agrochemicals, 1990-1995 (assoc. member 1985-1990). Symposium co-chair for the August, 2014 Int'l Congress of Pesticide Chemistry.
- American Chemical Society: Environmental Chemistry, Agrochemicals, and Medicinal Chemistry Divisions; Chemical Society of Washington.

REGISTERED TRADEMARKS

CarbonSave®: co-developed the first carbon footprint calculator and energy efficiency analyzer for golf courses.

SHORT COURSE/SEMINAR/WEBINAR INSTRUCTOR

2014-2015. Co-led a seminar on risk assessment science for Congressional (House) staff (2014), followed by a round table discussion for the Members of the House Energy & Commerce Committee (2015).

2012. Watershed Resource Management: Requirements and Benefits for Your Course (co-instructor), half-day seminar for the Golf Industry Show, Las Vegas.

2009. Water Issues in Land Use Permitting: Overcoming a Sea of Bad Information. Webinar presentation September 18, 2009, as part of the American Society of Golf Course Architects (ASGCA)/Rainbird Education webinar.

2007 & 2008. Develop and Implement a Water Quality Monitoring Program. Seminar instructor for the GCSAA (Golf Course Superintendents Association of America) Conference and Show, Anaheim, CA, San Diego, CA (local chapter), and Orlando, FL.

2004. Hydrolysis: Understanding & Predicting the Degradation of Organic Compounds in Water. Short course instructor at the 2004 NGWA Ground Water Expo, Las Vegas, December 13, 2004.

1994-1999: shooting range seminars (see "Abstracts, Posters, and Presentations" below).

INVITED INTERNATIONAL PROFESSIONAL TRAVEL

Rome (Italy, 2004). Invited lecturer at the "World Symposium on Lead in Ammunition".

Copenhagen (Denmark, 2003). Invited lecturer (two lectures) to the conference, "Non-Agricultural Use of Pesticides: Environmental Issues and Alternatives".

Basel (Switzerland, 2002). Presented platform summary for one of two poster presentations regarding amphibian toxicology and risks at the 10th IUPAC Int'l Congress on the Chemistry of Crop Protection.

Vienna (Austria, 1998). Invited lecturer to the IBC conference, "Pesticide Residues in Water".

London (England, 1998). Invited lecturer to the IBC conference, "Pesticides and Their Impact on the Aquatic Environment."

São Paulo (Brazil, 1996). Invited lecturer (two lectures) to the IUPAC/GARP Workshop, "Pesticide Uses and Environmental Safety in Latin America." The topics were milk contamination on Oahu and pesticides in ground water in the U.S.

London (England, 1996). Invited lecturer to the IBC conference, "An Update on the Pesticides in Water Issue." (A followup lecture was presented at Zeneca in Jealott's Hill.)

Budapest (Hungary, 1995). Invited lecturer at 5th European Conference on Chemistry & The Environment.

Bangkok (Thailand, 1992). Invited lecturer (2 lectures) to the Thai Department of Agriculture/IUPAC Workshop, "Assessment and Management of Risks from Pesticide Use in SE Asia".

IUPAC. Members of the Agrochemicals Commission met in different countries each year to write scientific papers. I participated in the following meetings: *Lyon, France* (1985); *Barrie, Ontario* (*Canada*, 1986); *Boston, MA* (*USA*, 1987); *Lund, Sweden* (1989); *Hamburg, Germany* (1991); *Bangkok, Thailand* (1992); *Lisbon, Portugal* (1993); *Berkeley Springs, WV* (*USA*, 1994); *Guildford, England* (1995).

Rehovot/Bet Dagan (Israel, 1991). Two lectures at the Volcani Institute: for the Weed Science Society of Israel and the Department of Chemistry of Pesticides and Natural Products.

Hamburg (Germany, 1990). Workshop discussion leader, Subtopic Co-Organizer, and poster presenter at the Seventh International Congress of Pesticide Chemistry.

Lyon (France, 1989). "Impact of Golf Courses on Ground Water Quality: A Focus on Pesticides," for a symposium organized by the INSA (l'Institut National des Sciences Appliquees de Lyon) and l'Institut International de Gestion et de Genie de l'environment.

West Berlin (Germany, 1985). "Monitoring Ground Water for Pesticides in the U.S.A.," a published symposium sponsored by the Institute of Water, Soil, and Air Hygiene of the Federal Dept. of Health.

JOURNAL & BOOK PUBLICATIONS

Petrovic, A.M., T.C. Cambareri, N.L. Barnes, and S.Z. Cohen. 2022. Nitrogen Rate, Irrigation and Rainfall Impacts on Groundwater Nitrate Levels in Sandy Coastal Golf Courses. *Int'l Turfgrass Soc. Res. J.* [under review].

Burns, C.J., S.Z. Cohen, and C. Lunchick. 2015. Neurodevelopmental Disorders and Agricultural Pesticide Exposures. *Environ. Health Perspect.* 123(4):A79. Letter to Editor, in response to Shelton et al., 2014, *Environ. Health Perspect.* 122(10):1103-1109.

Baris, R.D., S.Z. Cohen, N.L. Barnes, J. Lam, and Q. Ma. 2010a. Quantitative Analysis of Over 20 Years of Golf Course Monitoring Studies. *Environ. Tox. and Chem.* 29(6):1224-1236.

Baris, R.D., S.Z. Cohen, N.L. Barnes, J. Lam, and Q. Ma. 2010b. Quantitative Analysis of 20-plus Years of Golf Course Monitoring Studies. *Golf Course Mgmt.*, 78(11):82-94.

Cohen, S.Z. and N.L. Barnes. 2009. EPA and OSHA Compliance Guide For Small Arms Ranges: A Focus on Lead (3rd edition). Environmental & Turf Services, Inc., Wheaton, MD.

Cohen, S.Z, Q. Ma, N.L. Barnes, and S. Jackson. 2008. Pesticide and Nutrient Modeling, Chapter 9, pp.153-170. *In*: Beard, J.B. and M.P. Kenna (eds.), Water Quality and Quantity Issues for Turfgrasses in Urban Landscapes, CAST Council for Agricultural Science and Technology, Ames, Iowa.

Cohen, S.Z. 2004. "The Special Case of Pesticides: Science and Regulation", Environmental Claims Journal, 16(1/Winter):55-68.

Durborow, T.E., N.L. Barnes, S.Z. Cohen, G.L. Horst and A.E. Smith. 2000. "Calibration and Validation of Runoff and Leaching Models for Turf Pesticides, and Comparison with Monitoring Results," in Fate and Management of Turfgrass Chemicals, ACS Series 743, J.M. Clark and M.P. Kenna, eds., pp. 195-227, American Chemical Society, Washington, D.C., 2000.

Cohen, S.Z., A.J. Svrjcek, T. Durborow, N.L. Barnes. 1999. Water Quality Impacts by Golf Courses. *J. Environ. Qual.*, 28(3):798-809.

Cohen, S.Z. 1997. "Environmental Compliance and Liability For Outdoor Shooting Ranges - Potential Problems and Feasible Solutions," Outdoor Range Source Book, National Rifle Association of America, Fairfax, VA.

Cohen, S.Z., L. Lindstrand, N.L. Barnes and T. Durborow. 1997. EPA and OSHA Compliance Guide For Small Arms Ranges: A Focus on Lead, Environmental & Turf Services, Inc., Wheaton, MD.

Racke, K.D., M. W. Skidmore, D.J. Hamilton, J.B. Unsworth, J. Miyamoto and S.Z. Cohen. 1997. "Pesticide Fate in Tropical Soils," Pure & Applied Chemistry, 69(6):1349-1371, International Union of Pure and Applied Chemistry.

Cohen, S.Z. 1996. Pesticides in Ground Water in the United States: Monitoring, Modeling, and Risks from the U.S. Perspective. *J. Environ. Sci. Health*, B31(3):345-352.

Cohen, S.Z., R.D. Wauchope, A.W. Klein, C.V. Eadsforth and R. Graney. 1995. Offsite Transport of Pesticides in Water: Mathematical Models of Pesticide Leaching and Runoff, *Pure & Applied Chem.*, 67(12), 2109-2148, International Union of Pure and Applied Chemistry.

Cohen, S.Z., T.E. Durborow, and N.L. Barnes. 1993. "Ground Water and Surface Water Risk Assessments for Proposed Golf Courses," in Fate and Significance of Pesticides in Urban Environments, ACS Series 522, K.D. Racke and A.R. Leslie, eds., 214-227, American Chemical Society, Wash. DC.

Barnes, N.L., T.E. Durborow, S.Z. Cohen, A.J. Svrjcek, and M.J. O'Connor. 1993. Conservative Ground Water and Surface Water Risk Assessments for Golf Courses in Vermont. *Proceedings of the Focus Conference on Eastern Regional Ground Water Issues*, September 27-29, 1993, Burlington, VT, Ground Water Mgmt Book 16 of Series, 531-548, National Ground Water Association, Dublin, OH.

Cohen, S.Z., S. Nickerson, R. Maxey, A. Dupuy, and J.A. Senita. 1990. A Ground Water Monitoring Study for Pesticides and Nitrates Associated with Golf Courses on Cape Cod. *Ground Water Mon. Rev.*, 10(1), 160-173.

Cohen, S.Z. 1990. Pesticides in Ground Water: An Overview. *Environmental Fate of Pesticides*, Vol. 7 in series: Progress in Pesticide Biochemistry and Toxicology, D.H. Hutson and T.R. Roberts (Eds), 13-25, John Wiley & Sons Ltd.

Pignatello, J.J., and S.Z. Cohen. 1990. Environmental Fate of Ethylene Dibromide in Soil and Ground Water. Invited paper for *Rev. Environ. Contam. Toxicol.*, 112, 1-47.

Lorber, M.N., S.Z. Cohen, and G.D. DeBuchananne. 1990. A National Evaluation of the Leaching Potential of Aldicarb: Part 2. An Evaluation of Ground Water Monitoring Data. *Ground Water Mon. Rev.*, 10(1), 127-141.

Lorber, M.N., S.Z. Cohen, S. Noren, and G.D. DeBuchananne. 1989. A National Evaluation of the Leaching Potential of Aldicarb: Part 1. An Integrated Assessment Methodology. *Ground Water Mon. Rev.*, 9(4), 109-125.

Aharonson, N., S.Z. Cohen, N. Drescher, T.J. Gish, S. Gorbach, P.C. Kearney, S. Otto, T.R. Roberts, and J.W. Vonk. 1987. Potential Contamination of Ground Water by Pesticides-An International Assessment. *Pure and Appl. Chem.*, 59(10), 1419-1446.

Cohen, S.Z., C. Eiden, and M.N. Lorber. 1986. Monitoring Ground Water for Pesticides in the USA. *In* Evaluation of Pesticides in Ground Water, W.Y. Garner, H.N. Nigg, and R.C. Honeycutt, (eds.), American Chemical Society, 170-196, Washington, DC.

Cohen, S.Z., S.M. Creeger, R.F. Carsel, and C.G. Enfield. 1984. Potential for Pesticide Contamination of Ground Water Resulting from Agricultural Use. *In* Treatment and Disposal of Pesticide Wastes, American Chemical Society Symposium Series 259, R.F. Krueger and J.N. Seiber, eds., 297-325, Washington, D.C.

Enfield, C.G., R.F. Carsel, S.Z. Cohen, T. Phan, and D.M. Walter. 1982. Approximating Pollutant Transport to Ground Water. *Ground Water*, 20(6), 711-722.

Zweig, G., S.Z. Cohen, and F.S. Betz. 1982. EPA Registration Requirements for Biochemical Pesticides, with Special Emphasis on Pheromones. *In:* Insect Suppression with Controlled Release Pheromone Systems, Vol. I, M. Beroza and A.F. Kydonieus, eds., CRC Press, Boca Raton, FL.

Haque, R., J. Falco, S.Z. Cohen, C. Riordan. 1980. Role of Transport and Fate Studies in the Exposure, Assessment, and Screening of Toxic Chemicals. *In:* Dynamics, Exposure and Hazard Assessment of Toxic Chemicals, R. Haque, ed., Ann Arbor Science, Ann Arbor, MI.

Cohen, S.Z., G. Zweig, M. Law, D. Wright, W.R. Bontoyan. 1978. Analytical Determination of N-nitroso Compounds in Pesticides by the United States Environmental Protection Agency. A Preliminary Study. *In:* Environmental Aspects of N-nitroso Compounds, E.A. Walker, M. Categnaro, L. Griciute, R.E. Lyle, eds., International Agency for Research on Cancer, Lyon, France.

Adkinson, N.F., T. Barron, S. Powell, and S.Z. Cohen. 1977. Prostaglandin Production by Human Peripheral Blood Cells in Vitro. *J. Lab. Clinical Med.*, 90(6), 1043-1053.

ABSTRACTS, POSTERS, PRESENTATIONS, AND WEBINARS

Cohen, S.Z. August, 2020. Soil Sequestration of the Herbicide MSMA. Presented at the American Chemical Society National Meeting & Exposition, Fall 2020.

Cohen, S.Z. and L.A. Cohen. August, 2020. Kinetics and Mechanism of Hydrolysis of Substituted (Trifluoromethyl)Imidazoles. (Presented at the American Chemical Society National Meeting & Exposition, Fall 2020.

Cohen, S.Z. August 25, 2019. Biphasic Sorption and Transformation are Key Factors in the Complex Environmental Fate of the Herbicide Monosodium Methylarsonic Acid (MSMA) (AGRO #27). Presented at the American Chemical Society National Meeting & Exposition, Fall 2019.

Cohen, S.Z. November 16, 2017. Communicating Turf Pesticide Risk Assessment Science to the Public: Lessons Learned (Poster #PC021). Society of Environmental Toxicity and Chemistry (SETAC) NA 38th Annual Meeting, Minneapolis, MN.

Cohen, S.Z. August 24, 2017. Communicating Turf Pesticide Risk Assessment Science to the Public: Lessons Learned (AGRO #376). Presented at the American Chemical Society 254th Annual Meeting, Washington, DC.

Cohen, S.Z. February 22, 2017. How to Talk About Turf Chemical Risks in Your Community. Presented at the Mid-Atlantic Association of Golf Course Superintendents 2017 Education Seminar, Columbia, MD.

Cohen, S.Z., S. Haefner, L.J. Thibodeaux, C.A. Jones, and W.M. Williams. August 24, 2016. Three Estuarine and Marine Mixing Scenarios for Pesticide Risk Assessment: A Proposal (AGRO #293). Presented at the 252nd American Chemical Society National Meeting, Philadelphia, PA.

Cohen, S.Z., and J.D. Walker. August 24, 2016. QSARs, Computational Chemistry, and Computational Toxicology in Environmental Risk Assessment: Overview and Historical Perspective (AGRO #276). Presented at the 252nd American Chemical Society National Meeting, Philadelphia, PA.

Cohen, S.Z. January 21, 2016. How to Talk About Turf Chemical Risks in Your Community. Presented as a Golf Course Superintendents Association of America webinar.

Cohen, S.Z., T. Augspurger, P.D. Guiney, et al. November 2, 2015. Making Science Matter for Congress: The SETAC NA TSCA Reform Diaiog Group. Presented at the Society of Environmental Toxicology and Chemistry (SETAC) 36th Annual Meeting, Salt Lake City, UT.

Cohen, S.Z., S. Haefner, and L.J. Thibodeaux. October 26, 2015. A Conceptual Approach to Creating Three Estuarine Mixing Scenarios for Pesticide Risk Assessment. Presented at the US EPA Environmental Modeling Public Meeting (EMPM), Crystal City, VA.

Gobas, F., S. Haefner, and S. Cohen. 2014. Bioaccumulation Risk Assessment of Pentachloronitrobenzene: 1. Basis for Lessons Learned (Abstract AGRO353). Presented at the August 2014 IUPAC International Congress on Pesticide Chemistry in San Francisco, CA.

Gobas, F., S. Cohen, and S. Haefner. 2014. Bioaccumulation Risk Assessment of Pentachloronitrobenzene: 2. Lessons Learned (Abstract AGRO354). Presented at the August 2014 IUPAC International Congress on Pesticide Chemistry in San Francisco, CA.

Haefner, S.M., S.Z. Cohen, and N.L. Barnes. August 23, 2012. Urban Stressors for Pesticide Endangered Species Assessments: Should Recent Nutrient TMDLs and Laws be Considered? Presented at the American Chemical Society (AGRO Division) 244th National Meeting in Philadelphia, PA.

Carroll, M., G. Felton, T. Turner, P. Landschoot, M. Goatley, J. Derr, N.L. Barnes, and S.Z. Cohen. April, 2012. Home Lawn BMPs to Reduce Runonff and Fertilizer Use in the Chesapeake Bay Watershed: A Compost and Microclover Demonstration and Technology Transfer Project. Presented at the SETAC/CPRC meeting, College Park, MD.

Cohen, S.Z. December 8, 2011. State and Local Fertilizer Restrictions Driven by Water Quality Impacts: The Status, The Science (and its Misuse), and the BMPs. Presented at the NPMA and PLANET Lawn Care Summit, Aventura, FL.

Cohen, S.Z., A.J. Harding, R. Baris, N.L. Barnes, Q. Ma, G. Pohll, S. Wheatcraft, and J. Bahme. November 17, 2011. Modeling Ground Water Contamination by Soil Fumigants in Hawaii and California: Soil Loading and Fate Input are Critical for Validated Predictions. Presented at the SETAC North America 32nd Annual Meeting, Boston, MA.

Cohen, S.Z., A.J. Harding, N.L. Barnes, G. Pohll, S. Wheatcraft, and J. Bahme. August 29, 2011. DBCP and TCP in Ground Water in California and Hawaii: Comparison of Vadose Zone and Saturated Zone Modeling with Monitoring Results. Presented at the American Chemical Society 242nd National Meeting in Denver, CO.

Cohen, S.Z., A.J. Harding, N.L. Barnes, G. Pohll, and S. Wheatcraft. May 3, 2011. Ground Water Contamination by DBCP and TCP in Hawaii and California: Part 1. Unsaturated Zone. Presented at the National Ground Water Association's Ground Water Summit in Baltimore, MD.

Pohll, G., S.W. Wheatcraft, S.Z. Cohen, A.J. Harding, and N.L. Barnes. May 3, 2011. Ground Water Contamination by DBCP and TCP in Hawaii and California: Part 2. Saturated Zone Flow and Transport Model. Presented at National Ground Water Association's Ground Water Summit, Baltimore, MD.

Cohen, S.Z. March 10, 2011. Turfgrass Restrictions Driven by Regulatory Science: A Focus on the Chesapeake Bay and Beyond. Presented at New England Regional Turfgrass Conference and Show.

Cohen, S.Z. December 2, 2010. Turfgrass Restrictions Driven by Regulatory Science: A Focus on the Chesapeake Bay and Beyond. Presented at Lawn Care Summit (NPMA and PLANET), Atlanta, GA.

Cohen, S.Z., A.J. Harding, N.L. Barnes, K.B. Ingram. March 21, 2010. Carbon Footprints and Turf Management: Carbon Emissions and Sequestration for Golf Courses. Presented at the American Chemical Society/AGRO Division 239th National Meeting, San Francisco, CA.

Hoch, S.L. (Brownstein Hyatt Farber Schreck), S.Z. Cohen and A.J. Staples (Golf Resource Group, Inc.). February 12, 2010. Global Warming and Golf: The Science, Potential Impacts, and Energy Conservation Opportunities. Before the World Conference on Club Management, Golf Industry Show, San Diego, CA.

Baris, R., S.Z. Cohen, N.L. Barnes, J. Lam. February 9, 2010. A Critical Review of Water Quality Impacts by Golf Courses: Updates and Trends. Before the GCSAA Education Conference and GIS, San Diego, CA.

Cohen, S.Z. and Q.L. Ma. August 19. 2009. Urban BMPs Can Protect Water Quality: Non-Pesticides as Models for Pesticides. Presentation before the Division of Agrochemicals, American Chemical Society 238th National Meeting, Washington DC.

Cohen, S.Z. August 18, 2009. Modeling Pesticide Risks: Start with Ground Water, Go to Turf, and Keep Going. Presentation before the Division of Agrochemicals, American Chemical Society 238th National Meeting, Washington DC.

Q.L. Ma and S.Z. Cohen. August 17, 2009. Improving Model Performance via Model Parameterization – A Focus on RZWQM. Presentation before the Division of Agrochemicals, American Chemical Society 238th National Meeting, Washington DC.

Cohen, S.Z. April 29, 2009. Protecting Listed Species in Non-Agricultural and Urban Settings. Presented at the Crop Life America (CLA) and Responsible Industry for a Sound Environment (RISE) spring conference, Crystal City, VA.

Baris, R., Q.L. Ma and S. Cohen. December 9, 2008. Buffer Widths and Removal Efficiencies for TN, TP, and TSS: Models for Pesticides? Presented before the Environmental Modeling Public Meeting, Crystal City, VA.

Baris, R., S.Z. Cohen, J. Lam, N.L. Barnes and Q.L. Ma. November 18, 2008. A Meta Analysis of Water Quality Impacts by Golf Courses: Monitoring Results and Environmental Significance. Presented at SETAC North America 29th Annual Meeting, Tampa, FL.

Cohen, S.Z. October 29, 2008. Comments on Food Web Modeling and Long Range Transport to the FIFRA Scientific Advisory Panel. Presented on behalf of AMVAC Chemical, Crystal City, VA.

Cohen, S.Z., A.K. Smith, K. Morris, B. Leinauer, and T. Delaney. August 14, 2008. Outdoor Water Efficiency Criteria of the Draft Single-Family New Home Specification: Technical and Policy Questions, Concerns, and Suggestions. A technical presentation to EPA's Office of Water, regarding anticipated restrictive guidance on water use for turf and ornamental plants. Alexandria, VA.

Cohen, S.Z., J. Lam, Q. Ma, J. Grant, A.M. Petrovic, B. Branham, T. Fermanian, T. Voigt, and C. Throssell. November 14, 2007. A Screening-Level Risk Evaluation Program for Golf Course Superintendents: Enabling Site-Based Risk/Benefit Considerations. Presented at the SETAC North America 28th Annual Meeting, Milwaukee, WI.

Baris, R.D., J. Lam, S.Z. Cohen, and N.L. Barnes. November 12, 2007. Water Quality Impacts by Golf Courses: a Metastudy. Poster #MP 93, presented at SETAC North America 28th Annual Meeting, Milwaukee, WI. Environmental & Turf Services, Inc., Wheaton, MD.

Cohen, S.Z. October 23, 2007. Environmental Chemistry in an Environmental Risk Assessment Context: Case Studies of Dibromochloropropane, Pentachloronitrobenzene, and Organoarsenical Pesticides. Presentation before the Department of Chemistry & Biochemistry, University of Maryland, Baltimore Campus.

Cohen, S.Z. September 17, 2007. Develop and Implement a Water Quality Monitoring Program. Presented at GCSAA Regional Seminar before the Golf Course Superintendents Assoc. of San Diego.

Ma, Q., S.Z. Cohen, and D. Haith. June 12, 2007. A Comparison of PRZM, RZWQM, and TurfPQ for Modeling Turf Pesticides. Presented before the Environmental Modeling Public Meeting (EMPM), Office of Pesticide Programs, EPA, Washington, DC.

Lam, J. and S.Z. Cohen. November, 2006. "Prediction of Pesticide Toxicity to Amphibians: Testing a Preliminary Screening Equation and EPA's 'ICE' Equations with New Data" presented at SETAC (Society of Environmental Toxicology and Chemistry) North America 27th Annual Meeting, Montreal, Quebec, Canada, November 5-9, 2006.

Cohen, S.Z., Q. Ma, N.L. Barnes, and S. Jackson. January 24, 2006. "Pesticide and Nutrient Modeling" presented at CAST Water Quality/Quantity Workshop on Perennial Grasses Used in Urban Landscapes, Las Vegas, NV.

Cohen, S.Z., M.W. Klemens and M. Klein. November 14, 2005. Amphibian Risk Assessment, Risk Management, and Habitat Conservation for Golf Course Developments. Presented at SETAC North America 26th Annual Meeting, Baltimore, MD.

Ma, Q., S.Z. Cohen and N.L. Barnes. August 31, 2005. Modeling Offsite Transport of Turf-Applied Pesticides: Model and Data Needs. Presentation before the 230th American Chemical Society national meeting, Washington, DC.

Cohen, S.Z. September 9, 2004. The Science Underlying Best Management practices for Shooting Ranges: A Focus on Lead and Arsenic. Invited presentation before the World Symposium on Lead in Ammunition, Rome, Italy.

Cohen, S.Z., N.L. Barnes, S.S. Reid and Q. Ma. August 26, 2004. Turf Pesticide and Fertilizer Impacts on Watersheds: Monitoring and Modeling Case Studies in a TMDL, Water Quality Criteria, and Ecoregional Context. Presented at 228th American Chemical Society National Meeting, Philadelphia.

Cohen, S.Z. September 10, 2003. Water Quality Impacts by Golf Courses and Mitigation Measures, with a Focus on MSMA. Presented at Florida Turfgrass Assn 2003 Conference and Show, Tampa, FL.

Cohen, S.Z., N.L. Barnes, S.S. Reid, and Q. Ma. November, 2002. Integrated Water Quality Risk Assessment for a Proposed Golf Course Near Salt Lake City: Focus on Pesticides, Phosphorus, and Amphibians. Poster presented at 23rd Annual Meeting of the Society of Environmental Toxicology and Chemistry (SETAC), Salt Lake City, UT.

Cohen, S.Z. August, 2002. Risk Assessments for Golf Course Pesticides: 1. Special Considerations for Modeling. Poster presented at 10th IUPAC International Congress on the Chemistry of Crop Protection, Basel, Switzerland.

Reid, S.S., S.Z. Cohen, J. Julian, S. Julian, J. Ferrigan, and J. Howard. August, 2002. Risk Assessments for Golf Course Pesticides: 2. New Methodologies to Estimate Amphibian Toxicity of Turfgrass Chemicals. Poster presented at 10th IUPAC International Congress on the Chemistry of Crop Protection, Basel, Switzerland.

Reid, S., J. Julian, S. Julian, J. Ferrigan, S. Cohen, J. Howard, and Q. Ma. November, 2001. Potential Amphibian Risks in Vernal Pools to Golf Course Chemicals Using PRZM/EXAMS Models: Part 1. Toxicity Assessment. Poster presented at SETAC 22nd Annual Meeting, Baltimore, MD.

Cohen, S., Q. Ma, and S. Reid. November, 2001. Potential Amphibian Risks in Vernal Pools to Golf Course Chemicals Using PRZM/EXAMS Models: Part 2. Exposure Assessment. Poster presented at SETAC 22nd Annual Meeting, Baltimore, MD.

Ma, Q.L., S.Z. Cohen, and S.S. Reid. October, 2001. Watershed/Basin Scale Golf Course Risk Assessments: Model Scenario Development. Poster presented at Soil Science Society of America 2001 Annual Meeting, Charlotte, NC.

Reid, S. and S. Cohen. October, 2000. A New Tool to Predict Lead Mobility in Shooting Range Soils. Poster presented at U.Mass Amherst, 16th Annual International Conference on Contaminated Soils, Sediments and Water.

Cohen, S.Z. October, 1996. The Fate, Occurrence, and Risks of Pesticides in Surface Water and Ground Water – The U.S. Perspective. Lecture presented at IUPAC GARP Workshop on Pesticides: Uses and environmental Safety in Latin America, Sao Paulo, Brazil.

Cohen, S.Z. 1994-1999. Environmental Assessments. Instructor of 2-hour segment of National Rifle Association's 5-day course, "Range Development"; given 12-15 times, various cities, 1994-1999.

Cohen, S.Z. July 10, 1998. The U.S. Approach to Predicting, Evaluating and Mitigating Human Risks from Pesticides in Drinking Water. Lecture presented at the IBC UK Conference on Pesticide Residues in Water, in Vienna, Austria.

Cohen, S.Z. November 17, 1993. Potential Impacts of Turf Chemicals on Ground Water. Lecture presented at New England Recertification Seminar, sponsored by Turf Specialty, Inc., Wachusett Country Club, Boylston, MA.

Cohen, S.Z. November 2, 1993. Environmental Considerations in Golf Course Development. Lecture presented at the Public Golf '92 Conference, Chicago, IL.

Cohen, S.Z. October 17, 1993. Introductory Overview presented as moderator of "Ground Water Quality in the Agricultural Environment: The Nitrate Question," an NGWA 1993 Management Strategy Workshop at the NGWA National Convention, Kansas City, MO.

Cohen, S.Z. September 27, 1993. Risk Assessment in Golf Turf: A Focus on Water Quality Impacts. Lecture presented at Florida Turfgrass Association Annual Conference & Show, Tampa, FL.

Cohen, S.Z. September 27, 1993. Risk Assessment in the Lawn Care Industry: A Focus on Water Quality Impacts. Lecture presented at Florida Turfgrass Association Annual Conference & Show, Tampa, FL.

Cohen, S.Z., T.E. Durborow, and N.L. Barnes. July 23, 1993. Ground Water and Surface Water Risk Assessments for Proposed Golf Courses. Invited paper before the International Turfgrass Society Quadrennial Meeting, Palm Beach, FL.

A total of 5 lectures delivered at Ohio Turfgrass Foundation and Midwest Regional Turf Foundation conferences in 1992 on two topics: water quality, and risk assessment issues for golf courses.

November, 1992. Two lectures presented at conference sponsored by IUPAC and the Thailand Department of Agriculture. (Assessment and Management of Risks from Pesticide Use in SE Asia): "Bioaccumulation of Crop Residues in the Food Chain - A case study of Heptachlor Epoxide in Milk in Hawaii" and "Modeling Pesticide Transport to Ground Water".

Cohen, S.Z. April, 1992. Modeling the Runoff and Leaching of Pesticides Applied to Turfgrass. Invited paper at Agro Division of American Chemical Society's 203rd National Meeting, San Francisco, CA.

September 16, 1991. Lecturer in a workshop, "Golf Course Development on Hawaii," sponsored by the Office of State Planning Honolulu.

Cohen, S.Z. and T. Durborow. April 1991. Ground Water & Surface Water Contamination by Golf Courses: Fact and Fiction. Presented at 201st American Chemical Society National Meeting (Agro 53) Atlanta.

Cohen, S.Z. August 5-10, 1990. The Occurrence of Pesticides in Ground Water in the United States: Extent and Toxicologic Significance. Poster No. 9D-08, presented at 7th International Congress of Pesticide Chemistry. Hamburg, Federal Republic of Germany; ISBN No. 3-924763-25-9.

Senita, J.A. and S. Z. Cohen. 1990. A Soil Gas and Ground Water Study for GY-81 in a Florida Citrus Grove. Presented at 1990 Cluster of Conferences, Kansas City, MO; National Water Well Association (currently NGWA); Dublin, OH.

Lorber, M.N. S.Z. Cohen, S. Noren, and G.D. Debuchananne. 1990. A National Evaluation of the Leaching Potential of Aldicarb. Presented at the 1990 Cluster of Conferences, Kansas City, MO; National Water Well Assoc. (currently NGWA), Dublin, OH.

1987-1990. Lecturer for the Executive Enterprises Institute at their Pesticide Registration educational seminars, Washington, D.C.

Cohen, S.Z. February, 1990. The Cape Cod Ground Water Study: Implications for the Future. *61st International Golf Course Conference and Show Proceedings*, Golf Course Superintendents Assoc., Lawrence, KS, 1990, presented in Orlando, FL.

1989. Lectures on the impact of golf course pesticides and fertilizers on ground water quality given in 1989 at Anaheim, Pinehurst, NC, and Lyon, France before various golf course associations and research institutions.

Cohen, S.Z. and J.A. Senita. 1988. Extent of Pesticide Plumes in Ground Water in the U.S. Third Chemical Congress of North America; American Chemical Society meeting, AGRO III, Ontario, Canada.

Cohen, S.Z. 1987. Pesticides in Ground Water from Normal Use-A Focus on Turf. *58th Int'l Golf Course Conference and Show Proceedings*, Golf Course Superintendents Assoc'n of America, Lawrence, KS.

Jungclaus, G.A. and S.Z. Cohen. 1986. Hydrolysis of Ethylene Dibromide. 191st American Chemical Society National Meeting [ENVR 6], New York, NY.

Cohen, S.Z. April 7, 1986. Pesticides in Ground Water. Environmental and Water Issues in the Northeast - Training Seminar, sponsored by Golf Course Superintendents Association of America, Cape Cod, MA.

Cohen, S.Z. 1985; Monitoring Ground Water for Pesticides in the USA. 189th American Chemical Society National Meeting; PEST 34; Miami Beach, FL. Similar presentation also made to a European conference in West Berlin, sponsored by the Federal Republic of Germany, Dept. of Health.

Cohen, S.Z. 1984. EDB in the Subsurface Environment-Ground Water and Soil Results. 188th Annual Meeting of the American Chemical Society (Committee on Environmental Improvement), Philadelphia, PA, 1984. Similar presentation at the Fifth Annual Meeting of the Society of Environmental Toxicology & Chemistry, Arlington, VA.

Cohen, S.Z., S.M. Creeger, R.F. Carsel, and C.G. Enfield. September, 1983. Potential for Ground Water Contamination by Pesticides Resulting from Agricultural Uses. Presented in different forms 6 times, 186th National Meeting of American Chemical Society (Pest 89); Senate Office Building conference.

Cohen, L.A., S.Z. Cohen, and H. Kimoto. August, 1982. Photochemical Perfluoroalkylation of Imidazoles. Abstracts of 10th International Symposium of Fluorine Chemistry, Vancouver, British Columbia.

PROCEEDINGS, GOVERNMENT, AND MISCELLANEOUS PUBLICATIONS

Cohen, S.Z. July 2016. Overestimates of Aquatic Impacts by Pesticides under the Endangered Species Act. Pesticides, Chemical Regulation, and Right-to-Know Committee Newsletter, 17(3):12-13. American Bar Association, Section of Environment, Energy, and Resources.

Cohen, S.Z., N.L. Barnes and S.M. Hoover. May 12, 2017 (Revised May 17, 2017). Review of "Final Report Wekiva River Basin Nitrate Sourcing Study" with a Focus on Turf Fertilization. Written on behalf of The Environmental Research and Education Foundation. (One key topic was nitrogen and oxygen isotope ratios.)

Cohen, S.Z., Q. Ma, N.L. Barnes, and S. Jackson. 2008. Chapter 8: Pesticide and Nutrient Modeling, *In*: Water Quality and Quantity Issues for Turfgrasses in Urban Landscapes, A Proceedings of CAST series, Special Publication No. 26, Council for Agricultural Science and Technology (CAST), Ames, IA.

Cohen, S.Z., 2004. Golf Course Developments: Frequently Occurring Environmental Claims and Issues. *Land Development,* 17(1):8-11.

1987-2002. "Agricultural Chemical News" (sole author), a scientific news column in the quarterly journal Ground Water Monitoring and Remediation (formerly Ground Water Monitoring Review), published by the National Ground Water Association.

Cohen, S.Z. June 3-6, 2000. Testing Your Outdoor Range–Using the Right Tools. Proceedings of the Fourth National Shooting Range Symposium, Phoenix, AZ.

Cohen, S.Z., A. Svrjeck, T. Durborow, and N. L. Barnes. November 1997. Water Pollution Minimal from Monitored Courses. *Golf Course Management*, 65(11):54-68.

Cohen, S.Z. May 1995. Agriculture and the Golf Course Industry: An Exploration of Pesticide Use. *Golf Course Management*, 63(5):96-104.

Cohen, S.Z. and T.E. Durborow. February 1994. Watershed Findings: Pesticides Test Well. *Golf Course News*, 5 (2), pp. 1 and 24-27.

October 18, 1993. A Priority Ranking Scheme for Ground Water Contamination Potential. Lead author as Chairman of the Ground Water Protection Subcommittee of the National Ground Water Association.

Cohen, S.Z. Spring, 1993. Ground Water Protection and Management Committee Explores Priority Ranking Scheme. Invited editorial appearing in 'Briefings', a National Ground Water Association quarterly newsletter.

Cohen, S.Z. April, 1991. Ignorance Can Cost You Bliss: ESAs for Private Clubs. *Club Director* (National Club Association), 9(4):9-12.

Cohen, S.Z. February, 1990. The Cape Cod Study. *Golf Course Management*, 58(2):26-44.

Gowland, P.A. and S.Z. Cohen. 1990. Dry Cleaners: A Possible Source of Subsurface Contamination. *Ground Water Management: Proceedings of the 1990 Cluster of Conferences*, National Water Well Assoc. (currently NGWA), 901-908, Dublin, OH.

Hess, A. and S.Z. Cohen. August 7, 1989. Pesticides and Nitrates in Ground Water: An Introductory Overview for the Office of Technology Assessment's Report to Congress. Contract No. J3-4815, Office of Technology Assessment, Washington, DC and Biospherics Incorporated, Beltsville, MD.

Weaver, M.F., S.Z. Cohen, and J.J. Pignatello. 1988. Environmental Chemistry of Ethylene Dibromide. *In*: Proceedings of the Agricultural Impacts on Ground Water - A Conference, National Water Well Association, 169-190, Dublin, OH.

September, 1986 and October 8, 1986 (respectively). "Alachlor Special Review Technical Support Document," and "Notice of Preliminary Determination to Cancel Registrations of Alachlor Products Unless the Terms and Conditions are Modified", coauthor with several other EPA staff of both publications; Federal Register 51(195):36166-36172.

Cohen, S.Z. March 1985. DBCP Use on Certain Pineapple Fields on Maui - Implications for Potential Drinking Water Contamination. Exposure Assessment Branch TS-769C, Office of Pesticide Programs, EPA, Washington, DC.

Task manager of a four-aquifer, soil/ground water study of four pesticides by the California Dept. of Food & Agriculture: Pesticide Movement to Ground Water; 3 related volumes have been published.

October 11, 1983. Conducted a ground water contamination assessment for EDB, resulting in the Sept., 1983 emergency suspension by EPA: work summarized in the EDB Position Document 4 and the Federal Register 48:46228-46248.

Cohen, S.Z. August 1981. DBCP in Ground Water in The Southeast. Exposure Assessment Branch TS-769C, Office of Pesticide Programs, EPA, Washington, D.C.

March, 1981. Project officer of work by G. Carter, J. Ligon, and O. Dickerson (Clemson U.); Study of DBCP Ground Water Contaminant Residue in Soil and Ground Water in South Carolina.

June, 1979. Project Officer of EPA Contract 560/12-79-001: Hendry, D.S. and R.A. Kenley; Atmospheric Reaction Products of Organic Compounds, EPA.

January 10, 1979. Coauthor of environmental fate testing guidelines in "Discussion of Premanufacture Testing Policy and Technical Issues; Request for Comment" (EPA), Federal Register 44, 16251-16280.

PUBLIC TESTIMONY *(Partial List - Updates available on request)*

Provided expert testimony regarding the impact that a golf course project may have on possible ground water and surface water quality by nutrients and pesticides. Expert testimony hearing before an administrative law judge in the town of Wilson, Wisconsin Department of Natural Resources, June 2018.

Expert testimony (individual plus part of an expert panel) in opposition to a proposed ban of turf pesticides before the Montgomery County Council (Maryland), 2015. (Dr. Cohen was a plaintiff in a subsequent lawsuit against the ordinance, 2016.)

Expert testimony before the local zoning commission on behalf of The Gunnery School (Connecticut) regarding pesticides and nutrients, 2012.

Expert testimony before the Zoning Board of Appeals regarding nutrient contamination on behalf of the Maidstone Golf Course, East Hampton, NY, 2012.

Expert testimony, deposition, and report on ground water contamination by 1,2-D and 1,2,3-TCP in a ground water contamination case before the Superior Court in San Francisco, 2012 (Saldana et al.).

Expert testimony provided in a FIFRA data compensation case September 2009 regarding use of water quality monitoring data in risk assessments.

Prepared expert report (2009) and rebuttal report (2010), and gave a deposition in a ground water contamination case in California for the US Department of Justice.

Gave a deposition (2009) and planned to give expert testimony for City of Redlands, California, re: TCP.

Gave a deposition and testified at trial in Circuit Court for the Town of Hampstead, Carroll County, Maryland (2009), regarding water use by a golf course.

Prepared expert report (March, 2007), gave a deposition, and planned to give expert testimony re: ground water contamination by DBCP and TCP on Maui (Hawaii Water Service Co.; settled).

Testified as percipient witness and provided litigation support on a pesticide ground water contamination case in Federal District Court, Honolulu, Hawaii, 2004 (Akee et al.) involving DBCP.

Provided expert testimony, reviews of hearing depositions and other trial support for a proposed firing range facility in Washington State in 1998. (ETS also produced an extensive BMP plan for this project facility.)

Testified on the environmental persistence and mobility of DBCP and EDB for the City of Fresno (1995).

Testified before several planning and zoning commissions and state agencies from 1991-present in New York, California, Connecticut, Colorado, Minnesota, Maryland, Hawaii, etc.

Testified before the Montgomery County, Maryland Planning Board and the Board of Appeals four times in 1991 and 1992 on two proposed golf courses.

Testified before an arbitration panel on a leaking UST case in Washington, D.C., 1992.

Deposition given on a leaking UST case before the District Court, City and County of Denver, State of Colorado, Columbia, Maryland, May 26, 1992.

Testified in Superior Court, Barnstable MA, in a golf course ground water contamination case, 1991.

Testified before the Baltimore County Zoning Commission on the potential for lead to migrate from shot and contaminate surface water and ground water; Towson, MD, April 1991.

Testified before the City and County Council of Honolulu several times on environmental risks of golf courses; 1990, 1991.

Expert witness on EDB for the Department of Justice in the United States District Court, Northern District of Florida - Tallahassee Division (three depositions in February 1989 and January 1990).

Testified (invited) on pesticides in ground water before the Senate Committee on Environment and Public Works (Sens. Burdick, Durenberger, et al.); Washington, DC, June 10, 1988.

Testified on environmental risks and ground water assessment of pesticides before the Vermont Environmental Board pursuant to Vermont Act 250; Williston, Vermont, May 3, 1988.

Testified on EDB in ground water before the Superior Court of the State of Washington, Mt. Vernon, Washington, October 8, 1987.

Deposition given on EDB in ground water before the Superior Court of the State of Washington, Rockville, MD, May 22, 1987.

Testified (invited) on pesticides in ground water before Senator Leahy's Committee on Agriculture, Nutrition, and Forestry; Washington, D.C., April 29, 1987.

Testified on DBCP in ground water in the FIFRA imminent hazard suspension hearing before Administrative Law Judge Harwood; Washington, D.C., August 1979.

Appeared as a speaker or panel member in a total of 16 public hearings, press conferences, briefings of state legislators, and public advisory committee meetings from 1976 to 1986 during tenure at EPA.

N. LAJAN BARNES, P.G.
Senior Hydrogeologist

EDUCATION

M.S., Hydrogeology, Texas Tech University, Lubbock, Texas, 1980 (degree awarded 1983). MASTERS THESIS: "Local Study of the Coalmont Aquifer in the North Park Basin, Colorado."
B.S., Geology, Texas Tech University, Lubbock, Texas, 1978.
University of Hawai'i Hilo, Hilo, Hawai'i, 1972-74.
FIFRA Good Laboratory Practices training, 1990 and 2000.
Dozens of short courses, etc. – See "Additional Coursework" below.

CERTIFICATIONS

Registered Professional Geologist, Commonwealth of Pennsylvania, #PG-002427-G, 1995.
Registered Professional Geologist, State of Wyoming, #PG-3013, 1998.
Registered Professional Geologist, State of Utah, #5220697-2250, 2002.
Registered Professional Geologist, State of Texas, #232, 2003.
Registered Professional Geologist, State of New York, #000915, 2018.

First Aid Training - Red Cross, 1993, 1996, 1999, 2002, 2006.
CPR Training - 1981, 1982, 1984, 1985, 1993, 1995, 1999, 2001, 2002, 2004, 2006, 2008, 2011.
NITON Spectrum Analyzer (field device to measure heavy metals in soils) - NITON Corporation, 1998, 2002, 2008.

EXPERIENCE

1991 to Present: Project Manager/Senior Hydrogeologist, Environmental & Turf Services, Inc., Wheaton, Maryland.

Project manager for all ground water investigations. Models include PRZM-GW, PELMO (German modification of PRZM), Attenuation Factor, LEACHM, SCI-GROW, and iSTREEM. Conducts computer simulation modeling of chemicals leaching to ground water, field geology assessments, field hydraulic conductivity measurements using the GUELPH® permeameter, environmental site assessments for real estate transactions, soil and ground water sampling, interviews, records searches, report writing, proposal writing, and project management. Manages and selects subcontractors for implementation of all ground water and surface water monitoring studies. Assists in determination of water supply and irrigation demands for golf courses. Evaluates all water quality monitoring lab results and quality control data: insecticides (includes fumigants), fungicides, herbicides, nematicides, and inorganics.

1990 to 1991; 1994: Project Manager/Hydrogeologist, Maryland Department of the Environment, Hazardous and Solid Waste Management Administration, Baltimore, Maryland. Responsible for the management of State and Federal hazardous waste site investigations and assessments. Also, responsible for site inspections, sampling plans and remediation of RCRA facilities. Coordinate activities between responsible parties and their contractors for implementing all aspects of technical investigations and assessment studies including on-site drilling and sampling of monitor wells.

1987 to 1990: Geologist, BTA Oil Producers, Midland, Texas. Responsible for outside prospect evaluation, maintained field development, received and maintained mudlog reports, evaluated land sale properties, produced maps, and conducted log analyses. Computer experience on PC in spreadsheet application and IBM mainframe.

1980 to 1986: Advanced Geologist, Marathon Oil Company, Midland, Texas. Responsible for geologic development in the Anadarko Basin, Oklahoma. Served as team member or liaison on projects involving multi-disciplinary teams. Responsible for numerous oil and gas production well sites in Texas, New Mexico, and Oklahoma. Directly supervised geologic well drilling operations including sample description and analysis, casing point selections, and borehole electric logging. Performed characterization analysis of reservoirs using porosity, permeability, reservoir geology, fluid contacts, and pressure data. Mapped geologic formations utilizing cross-sections, drill samples, and borehole logs.

1979 to 1980: Lab Assistant, Texas Tech University, Lubbock Texas. Responsible for water analysis, computer analogs for aquifer systems, computer modeling of aquifer system using Prickett and Lonnquist's Selected Digital Computer Techniques for Groundwater Resource Evaluation.

Summer 1979: Field Hydrogeologist, U.S. Geological Survey, Littleton, Colorado. Responsible for water sampling and testing for pH, temperature, and conductance. Performed pump and pressure tests in monitor wells and artesian wells respectively to determine aquifer characteristics and basin analysis in the North Park Basin, Colorado. Thesis work.

REGISTERED TRADEMARKS

CarbonSave® - helped develop the first carbon footprint calculator and energy efficiency analyzer for golf courses.

PUBLIC TESTIMONY/PRESENTATIONS

AFWA – Association of Fish & Wildlife Agencies, St. Louis, MO, 2014.
IWLAA – Isaac Walton League Association of America, Lincoln, NE, 2012.
Addressed Park Officials, City of Arlington, Texas, April 30, 2013.
Planning Board Presentation, Village of Croton-on-Hudson, May 22, 2012.
Informational Presentation to Citizens - Pre-Public Meeting, Comus, MD, April 6, 1999.
Public Meeting Presentation - Water Appropriations Hearing for MDE, Comus, MD, April 27, 1999.
Deposition given for leaking UST before District Court, City and County of Denver, State of Colorado, Columbia, Maryland, May 27, 1992.
Deposition given for Marathon Oil Company concerning migration of gas reserves in the subsurface in Midland, Texas, early 1980's.

JOURNAL & BOOK PUBLICATIONS

Petrovic, A.M., T.C. Cambareri, N.L. Barnes, and S.Z. Cohen. 2022. Nitrogen Rate, Irrigation and Rainfall Impacts on Groundwater Nitrate Levels in Sandy Coastal Golf Courses. *Int'l Turfgrass Soc. Res. J.* [under review].
Baris, R.D., S.Z. Cohen, N.L. Barnes, J. Lam, and Q. Ma. 2010. Quantitative Analysis of Over 20 Years of Golf Course Monitoring Studies. *Environ. Tox. and Chem.* 29(6):1224-1236.

Durborow, T.E., N.L. Barnes, S.Z. Cohen, G.L. Horst and A.E. Smith. 2000. "Calibration and Validation of Runoff and Leaching Models for Turf Pesticides, and Comparison with Monitoring Results," in Fate and Management of Turfgrass Chemicals, ACS Series 743, J.M. Clark and M.P. Kenna, eds., pp. 195-227, American Chemical Society, Washington, D.C., 2000.

Cohen, S.Z., A.J. Svrjcek, T. Durborow, N.L. Barnes. 1999. "Water Quality Impacts by Golf Courses," J. Environ. Qual., 28(3):798-809.

Cohen, S.Z., L. Lindstrand, N.L. Barnes and T. Durborow; EPA and OSHA Compliance Guide For Small Arms Ranges: A Focus on Lead, Environmental & Turf Services, Inc., Wheaton, Maryland, 1997.

Barnes, N.L., T.E. Durborow, S.Z. Cohen, A.J. Svrjcek, and M.J. O'Connor. 1993. "Conservative Ground Water and Surface Water Risk Assessments for Golf Courses in Vermont" in Proceedings of the Focus Conference on Eastern Regional Ground Water Issues. NGWA, Ground Water Management Book 16 of the Series.

Cohen, S.Z., T.E. Durborow, and N.L. Barnes; "Ground Water and Surface Water Risk Assessments for Proposed Golf Courses" in Fate and Significance of Pesticides in Urban Environments, American Chemical Society 214-227 Series 522, K.D. Racke and A.R. Leslie, eds., Wash. D.C., 1993.

SCIENTIFIC PRESENTATIONS

Barnes, N.L. 2014. Implementing A Shooting Range BMP Plan: A Focus on Risk Assessment and Risk Management, presented to the Hunting and Shooting Sports Participation Committee during the Association of Fish & Wildlife Agencies annual meeting, St. Louis, MO.

Carroll, M., G. Felton, T. Turner, P. Landschoot, M. Goatley, J. Derr, N. LaJan Barnes, and S. Cohen. 2012. Home Lawn BMPs to Reduce Runoff and Fertilizer Use in the Chesapeake Bay Watershed: A Compost and Microclover Demonstration and Technology Transfer Project. SETAC - NFWF poster presentation, University of Maryland, College Park, April 23, 2012.

Barnes, N.L. 2001. Hydrogeologic Factors Required to Ensure the Delivery of a Safe and Plentiful Water Supply. Invited presenter at Rural Community Assistance Program (RCAP) 2001 National Rural Policy Conference, Washington, D.C., October 25, 2001.

Cohen, S.Z. 1998. Pesticides in Surface Water and Ground Water in the U.S.: Monitoring Results, Potential Human Health Risks, and New Regulatory Initiatives, presented before the IBC UK Conference, Pesticides & Their Impact on the Aquatic Environment, London, England, March 17, 1998.

Barnes, N.L., T.E. Durborow, S.Z. Cohen, A.J. Svrjcek, and M.J. O'Connor. 1993. Conservative Ground Water and Surface Water Risk Assessments for Golf Courses in Vermont. Presented at the Focus Conference on Eastern Regional Ground Water Issues, Burlington, Vermont, September 27-29, 1993.

MEMBERSHIPS

National Ground Water Association
(Association of Ground Water Scientist and Engineers)

HONORS & AWARDS

Full scholarship summer program, OSU, 1990.
Certificate of Appreciation for Outstanding Participation as an Instructor, MDE's 1990 Ground Water Training Program.

ADDITIONAL COURSEWORK

Continuing Education Courses to maintain PG certifications annually, 1991-Present.
Plant-Soil Interaction Seminar, Golf Industry Show, Orlando, FL, February 4, 2014.
Phosphorus-Must It Always Equal Zero, Golf Industry Show, Orlando, FL, February 5, 2014.
Dye-Tracer and Geophysics Field Program, NGWA, San Antonio, TX, May 2, 2013.
Sustainability & Conservation: "Green Golf" by GCSAA webcast, May 24, 2011.
Peer Reviewed NGWA Best Suggested Practices for GW Sampling March 4-9, 2011.
QED webinar low flow pumps webinar, December 16, 2010.
Science-based Guidance for the Identification and Evaluation of PBTs and POPs, SETAC. Webinar, June 15, 2010.
Trends in G-W Sampling: A Comparison of GW Sampling Methods, webinar, January 27, 2010.
Phosphorus Fert. & Pollution (webinar, EIG & AAT), January, 12, 2010
Emerging Pollutants in the Water Supply (Geosyntec webinar), October, 20, 2009.
GW Flow & Chemical Transport in Fractured Rx. (#821 webinar) NGWA, November 18, 2008.
Niton XRF Training (Spectrum Analyzer) (1 day - 8 hr) Baltimore, MD, August, 5, 2008.
Introductory Statistics for Environmental Professionals - NGWA, Orlando, FL, December, 2007.
Aquifer Testing for Improved Hydrogeologic Site Characterization - NGWA Ground Water Expo - Orlando, FL, December, 2007.
SAWS Field Trip - NGWA Ground Water Summit, San Antonio, TX, 2005.
Management of Karst Aquifers - The Center for Cave and Karst Studies, San Antonio, TX, 2002.
Aquifer Tests: Operation and Parameter Estimation – NGWA, Milwaukee, WI, 2000.
Strategies of Effective Writing – EEI Communications, Silver Spring, MD, 2000.
Micropurge Low-Flow Purging and Ground Water Sampling -- The Nielson Environmental Field School, Inc., 1998.
NITON Spectrum Analyzer -- NITON Corporation, 1998, 2002, and 2008.
Pesticide Root Zone Model Release 3.0 Training -- EPA, Athens GA, 1997.
Ground Water Protection & Management of Public Drinking Water Supplies & Aquifers - Baltimore, MD, 1995.
National Ground Water Sampling Symposium -- Washington D.C., 1992.
Principles of Subsurface Contaminant Fate and Transport Modeling -- NGWA, San Diego, CA, 1992.
Ground Water Investigations -- EPA, Baltimore, MD, 1991.
FIFRA, Basic Good Laboratory Practices, Quality Associates Inc., Columbia, MD, 1991 and 2000.
Monitor Well Design -- Maryland Department of the Environment (MDE), co-instructor, 1991.
Hazmat 1A Awareness -- MDE, Baltimore, MD, 1990.
Hazardous Materials Incident Response Operations (OSHA 40-hour health and safety training) -- EPA, Edison, NJ, 1990.
Practical Approaches to Ground Water Hydrology and Contamination (taught by Drs. Pettyjohn & Prickett) -- OSU, Stillwater, OK, 9 hours graduate credit (after degrees), 1990.
OSHA 8-hour health and safety training refresher 1991, 1992, 1993, Dec. 1994, 1996, 1997, 1998, 1999.
Plus 60+ other geological and geophysical short courses, conferences, and workshops between 1980 and 1990.

POUND RIDGE GOLF CLUB
POUND RIDGE, NEW YORK
GROUND-WATER, SURFACE-WATER AND STORM-WATER MONITORING PLAN

Prepared For

U. S. Summit Company

October 2001

Revised March 2002

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
110 Corporate Park Drive, Suite 112
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(914) 694-5711

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POUND RIDGE GOLF CLUB
POUND RIDGE, NEW YORK
GROUND-WATER, SURFACE-WATER AND STORM-WATER MONITORING PLAN

1.0 INTRODUCTION

The following Ground-Water, Surface-Water and Storm-Water Monitoring Plan (Plan) is to be initiated in connection with the construction and operation of the Pound Ridge Golf Club (Golf Course), on High Ridge Road in Pound Ridge, New York. As part of the State Environmental Quality Review Act (SEQRA) the proposal for the Pound Ridge golf club has been through a thorough environmental evaluation. The results of this evaluation have been compiled in the DEIS and FEIS for this project, which include various plans and mitigation measures such that the construction and operation of this course, will not result in significant adverse impacts to ground water, surface water or storm-water.

The purpose of this Plan is to ensure that the environmental controls, implemented during the construction and operation of this course, are effective at preventing adverse water quantity or water-quality impacts. This will be accomplished by regular monitoring of ground-water quantity, and ground-water, surface-water and storm-water quality, as described in the following sections.

This Plan describes the general methods for the physical sampling of ground water and surface waters that exist on and in close proximity to the Golf Course. Ten onsite wells and up to ten offsite residential wells will be monitored for ground-water quantity. Five onsite wells and up to ten offsite wells will be monitored for ground-water quality. Four surface-water locations will be monitored, including all locations where surface water enters and exits the Golf Course and Irrigation Pond 1.

The monitoring described in this Plan shall be the responsibility of the Golf Course owner, with oversight by an independent third party auditor. The third party auditor will audit selected monitoring events, summarize the analytical data and prepare all reports. The analytical results of the ground-water and surface-water sampling will be sent directly to the third party auditor. In the event that concentrations of chemical parameters are detected above response levels, the third party auditor will immediately notify the Town and the Golf Course owner. Similarly, in the event that offsite ground-water levels decline to levels that trigger response actions, the third

party auditor will notify the Town and the Golf Course owner. The Golf Course owner will be responsible for implementing the prescribed response action (see Sections 2.6 and 3.7).

2.0 GROUND-WATER QUANTITY MONITORING

The purpose of ground-water quantity monitoring is to observe and report potential onsite and offsite changes in ground-water levels associated with the construction and operation of the Golf Course. Ground-water quantity monitoring will be conducted before, during, and after construction as described below.

2.1 Monitoring Points

The ground-water quantity monitoring program will include the following onsite wells (see figure 1):

TW-1	TW-6
OW-2	OW-7
OW-3	TW-8
TW-4	TW-9
TW-5	Well E

In addition to the onsite wells, a network of neighboring residential offsite wells will also be monitored. The offsite network will include a minimum of 10 neighboring wells from the following areas:

Pound Ridge, New York	Stamford, Connecticut
High Cliff Terrace	Country Club Road
Clear Water Lane	Coventry Road
High Ridge Road	
Old Snake Hill Road	

Fairway Drive, Greens Circle and parts of High Ridge Road in Stamford will be provided with public water by the Golf Course owner and, therefore, monitoring is not proposed in those areas. The specific offsite monitoring points will be established as part of this Plan and will be dependent on which residents agree to make their wells available for monitoring. Once a group

of willing participants has been identified, the residential wells to be monitored will be selected in consultation with the Town and the third party auditor. The selected wells will be based on several factors including the ability to install automatic monitoring equipment in the wells and the location of willing participants relative to the Golf Course property.

2.2 Monitoring Duration and Frequency

The ground-water quantity monitoring program will be implemented before, during and after the Golf Course construction and will continue for the life of the course. The frequency of monitoring will change during the program depending on the phase (baseline or operational monitoring) as described in Sections 2.3 and 2.4. At the end of the third and fifth years of post construction monitoring, a review of the monitoring results will be presented to the Planning Board by the Golf Course owner and third party auditor. After the fifth year of post construction monitoring, the Golf Course owner will have the right to petition the Planning Board to end the monitoring program.

If at any point during the life of the course the monitoring plan is terminated, the Town will have the right to reinstate the program, in response to any of the following:

- the installation and use of a new irrigation well on the Golf Course;
- a water quantity complaint from a resident which, after investigation, is determined to be related to operation of the Golf Course wells; and,
- any exceedance of the 160 gpm maximum allowable pumping rate for the irrigation wells.

2.3 Baseline Monitoring

The purpose of the baseline monitoring is to develop a record of ground-water levels in onsite and the selected offsite wells prior to Golf Course irrigation well use. Baseline monitoring will be conducted in the onsite and selected offsite wells with the use of automatic water-level recorders for a period of two months prior to construction, through construction, and ending once the first irrigation well is pumped. Once the first irrigation well is pumped, the operational water-level monitoring phase will commence.

The automatic water-level recorders will be downloaded once prior to construction, and once a month throughout the construction period. Throughout the Baseline Monitoring Phase, the automatic water-level recorders will be programmed to record water levels at hourly intervals from 6:00 a.m. to 9:00 p.m., and once at 3:00 a.m. Once downloaded, the data from the automatic loggers will be used to generate pre-irrigation baseline profiles. These baseline profiles will in turn be used to formulate safeguards unique to each individual offsite residential well once the irrigation of the Golf Course commences. The safeguards will allow the third party auditor to observe potential reductions of water levels in the offsite residential wells and impose appropriate response actions on the Golf Course owner in the event that the offsite residential wells are adversely impacted by Golf Course irrigation (e.g. reducing or ceasing pumping of the irrigation wells).

A well can produce water as long as its pump is below the lowest point at which the water level is drawn down in the well during normal operation. When the water level is drawn down below the intake of the pump while it is running, not only is there no production of water, but damage to the pump can result. Since the residential wells in the vicinity of the Golf Course are currently yielding water, it can be inferred that water levels in the residential wells do not currently fall below the pump intakes.

Once the irrigation wells commence pumping, it is possible that the ground-water levels in the vicinity of the Golf Course will decline. A reduction in water levels is not a problem for the residential wells, as long as the water levels remain above the pump intake during normal pumping operation. The Baseline Monitoring Phase will be used to determine how close each well is to this critical point (e.g. the maximum level to which the water is drawn down in a well compared to the pump elevation) before the irrigation wells are used. Once an estimate has been made of the capacity for each well to sustain a water-level drop, safeguards will be formulated for the Operational Monitoring Phase to ensure the use of the Golf Course irrigation wells do not impact the operation of the offsite residential wells.

When the ground-water level in a well is plotted against time, the result is a profile of water use and draw down for that well. This pre-irrigation baseline profile will be constructed for every residential monitored well and is unique to each well. The baseline profile captures the effect of pumping on ground-water levels in the well and the well's ability to recharge once

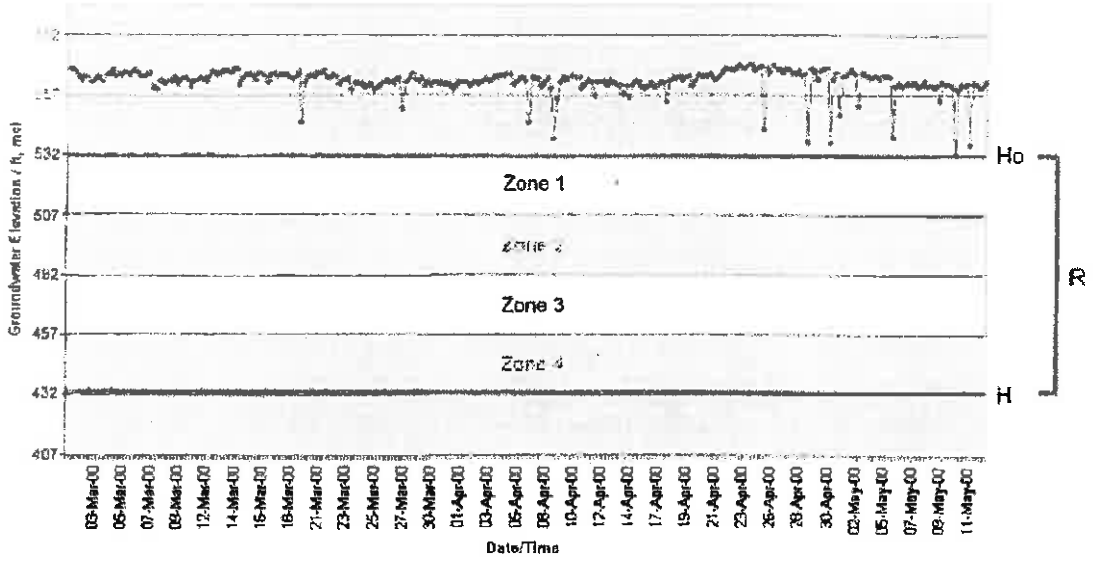
pumping has stopped. The baseline profile will show the lowest water level that the well experienced during the Baseline Monitoring Phase. The difference between the lowest observed water level and the pump elevation is defined as the reserve capacity of the well, which is the level of additional draw down that is possible without impacting the operation of the well. During the Baseline Monitoring Phase, the reserve capacity for each monitored residential well will be quantified.

This baseline analysis is illustrated for a theoretical well in Diagram 1 below — Hypothetical Baseline Profile. In Diagram 1, the water level has been plotted against time to generate the baseline profile. The lowest observed point during the monitoring period occurred on May 9, 2000, and is designated by the symbol H_o. The elevation of the pump intake, which is the lowest level to which the water can be drawn down for a productive well, is indicated by H. The difference between these two elevations is the reserve capacity, denoted by R, which will be unique for each well. This reserve capacity will be used as a benchmark to determine how close a residential well is to being adversely impacted during the Golf Course Operational Monitoring Phase and to prescribe appropriate response actions, if necessary.

The reserve capacity, expressed in feet or inches, is divided into four equal zones. When the H_o level is reduced, it will fall into one of the four zones. Reduction of the H_o level into any one of the four zones will trigger a specific response action, as described in Section 2.6.

Diagram 1

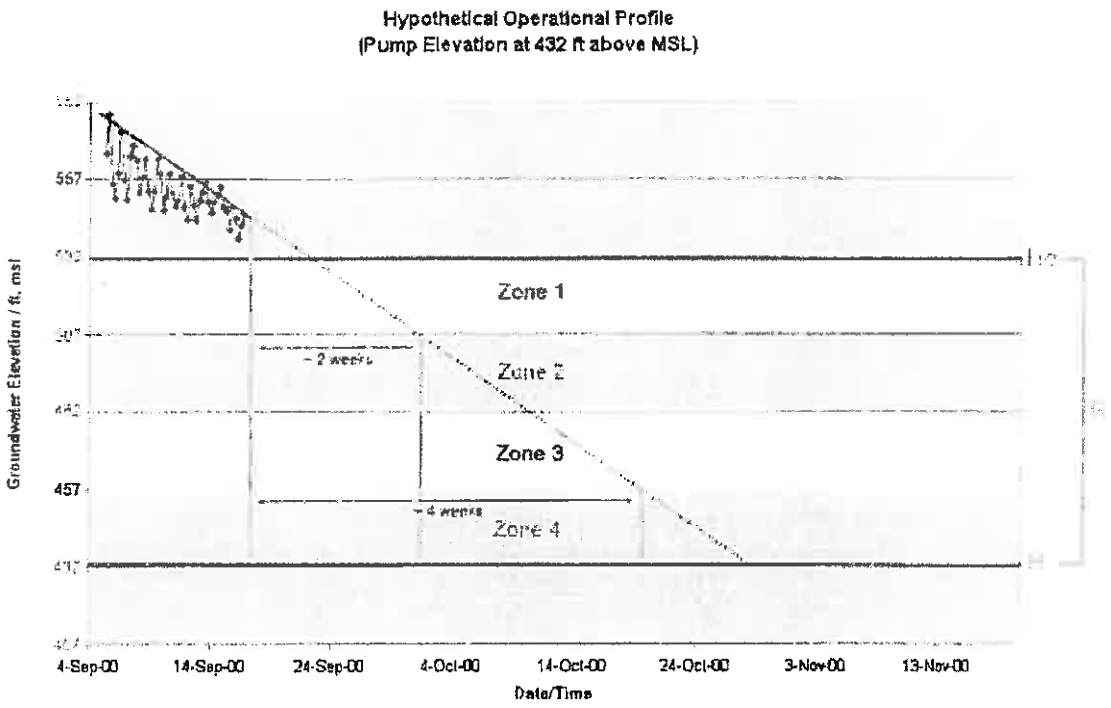
Hypothetical Baseline Profile
(Pump Elevation at 432 ft above MSL)



2.4 Operational Monitoring

The Operational Monitoring Phase will consist of water-level monitoring in accordance with the schedule presented at the end of this section. The Operational Monitoring Phase will also include the development of operational water usage profiles of the residential wells to assist in water resource management. The purpose of the operational monitoring profiles is to detect potential impacts to residential wells at an early stage so that irrigation well pumping rates can be reduced or ceased accordingly. This operational profiling procedure is outlined below and illustrated in Diagram 2 — Hypothetical Operational Profile. This operational profiling procedure allows for standardized monitoring that can be applied to all residential wells while accounting for each well's unique characteristics and reserve capacity.

Diagram 2



When the operational profile has been constructed, a best-fit line is drawn through the "recovery" water levels observed during the last monitoring event. The data logger readings with the highest water level of any given day (e.g. the "recovery" water level) is considered to be representative of the background regional ground-water levels. If the best-fit line is downward-sloping, it indicates that the water in the well is generally being used at a faster rate than it is being replenished. The best-fit line can be extrapolated to gain an understanding of the rate of water-level depletion with respect to time in any given residential well. In this manner, the third party auditor can alert the Golf Course owner about the specific projected time frames at which the water levels are expected to fall into that well's reserve capacity (Zones 1 through 4), thereby requiring the response actions outlined in Section 2.6 to be implemented. If the recovery water levels in a residential well equilibrate with regional ground-water levels, and the best-fit line indicates that water levels are not projected to fall into that particular well's reserve capacity or, the water-level depletion is not related to the Golf Course wells, then no response action would be required.

In Diagram 2 above, the operational profile for a hypothetical well is illustrated. When the best-fit line is plotted (solid line), it is downward-sloping, indicating that the rate of use is greater than the rate of replenishment. When the line is extrapolated (the dotted line) it shows that at current rates of use and recharge, the H_o level will fall into Zone 1 in two weeks and into Zone 4 in four weeks, thereby triggering a response action.

The operational profile provides a quantitative and predictive tool that both the third party auditor and the Golf Course owner can use to effectively manage ground-water resources and prevent impacts to offsite residential wells. For example, using the hypothetical operational profile presented in Diagram 2, rather than wait the four weeks for Zone 4 restrictions to be implemented, the Golf Course owner might find it prudent to decrease its pumping by a smaller amount early to avoid or minimize the pending restrictions.

The operational profile can also be used to determine the effectiveness of the response action implemented by the Golf Course. If the best-fit line through the recovery water levels is upward-sloping following the implementation of a response action, the well is being recharged at a higher rate than it is being depleted, and the implemented response action has been effective.

Operational Water Quantity Monitoring Schedule

Phase	Time Period	Monitoring Frequency
I Grow In	First month	Four times a day - data to be downloaded twice a week
	Second month	Four times a day - data to be downloaded once a week
	Third month through end of grow-in	Four times a day - data to be downloaded every other week
II First Year of Normal Golf Course Operation	First two months	Four times a day - data to be downloaded once a week
	Third month through end of golf season	Four times a day - data to be downloaded every other week
III Every year following the first of Normal Golf Course Operation	Through golf season	Once a day - data to be downloaded once a month

2.5 Monitoring Procedures

The water-level monitoring will be conducted with automated dataloggers from In Situ, Inc. or an equivalent brand. The loggers consist of a small diameter pressure transducer on an electronic cable, which would be lowered into the well and would remain there through the baseline and operational monitoring periods. Prior to placing the logger into the well, it will be sterilized with a mild solution of bleach and water. In addition, all personnel handling the equipment will wear latex gloves. The logger will be secured to the top of the well casing and will be installed so that the well cap can be in place during monitoring. The logger will be set to a depth in each well which will allow it to remain submerged at all times. Data from the logger will be downloaded electronically from a data port on the end of the cable. The data port will be located on the outside of the well casing to eliminate frequent opening of the well cap. Data collection will occur during normal business hours and the homeowner will be notified in advance of the monitoring schedule.

2.6 Response Actions

Any resident who experiences a water quantity problem should notify the third party auditor and the Town Planning Board. The contact information for the third party auditor will be available through the Town at (914) 764-5511, once an auditor has been selected. All complaints will be responded to within 24 hours.

The water levels in the residential wells will be monitored by automatic data loggers in accordance with the schedule presented in Section 2.4. The operational profiles will be generated in the same way that baseline profiles were constructed. An operational profile will be constructed using the highest observed recovery water level for each well for all the days representing the last data period. If the water levels did not fall below H_o level, then no response action is required. However, if the water level in any given well consistently drops below the H_o (e.g. the reserve capacity depicted as Zones 1 through 4 in Diagram 2), it implies that the well may be affected by Golf Course irrigation and might warrant closer scrutiny and/or response actions. The amount of reserve capacity being utilized is proportional to the risk of the well being impacted.

To provide a standard approach that can be applied to all residential wells, the reserve capacity is divided into four equal zones as discussed in Sections 2.3 and 2.4. If during the

Operational Monitoring Phase, the water level in any given residential well falls into Zone 1, there is no immediate risk of the well being impacted, since over 75% of the reserve capacity is remaining. However, continued monitoring and analysis will be required. This will include a review of the residents water usage to determine if the decrease in reserve capacity is related to increased water demand by the residents. If the water level in any given residential well falls into Zone 2, then the pumping rate of the irrigation wells will be reduced by 25% and data from the affected residential well will be downloaded weekly until the well recovers.

If a residential well's water level falls into Zone 3, it implies that less than half of the well's reserve capacity is remaining. If this occurs, the pumping rate of the irrigation wells will be reduced to 50% of the original pumping rate (prior to any rate reductions) and data from the affected residential well will be downloaded weekly until the well recovers. If water levels fall into Zone 4, it implies that less than 25% of the well's reserve capacity is remaining and that the well is in imminent risk of being adversely impacted. If this occurs, the Golf Course irrigation wells will cease pumping, until such time that the affected residential well recovers.

Once an affected residential well has recovered in response to a reduction in irrigation well pumping, the Golf Course may increase the pumping rate weekly, in increments equivalent to 25% of the original pumping rate, as long as no residential wells are affected, as defined above. If, after the implementation of a response action, it is determined that the declining water level in the residential well is not related to the Golf Course wells, then the pumping rate can be immediately restored to full capacity.

If, at any time during the life of the course a new irrigation well is installed, a pumping test with a minimum duration of 72 hours will be conducted. The test would include simultaneous pumping of the new well(s) and the existing irrigation wells. The Golf Course owner, in consultation with the Town and third party auditor, would select onsite and offsite wells to be monitored during the test. Specific details of the test including all proposed monitoring points and pumping rates, would be submitted to the third party auditor and the Town for review and approval before testing can begin. The test results would be summarized in a report and also submitted to the Town and third party auditor for review.

Based on the results of the pumping test, the water quantity monitoring program would be modified, as needed, to include the new irrigation well(s) and any new offsite monitoring points

that are deemed appropriate. All new monitoring points would be monitored in accordance with the protocols discussed in Sections 2.3, 2.4 and 2.5. Baseline profiles, as discussed in Section 2.3, would be generated prior to the pumping test. Drawdown in offsite wells resulting from operation of the Golf Course wells, would be mitigated in accordance with the response actions described above.

In the event a new irrigation well is installed and the water quantity monitoring program has been terminated, then it would be reinstated. The length of the monitoring period would be determined in consultation with the third party auditor and the Town and, would be based on the results of the pumping test and the data generated during the previous monitoring program.

2.7 Reporting

For the water quantity program, status reports will be submitted in accordance with the following schedule:

Phase		Report Submittal
Baseline Monitoring		End of pre-construction and end of construction period.
Operational Monitoring:		
I	Grow-In	Monthly.
II	First Year of Normal Golf Course Operation	Monthly during the golf season.
III	Every year following the first of Normal Golf Course Operation	Beginning, middle and end of Golf Season.

All water-level data will be sent directly to the third party auditor for analysis and report preparation. The reports will include all onsite and offsite water-level data collected since the prior report and an evaluation of that data. The reports will be prepared by the third party auditor with copies of the reports sent to all of the homeowners participating in the offsite monitoring

program and the Golf Course owner. When possible, these reports may be combined with the water-quality monitoring reports which are discussed in the next section.

3.0 WATER-QUALITY MONITORING

An Integrated Turfgrass and Pest Management Plan (ITPMP) was prepared as part of the DEIS and is hereby incorporated into this Plan by reference. A copy of the ITPMP is presented in Appendix I to this Plan. The purpose of the ITPMP is to minimize, to the maximum extent practicable, the potential for water-quality impacts by establishing management practices for safe, controlled fertilizer and pesticide use. In accordance with the ITPMP, fertilizers will be applied in small amounts based on the amount needed by the turf grass. Pesticides will only be used as a last resort after all other pest control measures have failed and pest damage is imminent. In addition, pesticides shown to have a potential to leach concentrations in excess of applicable water quality standards, and thus pose a risk to human health or aquatic life, have been eliminated from the ITPMP and will not be used on the Golf Course. The ITPMP identifies the pesticides to be used on the Golf Course.

The following water-quality monitoring program is intended to monitor the effectiveness of the ITPMP and, to establish procedures for responding to a chemical detection in ground water, surface water or storm-water, in the unlikely event that one should occur.

3.1 Monitoring Points

The monitoring points for the water-quality sampling programs are presented on figure 1 and include the following:

Ground Water	Surface Water	Storm Water
TW-1	UG-1	UG-1
OW-2	DP-1	DP-1
TW-4	DP-2	DP-2
TW-6	Irrigation Pond 1	
TW-9		
offsite residential wells (10 minimum)		

As part of this plan changes to the proposed monitoring points are allowable. However, any proposed changes must be made in consultation with, and with the approval of, the third party auditor.

3.2 Monitoring Duration and Frequency

Water-quality sampling will be conducted for ground water, surface water and storm water, beginning prior to construction of the course and continuing for 10 years after construction. However, under certain conditions, the program can be extended beyond the 10-year time frame or be reinstated after it has ended. A complete discussion of these conditions is presented in Section 3.7.

The sampling frequency will vary throughout the program in accordance with the schedule below. Additionally, the sampling frequency would be intensified during the program in response to a pesticide detection as described in Section 3.7. Sampling of offsite residential wells will be conducted once during baseline sampling and any time there is an onsite detection in ground water.

Water-Quality Monitoring Schedule

Period	Sample Type	Frequency
Baseline	Ground water, surface water, storm water, residential wells	Once prior to construction
Golf Course Grow-In Through the First Three Years	Ground water, surface water	Quarterly
	Storm water	Three times per year, spring, summer and fall
Years Four Through Seven After Construction	Ground water, surface water	Semiannually
	Storm water	Three times per year, spring, summer and fall
Yeas Eight Through Ten After Construction	Ground water, surface water	Annually in the fall
	Storm water	Three times per year, spring, summer and fall

3.3 Baseline Sampling

3.3.1 Ground Water

As part of this Plan, baseline ground-water sampling will be conducted for offsite residential wells and the five onsite wells listed in Section 3.1. The specific offsite wells to be sampled will be the same as those selected for ground-water quantity monitoring and will be dependent on those who agree to make their wells available for monitoring. The sampling network will be established in consultation with the Town and the third party auditor.

The wells will be sampled for the following parameters which include fertilizer components and pesticides previously used on the site and commonly applied to residential lawns. Other pesticides which are proposed for use on the Golf Course, and which are not included on the baseline list and have not been used onsite in the past, will be assumed to have a non-detectable baseline value.

pH	2,4D
temperature	carbaryl
conductivity	chlorpyrifos
nitrate-nitrogen	dicamba
ammonia nitrogen	imidcloprid
chloride	MCPP (mecoprop)
total phosphorus	

The baseline sampling will occur once, and will be conducted prior to construction of the Golf Course.

3.3.2 Surface Water and Storm Water

Baseline surface-water and storm-water samples will be conducted at the onsite locations listed in Section 3.1 which are shown on figure 1. For the purpose of this Plan a storm event will be considered a precipitation event with a rainfall intensity of at least 0.5 inch per hour at the Golf Course. The baseline surface-water and storm-water samples will be analyzed for the same parameters as the ground water and are listed in Section 3.3.1 above. Pesticides not included on the baseline list, and which are proposed for use on the Golf Course but have not been used in the past, will be assumed to have a

non-detectable baseline value. The baseline sampling will be conducted once and will be conducted prior to construction of the Golf Course.

3.4 Operational Sampling

3.4.1 Ground Water

As part of this Plan, operational ground-water sampling will be conducted at the five onsite wells listed in Section 3.1 for the purpose of monitoring the effectiveness of the ITPMP, and to ensure that operation of the Golf Course does not adversely affect ground-water quality.

The ground-water samples will be analyzed for the following parameters:

pH	ammonia-nitrogen
temperature	chloride
conductivity	total phosphorus
nitrate-nitrogen	any pesticide applied within the preceding 120 days

The 120 day time frame for pesticide analytes is based on the characteristics of the proposed chemicals and the quantitative risk assessment presented in the ITPMP. The risk assessment has shown, that when used as specified in the ITPMP, none of the proposed chemicals will leach at concentrations considered harmful to human health or aquatic life. As a result, it is highly improbable that these chemicals could impact ground water, surface water or storm water, 120 days after application. It will be the responsibility of the third party auditor to verify with the Golf Course superintendent what chemicals have been used.

3.4.2 Surface Water and Storm Water

Operational surface-water and storm-water quality samples will be collected from the locations listed in Section 3.1 which are shown on figure 1. The purpose of the sampling will be to monitor the quality of surface water and storm water entering and exiting the site under operating conditions.

The surface-water and storm-water samples will be analyzed for the same parameters listed in Section 3.4.1 Ground Water.

3.5 Sampling Procedures and Quality Assurance/Quality Control

3.5.1 Onsite Ground Water

Onsite ground-water samples are to be collected from four irrigation wells and one observation well. Samples from the irrigation wells will be collected from sample taps located at or near the well head. Prior to sampling, a minimum of three standing volumes of water will be purged from the wells using the installed submersible pumps. The standing volume will be calculated using the static water level, well depth and well diameter. If the wells have been operating prior to and up until sampling and, based on the pumping rate and operating time, have pumped the equivalent of three standing volumes, then additional purging will not be necessary. One observation well (OW-2) is artesian and historically water has flowed over the top of the casing. If this well is flowing at the time of sampling, purging will not be necessary and the samples will be collected from the well using a disposable bailer. If OW-2 is not flowing at the time of sampling, then it will be sampled by low-flow sampling, using a peristaltic pump and a Horiba Model U-22 (or equivalent) flow-through cell, to monitor pH, temperature and conductivity. Once these parameters have stabilized, the samples will be collected directly from the flow-through cell. Stabilization of these parameters is defined as pH varying no more than 0.1 and temperature and conductivity varying no more than three percent. The low-flow sampling will be conducted in accordance with the procedures outlined by the USEPA in a document titled "Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures", published by the Office of Solid Waste and Emergency Response, USEPA, Washington, D.C., April 1996.

3.5.2 Offsite Ground Water

Offsite ground-water samples will be collected from neighboring residential wells as discussed under Section 3.3.1 Baseline Sampling. Prior to collecting the samples, the well pump will be activated by running the water from an inside or outside faucet. The

faucet will be run for approximately 15-20 minutes. If possible, the samples will be collected from the spigot at the pressure tank. If the pressure tank is not accessible, or does not have a spigot, then the sample will be collected from the next closest spigot or faucet, inside or outside of the house. In either case, the sample should be collected while the well pump is operating if possible. In addition, any water conditioning or treatment systems will be bypassed.

3.5.3 Surface Water and Storm Water

Surface and storm-water samples will be collected from the locations noted in Section 3.1 and on figure 1. The surface-water samples will be collected directly in the sample containers by hand, without entering the surface-water body if possible. If it is necessary to enter the water to collect the sample, then the sampler will face the upstream direction and the samples will be collected from the downstream locations first. The surface-water samples will be collected in conjunction with the ground-water samples.

Storm-water sampling will be conducted in order to capture "first-flush" runoff, from a storm event with a minimum intensity of 0.5 inch per hour at the Golf Course. Storm-water samples will not be collected if a storm meeting this condition does not occur during a particular season. The storm-water samples will be collected using automated samplers. To ensure the capture of first-flush samples, the samplers will monitor the baseline water levels at each location and will be programmed to activate in response to a rise in water level. Once triggered, each sampler will collect two composite samples over the following 60 minutes. The samples will be comprised of six aliquots collected at five minute intervals, for a total of 30 minutes for each sample and a volume of two gallons per sample.

3.5.4 Sample Handling and Analysis

All samples will be collected in laboratory prepared containers, which will include chemical preservatives if required. Measurements of pH, temperature and conductivity will be made in the field. Latex gloves will be worn by all persons handling the samples, sample containers or sampling equipment. The gloves will be changed in between each

sampling location. Field instruments will be calibrated at the beginning of each sampling day in accordance with the manufacturers' specifications.

The samples will be collected in the following order:

1. field parameters (pH, temperature and conductivity);
2. pesticides;
3. chloride;
4. nitrogen compounds (ammonia and nitrate); and,
5. phosphorus.

All samples for laboratory analysis will be cooled to 4°C (39°F) and shipped to the laboratory, via overnight delivery, the same day they are collected. The samples will be analyzed by a New York State certified laboratory, using the most current EPA approved methodology in accordance with the most recent version of EPA's Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846) or, the American Public Health Association's Standard Methods for the Examination of Water and Wastewater.

3.5.5 Quality Assurance/Quality Control

Various procedures will be implemented as part of each sampling event to ensure sample integrity and avoid cross contamination. As indicated in the previous section, latex gloves will be worn by the sampling personnel and changed between each sampling location to prevent cross contamination of the samples. In addition, field instruments will be decontaminated in between samples using deionized water. Ground-water and surface-water samples will be collected directly into the sample containers, or with the use of dedicated equipment. As a result, decontamination of sampling equipment will not be necessary. Storm-water samples will be collected in 1 gallon glass jars using dedicated, automated samplers. In between each storm event, the glass jars will be cleansed using a solution of Alconox soap and water, followed by a tap water rinse, followed by a deionized water rinse.

All sample bottles will be labeled prior to sample collection. The labels will include the following information at a minimum:

- project identification
- sample location
- sample date and time
- required analyses
- preservative (if required)

All field notes including calibration information, field measurements, sample times and any other pertinent sampling information will be recorded on a field data sheet. The field data sheet will also include the project name, the date and, the names and signatures of the sampling personnel. The field data sheet for each sampling event will be maintained by the third party auditor and the Golf Course owner's consultant. In addition to the field data sheet, a chain-of-custody form will be used to track the samples from the point of collection, to the point of analysis. Each sample collected during a specific sampling event will be logged on the chain-of-custody form. The forms will include the same information as the sample bottle labels, in addition to the samplers names and signatures, the signature of the person releasing the samples for shipping, the date and time of shipping, the signature of the person receiving the samples, and the date and time of receipt. Copies of the chain-of-custody form will be maintained by the third party auditor, the Golf Course owner's consultant and the laboratory, and will be included with the analytical report. During shipping, sample coolers will be sealed with custody tape which will indicate if the coolers are opened during shipping.

Quality Assurance/Quality Control (QA/QC) samples including trip blanks and duplicate samples will be collected during each sampling event. One trip blank will be analyzed for every group of samples shipped. One duplicate will be analyzed per sample event and the location will be rotated each time. Field blanks will not be necessary as all of the samples will be collected with the use of dedicated/disposable equipment, or directly from the source into the laboratory containers. If, for some reason, non-dedicated sampling equipment is used requiring decontamination in the field, field blanks will be collected at a rate of one per day.

3.6 Water-Quality Standards

The water-quality standards applicable to this site are those contained in New York State Codes, Rules and Regulations Title 6, Chapter X (6 NYCRR) Parts 700-706, last amended August 1999 and, the NYSDEC's Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality Standards and Guidance Values and Ground Water Effluent Limitations, dated June 1998. However, most of the pesticide compounds proposed for use on this course do not have water-quality standards or guidance values promulgated under these regulations. In the absence of a water-quality standard, Health Advisory Levels (HALs) will be used as guidance values for ground-water quality and LC50's (lethal concentration) will be used as guidance values for surface-water and storm-water quality.

HALs are risk-based numbers based on the consumption of drinking 2 liters of water a day, containing some concentration of a compound, over a 70-year average life span. The HALs are the maximum concentration of a chemical in water that can be consumed on a daily basis over a 70-year period, without causing increased health risks. The LC50's are the chemical concentrations in surface water at which 50 percent of an aquatic population would not survive.

Table 1 lists the parameters that will be monitored at this site and their respective water-quality standards, HALs and LC50s. The values listed on table 1 will be reviewed annually and updated as necessary, in accordance with the most current version of the applicable regulations and health-related guidance values.

3.7 Response Actions

In the unlikely event of a detection of a pesticide or fertilizer compound in ground water, surface water or storm water or, the occurrence of other conditions as noted below, response actions will be implemented as follows:

Condition	Response Action
1. Any confirmed pesticide detection in onsite ground water, surface water or storm water, below a New York State water-quality standard and 50 percent of a HAL or, for surface water, 1 percent of an LC50 (table 1).	Review chemical usage and compare to ITPMP; determine if proper management practices were followed and if not make necessary adjustments. For onsite ground-water and surface-water detections, increase sampling frequency to monthly for affected monitoring points and the detected compound until the concentration is shown to be stable or decreasing, after which it can be reduced to quarterly. Quarterly sampling would be continued for a period of one year after the pesticide is no longer detectable. For an onsite ground-water detection, sample all other onsite wells and offsite potable wells. Offsite sampling will include those wells contiguous to the Golf Course and would be expanded as necessary based on the sampling results.
2. Any confirmed detection of a pesticide which exceeds a New York State water-quality standard, or 50 percent of an HAL or, for surface water, 1 percent of an LC50, or any confirmed pesticide detection in an offsite potable well. For nitrogen and phosphorus compounds, any confirmed detection above a New York State water-quality standard or any increase in concentration above baseline over three consecutive sampling events.	Implement response actions for Condition 1 plus, suspend use of the detected chemical or product and make any notifications required in accordance with applicable state regulations. The third party auditor will initiate an investigation to determine the cause, identify the extent of the impact and evaluate and implement appropriate remedial options as needed. Under this condition all laboratory analyses would be expedited to the maximum extent possible. Upon completion of the investigation, the suspended product can be reinstated only under the following conditions: • the detected concentration has been below the lower of the New York State water-quality standard, 50 percent of the HAL or, for surface water, 1 percent of the

2. (Continued)	LC50, for a minimum of three months; and,
	• any offsite detection is determined not to be related to the Golf Course.
3. Three occurrences of the same pesticide, above the lower of a New York State water-quality standard, 50 percent of an HAL, or for surface water, 1 percent of an LC50, in onsite ground water, surface water or storm water, or any combination thereof, associated with separate applications or, any confirmed pesticide detection in an offsite well, the source of which, after investigation, is determined to be the Golf Course.	The detected pesticide would be permanently eliminated from the list of approved chemicals and would no longer be used on the course. The ITPMP would be revised to reflect this change. For the purpose of this response action, subsequent detections associated with a single application would not be counted as a separate occurrence.
4. Any occurrence or continuation of Condition 1 or 2 during the 9th or 10th years of monitoring.	Implement the appropriate response actions as described above and, extend the length of the sampling program beyond the ten-year time frame, for ground water, surface water and storm water, for all sampling locations, for the compounds of concern, until such a time as there have been no pesticide detections or exceedances of baseline inorganic levels for a period of two years, with a minimum sampling frequency for ground water and surface water of quarterly for affected sampling points, and semiannually for non-affected sampling points. Storm water sampling would continue to be conducted three times a year in the spring, summer and fall.
5. The introduction of a new pesticide or fertilizer product on the course which has been screened in accordance with the provisions of the ITPMP for the introduction of new products (see Appendix I), at any time during the life of the course.	If the product is introduced any time during construction through the third year of post-construction sampling, no response is necessary. If the product is introduced anytime during the fourth through the tenth year of post-construction sampling, the monitoring frequency for ground water and surface water for

5. (Continued)	the new product would be increased to quarterly for a period of two years beginning after its first application. If the product is introduced after the 10 year sampling program has ended, then the program must be reinstated for all sampling points, for the new product, for a period of two years, with a minimum sampling frequency of quarterly for ground water and surface water, and three times a year for storm water. In the event of a detection, the two-year time frame would be extended in accordance with the above response actions.
6. The hiring of a new Golf Course superintendent at any time during the life of the course.	If this condition occurs during the first seven years of post-construction sampling then no response is necessary. If this condition occurs during the eighth through tenth years of sampling then the sampling frequency would be increased from annually to semiannually, for all sampling points and parameters, for a period of two years from the time the new superintendent takes charge. During this time, stormwater sampling would continue to be conducted three times a year. If this condition occurs any time after the ten-year sampling program has ended, then the program must be reinstated for all sampling points and all parameters for a period of two years, with the understanding that the two-year period could be extended in accordance with the above response actions in the event of a detection. The minimum sampling frequency during this program would be semiannually for ground water and surface water and three times per year for storm water.

3.8 Reporting

In general, water-quality monitoring reports will be prepared and submitted by the third party auditor within two weeks of receipt of the analytical data to the Town and the Golf Course owner. For the Baseline sampling, a report will also be submitted to the homeowners participating in the program. In the event of any confirmed pesticide detection in ground water or, any onsite detection above an applicable water- quality standard, verbal notification will be made to the Town and the Golf Course owner within 24 hours of receipt of the laboratory results, followed by written confirmation within one week. In the event of a confirmed onsite pesticide detection in ground water, offsite residents on contiguous properties will be notified verbally as soon as possible and arrangements will be made to sample their well. The results of any offsite sampling will be submitted to the Town, the Golf Course owner, and the sampled residents, as soon as possible.

Any time there is a pesticide detection, the subsequent monitoring report will include an assessment as to why the detection occurred, what response actions were initiated and what measures are being taken to prevent a reoccurrence. In addition to the monitoring reports, pesticide use reports will be issued for the life of the course in accordance with the schedule presented in the ITPMP (Appendix I). These reports will be prepared and issued by the third party auditor to the Town and the Golf Course owner to ensure that the ITPMP is being followed.

4.0 DISPUTE RESOLUTION PROCEDURES

In the event of a detected offsite water quantity or water-quality impact or, in response to a complaint of a water quantity or water-quality impact from a homeowner, the third party auditor, in consultation with the Town and/or agronomical consultants will conduct an investigation if appropriate. The purpose of the investigation will be to identify the cause, assess the extent of the impact and, recommend remedial alternatives. The results of the investigation, and recommendations, will be submitted to the Town and the Golf Course owner, as well as the affected homeowner(s). The report will include a recommendation for remedial action, if necessary. In evaluating if remedial action is necessary, the third party auditor will also consider any information provided by the affected homeowner(s), regarding the quantity or quality of their water supply.

Anyone dissatisfied with the recommendations of the third party auditor, particularly with respect to remediation, will have the right to arbitrate the dispute before a panel of arbitrators from the American Arbitration Association. The cost of the arbitration, including attorney's and other professionals' fees, will be borne by the party whose position is not supported by the arbitrators. For example, in an arbitration proceeding brought by a homeowner(s), if the position of the homeowner(s) is supported by the arbitrators, the Golf Course owner will be responsible for any professional fees incurred by them. If the third party auditor's position is upheld by the arbitrators, the homeowner(s) will be responsible for any professional fees incurred or paid for by the Golf Course owner. All costs associated with the initial investigation conducted by the Golf Course owner will be borne by the Golf Course owner, regardless of the final outcome.

dmd
October 19, 2001
Revised: March 28, 2002
reports\summit\gwswmonitoringplan revised rpt

TABLE

TABLE 1

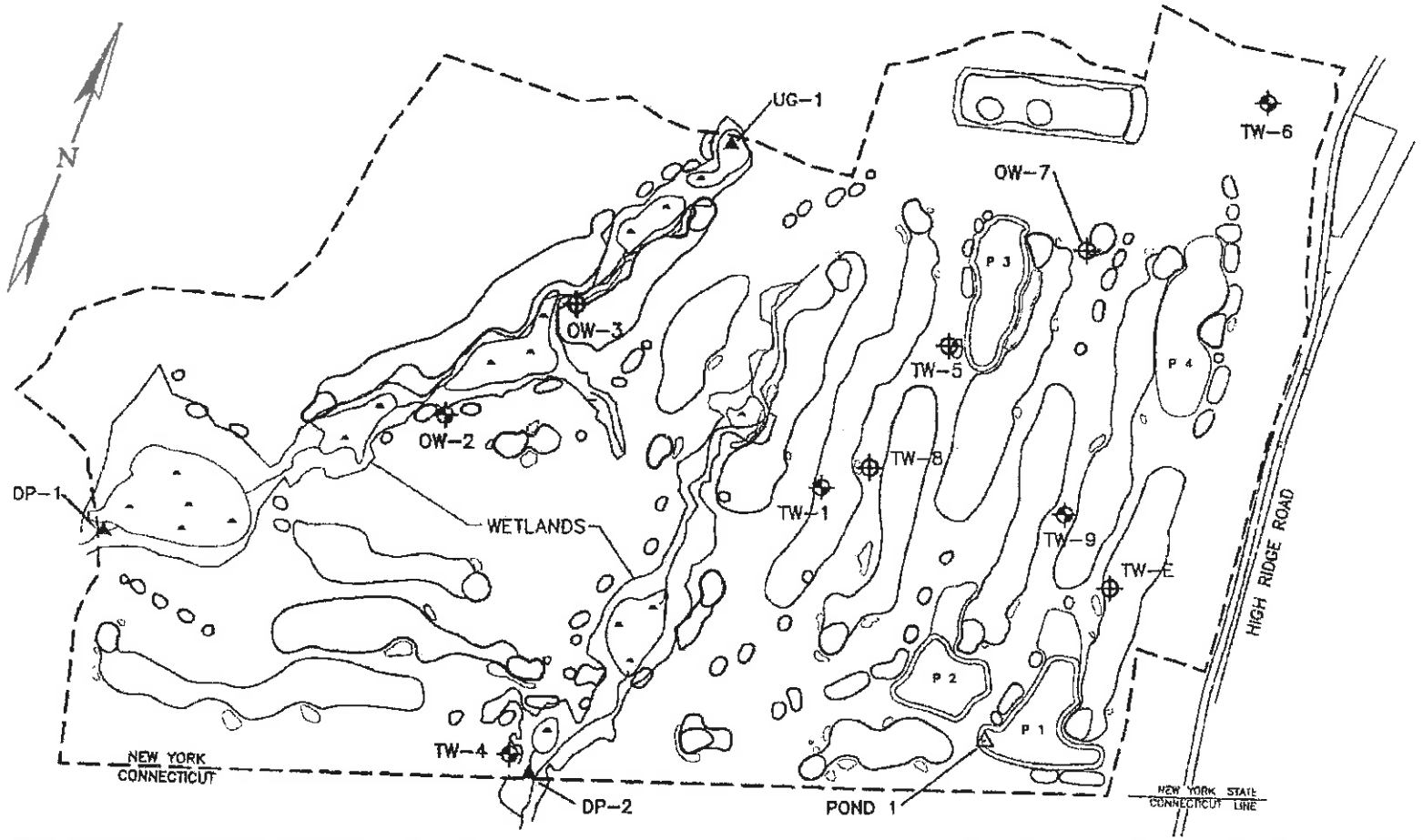
POUND RIDGE GOLF CLUB
POUND RIDGE, NEW YORK

Ground-Water and Surface-Water Quality Criteria

		Ground-Water Criteria			Surface-Water Criteria		
Compound	CAS Number	Ground-Water Standard[1/] (ug/l)[2/]	HAL[3/] (ug/l)	50% of HAL	Surface-Water[1/] Standard (ug/l)	LC50[4/] (ug/l)	1% of LC50 (ug/l)
Pesticides							
2,4-D	94-75-7	50	70	35	50	1,100	11
Prodiamine	29091-21-2	NA	50	25	NA	72,000	720
MSMA	2163-80-6	NA	70	35	NA	1,937	19.4
Iprodione	36734-19-7	NA	280	140	NA	2,250	22.5
Vinclozalin	50471-44-8	NA	175	87	NA	52,500	525
Propamocarb	24579-73-5	NA	700	350	NA	235,000	2,350
Fosetyl-al	39148-24-8	NA	10,000	5,000	NA	14,711	147
Etridiazole	2593-15-9	NA	175	87	NA	4,000	40
Cyproconazole	94361-06-5	NA	350	175	NA	3,211	32.1
Triadimefon	43121-43-3	NA	210	105	NA	1,600	16
Carbaryl	63-25-2	29	700	350	NA	2,328	23.3
Paclobutrazole	76738-62-0	NA	175	87	NA	4,076	40.8
Dicamba	1918-00-9	0.44	200	100	NA	28,000	280
MCPP (mecoprop)	93-65-2	NA	35	18	NA	25,495	255
Imidcloprid	105827-78-9	NA	400	200	NA	105,000	1,050
Inorganics							
pH	NA	6.5-8.5	NA	NA	6.5-8.5	NA	NA
Temperature	NA	NA	NA	NA	NA	NA	NA
Conductivity	NA	NA	NA	NA	NA	NA	NA
Nitrate-Nitrogen	NA	10,000	NA	NA	10,000	NA	NA
Chloride	NA	250,000	NA	NA	250,000	NA	NA
Phosphate Phosphorus	NA	NA	NA	NA	NA	NA	NA
Ammonia-Nitrogen	NA	2,000	NA	NA	2,000	NA	NA

1/ 6 NYCRR Chapter X Parts 700-706 March 1998, NYSDEC TOGS 1.1.1, June 1998
2/ Micrograms per liter
3/ Health Advisory Level
4/ Aquatic toxicity - Lethal concentration
NA = Not Applicable

FIGURE



NOTE: Figure is based on proposed routing plan.

SYMBOLS

- ⊕ WELL LOCATION
- ⊕ WELL LOCATION/GROUND-WATER SAMPLING POINT
- TW IRRIGATION WELL
- OW OBSERVATION WELL
- ▲ DP-1 SURFACE WATER AND STORMWATER SAMPLING POINT
- △ POND 1 SURFACE WATER SAMPLING POINT
- P 1 IRRIGATION POND

0 500

SCALE IN FEET

POUND RIDGE GOLF CLUB
POUND RIDGE, NEW YORK

GROUND-WATER, SURFACE-WATER AND STORM-WATER MONITORING POINTS

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water and Environmental Engineering Services
126 Monroe Turnpike
Trumbull, CT 06611
(203) 452-3100

DRAWN:	MRV	CHECKED:	JB	DATE:	10/3/01	FIGURE:	1

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APPENDIX I

INTEGRATED TURFGRASS AND PEST MANAGEMENT PLAN (ITPMP) FOR THE POUND RIDGE GOLF CLUB

TOWNS OF POUND RIDGE , NEW YORK

for the FEIS

PREPARED BY

A. MARTIN PETROVIC, PH.D

December 11, 1998
Revised February 26, 2001
Second revision August 28, 2001
Third revision April 15, 2002

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NPURG Evaluation Sheets-Soil Test Results
Pest Scouting Forms

I. INTRODUCTION

The U. S. Summit Company of New York, NY retained A. Martin Petrovic, Ph.D. in March of 1998 to develop The Integrated Turfgrass and Pest Management Program (ITPMP) for the Pound Ridge Golf Club. The ITPMP contains a program of fertilizer, pest control options and other maintenance practices to be used on this golf course. This program was designed to serve as the maintenance blueprint for the Pound Ridge golf course and describes materials used, rates of application and where possible, an expected time of application.

The golf course superintendent will be responsible for implementing this program. In general, golf course superintendents, as a group of professionals, are committed to the preservation of the ecology and the wildlife and share the concern for the preservation of the golf course site's environmental quality.

As with any new or existing golf course, a fertilizer and pest control program must show flexibility to deal with two very important variables: weather and nature. The initial year(s) or grow-in period, that often lasts up to 2 seasons, will require higher than normal annual inputs of fertilizers and limited use of pest control materials in order to promote rapid establishment of cover which reduces soil erosion and minimizes the likelihood of weed infestation.

The basic philosophy of this ITPMP is to produce a healthy pest-resistant golf-playing surface that will have little or no impact on the surrounding environment. Selection and use of fertilizers and pesticides will be based on producing a healthy plant while not contaminating either surface water (via runoff) or groundwater (via leaching). There is little or no evidence that golf courses have or will contaminate surface or ground water (Cohen et al., 1990; Cohen and Durborow, 1994; Petrovic, 1994; Shirk, 1996). The golf course superintendent of the Pound Ridge golf course will utilize every available method to minimize the risk of contaminating any surface water or ground water. Thus, the purpose of this report is to present a site specific analysis that meets the goals of having a healthy pest-resistant golf playing surface that poses little or no threat to the environment on or surrounding this site. The ITPMP conforms to the principles of sustainable resource management developed by Audubon International for golf courses.

The report presented here was compiled from the following information: site specific soil properties provided by the USDA- Soil Conservation Service for Westchester County, New York, the site specific soil report of Marc Beroz, Environmental Resource Associates (October 1, 1996) and soil sample results collected during a site visit (March 24, 1998); review of the site plans including the golf course routing plan of June, 1997, Dye Designs; environmental fate assessment (risk to surface and ground water) of the currently registered pesticides in the state of New York for golf course use by model simulation (NPURG), determination of the anticipated pest complex, and extensive literature search on the environment fate of fertilizers and pesticides, integrated pest management programs and fertility requirements for golf course turf. This report provides an

environmentally sound fertilizer and pest management program to be followed by the golf course management personnel. Any chemical (fertilizer or pesticide) found by this environmental risk assessment to pose a risk to either surface or groundwater quality will not be used on this golf course.

For the pests found to invade the Pound Ridge golf course, there are several pesticides registered for their control. Taking into consideration the need to protect surface and groundwater from contamination and to reduce the exposure of humans and wildlife to highly toxic pesticides, pesticides were selected that have a low potential risk to surface and ground water. The evaluation included determining the potential of each registered pesticide for contamination of water on a soil by soil basis based on soil properties of this site.

II. ENVIRONMENTAL RISK ASSESSMENT

The environmental risk assessment is composed of three parts. First, the surface and ground water contamination (runoff and leaching) potential of all pesticides registered for use on golf courses in New York for the soils of this site was evaluated. Second, the pesticides identified to have either a moderate or a high potential for surface or ground water contamination will not be used on this golf course (note the exception below for the potential use of dicamba, imadicloprid or MCPP). Pesticides with a low potential for both surface and ground water contamination will be used only after all other pest control measures have failed. Third, a worst case estimate of concentration of fertilizer nutrients (nitrogen and phosphorus) and pesticides application to the golf course in surface and ground water will be made. These estimates will be compared to water quality standards (health advisory limit and LC50) to determine the risk to humans and aquatic wildlife.

The assessment of the leaching and runoff potential of each registered pesticide on each soil (see appendix) found on the site was performed by using the National Pesticide/soil database and User decision support system for Risk assessment of Ground and surface water contamination (NPURG). NPURG is a computerized information delivery system developed by the US Department of Agriculture and the Soil Conservation Service based on the GLEAMS model (Leonard et al. 1987). Refer to the appendix for a complete explanation of NPURG and other information related to the pesticides that were evaluated.

This model was developed for row crop agricultural systems where pesticides are applied to the surface of bare soil. Pesticides in a golf course setting are directly applied to the plants, which will tie up much of the pesticide that is applied (Petrovic et al., 1994). Thus, the NPURG model is considered to be a very conservative screening procedure in light of this fact and based on the climatic conditions the model is run under.

NPURG appears to accurately predict the outcome of pesticide leaching based on the results from actual leaching studies of pesticides applied to turfgrass (Petrovic et al., 1994, 1996). As seen in Table 1, the NPURG simulation was found in most cases to predict the probability of leaching (10 out of 12 predictions were correct) or in two cases over predict (dicamba and mecoprop) the

leaching of pesticides applied to turfgrass. Therefore, when the model predicts a low probability for leaching, then in fact leaching is highly unlikely, no impact on groundwater quality. However, when the model predicts a high probability for leaching, in most cases this is real. It is recommended to err on the conservative side for environmental protection. Thus, any pesticide that is predicted to have a high probability for leaching, which could lead to a toxicologically significant concentration of pesticide leaching into groundwater, will be removed from the list of pesticides for use.

Table 1. Comparison of NPURG estimates and actual results from turfgrass studies.

			Results from actual studies	
	Soil	NPURG		Maximum
Pesticide	Texture	Ranking	% leaching	Concentration
				ug/L
2,4-D	sand	high	0.0003-1.4	105
	sandy loam	low	0.0004-0.003	<1
	silt loam	low	0.0004-0.1	25
dicamba	sand	high	0-4.3	56
	sandy loam	high	0.004-0.02	<1
	silt loam	low	0.01-0.2	14
mecoprop	sand	high	0.9-62.1	1200
	sandy loam	high	<1	51
	silt loam	low	<1	60
chlorothalonil				
	sand	low	0	<1
	sandy loam	low	0.0004	<1
	silt loam	low	0.0002-.002	4

Fertilizer nitrate leaching into groundwater will also be evaluated by NPURG. The NPURG model generates an estimated amount of groundwater recharge (amount of precipitation and irrigation that will move through the soil and enter groundwater) based on rainfall plus irrigation amounts.

It is also very likely that NPURG may grossly over predict the runoff of pesticides applied to turfgrass based on the results of several studies of pesticide runoff from turfgrass (Watschke et al, 1989, Harrison et al., 1993, Linde et al., 1995 and Gold et al, 1988). Their results clearly showed that once turfgrass is established there is little water leaving a turfgrass site (approximately 1-22 % of the water that comes in contact with the turf) even when irrigated at a 6 inch/hr. NPURG ranks runoff from bare soil which reflects the erosion potential of a given soil with no vegetation. Once this site has been established with turfgrass, then it is likely that there should not be significant run-off of water that may contain a pesticide or fertilizer nutrient. Erosion will be negligible from this

site once established.

The following are the pre-set conditions that the pesticide/soil fate predictions by the NPURG simulations were determined:

* The pesticide was applied to the surface of a fallow (bare) soil 16, 8, 4, and 2 days before and on the day of the first major rainfall event.

* A 3.5 inch precipitation event was generated every second day for five events, and then a 1.0 inch event every other day for at least four times during the half life period of the pesticide. Total precipitation was 21.5 inches.

* The site had an average overall four per cent slope.

The conditions that these simulations are run under are considered a "worst case scenario". The likelihood of even one 3.5 inch rainfall event other day (irrigation will be less than 1 inch per day) is very small, let alone 5 such events over a 10 day period.

A summary of the pesticide fate as determined by the NPURG analysis for the soils on greens/tees, fairways and roughs is contained in the appendix of this report.

The greens and tees will be built to US Golf Association recommended soil physical properties (sand/peat mixture) to provide a compaction resistant/well drained system to create a healthy pest- resistant playing surface. Based on the NPURG analysis, greens/tees will be built with at least 2.6 % organic matter, by weight, to a depth of at least 12 inches to minimize the potential for pesticide leaching. It is assume that after establishment that all soils on site will have at least a 0.15 inch/hr infiltration rate (SCS Hydrologic groups A and B).

The results of the environmental fate assessment by NPURG showed that no pesticide had a moderate or high potential for runoff (surface water contamination) from any soil on this site. Ten pesticides were found to have a high potential for ground water contamination (leaching). Based on this risk assessment protocol, Table 2 contains a list of pesticides that can be used since they that have both a low potential for surface and ground water contamination.

Table 2. Pesticide found to have a low potential for both surface and ground water contamination on the Pound Ridge Golf Course site.

Pesticide	Class	Pests controlled ^
2,4-D	herbicide	broad-leaf weeds
benefin	"	crabgrass
bensulide	"	"
fenoxaprop	"	"
MSMA	"	" & nutsedge
oxadiazon	"	"
pendimethalin	"	"

siduron	"	"
trifluralin	"	"
glyphosate	"	all weeds
glufosinate	"	"
propamocarb	fungicide	Pythium blight and root rot
etridiazole	"	" "
fosetyl-al	"	" "
propamocarb	"	" "
azoxystrobin	"	", anthracnose, necrotic ring spot, pink snow mold, summer patch, take-all patch
chloroneb	"	gray snow mold
chlorothalonil	"	brown patch, dollar spot, leaf spots, rusts, gray snow mold
cyproconazole	"	brown patch, dollar spot, necrotic ring spot, pink snow mold, smuts, summer patch
flutolanil	"	brown patch, fairy rings, red thread-pink
patch, iprodione	"	Brown patch, dollar spot, leaf spot, gray snow mold
pink & mancozeb	"	anthracnose, brown patch, leaf spots, rusts
PCNB	"	brown patch, pink & gray snow molds
propiconazole	"	brown patch, dollar spot, pink & gray snow molds, red thread-pink patch, smuts, summer patch
thiophanate	"	anthracnose, Brown patch, dollar spot, pink snow mold, summer patch (systemic)
triadimefon	"	Brown patch, dollar spot, pink snow mold, summer patch, gray snow mold (systemic)
vinclozalin	"	brown patch, dollar spot, leaf spots, pink snow mold, summer patch (systemic)
acephate	insecticide	sod webworm, cutworm
bendiocarb	"	white grubs
chlorpyrifos	"	white grubs, bluegrass billbug, Hyperodes weevil, cutworm, sod webworm, chinch bug
carbaryl	"	white grubs, bluegrass billbug, cutworm and sod webworm
isofenphos	"	white grubs, bluegrass billbug,hyperodes weevil, chinch bug
trinexapac-ethyl	plant growth regulator	less growth and water use

paclobutrazol " " and for annual bluegrass control
^ Based on Cornell Cooperative Extension Publication:1998 Pest management Recommendations for Commercial Turfgrass.

The existing golf course has needed to use very little pesticides and it is expected that pesticide use will be continued to be low based on following the ITPMP. Pesticides that have been applied in the 1997 and 1998 are: siduron, dithiopyr, imadicloprid, chlorpyrifos, trichlorfon, metalaxyl, etridiazole, chlorothalonil, 2,4-D, dicamba and MCPP. Based on estimated concentration of pesticides in surface and ground water, four pesticides (2,4-DP, chlorothalonil, chlorpyrifos and thiophanate) exceeded water quality standards and will not be used on the proposed Pound Ridge golf course.

The following list of ten pesticides that are considered to have a high potential for negatively impacting groundwater quality: bentazon, dicamba, ethoprop, fenamiphos, fenarimol, imadicloprid, mecoprop, metalaxyl, trichlorfon and triclopyr. Of this group, only MCPP or dicamba may need to be used since there is not other alternative pest control option for broad leaf weeds like clover on greens and tees and imadicloprid for Hyperodes weevil control. If these pesticides were needed to be used based on scouting, monitoring and threshold exceedences, them they would only be applied as a spot treatment to no more that 0.25 acre per year (for MCPP and dicamba) and only applied when there is not treat of rain forecasted for at least 72 hours (greatly reduces the likelihood for leaching).

III. PESTICIDE MANAGEMENT PLAN

The basic premise underlying this integrated pest management (IPM) plan is that a healthy plant will be most resistant to pest attaches and will recover much faster than less healthy turf. Therefore, the golf course superintendent will the follow standard accepted maintenance practices like proper mowing (height and frequency), topdressing and cultivation for thatch management and compaction alleviation as examples. What follows is a discussion of practices that more directly affect pest problems and are part of the pest management program.

A. Pest Management Philosophy

The basic philosophy of this Integrated Pest Management (IPM) program is to produce a healthy pest resistant golf playing surface that will have little or no impact on the surrounding environment. Every available pest management practice will be utilized with the goal of using pesticides as a last resort after all other control options have been followed. A new golf course provides the opportunity to construct a system that is less prone to stress, which is often the main cause of pest damage or invasion of weedy species. This can be accomplished by: 1) establishing grasses that are best adapted for the golf courses and are pest resistant, 2) by providing a soil system to minimize the stress caused by the golfer, and 3) reducing moisture plant stress by having "a state of the art" irrigation system that can provide the necessary amount of water needed by the plant (thus reducing over irrigation which can lead to the potential for ground/surface water

contamination or more pest problems). Thus, the purpose of this IPM Program is to summarize the approach that meets the goals of developing a healthy pest resistant golf playing surface that poses little or no threat to the environment on or surrounding this site.

B. Turfgrass Selection: Performance and Pest Resistance Criteria

Even though there are over 7,500 species in the grass family, only a handful of species is used on golf courses. The main reason for such a few species being used is the relatively short cutting height demands of golf course playing conditions. For greens in New York, only two species could be used, creeping bentgrass (Agrostis palustris) and velvet bentgrass (Agrostis canina). Velvet bentgrass does poorly under even moderate traffic conditions and is not well suited for the Pound Ridge golf course. There are several varieties of creeping bentgrass available. The one best suited for the climate and with good resistance to the major disease problems anticipated at this golf course (Brown patch and Dollar spot) and reduce annual bluegrass invasion will be used at Pound Ridge. A blend of one or more of the following varieties of creeping bent grass will be used on greens: A-4, G-2 or L-93. Tees will be seeded with a blend of Penncross and Southshore creeping bentgrass.

Options for grasses on fairways are somewhat broader. Low quality, slower play golf courses that mow higher than 3/4" can use a mixture of grasses including Kentucky bluegrass (Poa pratenses), fine fescue (Festuca spp.) and perennial ryegrass (Lolium perenne). However, on a golf course of the caliber proposed at Pound Ridge, fairways are to either perennial ryegrass or creeping/colonial bentgrasses. The advantage of perennial ryegrass is that it requires less water, has somewhat less disease problems, is resistant to surface feeding insects (if endophytic varieties are used, which is highly recommended) and does not produce much thatch that can be harmful to turf. Perennial ryegrass, however, is a short lived perennial requiring at least bi-annual over-seeding and is subject to winter kill during prolonged periods of ice cover or hard winters. However, the soils on site favor the growth of creeping bentgrass. Fairways will be established with blend of Pennlinks, Providence or Southshore creeping bentgrass.

Roughs are often established with very low maintenance grasses that are mowed higher than fairways, are not irrigated and require minimal fertilization. This golf course will establish roughs with this in mind using a mixture of fine fescues (red, chewing or hard fescue) that contain endophytes and low maintenance Kentucky bluegrass varieties (like Baron, Bronco, Destiny, Gnome, Merit, Opal, Ram I, or Sophia). A higher percentage (>70%) of Kentucky bluegrass will be used in the primary rough (nearest to the fairway) and more fine fescue (>70%) used in the secondary rough. Endophytic fine fescues (varieties like Jamestown II, Aurora, SR 3000 and Reliant) will be used since they are resistant to surface feeding insects like chinch bug and sod webworm and also resistant to the three common diseases of fine fescue, Red thread, dollar spot and leaf spot. At least three varieties of each species will be used to seed roughs to increase the genetic diversity so as to be ecologically competitive under the ever changing climatic conditions.

C. Target Pests and Pest Control Options

Anticipated Pest Problems

It is fortunate that the site is currently a golf course so that pest problems and management can be better formulated in advance of the reconstruction of this golf course. Based on the current pest problem (information provided by the current golf course superintendent, Peter Kearney), Table 3 contains the anticipated pests the Pound Ridge golf Course will experience.

Table 3. Anticipated pests on the Pound Ridge Golf Course.

Severity	Greens	Tees	Fairways	Roughs
Major Pest Problems	---------- Pythium root rot ----------			
			------ crabgrass ----------	
	---------- snow molds ----------			
	---------- dollar spot ----------			
	Hyperodes			
	clover			
	---------- annual bluegrass ----------			
	---------- Pythium blight ----------			
				grubs
			---------- broad leaf weeds ----------	
Moderate Pest Problems	---------- Brown patch ----------			
	Summer patch			
	---------- leaf spots ----------			
Infrequent Pest Problems	--anthracnose, Necrotic ring spot --------			
	----- Red thread, rust, smuts ----------			
	- ataenius beetle, chinch bug, cutworms -			

It is anticipated that these pests will occur during the periods shown in Table 4.

Table 4. Occurrence of anticipated pest on the Pound Ridge Golf Course.

	Month(s) of Pest Occurrence								
Pest	Jan-Mar	Apr	May	June	July	Aug	Sept	Oct	Nov-Dec
Diseases									
Anthracnose				XXXXXXXX					
Dollar spot					XXXXXXX				
Brown Patch*			XXXXXXXXXXXXXXXXXXXXXXXXXXX						
Gray snow mold	XXXX								XXXXX
Leaf spots			XXXXXXXXX				XXXXXX		
Necrotic Ring spot			XXXXXXX						
Pink snow mold	XXXX								XXXXX
Pythium blight					XXXXXX				
Pythium root rot			XXXXXXXXXXXXXXXXXXXXXXXXXX						
Red thread			XXXXXXXXXXXXXXXXXXXXXXX						
Summer patch				XXXXXXXXXXXX					
Insects									
White grubs	XXXXXXXXX					XXXXXXXXXXXXXXXXX			
Cutworms				XXXXXXXXXXXXXXXX					
Ataenius				XXXX		XXXXXXXXX			
Chinch bug				XXXXXXXXXXXXX					
Hyperodes			XXXXXXXXXXXXXXXXXXXXX						
Weeds									
Broad leafs			XXXXXXXXXXXXXXXXXXXXXXXXXXX						
Crabgrass			XXXXXXXXXXXXXXXXXXXXXXXXXXX						
Annual Bluegrass		XXXXXXXXXXXXXXXXXXXXXXXXXXXXX							

* Includes both cool and warm weather brown patch.

The scientific names and biological information for each pest are contained in the following section.

DISEASE PESTS

Four out of the ten pests that are anticipated to occur most often on this golf course are diseases. Fungi cause most diseases that attack turfgrass. The following are descriptions of each of the most prevalent diseases and the "state of the art" IPM practices that will be followed on this golf course:

Brown Patch (Rhizoctonia solani)

This disease occurs under conditions of warm (>85 F) and very humid weather as well as in cool wet weather. It is expected that the warm weather Brown patch will occur in June to August during most years and the cool weather version in April/May and September/October. Conditions that can reduce the severity of this disease are to avoid excessive nitrogen fertilization, to water minimally and provide for good air movement and water drainage. All three of these practices can be followed to some degree. The fertilization program (to follow) will provide optimum level of nutrients for plant growth based on soil tests, grass nutritional requirements and selected tissue testing (nitrogen levels will be maintained below 5.25% N to reduce the likelihood of Brown Patch). Part of the fertilization program will also contain disease suppressive, natural organic fertilizers (i.e. Sustain and Ringer) that have been shown to reduce the incidence of Brown patch by 75 % (Nelson, 1990), thus, reducing the need for fungicides. Irrigation will be provided to supply only the amount needed to replace the amount used by the plant (details to follow). The soils and underground drainage systems on green/tees will provide a well drained soil environment. There is a direct biological control agent registered for use (a Trichoderma spp. bacterial product called BioTrec, has received USEPA and NYDEC approval). It is a granule formulation that has been shown to reduce the incidence of Brown patch and will be used to further reduce the level of turfgrass damage related to Brown patch. It is not recommended that BioTrec will completely replace the need for fungicide applications. Further development of this product may make traditional fungicides controls unnecessary.

The presence of Brown patch can be confirmed by laboratory analysis or by disease detection kits. The golf course superintendent will use one of the diagnostic techniques to determine the need for additional control, namely fungicides. Daily scouting during periods of warm to hot weather is highly recommended and treatments made if the threshold is exceeded (one spot/yd. on greens/tees and two spot/yd. of fairways) and 24-48 hr. weather forecast indicates conditions are still favorable for disease development.

The pesticide selection and application procedure will involve following a program to reduce the chance of developing a strain of fungi resistant to a specific fungicide or class of fungicide. If more than one fungicide is needed to be used to control Brown patch in the same year, then a different type/class of fungicide will be used. If a systemic fungicide is used first (iprodione, propiconazole, vinclozalin) then a contact fungicide would be used next. Classes of fungicides would also be rotated. For every other systemic fungicide application a benzimidazole class (thiophanate) fungicide would be used, then followed by one of the dicarboximides fungicides (iprodione, vinclozalin) or sterol inhibitors (propiconazole and triadimefon). This mixing of classes/types of fungicides will be also followed for all diseases.

Pink Snow Mold (Microdochium nivale)

Pink snow mold is a fungal disease that is favored by temperatures in the range of 32 to 40 F and wet conditions with or without snow cover. It is likely to occur on this site from March-April and again in November-December until the ground freezes in winter on greens/tees/fairways. Avoiding heavy late fall water soluble nitrogen application can reduce the severity (no late nitrogen applications will be made). However, fungicides are the only control method available at this time although there is some disease suppression with the natural organic fertilizers to be used on this golf course. Scouting is not practical for this disease with snow cover. During other cool-wet periods without snow cover, scouting should be followed before a treatment is made. If the threshold of one spot/sq.yd. on greens/tees and two spots/sq.yd. on fairways is exceeded and short term weather forecasts are calling for cool-wet weather (32-40 F), then a fungicide application will be made.

Pythium Blight/Pythium Root Rot (Pythium spp.)

Pythium blight is the most rapidly developing and devastating disease to attack golf courses and if it does occur on this golf course it would be in July and August. It is favored by excessive nitrogen fertilization (the fertilization program outlined in a later section avoids over-fertilization) and very wet (90% humidity for 14 hrs.) and hot weather (>85 F and night temperatures not below 70 F). Poorly drained or over-watered areas often show the disease first.

Death of an entire green, tee or fairway can occur in hours once the pathogen becomes active. Thus, quite often a preventative fungicide program is utilized to reduce the risk of catastrophic damage to the golf course. If preventative measures are not taken, then very frequent scouting of the golf course is required to determine if the disease causing organism is active. Weather has a large effect and it is anticipated that Pythium blight will only occur occasionally on this golf course.

Scouting and weather forecasts will be used to determine an action plan. When temperatures are above 85 F and humidity levels are also high (>90% for at least 14 hrs.), an active scouting plan will be followed. Naturally wet areas of the golf course and sites with poor air movement (i.e. # 18 fairway) will be scouted first to determine if the disease is active. As this course matures, other sites that have shown to be prone to Pythium blight will also be scouted. If

the Pythium blight organism is found to be actively growing on these indicators sites and the 24 hr. weather forecast calls for hot (>85 F) and humid weather to continue, then a fungicide application would be recommended at least on the areas showing the first outbreak (indicator sites). No night watering will be used during this time to reduce the amount of free water on the leaf surfaces necessary for disease infection. Contact fungicides (etridiazole) are most effective for curative treatments as proposed here. If systemic fungicides are to be used then they will have to be applied in advance of the disease outbreak or in this case when temperatures for three days are greater than 85 F and humidity is high (> 90% for the last 14 hrs.). Disease forecasting equipment can be used to predict the time of application.

The cooler weather Pythium root rot occurs at temperatures from 50 to 70 F, under wet conditions. Scouting is difficult for this disease since a plant disease diagnostic laboratory must confirm the presence of this disease. Therefore, if the visual symptoms of this disease are present and laboratory results confirm the active presence of this organism, then a fungicide application to only portions of the site showing symptoms will be made.

Dollar Spot (Sclerotinia homoeocarpa)

Dollar Spot is a foliar disease that is favored by temperatures between 70 and 85 F and too low a level of a nitrogen level in the plant tissue. It will likely be most prevalent disease on this golf courses and would occur on this site from August and September. Dollar spot is easily recognizable, slow to develop and to cause damage. Thus, daily scouting should be used to determine the extent of occurrence and range of this disease on the golf course. Natural organic disease suppressive fertilizers like Ringer Compost Plus and Greens Restore have been shown to reduce the incidence of Dollar spot by 45% (Nelson, 1990) and will be used as part of the fertilization program. Tissue testing will be used to help maintain the nitrogen level (>4.5%) in the plant at a level to suppress disease development.

Damage from this disease even with these cultural controls may exceed the acceptable level on this golf course; thus, fungicide applications are very likely to be needed. Fungicides should be used only when 1) an outbreak in indicator sites has been observed in excess of the threshold (5 spots/sq.yd. for greens/tees and 10 spots/sq.yd. for fairways), when weather conditions still favor disease development (temperatures 70 to 85 F and humid) and plant nitrogen level is below 4.5% N, by weight.

Gray Snow Mold-Typhula Blight

Typhula blight or Gray snow mold is winter disease that requires snow cover to develop. During open or winters with low snowfall, Gray snow mold is seldom a problem. Avoiding excessive nitrogen fertilization in the mid-fall period (which the fertilization program does) reduces the severity
of this disease. Scouting is impractical since snow cover must be present for the disease to develop and treatment on top of snow is not practical. A preventative fungicide program is often used to

insure minimal turf damage from this disease since long term weather predictions are unreliable.

Anthracnose (Colletotrichum graminicola)

Symptoms of this disease can be seen in cool, wet weather but the most likely period of turfgrass damage can be seen in warm weather under drought conditions. Anthracnose is most damaging to annual bluegrass and creeping bentgrass during drought conditions and when the plants are deficient in nitrogen. The fertilization program is designed to provide an adequate level of nitrogen and the advanced technology irrigation system is designed to avoid drought stress conditions. It is therefore likely that this stress induced disease may only be a minor pest problem on this golf course, especially if annual bluegrass encroachment is discouraged and stress levels reduced through proper management (i.e. fertilization, irrigation and the use of compaction resistant/well drained soils on greens/tees).

If this disease does occur it will be during the warm summer months of mid-June through August. A forecasting model has been developed to predict an outbreak of anthracnose and should be used if this disease becomes a continuing problem. Scouting should be done if this disease becomes a recurring problem and will be coupled with the disease forecasting model to determine when to scout/sample to determine if a fungicide application is warranted. A threshold has not been established for anthracnose.

Leaf Spots

There are several fungi that cause the disease known as leaf spot. The symptoms of leaf spot are most often observed in the cool weather of spring months of April and May and again in the fall. Avoiding excessive early spring nitrogen applications can reduce the damage caused by this disease (as noted in the Fertilizer Program, excessive early spring nitrogen fertilization will be avoided).

Necrotic Ringspot

This disease's infection occurs in cool-wet weather of spring (April-May) and is most severe with excessive nitrogen fertilization and over/underwatering. Symptoms often do not appear until summer. Therefore, on areas with a history of Necrotic ringspot, fungicides must be applied in a preventative manner. At this point no other control options are available.

Summer Patch

This disease will most likely be found on this site from June to September. Over fertilization with nitrogen and extremes in water will increase the likelihood of the disease. The damage to the turfgrass plant occurs in April-May, well in advance of the symptoms. Thus, a preventative fungicide program is necessary on sites that have had a history of Summer Patch problems. A fungicide application needs to be made in the spring before June.

WEEDS

It is anticipated that, after the first year of establishment of this golf course, weed problems will tend to be minimal. This is a result of sound golf course cultural/pest control practices that will produce a dense-competitive environment against weed encroachment. Thus, the anticipated weeds on this golf course will be limited to annual bluegrass (potentially on all sites of the golf course) and broad leaf weeds (limited mostly to fairways and roughs). Crabgrass has been a major problem on tees and approaches to greens.

Annual Bluegrass

Annual bluegrass (Poa annua spp. Reptans/annua) is a very common weed that invades golf courses. It is well adapted to short mowing, heavily trafficked sites, soils high in pH and phosphorus, and wet soil/poorly drained conditions. Thus, the management program of this golf course is designed to reduce annual bluegrass competitiveness by: 1) keeping soil pH at 6.5 or below, 2) providing for good drainage where possible, 3) irrigating to a minimum, 4) using compaction resistant soils (like the sand used on greens/tees),5) following a disease/insect management program to maintain a dense turfgrass stand and 6) following a fertilization program that is optimal for the growth of the turfgrasses used here but not too high in phosphorus, which favors annual bluegrass.

Even with all of these measures, annual bluegrass can still invade this golf course. Thus, it is anticipated that some other control measures will be necessary. There are experimental biological control agents for annual bluegrass that may some day be commercially available. Chemical control is limited and generally involves the use of either plant growth suppressants or a traditional herbicide.

Each spring and late August the amount of annual bluegrass for all greens, tees and fairways will be mapped using the weed maps found in section G. When the late August mapping indicates more than 1% of the area contains annual bluegrass plants some form of treatment will be necessary to further reduce its spread.

Broadleaf Weeds

Broad leaf weeds (BLW) commonly occur on established golf course fairways and roughs and thus are considered a major pest problem on these sites. Clover is a commonly occurring BLW that is favored by soil pH around 7 and by dry soils. Thus, on this golf course it would be anticipated that clover would be found on the unirrigated areas (roughs) and has been a current problem on greens. One of the best ways to reduce broadleaf weed problems on golf courses is to produce a dense-competitive turfgrass stand by following the overall turfgrass management program to be used on this golf course: proper fertilization/irrigation practices and reducing pest damage that opens the turf to invasion by weeds. However, broad leaf weeds will most likely still

invade this golf course. Weed population and locations will be scouted and mapped at least twice a year (early June and mid-September). Since broadleaf weeds may be confined to a small area, pesticide applications will only be made on areas with weeds present in excess of the threshold; two weed plants per sq.yd. on fairways and five per sq.yd. on roughs, thus reducing the amount of pesticide applied and limiting the treated area.

Crabgrass

Crabgrass is an annual grassy weed that invades thin turf. Thus, all the cultural practices to be used on the Pound Ridge golf course will encourage a dense stand of turf and reduce the incidence of crabgrass. Practices such as the fertilizing, irrigation and disease/insect control programs to be used on this golf course will produce a dense turf that restricts light from reaching the soil surface. Crabgrass seeds require light for germination or open soil patches at least 2 inches in diameter. These management practices help significantly; however, when a golfer takes a divot the soil is exposed to light and crabgrass seeds can germinate and invade the turf.

There are two herbicidal control programs, preemergence and postemergence. These terms refer to herbicide applications made before or after the crabgrass seeds germinate, respectively. The preemergent herbicides must be applied in advance of the period of germination of crabgrass, usually in April. A problem with this approach is that you are not sure whether crabgrass will be present or not. If it is not present, then the application has been wasted. Preemergent herbicides will only be used on this golf course if during the previous year there was a large infestation of crabgrass. The crabgrass population will be mapped and monitored each fall to identify small areas to treated the following spring.

Postemergent herbicides are few (fenoxaprop-ethyl and MSMA) and require carefully timing for good control. Mapping the amount and location of young crabgrass plants in early summer will be used to determine if small areas will need treatment.

INSECT PESTS

Insect problems anticipated on this golf course are restricted to just a few insects which include Hyperodes weevil on greens/tees and white grubs in fairways. There are grasses that contain endophytic fungi that are resistant to certain surface feeding insects like cutworm, sod webworm and chinchbug. The grasses that will be used in the roughs are endophytic, thus are resistant to the surface feeding insects. Creeping bentgrasses (used on greens/tees) at this time do not contain endophytes and therefore are not resistant to surface feeding insects. Currently there are no turfgrasses resistant to root feeding insects like grubs.

Biological control (biocontrol) options are available for most of the insect pests anticipated on this golf course and will be the first line of control. Only after biological control options have been shown to be ineffective will a synthetic insecticide be used.

One of the best practices to follow in an insect control program is to have a systematic

sampling/monitoring scheme. It has been found that insect pests of turf like cutworms and white grubs do not uniformly cover the entire golf course. In fact it has been shown that grubs are confined to certain parts of the golf course and even small sections of fairways or roughs. Therefore, it is highly recommended that prior to any insecticide application a sampling protocol be followed and treatment be confined to only the areas where the insects are found. The sampling/monitoring maps for insects found in the appendix section will be followed and the procedures discussed under each insect section.

Cutworms

Black cutworms are anticipated to be an infrequent insect problem on this golf course. This insect does not overwinter in New York. Adults each spring fly in from the southeastern U.S., usually arriving in late spring-early summer (May-June). The adults lay eggs that hatch in two to three weeks as small larvae, the destructive phase of this insect. A second generation can hatch later in the summer. Cutworm larvae spend three days in the soil, often in old aerifier holes. At dusk they emerge and feed on the foliage of the grass and the damage is confined to a small zone surrounding their daytime home.

It is unlikely that the entire golf course at any one time will contain cutworms in excess of the action threshold. Action thresholds will be discussed in a later section. Therefore, monitoring and sampling of the population is necessary to substantially reduce the amount of the golf course that will need to be treated. Scouting for this insect will involve a two step process. In May each year, 10 to 20 black light and/or pheromone trays will be placed out on the golf course to attract/collect adult cutworms as they arrive at this golf course. Every other day the number of adult black cutworm adults in each trap will be counted. Two weeks after the adults begin showing up in the traps, the second phase of scouting will commence. This involves placing an irritant solution (soap or pyrethrum) on sections of each green, tee and fairway at bi-weekly intervals through June, July and August. If the number of cutworm larvae exceed one/sq.yd. on greens/tees and five/sq.yd. on fairways, then a control regime will be followed. The smaller the larvae the easier they are to control, so the initial scouting is very important. Also, biocontrols are most effective on small larvae.

The control for cutworms will first rely on a biocontrol method and if this does not give acceptable control (threshold still above limit after one week), then an insecticide will be used. A combination of two biocontrol agents will be applied at one time, the nematode Steinernema carpocapsae (Exhibit) and the bacteria Bacillus thurgingiensis var. kurstaki (BT). Each takes 2 to 7 seven days to kill the cutworm larvae; thus, one week after the application the areas will be sampled with the irritant solution to determine the effectiveness the biocontrols. If populations of cutworm larvae are still in excess of the threshold, a second application of the two biocontrol materials will be made and effectiveness determined one week later. If after two applications of the biocontrol materials the population of cutworm larvae is still above the threshold limit, then a traditional insecticide will be applied. As with the biocontrols, the effectiveness of the traditional insecticides will be evaluated one week after application before any additional treatment will be made.

White Grubs

There are several species of insects that have a destructive larval stage known as white grubs. These include Japanese beetle, Oriental Beetle, Asiatic Garden Beetle and European Chafer. The most destructive stages of these insects are their grub or larval stage in which the third and largest instar occurs later in the fall.

The population of grubs will be determined as follows before any insecticidal treatment will be made. Each golf hole will be mapped once in late July or early August each year for the extent, location and species of grub using the maps found in the appendix. Sampling consists of a crew of 8 to 10 individuals with cup cutters. On fairways and roughs, taking a sample at 20 yd. spacing will follow a grid sampling technique. Greens and tees will be sampled at 20 ft. intervals. The sample involves extracting the turf and top 2-3" of soil and observing the number and species of grubs in each sample. When the threshold of 36 to 48 grubs/sq.yd. is exceeded, then a treatment will be made. Treatments are most effective in early August when the grubs are very small. Spot treatments will be made.

The nematode Steinernema carpocapsae will be used first to control white grubs when found on sites exceeding the threshold. The effectiveness will be determined by repeated sampling the treated sites one week after application. An application will only be made if the grubs are near the soil surface and the soils are moist. A second nematode application will be made if the threshold level is still exceeded. The treated sites will be sampled again. If two nematode applications have failed to lower the white grub population below the threshold level, then an insecticide will be applied to the sites still having populations above the threshold level.

As with the nematode, one week after the traditional insecticide application the grub population will again be sampled on the treated sites and only if threshold levels are still exceeded would an additional insecticide application be made.

Other Insect Pests

There is some likelihood that other insects will attack the grasses found on this golf course. These could include Hyperodes weevil, sod webworm and Ataenius beetle grub. There are biocontrol products (Bt bacteria) available for sod webworm and Ataenius control and will be used as the first line of defense. If control is unsuccessful and these insects are still causing damage, then an insecticide will be used.

IV. ANTICIPATED FREQUENCY, METHOD and RATE of CHEMICALS to be APPLIED to POUND RIDGE GOLF COURSE

Application Procedures

To protect the wetlands, the adjoining properties and the off site water (Doughnut Pond,

Laurel Reservoir and Mianus River) from drift of the pesticide spray, all areas to be treated with pesticides, a shrouded sprayer will be used to apply pesticides. The shrouded sprayer applies the pesticide spray directly on the turf reducing drift to near zero at wind speeds less than 15 mph. Granular application will also be used to reduce the potential for any off-site movement of pesticides and fertilizers via spray drift. No applications of pesticides or fertilizer will be made within 48 hours (72 hours for MCPP, dicamba and imadicloprid or any high risk pesticide to surface or ground water) of a predicted heavy rainfall event (except for imminent threat of rapidly developing diseases like Pythium blight and Brown Patch). Pesticides will only be applied to areas that exceed thresholds and climatic conditions indicated above for each pest so as to minimize the amount of pesticide used. Spot treatments will be the rule not the exception.

Anticipated Frequency

Pesticides: It is nearly impossible to develop a pesticide application schedule in advance of the building of a golf course if the principles of IPM are to be followed. The major premise of an IPM program is to use all options in controlling a pest and when it is necessary to apply a pesticide it must be applied at the right time for optimal control. Only a preventative program could be developed in advance of operating a golf course. Preventative programs are only necessary for a few turfgrass diseases. It would be very likely that an all preventative program would lead to applying fungicides when it was not necessary, increasing the risk of environmental damage and greater likelihood of developing fungi resistant to fungicides. The actual pesticide application program would be expected to be at least fifty per cent of the preventative program shown in Table 5 when all other control measures are followed.

Table 5 is an outline of a preventative pesticide application program for the Pound Ridge Golf Course. None of the pesticides that have a high of ground water contamination are to be used on this golf course (with the exception of MCPP, dicamba and imadicloprid that were shown to not impact water quality, Tables 16 and 17).

Table 5. A preventative pesticide application program for the Pound Ridge Golf Course.

Pesticide	Date of Application	Rate of Application oz(wt) AI/ 1000 sq.ft	Location	Pest Controlled
2,4-D & ~~2,4-DP+~~ (Scotts Broad Leaf Weed Control)	Oct. 1 & 14		F & R*	broad-leaf weeds
2,4-D dicamba (Banvel)	Oct.14	0.18 0.05 (no more than 0.25 acres/yr.)	G & T	broad-leaf weeds

MCPP (Mecomcc)	Oct.14	0.37	(same as dicamba)	
prodiamine (Barricade) or MSMA treat post-emergent crabgrass	April 15 June 15	0.28	F,R, GT 0.8	crabgrass Spot F & R
iprodione^ (Chipco 26019)	March 15	1.0		pink & gray snow mold
triadimefon^ (Baylaton 25)	April 15	1.0		leaf spots, brown patch
vinclozalin dollar (Curalan DF)	May 15	0.5		Brown patch, spot, leaf spots
dollar iprodione^	June 15	1.		Brown patch, spot
propamocarb^ and (Banol)	June 14	1.5		Pythium blight root rot
fosetyl-al^ (Aliette T & O)	July 7	3.2		"
etridiazole^ (Terrazole)	Aug. 1	1.75		"
cyproconazole^ (Sentinel)	July 14	0.132		Brown patch, dollar spot
triadimefon^ (Bayleton 25)	Aug 7	1.0		Brown patch, dollar spot
iprodione^	Sept 7 (same as above)			

triadimefon^ mold	Nov. 1	1.0		pink & gray snow
carbaryl (Seven 80 WSP)	Aug. 1	2.94	F	white grubs
	May 15		G, T	Hyperodes weevil
imadicloprid (Merit)		0.15		
paclobutrazol (Scotts TGR)	April 15 & Sept. 1	0.12	G, T, F	annual bluegrass control

* F=fairway, R=roughs, G=greens, T=tees.
^ fungicides to be used on greens, tees and fairways.

V. Fertilization Program:

Unlike for pesticide programs, it is possible to develop in advance a comprehensive nitrogen fertilization schedule. For other nutrients like phosphorus, potassium, calcium and magnesium, soil test result information will be used to develop the fertilization program. Factors important in the development of such a program include the site specific soil properties, clipping management, nutrient requirements of grass species/cultivar, irrigation plan, desired level of quality, interaction with pest populations and environmental considerations.

The fertilizer nutrients of concern from an environmental perspective are nitrogen (as nitrate) and phosphorus (phosphates). Nitrate can cause a reduction in the quality of water in a drinking water source or cause eutrophication of streams, ponds or lakes. Phosphorus is needed in small amounts by turfgrass and is mostly of concern for surface water eutrophication. This fertilization program addresses the need to protect water quality from fertilizers contaminating surface and ground water.

There has been considerable research on the fate of nitrogen applied to turfgrass (Petrovic, 1990). About half of the applied fertilizer nitrogen is found in the clippings, 30 to 40 % stored in the soil as organic matter, and gaseous loss back to the atmosphere from 0 to 40 % of the applied nitrogen. Thus, there is little fertilizer nitrogen available for either runoff in surface waters or leaching into groundwater. Factors that influence the degree of nitrate leaching are the source of nitrogen, the rate of application, the timing of the application and irrigation practices (Morton et al., 1988). These factors are integrated into the fertilization program to produce a good quality golf course with a low probability of any negative impact on the surrounding environment.

Phosphorus can be a problem in runoff, but in turfgrass situations, runoff from turf seldom occurs due to the high amount of water infiltration into the soil (Harrison et.al., 1993). Phosphorus runoff has been a problem in traditional agricultural production when erosion has occurred or the application of phosphorus was in excess of the amount need for plant growth (based on soil tests). On established turf erosion is eliminated. On the Pound Ridge golf course, phosphorus (potassium, pH modification and other nutrients other than nitrogen) applications will be based on soil test results and plant tissue analysis to insure that the proper amounts be applied to provide for acceptable plant health and avoiding excesses that can lead to contamination of surface water. Soil testing will be done just prior to establishment to determine the amount of phosphorus to apply at seeding/sodding and twice times per year thereafter for maintenance applications. All greens, tees, fairways and roughs will be sampled. Tissue testing will be every four weeks to adjust (fine tune) the fertilization program. Based on preliminary soil test results (see appendix), the phosphorus levels of the soils on this site are very low to low requiring 0.9 to 2.3 lbs. of P2O5/1,000 sq. ft. at establishment or for the first year. The natural organic fertilizers that will be used for most of the fertilization program will supply most of this amount. Soil testing done just prior to seeding will give actual amounts needed on each green, tee, fairway and rough.

Clippings will be removed from the greens and tees, while clipping will be returned in the fairways and roughs. Clipping management was used in developing the nitrogen application rates shown below.

The basic fertilization program is shown in Tables 6 and 7.

Table 6. Recommended fertilization program for the greens/tees at the Pound Ridge Golf Course.

First year

April	May	June	July	Aug	Sept	Oct.-Nov	Yr. Tot.
lbs/1000 sq.ft.							
IBDU*	IBDU	Ringer or	Ringer or	Ringer	IBDU	IBDU	

		Sustane	Sustane	Sustane			
0.5	0.25	0.5	0.5	0.5	0.5	1.0	3.75 N
		0.4	0.4	0.4		(Sustane)	1.2 P_2O_5
		0.16	0.16	0.16		(Ringer)	0.48 "
	---------- Fertigation ----------						
	0.25	0.5	0.5	0.5	0.5		2.25 N
						Total N	**6.0 (8.0^)**

Future years

IBDU		Ringer or Sustane	Ringer or Sustane	Ringer or Sustane		IBDU	
0.5		0.4	0.4	0.4		0.5	2.2 N
Sustane P_2O_5		0	0.2	0.2	0.2	0	0.6
Ringer	0	0.1	0.1	0.1	0		0.3 "
	---------- Fertigation ----------						
	0.25	0.25	0.25	0.25	0.25		1.25
							Total N 3.45

* Other slow release nitrogen sources could be substituted: methylene urea (Nutralene, Scotts), coated urea (sulfur, resin or polymer coated) and natural organic (Milorganite, Nature Safe). ^ At establishment 2 lbs of N/1,000 sq-ft will be applied as a starter fertilizer.

Table 7. Recommended fertilization program for fairways and roughs for the Pound Ridge Golf Course.

Apr.	May	June	July	Aug.	Sept.	Oct./Nov.	Yearly Total
---------- lbs of Nitrogen/1000 sq.ft.----------							
Fairways, during establishment							
0.75	0.75	0.75	0.75	0.75	1.0	0.75	5.5 Nitrogen

Fairways, following establishment

~~0.5~~	0.5	0.5	0.5	~~0.5~~	0.5	0.5	2.5 Nitrogen

Roughs, during establishment

0.5	0.5	0.5	0.5	0.5		2.5 Nitrogen

Roughs, following establishment*

0.5		0.5	1.0 Nitrogen

* Roughs will only be fertilized when density drops by 25 %. On areas receiving wood chips an additional 1 to 2 lbs. of nitrogen/1,000 sq. ft./yr will be applied for the first two years after establishment.

The nitrogen application for roughs following establishment consists of clippings being returned to roughs during mowing and from fairways. Sources to be used include any of the following slow release materials: IBDU, methylene urea (Nutralene, Scotts), natural organic (Sustane, Ringers, Milorganite, Nature Safe) and coated urea's (sulfur, resin and polymer). Fertigation is expected to be about half of the nitrogen applied to fairways. In no case will the phosphorus application, associated with the use of natural organic fertilizers, exceed the soil testing recommendation level. Tissue testing will be used on fairways to adjust applications.

Fertigation Program: Apply a small amount of water soluble fertilizer via the irrigation system will be practiced as irrigation water needs to be applied. The irrigation season usually runs from May through September. Tissue testing will be used to determine application amount so as to maintain 3-6 % N in the clippings) in mid-April and ending in late September.

The phosphorus and potassium needs could be met with the addition of Sustain/Ringer for summer applications as noted above. Phosphorus rates must not exceed amounts recommended by soil testing or when tissues levels are between 0.3-0.55 %.

To minimize the potential for airborne transmission (drift) of nitrogen and phosphorus applied in the irrigation water, the irrigation will only be done at wind speeds below the maximum wind speed specification for the irrigation system as designed and built (**to be determined when the final specifications for the irrigation system are made**). The irrigation system will be linked with a weather station and programmed to only irrigate below a threshold wind speed to reduce the potential for nutrient drift.

These fertilization programs incorporate a balanced approach to fertilization: the amount of each nutrient applied will provide for adequate plant growth, will not over or under stimulate

growth at the expense of disease resistance or weed encroachment, will act in a disease suppressive manner by the use of natural organic fertilizer (Sustane or Ringer) and will not lead to either a significant amount of runoff or leaching because there will not be a large pool of water soluble nitrogen available at one time. This program will avoid several of the major factors that encourage nitrate leaching: there is no late fall fertilization with highly water soluble sources, the nitrogen sources have not been shown to leach from golf course type turf (Petrovic, 1990 and Petrovic, 1991) and the rates of application are low, thus resulting in little soluble nitrogen available for off site transport. Tissue testing will be done bi-weekly during establishment and monthly thereafter on greens, tees and fairways during May-September to assess the nitrogen content. Nitrogen levels will be maintained between a range of 4.5 to 5.25 % N, on a dry weight basis, to reduce both Dollar spot and Brown patch disease. Small amounts of soluble N fertilizer (0.10 lbs. N/1000 sq.ft. from the fertigation system or from normal surface applications) will be applied if N contents drop below 4.5%. If N contents are above 5.25%, any scheduled N applications will not be made. No fertilizers will be applied in advance of inclement weather predictions (48 hr) to further reduce the likelihood or leaching or runoff.

VI. Daily Management Practices

Each golf course is managed differently based on numerous factors. The following is the recommended management routine that is typical of similar golf courses in the Metropolitan New York area.

Mowing: Greens and tees will be mowed 6 to 7 times per week during the major growing portion of the year (May-October). Fairways will be mowed 3 to 5 times per week with clippings left in place in most cases or distributed to the roughs. Roughs will be mowed one to three times per week and clippings left in place.

Clipping Management and Disposal: Clippings collected from greens, and tees will spread in rough areas. Clippings from all other areas will be left in place whenever possible or as the case with fairways (in the rare case when excessive clippings could built up under wet conditions that delay mowing) spread on the adjacent roughs. Clippings will never be placed within 100 feet from any wetland or sensitive area.

Irrigation Management: The modern computer-controlled irrigation system proposed for use on the Pound Ridge golf course is very flexible to be able to irrigate to the amount needed for adequate plant growth while not over irrigating. Over-irrigation can make many disease problems more severe, can lead to a significantly greater likelihood for either pesticide or nitrate leaching into groundwater and runoff into surface waters (Petrovic, 1990 and 1994) and can waste upwards of 50 % more water than is actually needed.

This golf course will apply water based on an estimate of the amount of water used by the turfgrass plant. This irrigation systems will have a weather station linked to the controller that

estimates plant water use and will irrigate accordingly. This proper amount of irrigation will be applied to minimize any environmental impact, reduce the potential for pest problems, reduce the waste of water from excess irrigation and produce a healthy pest-resistant grass. Fertigation will only take place when wind speeds are below the maximum specified for this irrigation system (irrigation heads and operating pressure).

Cultivation: Several times each year, the greens, tees, fairways and trafficked sections of the roughs will be cultivated to alleviate soil compaction caused from foot traffic from golfers and vehicular traffic. The cultivation method used will include shallow core cultivation, deep drill and water injection on greens/tees during the summer months if necessary. A soil penetrometer will be used to judge the need for cultivation. Compacted soils are much more prone to runoff and therefore, cultivation is necessary to protect surface water quality. To reduce the encroachment of annual bluegrass, core cultivation will not be done from the third week of August through September.

Topdressing: Topdressing is a practice of adding a small amount of soil (or sand) to the surface of the turf so as to reduce the development of thatch while smoothing and firming the putting surface. Greens and tees will be topdressed with the same material used to construct the root zone on a bi-weekly interval during most of the growing season.

Equipment Cleaning: A covered wash bay area will be used to clear the routine maintenance equipment. The wash bay will have a sloped floor to the center and a floor drain with a grease/oil and solids (clippings) trap. The sediment collected will be hauled to the proper licensed disposal facility. The wash water will be collected in a 1,000 underground doubled lined storage tank. The stored wash water will be pumped from the tank as needed and sprayed only on roughs for holes 2 and 4.

VII. Monitoring Techniques to Determine the Need for Fertilization and Pest Control Measures.

The following is a description of the procedures to be followed to determine the need for applications of fertilizers and pesticides to this proposed golf course.

Determining Fertilization Applications: Soil testing, tissue testing and visual inspections will be used to determine the need for a fertilization application. Soils testing is used to determine the amount of available nutrients currently found in the soil and the amount of nutrients needed to be applied to provide for healthy plant growth. Soil testing will be used to determine the basic quarterly application rates for phosphorus, potassium, calcium and magnesium. Soil samples will be collected in May, July, September and December on all greens, tees and fairways until it has been determined that certain sections are similar and fewer samples will be necessary. Soil pH modification to a maintain a pH in the range of 5.5 to 7.2 will also be used, based on the quarterly soil testing results.

Bi-weekly tissue testing for the grow-in period and monthly tissue testing thereafter will be used to fine tune the fertilization program so as to provide for optimum plant health, thus reducing the need for pesticides and protecting the environment from over-fertilization with potential water quality contaminants like nitrate and phosphate.

Pest Scouting, Monitoring and Action Thresholds: Scouting is one of the most common disease management practices followed by golf course superintendents. The extent and form of the scouting program varies widely between superintendents. Many superintendents rely on indicator sites or "hot spots" as areas where diseases (or other pests) first occur and use these sites as early warning signs. Many golf courses are now having pest populations mapped during a scouting visit. In this way a more permanent record of pest pressure is recorded and the effectiveness of control options evaluated. The Seven Springs golf course will follow an aggressive scouting program as outlined in the discussion section for each pest. The scouting forms found at the end of this section will be used by this golf course to monitor pest populations.

Monitoring for pests involves determining the location and number of pests or area affected by pests. Thresholds for pest occurrence have been developed for many golf course pests and will be used to determine if a pesticides application is warranted. The table 8 contains action threshold values for most of the pests that are anticipated to occur on this golf course.

Table 8. Pest action thresholds for the Pound Ridge Golf Course.

Pest	Greens/tees	Fairways	Roughs
	#/sq.yd		
Diseases			
Dollar spot	3	9	-
Brown Patch	1	2	-
Pink Snow mold	1*	2	-
Summer patch	UD**	UD	
Take-all patch	UD	UD	
Pythium blight	UD	UD	
Insects			
White grubs	36-48	36-48	36-48
cutworm	1	5	-
Ataenius	180-270	180-270	180
Hyperodes	36	54	72
Weeds			
broadleaf's	1	2	5
crabgrass	1	1	3
ann. bluegrass	1	9	-

* #/sq.yd. depend on pest. For diseases of Dollar spot and Brown Patch these are the numbers of spots/patches per sq.yd. For insects and weeds it is the number of each organism per sq.yd. ** UD=upon detection, in conjunction with weather conditions.

If environmental conditions favor continued pest pressure, the action threshold has been exceeded and other non-pesticidal options have been tried, then a pesticide will be applied. The threshold values may be changed as pest history on this golf course warrants modification (i.e. too much or too little pest damage at a given threshold).

VIII. Qualification of Golf Course Management and Maintenance Staff

Golf Course Superintendent: Is responsible for the overall management of the golf course maintenance operation and implementation/inspection and verification of the ITPMP . Must be a Golf Course Superintendent Association of America Certified Golf Course Superintendent, with at least 2 years of work in the metropolitan-NY region. Must be trained and have practiced a similar IPM program as proposed here in at least one other position. Must have a minimum of an associate's degree in turfgrass management from an accredited college or university.

Assistant Golf Course Superintendent: will be responsible for implementing the IPM program on a daily bases. Must have at least 3 years of golf course work experience, formal course work in all aspects of pest management (weed science, plant pathology, entomology and IPM principals) and have training in scouting. Must have a minimum of an associate's degree in turfgrass management.

IPM Scout: will be responsible for carrying out the scouting program. Must have a BS or Bachelors of Technology (B.T.) in pest management and at least two years of experience in golf course pest management.

IX. Proposed Storage of Fertilizers and Pesticides

Pesticide Storage: All pesticides will be mixed, loaded and stored in a chemical handling/storage building equipped as follows: a small section for record keeping; mixing/loading area; application equipment washdown area; and pesticide storage space. Access to the building will be by the superintendent, assistant superintendent and trained applicators under the direct supervision of the superintendent. The building will contain heat detectors, fire extinguisher, first aid kit, two stage ventilation (low level ventilation at all times and a three times ventilation volume increase when someone enters the building), explosion proof fixtures, emergency shower/eyewash station and personal protection gear including disposable coverall/suits, gloves, goggles, respirators and hearing protection. Hazard communication signage will be placed inside and outside the building. Material Safety Data Sheets on all pesticides stored/used in building will be readily available. All personnel using the facility will be trained in safe handing and operation of application equipment and emergency response procedures and contacts.

Spills in the building will be readily contained by dry absorbent materials and safely stored until disposed of by a licensed hauler (this also pertains to any sludge/solids from the equipment wash area). Only the amount of pesticide needed will be loaded in the sprayer. All rinseate from containers and from the sprayer equipment will be reused in the next spray or sprayed in a dilute fashion in the roughs. All pesticides will be stored, handled and applied according to the label instructions. All personal protective measures will be followed.

The building will be constructed of non-combustible walls, with a combustible roof. With explosion proof fixtures, fire is unlikely. If a fire does occur, the building will vent heat and smoke through the roof and spraying water on the fire will not be encouraged. The use of a limited amount of fire fighting water is encouraged to reduce the likelihood of environmental damage from a large volume of water and to reduce the amount of contaminated water that will need disposal.

It is anticipated that only small quantities of pesticides will be stored in the building. A general contact fungicide like chlorothalonil or a specialized fungicide like etridiazole (for Pythium control) will be stored in case of an outbreak of a disease posing an imminent threat to the Pound Ridge golf course requiring immediate action. For insect and weed control, insecticides and

herbicides will be purchased and used on an as needed bases. All empty containers will be handled and disposed of by a licensed hauler.

Fertilizer Storage: fertilizers will be stored in a walled off section of the maintenance facility. The floor will be seal and will not contain a floor drain. The concrete for the floor and lowest one foot of the walls will be poured at the same time with out joints so as not to allow water in or out of the storage area. It will be unheated unless liquid fertilizers will be stored. Only small amounts of fertilizers will be stored at any one time, usually no longer than several days (from the time of delivery until it is applied).

X. Potential Impacts of Proposed Pesticide and Fertilization Program on Surface and Ground Water Quality

The potential impacts of the fertilizer program for the Pound Ridge golf course was determine by estimating the amount of runoff (Kellard Engineering) and groundwater recharge (NPURG) for regions of the golf course and the potential loading rates of nitrate, phosphate and pesticides applied to the golf course. NPURG was used to screen pesticide for their risk of surface or groundwater contamination. The results of NPURG indicate that there is a low potential for any pesticide to runoff into surface water or leaching into groundwater based on this site specific analysis. **All estimated values shown below do not take into consideration the filtering capacity of the biofilter system on the Pound Ridge Golf Course which would result in lower concentrations than reported.**

Nitrates in Groundwater

The NPURG model calculates an annual groundwater recharge value for each soil (based on hydrologic group) in relationship to yearly rainfall and irrigation amounts. The NPURG value is an estimate of the amount of water (in inches) that moves deeper than the root zone of plants, in this case 4 feet below the ground. This value represents shallow groundwater recharge not bedrock recharge which is often a much lower value. The amount of nitrate leaching into ground water was estimated based on the per cent of amount applied to greens, tees, fairways and roughs that would leach into groundwater. Petrovic (1990) noted that in most cases the per cent fertilizer leaching from turfgrass is 5 % or less. Estimated nitrate concentrations in groundwater was calculated assuming a 1, 5 and 10 % leaching value of the fertilizer nitrogen applied the coving worst case (10 % of the amount applied), a high amount (5 %) and a well managed system of best management practices to reduce nitrate leaching (1 %, practices followed in the ITPMP). The annual groundwater recharge values for each soil were given for a standard unit of turfed area (1,000 sq-ft). Table 9 contains the estimated concentrations of nitrate in groundwater from the various locations on this golf course.

Table 9. Estimated concentration of nitrate –nitrogen in groundwater at various locations on the fertilized portions of the Pound Ridge Golf Course.

Soil	% Fertilizer Nit. leached	Annual Recharge	Annual Recharge Volume/1,000 sq-ft	Estimated nitrate concentration in ground water
		Inches	Liters	mg/Liters
Establishment				
Greens/tees	1	28.3	66, 675	0.54
	5	"	"	2.52
	10	"	"	5.45
Fairways/roughs*				
Udorthents	1	28.3	66, 675	0.37/0.17
	5	"	"	1.87/0.85
	10	"	"	3.75/1.70
Charlton, Chatfield Hollis complex & Woodbridge	1	20. 8	49,005	0.51/0.23
	5	"	"	2.54/1.16
	10	"	"	5.10/2.32
Post Establishment				
Greens/tees	1	28.3	66,675	0.23
	5	"	"	1.17
	10	"	"	2.35
Fairways/roughs*				
Udorthents	1	28.3	66,675	0.24/0.07
	5	"	"	1.19/0.34
	10	"	"	2.38/0.68
Charlton, Chatfield Hollis complex & Woodbridge	1	20.8	49,005	0.32/0.09
	5	"	"	1.62/0.45
	10	"	"	3.24/0.92

- The first number is nitrate concentration in groundwater from fairways and the second from roughs.

The values above are for the fertilized sections of the project site. The remaining parts of this site

will not be fertilized, therefore, will not contribute nitrate to groundwater in any large degree. If the non-fertilized portions of this site are combined with the fertilized portions, an integrated nitrate concentration in groundwater can be estimated for the entire project. Assuming the worst case conditions of having all the fairways and roughs on soils with the greatest amount of nitrate leaching (Charlton, Chatfield & Hollis complex and Woodbridge soils), Table 10 is the estimated nitrate concentrations in groundwater for the entire project (3.0 acres of greens, 3.4 acres of tees, 32.6 acres of fairways, 47 acres of roughs and outer roughs, 87.4 acres of unfertilized land).

Table 10. Estimated concentration of nitrate-nitrogen in groundwater for the entire Pound Ridge Golf Course site.

Nitrate leaching	Nitrate concentration in groundwater mg/Liters	
	At establishment	post establishment
1%	0.18	0.09
5 %	0.90	0.47
10 %	1.80	0.93

All of the above values are far below the drinking water standard for nitrate-nitrogen of 10 mg/L.

Phosphorus in Groundwater

The leaching of phosphorus from turfgrass into groundwater has been shown not occur (Petrovic et.al. 1998) or occurs at a very low rate. Watschke and Mumma (1989) note at only 1 lb. of phosphorus per acre leached from a turfgrass site. Using this loading rate and the groundwater recharge values shown above, Table 11 is the estimated phosphorus levels in groundwater from this golf course.

Table 11. The estimated concentration of phosphorus in groundwater from the fertilized portions of the Pound Ridge Golf Course.

Location	phosphorus concentration (for 1,000 sq-ft) mg/Liter
Greens/tees	0.15
Udorthents	0.15
Charlton, Chatfield Hollis complex & Woodbridge	0.21

As with nitrogen, assuming the non-fertilized section contribute little or no phosphorus to

groundwater, then the estimated concentration of phosphorus in groundwater for the entire site would be 0.10 mg of phosphorus/Liter.

Nitrogen and Phosphorus in Surface Water

The concentration of ammonium, nitrate and phosphorus in surface water was estimated using actual loading rates from turfgrass sites. The low value (0.02 lbs of nitrate-nitrogen/acre, 0.046 lbs. ammonium-nitrogen/acre and 0.052 lbs. of phosphorus/acre) was estimated from the study of Gross et. al., 1990 having a site with a lower potential for runoff (sandy loam soil on 5-7 % slope) that had runoff events from rainfall events from 0.25 inch (7 mm) to 5.4 inches (137 mm). The high potential runoff (0.52 lbs. of phosphorus/acre) study (Watschke and Mumma, 1989) was a site with a clay soil, 9-12 % slope receiving 6 inch/hr. irrigation events to produce runoff. The volume of runoff from the 7 design points on this site for the first flush (0.5 inch of runoff) runoff was determined by Kellard Engineering and used to estimate concentration. These values do not account for any effect the biofilters have on reducing the amount of nitrogen or phosphorus in runoff.

Tables 12 and 13 contains the range in estimated amount of ammonium, nitrate and phosphorus in runoff from the seven design discharge points on the Pound Ridge Golf Course.

Revised Table 12. Estimated concentration of nitrate and ammonium-nitrogen in the first flush (0.5 inch) runoff water from the seven design points for the Pound Ridge Golf Course Project.

Design point	First flush discharge volume, liters	Area of turf, acres	Total area, acres	Range in estimated amount of nitrate-nitrogen in runoff* mg	Estimated amount of ammonium in runoff^, mg	Range in concentration of ntrate-nitrogen in runoff, mg/L	Concentration of ammonium-nitrogen in runoff, mg/L
1	4,627,614	14.500	90.03	131,660 to 658,300	303,818	0.03 to 0.14	0.07
2	4,400,422	34.874	85.61	316,652 to 1,583,260	728,309	0.07 to 0.35	0.17
3	137,240	0.015	2.67	136 to 681	313	0.001 to 0.005	0.002
4	226,678	0	4.41	0	0	0	0
5	269,340	0.509	5.24	4,622 to 23,109	10,630	0.02 to 0.09	0.04
6	68,363	0.212	1.33	1,925 to 9,625	4,427	0.03 to 0.14	0.06
7	40,607	0.055	0.79	499 to 2,497	1,149	0.01 to 0.06	0.03

* Amount of nitrate-nitrogen in runoff from turf ranged from 0.02 lbs/acre (Gross et. al., 1990) to 0.10 lbs. /acre (Watschke and Mumma, 1989). ^ Amount of ammonium-nitrogen in runoff of 0.046 lbs./acre of turf from Gross et.al., 1990.

Revised Table 13. Estimated concentration of phosphorus in the first flush (0.5 inch) runoff water from the seven design points for the Pound Ridge Golf Course Project.

Design point	First flush discharge volume, liters	Area of turf, acres	Total area, acres	Estimated low amount of phospho-rus in runoff* mg	Estimated high amount of phospho-rus in runoff^, mg	Estimated low concentra-tion of phospho-rus in runoff, mg/L	Estimated high concentra-tion of phospho-rus in runoff, mg/L
1	4,627,614	14.500	90.03	342,316	3,291,500	0.07	0.71
2	4,400,422	34.874	85.61	823,305	7,916,398	0.19	1.78
3	137,240	0.015	2.67	6,374	6,125	0.05	0.45
4	226,678	0	4.41	0	0	0	0
5	269,340	0.509	5.24	12,016	115,538	0.04	0
6	68,363	0.212	1.33	5,004	48,115	0.07	0.70
7	40,607	0.055	0.79	1,298	12,485	0.03	0.31

* A low estimated amount of PO4-phosphorus in runoff from turf of 0.052 lbs/acre (Gross et. al., 1990). ^ A high estimated amount of phosphorus in runoff from turf of 0.50 lbs./acre (Watschke and Mumma, 1989).

Pesticides in Surface and Ground Water

The computer model NPURG was used to determined the potential for surface and ground water contamination for the conditions of this site. None of the NYDEC and USEPA registered pesticides for golf courses in New York were considered to pose a risk of surface water contamination. All were considered to have a low risk of surface water contamination, therefore, applying pesticides to Pound Ridge golf course should have no effect on surface water quality. Ten pesticides were determined by the NPURG computer model to have a high risk of contaminating groundwater. ~~Eight~~ Seven will not be used on this golf course. Two (dicamba and MCPP) may be needed on occasion to treat broad leaf weeds (clover) on greens and tees, but only applied in small areas (no more than 0.25 acres per year), and one for grub control (imadicloprid). The three pesticides will only be applied with no threat of rainfall for at least 72 hrs. Therefore, applying pesticides (except for bentazon, ethoprop, fenamiphos, fenarimol, metalaxyl, trichlorfon and triclopyr that will not be applied) to the Pound Ridge golf course should not effect groundwater quality.

By only using pesticides with a low potential for both surface and ground water contamination (except for the three pesticides noted above), it is highly likely that any pesticides would be found in surface or ground water on or off this site. The results from surface and ground water montoring studies of over 30 golf courses in the U.S. support this conclusion. However, in some cases small amount s pesticides could be detected. Therefore, the concentration of pesticides

in surface and ground water was estimated assuming that a moderate amount (0.1 %) of the pesticide applied would enter surface and ground water. Using the application rates of pesticides, found in Table 5, and the values of runoff and ground water recharge used in the nutrient analysis above, Table 14 contains a worst case estimate of pesticide concentration in surface water at the 7 design points. **As expected the estimated concentrations of pesticides in surface water was low.** However, when estimated concentrations were compared to water quality standard for humans (health advisory limit, HAL) or aquatic wildlife (10 % of the LC50), as seen in Table 16, four pesticides (2,4-DP, chlorothalonil, thiophanate and chlorpyrifos) exceeded water quality standards in at least one drainage basin and therefore, will not be used on this golf course. One pesticide was reevaluated for use (imadicloprid) and MCPP and dicamba were also evalueted in Table 16 at a much higher runoff rate (10 % instead of 0.1%) and each was found to be at an estimated concentration below water quality standards and will be used on the Pound Ridge Golf Course. Table 5 has been revised to reflect these changes.

The estimated concentration of pesticides in ground water in shown in Table 15. These values use the pesticide application rates shown in Table 5 and the volume of ground water recharge equal to 370, 146,853 litters (173.4 acres and 20. 8 inches of recharge/yr.). **As expected the estimated concentration of pesticides in ground water was very low.** When compared to the water quality standard for lifetime human consumption (HAL), as seen in Table 17, none of the estimated concentration of pesticides in groundwater exceeded the drinking water standard and only two were about 1 % of the HAL. Thus, the use of pesticides on the Pound Ridge Golf Course should not result in ground water with pesticides in excess of drinking water standards.

Revised Table 14. Estimated concentration of pesticides in the first flush (0.5 inch) runoff water from the 7design points for the Pound Ridge Golf Course project.

Pesticide	Design point	Acres of greens treated*	Acres of tees treated	Acres of fairways treated	Acres of roughs treated	First flush discharge volume, liters	Estimated amount of pesticide in runoff, mg	Estimated concentraion of pesticide in runoff, ug/L
2,4-D & ~~2,4-DP~~	1	0	0	10.715	2.216	4627614	2,935	0.6
	2	0	0	18.614	11.897	4400422	6,926	1.6
	5	0	0	0	0.334	269,340	76	0.3
Prodiamine	1	0.751	0.818	10.715	2.216	4627614	5,018	1.1
	2	2.095	2.268	18.614	11.897	4400422	12,069	2.7
	5	0	0.175	0	0.334	269,340	176	0.7
MSMA	1	0	0	10.715	2.216	4627614	29,215	0.006
	2	0	0	18.614	11.897	4400422	45,703	0.012
	5	0	0	0	0.334	269,340	1,386	0.002
Iprodione	1	0.751	0.818	10.715	0	4627614	16,132	0.004
	2	2.095	2.268	18.614	0	4400422	29,974	0.008
	5	0	0.175	0	0	269,340	915	0.001
Chloro-thalonil	1	0.751	0.818	10.7150	0	4627614	50,492	0.011
	2	2.095	2.268	18.614	0	4400422	89,820	0.023
	5	0	0.175	0	0	269,340	2,865	0.004
Vinclo za-lin	1	0.751	0.818	10.7150	0	4627614	8,066	0.002
	2	2.095	2.268	18.614	0	4400422	14,987	0.004
	5	0	0.175	0	0	269,340	460	0.001
~~Thiophanate~~	1	0.751	0.818	10.7150	0	4627614	18,068	0.004
	2	2.095	2.268	18.614	0	4400422	33,571	0.008
	5	0	0.175	0	0	269,340	1,025	0.001

Table 14. continue.

Pesticide	Design point	Acres of treated greens *	Acres of treated tees	Acres of treated fairways	Acres of treated roughs	First flush discharge volume, liters	Estimated amount of pesticide in runoff, mg	Estimated concentration in runoff, mg/L
Propamo-carb	1	0.751	0.818	10.7150	0	4627614	24,198	0.005
	2	2.095	2.268	18.614	0	4400422	44,961	0.011
	5	0	0.175	0	0	269,340	1,380	0.002
Fosetyl-al	1	0.751	0.818	10.7150	0	4627614	51,621	0.011
	2	2.095	2.268	18.614	0	4400422	91832	0.023
	5	0	0.175	0	0	269,340	2,929	0.004
Etridia-zole	1	0.751	0.818	10.7150	0	4627614	28,231	0.006
	2	2.095	2.268	18.614	0	4400422	52,425	0.013
	5	0	0.175	0	0	269,340	1,609	0.002
Cyproconazole	1	0.751	0.818	10.7150	0	4627614	2,129	0.001
	2	2.095	2.268	18.614	0	4400422	3,949	0.001
	5	0	0.175	0	0	269,340	121	<0.001
Triadime-fon	1	0.751	0.818	10.7150	0	4627614	16,132	0.004
	2	2.095	2.268	18.614	0	4400422	29,974	0.008
	5	0	0.175	0	0	269,340	915	0.001
Carbaryl	1	0	0	10.7150	0	4627614	40,735	0.009
	2	0	0	18.614	0	4400422	76,304	0.019
	5	0	0	0	0	269,340	546	0.001
~~Chlorpyrifos~~	1	0.751	0.818	0	0	4627614	1,593	<0.001
	2	2.095	2.268	0	0	4400422	2,815	0.001
	5	0	0.175	0	0	269,340	511	0.001
Paclobutrazole	1	0.751	0.818	10.7150	0	4627614	1,935	<0.001
	2	2.095	2.268	18.614	0	4400422	3,597	0.001
	5	0	0.175	0	0	751988	66	<0.001

* Based on pesticide application rates and sites found in Section IV.

Table 15. Estimated concentration of pesticides in ground water for Pound Ridge Golf Course.

Pesticide	Acres treated	Estimated amount of pesticide in ground water, mg	Estimated concentration in ground water, mg/L
2,4-D &	79.6	17,725	0.00005
Prodiamine	86.0	29,789	0.0001
MSMA	79.6	78,779	0.0002
Iprodione	39	48,237	0.0001
Chlorothalonil	39	151,010	0.0004
Vinclozalin	39	337,740	0.0009
Propamocarb	39	72,357	0.0002
Fosetyl-al	39	154,358	0.0004
Etridiazole	39	84,415	0.0002
Cyproconazole	39	6,367	0.00002
Triadimefon	39	48,237	0.0001
Carbaryl	32.6	118,566	0.0003
Paclobutrazol	86	12,767	0.00004

Table 16. Estimated concentration of pesticides in the first flush (0.5 inch) runoff water from the 7 design points* for the Pound Ridge Golf Course project as compared to drinking water standard (health advisory limit, HAL) and aquatic toxicity (LC50).

Pesticide	Design point	Estimated concentration of pesticide in runoff, Ug/L	Health advisory limit (HAL), ug/L	% of HAL	LC50, ug/L	% of LC50
2,4-D	1	0.6	70	0.85	4247	0.014
2,4-D	2	1.6	70	2.3	4247	0.038
2,4-D	5	0.3	70	0.43	4247	0.007
Prodi-amine	1	1.1	50	2.2	72,000	0.002
	2	2.7	50	5.4	72,000	0.004
	5	0.7	50	1.4	72,000	0.001
MSMA	1	2.8	70	4.0	1937	0.14
	2	6.9	70	9.9	1937	0.36
	5	1.2	70	1.7	1937	0.06
Iprodione	1	3.3	8	41.25	378	0.87
	2	6.5	8	75	378	1.72
	5	0.8	8	10	378	0.21
Chloro-thalonil	1	10.3	2	515	49	21.02
	2	20.2	2	1010	49	41.22
	5	2.5	2	125	49	5.1
Vinclo za-lin	1	1.6	175	0.91	397	0.403
	2	3.2	175	1.86	397	0.806
	5	0.4	175	0.23	397	0.101

Table 16, continue.

Pesticide	Design point	Estimated concentration of pesticide in runoff, ug/L	Health advisory limit (HAL), Ug/L	% of HAL	LC50, ug/L	% of LC50
Propamo-carb	1	4.9	700	0.70	4076	0.12
	2	9.7	700	1.39	4076	0.23
	5	1.2	700	0.17	4076	0.029
Fosetyl-al	1	10.5	10000	0.11	14711	0.07
	2	20.7	10000	0.21	14711	0.14
	5	2.6	10000	0.026	14711	0.018
Etridia-zole	1	5.7	175	3.26	369	1.54
	2	11.3	175	6.46	369	3.06
	5	1.4	175	0.8	369	0.379
Cyproconazole	1	0.4	350	0.11	3211	0.01
	2	0.9	350	0.25	3211	0.03
	5	0.1	350	0.03	3211	0.003
Triadime-fon	1	3.3	210	1.57	68	4.85
	2	6.5	210	3.1	68	9.56
	5	0.8	210	0.38	68	1.176
Carbaryl	1	8.4	700	1.20	2328	0.36
	2	15.4	700	2.2	2328	0.66
	5	0	0	0	0	0
Paclobutrazole	1	0.4	175	0.23	4076	0.01
	2	0.8	175	0.46	4076	0.02
	5	0.1	175	0.06	4076	0.003
Dicamba^	1	0.0005	200	0.0003	28000	0.000002
	2	0.15	200	0.06	28000	0.0005
	5	0.11	200	0.05	28000	0.0004
MCPP^	1	0.41	35	1.17	25495	0.002
	2	1.22	35	3.49	25495	0.005
	5	0.9	35	2.57	25495	0.004
Imadcloprid^	1	6.16	400	1.54	105000	0.006
	2	18.01	400	4.53	105000	0.017
	5	11.8	400	2.95	105000	0.011

* for design points 3, 4, 6 and 7 had only a small amount of turf (0.282 acres) of the 9.2 acres (only 3 %).
^ A 10 % runoff rate was used instead of 0.1 %.

Table 17. Estimated concentration of pesticides in ground water for Pound Ridge Golf Course as compared to the drinking water standard (health advisory limit).

Pesticide	Estimated concentration n groundwater, ug/L	Health advisory limit (HAL), ug/L	% of HAL
2,4-D	0.05	70	0.07
Prodiamine	0.1	50	0.2
MSMA	0.2	70	0.29
Iprodione	0.1	8	1.25
Vinclozalin	0.9	175	0.5
Propamocarb	0.2	700	0.03
Fosetyl-al	0.4	2100	0.019
Etridiazole	0.2	11	1.81
Cyproconazole	0.02	350	0.006
Triadimefon	0.1	28	0.35
Carbaryl	0.3	700	0.04
Paclobutrazol	0.04	175	0.02
MCPP*	0.03	35	0.09
Dicamba*	0.004	200	0.002
Imadicloprid*	0.32	400	0.08

* A 10 % leaching value was used instead of 0.1 % for the other pesticides.

XI. ITMP Use and Reporting

The golf course superintendent will have the responsibility of implementing the ITMP. Inplimentation will involve developing an operational manual that utilizes the information found in this ITMP. This will be one of the first tasks of the new superintendent once the person is hired and will be completed in advance of the opening of the golf course. At the point of hiring the golf course superintendent will be responsible for implimenation of the ITMP. The operational ITMP will be provided to the Town each year showing additions, changes and deletions to the previous years plan in an summary section. Each year the applicant will provide the Town with report that will include the following information:

1. The materials used at establishment; actual grasses (species and variety) used by location and seeding rate (or sod used) and establishment date, fertilizer materials used (rates and dates of application by location including soil test results), amount of mulch used and location applied, amount of lime if applied to which areas on what date(s). After the first year this section will contain information on any over seeding or sodding that was done the previous year.

2. Irrigation Protocol: how amount of irrigation was determined, weekly summary of

irrigation amount by location.

3. IPM Program: results from pest scouting showing location and amounts of pests by date, table containing all pest control applications (including cultural, biological and chemical control used) listing date, location ,rate of application and material used.

4. Suggested changes to the ITMP: the applicant may upon review of the history of the sitc suggest changes to the ITMP which may include adoption of new technologies, materials and deletions of materials to be used. Any new pesticide to be considered for use will go through a risk assessment using the currently acceptable method.

5. The use of and reporting of pesticides with a high potential for surface or ground water contamination applied to highly leachable soils (greens and tees) or adjacent to wetlands or biofilters:

   The application of the two herbicides (MCPP and dicamba) will only be considered if 2 or more broadleaf weeds per sq. yard are found on greens and tees.

   The golf course superintendent will notify the Town in writing at least 7 days in advance of the anticipated application date.

   Treatment will be mad to areas that have weeds and will not exceed 025 acres/year and applications will only be made if there is no forcast for heavy rain for a 72 hour period after application.

   The golf course superintendent will notify the Town of the application in the report form. The report will contain the date and amount of application, pesticide(s) used, location of application (map), sq. ft. of the treated area and the weather conditions during aand fo r the 72 hours after application. The report will be sent to the Town within thirty days of any such application.

Literature Cited

1. Morton, T.G., A.J. Gold and W.M. Sullivan. 1988. Influence of overwatering and fertilization on nitrogen losses from home lawns. J.of Environ. Qual. 17:124-130.

2. Petrovic, A.M. 1990. The fate of nitrogenous fertilizers applied to turfgrass. J. of Environ. Qual. 19:1-14.

3. Petrovic, A.M. 1991. Leaching of organics: fertilizers and pesticides. Proc. 62 nd Intern. Golf Conf., Las Vegas. p.75.

4. Nelson, E.B. 1990. The advent of biological controls for turfgrass disease management. Cornell Univ. Turfgrass Times.1(1):1,4.

5. Watschke, T.L., S. Harrison and G.W.Hamilton. 1989. Does fertilizers/pesticide use on a golf course put water resources in peril? US Golf Assoc. Greens Sect. Record 27(3)5-8.

6. Petrovic, A. M. 1994. Impact of Golf Courses on Groundwater Quality. Proc. 2 nd World Scient. Cong. Golf. St. Andrews, Scotland.

7. Harrison, S.A., T.L. Watschke, R.O. Mumma, A.J. Jarrett and G.W. Hamilton, Jr. 1993. Nutrient and pesticide concentrations in water from chemically treated turfgrass. In, A. Lesie (ed). Pesticides in Urban Environments. Am. Chem. Soc.

8. Gold, A.J., T.G.Morton, W.M.Sullivan and J.McClory.1988. Leaching of 2,4-D and dicamba from home lawns. J. Water, Air and Soil Poll. 37:121-129.

9. Leonard, R.A., W.G. Knisel and D.A.Still. 1987. GLEAMS:Ground Water Loading Effects of Agricultural Management Systems. Trans. ASAE 30:1403-1418.

10. Petrovic, A.M., N.C.Roth, D.Lisk and D.A.Haith. 1990. Evaluation of pesticide leaching models for turfgrass. Am. Soc. Agron. Abs.p.180.

11. Shirk, F.W. 1996. Water quality monitoring at Queenstown Harbor. USGA Greens Sect. Rec. 34(4):5-8.

12. Cohen, S.Z., S. Nicherson, R. Maxey, A. Dupuy and J.A. Senita. 1990. A ground water monitoring study for pesticides and nitrates associated with golf courses on Cape Cod. Ground Wat. Monit. Rev. 10(1):1-24.

13. Cohen, S.Z. and T. Durborow. 1994. Watershed findings:pesticide test well. Golf Course News 5(2):1,24,25.

14. Linde, D.T., T.L. Watschke, A.R. Jarrett and J.A. Borger. 1995. Surface runoff assessment from creeping bentgrass and perennial ryegrass turf. Agron. J. 87:176-182.

15. Petrovic, A.M., N.R. Borromeo and M.J. Carroll. 1994. Fate of pesticides in the turfgrass environment. A.R.Lesie (ed.)in Handbook of Pest Management for Turf and Ornamentals. Lewis Pubs. and CRC Press, Boca Raton, FL. pp 29-44.

16. Petrovic, A.M. and I. Larsson-Kovach. 1996. Effects of maturing turfgrass soils on the leaching of the herbicide mecoprop. Chemosphere 33:585-593.

17. Petrovic, A.M. ,D.J. Lisk and I. Larsson-Kovach. 1998. Leaching of pesticides and fate of fertilizers applied to golf turf. Am. Chem. Soc. Abstracts (Boston, MA).

18. Watschke, T.L. and R.R. Mumma. 1989. The effect of nutrients and pesticides applied to turf on the quality of runoff and percolating water. USGS Final Report (ER 8904).

19. Gross, C. M., J.S. Angle and M.S. Welterlen. 1990. Nutrient and sediment losses from turfgrass. J. Environ. Qual. 19:663-668.

Chapter 75 Noise

§ 75-1 Title
The title to the chapter shall be known as the "Town of Pound Ridge Noise Control Law."

§ 75-2 Statement of policy.
It is hereby declared to be the policy of the Town of Pound Ridge to safeguard the rights of its residents within the privacy of their homes to be free from intrusive and unwanted sounds. Problems concerning disturbance of peace and quiet by noise from various activities are best solved by thoughtful discussions and cooperative agreements between neighbors or other affected parties. However, to resolve remaining problems of noise, which is disturbing to others, it is the policy of the Town of Pound Ridge to establish standards, enforcement procedures and penalties.

§ 75-3Definitions.

BUILDING DEPARTMENT
The Building Department of the Town of Pound Ridge.

COMMERCIAL ACTIVITY
Any work or activity associated with the normal exterior maintenance or repair of a property, performed by a third-party contractor, that is not regulated by the Town of Pound Ridge Building Department.

COMMERCIAL OPERATOR
Anyone engaged in a commercial activity.

HOLIDAYS
New Year's Day, Dr. Martin Luther King Birthday, Presidents Day, Columbus Day, Veterans Day, Memorial Day, Juneteenth, Independence Day, Labor Day, Yom Kippur, Thanksgiving Day and Christmas Day.

NONCOMMERCIAL ACTIVITY
Any work or activity associated with the normal exterior maintenance or repair of a property, performed by an individual homeowner and family, that is not regulated by the Pound Ridge Building Department.

POLICE OFFICIAL
Any sworn member of the Town of Pound Ridge Police Department, any member of the New York State Police, or any other official who possesses the powers of a police officer, as defined in the Criminal Procedure Law, whose geographic area of employment includes the Town of Pound Ridge, Westchester County, New York.

INTERNAL COMBUSTION LEAF BLOWER
Any device powered by a gasoline, diesel or similar fuel engine which is used, designed, or operated to produce a current of air for the purpose of pushing, propelling or blowing leaves, dirt, gardening and grass clippings and cuttings, refuse or debris, whether portable and carried, or walked behind, or attached to a tractor or similar machine.

§ 75-4 Prohibited commercial activities.
During the hours of 6:00 p.m. to 8:00 a.m., Monday through Saturday; from 6:00 p.m. on Saturday until 8:00 a.m. on Monday; and on all holidays (as defined herein), it shall be unlawful for a commercial operator to:

A.
Operate, cause to be operated or permit the operation of a leaf blower, chain saw, lawnmower or other gardening or landscaping equipment which is powered by electricity, rechargeable battery or combustion engine.

B.
Operate, cause to be operated or permit the operation of any equipment, machinery, tool or any other device used in construction, building, grading, blasting, excavation, or tree removal that makes a noise or sound which is audible beyond the property line on which it is located.

C.
Operate, cause to be operated, or permit the operation of an internal combustion leaf blower between May 15th and October 15th.

§ 75-5 Specific limits; responsibility of owner or lessee or possessor.
It shall additionally be unlawful for the owner, lessee or person having possession and control of any property to:

A.
Permit such noise activities as defined in § 75-4 thereon.

B.
Engage in or to conduct themselves in such a manner so as to disturb the peace of the neighborhood. A specific prohibition is continuous noise in excess of 45 dBa at the property line for 30 minutes or more between the hours of 11:00 p.m. to 7:00 a.m.

§ 75-6 Exemptions.

A.
The use of snowblowers, chain saws, generators, and other domestic tools and equipment is exempted from the limits of this chapter when they are being used to clear driveways, streets or walkways during and within 24 hours after the cessation of a power outage, weather event or similar emergencies.

B.
Nothing in this chapter shall be construed to prevent the production of music in connection with any military or civic parade, funeral procession, or religious service.

C.
This chapter shall not be construed to prohibit the use of any organ, bell, chimes, or any other similar instrument or device by any church, synagogue or school on or within its own premises in connection with religious rites or ceremonies of such church or synagogue or in connection with a school education program.

D.
Sounds created by any governmental agency by the use of public warning devices are exempted from the limitations of this chapter.

E.
Sounds created by public utilities in carrying out the operations of their franchise are exempted from the limitations of this chapter.

F.
Sounds connected with activities and equipment of the Town of Pound Ridge are exempt from the limitations of this chapter with the exception of internal combustion leaf blowers.

G.
Sounds created by contractors in the performance of public duties and operating under government direction are exempt from the limitations of this chapter.

H. The restrictions and limitations set forth in Section 75-4 shall not apply:

i. To any operating eighteen-hole golf courses in the Town of Pound Ridge
ii. During times of emergency as determined by executive order of the Town Supervisor, provided the use of such equipment which is non-compliant with this Chapter is deemed necessary by the Supervisor or other emergency response official to address the emergency adequately and expeditiously.
iii. Additionally, the Supervisor or his or her designee, may, in his or her discretion and upon application, grant a temporary permit to allow the operation of one or more gas-powered leaf blowers to accommodate a special circumstance. By way of illustration, a "special circumstance" includes, among other things, the remediation of an abandoned or neglected property, the cleanup of streets and roadways following a severe storm or any emergency situation which presents an immediate danger to public health and safety.

Town of Pound Ridge

Diane Briganti, Assessor

Tel.: 914-764-5511
Fax: 914-764-0102

MEMORANDUM

TO: **KEVIN HANSAN, SUPERVISOR AND THE TOWN BOARD**

FROM: **DIANE BRIGANTI, ASSESSOR**

DATE: **SEPTEMBER 12, 2022**

SUBJECT: **MARIE LAZARO**

Request for a transfer from contingency fund of $2,500 for Marie Lazaro employment at approximately $900/per month through 2022.

Current expenditures for Assessor Office help are $3647.50 through August 2022.

Town of pound Ridge Highway Dept.

MEMO

Date: September 12, 2022

To: Town Board

From: Highway Dept.

Members of the Board,
This memo is to get your permission to move $ 40,000.00 out of contingency into the Highway line [5110.0400] for the bulk removal of about 25 dead trees around town.

Thanks, Vinnie Duffield

Highway Supt.

Town of Pound Ridge
179 Westchester Avenue
Pound Ridge, NY 10576

Maintenance Dept.

Memo

To: Pound Ridge Town Board

From: Jonah Maddock, Maintenance Supervisor

Date: August 31, 2022

Re: Request to hire Andrew Correia full time.

This memo is to respectfully request approval to fill the position in the Maintenance (Department) for fulltime help. Andrew Correia has worked for the maintenance department for 2 summers and we would like to hire him full time with a start date of September 12th and an hourly rate of $26. I have spoken to Steve and he agrees with the hourly rate and start date.

Thank you for your consideration of this request.

Respectfully,

Jonah Maddock

Andrew Correia

New Milford, CT 06776 · (914) 584-9098 · afcorreia99@gmail.com

Professional Summary

Hardworking, dependable, and well-rounded individual with the capability to fulfill multiple responsibilities including landscaping, construction and custodial tasks. Able to provide prompt and friendly service to customer, clients or residents. Capable laborer with the ability to lift and move heavy objects and proficiently operate a variety of hand and power tools.

Skills

- Problem Solving
- Critical Thinking
- Scientific Research
- Hand and Power Tools
- Customer Service and Conflict Resolution Skills
- Cash Register Transactions
- Store Opening and Closing Procedures
- Facilities Maintenance
- Landscaping
- Experience Working in Hazardous Environment

Work History

06/2021 to 08/2021 **Food and Drink Runner**

Captain Lawrence Barrel House – *Mount Kisco, NY*

- Served food and drink orders to tables
- Took drink orders
- Organized order tickets and ensured accuracy on expo line
- Delivered utensils and condiments to guests and cleared tables
- Custodial and closing duties

05/2019 to 01/2021 **Laborer**

Town Of Pound Ridge Building and Maintenance Dept. – *Pound Ridge, NY*

- Worked full-time in the summer of 2019 between college semesters and full-time during gap year in 2020
- Used a variety of landscaping and snow removal equipment to maintain town properties, roads and sidewalks
- Assisted with tree maintenance and removal, pest control and minor facility repairs
- Assisted with chemically balancing and cleaning municipal swimming pools
- Drove large trucks for dumping and hauling

06/2018 to 08/2018 **Retail, Host and Bar-back**

Ship Bottom Brewery – *Beach Haven, NJ*

- Greeted customers, checked ID cards and verified bar guests were of legal age
- Worked cash register at the merchandise counter
- Answered questions and occasionally gave brewery tours
- Worked in the taproom as a bar-back and runner, and poured when needed
- Assisted with canning

03/2018 to 06/2018 **Field Scientist Intern**

HydroEnvironmental Solutions Inc. *– Somers, NY*

- Assisted with monitoring, sampling and logging of soil and water on private residences, commercial properties and city water systems
- Operated heavy equipment including geotechnical drill rigs
- Assisted with implementation of remedial measures such as hydrogen peroxide injections in wells and city water systems
- Used design software like Adobe Illustrator to prepare site maps for deliverables

06/2017 to 08/2017 **Camp Counselor**

Breezemont Day Camp *– Armonk, NY*

- Organized and supervised daily activities for a group of twelve-year-old boys
- Also served as a one-to-one assistant to a special needs child in the group

12/2016 to 05/2017 **Mentor**

Role Model Mentors *– Bedford, NY*

- Mentored a ten-year-old boy without an older brother who was struggling with self esteem
- Matched through the company based on our ages and the areas in which mentee wanted to improve and build his confidence
- Once a week, for two hours, I helped him with homework, taught him the fundamentals of basketball and football, and helped him improve his drumming and bass playing skills

06/2016 to 08/2016 **Custodial and Retail**

Ship Bottom Brewery *– Beach Haven, NJ*

- Helped build the interior of the brewery before it opened
- Moved brewing ingredients, cleaned floors and brewing tanks, and worked the cash register at the merchandise counter

Education

08/2017 to 01/2020. *The College of William & Mary*
Williamsburg, VA

01/2021 to 05/2022 *University at Buffalo*
Buffalo, NY

Completed 87 credits towards a B.S. in **Geology**

Certifications

OSHA 40-Hour HAZWOPER Certification: March 2018-Present

TILSON
On a Mission

09/01/2022

Town of Pound Ridge
Attention: Building Department
179 Westchester Avenue
Pound Ridge, NY 10576

Applicant Name: Tilson Technology Management on behalf of American Tower Corporation
Tilson Technology Management
16 Middle Street, 4th Floor
Portland, ME 04101

Representative: Bryan Holmes, Site Deployment
(813) 838-0996
bholmes@tilsontech.com

RE: 29 ADAMS LANE – CELL TOWER EQUIPMENT MODIFICATION (POUNDRIDGE)

Dear Mr. Perry:

Enclosed herein please find Tilson Technology Management's (Tilson) Special Use Permit and Building Permit applications to perform equipment modifications on an existing 155-foot monopine tower ("Tower"). I have enclosed the following documents for Tilson's submittal:

- (1) 6409 Eligible Facility Cover letter
- (1) Building Permit Application
- (1) Special Use Permit Application
- (1) Certificate of Insurance
- (3) Structural Analysis Report
- (3) Mount Analysis Report
- (3) Construction Drawings

Please feel free to reach out to me if any additional information is needed.

Thank you,

Bryan Holmes
Site Acquisition Specialist
(813)838-0996
bholmes@tilsontech.com

TILSON
On a Mission

60-Day Eligible Facility Request
Modification of Existing Wireless Tower

Request Date: 09/01/2022
Jurisdiction: Town of Pound Ridge
Site Address: 29 Adams Lane, Pound Ridge, NY

This document serves as American Tower Corporation's eligible facilities request to modify an existing wireless tower at the above-referenced site address. This eligible facilities request must be approved administratively under Section 6409 of the federal Spectrum Act and Federal Communications Commission ("FCC") rules. Review by the Town of Pound Ridge is limited to determining whether the proposed modification qualifies as an eligible facilities request that does not substantially change the physical dimensions of the wireless tower. All permits necessary to commence construction must be approved within 60 days of the request date set forth above, subject to tolling for incompleteness.

For this request, American Tower Corporation attaches the following applications for all the permits required by the Town to commence construction of the modification:

- (1) 6409 Eligible Facility Cover letter
- (1) Building Permit Application
- (1) Special Use Permit Application
- (1) Certificate of Insurance
- (3) Structural Analysis Report
- (3) Mount Analysis Report
- (3) Construction Drawings

Project Description

American Tower Corporation proposes to remove existing T-arms, 6 antennas, 6 TTA's and coax cable. Install 9 antenna's 6 RRU's, and 3 cables. The groundwork will include the removal of one cabinet and installation of 2 cabinets. No additional changes are proposed.

FCC Rules for Eligible Facilities Requests

The Spectrum Act states that "a State or local government may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station."[1] An "eligible facilities request" includes any collocation, removal, or replacement of existing equipment.[2]

[1] 47 U.S.C. § 1455(a)(1).
[2] 47 U.S.C. § 1455(a)(2).

The FCC adopted rules providing legally binding guidance on key terms of the Spectrum Act, notably defining "substantial change" with the six thresholds listed below.[3] The FCC requires that qualifying eligible facilities requests be approved within 60 days, subject to tolling for incompleteness.[4] The 60-day period begins when an applicant takes the first procedural step required by a local government and submits written documentation.[5] A local government can only require submittal documents that are relevant to determining if a proposed modification qualifies as an eligible facilities request.[6] If a local government does not render a decision within the 60-day period, an eligible facilities request can be deemed granted by operation of law.[7]

The Proposed Modification Does Not Constitute a "Substantial Change"

Below are the FCC's six "substantial change" thresholds for a wireless tower not in the right-of-way[8], each followed by an explanation that the proposed modification does not exceed that threshold.

1) It involves a height increase greater than 10% or by the height of one additional antenna array with separation from the nearest existing antenna not to exceed twenty feet, whichever is greater.

No height increase is proposed for this project.

2) It involves adding an equipment to the body of the tower that would protrude from the edge of the tower more than twenty feet, or more than the width of the tower structure at the level of the equipment, whichever is greater.

This proposal will not protrude more than twenty feet from the edge of the tower.

3) It involves the installation of more than four new equipment cabinets.

2 new equipment cabinets are proposed.

4) It entails any excavation or deployment of transmission equipment outside of the current site by more than 30 feet in any direction. The site boundary from which 30 feet is measured excludes any access or utility easements currently related to the site. The "site" is as defined at 47 C.F.R. § 1.6100(b)(6).

No new excavation or deployment of transmission equipment outside of the current site is proposed.

5) It would defeat the concealment elements of the eligible support structure.

[3] See Report and Order FCC 14-153, 29 FCC Rcd. 12865 (FCC October 17, 2014); see also Report and Order FCC 20-153, 85 FR 78005 (FCC October 27, 2020).
[4] See 47 C.F.R. § 1.6100(c)(2), (3).
[5] Declaratory Ruling FCC 20-75, 35 FCC Rcd 5977, ¶ 16 (FCC June 9, 2020).
[6] See 47 C.F.R. § 1.6100(c)(1).
[7] See 47 C.F.R. § 1.6100(c)(4).
[8] See 47 C.F.R. § 1.6100(b)(7).

No concealment elements are impacted by this proposal.

6) It does not comply with conditions associated with the siting approval of the construction or modification of the existing facility, unless the non-compliance is due only to a change in height, width, etc., that does not exceed the first four thresholds.

There are no prior conditions of approval that would render the modification to be non-compliant, aside from any conditions that would be preempted by the first four "substantial change" thresholds.

The modification qualifies as an "eligible facilities request" under the Spectrum Act and FCC rules, because it does not exceed any of the thresholds such that it would "substantially change" the physical dimensions of the existing wireless tower. Failure to process this eligible facilities request and approve all necessary permits within 60 days will result in the request being deemed granted by operation of law.

Respectfully,

Bryan Holmes
Tilson Technology Management
Site Acquisition Specialist
(813)838-0996
bholmes@tilsontech.com

TOWN OF POUND RIDGE

BUILDNG DEPARTMENT APPLICATION INSTRUCTIONS

This application must be complete in order to be accepted. All documents, as indicated, must be completely filled in clearly and submitted to the Building Department with appropriate fee.

NO WORK IS TO BE STARTED UNTIL BUIDLING PERMIT HAS BEEN ISSUED

NO USE OR OCCUPANCY OF STRUCTURE OR LAND WITHOUT CERTIFICATE OF OCCUPANCY

The following Documents must be filed:

a. Application for Building Permit signed by owner or his agent and notarized.

b. Three (3) copies of Property Survey.

c. Three (3) copies of Plot Plan, prepared by a Licensed N.Y.S. Professional Engineer or Land Surveyor. The location, to scale of existing improvements; proposed driveways and structures; and, indicating all setback lines. This condition may be partially waived by the Building Inspector for certain additions and alterations; whereby, suffcient information is provided to confirm that there will not be any violation of the Zoning Ordinance.

d. All Building Permit Applications for additions and alterations shall be submitted with a copy of the contractors Westchester County "**HOME IMPROVEMENT CONTRACTORS LICENSE**."

e. Copies of Certification of **Workman's Compensation, Liability, and Disability Insurance** with the **Town of Pound Ridge as the Certificate Holder**: no permit or contract involving the employment of employees may be issued, unless proof in the form satisfactory to the Chairman of the New York State Workman's Compensation Law and the Disability Benefits Law with respect to all of his employees.

f. In the case of a new driveway-a permit is issued by the Highway Department

g. In the case of a new structure or an alteration involving the total number of bedrooms or a change in use - a separate Sewage Disposal Construction Permit from the Westchester County Departrnent of Health is required.

h. Three (3) complete sets of Plans and Specifications, prepared by a Licensed N.Y.S. Professional Engineer or a Registered Architect, showing proposed construction. Plans and Specifications shall describe the nature of the work, the materials, the equipment, and provide details of the structural and mechanical installations.

i. If no work is commenced, the permit issued under this application will expire in 60 days and all fees will be forfeit. The permit issued under this application will expire one year from the date of issuance, at which time it may be renewed for one additional year with payment of $200.00; third year and thereafter, at the Building Inspector's discretion, the fee will double each year and applicant is required to go before the Planning Board.

j. Residential Site Plan Application determining lot coverage must accompany all applications.

Upon approval of this application, the Building Department will issue a Building Permit to the applicant, together with an approved duplicate set of plans and specifications. Such permit and approved plans and specifications shall be kept on premises available for inspection throughout the process of the work. All changes to the approved plans shall be filed with an amendment AND revised plans.

HOURS OF OPERATION: 8:00 A.M. to 6:00 P.M. WEEKDAYS MONDAY-SATURDAY

NO WORK ON SUNDAYS AND HOLIDAYS

BUILDING INSPECTOR: 764-4635 OFFICE HOURS: 9:00 AM to 4:30 PM

TOWN OF POUND RIDGE

Westchester County
New York

Building Department

Permit _____
Date _____
BLOCK _____ LOT _____
Application No. _____
Receipt No. _____
Fee Amt. Pd. _____
Date _____

Do Not Write In the Above Space

APPLICATION FOR BUILDING PERMIT **(Type or Print Clearly)**

Date 09/01/2022

Name of Owner of Premises American Tower Corporation

Address 10 Presidential Way, Woburn, MA 01801 Telephone (813) 838-0996

EMAIL: bholmes@tilsontech.com

Block 9817 Lot 41.9-5

Is the property or residence a Landmark or in a Landmark District? ( ) Yes (X) No

Was a Special Permit or Variance granted by the ( ) Town Board ( ) Water Control Commission (X) Zoning Board or ( ) Planning Board? ( ) Yes ( ) No
(If yes, submit a copy of the resolution)

1. Nature of Work: ( ) New Building ( ) Addition ( ) Alteration
( ) New Use ( ) Repair Damaged Bldg. (X) Other (Specify) Swapping out equipment

2. Description of Work: Remove 3 T-arms, 6 antennas, 6 TTAs, and coax cable. Install 9 antennas, 6 RRUs, and hybrid trunk cables. Ground work includes removing 1 cabinet and installing 1 cabinet and 1 battery cabinet.

3. Intended Use and Occupancy Unmanned telecommunications tower

4. Existing Use and Occupancy (if any) Unmanned telecommunications tower

5. Is application made to remove a violation? ( ) Yes (X) No If yes, specify _____

6. Will construction include installation or work on: ( ) Electric ( ) Plumbing ( ) Heating N/A
(Separate permits by Licensed Mechanic's required)

7. General Contractor: Name EJD Wireless, Inc. Telephone 201-957-5118

Address 211 Lackawanna Ave., Woodland Park, NJ

EMAIL: jennifer.appice@ejdwireless.com

8. Engineer or Architect: Name A.T. Engineering Services, PLLC Telephone (919) 468-0112

Address 3500 Regency Parkway, Suite 100, Cary, NC 27518

EMAIL: _____

9. Contractor: Name _____ Telephone _____

Address _____

EMAIL: _____

10. Estimated Cost: $ 25,000 Fee: $ _____
APPLICANT SHALL SUBMIT AN AFFIDAVIT AND STATEMENT TO VERIFY THIS COST. Costs shall include current value of all work and materials, equipment, fixtures, water supply, sewage system, excavation, filling and grading but not the cost of the lot. If final cost exceeds estimated cost an additional fee may be required before issuance of Certificate of Occupancy and Compliance.

Rev. 5/2022

Date _____

PURSUANT TO LOCAL LAW I OF 1988
COLLECTION OF FEES, FINES, ASSESSMENTS AND CHARGES

To Whom It May Concern:

I, _____ Receiver Taxes, of the Town of Pound Ridge, New York 10576, do hereby certify that all current taxes due on the property designated as:

Section _____ Block _____ Lot _____, of the Town of Pound Ridge assessment map are paid to date.

The said parcel being assessed to: _____

_____

NOTE: This document is valid only until the close of the next tax billing period _____.

_____

Receiver of Taxes

OWNER'S CERTIFICATE THAT CONSTRUCTION IS NOT IN A CONTROLLED AREA

OWNER American Tower Corporation

LOCATION 29 Adams Lane, Pound Ridge, NY **Block** 9817 **Lot** 41.9-5

I, Bryan Holmes, Agent for the, **OWNER OF THE ABOVE-MENTIONED PROPERTY, HEREBY CERTIFY THAT THE CONSTRUCTION BY THIS APPLICATION DOES NOT ENCROACH ON ANY WETLANDS OR WETLAND CONTROLLED AREA.**

The terms "Wetlands" and "Controlled Area" are defined in the Pound Ridge Freshwater Wetlands Ordinance. Local Law #1 of 1986 and includes bodies of water, bogs, marshes, swamps, rainfall drainage systems and areas defined by certain vegetation together with all adjacent contributory surfaces within 150 feet.

The term "Construction" includes any portion of a new building, additions to existing buildings, swimming pools, tennis courts, septic systems (including required expansion areas) driveways and all areas that may be distributed during the construction.

In the event the construction of the applicant does encroach upon Wetlands or a Wetland Controlled Area, applicant must first obtain a Water Control Permit from the Water Control Commission before any construction is commenced.

FAILURE TO OBTAIN THE REQUIRED WATER CONTROL PERMIT WILL RESULT IN AN IMMEDIATE STOP WORK ORDER.

Agent

Owner's Signature

Sworn to before me this 23RD day

of August, 20 22

Kimberly Dampman

NOTARY PUBLIC

KIMBERLY DAMPMAN
Notary Public - State of Florida
Commission # HH 097810
My Comm. Expires Feb 25, 2025
Bonded through National Notary Assn.

Affidavit of Applicant

State of New York
County of Westchester ss:

Bryan Holmes, Tilson Technology Management on behalf of American Tower Corp Being duly sworn, deposes and says:

That he resides at 16 Middle Street, Portland, ME 04101 and that: (circle one).

A. He/she is the owner of the premises described hereon.
B. He/she is a General Partner of _____ of the New York Corporation, with offices at _____ and is duly authorized by resolution of the Board of Directors, and that said corporation is duly authorized by the owner to make this application.
C. He/she is a General Partner of _____ with offices at _____ and that said partnership is duly authorized by the owner to make this application.
D. He/she is the Architect or Engineer duly authorized by the owner to make this application.
E. He/she is the Contractor duly authorized by the owner to make this application.
F. He/she is the Contract Vendee of the premises described hereon. Date of contract is _____.

That the information contained in this application and on the accompanying drawings are true to the best of his/her knowledge, and belief. The undersigned hereby agrees to comply with all the requirements of the Pound Ridge Building Code, Zoning Ordinance and all other laws pertaining to it, in the construction applied for, whether or not shown on Plans or specified in the application.

Sworn to before me, this 23RD day of August, 2022

Agent
Signature of deponent

KIMBERLY DAMPMAN
Notary Public - State of Florida
Commission # HH 097810
My Comm. Expires Feb 25, 2025
Bonded through National Notary Assn.

(813) 838-0996
Telephone

Notary Public

Kimberly Dampman

Affidavit of Contractor

State of New York
County of Westchester ss:

Jennifer Appice, EJD Wireless Inc. Being duly sworn, deposes and says:

That he resides at 211 Lackawanna Ave. Ste. A Woodland Park, NJ 07424 and that: (circle one).

A. He/she does business as EJD Wireless Inc. with offices at 211 Lackawanna Ave. Woodland Park NJ 07424 and that he/she is the contractor, duly authorized by the owner for the proposed work.
B. He/she is the _____ of the New York Corporation _____ with offices at _____ and that said corporation is the contractor duly authorized by the owner for the proposed work.
C. He/she is a General Partner of _____ with offices at _____ and that said partnership is the Contractor, duly authorized by the owner for the proposed work.

The undersigned further states: That the work will be performed in accordance with the Building Code of the Town of Pound Ridge and all other applicable Codes and Regulations, whether or not shown on the plans and specification in the application and they assume all responsibilities for all acts and work performed by Sub-Contractors, laborers, and material men in connection with the work to be performed.

Sworn to before me, this 18 day of August, 2022

Jennifer Appice
Signature of deponent

JOSEPH J AQUINO
Notary Public – State of New Jersey
My Commission Expires Jan 30, 2022

201-957-5118
Telephone

Notary Public

TOWN OF POUND RIDGE
Energy Conservation Construction Code – Compliance Certification

Building design must comply with 19 NYCRR N 1101
Design criteria based on 19NYCRR N 301

Heating Degree Days = 5750
Design Temperature = 73 f

TOWN OF POUND RIDGE
Geographic Design Criteria

Ground Snow Load = 45psf
Wind Speed = 100-110 mph
Seismic Design Category = C
Frost Line Depth = 42"
Winter Design Temp = 7
Ice Shield = reqd.

Information is provided by the Town of Pound Ridge Building Department to design professionals and others making application for Building Permits. The design criteria is to be used as a guide to compliance with 19NYCRR R301 adopted January 1, 2008.

Certification by the Design Professional is required by the Building Department prior to the issuance of a permit.

Project Type: _____

Owner: _____

Block: _____ Lot: _____

By: _____ Date: _____
(Affix Seal)

Town of Pound Ridge
Do not write on this page – Official Use Only

HIGHWAY DEPARTMENT

Records indicate that the lot herein described requires:

{ Town Highway Permit
{ County Highway Permit
{ New York State DOT Permit
{ No Permit required for work described

The applicant is aware that this application may require additional approvals by the following:

{ Pound Ridge Planning Board
{ Pound Ridge Board of Appeals
{ W.C.C. (Water Control Commission)
{ Westchester County Board of Health
{ New York City Department of Environmental Protection

This application does not cover any Electric, Plumbing, HVAC, Blasting or Fill work completed on site. This work requires separate applications and permits.

Application Form
RESIDENTIAL SITE PLAN
Town of Pound Ridge

Site Plan approval is required prior to issuance of a building permit for residential development in excess of the thresholds for building coverage and/or for coverage or within the minimum vegetated buffers.

PURPOSE: To minimize the environmental and visual impacts of residential development with exceptionally large building coverage and/or lot coverage (Particularly the impacts upon adjacent land and public thoroughfares); and,

To protect the rural character and landscapes of Pound Ridge by increasing the minimum required setbacks and vegetated buffers, where appropriate, based upon the site plan review of property and proposed development.

REVIEW AND APPROVAL PROCESS: The Planning Board shall review the application in accordance with the standards and procedures set forth in Article IX of the Zoning Law, Site plan Requirements. The typical process includes: 1) a presentation by the applicant to the Planning Board after submittal of an application; 2) a site visit by the Board before its next meeting; and, 3) assuming adequate site plan information and modifications are made, if requested, Board approval with or without modifications at its second meeting without need for a public hearing.

SUBMISSION REQUIREMENTS: The Planning Board may require, waive or modify the required application materials set forth in Section 113-61.C of the Zoning Law as appropriate based upon the nature of the application and the property. Appropriate fees shall be determined and submitted to the Planning Board Department. In general, initial submissions should include the following:

A. **Survey and Improvement Plans** – Include all notes, restrictions, easements, building envelopes (minimum yard setbacks) and Supplementary Setback Building Areas (SSBAs) as identified on the final subdivision plan by which the subject parcel(s) was created. Provide an improvement plan including existing and proposed buildings, structures, driveways, septic systems, wells, and required minimum required buffer areas. Existing and proposed grading must be shown.

B. **Zoning Conformance Worksheet (attached):** – To be completed by applicant.

C. **Wetlands** – Identify wetlands and 150-foot wetland minimum activity setback regulated areas. (All activity within 150 feet of a wetland shall require a wetlands permit issued by the Water Control Commission.)

D. **Natural Features** – Identification of natural feature including tree line and significant vegetation, stone walls, rock outcrops, (identification of areas of steep slopes in excess of 25% is requested.

E. **Standard Notations** – The following standard notations should be added to the site plan map.

"A wetlands permit shall be required from the Water Control Commission of the Town of Pound Ridge for any regulated activity within 150 feet of the wetlands boundaries in accordance with the Town of Pound Ridge Wetlands Law."

"Approval by the Pound Ridge Water Control Commission shall be obtained prior to the initiation of any construction or any regulated activity, as defined in the Pound Ridge Freshwater Wetlands Law."

"An application to Pound Ridge for a building permit or for a wetlands permit shall include a survey of the lot showing the location of the existing wetlands controlled area. The Town Engineer or consulting engineer; Building Inspector or Water Control Commission; as appropriate, may require that the wetlands controlled area for any individual lot be delineated in the field, by means of stakes, fencing, or other means, prior to the initiation of any construction activity."

"Site Plan approval by the planning Board shall be required for: any lot where the building coverage exceeds (4,500) square feet in R-3A, (3,600) in R-2A, (2,600) in R-1A; on any lot where the building coverage exceeds the area of the required potential house site within the horizontal circle shown on an approved plan; or, any lot where the lot coverage, excluding common driveways approved by the Planning Board, exceeds (12,000) square feet in R-3A, (9,000) in R-2A, (7,000) in R-1A. The minimum front yard, side yard and rear yard setbacks and the minimum buffer area from all lot lines shall be increased in five (5) foot increments in proportion to the amount the threshold standard(s) for site plan approval are exceeded, unless otherwise modified by the planning Board as part of site plan approval."

"The minimum required yard is inclusive of the minimum buffer area. No buildings, structures, driveways, parking areas, septic areas, utilities or other improvements, excluding the repair of existing stone walls and non-electric fences four (4) feet or less in height, shall be permitted within the minimum buffer area except as shown on a construction plan or site plan approved by the Planning Board. Such disturbance within the minimum required buffer area shall be the minimum necessary to provide appropriate and reasonable access or service to said lot. Said areas shall generally be maintained in as natural a condition as possible, except that additional landscaping or planning or other buffer screening may be required or permitted by the Planning Board as part of site plan approval."

Attachments: Section 113-37, Schedule of Bulk Regulations and Zoning Conformance Table to be completed by Applicant.

Town of Pound Ridge

CODE CONFORMANCE WORKSHEET

Date:_____

Owner/Applicant:_____ Address:_____ Block/Lot:_____ Zoning District:_____

	EXISTING sq. ft. *(footprint)*	+ PROPOSED sq. ft. *(footprint)*	= TOTAL	DIVIDE TOTAL BY COVERAGE OF YOUR ZONING DISTRICT	% THRESHOLD
Principal Dwelling				Threshold Building Coverage: □ R-1A = 2,600 sq. ft. □ R-2A = 3.600 sq. ft □ R-3A = 4,500 sq. ft.	Multiply figure by 100 to obtain percentage.
Other Covered Structures					
TOTAL BUILDING COVERAGE				= _____	= _____ %
Total Building Coverage				Threshold Lot Coverage: □ R-1A = 7,000 sq. ft. □ R-2A = 9,000 sq. ft □ R-3A = 12,000 sq. ft.	Multiply figure by 100 to obtain percentage
Driveway: (pervious & impervious)					
Other Structures: deck, patio, pool, tennis court, walkways					
TOTAL LOT COVERAGE				= _____ *	= _____ %

*** If the % Threshold exceeds 100%,** use this decimal figure to calculate increased minimum setbacks below.

Example: if the "% Threshold" is 120%, & in an R-3A district, multiply each setback by 1.2 (1.2 x 60' front yard = 72' rounded up to 5' increments = 75')

	MINIMUM REQUIRED SETBACKS			EXISTING	PROPOSED	INCREASED MINIMUM SETBACKS (Minimum Required x % Threshold Rounded up to 5' increments) Plot these on the site plan.
ZONING DISTRICT	R-3A	R-2A	R-1A			
a. Front Yard	60'	60'	50'			
b. Side Yard	50'	50'	35'			
c. Rear Yard	75'	50'	50'			
d. Vegetated Buffer	20'	15'	10'			

Instructions for Completing Zoning Conformance Worksheet

1. Enter existing and proposed square footage of all property coverage and enter total.
2. Divide this total by the maximum coverage for your zoning district (R-3A, R-2A, R-1A.).
3. Enter the percentage in the right column.
4. Adjust this percentage to a decimal to calculate increased setbacks in the table at the bottom of the worksh Threshold is 121%, and you are in an R-3A district, multiply each setback by 1.2 (1.2 x 60'front yard = 72' increment = 75') (1.2 x 50" side yard = 60').
5. Enter the increased setbacks in the column to the right. Identify these increased setbacks as the minimum s

Town of Pound Ridge

Visit us at
www.townofpoundridge.com

Tel.: 914-764-5511
Fax: 914-764-0102

NOTICE OF UTILIZATION OF TRUSS TYPE CONSTRUCTION, PRE-ENGINEERED WOOD CONSTRUCTION AND/OR TIMBER CONSTRUCTION IN RESIDENTIAL STRUCTURES

(In accordance with Title 19 NYCRR PART 1265)

TO: The Town of Pound Ridge

OWNER OF PROPERTY: _____

SUBJECT PROPERTY (ADDRESS AND TAX MAP NUMBER):

_____

_____

_____

PLEASE TAKE NOTICE THAT THE (CHECK ALL THAT APPLY):

- ☐ New Residential Structure
- ☐ Addition to Existing Residential Structure
- ☐ Rehabilitation to Existing Residential Structure

TO BE CONSTRUCTED OR PERFORMED AT THE SUBJECT PROPERTY REFERENCE ABOVE WILL UTILIZE
(check each applicable line):

- ☐ Truss Type Construction (TT)
- ☐ Pre-Engineered Wood Construction (PW)
- ☐ Timber Construction (TC)

IN THE FOLLOWING LOCATION(S) (CHECK APPLICABLE LINE):

- ☐ Floor Framing, Including Girders and Beams (F)
- ☐ Roof Framing (R)
- ☐ Floor Framing and Roof Framing (FR)

SIGNATURE: _____ **DATE:** _____

PRINT NAME: _____

CAPACITY (Check One): ☐ Owner ☐ Owner's Representative

Pound Ridge Conservation Board
PROTECTING OUR ENVIRONMENTAL HEALTH AND NATURAL RESOURCES

Dear Applicant,

As you prepare for construction, please consider the plants and small animals that might inhabit the site. Native species can be relocated, invasive species removed, and overall habitat quality improved. The Conservation Board, established in 1973, to protect and preserve the natural resources of Pound Ridge appreciates the efforts of residents to do the same.

Local naturalists are ready to rescue the plants and small animals, particularly amphibians and reptiles that are unable to get out of the way quickly, by relocating them to a site where they will flourish. Please contact Pound Ridge Land Conservancy for help (contact information below). In addition, the naturalist can answer questions about the ecology of your land and offer suggestions regarding natural landscaping.

Adding native plants to your property provides a variety of needed foods as well as shelter, cover, and nesting sites for birds and other wildlife. Native plants, especially shrubs and trees, and the beauty of a naturalized landscape distinguishes our town from others. On the Conservation Board's webpage (see link below) are lists of native plants to address a variety of purposes. Volunteers from The Invasives Project-Pound Ridge can help identify invasive plants. This may be an opportune time to remove invasive vines, like Oriental Bittersweet, and shrubs (Russian and Autumn olive, Winged euonymus, Japanese barberry, etc.) so as to prevent further seeding of invasive species into the surrounding environment.

Please let us know about your efforts to save native species, and to reduce invasive plants. We appreciate your efforts to create a healthy yard and woods for birds and other wildlife.

Conservation Board
CB@townofpoundridge.com

Additional contacts:
Mianus River Gorge Preserve: rchristie@mianus.org
The Invasives Project-Pound Ridge: tipconsults@gmail.com

For plant lists and other resources: www.townofpoundridge.com/conservation

WORKERS' COMPENSATION REQUIREMENTS UNDER WCL SEC 57

To comply with coverage provisions of the Workers' Compensation Law, businesses must:

A) be legally exempt from obtaining workers' compensation insurance coverage; or
B) obtain such coverage from insurance carriers; or
C) be self-insured or participate in an authorized group self-insurance plan.

To assist State and municipal entities in enforcing Section 57 of the Workers' Compensation Law, businesses requesting permits or seeking to enter into contracts **MUST provide ONE** of the following forms to the government entity issuing the permit or entering into a contract.

A) WC/DB-100, Affidavit For New York Entities And Any Out Of State Entities With No Employees, That New York State Workers' Compensation And/Or Disability Benefits Insurance Coverage Is Not Required; **OR**

WC/DB-101, Affidavit That An OUT OF STATE OR FOREIGN EMPLOYER Working In New York State Does Not Require Specific New York State Workers' Compensation And/Or Disability Benefits Insurance Coverage; **OR**

(Affidavits must be stamped as received by the NYS Workers' Compensation Board)

B) C-105.2 – Certificate of Workers' Compensation Insurance (the business' insurance carrier will send this form to the government entity upon request) **PLEASE NOTE:** The State Insurance Fund provides its own version of this form, the U-263; **OR**

C) SI-12 – Certificate of Workers' Compensation Self-Insurance (the business calls the Board's Self-Insurance Office at 518-402-0247), OR GSI-105.2 – Certificate of Participation in Worker's Compensation Group Self-Insurance (the business' Group Self-Insurance Administrator will send this form to the government entity upon request).

DISABILITY BENEFITS REQUIREMENTS UNDER WCL SEC 220 SUBDIV 8

To comply with coverage provisions of the Disability Benefits Law, business may:

A) be legally exempt from obtaining disability benefits insurance coverage; or
B) obtain such coverage from insurance coverage; or
C) be self-insured.

Accordingly, to assist State and municipal entities in enforcing Section 220 Subdiv. 8 of the Disability Benefits Law, businesses requesting permits or seeking to enter into contracts **MUST provide ONE** of the following forms to the entity issuing the permit or entering into a contract:

A) WC/DB-100, Affidavit For New York Entities And Any Out Of State Entities With No Employees, That New York State Workers' Compensation And/Or Disability Benefits Insurance Coverage Is not Required; **OR**

WC/DB-101, Affidavit That An OUT OF STATE OR FOREIGN EMPLOYER Working In New York State Does Not Require Specific New York State Workers' Compensation And/Or Disability Benefits Insurance Coverage; **OR**

(Affidavits must be stamped as received by the NYS Workers' Compensation Board)

B) Either the DB-120.1 – Certificate of Disability Benefits Insurance **OR** the DB-820/829 Certificate/Cancellation of Insurance (the business' insurance carrier will send one of these forms to the government entity upon request); **OR**

C) DB-155 – Certificate of Disability Benefits Self-Insurance (the business calls the Board's Self-Insurance Office at 518-402-0247).

TOWN OF POUND RIDGE

APPLICATION CHECK LIST

NAME _____

LOCATION _____ BLOCK _____ LOT _____

Description of Work _____

_____

( ) New Building ( ) Residence ( ) Accessory Bldg ( ) Garage
( ) New Use ( ) Addition ( ) Alteration
( ) Other (specify) _____

DOCUMENTS REQUIRED: (BEFORE Issuance of Building Permit)

Provided	Waived	
( )	( )	Application for Building Permit (completely filled out)
( )	( )	Westchester County Contractors License
( )	( )	Property Survey, prepared by Licensed
( )	( )	Land Surveyor Plot Plan prepared by
( )	( )	Architect, Engineer, or Land Surveyor
( )	( )	Site Plan Approval
( )	( )	SSBA Construction Permit — County Health Department
( )	( )	Water Control Permit
( )	( )	Zoning Variance
( )	( )	Driveway Permit ( ) Town ( ) County ( ) State
( )	( )	Three (3) sets of Plans, signed & sealed by a NYS Licensed Professional
( )	( )	Three (3) sets of Specifications
( )	( )	Certification of Workman's Compensation, Liability & Disability Insurance
( )	( )	Certification New York State — Energy Code
( )	( )	Fee

TOWN OF POUND RIDGE - SPECIAL USE PERMIT APPLICATION

Date of application 09/01/2022

TO: TOWN BOARD - TOWN OF POUND RIDGE

APPLICATION IS HEREBY MADE to the Town Board for the issuance of a Special Use Permit pursuant to Chapter 113, Article VIII of the Zoning Code of the Town of Pound Ridge, entitled Special Permit Standards, for the following:

Remove 3 T-arms, 6 antennas, 6 TTA's, and coax cables. Install 9 antennas, 6 RRUs, and hybrid trunk cables. Groundwork includes removing 1 cabinet and installing 1 cabinet and 1 battery cabinet.

APPLICANT NAME: Bryan Holmes, Tilson Technology Management on behalf of American Tower
ADDRESS: 16 Middle Street, 4th Floor, Portland, ME 04101

BUSINESS TELEPHONE NO: (813) 838-0996

Check one: ___ **Owner** ___ **Lessee** X **Agent**

Town Tax Map Property Location: Section 9817 **Block** 41.9 **Lot No.** 5
29 Adams Lane, Pound Ridge, NY 10576

If map, survey or a plan is required, please attach to this application, as required by VIII, Section 113-8.3

With respect to the Special Use Permit described and requested on Page 2, attached, please respond to the following:

1. If you are a lessee, has property owner been apprised of your request? If so, attach the property owner's letter of approval to this application.

2. Will use be seasonal? Yes ___ **No** X
If yes, what months? _____ **What hours of the day?** _____

3. Will equipment or furniture or materials of any kind, not normal to present operation, be required? Yes ___ **No** X

4. Will the location and size of the use, nature and intensity of the operation involved, be in harmony with the district in which it is located? Yes X **No** ___
(Article VIII, Section 113-8.2.1

5. Will there be a noise or light factor that may impact neighboring properties: Yes ___ **No** X **(Article VIII, Section 113-8.2.3)**

6. If the operation is located in a Planned Business District, will existing parking be adequate? Yes ___ **No** ___ N/A

Special Use Application for Bryan Holmes, on behalf of American Tower

Bryan Holmes

Applicant's Signature

If the Town requires engineer, planning consultants or other professional assistance in reviewing this Special Use Permit application, applicant may be required to establish an escrow fee fund to pay the cost of such experts.

For the Town Board:

1. Referred to Planning Board on _____

2. Public Hearing scheduled for _____

3. Escrow Deposit of $_____ posted_____

Town Board Approval _____Date:_____Expiration Date:_____

CONDITIONS:

PERMIT NUMBER: _____

NEW YORK STATE Workers' Compensation Board

CERTIFICATE OF INSURANCE COVERAGE
NYS DISABILITY AND PAID FAMILY LEAVE BENEFITS LAW

PART 1. To be completed by NYS disability and Paid Family Leave benefits carrier or licensed insurance agent of that carrier

1a. Legal Name & Address of Insured (use street address only)
EJD WIRELESS INC

217 BROOK VALLEY RD
TOWACO, NJ 07082

Work Location of Insured *(Only required if coverage is specifically limited to certain locations in New York State, i.e., Wrap-Up Policy)*

1b. Business Telephone Number of Insured
845-721-3921

1c. Federal Employer Identification Number of Insured or Social Security Number
475037303

2. Name and Address of Entity Requesting Proof of Coverage (Entity Being Listed as the Certificate Holder)
Town of Pound Ridge
Att: building Department
179 Westchester Avenue
Round Ridge, NJ 10576

3a. Name of Insurance Carrier
ShelterPoint Life Insurance Company

3b. Policy Number of Entity Listed in Box "1a"
DBL633129

3c. Policy effective period
02/18/2022 to 02/17/2024

4. Policy provides the following benefits:
- [x] A. Both disability and paid family leave benefits.
- [ ] B. Disability benefits only.
- [ ] C. Paid family leave benefits only.

5. Policy covers:
- [x] A. All of the employer's employees eligible under the NYS Disability and Paid Family Leave Benefits Law.
- [ ] B. Only the following class or classes of employer's employees:

Under penalty of perjury, I certify that I am an authorized representative or licensed agent of the insurance carrier referenced above and that the named insured has NYS Disability and/or Paid Family Leave Benefits insurance coverage as described above.

Date Signed 8/29/2022 By _____
(Signature of insurance carrier's authorized representative or NYS Licensed Insurance Agent of that insurance carrier)

Telephone Number 516-829-8100 Name and Title Richard White, Chief Executive Officer

IMPORTANT: If Boxes 4A and 5A are checked, and this form is signed by the insurance carrier's authorized representative or NYS Licensed Insurance Agent of that carrier, this certificate is COMPLETE. Mail it directly to the certificate holder.

If Box 4B, 4C or 5B is checked, this certificate is NOT COMPLETE for purposes of Section 220, Subd. 8 of the NYS Disability and Paid Family Leave Benefits Law. It must be emailed to PAU@wcb.ny.gov or it can be mailed for completion to the Workers' Compensation Board, Plans Acceptance Unit, PO Box 5200, Binghamton, NY 13902-5200.

PART 2. To be completed by the NYS Workers' Compensation Board (Only if Box 4B, 4C or 5B have been checked)

State of New York
Workers' Compensation Board

According to information maintained by the NYS Workers' Compensation Board, the above-named employer has complied with the NYS Disability and Paid Family Leave Benefits Law(Article 9 of the Workers' Compensation Law) with respect to all of their employees.

Date Signed _____ By _____
(Signature of Authorized NYS Workers' Compensation Board Employee)

Telephone Number _____ Name and Title _____

Please Note: *Only insurance carriers licensed to write NYS disability and paid family leave benefits insurance policies and NYS licensed insurance agents of those insurance carriers are authorized to issue Form DB-120.1.* ***Insurance brokers are NOT authorized to issue this form.***

NEW YORK STATE | Workers' Compensation Board

CERTIFICATE OF NYS WORKERS' COMPENSATION INSURANCE COVERAGE

1a. Legal Name & Address of Insured (use street address only)	1b. Business Telephone Number of Insured
EJD Wireless Inc. & EJD Consultants Inc. 217 Brook Valley Road Towaco, NJ 07082	845-721-9321 1c. NYS Unemployment Insurance Employer Registration Number of Insured
Work Location of Insured *(Only required if coverage is specifically limited to certain locations in New York State, i.e., a Wrap-Up Policy)*	1d. Federal Employer Identification Number of Insured or Social Security Number 47-5037303
2. Name and Address of Entity Requesting Proof of Coverage (Entity Being Listed as the Certificate Holder) Town of Pound Ridge Att: Building Department 179 Westchester Avenue Pound Ridge, NY 10576	3a. Name of Insurance Carrier Ohio Security 3b. Policy Number of Entity Listed in Box "1a" XWS58946858 3c. Policy effective period 4/3/2022 to 4/3/2023 3d. The Proprietor, Partners or Executive Officers are ☑ included. (Only check box if all partners/officers included) ☐ all excluded or certain partners/officers excluded.

This certifies that the insurance carrier indicated above in box "3" insures the business referenced above in box "1a" for workers' compensation under the New York State Workers' Compensation Law. **(To use this form, New York (NY) must be listed under Item 3A on the INFORMATION PAGE of the workers' compensation insurance policy).** The Insurance Carrier or its licensed agent will send this Certificate of Insurance to the entity listed above as the certificate holder in box "2".

The insurance carrier must notify the above certificate holder and the Workers' Compensation Board within 10 days IF a policy is canceled due to nonpayment of premiums or within 30 days IF there are reasons other than nonpayment of premiums that cancel the policy or eliminate the insured from the coverage indicated on this Certificate. (These notices may be sent by regular mail.) **Otherwise, this Certificate is valid for one year after this form is approved by the insurance carrier or its licensed agent, or until the policy expiration date listed in box "3c", whichever is earlier.**

This certificate is issued as a matter of information only and confers no rights upon the certificate holder. This certificate does not amend, extend or alter the coverage afforded by the policy listed, nor does it confer any rights or responsibilities beyond those contained in the referenced policy.

This certificate may be used as evidence of a Workers' Compensation contract of insurance only while the underlying policy is in effect.

Please Note: Upon cancellation of the workers' compensation policy indicated on this form, if the business continues to be named on a permit, license or contract issued by a certificate holder, the business must provide that certificate holder with a new Certificate of Workers' Compensation Coverage or other authorized proof that the business is complying with the mandatory coverage requirements of the New York State Workers' Compensation Law.

Under penalty of perjury, I certify that I am an authorized representative or licensed agent of the insurance carrier referenced above and that the named insured has the coverage as depicted on this form.

Approved by: Jeff Scafuro
(Print name of authorized representative or licensed agent of insurance carrier)

Approved by: _____ 8/29/22
(Signature) (Date)

Title: President

Telephone Number of authorized representative or licensed agent of insurance carrier: 973-831-2787

Please Note: Only insurance carriers and their licensed agents are authorized to issue Form C-105.2. Insurance brokers are NOT authorized to issue it.

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**153 ft Monopine**
ATC Site Name	:	**POUNDRIDGE NY,NY**
ATC Site Number	:	**413118**
Engineering Number	:	**14128992_C3_02**
Proposed Carrier	:	**T-MOBILE**
Carrier Site Name	:	**NY09212H**
Carrier Site Number	:	**NY09212H**
Site Location	:	**29 Adams Lane** **Pound Ridge, NY 10576-1507** **41.2227, -73.5717**
County	:	**Westchester**
Date	:	**July 22, 2022**
Max Usage	:	**67%**
Result	:	**Pass**

Prepared By:

Taylor Kellner
Structural Engineer I

Reviewed By:

COA : #0012746

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 153 ft Monopine to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower Drawings	EEI Job #13328 Rev 5, dated February 15, 2006
Foundation Drawing	EEI Project #13328 Rev4, dated August 29, 2006
Geotechnical Report	GEOServices Project #31-151287P, dated October 12, 2015

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	115 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.00" radial ice concurrent
Code:	ANSI/TIA-222-H / 2018 IBC / 2020 New York Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.26, S_1 = 0.06
Site Class:	D - Stiff Soil - Default

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
155.0	1	Sinclair SD314-HF2P4LDF	Side Arm	(2) 7/8" Coax (2) 7/8" Coax (4) 1 1/4" Coax (2) 1/2" Coax (7) 7/8" Coax	COUNTY OF WESTCHESTER
	1	Sinclair SD314-HF2P4LDF			
	1	Sinclair SD314-HF2P4LDF			
	1	Sinclair SD314-HF2P4LDF			
	2	RFI Antennas BA160-67-T3			
153.0	1	Comprod 893-70-4			
	3	RFI Antennas BA160-67-T3			
	2	RFI Antennas BA160-67-T3			
145.1	1	Sinclair SD212-SF2P2SNM			
145.0	2	Sinclair SD314-HF2P4LDF	T-Arm	(2) 1 1/4" Coax (1) 1/2" Coax	TOWN OF POUNDRIDGE
	1	Sinclair SD212-HF2P4LDF(D00B)			
	1	Generic 5' Omni			
	4	Sinclair SD314-HF2P4LDF	Side Arm	(8) 7/8" Coax	COUNTY OF WESTCHESTER
	4	Sinclair SD314-HF2P4LDF			
144.6	3	Sinclair SD314-HF2P4LDF			
138.0	1	VZW Unused Reserve (0 sqin)	T-Arm	(6) 1 5/8" Coax (3) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	CSS X7CAP-680-VM0ip			
136.0	6	Commscope NHH-65B-R2B			
	3	Samsung MT6407-77A			
	3	Raycap RRODC-6600-PF-48			
	3	Samsung B5/B13 RRH-BR04C			
	3	Samsung B2/B66A RRH-BR049			
	3	Samsung XXDWMM-12.5-65-8T-CBRS			
	3	Samsung RT4401-48A			
111.0	3	Alcatel-Lucent B25 RRH4x30-4R	Sector Frame	(2) 0.39" (10mm) Fiber Trunk (4) 0.76" (19.2mm) 8 AWG 6 (12) 1 5/8" Coax (2) 2" conduit (3) 3/8" (0.38"-9.5mm) RET Control Cable	AT&T MOBILITY
	3	Nokia RRH 4T4R B30 100W AHNA (34.2 lbs)			
	2	Raycap DC6-48-60-18-8F ("Squid")			
	3	Nokia AirScale RRH 4T4R B5 160W AHCA			
	6	Commscope NNHH-65A-R4			
	3	Andrew DBXNH-6565A-A2M			
94.0	1	Generic 5' Dipole	Flush	(1) 1/2" Coax (1) 7/8" Coax	TOWN OF POUNDRIDGE
93.0	1	Sinclair SD212			
	1	RFS SC3-W100AC	T-Arm	(1) EWP90	COUNTY OF WESTCHESTER
91.7	1	Sinclair SD212-SF2P2SNM			
80.9	1	Generic 10' Dipole			

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
128.0	3	Ericsson Radio 4460 B25+B66	-	(3) 1 5/8” Coax (3) 1.99” (50.7mm) Hybrid	SPRINT NEXTEL
	3	Ericsson Radio 4480 B71+B85A			
	3	Ericsson Air6449 B41			
	3	Commscope VV-65A-R1			
	3	RFS APX16DWV-16DWVS-E-A20			
	3	RFS APXVAALL24 43-U-NA20			
102.1	3	RFS APXVF24-C-A20	-	-	T-MOBILE
101.3	3	RFS APX16PV-16PVL-A			
92.0	3	Ericsson KRY 112 144/1	-	(18) 1 5/8" Coax	
	3	Ericsson KRY 112 89/5			

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
128.0	3	RFS APXVAALL24 43-U-NA20	Sector Frame	(3) 2.00" (50.8mm) Hybrid	T-MOBILE
	3	Ericsson Radio 4460 B25+B66			
	3	Ericsson 4480 B71+B85A			
	3	Commscope VV-65A-R1			
	3	Ericsson AIR 6419 B41			

[1] Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	59%	Pass
Shaft	67%	Pass
Base Plate	19%	Pass
Flanges	39%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	8375.7	49%
Shear (Kips)	84.7	25%
Axial (Kips)	71.7	8%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
128.0	RFS APXVAALL24 43-U-NA20	T-MOBILE	0.947	0.880
	Ericsson Radio 4460 B25+B66			
	Ericsson AIR 6419 B41			
	Ericsson 4480 B71+B85A			
	Commscope VV-65A-R1			
93.0	RFS SC3-W100AC	COUNTY OF WESTCHESTER	0.481	0.620

***Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-H**

Standard Conditions

All engineering services performed by A.T. Engineering Services, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Services, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Services, PLLC and used in the performance of our engineering services is correct and complete.

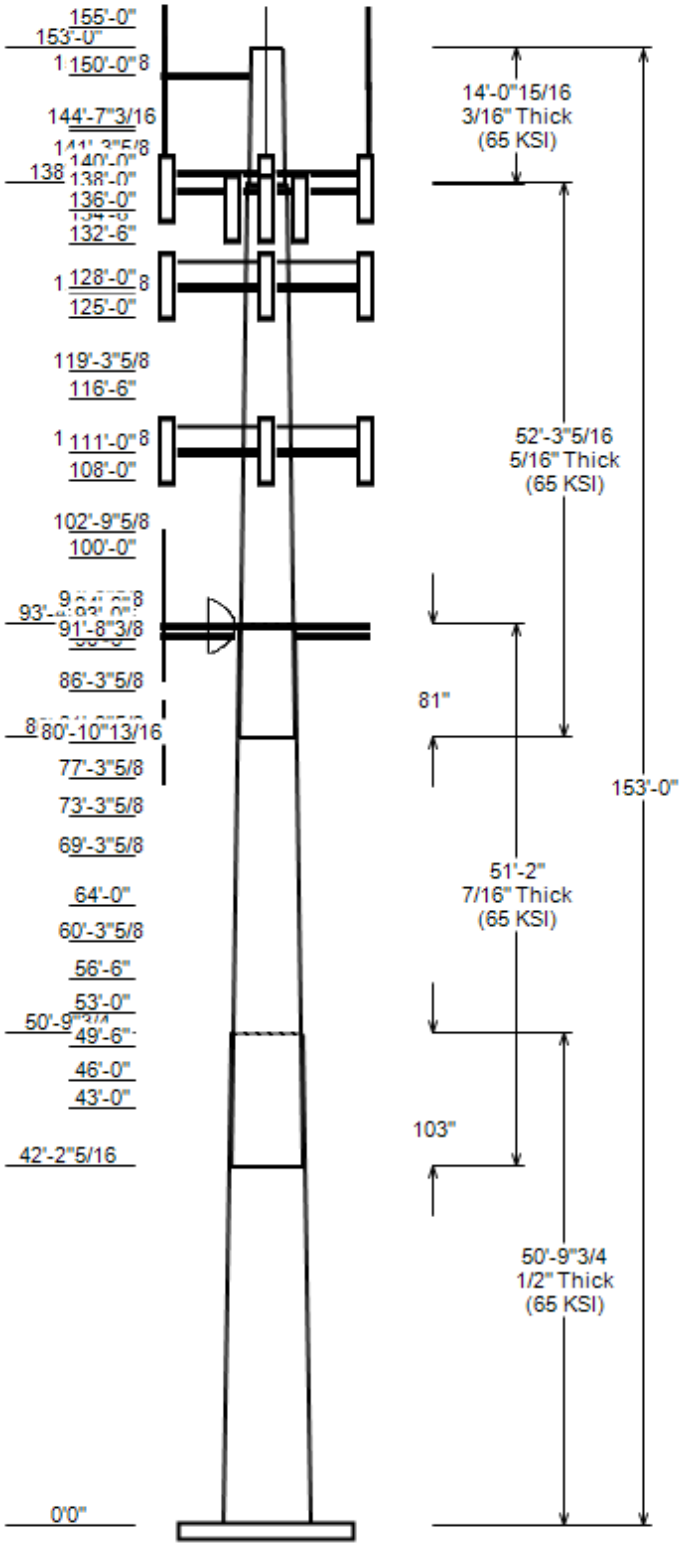
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Services, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Services, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

JOB INFORMATION

Asset :	413118, POUNDRIDGE NY	Height :	153 ft
Client :	T-MOBILE	Base Width :	79
Code :	ANSI/TIA-222-H	Shape :	18 Sides



SITE PARAMETERS

Nominal Wind: 115 mph wind with no ice **Topo Category:** 1

Ice Wind: 50 mph wind with 1" radial **Topo Method:** Method 1

Base Elev (ft): 0.00 **Taper :** 0.35600(In/ft) **Topo Feature:**

Structure Class: II **Exposure :** B **S_s :** 0.259 **S_1** : 0.059

SECTION PROPERTIES

Shaft Section	Length (ft)	Diameter (in) Across Flats Top	Diameter (in) Across Flats Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	50.810	60.90	79.00	0.500		0.000	18 Sides	65
2	51.167	46.62	64.85	0.438	Slip Joint	103.410	18 Sides	65
3	52.276	31.02	49.64	0.312	Slip Joint	80.590	18 Sides	65
4	14.081	26.00	31.02	0.188	Butt Joint	0.000	18 Sides	65

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
155.0	158.0	1	Sinclair SD314-HF2P4LDF
155.0	158.0	1	Sinclair SD314-HF2P4LDF
155.0	158.0	1	Sinclair SD314-HF2P4LDF
155.0	158.0	1	Sinclair SD314-HF2P4LDF
155.0	155.0	2	RFI Antennas BA160-67-T3
155.0	155.0	4	Pine Branches
153.0	153.0	1	Comprod 893-70-4
153.0	153.0	3	RFI Antennas BA160-67-T3
153.0	153.0	2	RFI Antennas BA160-67-T3
150.3	150.3	4	Pine Branches
150.0	150.0	1	Generic Flat T-Arm
145.1	145.1	1	Sinclair SD212-SF2P2SNM
145.0	146.0	1	Generic 5' Omni
145.0	145.0	1	Sinclair SD212-HF2P4LDF(D00B)
145.0	145.0	4	Sinclair SD314-HF2P4LDF
145.0	145.0	4	Sinclair SD314-HF2P4LDF
145.0	145.0	2	Sinclair SD314-HF2P4LDF
144.6	144.6	3	Sinclair SD314-HF2P4LDF
144.3	144.3	4	Pine Branches
141.3	141.3	4	Pine Branches
140.0	140.0	3	Generic Flat Side Arm
138.0	138.0	1	VZW Unused Reserve (0 sqin)
138.0	138.0	3	CSS X7CAP-680-VM0ip
138.0	138.0	3	Generic Flat T-Arm
136.0	136.0	3	Samsung RT4401-48A
136.0	136.0	3	Samsung XXDWMM-12.5-65-8T-CBRS
136.0	136.0	3	Samsung B5/B13 RRH-BR04C
136.0	136.0	3	Samsung B2/B66A RRH-BR049
136.0	136.0	3	Raycap RRODC-6600-PF-48
136.0	136.0	3	Samsung MT6407-77A
136.0	136.0	6	Commscope NHH-65B-R2B
134.5	134.5	4	Pine Branches
132.5	132.5	6	Pine Branches
128.0	128.0	3	Ericsson Radio 4460 B25+B66
128.0	128.0	3	Ericsson 4480 B71+B85A
128.0	128.0	3	Commscope VV-65A-R1
128.0	128.0	3	Ericsson AIR 6419 B41
128.0	128.0	3	Generic Flat Light Sector Fram
128.0	128.0	3	RFS APXVAALL24 43-U-NA20
127.3	127.3	4	Pine Branches
127.3	127.3	4	Pine Branches
125.0	125.0	6	Pine Branches
119.3	119.3	4	Pine Branches

JOB INFORMATION

Asset :	413118, POUNDRIDGE NY	Height :	153 ft
Client :	T-MOBILE	Base Width :	79
Code :	ANSI/TIA-222-H	Shape :	18 Sides

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
116.5	116.5	6	Pine Branches
111.3	111.3	4	Pine Branches
111.0	111.0	3	Nokia AirScale RRH 4T4R B5 160
111.0	111.0	3	Nokia RRH 4T4R B30 100W AHNA (
111.0	111.0	2	Raycap DC6-48-60-18-8F ("Squid
111.0	111.0	3	Alcatel-Lucent B25 RRH4x30-4R
111.0	111.0	3	Andrew DBXNH-6565A-A2M
111.0	111.0	6	Commscope NNHH-65A-R4
111.0	111.0	3	Generic Flat Light Sector Fram
108.0	108.0	6	Pine Branches
102.8	102.8	4	Pine Branches
100.0	100.0	6	Pine Branches
94.8	94.8	4	Pine Branches
94.0	98.0	1	Generic 5' Dipole
93.0	93.0	1	Sinclair SD212
93.0	93.0	3	Generic Round Side Arm
93.0	93.0	1	RFS SC3-W100AC
92.0	92.0	2	Generic Flat T-Arm
91.7	91.7	1	Sinclair SD212-SF2P2SNM
90.5	90.5	4	Pine Branches
86.3	86.3	4	Pine Branches
81.8	81.8	4	Pine Branches
80.9	80.9	1	Generic 10' Dipole
77.3	77.3	4	Pine Branches
73.3	73.3	4	Pine Branches
69.3	69.3	4	Pine Branches
64.0	64.0	4	Pine Branches
60.3	60.3	4	Pine Branches
56.5	56.5	4	Pine Branches
53.0	53.0	4	Pine Branches
49.5	49.5	4	Pine Branches
46.0	46.0	4	Pine Branches
46.0	46.0	16	Pine Branches
43.0	43.0	4	Pine Branches
43.0	43.0	4	Pine Branches

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	163.0	7/8" Coax	No
5.0	160.0	7/8" Coax	No
5.0	160.0	7/8" Coax	No
5.0	160.0	7/8" Coax	No
0.0	160.0	1/2" Coax	No
0.0	160.0	1 1/4" Coax	No
5.0	145.0	7/8" Coax	No
5.0	145.0	7/8" Coax	No
0.0	145.0	7/8" Coax	No
0.0	145.0	1/2" Coax	No
0.0	145.0	1 1/4" Coax	No
5.0	138.0	1 5/8" Coax	No
0.0	136.0	1 5/8" Hybriflex	No
0.0	128.0	2.00" (50.8mm) Hybrid	No
5.0	111.0	2" conduit	No
5.0	111.0	1 5/8" Coax	No
5.0	111.0	0.76" (19.2mm) 8 AWG 6	No
5.0	111.0	0.39" (10mm) Fiber Trunk	No
0.0	111.0	3/8" (0.38"- 9.5mm) RET Control Cable	No
0.0	94.0	1/2" Coax	No
5.0	93.0	EWP90	No

JOB INFORMATION

Asset :	413118, POUNDRIDGE NY	Height :	153 ft
Client :	T-MOBILE	Base Width :	79
Code :	ANSI/TIA-222-H	Shape :	18 Sides

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	93.0	7/8" Coax	No

LOAD CASES

1.2D + 1.0W Normal	115 mph wind with no ice
0.9D + 1.0W Normal	115 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Nor	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh Nor	Seismic
0.9D - 1.0Ev + 1.0Eh Nor	Seismic (Reduced DL)
1.0D + 1.0W Service Norm	60 mph Wind with No Ice

REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W Normal	8375.66	84.70	71.74
0.9D + 1.0W Normal	8346.05	84.68	53.79
1.2D + 1.0Di + 1.0Wi Normal	2383.55	23.92	91.71
1.2D + 1.0Ev + 1.0Eh Normal	307.25	2.94	72.37
0.9D - 1.0Ev + 1.0Eh Normal	305.83	2.94	48.73
1.0D + 1.0W Service Normal	2035.98	20.62	59.86

DISH DEFLECTIONS

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W Service Normal	93.00	5.767	0.620

ANALYSIS PARAMETERS

Location:	Westchester County,NY	**Height:**	153 ft
Type and Shape:	Custom, 18 Sides	**Base Diameter:**	79.00 in
Manufacturer:	Undetermined	**Top Diameter:**	26.00 in
K_d (non-service):	0.95	**Taper:**	0.3560 in/ft
K_e:	0.97	**Rotation:**	0.000°

ICE & WIND PARAMETERS

Exposure Category:	B	**Design Wind Speed w/o Ice:**	115 mph
Risk Category:	II	**Design Wind Speed w/Ice:**	50 mph
Topo Factor Procedure:	Method 1	**Operational Wind Speed:**	60 mph
Topographic Category:	1	**Design Ice Thickness:**	1.00 in
Crest Height:	0 ft	**HMSL:**	742.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			**Period Based on Rayleigh Method (sec):**	1.28
T_L (sec):	6	**P:**	1	**C_s:**	0.049
S_s:	0.259	**S_1:**	0.059	**C_s Max:**	0.049
F_a:	1.593	**F_v:**	2.400	**C_s Min:**	0.030
S_{ds}:	0.275	**S_{d1}:**	0.094		

LOAD CASES

1.2D + 1.0W Normal	115 mph wind with no ice
0.9D + 1.0W Normal	115 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Normal	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh Normal	Seismic
0.9D - 1.0Ev + 1.0Eh Normal	Seismic (Reduced DL)
1.0D + 1.0W Service Normal	60 mph Wind with No Ice

SHAFT SECTION PROPERTIES

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (in)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
									124.5							44,183.3			
1-18	50.81	0.5000	65		0.00	19,055	79.00	0.000	8	96,989.2	26.45	158.00	60.90	50.81	95.85		20.07	121.80	0.3562
2-18	51.17	0.4375	65	Slip	103.41	13,368	64.85	42.193	89.44	46,876.1	24.72	148.22	46.62	93.36	64.13	17,280.9	17.38	106.56	0.3562
3-18	52.28	0.3125	65	Slip	80.59	7,060	49.64	86.644	48.92	15,038.4	26.60	158.84	31.02	138.92	30.45	3,627.4	16.09	99.25	0.3562
								138.91								1,293.1			
4-18	14.08	0.1875	65	Butt	0.00	808	31.02	9	18.35	2,202.9	27.76	165.42	26.00	153.00	15.36		23.04	138.67	0.3562
				Shaft Weight		40,291													

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
155.00	Pine Branches	4	1.00	0.000	37.50	60.000	0.67	54.97	87.954	0.67
155.00	Sinclair SD314-HF2P4LDF	1	1.00	3.000	25.10	4.130	1.00	102.48	7.713	1.00
155.00	Sinclair SD314-HF2P4LDF	1	1.00	3.000	25.10	4.130	1.00	102.48	7.713	1.00
155.00	Sinclair SD314-HF2P4LDF	1	1.00	3.000	25.10	4.130	1.00	102.48	7.713	1.00
155.00	RFI Antennas BA160-67-T3	2	1.00	0.000	44.10	6.560	1.00	150.65	10.478	1.00
155.00	Sinclair SD314-HF2P4LDF	1	1.00	3.000	25.10	4.130	1.00	102.48	7.713	1.00
153.00	RFI Antennas BA160-67-T3	2	1.00	0.000	44.10	6.560	1.00	150.65	10.478	1.00
153.00	Comprod 893-70-4	1	1.00	0.000	60.00	5.810	1.00	178.16	14.597	1.00
153.00	RFI Antennas BA160-67-T3	3	1.00	0.000	44.10	6.560	1.00	150.65	10.478	1.00
150.30	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	18.32	5.862	0.67
150.00	Generic Flat T-Arm	1	1.00	0.000	312.50	12.900	1.00	486.73	18.354	1.00
145.10	Sinclair SD212-SF2P2SNM	1	0.90	0.000	22.50	4.780	1.00	108.70	8.848	1.00
145.00	Generic 5' Omni	1	1.00	1.000	10.00	1.000	1.00	28.23	1.912	1.00
145.00	Sinclair SD212-HF2P4LDF(D00B)	1	1.00	0.000	39.00	4.120	1.00	117.21	8.899	1.00
145.00	Sinclair SD314-HF2P4LDF	2	1.00	0.000	25.10	4.130	1.00	102.12	7.696	1.00
145.00	Sinclair SD314-HF2P4LDF	4	1.00	0.000	25.10	4.130	1.00	102.12	7.696	1.00
145.00	Sinclair SD314-HF2P4LDF	4	1.00	0.000	25.10	4.130	1.00	102.12	7.696	1.00
144.60	Sinclair SD314-HF2P4LDF	3	1.00	0.000	25.10	4.130	1.00	102.10	7.695	1.00
144.30	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	18.29	5.852	0.67
141.30	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	18.28	5.850	0.67
140.00	Generic Flat Side Arm	3	1.00	0.000	187.50	6.300	0.67	275.86	8.367	0.67
138.00	Generic Flat T-Arm	3	0.75	0.000	312.50	12.900	0.67	485.45	18.314	0.67
138.00	CSS X7CAP-680-VM0ip	3	0.80	0.000	38.20	9.549	0.68	176.32	11.385	0.68
138.00	VZW Unused Reserve (0 sqin)	1	0.80	0.000	0.00	0.000	0.90	0.00	0.000	0.90
136.00	Commscope NHH-65B-R2B	6	0.80	0.000	43.70	8.079	0.69	159.00	9.921	0.69
136.00	Samsung MT6407-77A	3	0.80	0.000	81.60	4.709	0.61	149.00	5.713	0.61
136.00	Raycap RRODC-6600-PF-48	3	0.80	0.000	31.50	4.056	0.72	115.55	4.959	0.72
136.00	Samsung B2/B66A RRH-BR049	3	0.80	0.000	84.40	1.875	0.50	126.59	2.472	0.50
136.00	Samsung XXDWMM-12.5-65-8T-CBRS	3	0.80	0.000	23.10	1.539	0.50	50.53	2.089	0.50
136.00	Samsung RT4401-48A	3	0.80	0.000	18.60	0.996	0.50	36.46	1.448	0.50
136.00	Samsung B5/B13 RRH-BR04C	3	0.80	0.000	70.30	1.875	0.50	108.13	2.472	0.50
134.50	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	18.25	5.840	0.67
132.50	Pine Branches	6	1.00	0.000	50.00	30.000	0.67	72.96	43.777	0.67
128.00	Ericsson AIR 6419 B41	3	0.80	0.000	83.30	6.322	0.63	182.79	7.434	0.63
128.00	Commscope VV-65A-R1	3	0.80	0.000	23.80	5.928	0.63	100.99	7.321	0.63
128.00	Ericsson Radio 4460 B25+B66	3	0.80	0.000	109.00	2.564	0.67	167.10	3.257	0.67
128.00	Generic Flat Light Sector Fram	3	0.75	0.000	400.00	17.900	0.67	597.83	27.819	0.67
128.00	RFS APXVAALL24 43-U-NA20	3	0.80	0.000	122.80	20.243	0.63	378.84	22.681	0.63
128.00	Ericsson 4480 B71+B85A	3	0.80	0.000	84.00	2.852	0.67	138.30	3.295	0.67
127.30	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	18.22	5.830	0.67
127.30	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	18.22	5.830	0.67
125.00	Pine Branches	6	1.00	0.000	50.00	30.000	0.67	72.80	43.682	0.67
119.30	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	18.18	5.817	0.67
116.50	Pine Branches	6	1.00	0.000	50.00	30.000	0.67	72.67	43.604	0.67
111.30	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	18.15	5.807	0.67
111.00	Commscope NNHH-65A-R4	6	0.80	0.000	67.20	9.103	0.63	194.90	10.541	0.63
111.00	Andrew DBXNH-6565A-A2M	3	0.80	0.000	34.20	5.368	0.69	116.16	6.645	0.69
111.00	Alcatel-Lucent B25 RRH4x30-4R	3	0.80	0.000	51.00	2.140	0.67	90.41	2.787	0.67
111.00	Nokia RRH 4T4R B30 100W AHNA (	3	0.80	0.000	34.20	1.341	0.50	58.44	1.837	0.50
111.00	Nokia AirScale RRH 4T4R B5 160	3	0.80	0.000	35.30	1.286	0.50	60.78	1.774	0.50
111.00	Generic Flat Light Sector Fram	3	0.75	0.000	400.00	17.900	0.75	595.00	27.676	0.75
111.00	Raycap DC6-48-60-18-8F ("Squid	2	0.80	0.000	31.80	1.470	0.67	71.78	1.923	0.67
108.00	Pine Branches	6	1.00	0.000	50.00	30.000	0.67	72.49	43.492	0.67
102.80	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	18.09	5.790	0.67

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
100.00	Pine Branches	6	1.00	0.000	50.00	30.000	0.67	72.29	43.373	0.67
94.80	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	18.05	5.777	0.67
94.00	Generic 5' Dipole	1	1.00	4.000	15.00	1.740	1.00	50.94	3.177	1.00
93.00	RFS SC3-W100AC	1	1.00	0.000	40.00	10.737	1.00	178.85	11.956	1.00
93.00	Generic Round Side Arm	3	1.00	0.000	187.50	5.200	0.67	245.70	6.929	0.67
93.00	Sinclair SD212	1	1.00	0.000	16.00	4.900	1.00	100.65	9.858	1.00
92.00	Generic Flat T-Arm	2	0.90	0.000	312.50	12.900	0.90	478.67	18.102	0.90
91.70	Sinclair SD212-SF2P2SNM	1	1.00	0.000	22.50	4.780	1.00	104.79	8.664	1.00
90.50	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	18.03	5.769	0.67
86.30	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	18.00	5.760	0.67
81.80	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	17.97	5.751	0.67
80.90	Generic 10' Dipole	1	1.00	0.000	30.00	3.760	1.00	99.90	7.519	1.00
77.30	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	17.94	5.740	0.67
73.30	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	17.90	5.729	0.67
69.30	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	17.87	5.718	0.67
64.00	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	17.83	5.705	0.67
60.30	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	17.81	5.699	0.67
56.50	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	17.77	5.686	0.67
53.00	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	17.73	5.674	0.67
49.50	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	17.69	5.660	0.67
46.00	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	17.66	5.652	0.67
46.00	Pine Branches	16	1.00	0.000	37.50	60.000	0.67	52.99	84.783	0.67
43.00	Pine Branches	4	1.00	0.000	37.50	4.000	0.67	52.89	5.641	0.67
43.00	Pine Branches	4	1.00	0.000	12.50	4.000	0.67	17.63	5.641	0.67
Totals	Num Loadings: 78	260			13,445.30			25,353.18		

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg) : _

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax/ Row	Dist Between Rows(in)	Dist Between Cols(in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	163.00	2	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	COUNTY OF WES
5.00	160.00	5	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	COUNTY OF WES
0.00	160.00	4	1 1/4" Coax	1.55	0.63	N	0	0	0	0	0	N	COUNTY OF WES
5.00	160.00	2	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	COUNTY OF WES
0.00	160.00	2	1/2" Coax	0.63	0.15	N	0	0	0	0	0	N	COUNTY OF WES
5.00	160.00	2	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	
0.00	145.00	4	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	COUNTY OF WES
5.00	145.00	2	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	COUNTY OF WES
5.00	145.00	2	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	COUNTY OF WES
0.00	145.00	2	1 1/4" Coax	1.55	0.63	N	0	0	0	0	0	N	
0.00	145.00	1	1/2" Coax	0.63	0.15	N	0	0	0	0	0	N	
5.00	138.00	6	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	VERIZON WIREL
0.00	136.00	3	1 5/8" Hybriflex	1.98	1.3	N	0	0	0	0	0	N	VERIZON WIREL
0.00	128.00	3	2.00" (50.8mm) Hybrid	2	3.09	N	0	0	0	0	0	N	T-MOBILE
5.00	111.00	12	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	AT&T MOBILITY
5.00	111.00	4	0.76" (19.2mm) 8 AWG	0.76	0.53	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	111.00	3	3/8" (0.38"- 9.5mm) R	0.38	0.23	N	0	0	0	0	0	N	AT&T MOBILITY
5.00	111.00	2	0.39" (10mm) Fiber Tr	0.39	0.06	N	0	0	0	0	0	N	AT&T MOBILITY
5.00	111.00	2	2" conduit	2.38	3.65	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	94.00	1	1/2" Coax	0.63	0.15	N	0	0	0	0	0	N	
0.00	93.00	1	7/8" Coax	1.09	0.33	N	0	0	0	0	0	N	
5.00	93.00	1	EWP90	1.32	0.32	N	0	0	0	0	0	N	COUNTY OF WES

SEGMENT PROPERTIES

(Max Len: 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.5000	79.000	124.575	96,989.20	26.45	158.00	70.3	2418.1	0.0	0.0
5.00		0.5000	77.219	121.749	90,536.40	25.82	154.44	71	2309.3	0.0	2,095.5
10.00		0.5000	75.438	118.922	84,376.30	25.19	150.88	71.8	2203.0	0.0	2,047.4
15.00		0.5000	73.657	116.096	78,502.20	24.56	147.31	72.5	2099.2	0.0	1,999.3
20.00		0.5000	71.876	113.270	72,907.30	23.94	143.75	73.2	1997.9	0.0	1,951.2
25.00		0.5000	70.095	110.443	67,584.70	23.31	140.19	74	1899.1	0.0	1,903.1
30.00		0.5000	68.314	107.617	62,527.70	22.68	136.63	74.7	1802.8	0.0	1,855.0
35.00		0.5000	66.533	104.791	57,729.50	22.05	133.07	75.5	1709.0	0.0	1,806.9
40.00		0.5000	64.752	101.964	53,183.20	21.42	129.50	76.2	1617.7	0.0	1,758.9
42.19	Bot - Section 2	0.5000	63.971	100.725	51,267.20	21.15	127.94	76.5	1578.5	0.0	756.2
43.00		0.5000	63.683	100.268	50,573.50	21.05	127.37	76.6	1564.2	0.0	521.2
45.00		0.5000	62.971	99.138	48,882.10	20.80	125.94	76.9	1528.9	0.0	1,281.1
46.00		0.5000	62.615	98.573	48,050.70	20.67	125.23	77.1	1511.5	0.0	635.1
49.50		0.5000	61.368	96.594	45,215.10	20.23	122.74	77.6	1451.2	0.0	2,194.6
50.00		0.5000	61.190	96.312	44,819.40	20.17	122.38	77.7	1442.7	0.0	309.9
50.81	Top - Section 1	0.4375	61.777	85.174	40,488.60	23.49	141.20	73.8	1290.9	0.0	500.1
53.00		0.4375	60.996	84.091	38,963.40	23.17	139.42	74.1	1258.2	0.0	630.7
55.00		0.4375	60.284	83.101	37,604.40	22.89	137.79	74.5	1228.6	0.0	568.9
56.50		0.4375	59.750	82.359	36,606.20	22.67	136.57	74.7	1206.7	0.0	422.3
60.00		0.4375	58.503	80.628	34,346.10	22.17	133.72	75.3	1156.3	0.0	970.6
60.30		0.4375	58.396	80.480	34,156.80	22.12	133.48	75.4	1152.1	0.0	82.2
64.00		0.4375	57.078	78.650	31,879.30	21.59	130.46	76	1100.1	0.0	1,001.7
65.00		0.4375	56.722	78.155	31,281.60	21.45	129.65	76.2	1086.2	0.0	266.8
69.30		0.4375	55.190	76.028	28,796.70	20.83	126.15	76.9	1027.7	0.0	1,128.0
70.00		0.4375	54.941	75.682	28,405.10	20.73	125.58	77	1018.3	0.0	180.7
73.30		0.4375	53.766	74.050	26,606.60	20.26	122.89	77.6	974.7	0.0	840.7
75.00		0.4375	53.160	73.209	25,710.50	20.01	121.51	77.9	952.6	0.0	425.9
77.30		0.4375	52.341	72.072	24,530.50	19.68	119.64	78.2	923.1	0.0	568.5
80.00		0.4375	51.379	70.736	23,192.00	19.30	117.44	78.7	889.1	0.0	656.0
80.90		0.4375	51.058	70.291	22,756.90	19.17	116.70	78.9	877.9	0.0	215.9
81.80		0.4375	50.738	69.846	22,327.20	19.04	115.97	79	866.7	0.0	214.6
85.00		0.4375	49.598	68.263	20,843.50	18.58	113.37	79.5	827.7	0.0	751.9
86.30		0.4375	49.135	67.620	20,260.10	18.39	112.31	79.8	812.1	0.0	300.5
86.64	Bot - Section 3	0.4375	49.013	67.450	20,107.80	18.34	112.03	79.8	808.1	0.0	78.9
90.00		0.4375	47.817	65.790	18,659.20	17.86	109.30	80.4	768.6	0.0	1,313.0
90.50		0.4375	47.639	65.543	18,449.60	17.79	108.89	80.5	762.8	0.0	192.8
91.70		0.4375	47.211	64.949	17,952.90	17.62	107.91	80.7	749.0	0.0	459.8
92.00		0.4375	47.105	64.801	17,830.10	17.57	107.67	80.7	745.5	0.0	114.3
93.00		0.4375	46.748	64.306	17,425.00	17.43	106.85	80.9	734.2	0.0	379.1
93.36	Top - Section 2	0.3125	47.245	46.550	12,954.70	25.25	151.19	71.7	540.1	0.0	135.5
94.00		0.3125	47.017	46.324	12,766.60	25.12	150.46	71.9	534.8	0.0	101.2
94.80		0.3125	46.732	46.041	12,534.40	24.96	149.54	72	528.3	0.0	125.7
95.00		0.3125	46.661	45.970	12,476.70	24.92	149.32	72.1	526.7	0.0	31.3
100.00		0.3125	44.880	44.204	11,093.00	23.91	143.62	73.3	486.8	0.0	767.1
102.80		0.3125	43.883	43.215	10,364.80	23.35	140.42	73.9	465.2	0.0	416.5
105.00		0.3125	43.099	42.437	9,815.60	22.91	137.92	74.5	448.6	0.0	320.6
108.00		0.3125	42.030	41.377	9,098.30	22.30	134.50	75.2	426.4	0.0	427.8
110.00		0.3125	41.318	40.671	8,640.10	21.90	132.22	75.6	411.9	0.0	279.2
111.00		0.3125	40.962	40.318	8,416.90	21.70	131.08	75.9	404.7	0.0	137.8
111.30		0.3125	40.855	40.212	8,350.70	21.64	130.74	75.9	402.6	0.0	41.1
115.00		0.3125	39.537	38.904	7,562.50	20.90	126.52	76.8	376.7	0.0	498.0
116.50		0.3125	39.003	38.374	7,257.70	20.60	124.81	77.2	366.5	0.0	197.2
119.30		0.3125	38.005	37.385	6,710.70	20.03	121.62	77.8	347.8	0.0	360.9
120.00		0.3125	37.756	37.138	6,578.50	19.89	120.82	78	343.2	0.0	88.8
125.00		0.3125	35.975	35.371	5,683.70	18.89	115.12	79.2	311.2	0.0	616.8
127.30		0.3125	35.156	34.559	5,300.90	18.43	112.50	79.7	297.0	0.0	273.7
128.00		0.3125	34.906	34.312	5,187.90	18.29	111.70	79.9	292.7	0.0	82.0
130.00		0.3125	34.194	33.605	4,874.00	17.88	109.42	80.4	280.7	0.0	231.1
132.50		0.3125	33.304	32.722	4,499.70	17.38	106.57	81	266.1	0.0	282.1
134.50		0.3125	32.591	32.015	4,214.40	16.98	104.29	81.4	254.7	0.0	220.3

SEGMENT PROPERTIES

(Max Len: 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
135.00		0.3125	32.413	31.839	4,145.10	16.88	103.72	81.5	251.9	0.0	54.3
136.00		0.3125	32.057	31.485	4,008.60	16.68	102.58	81.8	246.3	0.0	107.7
138.00		0.3125	31.344	30.779	3,744.70	16.28	100.30	82.3	235.3	0.0	211.9
138.92	Top - Section 3	0.3125	31.017	30.454	3,627.40	16.09	99.25	82.5	230.3	0.0	95.8
138.92	Bot - Section 4	0.1875	31.016	18.346	2,202.90	27.76	165.42	68.8	139.9	0.0	
140.00		0.1875	30.631	18.117	2,121.40	27.39	163.36	69.2	136.4	0.0	67.0
141.30		0.1875	30.168	17.841	2,026.00	26.96	160.89	69.7	132.3	0.0	79.5
144.30		0.1875	29.099	17.205	1,817.00	25.95	155.20	70.9	123.0	0.0	178.9
144.60		0.1875	28.992	17.142	1,797.00	25.85	154.63	71	122.1	0.0	17.5
145.00		0.1875	28.850	17.057	1,770.40	25.72	153.87	71.1	120.9	0.0	23.3
145.10		0.1875	28.814	17.036	1,763.80	25.69	153.68	71.2	120.6	0.0	5.8
150.00		0.1875	27.069	15.997	1,460.50	24.05	144.37	73.1	106.3	0.0	275.4
150.30		0.1875	26.962	15.934	1,443.10	23.94	143.80	73.2	105.4	0.0	16.3
153.00		0.1875	26.000	15.361	1,293.10	23.04	138.67	74.3	98.0	0.0	143.8
								Totals:			40,291.2

Load Case: 1.2D + 1.0W Normal 115 mph wind with no ice 21 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.20
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-71.74	-84.70	0.00	-8,375.7	0.00	8,375.66	7,880.97	2,186.29	15,500.81	12,748.09	0	0	0.668
5.00	-68.93	-84.27	0.00	-7,952.2	0.00	7,952.17	7,783.11	2,136.69	14,805.50	12,302.35	0.07	-0.12	0.657
10.00	-66.00	-83.84	0.00	-7,530.8	0.00	7,530.85	7,681.49	2,087.09	14,126.14	11,858.04	0.26	-0.24	0.645
15.00	-63.12	-83.41	0.00	-7,111.7	0.00	7,111.68	7,576.11	2,037.48	13,462.73	11,415.57	0.58	-0.36	0.633
20.00	-60.31	-82.99	0.00	-6,694.6	0.00	6,694.63	7,466.98	1,987.88	12,815.28	10,975.36	1.03	-0.49	0.620
25.00	-57.55	-82.57	0.00	-6,279.7	0.00	6,279.69	7,354.09	1,938.28	12,183.78	10,537.83	1.61	-0.62	0.606
30.00	-54.85	-82.15	0.00	-5,866.8	0.00	5,866.85	7,237.44	1,888.68	11,568.24	10,103.39	2.33	-0.74	0.590
35.00	-52.21	-81.71	0.00	-5,456.1	0.00	5,456.12	7,117.03	1,839.07	10,968.65	9,672.46	3.18	-0.87	0.573
40.00	-49.67	-81.38	0.00	-5,047.6	0.00	5,047.56	6,992.87	1,789.47	10,385.02	9,245.46	4.17	-1	0.555
42.19	-48.58	-81.24	0.00	-4,869.1	0.00	4,869.12	6,937.23	1,767.72	10,134.10	9,059.55	4.64	-1.06	0.547
43.00	-47.63	-80.53	0.00	-4,803.5	0.00	4,803.54	6,916.56	1,759.71	10,042.49	8,991.32	4.82	-1.08	0.543
45.00	-45.92	-80.37	0.00	-4,642.5	0.00	4,642.49	6,864.94	1,739.87	9,817.34	8,822.80	5.29	-1.14	0.535
46.00	-44.62	-62.32	0.00	-4,562.1	0.00	4,562.12	6,838.91	1,729.95	9,705.72	8,738.83	5.53	-1.16	0.530
49.50	-41.67	-61.78	0.00	-4,344.0	0.00	4,344.02	6,746.60	1,695.23	9,320.07	8,446.46	6.42	-1.25	0.522
50.00	-41.25	-61.71	0.00	-4,313.1	0.00	4,313.14	6,733.26	1,690.27	9,265.61	8,404.90	6.55	-1.27	0.521
50.81	-40.57	-61.57	0.00	-4,263.2	0.00	4,263.15	5,655.36	1,494.80	8,281.46	7,142.72	6.77	-1.29	0.606
53.00	-39.57	-61.06	0.00	-4,128.3	0.00	4,128.32	5,611.42	1,475.79	8,072.17	6,996.45	7.38	-1.35	0.599
55.00	-38.72	-60.89	0.00	-4,006.2	0.00	4,006.20	5,570.67	1,458.43	7,883.39	6,863.35	7.95	-1.41	0.592
56.50	-38.00	-60.34	0.00	-3,914.9	0.00	3,914.87	5,539.71	1,445.41	7,743.27	6,763.82	8.4	-1.45	0.587
60.00	-36.57	-60.14	0.00	-3,703.7	0.00	3,703.67	5,466.15	1,415.03	7,421.21	6,532.70	9.51	-1.56	0.575
60.30	-36.35	-59.65	0.00	-3,685.6	0.00	3,685.63	5,459.76	1,412.42	7,393.93	6,512.97	9.61	-1.57	0.574
64.00	-34.81	-59.08	0.00	-3,464.9	0.00	3,464.94	5,379.83	1,380.31	7,061.52	6,270.59	10.87	-1.68	0.561
65.00	-34.36	-58.84	0.00	-3,405.9	0.00	3,405.86	5,357.87	1,371.62	6,973.00	6,205.43	11.22	-1.71	0.557
69.30	-32.63	-58.24	0.00	-3,152.9	0.00	3,152.86	5,261.75	1,334.30	6,598.69	5,926.98	12.82	-1.84	0.540
70.00	-32.32	-58.06	0.00	-3,112.1	0.00	3,112.10	5,245.84	1,328.22	6,538.74	5,881.94	13.09	-1.86	0.537
73.30	-31.00	-57.46	0.00	-2,920.5	0.00	2,920.52	5,169.84	1,299.58	6,259.77	5,670.71	14.41	-1.96	0.523
75.00	-30.33	-57.27	0.00	-2,822.8	0.00	2,822.83	5,130.05	1,284.82	6,118.44	5,562.65	15.12	-2.01	0.515
77.30	-29.40	-56.68	0.00	-2,691.1	0.00	2,691.12	5,075.52	1,264.86	5,929.79	5,417.30	16.11	-2.08	0.505
80.00	-28.41	-56.49	0.00	-2,538.1	0.00	2,538.09	5,010.50	1,241.42	5,712.10	5,247.98	17.31	-2.16	0.491
80.90	-28.04	-56.28	0.00	-2,487.2	0.00	2,487.24	4,988.58	1,233.61	5,640.44	5,191.86	17.72	-2.19	0.487
81.80	-27.63	-55.75	0.00	-2,436.6	0.00	2,436.59	4,966.54	1,225.79	5,569.24	5,135.91	18.13	-2.22	0.482
85.00	-26.48	-55.51	0.00	-2,258.2	0.00	2,258.21	4,887.19	1,198.02	5,319.73	4,938.34	19.65	-2.31	0.465
86.30	-25.98	-55.07	0.00	-2,186.0	0.00	2,186.05	4,854.51	1,186.73	5,219.99	4,858.71	20.29	-2.35	0.457
86.64	-25.82	-54.90	0.00	-2,167.2	0.00	2,167.15	4,845.84	1,183.75	5,193.82	4,837.75	20.46	-2.36	0.455
90.00	-24.00	-54.66	0.00	-1,982.8	0.00	1,982.85	4,760.12	1,154.61	4,941.31	4,634.15	22.16	-2.46	0.435
90.50	-23.67	-54.22	0.00	-1,955.5	0.00	1,955.52	4,747.21	1,150.27	4,904.23	4,604.05	22.41	-2.48	0.432
91.70	-23.01	-53.97	0.00	-1,890.5	0.00	1,890.46	4,716.07	1,139.86	4,815.83	4,532.04	23.04	-2.51	0.424
92.00	-22.12	-53.18	0.00	-1,874.3	0.00	1,874.27	4,708.25	1,137.25	4,793.85	4,514.09	23.2	-2.52	0.422
93.00	-20.89	-52.20	0.00	-1,821.1	0.00	1,821.09	4,682.08	1,128.57	4,720.96	4,454.43	23.73	-2.55	0.415
93.36	-20.70	-52.14	0.00	-1,802.3	0.00	1,802.33	3,004.09	816.95	3,463.01	2,904.43	23.92	-2.56	0.632
94.00	-20.50	-52.02	0.00	-1,768.7	0.00	1,768.69	2,995.79	812.98	3,429.42	2,882.24	24.27	-2.58	0.625
94.80	-20.25	-51.61	0.00	-1,727.1	0.00	1,727.08	2,985.35	808.02	3,387.70	2,854.55	24.7	-2.61	0.616
95.00	-20.12	-51.39	0.00	-1,716.8	0.00	1,716.75	2,982.73	806.78	3,377.31	2,847.63	24.81	-2.62	0.614
100.00	-18.65	-46.89	0.00	-1,459.8	0.00	1,459.81	2,915.13	775.78	3,122.77	2,675.44	27.66	-2.8	0.556
102.80	-17.89	-46.28	0.00	-1,328.5	0.00	1,328.53	2,875.64	758.42	2,984.58	2,579.72	29.33	-2.9	0.525
105.00	-17.31	-46.04	0.00	-1,226.7	0.00	1,226.71	2,843.78	744.78	2,878.20	2,504.93	30.69	-2.98	0.500
108.00	-16.44	-41.60	0.00	-1,088.6	0.00	1,088.58	2,799.17	726.17	2,736.24	2,403.61	32.59	-3.08	0.462
110.00	-15.96	-41.45	0.00	-1,005.4	0.00	1,005.39	2,768.67	713.77	2,643.60	2,336.52	33.89	-3.14	0.439
111.00	-13.32	-38.63	0.00	-963.9	0.00	963.93	2,753.20	707.57	2,597.88	2,303.13	34.56	-3.18	0.426
111.30	-13.19	-38.08	0.00	-952.4	0.00	952.35	2,748.53	705.71	2,584.24	2,293.13	34.76	-3.18	0.423
115.00	-12.43	-37.83	0.00	-811.4	0.00	811.44	2,689.80	682.77	2,418.97	2,170.63	37.27	-3.3	0.382
116.50	-12.00	-33.34	0.00	-754.7	0.00	754.69	2,665.41	673.47	2,353.53	2,121.41	38.31	-3.34	0.363
119.30	-11.42	-32.79	0.00	-661.3	0.00	661.33	2,618.97	656.11	2,233.77	2,030.29	40.3	-3.42	0.333
120.00	-11.26	-32.56	0.00	-638.4	0.00	638.38	2,607.18	651.77	2,204.32	2,007.66	40.8	-3.44	0.325
125.00	-10.24	-27.83	0.00	-475.6	0.00	475.58	2,520.79	620.77	1,999.63	1,848.05	44.47	-3.56	0.263
127.30	-9.75	-26.91	0.00	-411.6	0.00	411.56	2,479.79	606.51	1,908.83	1,775.86	46.19	-3.61	0.238
128.00	-6.86	-23.52	0.00	-392.7	0.00	392.73	2,467.16	602.17	1,881.61	1,754.06	46.72	-3.62	0.228
130.00	-6.54	-23.33	0.00	-345.7	0.00	345.69	2,430.65	589.77	1,804.92	1,692.20	48.25	-3.66	0.209
132.50	-6.06	-18.67	0.00	-287.4	0.00	287.37	2,384.17	574.27	1,711.30	1,615.82	50.18	-3.71	0.181
134.50	-5.72	-18.16	0.00	-250.0	0.00	250.02	2,346.31	561.87	1,638.21	1,555.50	51.74	-3.74	0.164
135.00	-5.64	-18.10	0.00	-240.9	0.00	240.94	2,336.75	558.77	1,620.18	1,540.53	52.13	-3.75	0.160
136.00	-4.18	-16.10	0.00	-222.8	0.00	222.83	2,317.52	552.57	1,584.43	1,510.73	52.92	-3.77	0.150
138.00	-2.72	-14.59	0.00	-190.6	0.00	190.62	2,278.61	540.17	1,514.12	1,451.71	54.51	-3.8	0.133
138.92	-2.60	-14.51	0.00	-177.2	0.00	177.21	2,260.52	534.47	1,482.34	1,424.84	55.24	-3.81	0.126
138.92	-2.60	-14.51	0.00	-177.2	0.00	177.21	1,135.22	321.97	896.48	721.35	55.24	-3.81	0.250

140.00	-1.86	-13.91	0.00	-161.5	0.00	161.52	1,127.99	317.95	874.23	707.75	56.1	-3.83	0.232
141.30	-1.72	-13.34	0.00	-143.4	0.00	143.45	1,119.05	313.12	847.84	691.40	57.15	-3.85	0.211
144.30	-1.43	-12.81	0.00	-103.4	0.00	103.41	1,097.47	301.95	788.48	653.75	59.59	-3.9	0.161
144.60	-1.35	-12.31	0.00	-99.6	0.00	99.57	1,095.24	300.84	782.66	649.99	59.83	-3.91	0.156
145.00	-1.08	-10.51	0.00	-94.6	0.00	94.61	1,092.24	299.35	774.94	644.98	60.16	-3.91	0.149
145.10	-1.06	-10.18	0.00	-93.6	0.00	93.56	1,091.48	298.98	773.02	643.73	60.24	-3.92	0.147
150.00	-0.36	-9.47	0.00	-43.7	0.00	43.66	1,052.73	280.75	681.64	582.77	64.29	-3.97	0.076
150.30	-0.31	-8.96	0.00	-40.8	0.00	40.82	1,050.24	279.63	676.23	579.07	64.54	-3.97	0.072
153.00	0.00	-8.92	0.00	-16.6	0.00	16.62	1,027.22	269.59	628.53	545.89	66.79	-3.99	0.032

Load Case: 0.9D + 1.0W Normal — 115 mph wind with no ice — 21 Iterations
Gust Response Factor: 1.10
Dead load Factor: 0.90
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-53.79	-84.68	0.00	-8,346.0	0.00	8,346.05	7,880.97	2,186.29	15,500.81	12,748.09	0	0	0.663
5.00	-51.63	-84.21	0.00	-7,922.7	0.00	7,922.67	7,783.11	2,136.69	14,805.50	12,302.35	0.07	-0.12	0.652
10.00	-49.39	-83.75	0.00	-7,501.6	0.00	7,501.62	7,681.49	2,087.09	14,126.14	11,858.04	0.26	-0.24	0.641
15.00	-47.19	-83.29	0.00	-7,082.9	0.00	7,082.89	7,576.11	2,037.48	13,462.73	11,415.57	0.58	-0.36	0.628
20.00	-45.03	-82.84	0.00	-6,666.4	0.00	6,666.45	7,466.98	1,987.88	12,815.28	10,975.36	1.03	-0.49	0.615
25.00	-42.92	-82.39	0.00	-6,252.3	0.00	6,252.26	7,354.09	1,938.28	12,183.78	10,537.83	1.61	-0.61	0.601
30.00	-40.85	-81.95	0.00	-5,840.3	0.00	5,840.30	7,237.44	1,888.68	11,568.24	10,103.39	2.32	-0.74	0.586
35.00	-38.83	-81.49	0.00	-5,430.6	0.00	5,430.57	7,117.03	1,839.07	10,968.65	9,672.46	3.17	-0.87	0.569
40.00	-36.90	-81.15	0.00	-5,023.1	0.00	5,023.12	6,992.87	1,789.47	10,385.02	9,245.46	4.15	-1	0.551
42.19	-36.07	-81.00	0.00	-4,845.2	0.00	4,845.20	6,937.23	1,767.72	10,134.10	9,059.55	4.62	-1.06	0.542
43.00	-35.34	-80.29	0.00	-4,779.8	0.00	4,779.81	6,916.56	1,759.71	10,042.49	8,991.32	4.8	-1.08	0.539
45.00	-34.05	-80.12	0.00	-4,619.2	0.00	4,619.24	6,864.94	1,739.87	9,817.34	8,822.80	5.27	-1.13	0.531
46.00	-33.15	-62.07	0.00	-4,539.1	0.00	4,539.11	6,838.91	1,729.95	9,705.72	8,738.83	5.51	-1.16	0.526
49.50	-30.93	-61.54	0.00	-4,321.9	0.00	4,321.87	6,746.60	1,695.23	9,320.07	8,446.46	6.39	-1.25	0.518
50.00	-30.61	-61.47	0.00	-4,291.1	0.00	4,291.10	6,733.26	1,690.27	9,265.61	8,404.90	6.52	-1.26	0.516
50.81	-30.08	-61.32	0.00	-4,241.3	0.00	4,241.32	5,655.36	1,494.80	8,281.46	7,142.72	6.74	-1.28	0.601
53.00	-29.32	-60.81	0.00	-4,107.0	0.00	4,107.02	5,611.42	1,475.79	8,072.17	6,996.45	7.34	-1.34	0.594
55.00	-28.67	-60.63	0.00	-3,985.4	0.00	3,985.40	5,570.67	1,458.43	7,883.39	6,863.35	7.92	-1.4	0.588
56.50	-28.11	-60.08	0.00	-3,894.5	0.00	3,894.46	5,539.71	1,445.41	7,743.27	6,763.82	8.37	-1.45	0.583
60.00	-27.03	-59.88	0.00	-3,684.2	0.00	3,684.18	5,466.15	1,415.03	7,421.21	6,532.70	9.47	-1.55	0.571
60.30	-26.85	-59.37	0.00	-3,666.2	0.00	3,666.21	5,459.76	1,412.42	7,393.93	6,512.97	9.57	-1.56	0.570
64.00	-25.69	-58.80	0.00	-3,446.5	0.00	3,446.53	5,379.83	1,380.31	7,061.52	6,270.59	10.82	-1.67	0.556
65.00	-25.33	-58.55	0.00	-3,387.7	0.00	3,387.72	5,357.87	1,371.62	6,973.00	6,205.43	11.18	-1.7	0.552
69.30	-24.02	-57.96	0.00	-3,136.0	0.00	3,135.95	5,261.75	1,334.30	6,598.69	5,926.98	12.77	-1.83	0.536
70.00	-23.77	-57.77	0.00	-3,095.4	0.00	3,095.38	5,245.84	1,328.22	6,538.74	5,881.94	13.04	-1.85	0.533
73.30	-22.77	-57.17	0.00	-2,904.8	0.00	2,904.75	5,169.84	1,299.58	6,259.77	5,670.71	14.35	-1.95	0.519
75.00	-22.26	-56.97	0.00	-2,807.6	0.00	2,807.56	5,130.05	1,284.82	6,118.44	5,562.65	15.05	-2	0.511
77.30	-21.55	-56.39	0.00	-2,676.5	0.00	2,676.52	5,075.52	1,264.86	5,929.79	5,417.30	16.04	-2.07	0.500
80.00	-20.79	-56.20	0.00	-2,524.3	0.00	2,524.28	5,010.50	1,241.42	5,712.10	5,247.98	17.23	-2.15	0.487
80.90	-20.51	-55.99	0.00	-2,473.7	0.00	2,473.71	4,988.58	1,233.61	5,640.44	5,191.86	17.64	-2.18	0.483
81.80	-20.19	-55.45	0.00	-2,423.3	0.00	2,423.32	4,966.54	1,225.79	5,569.24	5,135.91	18.05	-2.21	0.478
85.00	-19.32	-55.21	0.00	-2,245.9	0.00	2,245.89	4,887.19	1,198.02	5,319.73	4,938.34	19.57	-2.3	0.461
86.30	-18.94	-54.77	0.00	-2,174.1	0.00	2,174.12	4,854.51	1,186.73	5,219.99	4,858.71	20.2	-2.34	0.453
86.64	-18.81	-54.60	0.00	-2,155.3	0.00	2,155.32	4,845.84	1,183.75	5,193.82	4,837.75	20.37	-2.35	0.452
90.00	-17.43	-54.37	0.00	-1,972.0	0.00	1,972.02	4,760.12	1,154.61	4,941.31	4,634.15	22.06	-2.45	0.431
90.50	-17.19	-53.93	0.00	-1,944.8	0.00	1,944.84	4,747.21	1,150.27	4,904.23	4,604.05	22.31	-2.46	0.428
91.70	-16.69	-53.69	0.00	-1,880.1	0.00	1,880.12	4,716.07	1,139.86	4,815.83	4,532.04	22.94	-2.5	0.421
92.00	-16.03	-52.91	0.00	-1,864.0	0.00	1,864.01	4,708.25	1,137.25	4,793.85	4,514.09	23.1	-2.51	0.418
93.00	-15.11	-51.93	0.00	-1,811.1	0.00	1,811.11	4,682.08	1,128.57	4,720.96	4,454.43	23.62	-2.54	0.412
93.36	-14.96	-51.88	0.00	-1,792.4	0.00	1,792.44	3,004.09	816.95	3,463.01	2,904.43	23.82	-2.55	0.626
94.00	-14.81	-51.76	0.00	-1,759.0	0.00	1,758.97	2,995.79	812.98	3,429.42	2,882.24	24.16	-2.57	0.619
94.80	-14.62	-51.34	0.00	-1,717.6	0.00	1,717.57	2,985.35	808.02	3,387.70	2,854.55	24.59	-2.6	0.611
95.00	-14.51	-51.12	0.00	-1,707.3	0.00	1,707.30	2,982.73	806.78	3,377.31	2,847.63	24.7	-2.61	0.608
100.00	-13.43	-46.63	0.00	-1,451.7	0.00	1,451.71	2,915.13	775.78	3,122.77	2,675.44	27.53	-2.79	0.551
102.80	-12.84	-46.02	0.00	-1,321.2	0.00	1,321.16	2,875.64	758.42	2,984.58	2,579.72	29.2	-2.89	0.520
105.00	-12.40	-45.78	0.00	-1,219.9	0.00	1,219.92	2,843.78	744.78	2,878.20	2,504.93	30.54	-2.96	0.495
108.00	-11.79	-41.34	0.00	-1,082.6	0.00	1,082.58	2,799.17	726.17	2,736.24	2,403.61	32.44	-3.06	0.458
110.00	-11.42	-41.20	0.00	-999.9	0.00	999.90	2,768.67	713.77	2,643.60	2,336.52	33.74	-3.13	0.435
111.00	-9.47	-38.41	0.00	-958.7	0.00	958.70	2,753.20	707.57	2,597.88	2,303.13	34.4	-3.16	0.423
111.30	-9.37	-37.86	0.00	-947.2	0.00	947.18	2,748.53	705.71	2,584.24	2,293.13	34.59	-3.17	0.419
115.00	-8.79	-37.62	0.00	-807.1	0.00	807.09	2,689.80	682.77	2,418.97	2,170.63	37.1	-3.28	0.378
116.50	-8.53	-33.14	0.00	-750.7	0.00	750.66	2,665.41	673.47	2,353.53	2,121.41	38.13	-3.32	0.359
119.30	-8.10	-32.59	0.00	-657.9	0.00	657.88	2,618.97	656.11	2,233.77	2,030.29	40.11	-3.4	0.330
120.00	-7.97	-32.36	0.00	-635.1	0.00	635.07	2,607.18	651.77	2,204.32	2,007.66	40.61	-3.42	0.322
125.00	-7.26	-27.64	0.00	-473.3	0.00	473.29	2,520.79	620.77	1,999.63	1,848.05	44.26	-3.54	0.261
127.30	-6.91	-26.72	0.00	-409.7	0.00	409.71	2,479.79	606.51	1,908.83	1,775.86	45.97	-3.59	0.235
128.00	-4.79	-23.38	0.00	-391.0	0.00	391.00	2,467.16	602.17	1,881.61	1,754.06	46.5	-3.61	0.226
130.00	-4.54	-23.20	0.00	-344.2	0.00	344.23	2,430.65	589.77	1,804.92	1,692.20	48.02	-3.65	0.207
132.50	-4.26	-18.56	0.00	-286.2	0.00	286.24	2,384.17	574.27	1,711.30	1,615.82	49.94	-3.69	0.180
134.50	-4.01	-18.05	0.00	-249.1	0.00	249.13	2,346.31	561.87	1,638.21	1,555.50	51.5	-3.73	0.163
135.00	-3.95	-17.99	0.00	-240.1	0.00	240.10	2,336.75	558.77	1,620.18	1,540.53	51.89	-3.73	0.159
136.00	-2.88	-16.02	0.00	-222.1	0.00	222.11	2,317.52	552.57	1,584.43	1,510.73	52.67	-3.75	0.149

138.00	-1.81	-14.53	0.00	-190.1	0.00	190.08	2,278.61	540.17	1,514.12	1,451.71	54.25	-3.78	0.132
138.92	-1.71	-14.45	0.00	-176.7	0.00	176.72	2,260.52	534.47	1,482.34	1,424.84	54.98	-3.79	0.126
138.92	-1.71	-14.45	0.00	-176.7	0.00	176.72	1,135.22	321.97	896.48	721.35	54.98	-3.79	0.249
140.00	-1.17	-13.86	0.00	-161.1	0.00	161.10	1,127.99	317.95	874.23	707.75	55.83	-3.81	0.231
141.30	-1.07	-13.30	0.00	-143.1	0.00	143.08	1,119.05	313.12	847.84	691.40	56.88	-3.83	0.210
144.30	-0.86	-12.77	0.00	-103.2	0.00	103.18	1,097.47	301.95	788.48	653.75	59.3	-3.88	0.160
144.60	-0.81	-12.27	0.00	-99.4	0.00	99.35	1,095.24	300.84	782.66	649.99	59.54	-3.89	0.155
145.00	-0.64	-10.48	0.00	-94.4	0.00	94.41	1,092.24	299.35	774.94	644.98	59.87	-3.9	0.148
145.10	-0.63	-10.15	0.00	-93.4	0.00	93.36	1,091.48	298.98	773.02	643.73	59.95	-3.9	0.147
150.00	-0.11	-9.45	0.00	-43.6	0.00	43.61	1,052.73	280.75	681.64	582.77	63.98	-3.95	0.076
150.30	-0.08	-8.95	0.00	-40.8	0.00	40.78	1,050.24	279.63	676.23	579.07	64.23	-3.95	0.072
153.00	0.00	-8.92	0.00	-16.6	0.00	16.62	1,027.22	269.59	628.53	545.89	66.47	-3.97	0.032

Load Case: 1.2D + 1.0Di + 1.0Wi Normal		50 mph wind with 1" radial ice			21 Iterations
Gust Response Factor:	1.10	Ice Dead Load Factor	1.00		
Dead load Factor:	1.20			Ice Importance Factor	1.00
Wind Load Factor:	1.00				

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-91.71	-23.92	0.00	-2,383.6	0.00	2,383.55	7,880.97	2,186.29	15,500.81	12,748.09	0	0	0.199
5.00	-88.68	-23.79	0.00	-2,264.0	0.00	2,263.97	7,783.11	2,136.69	14,805.50	12,302.35	0.02	-0.03	0.196
10.00	-85.50	-23.66	0.00	-2,145.0	0.00	2,145.03	7,681.49	2,087.09	14,126.14	11,858.04	0.07	-0.07	0.192
15.00	-82.37	-23.53	0.00	-2,026.7	0.00	2,026.74	7,576.11	2,037.48	13,462.73	11,415.57	0.16	-0.1	0.189
20.00	-79.29	-23.40	0.00	-1,909.1	0.00	1,909.09	7,466.98	1,987.88	12,815.28	10,975.36	0.29	-0.14	0.185
25.00	-76.27	-23.28	0.00	-1,792.1	0.00	1,792.08	7,354.09	1,938.28	12,183.78	10,537.83	0.46	-0.18	0.181
30.00	-73.30	-23.15	0.00	-1,675.7	0.00	1,675.70	7,237.44	1,888.68	11,568.24	10,103.39	0.66	-0.21	0.176
35.00	-70.40	-23.02	0.00	-1,560.0	0.00	1,559.96	7,117.03	1,839.07	10,968.65	9,672.46	0.91	-0.25	0.171
40.00	-67.57	-22.91	0.00	-1,444.9	0.00	1,444.88	6,992.87	1,789.47	10,385.02	9,245.46	1.19	-0.29	0.166
42.19	-66.34	-22.87	0.00	-1,394.6	0.00	1,394.64	6,937.23	1,767.72	10,134.10	9,059.55	1.32	-0.3	0.164
43.00	-65.30	-22.68	0.00	-1,376.2	0.00	1,376.18	6,916.56	1,759.71	10,042.49	8,991.32	1.37	-0.31	0.163
45.00	-63.47	-22.63	0.00	-1,330.8	0.00	1,330.83	6,864.94	1,739.87	9,817.34	8,822.80	1.51	-0.32	0.160
46.00	-61.60	-17.80	0.00	-1,308.2	0.00	1,308.20	6,838.91	1,729.95	9,705.72	8,738.83	1.58	-0.33	0.159
49.50	-58.39	-17.64	0.00	-1,245.9	0.00	1,245.92	6,746.60	1,695.23	9,320.07	8,446.46	1.83	-0.36	0.156
50.00	-57.95	-17.62	0.00	-1,237.1	0.00	1,237.10	6,733.26	1,690.27	9,265.61	8,404.90	1.87	-0.36	0.156
50.81	-57.23	-17.58	0.00	-1,222.8	0.00	1,222.82	5,655.36	1,494.80	8,281.46	7,142.72	1.93	-0.37	0.181
53.00	-56.09	-17.43	0.00	-1,184.3	0.00	1,184.32	5,611.42	1,475.79	8,072.17	6,996.45	2.1	-0.39	0.179
55.00	-55.12	-17.38	0.00	-1,149.5	0.00	1,149.46	5,570.67	1,458.43	7,883.39	6,863.35	2.27	-0.4	0.178
56.50	-54.32	-17.23	0.00	-1,123.4	0.00	1,123.39	5,539.71	1,445.41	7,743.27	6,763.82	2.4	-0.42	0.176
60.00	-52.67	-17.16	0.00	-1,063.1	0.00	1,063.09	5,466.15	1,415.03	7,421.21	6,532.70	2.71	-0.45	0.173
60.30	-52.45	-17.03	0.00	-1,057.9	0.00	1,057.94	5,459.76	1,412.42	7,393.93	6,512.97	2.74	-0.45	0.172
64.00	-50.66	-16.86	0.00	-995.0	0.00	994.95	5,379.83	1,380.31	7,061.52	6,270.59	3.1	-0.48	0.168
65.00	-50.20	-16.79	0.00	-978.1	0.00	978.09	5,357.87	1,371.62	6,973.00	6,205.43	3.2	-0.49	0.167
69.30	-48.18	-16.62	0.00	-905.9	0.00	905.90	5,261.75	1,334.30	6,598.69	5,926.98	3.66	-0.52	0.162
70.00	-47.86	-16.56	0.00	-894.3	0.00	894.27	5,245.84	1,328.22	6,538.74	5,881.94	3.74	-0.53	0.161
73.30	-46.33	-16.39	0.00	-839.6	0.00	839.62	5,169.84	1,299.58	6,259.77	5,670.71	4.12	-0.56	0.157
75.00	-45.59	-16.33	0.00	-811.8	0.00	811.76	5,130.05	1,284.82	6,118.44	5,562.65	4.32	-0.57	0.155
77.30	-44.52	-16.16	0.00	-774.2	0.00	774.20	5,075.52	1,264.86	5,929.79	5,417.30	4.6	-0.6	0.152
80.00	-43.38	-16.10	0.00	-730.6	0.00	730.57	5,010.50	1,241.42	5,712.10	5,247.98	4.94	-0.62	0.148
80.90	-42.91	-16.03	0.00	-716.1	0.00	716.08	4,988.58	1,233.61	5,640.44	5,191.86	5.06	-0.63	0.147
81.80	-42.46	-15.88	0.00	-701.6	0.00	701.65	4,966.54	1,225.79	5,569.24	5,135.91	5.18	-0.63	0.145
85.00	-41.14	-15.80	0.00	-650.8	0.00	650.85	4,887.19	1,198.02	5,319.73	4,938.34	5.62	-0.66	0.140
86.30	-40.53	-15.68	0.00	-630.3	0.00	630.31	4,854.51	1,186.73	5,219.99	4,858.71	5.8	-0.67	0.138
86.64	-40.39	-15.63	0.00	-624.9	0.00	624.93	4,845.84	1,183.75	5,193.82	4,837.75	5.85	-0.68	0.138
90.00	-38.38	-15.55	0.00	-572.5	0.00	572.47	4,760.12	1,154.61	4,941.31	4,634.15	6.33	-0.7	0.132
90.50	-38.01	-15.43	0.00	-564.7	0.00	564.70	4,747.21	1,150.27	4,904.23	4,604.05	6.41	-0.71	0.131
91.70	-37.21	-15.34	0.00	-546.2	0.00	546.18	4,716.07	1,139.86	4,815.83	4,532.04	6.59	-0.72	0.129
92.00	-36.03	-15.13	0.00	-541.6	0.00	541.58	4,708.25	1,137.25	4,793.85	4,514.09	6.63	-0.72	0.128
93.00	-34.40	-14.86	0.00	-526.4	0.00	526.45	4,682.08	1,128.57	4,720.96	4,454.43	6.78	-0.73	0.126
93.36	-34.19	-14.85	0.00	-521.1	0.00	521.11	3,004.09	816.95	3,463.01	2,904.43	6.84	-0.73	0.191
94.00	-33.94	-14.81	0.00	-511.5	0.00	511.52	2,995.79	812.98	3,429.42	2,882.24	6.94	-0.74	0.189
94.80	-33.62	-14.69	0.00	-499.7	0.00	499.67	2,985.35	808.02	3,387.70	2,854.55	7.06	-0.75	0.187
95.00	-33.55	-14.63	0.00	-496.7	0.00	496.73	2,982.73	806.78	3,377.31	2,847.63	7.09	-0.75	0.186
100.00	-31.56	-13.38	0.00	-423.6	0.00	423.60	2,915.13	775.78	3,122.77	2,675.44	7.91	-0.8	0.169
102.80	-30.64	-13.20	0.00	-386.1	0.00	386.14	2,875.64	758.42	2,984.58	2,579.72	8.39	-0.83	0.161
105.00	-29.98	-13.13	0.00	-357.1	0.00	357.10	2,843.78	744.78	2,878.20	2,504.93	8.78	-0.85	0.153
108.00	-28.66	-11.90	0.00	-317.7	0.00	317.71	2,799.17	726.17	2,736.24	2,403.61	9.33	-0.88	0.143
110.00	-28.09	-11.85	0.00	-293.9	0.00	293.92	2,768.67	713.77	2,643.60	2,336.52	9.7	-0.9	0.136
111.00	-23.74	-11.10	0.00	-282.1	0.00	282.07	2,753.20	707.57	2,597.88	2,303.13	9.89	-0.91	0.131
111.30	-23.59	-10.94	0.00	-278.7	0.00	278.74	2,748.53	705.71	2,584.24	2,293.13	9.95	-0.92	0.130
115.00	-22.65	-10.86	0.00	-238.2	0.00	238.24	2,689.80	682.77	2,418.97	2,170.63	10.67	-0.95	0.118
116.50	-21.82	-9.62	0.00	-222.0	0.00	221.95	2,665.41	673.47	2,353.53	2,121.41	10.97	-0.96	0.113
119.30	-21.06	-9.46	0.00	-195.0	0.00	195.02	2,618.97	656.11	2,233.77	2,030.29	11.54	-0.98	0.104
120.00	-20.89	-9.38	0.00	-188.4	0.00	188.40	2,607.18	651.77	2,204.32	2,007.66	11.69	-0.99	0.102
125.00	-19.27	-8.06	0.00	-141.5	0.00	141.48	2,520.79	620.77	1,999.63	1,848.05	12.74	-1.03	0.084
127.30	-18.59	-7.80	0.00	-122.9	0.00	122.94	2,479.79	606.51	1,908.83	1,775.86	13.24	-1.04	0.077
128.00	-13.70	-6.92	0.00	-117.5	0.00	117.48	2,467.16	602.17	1,881.61	1,754.06	13.4	-1.04	0.073
130.00	-13.28	-6.86	0.00	-103.6	0.00	103.64	2,430.65	589.77	1,804.92	1,692.20	13.84	-1.06	0.067
132.50	-12.31	-5.56	0.00	-86.5	0.00	86.49	2,384.17	574.27	1,711.30	1,615.82	14.39	-1.07	0.059
134.50	-11.83	-5.41	0.00	-75.4	0.00	75.37	2,346.31	561.87	1,638.21	1,555.50	14.84	-1.08	0.054
135.00	-11.73	-5.39	0.00	-72.7	0.00	72.66	2,336.75	558.77	1,620.18	1,540.53	14.96	-1.08	0.052
136.00	-8.91	-4.88	0.00	-67.3	0.00	67.27	2,317.52	552.57	1,584.43	1,510.73	15.19	-1.09	0.048

138.00	-6.54	-4.48	0.00	-57.5	0.00	57.51	2,278.61	540.17	1,514.12	1,451.71	15.64	-1.1	0.043
138.92	-6.37	-4.45	0.00	-53.4	0.00	53.39	2,260.52	534.47	1,482.34	1,424.84	15.86	-1.1	0.040
138.92	-6.37	-4.45	0.00	-53.4	0.00	53.39	1,135.22	321.97	896.48	721.35	15.86	-1.1	0.080
140.00	-5.35	-4.28	0.00	-48.6	0.00	48.59	1,127.99	317.95	874.23	707.75	16.11	-1.11	0.074
141.30	-5.10	-4.12	0.00	-43.0	0.00	43.02	1,119.05	313.12	847.84	691.40	16.41	-1.11	0.067
144.30	-4.64	-3.96	0.00	-30.7	0.00	30.66	1,097.47	301.95	788.48	653.75	17.11	-1.13	0.051
144.60	-4.34	-3.78	0.00	-29.5	0.00	29.48	1,095.24	300.84	782.66	649.99	17.18	-1.13	0.049
145.00	-3.26	-3.13	0.00	-28.0	0.00	27.95	1,092.24	299.35	774.94	644.98	17.28	-1.13	0.046
145.10	-3.15	-3.01	0.00	-27.6	0.00	27.64	1,091.48	298.98	773.02	643.73	17.3	-1.13	0.046
150.00	-2.08	-2.80	0.00	-12.9	0.00	12.88	1,052.73	280.75	681.64	582.77	18.47	-1.15	0.024
150.30	-1.97	-2.65	0.00	-12.0	0.00	12.04	1,050.24	279.63	676.23	579.07	18.55	-1.15	0.023
153.00	0.00	-2.61	0.00	-4.9	0.00	4.87	1,027.22	269.59	628.53	545.89	19.2	-1.15	0.009

Load Case: 1.0D + 1.0W Service Normal 60 mph Wind with No Ice 20 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.00
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-59.86	-20.62	0.00	-2,036.0	0.00	2,035.98	7,880.97	2,186.29	15,500.81	12,748.09	0	0	0.167
5.00	-57.65	-20.51	0.00	-1,932.9	0.00	1,932.86	7,783.11	2,136.69	14,805.50	12,302.35	0.02	-0.03	0.165
10.00	-55.35	-20.40	0.00	-1,830.3	0.00	1,830.30	7,681.49	2,087.09	14,126.14	11,858.04	0.06	-0.06	0.162
15.00	-53.09	-20.29	0.00	-1,728.3	0.00	1,728.29	7,576.11	2,037.48	13,462.73	11,415.57	0.14	-0.09	0.159
20.00	-50.88	-20.19	0.00	-1,626.8	0.00	1,626.82	7,466.98	1,987.88	12,815.28	10,975.36	0.25	-0.12	0.155
25.00	-48.72	-20.08	0.00	-1,525.9	0.00	1,525.88	7,354.09	1,938.28	12,183.78	10,537.83	0.39	-0.15	0.152
30.00	-46.61	-19.98	0.00	-1,425.5	0.00	1,425.48	7,237.44	1,888.68	11,568.24	10,103.39	0.57	-0.18	0.148
35.00	-44.54	-19.87	0.00	-1,325.6	0.00	1,325.60	7,117.03	1,839.07	10,968.65	9,672.46	0.77	-0.21	0.143
40.00	-42.53	-19.78	0.00	-1,226.3	0.00	1,226.27	6,992.87	1,789.47	10,385.02	9,245.46	1.01	-0.24	0.139
42.19	-41.66	-19.75	0.00	-1,182.9	0.00	1,182.89	6,937.23	1,767.72	10,134.10	9,059.55	1.13	-0.26	0.137
43.00	-40.90	-19.58	0.00	-1,167.0	0.00	1,166.95	6,916.56	1,759.71	10,042.49	8,991.32	1.17	-0.26	0.136
45.00	-39.51	-19.54	0.00	-1,127.8	0.00	1,127.80	6,864.94	1,739.87	9,817.34	8,822.80	1.29	-0.28	0.134
46.00	-38.20	-15.14	0.00	-1,108.3	0.00	1,108.26	6,838.91	1,729.95	9,705.72	8,738.83	1.34	-0.28	0.132
49.50	-35.78	-15.01	0.00	-1,055.3	0.00	1,055.28	6,746.60	1,695.23	9,320.07	8,446.46	1.56	-0.3	0.130
50.00	-35.44	-14.99	0.00	-1,047.8	0.00	1,047.77	6,733.26	1,690.27	9,265.61	8,404.90	1.59	-0.31	0.130
50.81	-34.90	-14.96	0.00	-1,035.6	0.00	1,035.63	5,655.36	1,494.80	8,281.46	7,142.72	1.64	-0.31	0.151
53.00	-34.11	-14.83	0.00	-1,002.9	0.00	1,002.87	5,611.42	1,475.79	8,072.17	6,996.45	1.79	-0.33	0.150
55.00	-33.43	-14.79	0.00	-973.2	0.00	973.21	5,570.67	1,458.43	7,883.39	6,863.35	1.93	-0.34	0.148
56.50	-32.88	-14.66	0.00	-951.0	0.00	951.02	5,539.71	1,445.41	7,743.27	6,763.82	2.04	-0.35	0.147
60.00	-31.74	-14.61	0.00	-899.7	0.00	899.72	5,466.15	1,415.03	7,421.21	6,532.70	2.31	-0.38	0.144
60.30	-31.59	-14.49	0.00	-895.3	0.00	895.34	5,459.76	1,412.42	7,393.93	6,512.97	2.34	-0.38	0.143
64.00	-30.35	-14.35	0.00	-841.7	0.00	841.73	5,379.83	1,380.31	7,061.52	6,270.59	2.64	-0.41	0.140
65.00	-30.03	-14.29	0.00	-827.4	0.00	827.39	5,357.87	1,371.62	6,973.00	6,205.43	2.73	-0.41	0.139
69.30	-28.63	-14.14	0.00	-766.0	0.00	765.95	5,261.75	1,334.30	6,598.69	5,926.98	3.12	-0.45	0.135
70.00	-28.42	-14.10	0.00	-756.0	0.00	756.05	5,245.84	1,328.22	6,538.74	5,881.94	3.18	-0.45	0.134
73.30	-27.36	-13.95	0.00	-709.5	0.00	709.52	5,169.84	1,299.58	6,259.77	5,670.71	3.5	-0.48	0.131
75.00	-26.85	-13.91	0.00	-685.8	0.00	685.80	5,130.05	1,284.82	6,118.44	5,562.65	3.67	-0.49	0.129
77.30	-26.11	-13.76	0.00	-653.8	0.00	653.81	5,075.52	1,264.86	5,929.79	5,417.30	3.91	-0.51	0.126
80.00	-25.32	-13.72	0.00	-616.6	0.00	616.65	5,010.50	1,241.42	5,712.10	5,247.98	4.21	-0.53	0.123
80.90	-25.03	-13.67	0.00	-604.3	0.00	604.30	4,988.58	1,233.61	5,640.44	5,191.86	4.31	-0.53	0.122
81.80	-24.72	-13.54	0.00	-592.0	0.00	592.00	4,966.54	1,225.79	5,569.24	5,135.91	4.41	-0.54	0.120
85.00	-23.80	-13.48	0.00	-548.7	0.00	548.69	4,887.19	1,198.02	5,319.73	4,938.34	4.78	-0.56	0.116
86.30	-23.39	-13.37	0.00	-531.2	0.00	531.16	4,854.51	1,186.73	5,219.99	4,858.71	4.93	-0.57	0.114
86.64	-23.29	-13.33	0.00	-526.6	0.00	526.57	4,845.84	1,183.75	5,193.82	4,837.75	4.97	-0.57	0.114
90.00	-21.81	-13.28	0.00	-481.8	0.00	481.81	4,760.12	1,154.61	4,941.31	4,634.15	5.38	-0.6	0.109
90.50	-21.54	-13.17	0.00	-475.2	0.00	475.18	4,747.21	1,150.27	4,904.23	4,604.05	5.45	-0.6	0.108
91.70	-21.00	-13.11	0.00	-459.4	0.00	459.37	4,716.07	1,139.86	4,815.83	4,532.04	5.6	-0.61	0.106
92.00	-20.24	-12.92	0.00	-455.4	0.00	455.44	4,708.25	1,137.25	4,793.85	4,514.09	5.64	-0.61	0.105
93.00	-19.20	-12.68	0.00	-442.5	0.00	442.52	4,682.08	1,128.57	4,720.96	4,454.43	5.77	-0.62	0.104
93.36	-19.04	-12.67	0.00	-438.0	0.00	437.97	3,004.09	816.95	3,463.01	2,904.43	5.81	-0.62	0.157
94.00	-18.90	-12.64	0.00	-429.8	0.00	429.79	2,995.79	812.98	3,429.42	2,882.24	5.9	-0.63	0.156
94.80	-18.68	-12.54	0.00	-419.7	0.00	419.68	2,985.35	808.02	3,387.70	2,854.55	6	-0.63	0.154
95.00	-18.64	-12.48	0.00	-417.2	0.00	417.18	2,982.73	806.78	3,377.31	2,847.63	6.03	-0.64	0.153
100.00	-17.33	-11.39	0.00	-354.8	0.00	354.76	2,915.13	775.78	3,122.77	2,675.44	6.72	-0.68	0.139
102.80	-16.73	-11.24	0.00	-322.9	0.00	322.87	2,875.64	758.42	2,984.58	2,579.72	7.13	-0.7	0.131
105.00	-16.29	-11.18	0.00	-298.1	0.00	298.13	2,843.78	744.78	2,878.20	2,504.93	7.46	-0.72	0.125
108.00	-15.43	-10.10	0.00	-264.6	0.00	264.58	2,799.17	726.17	2,736.24	2,403.61	7.92	-0.75	0.116
110.00	-15.05	-10.07	0.00	-244.4	0.00	244.38	2,768.67	713.77	2,643.60	2,336.52	8.24	-0.76	0.110
111.00	-12.74	-9.38	0.00	-234.3	0.00	234.31	2,753.20	707.57	2,597.88	2,303.13	8.4	-0.77	0.107
111.30	-12.64	-9.25	0.00	-231.5	0.00	231.49	2,748.53	705.71	2,584.24	2,293.13	8.45	-0.77	0.106
115.00	-12.04	-9.19	0.00	-197.3	0.00	197.26	2,689.80	682.77	2,418.97	2,170.63	9.06	-0.8	0.096
116.50	-11.51	-8.10	0.00	-183.5	0.00	183.47	2,665.41	673.47	2,353.53	2,121.41	9.31	-0.81	0.091
119.30	-11.02	-7.97	0.00	-160.8	0.00	160.79	2,618.97	656.11	2,233.77	2,030.29	9.79	-0.83	0.084
120.00	-10.91	-7.91	0.00	-155.2	0.00	155.22	2,607.18	651.77	2,204.32	2,007.66	9.92	-0.84	0.082
125.00	-9.86	-6.76	0.00	-115.7	0.00	115.67	2,520.79	620.77	1,999.63	1,848.05	10.81	-0.86	0.067
127.30	-9.43	-6.54	0.00	-100.1	0.00	100.12	2,479.79	606.51	1,908.83	1,775.86	11.23	-0.88	0.060
128.00	-6.87	-5.72	0.00	-95.6	0.00	95.55	2,467.16	602.17	1,881.61	1,754.06	11.36	-0.88	0.057
130.00	-6.60	-5.67	0.00	-84.1	0.00	84.11	2,430.65	589.77	1,804.92	1,692.20	11.73	-0.89	0.053
132.50	-5.98	-4.54	0.00	-69.9	0.00	69.94	2,384.17	574.27	1,711.30	1,615.82	12.2	-0.9	0.046
134.50	-5.68	-4.41	0.00	-60.9	0.00	60.86	2,346.31	561.87	1,638.21	1,555.50	12.58	-0.91	0.042
135.00	-5.61	-4.40	0.00	-58.7	0.00	58.66	2,336.75	558.77	1,620.18	1,540.53	12.67	-0.91	0.041
136.00	-4.30	-3.92	0.00	-54.3	0.00	54.26	2,317.52	552.57	1,584.43	1,510.73	12.86	-0.92	0.038

138.00	-3.01	-3.55	0.00	-46.4	0.00	46.43	2,278.61	540.17	1,514.12	1,451.71	13.25	-0.92	0.033
138.92	-2.91	-3.53	0.00	-43.2	0.00	43.16	2,260.52	534.47	1,482.34	1,424.84	13.43	-0.93	0.032
138.92	-2.91	-3.53	0.00	-43.2	0.00	43.16	1,135.22	321.97	896.48	721.35	13.43	-0.93	0.063
140.00	-2.27	-3.39	0.00	-39.4	0.00	39.35	1,127.99	317.95	874.23	707.75	13.64	-0.93	0.058
141.30	-2.13	-3.25	0.00	-34.9	0.00	34.94	1,119.05	313.12	847.84	691.40	13.89	-0.94	0.053
144.30	-1.87	-3.12	0.00	-25.2	0.00	25.20	1,097.47	301.95	788.48	653.75	14.48	-0.95	0.040
144.60	-1.77	-3.00	0.00	-24.3	0.00	24.26	1,095.24	300.84	782.66	649.99	14.54	-0.95	0.039
145.00	-1.45	-2.56	0.00	-23.0	0.00	23.05	1,092.24	299.35	774.94	644.98	14.62	-0.95	0.037
145.10	-1.43	-2.48	0.00	-22.8	0.00	22.80	1,091.48	298.98	773.02	643.73	14.64	-0.95	0.037
150.00	-0.81	-2.31	0.00	-10.6	0.00	10.64	1,052.73	280.75	681.64	582.77	15.63	-0.97	0.019
150.30	-0.74	-2.19	0.00	-10.0	0.00	9.95	1,050.24	279.63	676.23	579.07	15.69	-0.97	0.018
153.00	0.00	-2.17	0.00	-4.0	0.00	4.05	1,027.22	269.59	628.53	545.89	16.24	-0.97	0.007

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

(Based on ASCE7-16 Chapters 11, 12 and 15)

Spectral Response Acceleration for Short Period (S_S):	0.259
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.059
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.000
Site Coefficient $F_{a:}$	1.593
Site Coefficient F_v:	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.275
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.094
Seismic Response Coefficient (C_s):	0.049
Upper Limit C_S:	0.049
Lower Limit C_S:	0.030
Period based on Rayleigh Method (sec):	1.280
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.390
Total Unfactored Dead Load:	59.860 k
Seismic Base Shear (E):	2.940 k

1.2D + 1.0Ev + 1.0Eh Normal **Seismic**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
72	151.65	161	173	0.007	21	202
71	150.15	18	19	0.001	2	23
70	147.55	307	318	0.013	38	385
69	145.05	6	7	0.000	1	8
68	144.8	27	28	0.001	3	34
67	144.45	21	21	0.001	2	26
66	142.8	210	208	0.008	25	264
65	140.65	93	90	0.004	11	117
64	139.4596	78	75	0.003	9	98
63	138.4596	105	100	0.004	12	132
62	137	243	227	0.009	27	305
61	135.5	127	117	0.005	14	159
60	134.75	64	58	0.002	7	80
59	133.5	259	233	0.010	28	325
58	131.25	330	291	0.012	35	415
57	129	270	232	0.009	28	339
56	127.65	102	86	0.004	10	128
55	126.15	339	283	0.012	34	426
54	122.5	760	608	0.025	73	954
53	119.65	109	84	0.003	10	137
52	117.9	441	334	0.014	40	553
51	115.75	240	177	0.007	21	301
50	113.15	604	432	0.018	52	758
49	111.15	50	35	0.001	4	62
48	110.5	186	129	0.005	15	234
47	109	377	256	0.010	31	473
46	106.5	574	378	0.015	45	720
45	103.9	428	272	0.011	32	537
44	101.4	553	340	0.014	41	694
43	97.5	1,010	588	0.024	70	1,268
42	94.9	41	23	0.001	3	52
41	94.4	165	92	0.004	11	207
40	93.6797	132	73	0.003	9	166
39	93.1797	153	84	0.003	10	192

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
38	92.5	429	232	0.009	28	538
37	91.85	129	69	0.003	8	162
36	91.1	519	275	0.011	33	651
35	90.25	218	114	0.005	14	273
34	88.3216	1,479	751	0.030	90	1,856
33	86.4716	96	47	0.002	6	120
32	85.65	365	177	0.007	21	458
31	83.4	910	427	0.017	51	1,142
30	81.35	259	117	0.005	14	325
29	80.45	260	116	0.005	14	327
28	78.65	790	341	0.014	41	991
27	76.15	682	282	0.011	34	856
26	74.15	510	203	0.008	24	640
25	71.65	1,004	381	0.016	45	1,260
24	69.65	215	79	0.003	9	270
23	67.15	1,341	465	0.019	55	1,683
22	64.5	316	104	0.004	12	397
21	62.15	1,185	369	0.015	44	1,487
20	60.15	97	29	0.001	3	122
19	58.25	1,144	325	0.013	39	1,435
18	55.75	496	133	0.005	16	623
17	54	668	171	0.007	20	838
16	51.905	739	179	0.007	21	927
15	50.405	540	126	0.005	15	678
14	49.75	335	76	0.003	9	420
13	47.75	2,368	511	0.021	61	2,972
12	45.5	685	138	0.006	16	859
11	44	1,380	266	0.011	32	1,732
10	42.5964	561	103	0.004	12	704
9	41.0964	865	151	0.006	18	1,085
8	37.5	2,006	309	0.013	37	2,518
7	32.5	2,054	260	0.010	31	2,578
6	27.5	2,102	211	0.008	25	2,638
5	22.5	2,150	163	0.007	19	2,699
4	17.5	2,199	118	0.005	14	2,759
3	12.5	2,247	75	0.003	9	2,819
2	7.5	2,295	38	0.002	5	2,880
1	2.5	2,198	8	0.000	1	2,759
Sinclair SD314-HF2P4LDF	153	25	27	0.001	3	32
Sinclair SD314-HF2P4LDF	153	25	27	0.001	3	32
Sinclair SD314-HF2P4LDF	153	25	27	0.001	3	32
Sinclair SD314-HF2P4LDF	153	25	27	0.001	3	32
Sinclair SD314-HF2P4LDF	145	50	51	0.002	6	63
Sinclair SD314-HF2P4LDF	145	100	102	0.004	12	126
Sinclair SD314-HF2P4LDF	145	100	102	0.004	12	126
Sinclair SD314-HF2P4LDF	144.6	75	76	0.003	9	95
RFI Antennas BA160-67-T3	153	88	96	0.004	11	111
RFI Antennas BA160-67-T3	153	88	96	0.004	11	111
RFI Antennas BA160-67-T3	153	132	144	0.006	17	166
Pine Branches	153	150	163	0.007	20	188
Pine Branches	150.3	50	53	0.002	6	63
Pine Branches	144.3	50	50	0.002	6	63
Pine Branches	141.3	50	49	0.002	6	63
Pine Branches	134.5	50	46	0.002	5	63
Pine Branches	132.5	300	268	0.011	32	377
Pine Branches	127.3	50	42	0.002	5	63
Pine Branches	127.3	50	42	0.002	5	63
Pine Branches	125	300	247	0.010	29	377
Pine Branches	119.3	50	39	0.002	5	63
Pine Branches	116.5	300	224	0.009	27	377
Pine Branches	111.3	50	35	0.001	4	63
Pine Branches	108	300	201	0.008	24	377
Pine Branches	102.8	50	31	0.001	4	63
Pine Branches	100	300	181	0.007	22	377
Pine Branches	94.8	50	28	0.001	3	63
Pine Branches	90.5	50	26	0.001	3	63
Pine Branches	86.3	50	25	0.001	3	63
Pine Branches	81.8	50	23	0.001	3	63
Pine Branches	77.3	50	21	0.001	3	63
Pine Branches	73.3	50	20	0.001	2	63

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
Pine Branches	69.3	50	18	0.001	2	63
Pine Branches	64	50	16	0.001	2	63
Pine Branches	60.3	50	15	0.001	2	63
Pine Branches	56.5	50	14	0.001	2	63
Pine Branches	53	50	12	0.000	1	63
Pine Branches	49.5	50	11	0.000	1	63
Pine Branches	46	50	10	0.000	1	63
Pine Branches	46	600	123	0.005	15	753
Pine Branches	43	50	9	0.000	1	63
Pine Branches	43	150	28	0.001	3	188
Comprod 893-70-4	153	60	65	0.003	8	75
Generic Flat T-Arm	150	312	331	0.013	40	392
Generic Flat T-Arm	138	938	885	0.036	106	1,177
Generic Flat T-Arm	92	625	336	0.014	40	784
Sinclair SD212-SF2P2SNM	145.1	22	23	0.001	3	28
Sinclair SD212-SF2P2SNM	91.7	22	12	0.000	1	28
Generic 5' Omni	145	10	10	0.000	1	13
Sinclair SD212-HF2P4LDF(D00B)	145	39	39	0.002	5	49
Generic Flat Side Arm	140	562	542	0.022	65	706
VZW Unused Reserve (0 sqin)	138	0	0	0.000	0	0
CSS X7CAP-680-VM0ip	138	115	108	0.004	13	144
Samsung RT4401-48A	136	56	52	0.002	6	70
Samsung XXDWMM-12.5-65-8T-CBRS	136	69	64	0.003	8	87
Samsung B2/B66A RRH-BR049	136	253	234	0.010	28	318
Samsung B5/B13 RRH-BR04C	136	211	195	0.008	23	265
Raycap RRODC-6600-PF-48	136	94	87	0.004	10	119
Samsung MT6407-77A	136	245	226	0.009	27	307
Commscope NHH-65B-R2B	136	262	242	0.010	29	329
Ericsson Radio 4460 B25+B66	128	327	278	0.011	33	410
Ericsson 4480 B71+B85A	128	252	214	0.009	26	316
Commscope VV-65A-R1	128	71	61	0.002	7	90
Ericsson AIR 6419 B41	128	250	212	0.009	25	314
Generic Flat Light Sector Frame	128	1,200	1,020	0.041	122	1,506
Generic Flat Light Sector Frame	111	1,200	837	0.034	100	1,506
RFS APXVAALL24 43-U-NA20	128	368	313	0.013	37	462
Nokia AirScale RRH 4T4R B5 160W AHCA	111	106	74	0.003	9	133
Nokia RRH 4T4R B30 100W AHNA (34.2 lbs)	111	103	72	0.003	9	129
Raycap DC6-48-60-18-8F ("Squid")	111	64	44	0.002	5	80
Alcatel-Lucent B25 RRH4x30-4R	111	153	107	0.004	13	192
Andrew DBXNH-6565A-A2M	111	103	72	0.003	9	129
Commscope NNHH-65A-R4	111	403	281	0.011	34	506
Generic 5' Dipole	94	15	8	0.000	1	19
Sinclair SD212	93	16	9	0.000	1	20
Generic Round Side Arm	93	562	307	0.012	37	706
RFS SC3-W100AC	93	40	22	0.001	3	50
Generic 10' Dipole	80.9	30	13	0.000	2	38
		59,864	24,652	1.000	2,942	75,130

0.9D - 1.0Ev + 1.0Eh Normal **Seismic (Reduced DL)**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
72	151.65	161	173	0.007	21	136
71	150.15	18	19	0.001	2	15
70	147.55	307	318	0.013	38	259
69	145.05	6	7	0.000	1	5
68	144.8	27	28	0.001	3	23
67	144.45	21	21	0.001	2	17
66	142.8	210	208	0.008	25	178
65	140.65	93	90	0.004	11	79
64	139.4596	78	75	0.003	9	66
63	138.4596	105	100	0.004	12	89
62	137	243	227	0.009	27	205

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
61	135.5	127	117	0.005	14	107
60	134.75	64	58	0.002	7	54
59	133.5	259	233	0.010	28	219
58	131.25	330	291	0.012	35	279
57	129	270	232	0.009	28	228
56	127.65	102	86	0.004	10	86
55	126.15	339	283	0.012	34	287
54	122.5	760	608	0.025	73	642
53	119.65	109	84	0.003	10	92
52	117.9	441	334	0.014	40	373
51	115.75	240	177	0.007	21	203
50	113.15	604	432	0.018	52	510
49	111.15	50	35	0.001	4	42
48	110.5	186	129	0.005	15	158
47	109	377	256	0.010	31	318
46	106.5	574	378	0.015	45	485
45	103.9	428	272	0.011	32	361
44	101.4	553	340	0.014	41	467
43	97.5	1,010	588	0.024	70	854
42	94.9	41	23	0.001	3	35
41	94.4	165	92	0.004	11	139
40	93.6797	132	73	0.003	9	112
39	93.1797	153	84	0.003	10	129
38	92.5	429	232	0.009	28	362
37	91.85	129	69	0.003	8	109
36	91.1	519	275	0.011	33	439
35	90.25	218	114	0.005	14	184
34	88.3216	1,479	751	0.030	90	1,250
33	86.4716	96	47	0.002	6	81
32	85.65	365	177	0.007	21	308
31	83.4	910	427	0.017	51	769
30	81.35	259	117	0.005	14	219
29	80.45	260	116	0.005	14	220
28	78.65	790	341	0.014	41	667
27	76.15	682	282	0.011	34	577
26	74.15	510	203	0.008	24	431
25	71.65	1,004	381	0.016	45	848
24	69.65	215	79	0.003	9	182
23	67.15	1,341	465	0.019	55	1,133
22	64.5	316	104	0.004	12	267
21	62.15	1,185	369	0.015	44	1,001
20	60.15	97	29	0.001	3	82
19	58.25	1,144	325	0.013	39	966
18	55.75	496	133	0.005	16	420
17	54	668	171	0.007	20	564
16	51.905	739	179	0.007	21	624
15	50.405	540	126	0.005	15	456
14	49.75	335	76	0.003	9	283
13	47.75	2,368	511	0.021	61	2,001
12	45.5	685	138	0.006	16	578
11	44	1,380	266	0.011	32	1,166
10	42.5964	561	103	0.004	12	474
9	41.0964	865	151	0.006	18	731
8	37.5	2,006	309	0.013	37	1,695
7	32.5	2,054	260	0.010	31	1,736
6	27.5	2,102	211	0.008	25	1,776
5	22.5	2,150	163	0.007	19	1,817
4	17.5	2,199	118	0.005	14	1,858
3	12.5	2,247	75	0.003	9	1,898
2	7.5	2,295	38	0.002	5	1,939
1	2.5	2,198	8	0.000	1	1,857
Sinclair SD314-HF2P4LDF	153	25	27	0.001	3	21
Sinclair SD314-HF2P4LDF	153	25	27	0.001	3	21
Sinclair SD314-HF2P4LDF	153	25	27	0.001	3	21
Sinclair SD314-HF2P4LDF	153	25	27	0.001	3	21
Sinclair SD314-HF2P4LDF	145	50	51	0.002	6	42
Sinclair SD314-HF2P4LDF	145	100	102	0.004	12	85
Sinclair SD314-HF2P4LDF	145	100	102	0.004	12	85
Sinclair SD314-HF2P4LDF	144.6	75	76	0.003	9	64
RFI Antennas BA160-67-T3	153	88	96	0.004	11	75

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
RFI Antennas BA160-67-T3	153	88	96	0.004	11	75
RFI Antennas BA160-67-T3	153	132	144	0.006	17	112
Pine Branches	153	150	163	0.007	20	127
Pine Branches	150.3	50	53	0.002	6	42
Pine Branches	144.3	50	50	0.002	6	42
Pine Branches	141.3	50	49	0.002	6	42
Pine Branches	134.5	50	46	0.002	5	42
Pine Branches	132.5	300	268	0.011	32	253
Pine Branches	127.3	50	42	0.002	5	42
Pine Branches	127.3	50	42	0.002	5	42
Pine Branches	125	300	247	0.010	29	253
Pine Branches	119.3	50	39	0.002	5	42
Pine Branches	116.5	300	224	0.009	27	253
Pine Branches	111.3	50	35	0.001	4	42
Pine Branches	108	300	201	0.008	24	253
Pine Branches	102.8	50	31	0.001	4	42
Pine Branches	100	300	181	0.007	22	253
Pine Branches	94.8	50	28	0.001	3	42
Pine Branches	90.5	50	26	0.001	3	42
Pine Branches	86.3	50	25	0.001	3	42
Pine Branches	81.8	50	23	0.001	3	42
Pine Branches	77.3	50	21	0.001	3	42
Pine Branches	73.3	50	20	0.001	2	42
Pine Branches	69.3	50	18	0.001	2	42
Pine Branches	64	50	16	0.001	2	42
Pine Branches	60.3	50	15	0.001	2	42
Pine Branches	56.5	50	14	0.001	2	42
Pine Branches	53	50	12	0.000	1	42
Pine Branches	49.5	50	11	0.000	1	42
Pine Branches	46	50	10	0.000	1	42
Pine Branches	46	600	123	0.005	15	507
Pine Branches	43	50	9	0.000	1	42
Pine Branches	43	150	28	0.001	3	127
Comprod 893-70-4	153	60	65	0.003	8	51
Generic Flat T-Arm	150	312	331	0.013	40	264
Generic Flat T-Arm	138	938	885	0.036	106	792
Generic Flat T-Arm	92	625	336	0.014	40	528
Sinclair SD212-SF2P2SNM	145.1	22	23	0.001	3	19
Sinclair SD212-SF2P2SNM	91.7	22	12	0.000	1	19
Generic 5' Omni	145	10	10	0.000	1	8
Sinclair SD212-HF2P4LDF(D00B)	145	39	39	0.002	5	33
Generic Flat Side Arm	140	562	542	0.022	65	475
VZW Unused Reserve (0 sqin)	138	0	0	0.000	0	0
CSS X7CAP-680-VM0ip	138	115	108	0.004	13	97
Samsung RT4401-48A	136	56	52	0.002	6	47
Samsung XXDWMM-12.5-65-8T-CBRS	136	69	64	0.003	8	59
Samsung B2/B66A RRH-BR049	136	253	234	0.010	28	214
Samsung B5/B13 RRH-BR04C	136	211	195	0.008	23	178
Raycap RRODC-6600-PF-48	136	94	87	0.004	10	80
Samsung MT6407-77A	136	245	226	0.009	27	207
Commscope NHH-65B-R2B	136	262	242	0.010	29	222
Ericsson Radio 4460 B25+B66	128	327	278	0.011	33	276
Ericsson 4480 B71+B85A	128	252	214	0.009	26	213
Commscope VV-65A-R1	128	71	61	0.002	7	60
Ericsson AIR 6419 B41	128	250	212	0.009	25	211
Generic Flat Light Sector Frame	128	1,200	1,020	0.041	122	1,014
Generic Flat Light Sector Frame	111	1,200	837	0.034	100	1,014
RFS APXVAALL24 43-U-NA20	128	368	313	0.013	37	311
Nokia AirScale RRH 4T4R B5 160W AHCA	111	106	74	0.003	9	89
Nokia RRH 4T4R B30 100W AHNA (34.2 lbs)	111	103	72	0.003	9	87
Raycap DC6-48-60-18-8F ("Squid")	111	64	44	0.002	5	54
Alcatel-Lucent B25 RRH4x30-4R	111	153	107	0.004	13	129
Andrew DBXNH-6565A-A2M	111	103	72	0.003	9	87
Commscope NNHH-65A-R4	111	403	281	0.011	34	341
Generic 5' Dipole	94	15	8	0.000	1	13
Sinclair SD212	93	16	9	0.000	1	14
Generic Round Side Arm	93	562	307	0.012	37	475
RFS SC3-W100AC	93	40	22	0.001	3	34
Generic 10' Dipole	80.9	30	13	0.000	2	25

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
		59,864	24,652	1.000	2,942	50,585

1.2D + 1.0Ev + 1.0Eh Normal **Seismic**

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-72.37	-2.94	0.00	-307.25	0.00	307.25	7,880.97	2,186.29	15,501	12,748.09	0.00	0.00	0.03
5.00	-69.49	-2.94	0.00	-292.54	0.00	292.54	7,783.11	2,136.69	14,806	12,302.35	0.00	0.00	0.03
10.00	-66.67	-2.94	0.00	-277.82	0.00	277.82	7,681.49	2,087.09	14,126	11,858.04	0.01	-0.01	0.03
15.00	-63.91	-2.93	0.00	-263.12	0.00	263.12	7,576.11	2,037.48	13,463	11,415.57	0.02	-0.01	0.03
20.00	-61.21	-2.91	0.00	-248.47	0.00	248.47	7,466.98	1,987.88	12,815	10,975.36	0.04	-0.02	0.03
25.00	-58.57	-2.89	0.00	-233.90	0.00	233.90	7,354.09	1,938.28	12,184	10,537.83	0.06	-0.02	0.03
30.00	-56.00	-2.87	0.00	-219.43	0.00	219.43	7,237.44	1,888.68	11,568	10,103.39	0.09	-0.03	0.03
35.00	-53.48	-2.83	0.00	-205.10	0.00	205.10	7,117.03	1,839.07	10,969	9,672.46	0.12	-0.03	0.03
40.00	-52.39	-2.82	0.00	-190.93	0.00	190.93	6,992.87	1,789.47	10,385	9,245.46	0.15	-0.04	0.03
42.19	-51.69	-2.81	0.00	-184.76	0.00	184.76	6,937.23	1,767.72	10,134	9,059.55	0.17	-0.04	0.03
43.00	-49.71	-2.77	0.00	-182.49	0.00	182.49	6,916.56	1,759.71	10,042	8,991.32	0.18	-0.04	0.03
45.00	-48.85	-2.75	0.00	-176.95	0.00	176.95	6,864.94	1,739.87	9,817	8,822.80	0.20	-0.04	0.03
46.00	-45.06	-2.68	0.00	-174.20	0.00	174.20	6,838.91	1,729.95	9,706	8,738.83	0.20	-0.04	0.03
49.50	-44.58	-2.67	0.00	-164.84	0.00	164.84	6,746.60	1,695.23	9,320	8,446.46	0.24	-0.05	0.03
50.00	-43.90	-2.65	0.00	-163.50	0.00	163.50	6,733.26	1,690.27	9,266	8,404.90	0.24	-0.05	0.03
50.81	-42.97	-2.63	0.00	-161.36	0.00	161.36	5,655.36	1,494.80	8,281	7,142.72	0.25	-0.05	0.03
53.00	-42.07	-2.61	0.00	-155.60	0.00	155.60	5,611.42	1,475.79	8,072	6,996.45	0.27	-0.05	0.03
55.00	-41.45	-2.59	0.00	-150.38	0.00	150.38	5,570.67	1,458.43	7,883	6,863.35	0.30	-0.05	0.03
56.50	-39.95	-2.55	0.00	-146.49	0.00	146.49	5,539.71	1,445.41	7,743	6,763.82	0.31	-0.05	0.03
60.00	-39.83	-2.55	0.00	-137.55	0.00	137.55	5,466.15	1,415.03	7,421	6,532.70	0.35	-0.06	0.03
60.30	-38.28	-2.51	0.00	-136.78	0.00	136.78	5,459.76	1,412.42	7,394	6,512.97	0.36	-0.06	0.03
64.00	-37.82	-2.49	0.00	-127.51	0.00	127.51	5,379.83	1,380.31	7,062	6,270.59	0.40	-0.06	0.03
65.00	-36.13	-2.44	0.00	-125.01	0.00	125.01	5,357.87	1,371.62	6,973	6,205.43	0.42	-0.06	0.03
69.30	-35.80	-2.43	0.00	-114.53	0.00	114.53	5,261.75	1,334.30	6,599	5,926.98	0.48	-0.07	0.03
70.00	-34.54	-2.38	0.00	-112.83	0.00	112.83	5,245.84	1,328.22	6,539	5,881.94	0.49	-0.07	0.03
73.30	-33.84	-2.36	0.00	-104.97	0.00	104.97	5,169.84	1,299.58	6,260	5,670.71	0.54	-0.07	0.03
75.00	-32.98	-2.32	0.00	-100.97	0.00	100.97	5,130.05	1,284.82	6,118	5,562.65	0.56	-0.07	0.03
77.30	-31.93	-2.28	0.00	-95.63	0.00	95.63	5,075.52	1,264.86	5,930	5,417.30	0.60	-0.08	0.02
80.00	-31.60	-2.27	0.00	-89.47	0.00	89.47	5,010.50	1,241.42	5,712	5,247.98	0.64	-0.08	0.02
80.90	-31.24	-2.25	0.00	-87.43	0.00	87.43	4,988.58	1,233.61	5,640	5,191.86	0.66	-0.08	0.02
81.80	-30.03	-2.20	0.00	-85.41	0.00	85.41	4,966.54	1,225.79	5,569	5,135.91	0.67	-0.08	0.02
85.00	-29.58	-2.18	0.00	-78.38	0.00	78.38	4,887.19	1,198.02	5,320	4,938.34	0.73	-0.09	0.02
86.30	-29.39	-2.17	0.00	-75.55	0.00	75.55	4,854.51	1,186.73	5,220	4,858.71	0.75	-0.09	0.02
86.64	-27.54	-2.08	0.00	-74.81	0.00	74.81	4,845.84	1,183.75	5,194	4,837.75	0.76	-0.09	0.02
90.00	-27.26	-2.06	0.00	-67.84	0.00	67.84	4,760.12	1,154.61	4,941	4,634.15	0.82	-0.09	0.02
90.50	-26.55	-2.03	0.00	-66.81	0.00	66.81	4,747.21	1,150.27	4,904	4,604.05	0.83	-0.09	0.02
91.70	-26.36	-2.02	0.00	-64.37	0.00	64.37	4,716.07	1,139.86	4,816	4,532.04	0.86	-0.09	0.02
92.00	-25.04	-1.95	0.00	-63.77	0.00	63.77	4,708.25	1,137.25	4,794	4,514.09	0.86	-0.09	0.02
93.00	-24.07	-1.90	0.00	-61.82	0.00	61.82	4,682.08	1,128.57	4,721	4,454.43	0.88	-0.09	0.02
93.36	-23.90	-1.89	0.00	-61.14	0.00	61.14	3,004.09	816.95	3,463	2,904.43	0.89	-0.09	0.03
94.00	-23.68	-1.87	0.00	-59.93	0.00	59.93	2,995.79	812.98	3,429	2,882.24	0.90	-0.09	0.03
94.80	-23.56	-1.87	0.00	-58.43	0.00	58.43	2,985.35	808.02	3,388	2,854.55	0.92	-0.10	0.03
95.00	-22.29	-1.80	0.00	-58.06	0.00	58.06	2,982.73	806.78	3,377	2,847.63	0.92	-0.10	0.03
100.00	-21.22	-1.74	0.00	-49.07	0.00	49.07	2,915.13	775.78	3,123	2,675.44	1.02	-0.10	0.03
102.80	-20.63	-1.70	0.00	-44.21	0.00	44.21	2,875.64	758.42	2,985	2,579.72	1.09	-0.11	0.02
105.00	-19.91	-1.65	0.00	-40.47	0.00	40.47	2,843.78	744.78	2,878	2,504.93	1.13	-0.11	0.02
108.00	-19.06	-1.60	0.00	-35.51	0.00	35.51	2,799.17	726.17	2,736	2,403.61	1.20	-0.11	0.02
110.00	-18.82	-1.58	0.00	-32.31	0.00	32.31	2,768.67	713.77	2,644	2,336.52	1.25	-0.11	0.02
111.00	-16.09	-1.40	0.00	-30.73	0.00	30.73	2,753.20	707.57	2,598	2,303.13	1.27	-0.11	0.02
111.30	-15.27	-1.34	0.00	-30.31	0.00	30.31	2,748.53	705.71	2,584	2,293.13	1.28	-0.11	0.02
115.00	-14.96	-1.32	0.00	-25.36	0.00	25.36	2,689.80	682.77	2,419	2,170.63	1.37	-0.12	0.02
116.50	-14.03	-1.25	0.00	-23.38	0.00	23.38	2,665.41	673.47	2,354	2,121.41	1.41	-0.12	0.02
119.30	-13.83	-1.24	0.00	-19.88	0.00	19.88	2,618.97	656.11	2,234	2,030.29	1.48	-0.12	0.02
120.00	-12.88	-1.16	0.00	-19.01	0.00	19.01	2,607.18	651.77	2,204	2,007.66	1.50	-0.12	0.01
125.00	-12.08	-1.10	0.00	-13.20	0.00	13.20	2,520.79	620.77	2,000	1,848.05	1.63	-0.13	0.01
127.30	-11.83	-1.08	0.00	-10.68	0.00	10.68	2,479.79	606.51	1,909	1,775.86	1.69	-0.13	0.01
128.00	-8.39	-0.79	0.00	-9.93	0.00	9.93	2,467.16	602.17	1,882	1,754.06	1.71	-0.13	0.01
130.00	-7.97	-0.76	0.00	-8.34	0.00	8.34	2,430.65	589.77	1,805	1,692.20	1.76	-0.13	0.01

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
132.50	-7.27	-0.69	0.00	-6.46	0.00	6.46	2,384.17	574.27	1,711	1,615.82	1.83	-0.13	0.01
134.50	-7.13	-0.68	0.00	-5.07	0.00	5.07	2,346.31	561.87	1,638	1,555.50	1.88	-0.13	0.01
135.00	-6.97	-0.67	0.00	-4.73	0.00	4.73	2,336.75	558.77	1,620	1,540.53	1.90	-0.13	0.01
136.00	-5.17	-0.50	0.00	-4.06	0.00	4.06	2,317.52	552.57	1,584	1,510.73	1.93	-0.13	0.01
138.00	-3.72	-0.37	0.00	-3.05	0.00	3.05	2,278.61	540.17	1,514	1,451.71	1.98	-0.13	0.00
138.92	-3.62	-0.36	0.00	-2.71	0.00	2.71	1,135.22	321.97	896	721.35	2.01	-0.13	0.01
138.92	-3.62	-0.36	0.00	-2.71	0.00	2.71	2,260.52	534.47	1,482	1,424.84	2.01	-0.13	0.00
140.00	-2.80	-0.28	0.00	-2.32	0.00	2.32	1,127.99	317.95	874	707.75	2.04	-0.13	0.01
141.30	-2.47	-0.25	0.00	-1.95	0.00	1.95	1,119.05	313.12	848	691.40	2.07	-0.13	0.01
144.30	-2.38	-0.24	0.00	-1.19	0.00	1.19	1,097.47	301.95	788	653.75	2.15	-0.13	0.00
144.60	-2.25	-0.23	0.00	-1.12	0.00	1.12	1,095.24	300.84	783	649.99	2.16	-0.13	0.00
145.00	-1.87	-0.19	0.00	-1.02	0.00	1.02	1,092.24	299.35	775	644.98	2.17	-0.13	0.00
145.10	-1.46	-0.15	0.00	-1.00	0.00	1.00	1,091.48	298.98	773	643.73	2.18	-0.13	0.00
150.00	-1.04	-0.11	0.00	-0.26	0.00	0.26	1,052.73	280.75	682	582.77	2.31	-0.13	0.00
150.30	-0.78	-0.08	0.00	-0.22	0.00	0.22	1,050.24	279.63	676	579.07	2.32	-0.13	0.00
153.00	0.00	-0.08	0.00	0.00	0.00	0.00	1,027.22	269.59	629	545.89	2.40	-0.13	0.00

0.9D - 1.0Ev + 1.0Eh Normal **Seismic (Reduced DL)**

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-48.73	-2.94	0.00	-305.83	0.00	305.83	7,880.97	2,186.29	15,501	12,748.09	0.00	0.00	0.03
5.00	-46.79	-2.94	0.00	-291.12	0.00	291.12	7,783.11	2,136.69	14,806	12,302.35	0.00	0.00	0.03
10.00	-44.89	-2.94	0.00	-276.41	0.00	276.41	7,681.49	2,087.09	14,126	11,858.04	0.01	-0.01	0.03
15.00	-43.03	-2.92	0.00	-261.74	0.00	261.74	7,576.11	2,037.48	13,463	11,415.57	0.02	-0.01	0.03
20.00	-41.21	-2.91	0.00	-247.11	0.00	247.11	7,466.98	1,987.88	12,815	10,975.36	0.04	-0.02	0.03
25.00	-39.44	-2.89	0.00	-232.58	0.00	232.58	7,354.09	1,938.28	12,184	10,537.83	0.06	-0.02	0.03
30.00	-37.70	-2.86	0.00	-218.15	0.00	218.15	7,237.44	1,888.68	11,568	10,103.39	0.09	-0.03	0.03
35.00	-36.01	-2.82	0.00	-203.87	0.00	203.87	7,117.03	1,839.07	10,969	9,672.46	0.12	-0.03	0.03
40.00	-35.28	-2.81	0.00	-189.76	0.00	189.76	6,992.87	1,789.47	10,385	9,245.46	0.15	-0.04	0.03
42.19	-34.80	-2.79	0.00	-183.61	0.00	183.61	6,937.23	1,767.72	10,134	9,059.55	0.17	-0.04	0.03
43.00	-33.47	-2.76	0.00	-181.35	0.00	181.35	6,916.56	1,759.71	10,042	8,991.32	0.18	-0.04	0.03
45.00	-32.89	-2.74	0.00	-175.84	0.00	175.84	6,864.94	1,739.87	9,817	8,822.80	0.19	-0.04	0.03
46.00	-30.34	-2.66	0.00	-173.09	0.00	173.09	6,838.91	1,729.95	9,706	8,738.83	0.20	-0.04	0.02
49.50	-30.01	-2.65	0.00	-163.77	0.00	163.77	6,746.60	1,695.23	9,320	8,446.46	0.24	-0.05	0.02
50.00	-29.56	-2.64	0.00	-162.44	0.00	162.44	6,733.26	1,690.27	9,266	8,404.90	0.24	-0.05	0.02
50.81	-28.93	-2.62	0.00	-160.31	0.00	160.31	5,655.36	1,494.80	8,281	7,142.72	0.25	-0.05	0.03
53.00	-28.32	-2.60	0.00	-154.57	0.00	154.57	5,611.42	1,475.79	8,072	6,996.45	0.27	-0.05	0.03
55.00	-27.91	-2.58	0.00	-149.38	0.00	149.38	5,570.67	1,458.43	7,883	6,863.35	0.29	-0.05	0.03
56.50	-26.90	-2.54	0.00	-145.51	0.00	145.51	5,539.71	1,445.41	7,743	6,763.82	0.31	-0.05	0.03
60.00	-26.81	-2.54	0.00	-136.61	0.00	136.61	5,466.15	1,415.03	7,421	6,532.70	0.35	-0.06	0.03
60.30	-25.77	-2.49	0.00	-135.85	0.00	135.85	5,459.76	1,412.42	7,394	6,512.97	0.36	-0.06	0.03
64.00	-25.46	-2.48	0.00	-126.63	0.00	126.63	5,379.83	1,380.31	7,062	6,270.59	0.40	-0.06	0.03
65.00	-24.33	-2.42	0.00	-124.15	0.00	124.15	5,357.87	1,371.62	6,973	6,205.43	0.42	-0.06	0.03
69.30	-24.10	-2.41	0.00	-113.73	0.00	113.73	5,261.75	1,334.30	6,599	5,926.98	0.47	-0.07	0.02
70.00	-23.26	-2.37	0.00	-112.04	0.00	112.04	5,245.84	1,328.22	6,539	5,881.94	0.48	-0.07	0.02
73.30	-22.78	-2.34	0.00	-104.22	0.00	104.22	5,169.84	1,299.58	6,260	5,670.71	0.53	-0.07	0.02
75.00	-22.21	-2.31	0.00	-100.24	0.00	100.24	5,130.05	1,284.82	6,118	5,562.65	0.56	-0.07	0.02
77.30	-21.50	-2.26	0.00	-94.93	0.00	94.93	5,075.52	1,264.86	5,930	5,417.30	0.60	-0.08	0.02
80.00	-21.28	-2.25	0.00	-88.82	0.00	88.82	5,010.50	1,241.42	5,712	5,247.98	0.64	-0.08	0.02
80.90	-21.03	-2.24	0.00	-86.79	0.00	86.79	4,988.58	1,233.61	5,640	5,191.86	0.66	-0.08	0.02
81.80	-20.22	-2.18	0.00	-84.78	0.00	84.78	4,966.54	1,225.79	5,569	5,135.91	0.67	-0.08	0.02
85.00	-19.91	-2.16	0.00	-77.80	0.00	77.80	4,887.19	1,198.02	5,320	4,938.34	0.73	-0.08	0.02
86.30	-19.79	-2.15	0.00	-74.99	0.00	74.99	4,854.51	1,186.73	5,220	4,858.71	0.75	-0.09	0.02
86.64	-18.54	-2.06	0.00	-74.25	0.00	74.25	4,845.84	1,183.75	5,194	4,837.75	0.76	-0.09	0.02
90.00	-18.36	-2.05	0.00	-67.33	0.00	67.33	4,760.12	1,154.61	4,941	4,634.15	0.82	-0.09	0.02
90.50	-17.87	-2.01	0.00	-66.30	0.00	66.30	4,747.21	1,150.27	4,904	4,604.05	0.83	-0.09	0.02
91.70	-17.75	-2.00	0.00	-63.89	0.00	63.89	4,716.07	1,139.86	4,816	4,532.04	0.85	-0.09	0.02
92.00	-16.86	-1.93	0.00	-63.29	0.00	63.29	4,708.25	1,137.25	4,794	4,514.09	0.86	-0.09	0.02
93.00	-16.20	-1.88	0.00	-61.36	0.00	61.36	4,682.08	1,128.57	4,721	4,454.43	0.88	-0.09	0.02
93.36	-16.09	-1.87	0.00	-60.68	0.00	60.68	3,004.09	816.95	3,463	2,904.43	0.88	-0.09	0.03
94.00	-15.94	-1.86	0.00	-59.48	0.00	59.48	2,995.79	812.98	3,429	2,882.24	0.90	-0.09	0.03
94.80	-15.86	-1.86	0.00	-57.99	0.00	57.99	2,985.35	808.02	3,388	2,854.55	0.91	-0.09	0.03
95.00	-15.01	-1.79	0.00	-57.62	0.00	57.62	2,982.73	806.78	3,377	2,847.63	0.92	-0.10	0.03
100.00	-14.29	-1.72	0.00	-48.69	0.00	48.69	2,915.13	775.78	3,123	2,675.44	1.02	-0.10	0.02
102.80	-13.89	-1.69	0.00	-43.87	0.00	43.87	2,875.64	758.42	2,985	2,579.72	1.08	-0.10	0.02
105.00	-13.40	-1.64	0.00	-40.16	0.00	40.16	2,843.78	744.78	2,878	2,504.93	1.13	-0.11	0.02

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
108.00	-12.83	-1.59	0.00	-35.23	0.00	35.23	2,799.17	726.17	2,736	2,403.61	1.20	-0.11	0.02
110.00	-12.67	-1.57	0.00	-32.06	0.00	32.06	2,768.67	713.77	2,644	2,336.52	1.24	-0.11	0.02
111.00	-10.83	-1.39	0.00	-30.49	0.00	30.49	2,753.20	707.57	2,598	2,303.13	1.27	-0.11	0.02
111.30	-10.28	-1.33	0.00	-30.08	0.00	30.08	2,748.53	705.71	2,584	2,293.13	1.27	-0.11	0.02
115.00	-10.07	-1.31	0.00	-25.16	0.00	25.16	2,689.80	682.77	2,419	2,170.63	1.36	-0.12	0.02
116.50	-9.45	-1.24	0.00	-23.20	0.00	23.20	2,665.41	673.47	2,354	2,121.41	1.40	-0.12	0.01
119.30	-9.31	-1.23	0.00	-19.72	0.00	19.72	2,618.97	656.11	2,234	2,030.29	1.47	-0.12	0.01
120.00	-8.67	-1.15	0.00	-18.86	0.00	18.86	2,607.18	651.77	2,204	2,007.66	1.49	-0.12	0.01
125.00	-8.13	-1.09	0.00	-13.10	0.00	13.10	2,520.79	620.77	2,000	1,848.05	1.62	-0.13	0.01
127.30	-7.96	-1.07	0.00	-10.60	0.00	10.60	2,479.79	606.51	1,909	1,775.86	1.68	-0.13	0.01
128.00	-5.65	-0.78	0.00	-9.85	0.00	9.85	2,467.16	602.17	1,882	1,754.06	1.70	-0.13	0.01
130.00	-5.37	-0.75	0.00	-8.28	0.00	8.28	2,430.65	589.77	1,805	1,692.20	1.75	-0.13	0.01
132.50	-4.90	-0.69	0.00	-6.41	0.00	6.41	2,384.17	574.27	1,711	1,615.82	1.82	-0.13	0.01
134.50	-4.80	-0.68	0.00	-5.03	0.00	5.03	2,346.31	561.87	1,638	1,555.50	1.87	-0.13	0.01
135.00	-4.69	-0.66	0.00	-4.69	0.00	4.69	2,336.75	558.77	1,620	1,540.53	1.89	-0.13	0.01
136.00	-3.48	-0.50	0.00	-4.03	0.00	4.03	2,317.52	552.57	1,584	1,510.73	1.91	-0.13	0.00
138.00	-2.50	-0.37	0.00	-3.03	0.00	3.03	2,278.61	540.17	1,514	1,451.71	1.97	-0.13	0.00
138.92	-2.44	-0.36	0.00	-2.69	0.00	2.69	2,260.52	534.47	1,482	1,424.84	1.99	-0.13	0.00
138.92	-2.44	-0.36	0.00	-2.69	0.00	2.69	1,135.22	321.97	896	721.35	1.99	-0.13	0.01
140.00	-1.88	-0.28	0.00	-2.30	0.00	2.30	1,127.99	317.95	874	707.75	2.02	-0.13	0.01
141.30	-1.66	-0.25	0.00	-1.93	0.00	1.93	1,119.05	313.12	848	691.40	2.06	-0.13	0.00
144.30	-1.60	-0.24	0.00	-1.18	0.00	1.18	1,097.47	301.95	788	653.75	2.14	-0.13	0.00
144.60	-1.52	-0.23	0.00	-1.11	0.00	1.11	1,095.24	300.84	783	649.99	2.15	-0.13	0.00
145.00	-1.26	-0.19	0.00	-1.01	0.00	1.01	1,092.24	299.35	775	644.98	2.16	-0.13	0.00
145.10	-0.98	-0.15	0.00	-1.00	0.00	1.00	1,091.48	298.98	773	643.73	2.16	-0.13	0.00
150.00	-0.70	-0.11	0.00	-0.25	0.00	0.25	1,052.73	280.75	682	582.77	2.30	-0.13	0.00
150.30	-0.52	-0.08	0.00	-0.22	0.00	0.22	1,050.24	279.63	676	579.07	2.31	-0.13	0.00
153.00	0.00	-0.08	0.00	0.00	0.00	0.00	1,027.22	269.59	629	545.89	2.38	-0.13	0.00

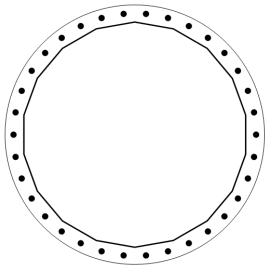
ANALYSIS SUMMARY

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W Normal	84.70	0.00	71.74	0.00	0.00	8375.66	0.00	0.67
0.9D + 1.0W Normal	84.68	0.00	53.79	0.00	0.00	8346.05	0.00	0.66
1.2D + 1.0Di + 1.0Wi Normal	23.92	0.00	91.71	0.00	0.00	2383.55	0.00	0.2
1.2D + 1.0Ev + 1.0Eh Normal	2.94	0.00	72.37	0.00	0.00	307.25	0.00	0.03
0.9D - 1.0Ev + 1.0Eh Normal	2.94	0.00	48.73	0.00	0.00	305.83	0.00	0.03
1.0D + 1.0W Service Normal	20.62	0.00	59.86	0.00	0.00	2035.98	0.00	0.17

BASE PLATE ANALYSIS @ 0 FT

PLATE PARAMETERS (ID# 15878)

Diameter:	92	in
Shape:	Round	
Thickness:	2.75	in
Grade:	A572-60	
Yield Strength:	60	ksi
Tensile Strength:	75	ksi
Rod Detail Type:	d	
Clear Distance	3.25	in
Base Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Elastic	
Neutral Axis:	288	°



ANCHOR ROD PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)
Original [ID# 16249]	Radial	34	2.25	86	A615-75	75	100	-	-

ANCHOR ROD GEOMETRY AND APPLIED LOADS --- ORIGINAL (34) 2.25"ø [ID 16249]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in^4)	Axial Load (k)	Shear Load (k)
1	0.185	42.27	7.90	41.339	5550.908	142.71	0.50
2	0.370	40.10	15.53	41.623	5627.499	143.67	0.22
3	0.554	36.56	22.64	40.490	5325.305	139.82	0.93
4	0.739	31.78	28.97	37.978	4685.138	131.28	1.61
5	0.924	25.91	34.32	34.173	3793.456	118.33	2.24
6	1.109	19.17	38.49	29.204	2770.687	101.43	2.79
7	1.294	11.77	41.36	23.240	1754.960	81.15	3.25
8	1.478	3.97	42.82	16.485	883.456	58.18	3.60
9	1.663	-3.97	42.82	9.169	273.875	33.29	3.82
10	1.848	-11.77	41.36	1.540	8.546	7.35	3.91
11	2.033	-19.17	38.49	-6.141	123.301	-18.78	3.87
12	2.218	-25.91	34.32	-13.613	602.644	-44.19	3.70
13	2.402	-31.78	28.97	-20.621	1381.836	-68.02	3.40
14	2.587	-36.56	22.64	-26.927	2355.642	-89.47	2.99
15	2.772	-40.10	15.53	-32.316	3392.545	-107.80	2.47
16	2.957	-42.27	7.90	-36.605	4352.506	-122.38	1.87
17	3.142	-43.00	0.00	-39.647	5105.876	-132.73	1.21
18	3.326	-42.27	-7.90	-41.339	5550.908	-138.49	0.50
19	3.511	-40.10	-15.53	-41.623	5627.499	-139.45	0.22
20	3.696	-36.56	-22.64	-40.490	5325.305	-135.60	0.93
21	3.881	-31.78	-28.97	-37.978	4685.138	-127.06	1.61
22	4.066	-25.91	-34.32	-34.173	3793.456	-114.11	2.24
23	4.250	-19.17	-38.49	-29.204	2770.687	-97.21	2.79
24	4.435	-11.77	-41.36	-23.240	1754.960	-76.93	3.25
25	4.620	-3.97	-42.82	-16.485	883.456	-53.96	3.60
26	4.805	3.97	-42.82	-9.169	273.875	-29.07	3.82
27	4.990	11.77	-41.36	-1.540	8.546	-3.13	3.91
28	5.174	19.17	-38.49	6.141	123.301	23.00	3.87
29	5.359	25.91	-34.32	13.613	602.644	48.41	3.70
30	5.544	31.78	-28.97	20.621	1381.836	72.24	3.40
31	5.729	36.56	-22.64	26.927	2355.642	93.69	2.99
32	5.914	40.10	-15.53	32.316	3392.545	112.02	2.47
33	6.098	42.27	-7.90	36.605	4352.506	126.60	1.87
34	6.283	43.00	0.00	39.647	5105.876	136.95	1.21

REACTION DISTRIBUTION

Component	ID	Moment Mu (k-ft)	Axial Load Pu (k)	Shear Vu (k)	Moment Factor
Pole	79"ø x 0.5" (18 Sides)	8375.7	71.74	84.70	1.000
Bolt Group	Original (34) 2.25"ø	8375.7	-	84.70	1.000
	TOTALS	**8375.66**	**71.74**	**84.7**	

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	79"ø x 0.5" (18 Sides)	122.6824	-	-	94510.24	-
Bolt Group	Original (34) 2.25"ø	3.9761	3.2477	0.8393	95976.36	4.5

EXTERNAL BASE PLATE BEND LINE ANALYSIS @ 0 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	79.12	in
Point-to-Point Diameter:	80.35	in
Flat Width:	13.952	in
Flat Radians:	0.349	rad

PLATE PROPERTIES

Neutral Axis:	288	°
Bend Line Lower Limit:	6.187	rad
Bend Line Upper Limit:	0.650	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in^3)	Applied Moment Mu (k-in)	Moment Capacity ϕMn (k-in)	Ratio
Flat	41.591	0.00	78.633	691.0	4246.2	0.163
Corner	39.181	0.00	74.077	419.3	4000.1	0.105
Circumferential	44.524	0.00	84.177	853.0	4545.6	0.188

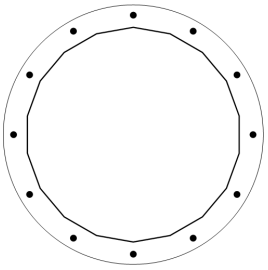
ELASTIC ANCHOR ROD ANALYSIS

Class	Group Quantity	Rod Diameter (in)	Applied Axial Load Pu (k)	Applied Shear Load Vu (k)	Compressive Capacity ϕPn (k)	Ratio	Interaction
Original	34	2.25	143.7	0.2	243.6	0.590	0.592

UPPER FLANGE PLATE ANALYSIS @ 138.9193 FT

PLATE PARAMETERS (ID# 15877)

Diameter:	38	in
Shape:	Round	
Thickness:	1	in
Grade:	A572-65	
Yield Strength:	65	ksi
Tensile Strength:	80	ksi
Pole Weld Size:	0.125	in
Orientation Offset:	-	°
Analysis Type:	Elastic	
Neutral Axis:	120	°



FLANGE BOLT PARAMETERS

Class	Arrangement	Quantity	Diameter (in)	Circle (in)	Grade	Fy (ksi)	Fu (ksi)	Spacing (in)	Offset (°)
Original [ID# 16250]	Radial	12	1	35	A325	92	120	-	-

FLANGE BOLT GEOMETRY AND APPLIED LOADS --- ORIGINAL (12) 1"ø [ID 16250]

Position	Radians	X (in)	Y (in)	Moment Arm (in)	Inertia (in^4)	Axial Load (k)	Shear Load (k)
1	0.524	15.16	8.75	-16.875	172.525	-20.78	0.00
2	1.047	8.75	15.16	-14.614	129.401	-17.97	0.97
3	1.571	0.00	17.50	-8.438	43.153	-10.28	1.68
4	2.094	-8.75	15.16	0.000	0.029	0.22	1.94
5	2.618	-15.16	8.75	8.438	43.153	10.71	1.68
6	3.142	-17.50	0.00	14.614	129.401	18.40	0.97
7	3.665	-15.16	-8.75	16.875	172.525	21.21	0.00
8	4.189	-8.75	-15.16	14.614	129.401	18.40	0.97
9	4.712	0.00	-17.50	8.438	43.153	10.71	1.68
10	5.236	8.75	-15.16	0.000	0.029	0.22	1.94
11	5.760	15.16	-8.75	-8.438	43.153	-10.28	1.68
12	6.283	17.50	0.00	-14.614	129.401	-17.97	0.97

REACTION DISTRIBUTION

Component	ID	Moment Mu (k-ft)	Axial Load Pu (k)	Shear Vu (k)	Moment Factor
Pole	31.0157"ø x 0.1875" (18 Sides)	177.2	2.60	14.51	1.000
Bolt Group	Original (12) 1"ø	177.2	-	14.51	1.000
	TOTALS	**177.21**	**2.6**	**14.51**	

COMPONENT PROPERTIES

Component	ID	Gross Area (in^2)	Net Area (in^2)	Individual Inertia (in^4)	Moment of Inertia (in^4)	Threads/in
Pole	31.0157"ø x 0.1875" (18 Sides)	18.0673	-	-	2146.55	-
Bolt Group	Original (12) 1"ø	0.7854	0.6057	0.0292	1035.32	8.0

EXTERNAL UPPER FLANGE PLATE BEND LINE ANALYSIS @ 138.9193 FT

POLE PROPERTIES

Flat-to-Flat Diameter:	31.14	in
Point-to-Point Diameter:	31.62	in
Flat Width:	5.491	in
Flat Radians:	0.349	rad

PLATE PROPERTIES

Neutral Axis:	120	°
Bend Line Lower Limit:	3.271	rad
Bend Line Upper Limit:	4.060	rad

Bend Line	Chord Length (in)	Additional Length (in)	Section Modulus (in^3)	Applied Moment Mu (k-in)	Moment Capacity ϕMn (k-in)	Ratio
Flat	19.183	0.00	4.796	27.7	280.6	0.099
Corner	18.380	0.00	4.595	22.6	268.8	0.084
Circumferential	20.271	0.00	5.068	22.6	296.5	0.076

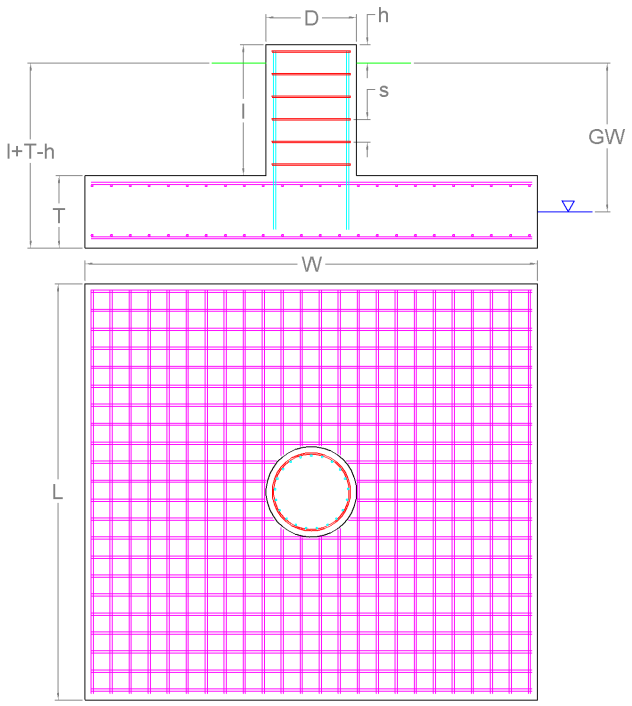
ELASTIC FLANGE BOLT ANALYSIS

Class	Group Quantity	Bolt Diameter (in)	Applied Axial Load Pu (k)	Applied Shear Load Vu (k)	Compressive Capacity ϕPn (k)	Ratio	Interaction
Original	12	1	21.2	0.0	54.5	0.389	0.389

Monolithic Mat Foundation Analysis (ANSI/TIA-222-H)

Foundation & Tower Parameters			
Ignore Mat Rebar?		N	
Ignore Pier Rebar?		N	
Foundation has Pier(s)?		Y	
Pier Shape		Round	
Pier Diameter	*D*	10.15	ft
Pier Height Above Ground	*h*	1.75	ft
Pier Length	*l*	4	ft
Mat Base Depth	*l+T-h*	6.25	ft
Mat Length	*L*	35	ft
Mat Width	*W*	35	ft
Mat Thickness	*T*	4	ft
Unit Weight of Concrete		150	pcf
Tower Eccentricity	ecc	0	ft
Tower Face Width	FW	6.58	ft
Tower Leg Count		1	

Reactions		
Moment, M_u	8,375.66	k-ft
Shear, V_u	84.7	k
Axial, P_u	71.74	k
Uplift, T_u	0	k
Tower Weight	71.74	k
Tower Dead Load Factor	0.9	



Soil Parameters			
Water Table Depth [BGL]	*GW*	-	ft
Unit Weight of Soil		110	pcf
Unit Weight of Soil [Submerged]		47.6	pcf
Shear Friction Coefficient		0.35	
Ultimate Bearing Pressure		30,000	psf
Bearing Pressure Type		Net	
Conical Failure Angle		15	°
Capacity Increase (Transient Loads)		1.00	
Soil Strength Reduction Factor, ϕ_s		0.75	
Dead Load Factor		1.2	

Soil Capacities		
Design Moment, M_u	9,053.26	k-ft
Nominal Moment Capacity, $\phi_m M_n$	18,377.77	k-ft
$M_u / \phi_s M_n$	**49.3%**	
Net Bearing Pressure	1,720	k
Nominal Bearing Capacity, $\phi_b P_n$	23,016	k
Bearing Pressure Controlling Load Direction	Diagonal to Pad Edge	
$P_u / \phi_s P_n$	**7.5%**	
Ultimate Friction Resistance	394.27	k
Ultimate Passive Pressure Resistance	65.45	k
Nominal Shear Capacity, $\phi_s V_n$	344.79	k
$V_u / \phi_s V_n$	**25.0%**	

Mat Reinforcement Parameters		
Concrete Compressive Strength, f'_c	4,000	psi
Mat Rebar Quantity [Lower]	40	
Mat Rebar Size # [Lower]	11	
Mat Single Rebar Area [Lower]	1.56	in^2
Mat Rebar Quantity [Upper]	40	
Mat Rebar Size # [Upper]	11	
Mat Single Rebar Area [Upper]	1.56	in^2
Mat Rebar Yield Strength, F_y	60	ksi
Mat Clear Cover	3	in
Bending Reduction Factor, ϕ_B	0.9	
Shear Reduction Factor, ϕ_V	0.75	
Compression Reduction Factor, ϕ_C	0.65	
Steel Elastic Modulus	29,000	ksi

Mat Reinforcement Capacities		
Compression Zone Factor, β_1	0.85	
Lower Reinforcement Spacing	10.6	in
Upper Reinforcement Spacing	10.6	in
One Way Design Shear, V_u	265.49	k
One Way Shear Capacity, ϕV_c	1,593.04	k
One Way Shear Controlling Load Direction	Diagonal to Pad Edge	
$V_u / \phi V_c$	**16.7%**	
Punching Design Shear Stress, v_u	36.02	psi
Punching Shear Capacity, $\phi_c V_n$	189.74	psi
$v_u / \phi_c V_n$	**19.0%**	
Moment Transfer Effective Flexural Width, $_f$	22.15	in
Neutral Axis Depth	2.7	In
Moment Transfer Flexural Capacity, $\phi M_{sc,f}$	93,323.82	k-in
$\gamma_f M_{sc} / \phi M_{sc,f}$	**0.0%**	
Flexure Due to Soil Pressure, M_u	2,875.2	k-ft
Lower Steel Mat Moment Capacity, ϕM_n	11,937.01	k-ft
Flexural Steel Controlling Load Direction	Parallel to Pad Edge	
$M_u / \phi M_n$	**24.1%**	
Flexure Due to Uplift, M_u	2,289.66	k-ft
Upper Steel Mat Moment Capacity, ϕM_n	11,937.01	k-ft
$M_u / \phi M_n$	**19.2%**	

Pier Reinforcement Parameters			
Concrete Compressive Strength (f'_c)		4,000	psi
Pier Rebar Quantity		46	
Pier Rebar Size #		11	
Pier Single Rebar Area		1.56	in^2
Pier Rebar Yield Strength (F_y)		60	ksi
Tie Rebar Size #		5	
Tie Rebar Area (Single)		0.31	in^2
Tie Rebar Spacing	*s*	10.5	in
Tie Rebar Yield Strength (F_y)		60	ksi
Rebar Cage Diameter		113.18	in

Pier Reinforcement Capacities		
Design Moment (M_u)	8,714.46	k-ft
Nominal Moment Capacity ($\phi_B M_n$)	17,875.74	k-ft
$M_u / \phi_B M_n$	**48.8%**	
Design Shear (V_u)	84.7	k
Nominal Shear Capacity ($\phi_V V_n$)	1,380.63	k
$V_u / \phi_V V_n$	**6.1%**	
Design Compression (P_u)	71.74	k
Nominal Compression Capacity ($\phi_P P_n$)	20,521.78	k
$P_u / \phi_P P_n$	**0.3%**	
Pier Reinforcement Ratio	0	-
$M_u / \phi_B M_n + T_u / \phi_T T_n$	**48.8%**	

AMERICAN TOWER®
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Mount Analysis Report

ATC Site Name	:	**POUNDRIDGE NY, NY**
ATC Site Number	:	**413118**
Engineering Number	:	**14128992_C8_01**
Mount Elevation	:	**128 ft**
Carrier	:	**T-Mobile**
Carrier Site Name	:	**NY09212H**
Carrier Site Number	:	**NY09212H**
Site Location	:	**29 Adams Lane** **Pound Ridge, NY 10576-1507** **41.22273231 , -73.57169528**
County	:	**Westchester**
Date	:	**July 15, 2022**
Max Usage	:	**73%**
Result	:	**Pass**

Prepared By:
Aviskar Ghansam
Structural Engineer

Aviskar Ghansam

Reviewed By:

COA: 0012746

Table of Contents

Introduction

The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 128 ft.

Supporting Documents

Previous Analysis	ATC Project #13714510_C8_03, dated November 19, 2021
Radio Frequency Data Sheet	RFDS ID #NY09212H, dated July 7, 2022
Reference Photos	Site photos from 2020

Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	115 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.00'' radial ice concurrent
Codes:	ANSI/TIA-222-H / 2018 IBC / 2020 New York Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.259, S1 = 0.059
Site Class:	D - Stiff Soil - Default
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above. The mount can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

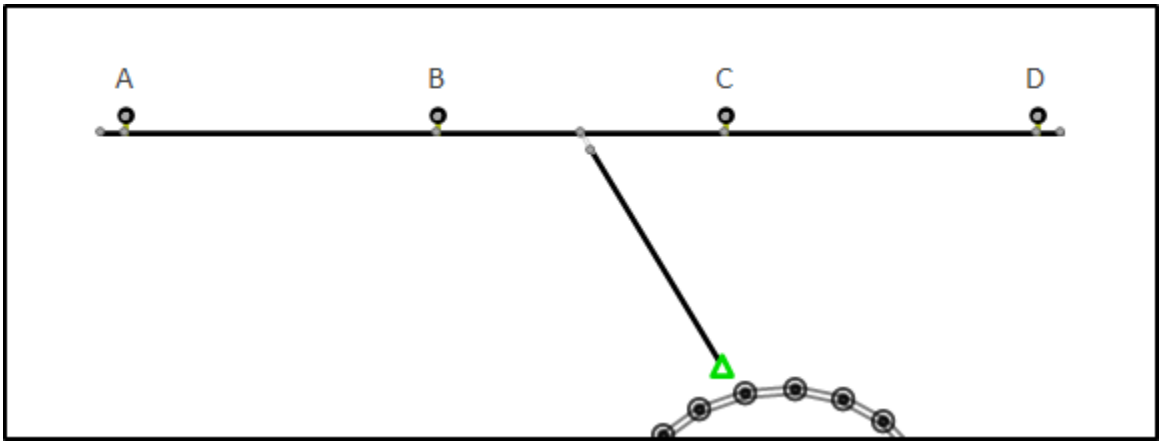
Application Loading

Mount Centerline (ft)	Equipment Centerline (ft)	Qty	Equipment Manufacturer & Model
128.0	128.0	3	Ericsson AIR 6419 B41
		3	RFS APXVAALL24 43-U-NA20
		3	Commscope VV-65A-R1
		3	Ericsson Radio 4460 B25+B66
		3	Ericsson 4480 B71+B85A

Structure Usages

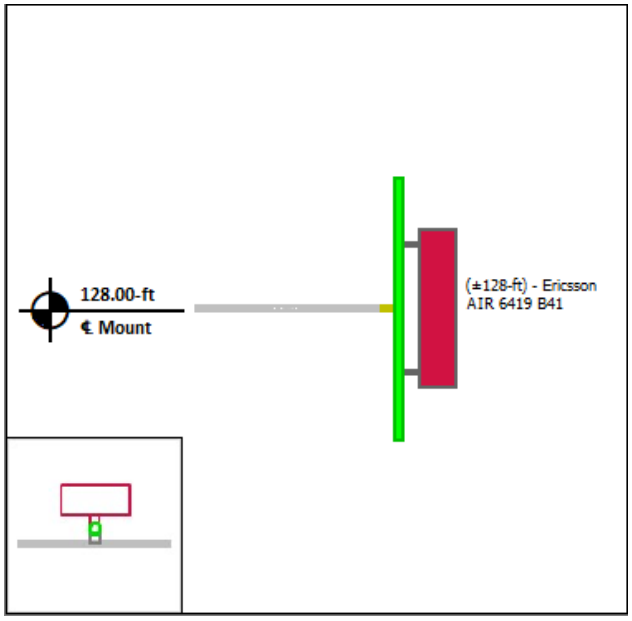
Structural Component	Controlling Usage	Pass/Fail
Horizontals	73%	Pass
Verticals	34%	Pass
Mount Pipes	38%	Pass
Serviceability	N/A	Pass

Mount Layout

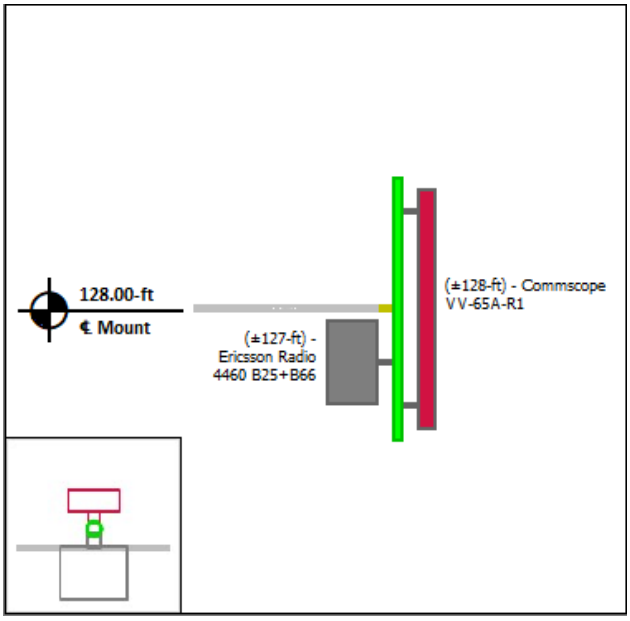


Equipment Layout

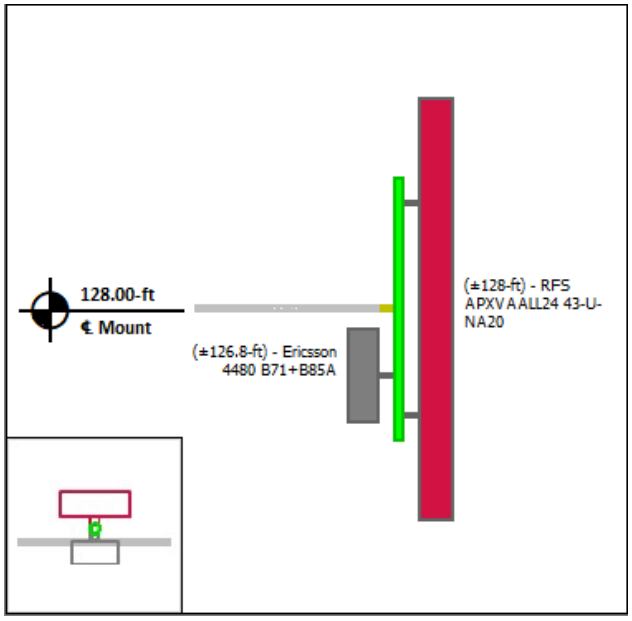
Mount Pipe A



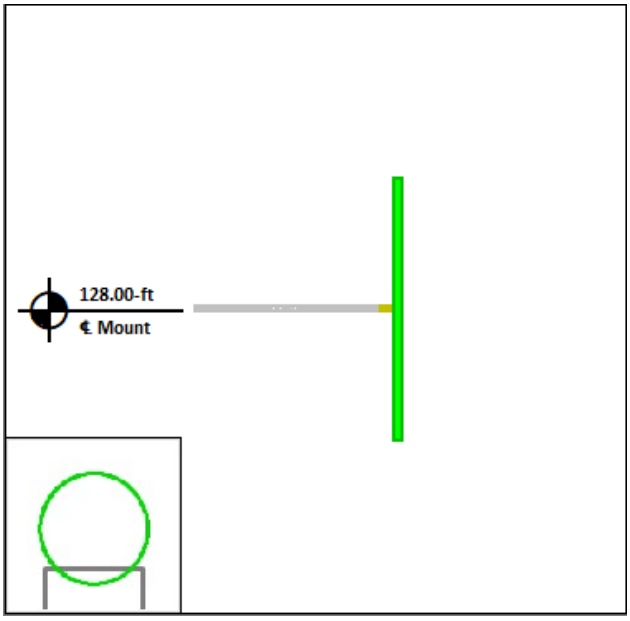
Mount Pipe B



Mount Pipe C



Mount Pipe D



Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding equipment, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

All connections are to be verified for condition and tightness by the installation contractor preceding any changes to the appurtenance mounting system and/or equipment attached to it.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

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Site Number:	*413118*
Project Number:	*14128992_C8_01*
Carrier:	*T-Mobile*
Mount Elevation:	*128 ft*
Date:	7/15/2022

Mount Analysis Force Calculations

Wind & Ice Load Calculations			
Velocity Pressure Coefficient	K_z	1.06	
Topographic Factor	K_{zt}	1.00	
Rooftop Wind Speed-up Factor	K_s	1.00	
Shielding Factor	K_a	0.90	
Ground Elevation Factor	K_e	0.97	
Wind Direction Probability Factor	K_d	0.95	
Basic Wind Speed	V	115	mph
Velocity Pressure	q_z	33.2	psf
Height Escalation Factor	K_{iz}	1.15	
Thickness of Radial Glaze Ice	T_{iz}	1.15	in

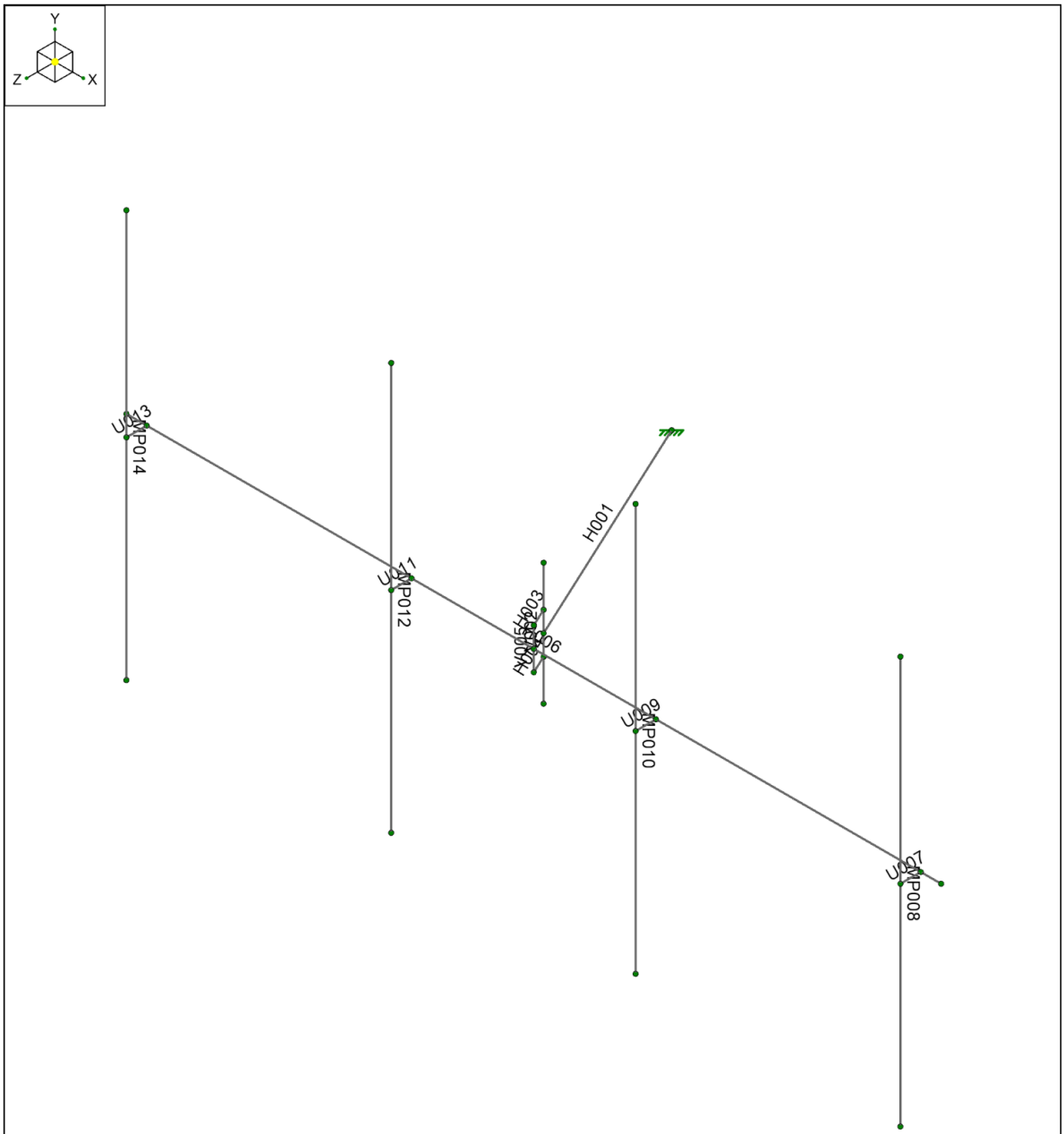
Seismic Load Calculations			
Short Period DSRAP	S_{DS}	0.207	
1 Second DSRAP	S_{D1}	0.094	
Importance Factor	I	1.0	
Response Modification Coefficient	R	2.0	
Seismic Response Coefficient	C_S	0.104	
Amplification Factor	A	1.0	
Total Weight	W	637.9	lbs
Total Shear Force	V_S	66.1	lbs
Horizontal Seismic Load	Eh	66.1	lbs
Vertical Seismic Load	Ev	26.4	lbs

Antenna Calculations (Elevations per Application/RFDS)*

Equipment	Height	Width	Depth	Weight	EPA_N	EPA_T	EPA_{Ni}	EPA_{Ti}
Model #	in	in	in	lbs	sqft	sqft	sqft	sqft
Ericsson AIR 6419 B41	36.3	20.9	9.0	83.3	6.32	1.82	7.46	2.43
RFS APXVAALL24 43-U-NA20	95.9	24.0	8.5	122.8	20.24	3.40	22.70	4.41
Commscope VV-65A-R1	54.7	12.1	4.6	23.8	5.93	1.46	7.35	2.27
Ericsson Radio 4460 B25+B66	19.6	15.7	12.1	109.0	2.56	1.98	3.28	2.63
Ericsson 4480 B71+B85A	21.8	15.7	7.5	84.0	2.85	1.38	3.61	2.00

**** Equipment with EPA values N/A were not considered in the mount analysis***

American Tower Corp.	413118, POUNDRIDGE NY	SK-1
Aviskar.Ghansam		Jul 15, 2022
14128992_C8_01		R3D. T-MOBILE @ 413118, POU…



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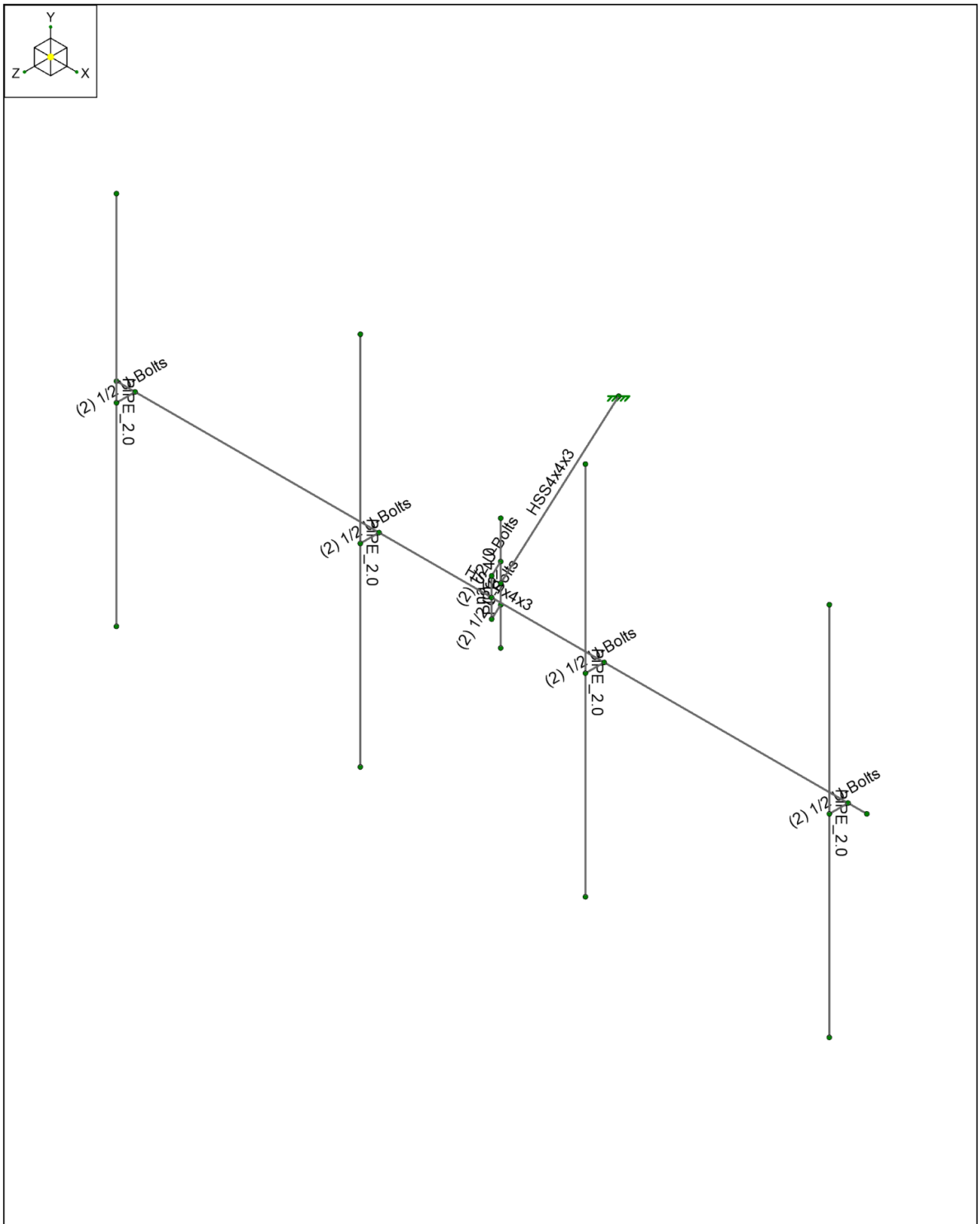

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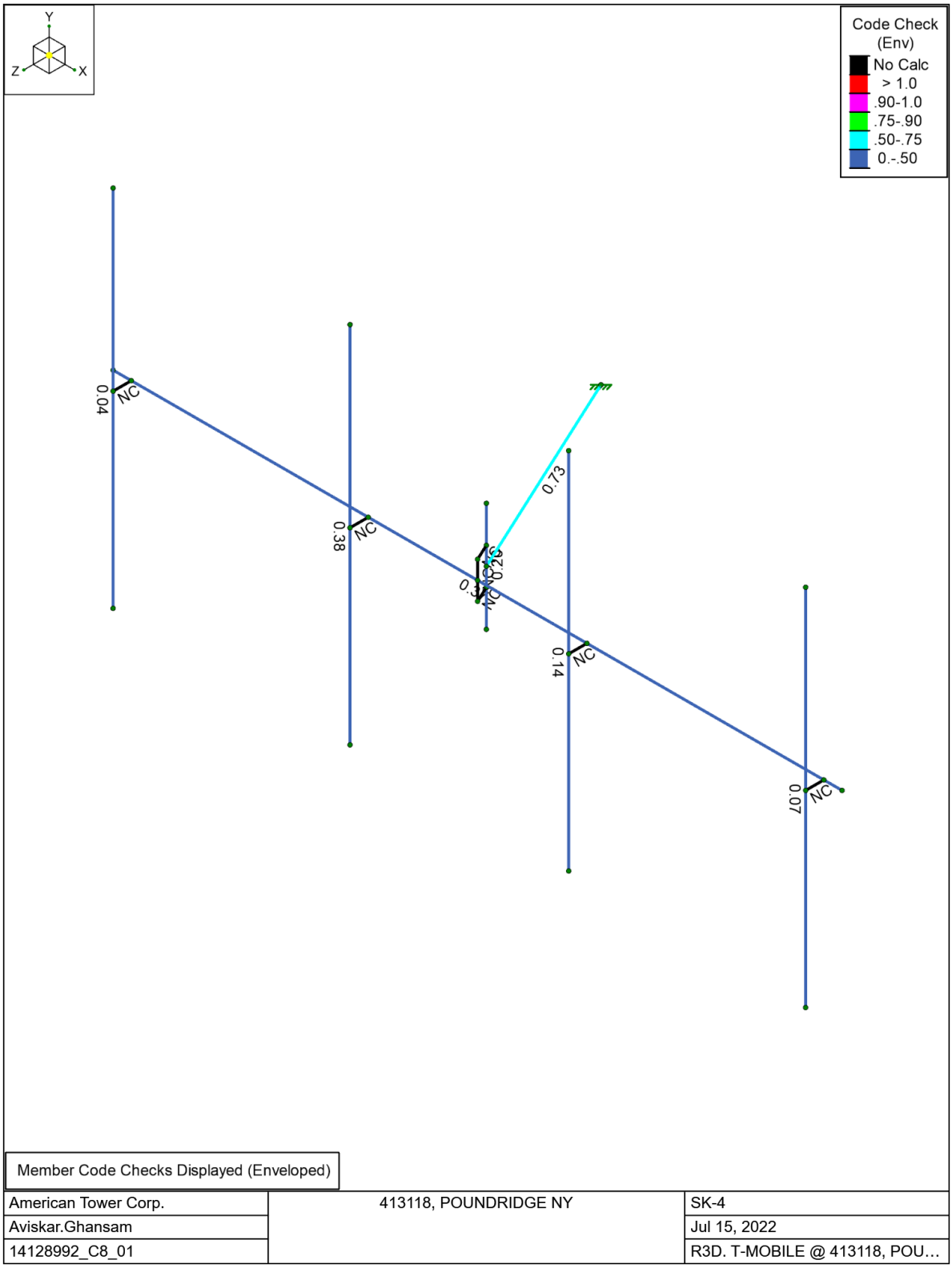
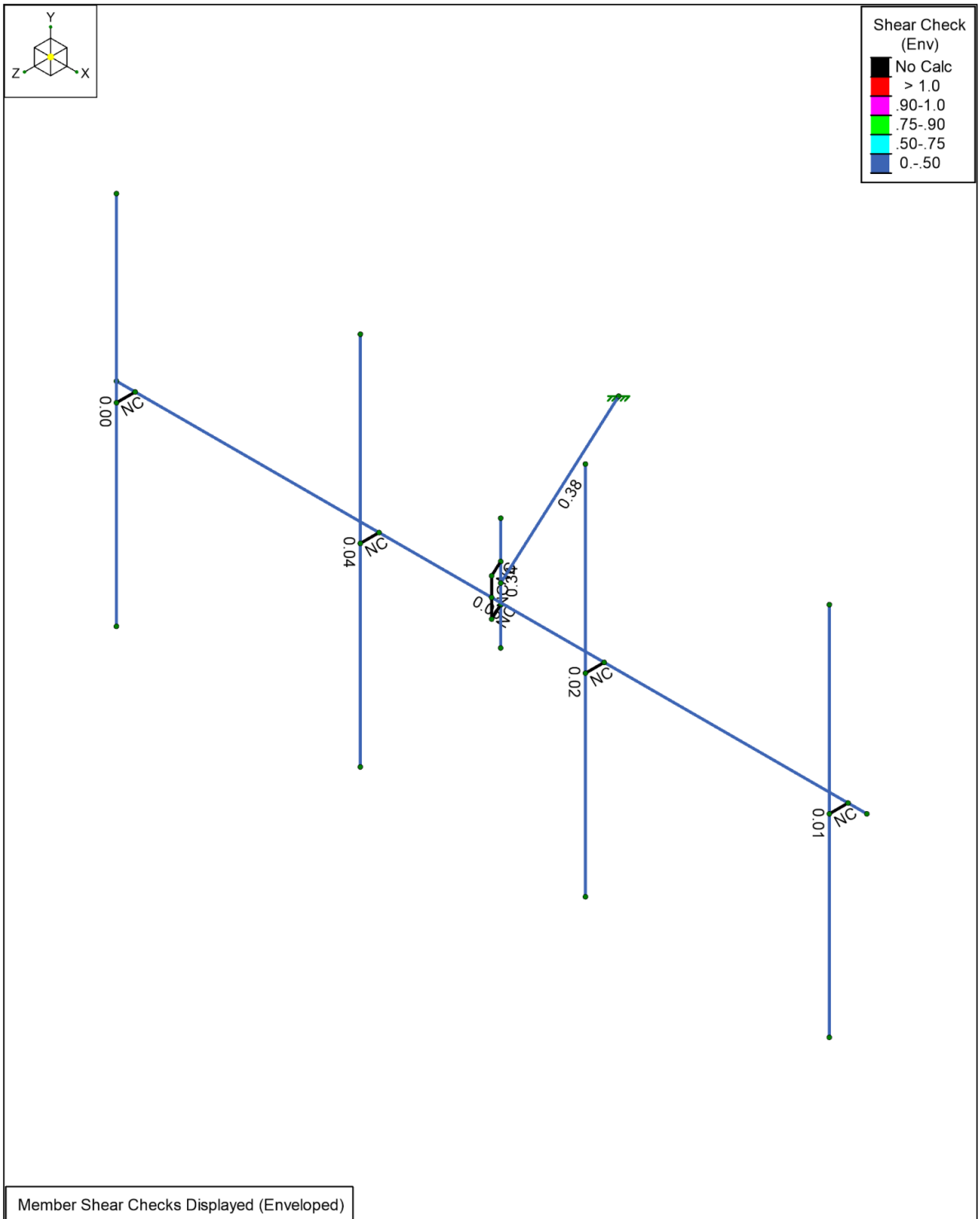
Aviskar.Ghansam		Jul 15, 2022
14128992_C8_01		R3D. T-MOBILE @ 413118, POU…



American Tower Corp.	413118, POUNDRIDGE NY	SK-4
Aviskar.Ghansam		Jul 15, 2022
14128992_C8_01		R3D. T-MOBILE @ 413118, POU…



American Tower Corp.	413118, POUNDRIDGE NY	SK-5
Aviskar.Ghansam		Jul 15, 2022
14128992_C8_01		R3D. T-MOBILE @ 413118, POU…

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
1	D	DL	-1		8	
2	Di	IL			8	7
3	W 0	WL			8	14
4	W 30	WL			16	27
5	W 60	WL			16	27
6	W 90	WL			8	14
7	W 120	WL			16	27
8	W 150	WL			16	27
9	W 180	WL			8	14
10	W 210	WL			16	27
11	W 240	WL			16	27
12	W 270	WL			8	14
13	W 300	WL			16	27
14	W 330	WL			16	27
15	Wi 0	WL			8	14
16	Wi 30	WL			16	27
17	Wi 60	WL			16	27
18	Wi 90	WL			8	14
19	Wi 120	WL			16	27
20	Wi 150	WL			16	27
21	Wi 180	WL			8	14
22	Wi 210	WL			16	27
23	Wi 240	WL			16	27
24	Wi 270	WL			8	14
25	Wi 300	WL			16	27
26	Wi 330	WL			16	27
27	Ws 0	WL			8	14
28	Ws 30	WL			16	27
29	Ws 60	WL			16	27
30	Ws 90	WL			8	14
31	Ws 120	WL			16	27
32	Ws 150	WL			16	27
33	Ws 180	WL			8	14
34	Ws 210	WL			16	27
35	Ws 240	WL			16	27
36	Ws 270	WL			8	14
37	Ws 300	WL			16	27
38	Ws 330	WL			16	27
39	Ev -Y	ELY				7
40	Eh -Z	ELZ				7
41	Eh -X	ELX				7
42	Lv (1)	LL			1	
43	Lv (2)	LL			1	
44	Lv (3)	LL		1		
45	Lm (1)	LL		1		
46	Lm (2)	LL		1		
47	Lm (3)	LL		1		
48	Lm (4)	LL		1		

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4D	Yes	Y	DL	1.4						
2	1.2D + 1.0W [0°]	Yes	Y	DL	1.2	3	1				
3	1.2D + 1.0W [30°]	Yes	Y	DL	1.2	4	1				

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
4	1.2D + 1.0W [60°]	Yes	Y	DL	1.2	5	1				
5	1.2D + 1.0W [90°]	Yes	Y	DL	1.2	6	1				
6	1.2D + 1.0W [120°]	Yes	Y	DL	1.2	7	1				
7	1.2D + 1.0W [150°]	Yes	Y	DL	1.2	8	1				
8	1.2D + 1.0W [180°]	Yes	Y	DL	1.2	9	1				
9	1.2D + 1.0W [210°]	Yes	Y	DL	1.2	10	1				
10	1.2D + 1.0W [240°]	Yes	Y	DL	1.2	11	1				
11	1.2D + 1.0W [270°]	Yes	Y	DL	1.2	12	1				
12	1.2D + 1.0W [300°]	Yes	Y	DL	1.2	13	1				
13	1.2D + 1.0W [330°]	Yes	Y	DL	1.2	14	1				
14	0.9D + 1.0W [0°]	Yes	Y	DL	0.9	3	1				
15	0.9D + 1.0W [30°]	Yes	Y	DL	0.9	4	1				
16	0.9D + 1.0W [60°]	Yes	Y	DL	0.9	5	1				
17	0.9D + 1.0W [90°]	Yes	Y	DL	0.9	6	1				
18	0.9D + 1.0W [120°]	Yes	Y	DL	0.9	7	1				
19	0.9D + 1.0W [150°]	Yes	Y	DL	0.9	8	1				
20	0.9D + 1.0W [180°]	Yes	Y	DL	0.9	9	1				
21	0.9D + 1.0W [210°]	Yes	Y	DL	0.9	10	1				
22	0.9D + 1.0W [240°]	Yes	Y	DL	0.9	11	1				
23	0.9D + 1.0W [270°]	Yes	Y	DL	0.9	12	1				
24	0.9D + 1.0W [300°]	Yes	Y	DL	0.9	13	1				
25	0.9D + 1.0W [330°]	Yes	Y	DL	0.9	14	1				
26	1.2D + 1.0Di + 1.0Wi [0°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	15	1		
27	1.2D + 1.0Di + 1.0Wi [30°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	16	1		
28	1.2D + 1.0Di + 1.0Wi [60°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	17	1		
29	1.2D + 1.0Di + 1.0Wi [90°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	18	1		
30	1.2D + 1.0Di + 1.0Wi [120°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	19	1		
31	1.2D + 1.0Di + 1.0Wi [150°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	20	1		
32	1.2D + 1.0Di + 1.0Wi [180°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	21	1		
33	1.2D + 1.0Di + 1.0Wi [210°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	22	1		
34	1.2D + 1.0Di + 1.0Wi [240°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	23	1		
35	1.2D + 1.0Di + 1.0Wi [270°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	24	1		
36	1.2D + 1.0Di + 1.0Wi [300°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	25	1		
37	1.2D + 1.0Di + 1.0Wi [330°] + 1.0Ti	Yes	Y	DL	1.2	IL	1	26	1		
38	1.2D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	1.2	ELY	1	ELZ	1	ELX	0.001
39	1.2D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	0.5
40	1.2D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	0.866
41	1.2D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	1
42	1.2D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	0.866
43	1.2D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	0.5
44	1.2D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	1.2	ELY	1	ELZ	-1	ELX	0.001
45	1.2D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.866	ELX	-0.5
46	1.2D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	1.2	ELY	1	ELZ	-0.5	ELX	-0.866
47	1.2D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.001	ELX	-1
48	1.2D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.5	ELX	-0.866
49	1.2D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	1.2	ELY	1	ELZ	0.866	ELX	-0.5
50	0.9D + 1.0Ev + 1.0Eh [0°]	Yes	Y	DL	0.9	ELY	1	ELZ	1	ELX	0.001
51	0.9D + 1.0Ev + 1.0Eh [30°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	0.5
52	0.9D + 1.0Ev + 1.0Eh [60°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	0.866
53	0.9D + 1.0Ev + 1.0Eh [90°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	1
54	0.9D + 1.0Ev + 1.0Eh [120°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	0.866
55	0.9D + 1.0Ev + 1.0Eh [150°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	0.5
56	0.9D + 1.0Ev + 1.0Eh [180°]	Yes	Y	DL	0.9	ELY	1	ELZ	-1	ELX	0.001
57	0.9D + 1.0Ev + 1.0Eh [210°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.866	ELX	-0.5
58	0.9D + 1.0Ev + 1.0Eh [240°]	Yes	Y	DL	0.9	ELY	1	ELZ	-0.5	ELX	-0.866

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
59	0.9D + 1.0Ev + 1.0Eh [270°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.001	ELX	-1
60	0.9D + 1.0Ev + 1.0Eh [300°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.5	ELX	-0.866
61	0.9D + 1.0Ev + 1.0Eh [330°]	Yes	Y	DL	0.9	ELY	1	ELZ	0.866	ELX	-0.5
62	1.2D + 1.5Lv(1)	Yes	Y	DL	1.2	42	1.5				
63	1.2D + 1.5Lv(2)	Yes	Y	DL	1.2	43	1.5				
64	1.2D + 1.5Lv(3)	Yes	Y	DL	1.2	44	1.5				
65	1.2D + 1.5Lm(1) + 1.0Wm [0°]	Yes	Y	DL	1.2	45	1.5	27	1		
66	1.2D + 1.5Lm(1) + 1.0Wm [30°]	Yes	Y	DL	1.2	45	1.5	28	1		
67	1.2D + 1.5Lm(1) + 1.0Wm [60°]	Yes	Y	DL	1.2	45	1.5	29	1		
68	1.2D + 1.5Lm(1) + 1.0Wm [90°]	Yes	Y	DL	1.2	45	1.5	30	1		
69	1.2D + 1.5Lm(1) + 1.0Wm [120°]	Yes	Y	DL	1.2	45	1.5	31	1		
70	1.2D + 1.5Lm(1) + 1.0Wm [150°]	Yes	Y	DL	1.2	45	1.5	32	1		
71	1.2D + 1.5Lm(1) + 1.0Wm [180°]	Yes	Y	DL	1.2	45	1.5	33	1		
72	1.2D + 1.5Lm(1) + 1.0Wm [210°]	Yes	Y	DL	1.2	45	1.5	34	1		
73	1.2D + 1.5Lm(1) + 1.0Wm [240°]	Yes	Y	DL	1.2	45	1.5	35	1		
74	1.2D + 1.5Lm(1) + 1.0Wm [270°]	Yes	Y	DL	1.2	45	1.5	36	1		
75	1.2D + 1.5Lm(1) + 1.0Wm [300°]	Yes	Y	DL	1.2	45	1.5	37	1		
76	1.2D + 1.5Lm(1) + 1.0Wm [330°]	Yes	Y	DL	1.2	45	1.5	38	1		
77	1.2D + 1.5Lm(2) + 1.0Wm [0°]	Yes	Y	DL	1.2	46	1.5	27	1		
78	1.2D + 1.5Lm(2) + 1.0Wm [30°]	Yes	Y	DL	1.2	46	1.5	28	1		
79	1.2D + 1.5Lm(2) + 1.0Wm [60°]	Yes	Y	DL	1.2	46	1.5	29	1		
80	1.2D + 1.5Lm(2) + 1.0Wm [90°]	Yes	Y	DL	1.2	46	1.5	30	1		
81	1.2D + 1.5Lm(2) + 1.0Wm [120°]	Yes	Y	DL	1.2	46	1.5	31	1		
82	1.2D + 1.5Lm(2) + 1.0Wm [150°]	Yes	Y	DL	1.2	46	1.5	32	1		
83	1.2D + 1.5Lm(2) + 1.0Wm [180°]	Yes	Y	DL	1.2	46	1.5	33	1		
84	1.2D + 1.5Lm(2) + 1.0Wm [210°]	Yes	Y	DL	1.2	46	1.5	34	1		
85	1.2D + 1.5Lm(2) + 1.0Wm [240°]	Yes	Y	DL	1.2	46	1.5	35	1		
86	1.2D + 1.5Lm(2) + 1.0Wm [270°]	Yes	Y	DL	1.2	46	1.5	36	1		
87	1.2D + 1.5Lm(2) + 1.0Wm [300°]	Yes	Y	DL	1.2	46	1.5	37	1		
88	1.2D + 1.5Lm(2) + 1.0Wm [330°]	Yes	Y	DL	1.2	46	1.5	38	1		
89	1.2D + 1.5Lm(3) + 1.0Wm [0°]	Yes	Y	DL	1.2	47	1.5	27	1		
90	1.2D + 1.5Lm(3) + 1.0Wm [30°]	Yes	Y	DL	1.2	47	1.5	28	1		
91	1.2D + 1.5Lm(3) + 1.0Wm [60°]	Yes	Y	DL	1.2	47	1.5	29	1		
92	1.2D + 1.5Lm(3) + 1.0Wm [90°]	Yes	Y	DL	1.2	47	1.5	30	1		
93	1.2D + 1.5Lm(3) + 1.0Wm [120°]	Yes	Y	DL	1.2	47	1.5	31	1		
94	1.2D + 1.5Lm(3) + 1.0Wm [150°]	Yes	Y	DL	1.2	47	1.5	32	1		
95	1.2D + 1.5Lm(3) + 1.0Wm [180°]	Yes	Y	DL	1.2	47	1.5	33	1		
96	1.2D + 1.5Lm(3) + 1.0Wm [210°]	Yes	Y	DL	1.2	47	1.5	34	1		
97	1.2D + 1.5Lm(3) + 1.0Wm [240°]	Yes	Y	DL	1.2	47	1.5	35	1		
98	1.2D + 1.5Lm(3) + 1.0Wm [270°]	Yes	Y	DL	1.2	47	1.5	36	1		
99	1.2D + 1.5Lm(3) + 1.0Wm [300°]	Yes	Y	DL	1.2	47	1.5	37	1		
100	1.2D + 1.5Lm(3) + 1.0Wm [330°]	Yes	Y	DL	1.2	47	1.5	38	1		
101	1.2D + 1.5Lm(4) + 1.0Wm [0°]	Yes	Y	DL	1.2	48	1.5	27	1		
102	1.2D + 1.5Lm(4) + 1.0Wm [30°]	Yes	Y	DL	1.2	48	1.5	28	1		
103	1.2D + 1.5Lm(4) + 1.0Wm [60°]	Yes	Y	DL	1.2	48	1.5	29	1		
104	1.2D + 1.5Lm(4) + 1.0Wm [90°]	Yes	Y	DL	1.2	48	1.5	30	1		
105	1.2D + 1.5Lm(4) + 1.0Wm [120°]	Yes	Y	DL	1.2	48	1.5	31	1		
106	1.2D + 1.5Lm(4) + 1.0Wm [150°]	Yes	Y	DL	1.2	48	1.5	32	1		
107	1.2D + 1.5Lm(4) + 1.0Wm [180°]	Yes	Y	DL	1.2	48	1.5	33	1		
108	1.2D + 1.5Lm(4) + 1.0Wm [210°]	Yes	Y	DL	1.2	48	1.5	34	1		
109	1.2D + 1.5Lm(4) + 1.0Wm [240°]	Yes	Y	DL	1.2	48	1.5	35	1		
110	1.2D + 1.5Lm(4) + 1.0Wm [270°]	Yes	Y	DL	1.2	48	1.5	36	1		
111	1.2D + 1.5Lm(4) + 1.0Wm [300°]	Yes	Y	DL	1.2	48	1.5	37	1		
112	1.2D + 1.5Lm(4) + 1.0Wm [330°]	Yes	Y	DL	1.2	48	1.5	38	1		

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	H001	N001	N002	HSS4x4x3	Beam	None	A500 Gr. B [SQR]	Typical
2	V002	N004	N003	PIPE_4.0	Column	None	A53 Gr. B	Typical
3	H003	N005	N006	(2) 1/2 U-Bolts	Beam	None	A36	Typical
4	H004	N007	N008	(2) 1/2 U-Bolts	Beam	None	A36	Typical
5	V005	N008	N006	RIGID	None	None	RIGID	Typical
6	H006	N010	N011	HSS4x4x3	Beam	None	A500 Gr. B [SQR]	Typical
7	U007	N012	N016	(2) 1/2 U-Bolts	Beam	None	A36	Typical
8	MP008	N017	N018	PIPE_2.0	Column	None	A53 Gr. B	Typical
9	U009	N013	N019	(2) 1/2 U-Bolts	Beam	None	A36	Typical
10	MP010	N020	N021	PIPE_2.0	Column	None	A53 Gr. B	Typical
11	U011	N014	N022	(2) 1/2 U-Bolts	Beam	None	A36	Typical
12	MP012	N023	N024	PIPE_2.0	Column	None	A53 Gr. B	Typical
13	U013	N015	N025	(2) 1/2 U-Bolts	Beam	None	A36	Typical
14	MP014	N026	N027	PIPE_2.0	Column	None	A53 Gr. B	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	L-Torque [in]	K y-y	K z-z	Function
1	H001	HSS4x4x3	39			Lbyy		2.1	2.1	Lateral
2	V002	PIPE_4.0	18			Lbyy		2.1	2.1	Lateral
3	H003	(2) 1/2 U-Bolts	3			Lbyy		2.1	2.1	Lateral
4	H004	(2) 1/2 U-Bolts	3			Lbyy		2.1	2.1	Lateral
5	H006	HSS4x4x3	120			Lbyy		2.1	2.1	Lateral
6	U007	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
7	MP008	PIPE_2.0	60	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
8	U009	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
9	MP010	PIPE_2.0	60	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
10	U011	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
11	MP012	PIPE_2.0	60	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral
12	U013	(2) 1/2 U-Bolts	3			Lbyy		0.5	0.5	Lateral
13	MP014	PIPE_2.0	60	Segment	Segment	Lbyy	Segment	2.1	2.1	Lateral

Node Boundary Conditions

	Node Label	X [lb/in]	Y [lb/in]	Z [lb/in]	X Rot [k-in/rad]	Y Rot [k-in/rad]	Z Rot [k-in/rad]
1	N001	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Advanced Data

	Label	Physical	Deflection Ratio Options	Activation	Seismic DR
1	H001	Yes	N/A		None
2	V002	Yes	** NA **		None
3	H003	Yes	N/A	Exclude	None
4	H004	Yes	N/A	Exclude	None
5	V005	Yes	** NA **		None
6	H006	Yes	N/A		None
7	U007	Yes	N/A	Exclude	None
8	MP008	Yes	** NA **		None
9	U009	Yes	N/A	Exclude	None
10	MP010	Yes	** NA **		None
11	U011	Yes	N/A	Exclude	None
12	MP012	Yes	** NA **		None
13	U013	Yes	N/A	Exclude	None
14	MP014	Yes	** NA **		None

Hot Rolled Steel Properties

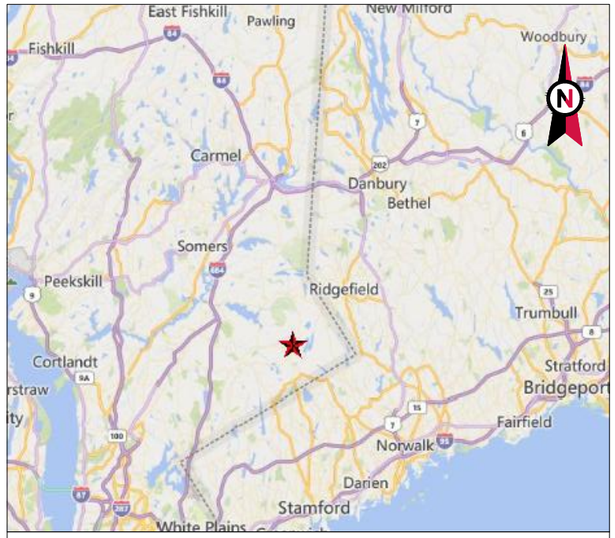
	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [lb/ft³]	Yield [psi]	Ry	Fu [psi]	Rt
1	A500 Gr. B [SQR]	2.9e+07	1.115e+07	0.3	0.65	490	46000	1.4	58000	1.3
2	A53 Gr. B	2.9e+07	1.115e+07	0.3	0.65	490	35000	1.6	60000	1.2
3	A36	2.9e+07	1.115e+07	0.3	0.65	490	36000	1.5	58000	1.2

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N001	max	999.107	6	1566.393	27	1432.893	2	-1636.173	20	4463.85	7	6163.857	67
2		min	-999.106	24	564.965	21	-1432.893	20	-5216.091	27	-4491.861	25	-1072.591	109
3	Totals:	max	999.107	6	1566.393	27	1432.893	2						
4		min	-999.106	24	564.965	21	-1432.893	20						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	H001	HSS4x4x3	0.734	0	70	0.377	0	y	69	88553.988	106812	12661.5	12661.5	1.371	H3-6
2	V002	PIPE_4.0	0.201	9	67	0.335	9		69	90327.022	93240	10631.25	10631.25	1.923	H1-1b
3	H006	HSS4x4x3	0.371	60	71	0.064	60	y	101	22091.762	106812	12661.5	12661.5	1.584	H1-1b
4	MP008	PIPE_2.0	0.071	29.375	9	0.011	29.375		9	22576.779	32130	1871.625	1871.625	1.886	H1-1b
5	MP010	PIPE_2.0	0.143	29.375	9	0.02	29.375		9	22576.779	32130	1871.625	1871.625	1.653	H1-1b
6	MP012	PIPE_2.0	0.381	29.375	8	0.04	43.75		8	22576.779	32130	1871.625	1871.625	1.461	H1-1b
7	MP014	PIPE_2.0	0.041	28.75	105	0.002	28.75		105	23593.813	32130	1871.625	1871.625	1.696	H1-1b



VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: POUNDRIDGE NY
ATC SITE NUMBER: 413118
T-MOBILE SITE NAME: NY09212H
T-MOBILE SITE NUMBER: NY09212H
SITE ADDRESS: 29 ADAMS LANE
POUND RIDGE, NY 10576

LOCATION MAP

T-MOBILE REPLACEMENT AMENDMENT PLAN
67E5D998E 6160 CONFIGURATION

COMPLIANCE CODE

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

1. 2020 NEW YORK BUILDING CODE (2018 IBC)
2. 2017 NATIONAL ELECTRIC CODE (NEC)
3. LOCAL BUILDING CODE
4. CITY/COUNTY ORDINANCES

UTILITY COMPANIES

POWER COMPANY: NYSEG
PHONE: N/A

TELEPHONE COMPANY: VERIZON
PHONE: N/A

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

PROJECT SUMMARY

SITE ADDRESS:

29 ADAMS LANE
POUND RIDGE, NY 10576
COUNTY: WESTCHESTER

GEOGRAPHIC COORDINATES:

LATITUDE: 41.22273231
LONGITUDE: -73.57169528
GROUND ELEVATION: 742' AMSL

PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

APPLICANT:

T-MOBILE
103 MONARCH DRIVE
LIVERPOOL, NY 13088

ENGINEER:

ATC TOWER SERVICES, LLC
3500 REGENCY PKWY STE 100
CARY, NC 27518

PROPERTY OWNER:

OLD STONE HILL RD ASSOCIATES INC
29 ADAMS LANE
POUND RIDGE, NY 10576

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW:

TOWER WORK:

REMOVE (3) T-ARM(s), (6) ANTENNA(s), (6) TTA(s), AND (18) 1-5/8 COAX CABLE(s) @ 92'

INSTALL (9) ANTENNA(s), (6) RRU(s), AND (3) 6X24 HYBRID TRUNK CABLE(s) @ 128'

EXISTING (3) T-ARMS(s) TO REMAIN @ 128'

GROUND WORK:

REMOVE (1) RBS 6201 ODE CABINET

INSTALL (1) ENCLOSURE 6160 CABINET AND (1) B160 BATTERY CABINET

EXISTING (1) RBS 6201 ODE CABINET TO REMAIN

PROJECT NOTES

1. THE FACILITY IS UNMANNED.
2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE.
3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE.
4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED.
5. HANDICAP ACCESS IS NOT REQUIRED.
6. THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7).

PROJECT LOCATION DIRECTIONS

FROM RT 684 TAKE EXIT FOR HWY 172EAST, TAKE 172 TO END AT T INTERSECTION AND MAKE LEFT ONTO124 (SALEM RD). MAKE LEFT ON OLD STONE HILL RD, MAKE LEFT ON ADAMS LANETOP OF HILL TAKE SERVICE ROAD ON LEFT TO SITE.

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	0	07/18/22	JP
G-002	GENERAL NOTES	0	07/18/22	JP
C-101	DETAILED SITE PLAN	0	07/18/22	JP
C-102	DETAILED EQUIPMENT PLAN	0	07/18/22	JP
C-201	TOWER ELEVATION	0	07/18/22	JP
C-401	ANTENNA INFORMATION & SCHEDULE	0	07/18/22	JP
C-501	CONSTRUCTION DETAILS	0	07/18/22	JP
E-501	GROUNDING DETAILS	0	07/18/22	JP
R-601	SUPPLEMENTAL			
R-602	SUPPLEMENTAL			
R-603	SUPPLEMENTAL			
R-604	SUPPLEMENTAL			
R-605	SUPPLEMENTAL			
R-606	SUPPLEMENTAL			
R-607	SUPPLEMENTAL			
R-608	SUPPLEMENTAL			
R-609	SUPPLEMENTAL			

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3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
#0012746

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JP	07/18/22

ATC SITE NUMBER:
413118

ATC SITE NAME:
POUNDRIDGE NY

T-MOBILE SITE NAME:
NY09212H

SITE ADDRESS:
29 ADAMS LANE
POUND RIDGE, NY 10576

SEAL:

T-Mobile

ATC JOB NO:	14128992_G3
CUSTOMER ID:	NY09212H
CUSTOMER #:	NY09212H

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	0

GENERAL CONSTRUCTION NOTES:

1. OWNER FURNISHED MATERIALS, T-MOBILE "THE COMPANY" WILL PROVIDE AND THE CONTRACTOR WILL INSTALL
   - A. BTS EQUIPMENT FRAME (PLATFORM) AND ICEBRIDGE SHELTER (GROUND BUILD/CO-LOCATE ONLY)
   - B. AC/TELCO INTERFACE BOX (PPC)
   - C. ICE BRIDGE (CABLE TRAY WITH COVER) (GROUND BUILD/CO-LOCATE ONLY, GC TO FURNISH AND INSTALL FOR ROOFTOP INSTALLATION)
   - D. TOWERS, MONOPOLES
   - E. TOWER LIGHTING
   - F. GENERATORS & LIQUID PROPANE TANK
   - G. ANTENNA STANDARD BRACKETS, FRAMES AND PIPES FOR MOUNTING
   - H. ANTENNAS (INSTALLED BY OTHERS)
   - I. TRANSMISSION LINE
   - J. TRANSMISSION LINE JUMPERS
   - K. TRANSMISSION LINE CONNECTORS WITH WEATHERPROOFING KITS
   - L. TRANSMISSION LINE GROUND KITS
   - M. HANGERS
   - N. HOISTING GRIPS
   - O. BTS EQUIPMENT
2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS, PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS. IT IS THE POSITION OF T-MOBILE TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.
3. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS.
4. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
6. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
7. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
8. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
9. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
11. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
12. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE REP PRIOR TO PROCEEDING.
13. EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
14. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE CONSTRUCTION MANAGER.
15. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
16. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE REP AND ENGINEER OF RECORD IMMEDIATELY.
17. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
18. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
19. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH AMERICAN TOWER CORPORATION (ATC) AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
20. CONTRACTOR SHALL FURNISH T-MOBILE AND AMERICAN TOWER CORPORATION (ATC) WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
21. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.
22. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
23. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE SPECIFICATIONS AND REQUIREMENTS.
24. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
25. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
26. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
27. CONTRACTOR SHALL NOTIFY T-MOBILE REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
28. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.
29. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
30. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE T-MOBILE REP. ANY WORK FOUND BY THE T-MOBILE REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
31. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.
32. T-MOBILE FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE T-MOBILE WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, UNCRATE, PROTECTED AND INSTALLED BY THE CONTRACTOR WITH ALL APPURTENANCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING IT UP.
33. T-MOBILE OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OWN OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO T-MOBILE OR THEIR ARCHITECT/ENGINEER.

SPECIAL CONSTRUCTION ANTENNA INSTALLATION NOTES:

1. WORK INCLUDED:
   - A. ANTENNA AND COAXIAL CABLES ARE FURNISHED BY T-MOBILE UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL.
   - B. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND T-MOBILE SPECIFICATIONS.
   - C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.
   - D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE.
   - E. CONTRACTOR SHALL PROVIDE FOUR (4) SETS OF SWEEP TESTS USING ANRITZU-PACKARD 8713B RF SCALAR NETWORK ANALYZER. SUBMIT FREQUENCY DOMAIN REFLECTOMETER(FDR) TESTS RESULTS TO THE PROJECT MANAGER. SWEEP TESTS SHALL BE AS PER ATTACHED RFS "MINIMUM FIELD TESTING RECOMMENDED FOR ANTENNA AND HELIAX COAXIAL CABLE SYSTEMS" DATED 10/5/93. TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING SERVICE AND BE BOUND AND SUBMITTED WITHIN ONE WEEK OF WORK COMPLETION.
   - F. INSTALL COAXIAL CABLES AND TERMINATING BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTIONS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.
   - G. ANTENNA AND COAXIAL CABLE GROUNDING:
2. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTORS/SPLICE WEATHERPROOFING KIT #221213 OR EQUAL.
3. ALL COAXIAL CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL CABLE (NOT WITHIN BENDS)

ALL DISCREPANCIES FROM WHAT IS SHOWN ON THESE CONSTRUCTION DRAWINGS SHALL BE COMMUNICATED TO ATC ENGINEERING IMMEDIATELY FOR CORRECTION OR RE-DESIGN. FAILURE TO COMMUNICATE DIRECTLY WITH ATC ENGINEERING OR ANY CHANGES FROM THE DESIGN CONDUCTED WITHOUT PRIOR APPROVAL FROM ATC ENGINEERING SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

AMERICAN TOWER®
A.T. ENGINEERING SERVICES, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
#0012746

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JP	07/18/22

ATC SITE NUMBER:
413118

ATC SITE NAME:
POUNDRIDGE NY

T-MOBILE SITE NAME:
NY09212H

SITE ADDRESS:
29 ADAMS LANE
POUND RIDGE, NY 10576

SEAL:

T-Mobile

ATC JOB NO:	14128992_G3
CUSTOMER ID:	NY09212H
CUSTOMER #:	NY09212H

GENERAL NOTES

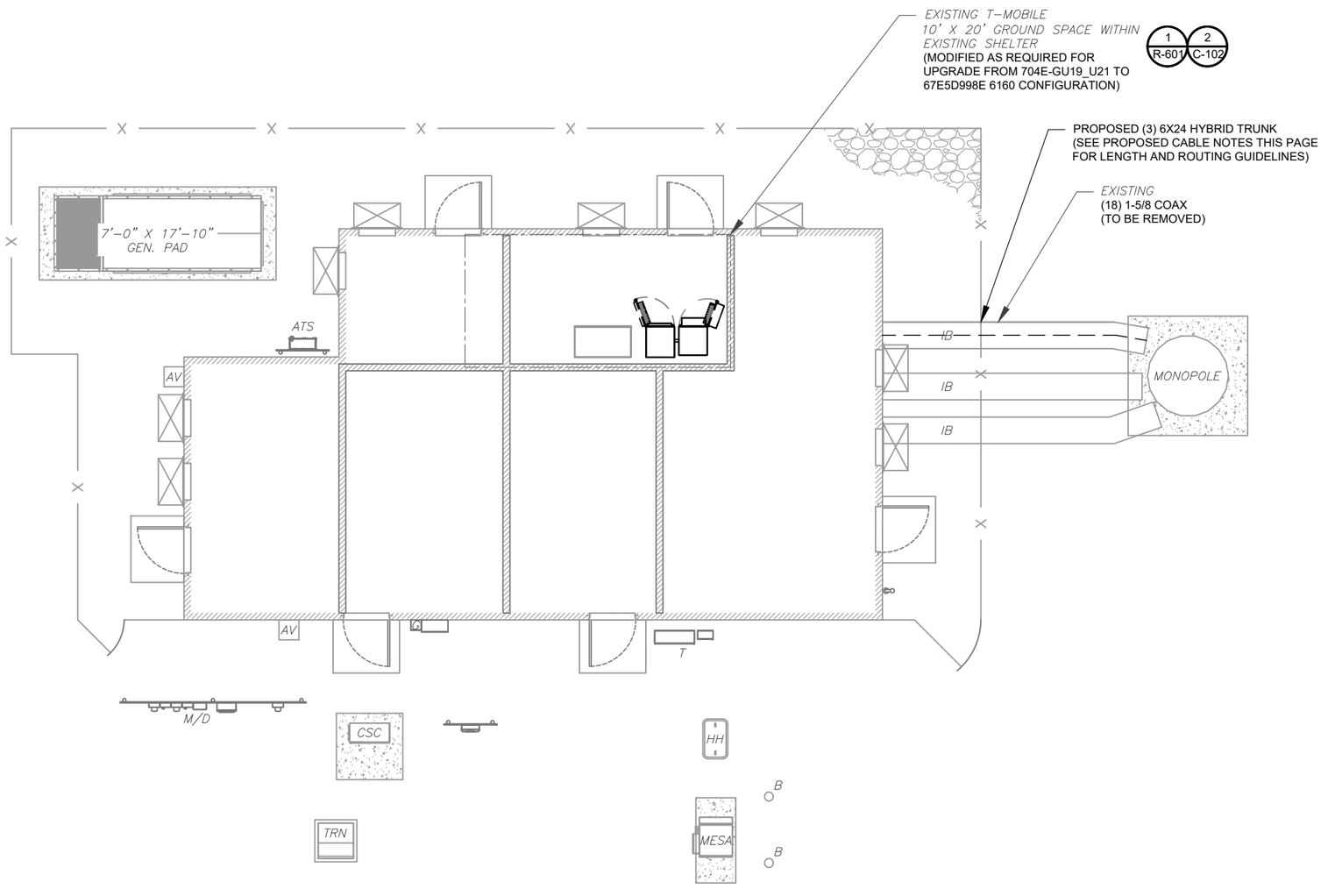
SHEET NUMBER:	REVISION:
G-002	0

SITE PLAN NOTES:

1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.
2. ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.
3. NO ELECTRICAL SCOPE IS INCLUDED IN THIS PROJECT.

LEGEND

⊗	GROUNDING TEST WELL
ATS	AUTOMATIC TRANSFER SWITCH
B	BOLLARD
CSC	CELL SITE CABINET
D	DISCONNECT
E	ELECTRICAL
F	FIBER
GEN	GENERATOR
G	GENERATOR RECEPTACAL
HH, V	HAND HOLE, VAULT
IB	ICE BRIDGE
K	KENTROX BOX
LC	LIGHTING CONTROL
M	METER
PB	PULL BOX
PP	POWER POLE
T	TELCO
TRN	TRANSFORMER
———	CHAINLINK FENCE



1 DETAILED SITE PLAN

GRAPHIC SCALE

10 0 5 10

(IN FEET)
1 UNIT = 10 FEET

PROPOSED CABLE NOTES:

1. ESTIMATED LENGTH OF PROPOSED CABLE IS **190'**. ESTIMATED LENGTH OF CABLE WAS PROVIDED BY CUSTOMER OR CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES), CDS DEFER TO GREATEST CABLE LENGTH.
2. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.

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REV.	DESCRIPTION	BY	DATE
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ATC SITE NUMBER:
413118

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T-MOBILE SITE NAME:
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SITE ADDRESS:
29 ADAMS LANE
POUND RIDGE, NY 10576

SEAL:

T-Mobile

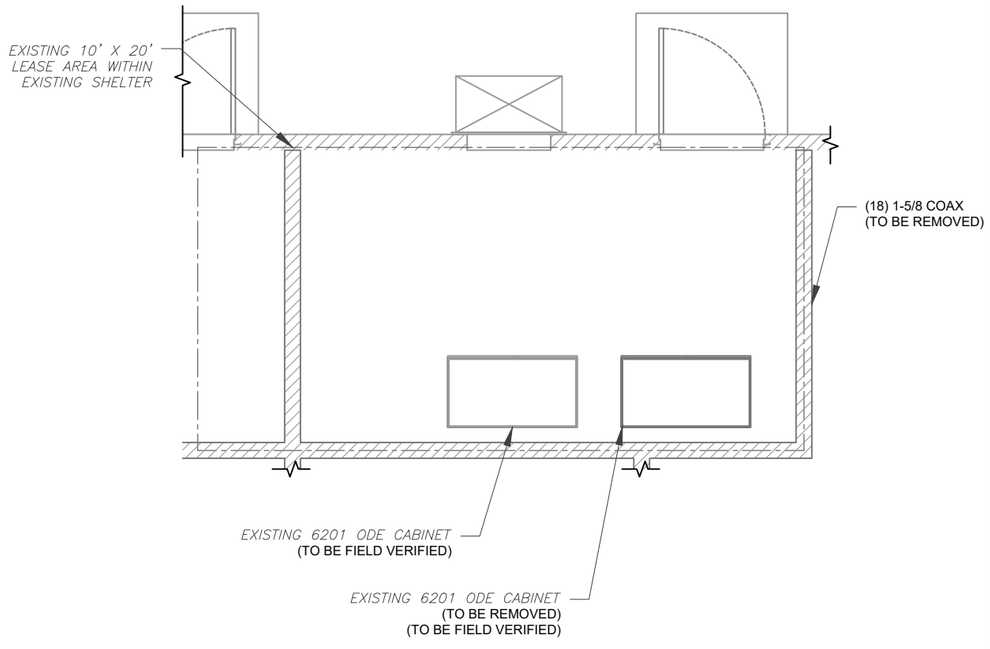
ATC JOB NO:	14128992_G3
CUSTOMER ID:	NY09212H
CUSTOMER #:	NY09212H

DETAILED SITE PLAN

SHEET NUMBER:	REVISION:
C-101	0

SITE PLAN NOTES:

1. CONTRACTOR TO VERIFY THERE IS NO LIVE AAV FIBER RUNNING THROUGH EXISTING DEAD EQUIPMENT. IF SO, THIS WILL NEED TO BE RERUN THROUGH CONDUIT PRIOR TO REMOVING DEAD 2G (6201 CABS) EQUIPMENT.
2. ALL OPEN PORTS NEED TO BE SEALED / WEATHERPROOFED PROPERLY
3. ALL UNNEEDED / EXCESS EQUIPMENT AND GARBAGE TO BE REMOVED FROM EQUIPMENT AREA. DISPOSE OF MATERIALS PROPERLY OFF SITE.



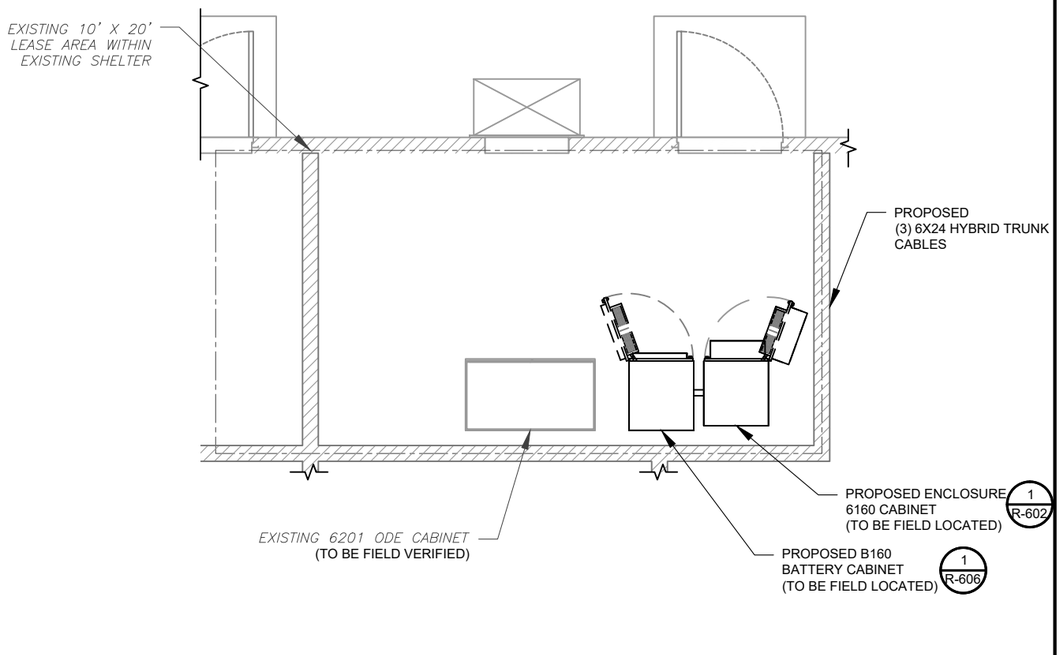
1 EXISTING GROUND EQUIPMENT LAYOUT

GRAPHIC SCALE

5 0 2.5 5

(IN FEET)
1 UNIT = 5 FEET

T-MOBILE CM APPROVAL REQUIRED BEFORE INSTALLING CABINETS.



2 PROPOSED GROUND EQUIPMENT LAYOUT

GRAPHIC SCALE

0 ###

(IN FEET)
1 UNIT = # FEET

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POUND RIDGE, NY 10576

SEAL:

T-Mobile

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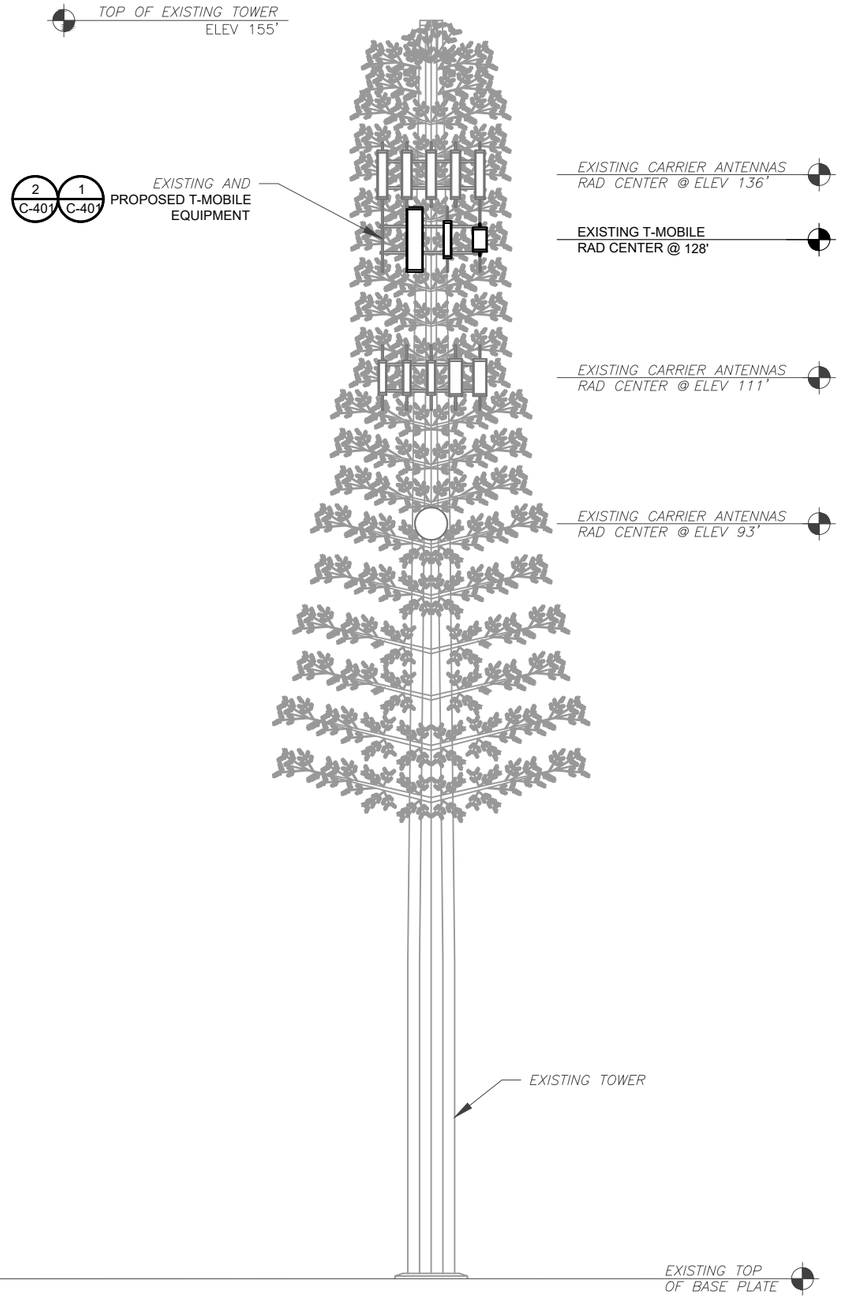
CUSTOMER ID:	NY09212H
CUSTOMER #:	NY09212H

DETAILED EQUIPMENT PLAN

SHEET NUMBER:	REVISION:
C-102	0

PER MOUNT ANALYSIS COMPLETED BY AMERICAN TOWER CORPORATION , DATED 07/15/22, THE EXISTING MOUNT CAN ADEQUATELY SUPPORT THE PROPOSED LOADING.



1 TOWER ELEVATION
SCALE: N.T.S.

MONOPINE NOTE:
MONOPINE BRANCHES ARE SHOWN FOR VISUAL REFERENCE ONLY AND DO NOT DEPICT ACTUAL FIELD CONDITIONS

TOWER NOTE:
1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE PROJECT MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
2. WHERE APPLICABLE, ALL NEW ANTENNAS, EQUIPMENT, MOUNTS, CABLING, ETC. SHALL BE PAINTED/SOCKED TO MATCH EXISTING EQUIPMENT IN ACCORDANCE WITH FAA, JURISDICTION, AND/OR OTHER LOCAL REQUIREMENTS.
3. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.
4. TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)
5. TOWER ELEVATION DEPICTION MAY NOT REFLECT ALL EQUIPMENT INCLUDED IN STRUCTURAL ANALYSIS. REFER TO STRUCTURAL ANALYSIS FOR FULL TOWER LOADING.

AMERICAN TOWER®
A.T. ENGINEERING SERVICES, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
#0012746

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JP	07/18/22

ATC SITE NUMBER:
413118

ATC SITE NAME:
POUNDRIDGE NY

T-MOBILE SITE NAME:
NY09212H

SITE ADDRESS:
29 ADAMS LANE
POUND RIDGE, NY 10576

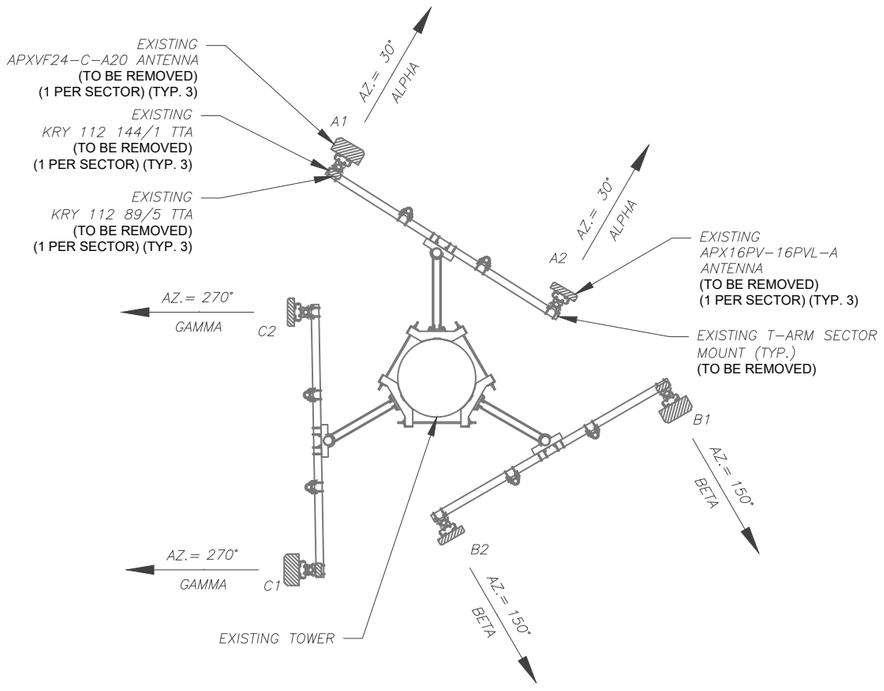
SEAL:

T-Mobile

ATC JOB NO:	14128992_G3
CUSTOMER ID:	NY09212H
CUSTOMER #:	NY09212H

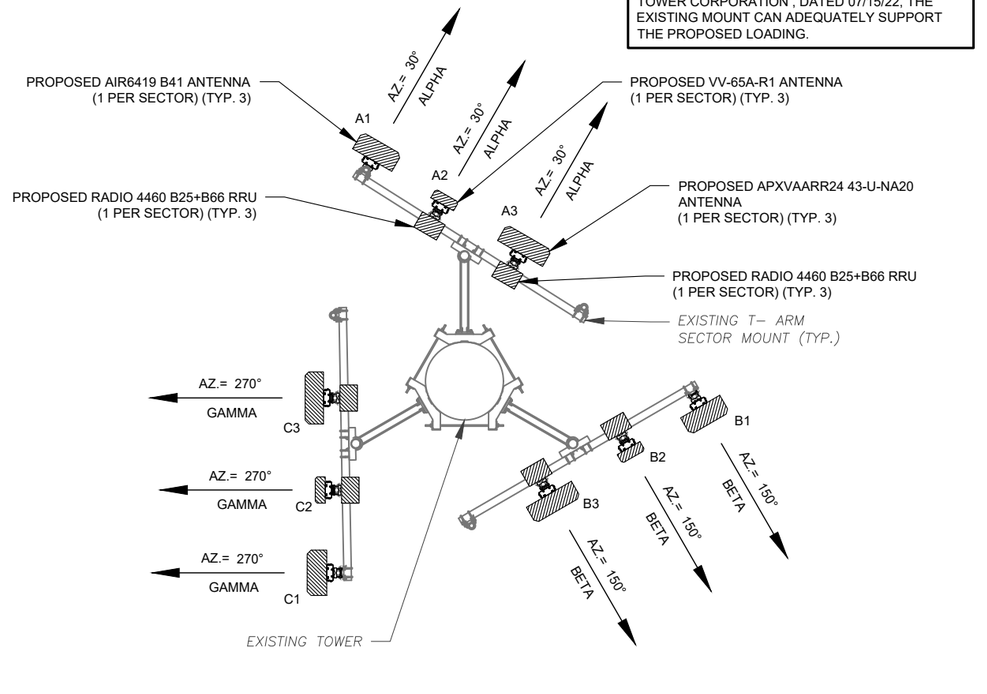
TOWER ELEVATION

SHEET NUMBER:	REVISION:
C-201	0



1 EXISTING ANTENNA PLAN @ 92'

SCALE: N.T.S.



PER MOUNT ANALYSIS COMPLETED BY AMERICAN TOWER CORPORATION , DATED 07/15/22, THE EXISTING MOUNT CAN ADEQUATELY SUPPORT THE PROPOSED LOADING.

2 FINAL ANTENNA PLAN @ 128'

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

LOCATION			ANTENNA SUMMARY					NON ANTENNA SUMMARY	
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	92'	0°	A1	APXVF24-C-A20	U2100/G1900/ U1900/L2100	0°/0°	RMV	KRY 112 144/1 KRY 112 89/5	RMV RMV
			A2	APX16PV-16PVL-A	L700	0°/0°	RMV	–	–
BETA		150°	B1	APXVF24-C-A20	U2100/G1900/ U1900/L2100	0°/0°	RMV	KRY 112 144/1 KRY 112 89/5	RMV RMV
			B2	APX16PV-16PVL-A	L700	0°/0°	RMV	–	–
GAMMA		270°	C1	APXVF24-C-A20	U2100/G1900/ U1900/L2100	0°/0°	RMV	KRY 112 144/1 KRY 112 89/5	RMV RMV
			C2	APX16PV-16PVL-A	L700	0°/0°	RMV	–	–

NOTES

1. CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
2. CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.

STATUS ABBREVIATIONS

RMV: TO BE REMOVED
RMN: TO REMAIN
REL: TO BE RELOCATED
ADD: TO BE ADDED

CABLE LENGTHS FOR JUMPERS

JUNCTION BOX TO RRU: 15'
RRU TO ANTENNA: 10'

FINAL ANTENNA SCHEDULE

LOCATION			ANTENNA SUMMARY					NON ANTENNA SUMMARY	
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	128'	0°	A1	AIR 6419 B41	N2500/L2500	2°/6°	ADD	-	-
			A2	VV-65A-R1	L1900/G1900/U2100/ L2100	2°/6°	ADD	RADIO 4460 B25+B66	ADD
			A3	APXVAALL24 43-U-NA20	L600/L700/N600	4°/8°	ADD	4480 B71+B85A	ADD
BETA		150°	B1	AIR 6419 B41	N2500/L2500	2°/6°	ADD	-	-
			B2	VV-65A-R1	L1900/G1900/U2100/ L2100	2°/6°	ADD	RADIO 4460 B25+B66	ADD
			B3	APXVAALL24 43-U-NA20	L600/L700/N600	4°/8°	ADD	4480 B71+B85A	ADD
GAMMA		270°	C1	AIR 6419 B41	N2500/L2500	2°/6°	ADD	-	-
			C2	VV-65A-R1	L1900/G1900/U2100/ L2100	2°/6°	ADD	RADIO 4460 B25+B66	ADD
			C3	APXVAALL24 43-U-NA20	L600/L700/N600	4°/8°	ADD	4480 B71+B85A	ADD

EXISTING FIBER DISTRIBUTION/OVP BOX

MODEL NUMBER	STATUS
–	–
–	–

EXISTING CABLING SUMMARY

CABLE QTY, SIZE, TYPE	STATUS
–	–
(18) 1-5/8 COAX	RMV

FINAL FIBER DISTRIBUTION / OVP BOX

MODEL NUMBER	STATUS
-	-
-	-

FINAL CABLING SUMMARY

CABLE QTY, SIZE, TYPE	STATUS
-	-
(3) 6X24 HYBRID TRUNK	ADD

3 EQUIPMENT SCHEDULES

AMERICAN TOWER®
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#0012746

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	JP	07/18/22

ATC SITE NUMBER:
413118

ATC SITE NAME:
POUNDRIDGE NY

T-MOBILE SITE NAME:
NY09212H

SITE ADDRESS:
29 ADAMS LANE
POUND RIDGE, NY 10576

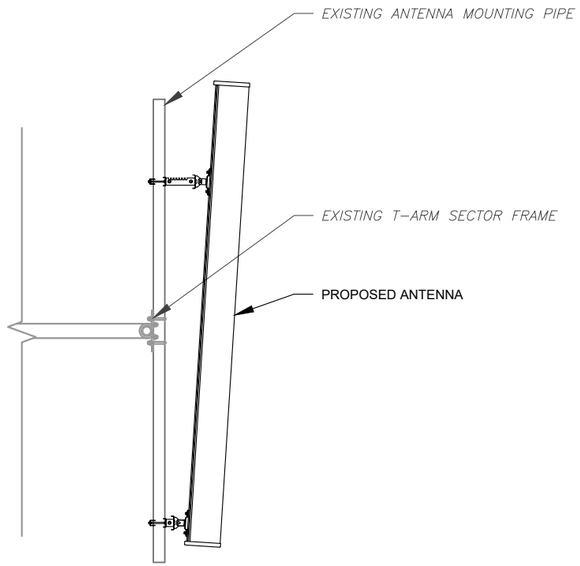
SEAL:

T-Mobile

ATC JOB NO:	14128992_G3
CUSTOMER ID:	NY09212H
CUSTOMER #:	NY09212H

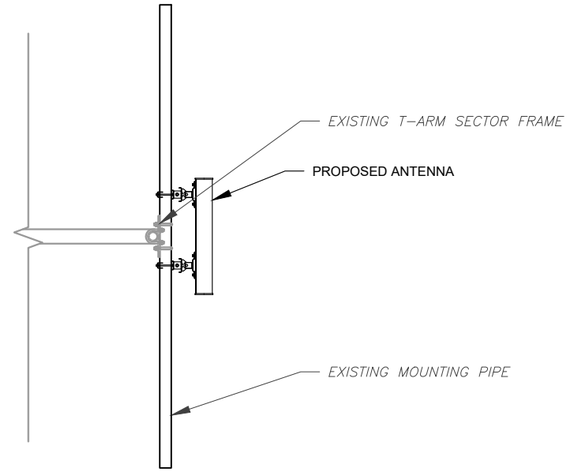
ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-401	0



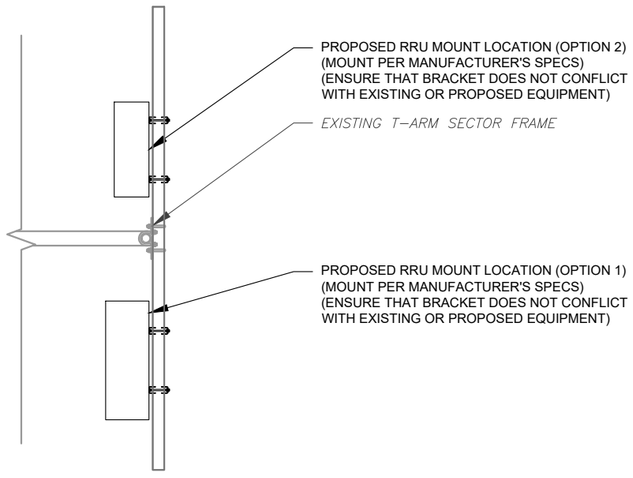
1 PROPOSED ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



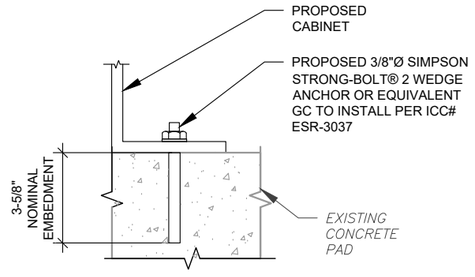
2 PROPOSED 5G ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



3 PROPOSED RRU MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



NOTE:

INSTALL SIMPSON STRONG-TIE® STRONG-BOLT® 2 WEDGE ANCHOR(S) STRICTLY PER INSTALLATION INSTRUCTIONS INCLUDED WITH PRODUCT OR FOUND ONLINE AT WWW.STRONGTIE.COM. PROPER INSTALLATION IS CRITICAL FOR FULL PERFORMANCE.

4 CABINET ATTACHMENT DETAIL

SCALE: N.T.S.

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REV.	DESCRIPTION	BY	DATE
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POUND RIDGE, NY 10576

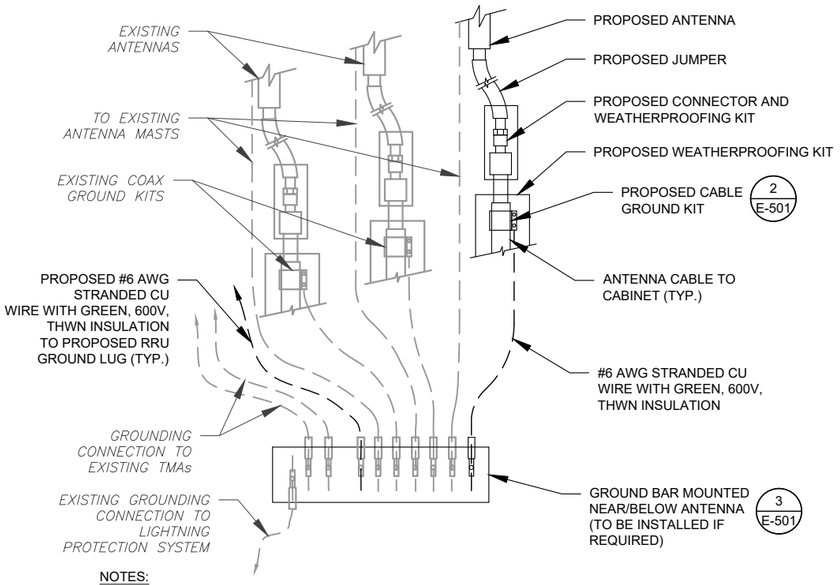
SEAL:

T-Mobile

ATC JOB NO:	14128992_G3
CUSTOMER ID:	NY09212H
CUSTOMER #:	NY09212H

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-501	0

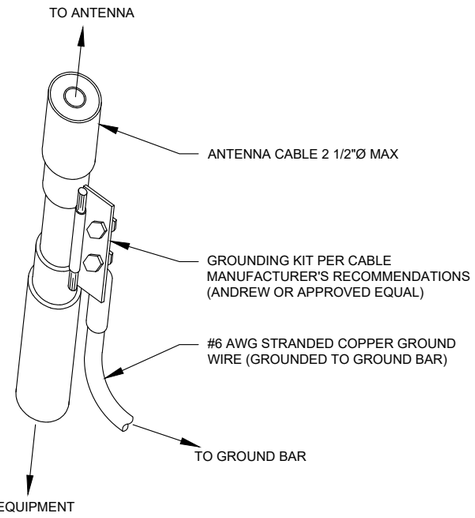


NOTES:

1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH T-MOBILE GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH T-MOBILE GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

1 TYPICAL ANTENNA GROUNDING DIAGRAM

SCALE: N.T.S.

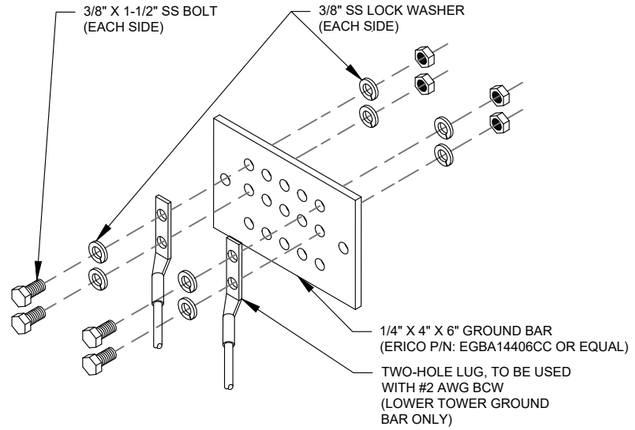


GROUND KIT NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

2 CABLE GROUND KIT CONNECTION DETAIL

SCALE: N.T.S.



GROUND BAR NOTES:

1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

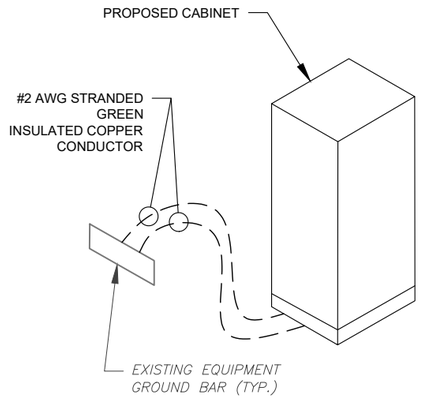
3 TOWER GROUND BAR DETAIL

SCALE: N.T.S.

STANDARD CONDUIT USE TABLE			
CONDUIT TYPE	USE CASE	LOCATION	USE CASE EXAMPLE
RMC (METALLIC)	AC, DC COMM	ABOVE GROUND	ABOVE GROUND PPC TO SSC
PVC	AC POWER	UNDERGROUND	UNDERGROUND PPC TO SSC OR BACKHAUL TRANSPORT HUB TO SSC
LFMC	AC, DC, COMM	MAX 6' PER CONDUIT RUN, ABOVE GROUND ONLY	TIGHT LOCATIONS BETWEEN HUB AND CONDUIT BUT NOT TO BE USED WHERE IT CAN BE STEPPED ON
EMT	INDOOR AC, DC COMM	INDOOR NOT EXPOSED TO THE OUTDOOR ENVIRONMENT (MUST BE DRY)	CIRCUIT PANEL TO JUNCTION BOX
LFNC	GROUND WIRE	CONCEALING AND PROTECTING BTCW RISERS ONLY	GROUND RING TO MGB OR SSC

EXCEPTION CONDUIT USE TABLE			
CONDUIT TYPE	USE CASE	LOCATION	USE CASE EXAMPLE
EMT (NOT PREFERRED)	OUTDOOR DC, COMM	OUTDOOR WHEN USED WITH WATERTIGHT HUBS ONLY	BETWEEN EQUIPMENT AND BATTERY CABINET OR EQUIPMENT TO EQUIPMENT CABINETS FOR INTER CABINET CONNECTION
RMC NONMETALLIC (ALUMINUM)	OUTDOOR/INDOOR PER NEC GUIDLINES	ABOVE GROUND	MAT BE USED AS A LOWER COST ALTERNATIVE TO METALLIC RMC, MUST MEET OR EXCEED FEDERAL SPEC: WW-C-540C, UL-6A, ANSI C80.5, NEC 344.10 (A) ALLOWS THE USE OF EITHER ALUMINUM OR GALVANIZED FITTINGS

4 CONDUIT USE TABLES



5 CABINET GROUNDING DETAIL

SCALE: N.T.S.

ELECTRICAL NOTES:

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.
2. ATC HAS NOT VERIFIED ANY EXISTING T-MOBILE GROUND EQUIPMENT OR ELECTRICAL LOADING. PROPOSED WORK BASED ON INSTALLATION CONFIGURATION PROVIDED BY T-MOBILE. CONTRACTOR TO VERIFY EXISTING T-MOBILE PANEL HAS SUFFICIENT SPACE FOR PROPOSED BREAKER. PROPOSED CABLE AND CONDUIT SHALL BE MINIMUM SIZE PER BELOW IN CHART.
3. FOR SPECIFIC CABINET / ANCILLARY EQUIPMENT WIRING REQUIREMENTS, THE T-MOBILE CONTRACTOR SHOULD REFERENCE DESIGN DOCUMENTS PROVIDED BY T-MOBILE FOR THIS CURRENT PROJECT CONFIGURATION, IN ACCORDANCE WITH LOCAL JURISDICTION REQUIREMENTS & NEC STANDARDS & PRACTICES.

VOLTS	OCPD SIZE	WIRE SIZE	GROUND	CONDUIT
120/240V OR 120/208V	80A/2P	3-#3 AWG	#8 AWG	1-1/4"
	100/2P	3-#2 AWG	#8 AWG	1-1/4"
	125A/2P	3-#3/0 AWG	#6 AWG	2"
	150A/2P	3-#3/0 AWG	#6 AWG	2"
	200A/2P	3-#3/0 AWG	#6 AWG	2"
240V OR 208V	80A/2P	2-#3 AWG	#8 AWG	1-1/4"
	100/2P	2-#2 AWG	#8 AWG	1-1/4"
	125A/2P	2-#3/0 AWG	#6 AWG	2"
	150A/2P	2-#3/0 AWG	#6 AWG	2"
	200A/2P	2-#3/0 AWG	#6 AWG	2"

6 ELECTRICAL NOTES

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SEAL:

T-Mobile

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CUSTOMER ID:	NY09212H
CUSTOMER #:	NY09212H

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0

Proposed RAN Equipment		
Template: 67E5D998E 6160		
Enclosure	1	2
Enclosure Type	RBS 6102	Enclosure 6160 AC V1
Baseband		DUW30 (U2100) DUG20 (G1900) RP 6651 (L2100, L1900, L700, L600, N600) RP 6651 (L2500, N2500)
Hybrid Cable System		Hybrid Trunk 6/24 4AWG 60m **(x 3)** PSU 4813 vR4A (Kit) **(x 2)**
Transport System		CSR IXRe V2 (Gen2)

RAN Scope of Work:

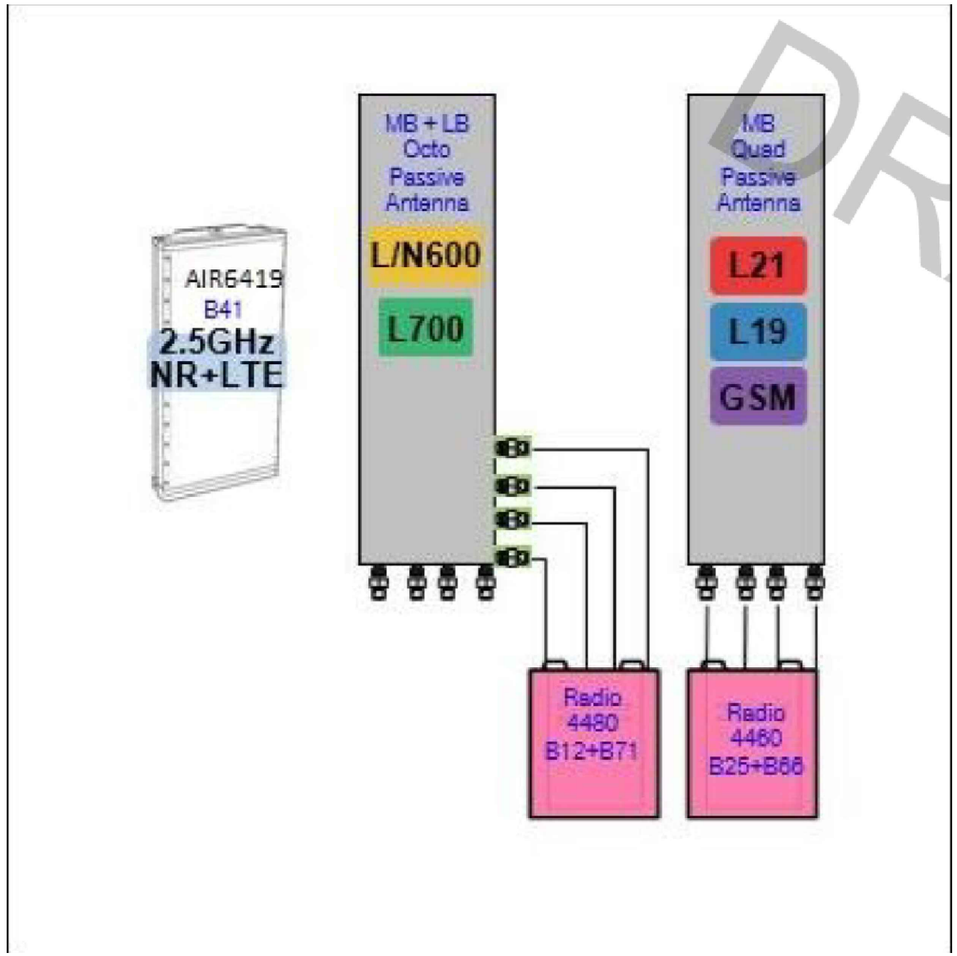
"RAN SOW

Replacement Colo-Consolidation POR (Using the ground leasing for TMO and Centerline of Sprint Retain (Cascade ID: NY54XC594, NJ01429))

Only Legacy Cabinet keep, remove all other cabinets
Add 6160 and B160.
Move Existing DUG/DUW to new 6160 from legacy
Add 6160 and B160.
Add 1 RP6651 for all Midband and Lowband
Add 1 RP6651 for L2500/NR2500
Add 2 PSU 4813 and Ixre Router
Add 3 HCS (6x24 length to be confirmed from CD)

Note for 4Sec-Site we are not doing 1D so only for 4Sec-Site add (3) RP6651 and (3) PSU

1 CABINET CONFIGURATION



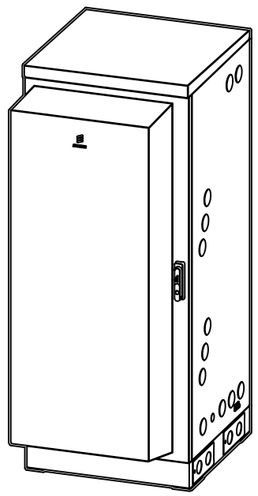
2 ANTENNA CONFIGURATION

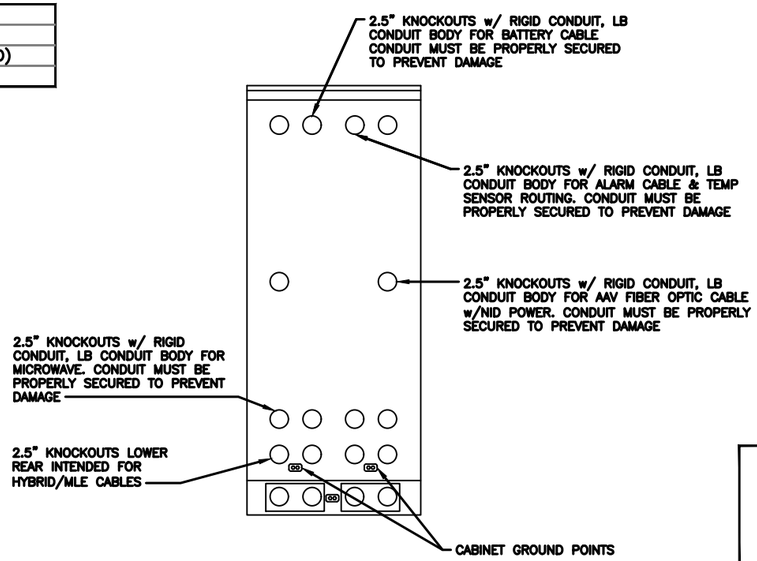
NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-601	0

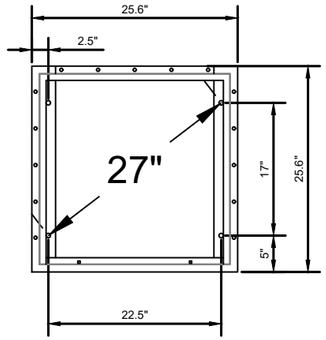
MANUFACTURER:	ERICSSON
MODEL:	6160 SITE SUPPORT CABINET
DIMENSIONS:	63" x 25.6" x 33.6" (H x W x D)
WEIGHT:	373 LBS





REAR VIEW

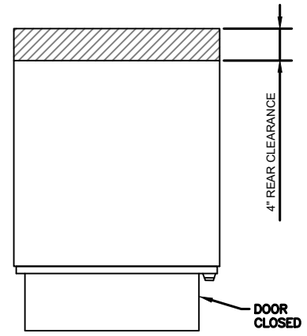
NOTE:
- CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS
- CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING

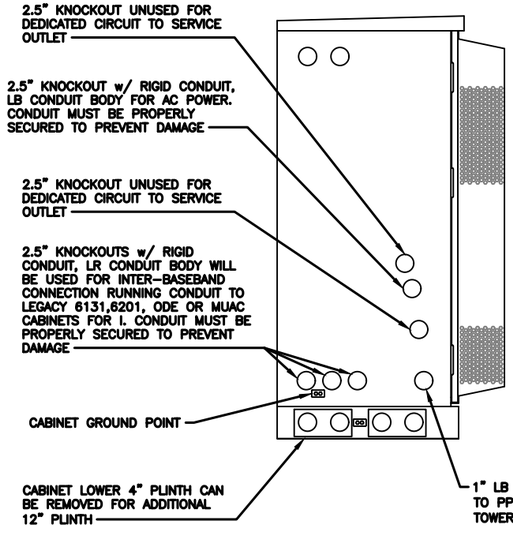


BOLT DOWN PATTERN

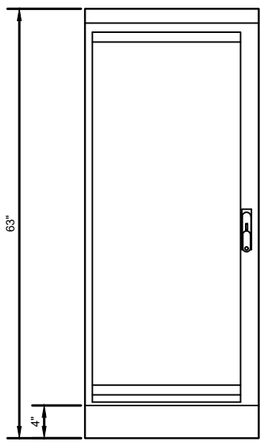
GROUNDING NOTE:

"CABINET GROUNDING TO USE A SINGLE, #2 BTCW CONDUCTOR, W/ 2-HOLE, 1" C-C, LONG BARREL, WINDOW LUG, IN 3/4" LFNC TO GROUND RING. PLINTH GROUNDING IS NOT REQUIRED."

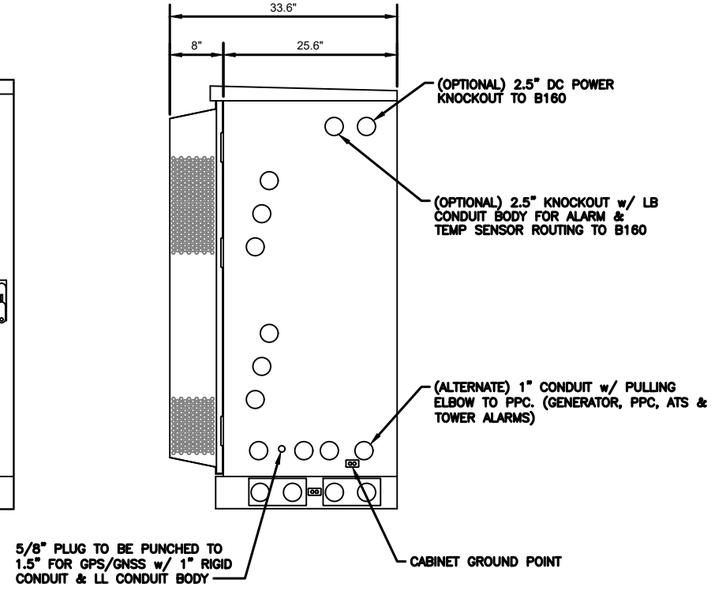




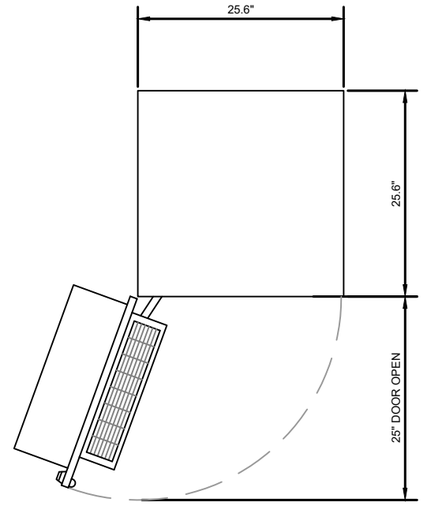
LEFT VIEW



FRONT VIEW



RIGHT VIEW



PLAN VIEW

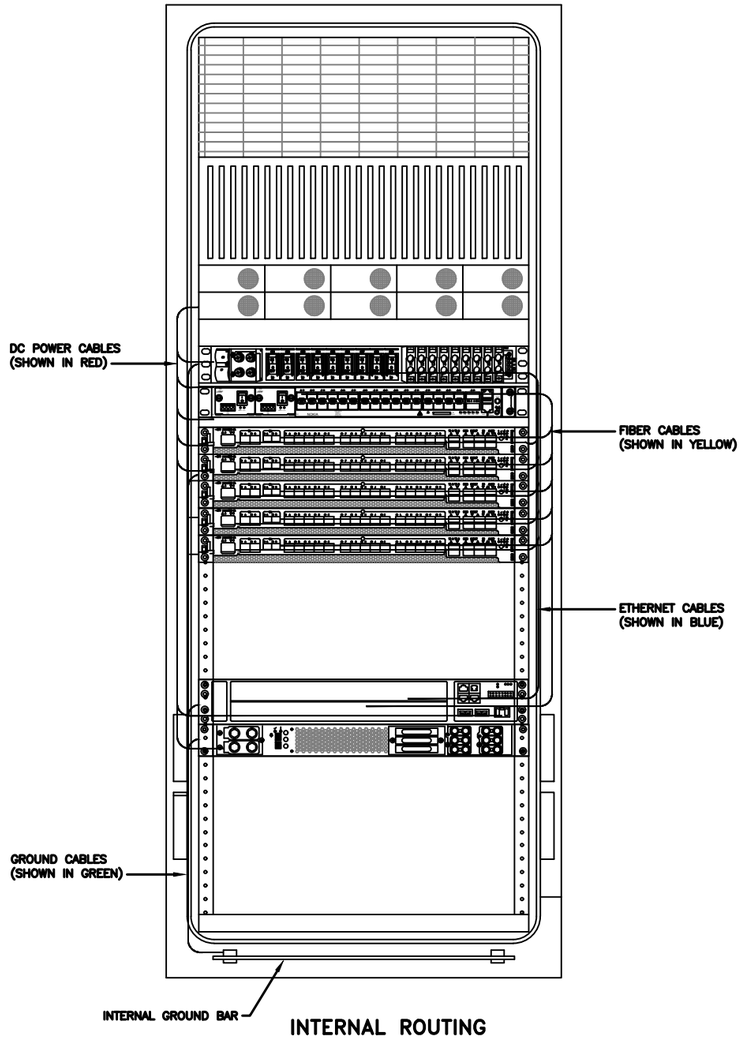
1 ERICSSON 6160 SITE SUPPORT CABINET SPECIFICATIONS

SCALE: N.T.S.

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

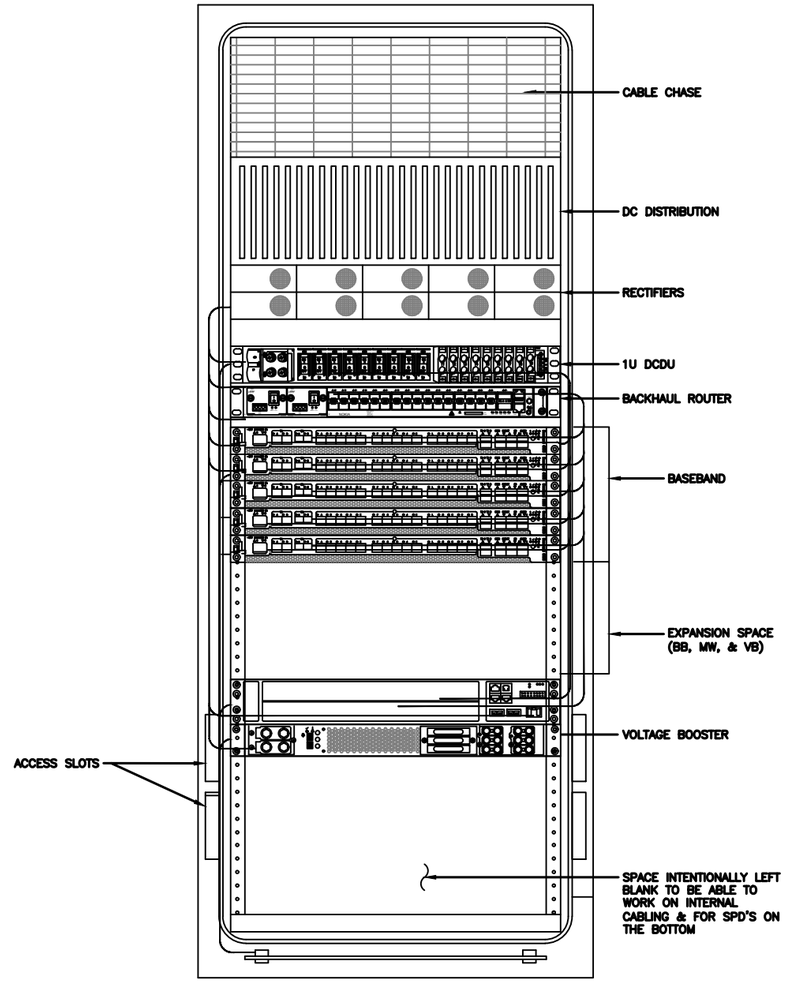
SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-602	0



INTERNAL ROUTING
(DOOR OPEN)

RACK ASSIGNMENTS	
RU SLOTS	DESCRIPTION
1	DC DISTRIBUTION
2	
3	
4	
5	RECTIFIER SHELF
6	
7	FIBER BOX
8	DCDU
9	BACKHAUL ROUTER
10	
11	1ST BASEBAND
12	2ND BASEBAND
13	3RD BASEBAND
14	4TH BASEBAND
15	5TH BASEBAND
16	EXPANSION
17	
18	
19	
20	EXPANSION / LEGACY BASEBAND / VOLTAGE BOOSTER
21	
22	VOLTAGE BOOSTER
23	OPEN SPACE FOR SPD ACCESS
24	
25	



FRONT VIEW
(DOOR OPEN)

1 ERICSSON 6160 CABINET DETAILS

SCALE: N.T.S.

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

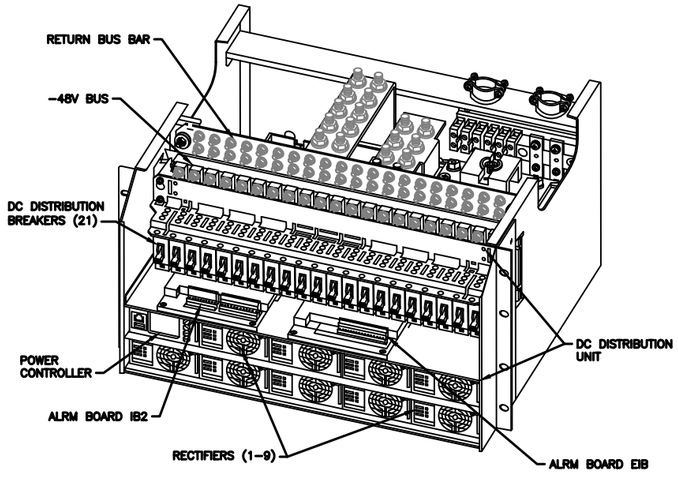
SUPPLEMENTAL

SHEET NUMBER: R-603

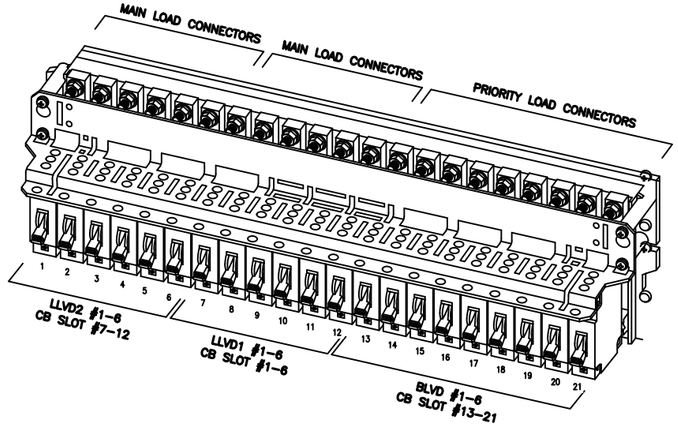
REVISION: 0

NOTE:
THIS IS FOR REFERENCE ONLY, CHECK FOR SPECIFIC DETAIL IN T–MOBILE CABINET SPECIFIC INSTALLATION GUIDES

Breaker Allocation for E6160					
CB SLOT	Ckt #		w/ DCDU Prior to availability of the 4460 and 4480	w/ DCDU Later Design Post-4460 and Post-4480	w/ DCDU 4 and 6 Sector designs
1	LVD1 47.0V	1	Router PS-2*/Future		Radio 4460 B25/66 ζ-1
2		2	Future		Radio 4460 B25/66 ζ-2
3		3	PSU 4813 feeding B25/66 α, β and γ (AIR 1641s)		PSU 4813 feeding B41-δ & B71/12-δ (Air 6449s and Radio 4480s)
4		4			
5		5	PSU 4813 feeding B41 α, β and γ (Air 6449s)		
6		6			
7	LVD2 45.1V	1	PSU 4813 feeding B71/12 α, β and γ (Radio 4449s)	PSU 4813 feeding B71/12 α, β and γ (Radio 4480s)	
8		2			
9		3	Future		Radio 4460 B25/66 δ-1
10		4	Future		Radio 4460 B25/66 δ-2
11		5	Future		Radio 4460 B25/66 ε-1
12		6	Future		Radio 4460 B25/66 ε-2
13	BLVD 43.2V	1	Router PS-1		
14		2	Radio 4415 B25/66 α	Radio 4460 B25/66 α-1	
15		3	Radio 4415 B25/66 β	Radio 4460 B25/66 α-2	
16		4	Radio 4415 B25/66 γ	Radio 4460 B25/66 β-1	
17		5	PSU 4813 feeding B2/25 α, β and γ (Radio 4424s)	Radio 4460 B25/66 β-2	
18		6		Radio 4460 B25/66 γ-1	
19		7	Future	Radio 4460 B25/66 γ-2	
20		8	DCDU		
21		9	AAV		
Sector Identification α = Alpha, β = Beta, γ = Gamma, δ = Delta, ε = Epsilon, ζ = Zeta					



POWER SUBRACK



DC DISTRIBUTION

1 ERICSSON 6160 ELECTRICAL DETAILS

SCALE: N.T.S.

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

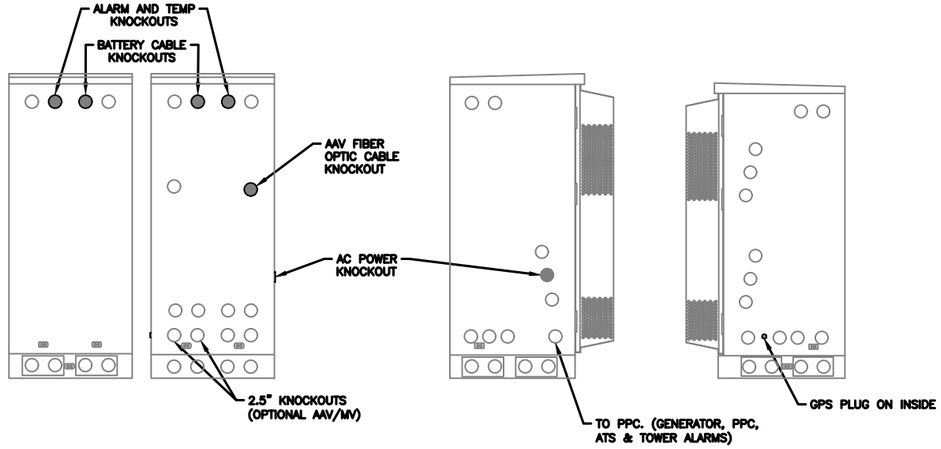
SUPPLEMENTAL

SHEET NUMBER: R-604

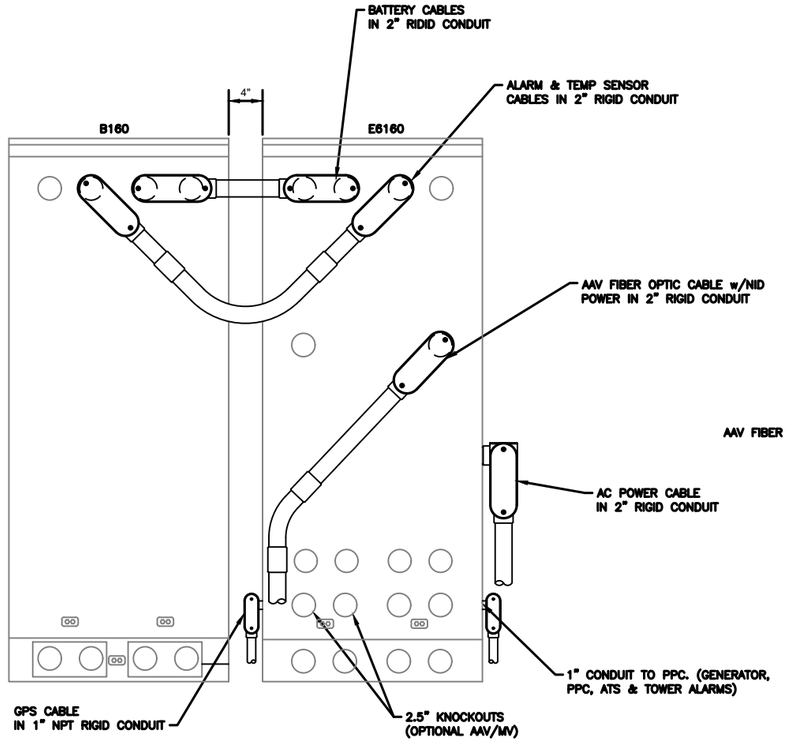
REVISION: 0

NOTE:

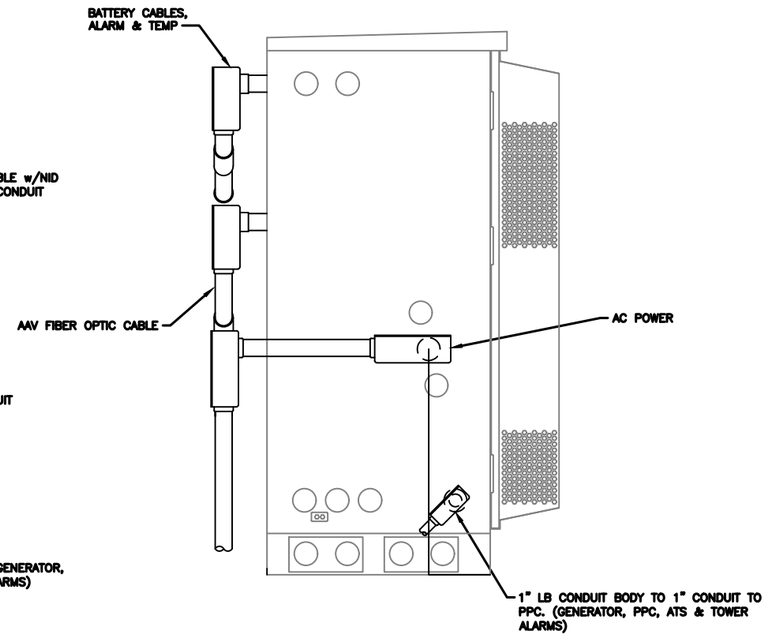
1. ALL CONDUIT AND FITTING ENTRANCES INTO CABINETS AND ENCLOSURES MUST UTILIZE MYERS OR EQUIVALENT HUBS OR SEALING WASHERS TO PREVENT WATER ENTRY/SEEPAGE INTO CABINETS AND ENCLOSURES.
2. (LIQUIDFLEX) FLEXIBLE METALLIC CONDUIT (LFMC) & ASSOCIATED FITTINGS CAN BE USED AS NEEDED BUT ONLY FOR TIGHT CONDUIT BENDS AND RUNS SUBJECT TO UL AND NEC LIMITATIONS. 6' MAX PER CONDUIT RUN.
3. POWER CONDUIT BODY ATTACHED WITH SHORT NIPPLE AND SEALING WASHER INSIDE & OUT. (FOR DOOR HOOD CLEARANCE)
4. PULLING ELBOWS MAY BE USED IN LIEU OF A CONDUIT BODIES WHEN CLEARANCE IS LIMITED.
5. ALL EXTERNAL ALARM CONDUITS ARE TOO TERMINATE AT THE PPC WITH A SINGLE 1" ALARM CONDUIT TO THE 6160.
6. (DO NOT USE CHASE NIPPLES) CONDUIT SHOULD HAVE SEALING WASHERS INSIDE AND OUT w/ LOCK NUT AND CAP.



CONDUIT LOCATIONS



REAR VIEW



SIDE VIEW

1 ERICSSON 6160/B160 CONDUIT ROUTING DETAILS

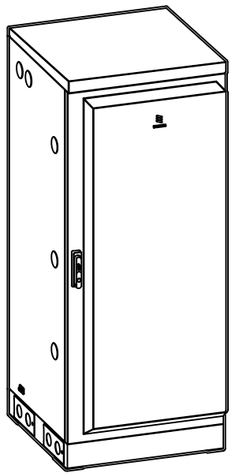
SCALE: N.T.S.

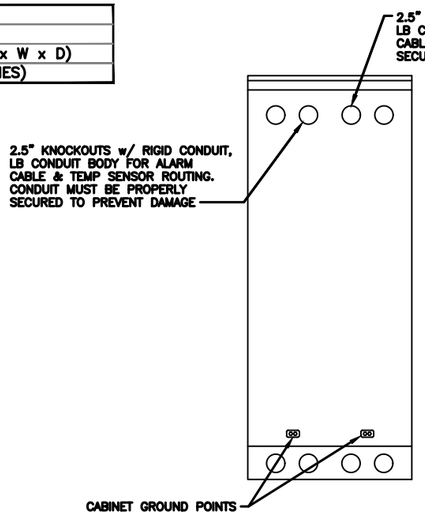
NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

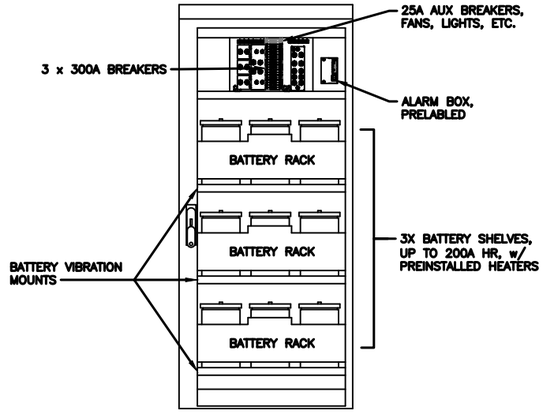
SHEET NUMBER:	REVISION:
R-605	0

MANUFACTURER:	ERICSSON
MODEL:	B160 BATTERY CABINET
DIMENSIONS:	63" x 25.6" x 29.5" (H x W x D)
WEIGHT:	295 LBS (WITHOUT BATTERIES)



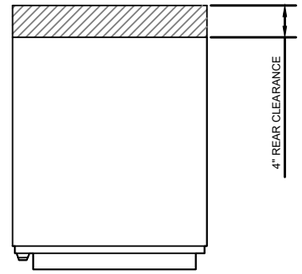


REAR VIEW



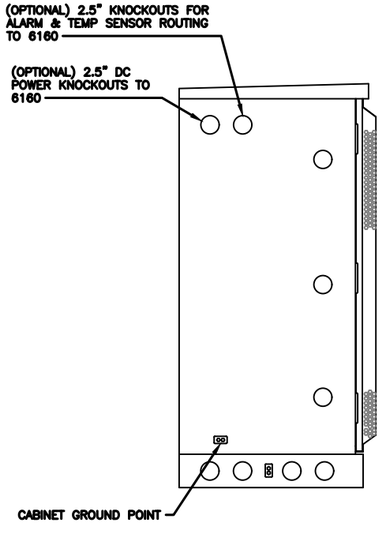
FRONT VIEW
(DOOR OPEN)

NOTE:
- CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS
- CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING

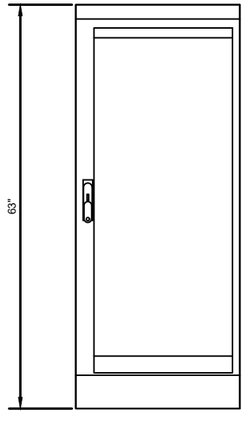


GROUNDING NOTE:

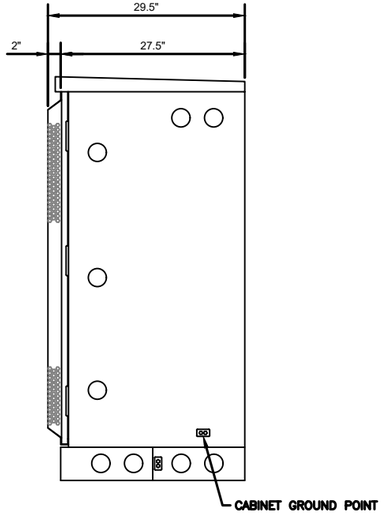
"CABINET GROUNDING TO USE A SINGLE, #2 BTCW CONDUCTOR, W/ 2-HOLE, 1" C-C, LONG BARREL, WINDOW LUG, IN 3/4" LFNC TO GROUND RING. PLINTH GROUNDING IS NOT REQUIRED."



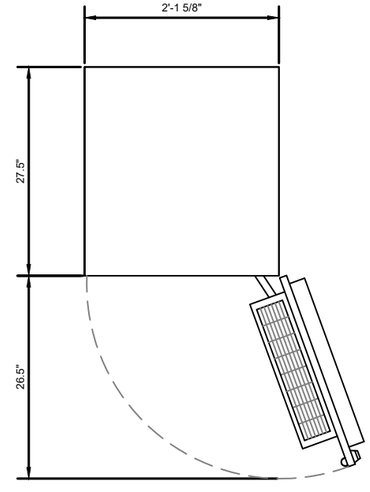
LEFT VIEW



FRONT VIEW



RIGHT VIEW



PLAN VIEW

B160 ERICSSON SITE SUPPORT BATTERY CABINET

1 ERICSSON B160 BATTERY CABINET SPECIFICATIONS

SCALE: N.T.S.

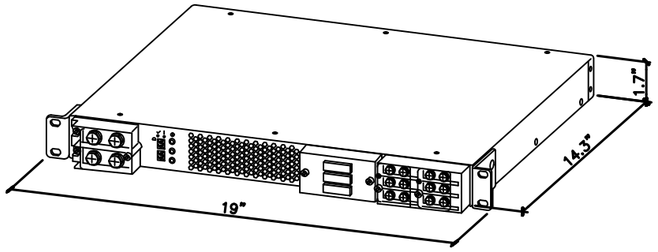
NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT.

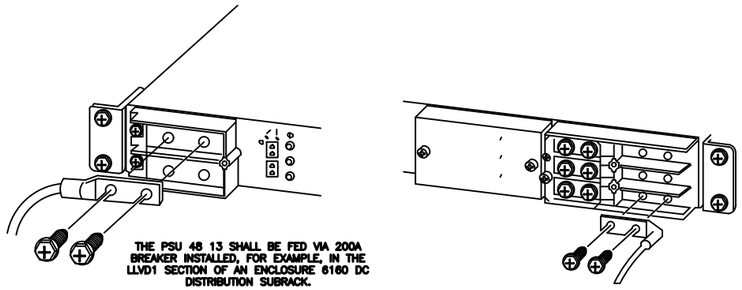
SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-606	0

MANUFACTURER:	ERICSSON
MODEL:	PSU 48 13
WEIGHT:	17.1 LBS
DIMENSIONS:	19"x 1.7"x 14.3"

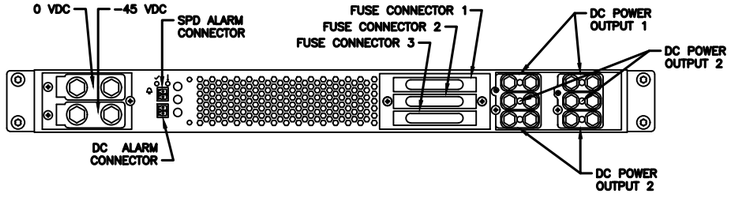
NEEDED INSTALL KIT (PICK 1)
34133 PSU4813 INSTALL KIT FOR RBS61XX
34134 PSU4813 INSTALL KIT FOR PBC6200
34135 PSU4813 INSTALL KIT FOR 6X60/RBS6230





THE PSU 48 13 SHALL BE FED VIA 200A BREAKER INSTALLED, FOR EXAMPLE, IN THE LLVD1 SECTION OF AN ENCLOSURE 6160 DC DISTRIBUTION SUBRACK.

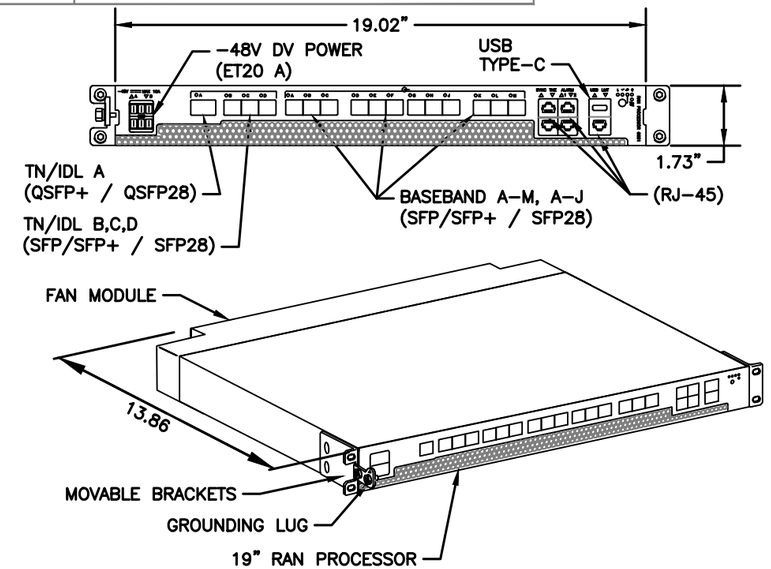
CONNECT –58 VDC DISTRIBUTION CABLE TO TERMINAL AT THE RIGHT, WHICH WILL BE FED TO RRU/AIR AT THE OTHER END.



1 SKU# 34132 - PSU 48 13

SCALE: N.T.S.

MANUFACTURER:	ERICSSON
MODEL:	6651 RAN PROCESSOR (KDU1370093/11)
DIMENSIONS:	1.73" X 19.02" X 13.86" (H" X W" X D")
WEIGHT:	16.98 LBS



2 34553 - ERICSSON 6651 RAN PROCESSOR

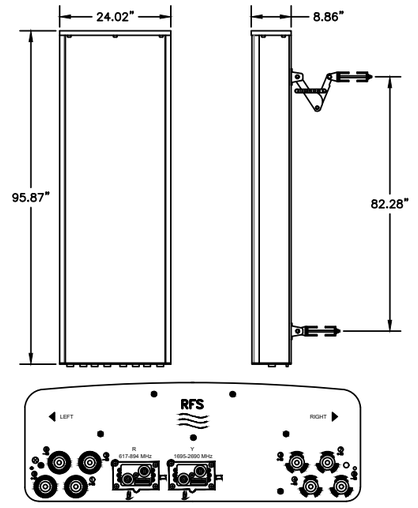
SCALE: N.T.S.

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-607	0

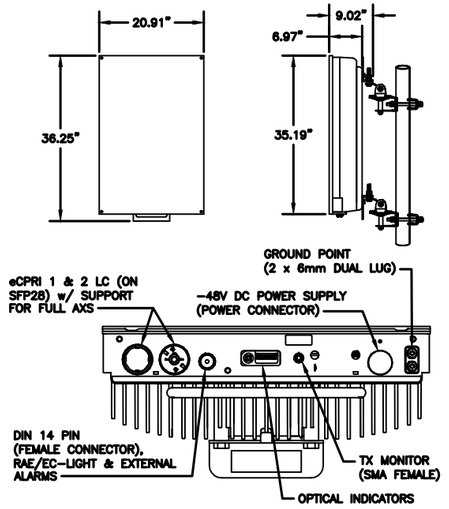
MANUFACTURER:	RFS
MODEL:	APXVAALL24_43-U-NA20
DIMENSIONS:	95.87" x 24.02" x 8.86"
WEIGHT:	119 LB
BAND:	QUAD BAND (8 PORT)
MOUNTING KIT & WEIGHT:	APM40-10E BEAM TILT KIT (INCLUDED) (16.53 LBS)



1 34087 - RFS APXVAALL24_43-U-NA20

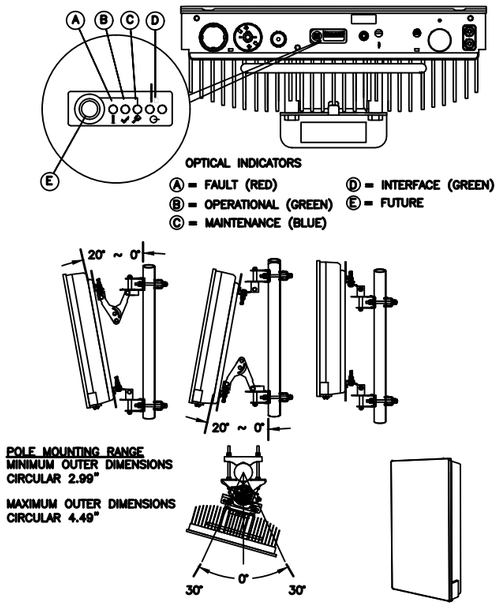
SCALE: N.T.S.

MANUFACTURER:	ERICSSON
MODEL:	AIR 6419 B41 (2.5GHz M-MIMO)
DIMENSIONS:	36.25" x 20.91" x 9.02" NOT TO EXCEED (H x W x D)
WEIGHT:	83 LBS (EXCLUDING MOUNTING KIT)
MOUNT WEIGHT:	13.5 LBS (SXK109 2016/1)

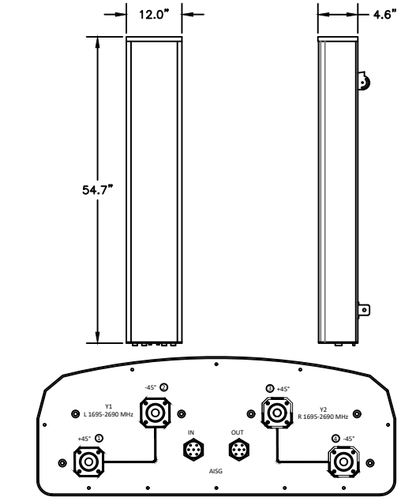


2 34552 - ERICSSON AIR 6419 BAND 41

SCALE: N.T.S.



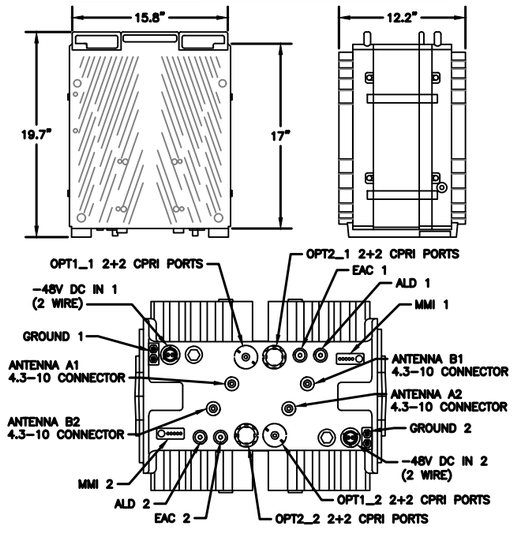
MANUFACTURER:	COMMSCOPE
MODEL:	VV-65A-R1
DIMENSIONS:	54.7" x 12.1" x 4.6" (H x W x D)
WEIGHT:	24.7 LB
INTERFACE:	4-PORT 4.3-10 FEMALE
MOUNTING KIT:	600899A-2 (INCLUDED) WEIGHT: 8.6 LB



3 34401 - COMMSCOPE VV-65A-R1

SCALE: N.T.S.

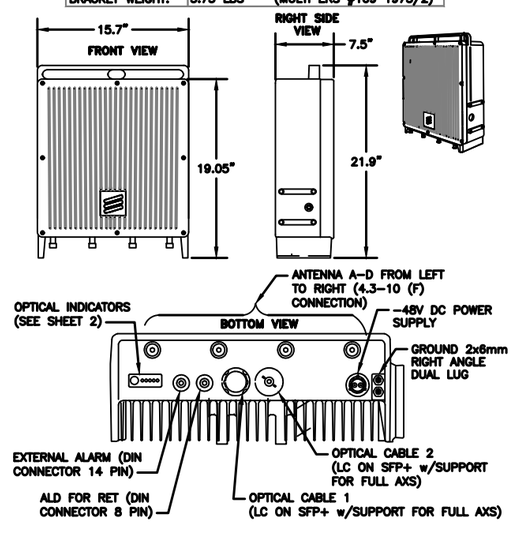
MANUFACTURER:	ERICSSON
MODEL:	4460 RADIO B2/25 B66 (KRC 161 912/3)
DIMENSIONS:	19.7" x 15.8" x 12.2" (H" x W" x D")
WEIGHT:	109 LBS
BRACKET WEIGHT:	4.8 LBS (ERS HEAVY #SXK1255993/1)



4 34373 - ERICSSON 4460 RADIO B2/25 B66

SCALE: N.T.S.

MANUFACTURER:	ERICSSON
MODEL:	4480 RADIO (KRC 161 922/1)
DIMENSIONS:	21.9" x 15.7" x 7.5" (H x W x D)
MODEL BAND:	B71, B85 FOR NR AND LTE
WEIGHT:	81 LBS
BRACKET WEIGHT:	3.75 LBS (MULTI ERS #109 1973/2)



5 34372 - ERICSSON 4480 RADIO

SCALE: N.T.S.

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-608	0

Mount Analysis Report

ATC Site Name	:	**POUNDRIDGE NY, NY**
ATC Site Number	:	**413118**
Engineering Number	:	**14128992_C8_01**
Mount Elevation	:	**128 ft**
Carrier	:	**T-Mobile**
Carrier Site Name	:	**NY09212H**
Carrier Site Number	:	**NY09212H**
Site Location	:	**29 Adams Lane** **Pound Ridge, NY 10576-1507** **41.22273231 , -73.57169528**
County	:	**Westchester**
Date	:	**July 15, 2022**
Max Usage	:	**73%**
Result	:	**Pass**

Prepared By:
Aviskar Ghansam
Structural Engineer

Aviskar Ghansam

Reviewed By:

STATE OF NEW YORK
ESHA KAUSHAL MODI
102024
LICENSED PROFESSIONAL ENGINEER

Authorized by "EOR"
15 Jul 2022 03:18:58 cosign

COA: 0012746

Introduction

The purpose of this report is to summarize results of the mount analysis performed for T-Mobile at 128 ft.

Supporting Documents

Previous Analysis	ATC Project #13714510_C8_03, dated November 19, 2021
Radio Frequency Data Sheet	RFDS ID #NY09212H, dated July 7, 2022
Reference Photos	Site photos from 2020

Analysis

This mount was analyzed using American Tower Corporation's Mount Analysis Program and RISA-3D

Basic Wind Speed:	115 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 1.00'' radial ice concurrent
Codes:	ANSI/TIA-222-H / 2018 IBC / 2020 New York Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.259, S1 = 0.059
Site Class:	D - Stiff Soil - Default
Live Loads:	Lm = 500 lbs, Lv = 250 lbs

Conclusion

Based on the analysis results, the antenna mount meets the requirements per the applicable codes listed above. The mount can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

A.T. Engineering Service, PLLC - 3500 Regency Parkway, Suite 100 - Cary, NC 27518 - 919.468.0112 Office - 919.466.5414 Fax - www.americantower.com

1 MOUNT ANALYSIS

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT. PLEASE REFERENCE THE MOUNT ANALYSIS REPORT FOR COMPLETE MOUNT ANALYSIS CALCULATIONS AND DETAILS. SUPPLEMENTAL PAGES INCLUDED IN THE CONSTRUCTION DRAWINGS ARE FOR REFERENCE ONLY. GENERAL CONTRACTOR IS TO VERYIFY THEY HAVE THE MOST RECENT MOUNT ANALYSIS PRIOR TO CONTRUCTION.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-609	0

Town of Pound Ridge
Receiver of Taxes

Memo

To: Town Board

From: Drifa Segal

Date: 9/8/2022

Re: Deputy Receiver of Taxes

I respectfully request the Town Board transfer $6000 in funds from Contingency 1.1990.400 to 1.1330.103 in order to fully fund the Deputy Receiver of Taxes salary for extended hours during the School bill collection period and for the remainder of 2022.

REQUEST FOR QUOTES (RFQ) FOR
POOL REPAIR SERVICES FOR
THE TOWN OF POUND RIDGE
199 WESTCHESTER AVENUE SITE

QUOTE DUE:

OCTOBER 6, 2022
4:00 PM

SUBMIT QUOTE TO:

OFFICE OF THE TOWN CLERK
TOWN OF POUND RIDGE
179 WESTCHESTER AVENUE
POUND RIDGE, NY 10576

INSTRUCTIONS & INFORMATION

- The Town of Pound Ridge, Westchester County, New York ("Town") is issuing a request for quotes (RFQ) from qualified pool contractors ("Contractors"), licensed in New York State, who shall provide pool repair services to support the repair of the Town's pools at 199 Westchester Avenue, Town of Pound Ridge, New York ("Project"). Qualified Contractors shall have ample experience and expertise in all aspects of municipal pool maintenance, diagnostics and repairs and pool construction as well as general knowledge of site construction work.

- Sealed quotes must be received at the Office of the Town Clerk, Town of Pound Ridge, 179 Westchester Avenue, Pound Ridge, NY 10576 until 4 pm on October 6, 2022. One additional copy of the sealed quote shall be sent to the Office of the Town Engineer, Pitingaro & Doetsch Consulting Engineers, P.C. ("Town Engineer"), 15 Industrial Drive, Suite 2, Middletown, NY 10941 before 4 pm on October 6, 2022.

- Any and all addenda pertaining to this particular RFQ will be issued via email. It is incumbent upon all potential Contractors to view all released addenda prior to the RFQ close date. If you obtain the RFQ documents and decide you are interested in submitting a response, please email Linda Kump (lkump@panddengineers.com) at Pitingaro & Doetsch Consulting Engineers, P.C. and copy the Town of Pound Ridge Town Clerk (townclerk@townofpoundridge.com). Provide the following information in your email:
    - Contractor Name
    - Contractor Contact Name
    - Address
    - Phone Number
    - Email Address – **All addenda will be issued via email**

- One (1) copy of the quote must be received by the Town Clerk in a sealed envelope, designated as "**QUOTE – 199 WESTCHESTER AVENUE POOL REPAIR"** with the name and address of the Contractor clearly indicated on the outside of the envelope, addressed to the Town Clerk, Town of Pound Ridge, 179 Westchester Avenue, Pound Ridge, NY 10576, on or before October 6, 2022 at 4 pm,

- One (1) copy of the quote must be received by the Town Engineer in a sealed envelope, designated as "**QUOTE – 199 WESTCHESTER AVENUE POOL REPAIR"** with the name and address of the Contractor clearly indicated on the outside of the envelope, on or before October 6, 2022 at 4 pm.

INSTRUCTIONS & INFORMATION

- The Town reserves the right to waive any informalities or reject any and all quotes where such waiving or rejection is in the best interest of the Town.

- Contractors are responsible for submitting their quotes to the appropriate locations at or prior to the time and date as stated in the RFQ. No quotes will be accepted after the designated time or date indicated. It is recommended that quotes be submitted in advance to allow for timely receipt. Delay in mail delivery is not an exception to the receipt of a quote.

- The following are required as part of a quote submission:
    1. Contractor Statement of Qualifications
    2. Quote Price Form
    3. Statement of Non-collusion

- No bid bond will be required as part of this solicitation.

- Written questions concerning this RFQ shall be submitted to the office of the Town Engineer. Questions shall be submitted to Linda Kump at lkump@panddengineers.com with the Town of Pound Ridge Town Clerk copied (townclerk@townofpoundridge.com) on or before September 27, 2022. The subject line of the email shall include "QUOTE – 199 WESTCHESTER AVENUE POOL REPAIR." Only written responses to questions will be considered official. Written responses will be issued via addendum to all Contractors who have provided a valid email address to the Office of the Town Engineer.

- Should a Contractor find any discrepancies or omissions in this RFQ, they shall notify the Town Engineer at once. The Town does not assume responsibility for any oral instructions or interpretations of meaning of the RFQ documents to any Contractor by any person(s).

- The following tentative schedule has been established for the selection and contracting process. It is subject to change by the Town.

Event	Date
Release of Request for Qualifications (RFQ)	September 14, 2022
Deadline for Questions	September 27, 2022
Quote Due Date	October 6, 2022

INSTRUCTIONS & INFORMATION

- Contractor shall maintain in full force and effect during the term of the Project and at the Contractor's expense the minimum insurance coverages listed below. Upon Project award, insurance certificates in connection with the Project shall be furnished and shall contain the name of insured (Contractor), address of insured (Contractor), issue date of certificate, name of insurance company, policy number, inception and expiration dates, limits of liability for all policies, type(s) of coverage(s) in effect and location and description of work. The Town of Pound Ridge and Pitingaro & Doetsch Consulting Engineers, P.C. shall be listed as additional insured. The Contractor agrees to indemnify the Town of Pound Ridge and Pitingaro & Doetsch Consulting Engineers, P.C. for any applicable deductibles and self-insured retentions.

    - Owner's Protective Liability
        - Bodily Injury Liability: $1,000,000 each occurrence; $2,000,000 aggregate
        - Property Damage Liability: $1,000,000 each occurrence; $2,000,000 aggregate
    - Comprehensive General Liability, including operations-premises liability, contractor's protective liability, contractual liability and products/completed operations
        - Bodily Injury Liability: $1,000,000 each occurrence; $2,000,000 aggregate
        - Property Damage Liability: $1,000,000 each occurrence; $2,000,000 aggregate
    - Automobile Liability, including owned, hired and non-owned
        - Bodily Injury Liability: $1,000,000 each person; $1,000,000 each accident
        - Property Damage Liability: $1,000,000 each accident
    - Worker's Compensation & Disability Insurance
        - Limit $500,000 or State-mandated statutory limit, as applicable
    - Umbrella Insurance
        - Limit $2,000,000
- Contractual Liability: The Contractor shall at all times indemnify and save harmless the Town of Pound Ridge and Town Engineer and their respective officers, agents and employees on account of any and all claims, damages losses, litigation, expenses, counsel fees and compensation arising out of injuries (including death) sustained by or alleged to

have been sustained by the officers, agents and employees of said Town or Town Engineer, or the Contractor or their subcontractors, and from injury including and from injuries (including death) sustained by or alleged to have been sustained by the public, any or all persons on or near the work, or by any other person or property, real or personal (including property of said Town or Town Engineer) caused in whole or in part by the acts, omissions or neglect of the Contractor including but not limited to any neglect in safeguarding the work or through the use of unacceptable materials in constructing the work of the Contractor, any subcontractor, materialmen or anyone directly or indirectly employed by them or any of them while engaged in the performance of the Project, including the entire elapsed time from the date ordered to start work or the actual start whichever occurs first until completion of the guarantee period, as certified by the Town or the Town Engineer.

- Laws and Regulations: The Contractor's attention is directed to the fact that all applicable Federal, State and Local laws, and the rules and regulations of all authorities having jurisdiction over execution and performance of the proposal and contract, shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

- Applicable New York State Labor Laws: The Contractor and each and every subcontractor performing work at the site of the Project to which this Contract relates shall comply with the applicable provisions of the Labor Laws of the State of New York and particularly Article 8 thereof. The Contractor and each and every subcontractor performing work at the site of the project to which this Contract relates shall comply with the applicable provisions of Part 53 Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York (12NYCRR53) Industrial Code Rule 53 and any amendments thereto. No laborer, workman or mechanic in the employ of the Contractor, subcontractor or other person doing or contracting to do the whole or part of the work contemplated by this Contract shall be permitted or required to work more than eight (8) hours in any one (1) calendar day or more than five (5) days in any one week, except in case of extraordinary emergency caused by fire, flood or danger to life or property.

- In the hiring of employees for the performance of work under this Contract or subcontract, neither the Contractor, nor any subcontractor, shall by reason of race, age, gender, religion, nationality, sexual orientation or color discriminate against any citizen of the State of New York who is qualified and available to perform the work to which the employment relates, nor shall the Contractor, any subcontractor, or any person acting on behalf of the Contractor or subcontractor discriminate in any manner against or intimidate any employee hired for the performance of work under this Contract on account of age, race, creed, color,

sexual orientation, national origin or gender, in accordance with Executive Law 296, Sections 20 through 23.

- The Contractor agrees that the estimated quantities of the classes of materials or work and kinds of material stated in the RFQ are approximate and are to be used only for the purpose of comparing quotes offered for the work. The Contractor agrees that they will not hold responsible the Town and agents should any of the estimated quantities be found not even approximately correct and that they will make no claim for anticipated profits or for loss of profit because of a difference between the quantities of work actually done or materials actually delivered and the estimated quantities stated in the RFQ.

Note: Where any form of the pronoun “they” (e.g. “their,” “theirs,” “them,” etc.) is used to reference Contractor, that pronoun shall be understood to be singular and gender-neutral.

SCOPE OF WORK

INTRODUCTION

The Town of Pound Ridge ("Town") is soliciting quotes from qualified pool repair companies ("Contractors") for pool repairs at the Town's site at 199 Westchester Avenue, Town of Pound Ridge, New York ("Project").

The 199 Westchester Avenue site consists of approximately 34 acres, and it is used as the Town Park. The Town Park contains ball fields, tennis and basketball courts, playgrounds, benches, grills and three (3) swimming pools: the recreational pool, the competition pool and the kiddie pool. The site is located adjacent to Town Hall and within the two-acre Residential (R-2A) Zoning District.

To continue to provide operable Town pools, the existing recreational and competition pools will need to be repaired. Currently, both pools leak up to 6,000 gallons of water daily. The pool water levels have been maintained using two on-site wells, which have been forced to run constantly to keep up with the large amount of water loss. Once the pool leaks are repaired, the pool will then be able to reach the proper temperature, use less chemicals and minimize depletion of the Town's groundwater assets.

The following is a summary description of the anticipated Project tasks. This information is provided as a framework for Contractor Statements of Qualifications (SOQs) and Price Quotes.

BASE BID SCOPE OF WORK

Standard industry practices for the repair of the Town Pools are expected throughout the duration of the Project, which will consist of the following:

1. Inspect all areas of pools prior to beginning work.
2. Inspect all joints, seals, and associated components for leakage.
3. Remove and reinstall gutters, including all plumbing connection grout seals and backing. This work shall include the removal, disposal and replacement of all concrete decking as needed.
4. Pressure test all pool drains and returns to verify that none leak.
5. Inspect areas of pool drains and returns for seepage and wicking.
6. Dye test pool if no identifiable leaks are found.
7. All items found to be defective or deficient shall be repaired. A repair plan and cost estimate for each item not previously identified shall be provided to the Town Engineer for review.
8. Contractor shall be responsible for obtaining all permits and performing all inspections and testing along with any fees associated for all items.

PROJECT SCHEDULE

Time is of the essence in completing this Project. It is the Town's intention to provide a Notice to Proceed by October 13, 2022, with work commencing by November 14, 2022 and being substantially completed by April 3, 2023.

REQUIRED QUALIFICATIONS

Qualified Contractors shall have ample experience and expertise in all aspects of municipal and public pool repair and completion of site work.

1. **General:**
    a. The Contractor's primary business, or the primary business of a department within the Contractor's company, shall be municipal pool maintenance, diagnostics and repairs and pool construction or closely related construction services for public and municipal entities.
    b. The Contractor (as a firm) shall have been in the business of pool maintenance, repair and construction or closely related services for at least five (5) years.
    c. Contractor shall provide a single Project Manager as the primary point of contact for all work assigned by the Town. This Project Manager shall have at least ten (10) years of experience in pool maintenance, repair and construction; site work; and/or general construction.
    d. Preference will be given to Contractors whose principal place of business is located in New York State and within a three-hour (3-hour) commute of the Town. The work must be based in and performed out of said offices.

2. **Certifications & Insurance (Required):**
    a. Contractor shall be licensed to do business in the State of New York.
    b. Contractor shall possess a valid license for providing the requested services in the State of New York.
    c. Contractor shall maintain in full force and effect during the term of the Project and at the Contractor's expense the minimum insurance coverages described in the Instructions & Information section herein.

3. **Performance Bond (Required):**
    a. Contractor shall be required to obtain a performance bond for the proposed work.

QUOTE CONTENTS

STATEMENT OF QUALIFICATIONS

Statements of Qualifications (SOQs) shall be concise and well organized and shall demonstrate the Contractor's experience applicable to the requirements of this RFQ. SOQs submitted in response to this RFQ shall be in the following order and shall include the following:

1. **Brief Cover Letter**
   The cover letter shall describe the Contractor's understanding of the services identified. This letter shall contain an expression of the Contractor's interest in the work, a statement regarding the qualifications of the Contractor to do the work and any other information that may be useful to the Town. Cover letters shall be signed by an individual authorized to bind the Contractor and shall contain a statement to the effect that the submittal is in effect for ninety (90) days. The letter shall also acknowledge the receipt of any addenda to the RFQ.

2. **Contractor Information:**
   a. Legal name and address of company
   b. Address of office providing services and number of employees
   c. Legal form of company (e.g. partnership, corporation, etc.)
   d. Name, title, address, telephone number and email of person to contact regarding this RFQ

PRICE QUOTE

The Quote Price Form included in this RFQ shall be completed and submitted with the Contractor's response. A lump-sum fee shall be provided as well as unit prices for individual items.

FORMS

The following forms shall be submitted with the Contractor's response:

1. Statement of Non-collusion

QUOTE PRICE FORM

The undersigned, having carefully examined the appropriate RFQ documents, does hereby agree to furnish and deliver to the Town of Pound Ridge, Westchester County, New York, the following item(s) at the price(s) indicated:

BASE BID – RECREATIONAL POOL				
ITEM #	**DESCRIPTION**	**# OF UNITS**	**UNIT**	**ITEM TOTAL ($)**
1	Inspect all areas of pools prior to beginning work.	1	Lump Sum	
2	Inspect all joints, seals, and associated components for leakage.	1	Lump Sum	
3	Remove and reinstall gutters including all plumbing connection grout seals and backing and concrete work.	1	Lump Sum	
4	Pressure test all pool drains and returns to verify that none leak.	1	Lump Sum	
5	Inspect areas of pool drains and returns for seepage and wicking.	1	Lump Sum	
6	Dye test pool if no apparent leaks are found.	1	Lump Sum	
7	Stated Allowance for Unforeseen Items	1	Lump Sum	100,000.00

BASE BID – RECREATIONAL POOL	
DESCRIPTION	**TOTAL NOT-TO-EXCEED PRICE ($)**
Not-to-Exceed Price to Perform the Work for Items 1-7 as specified herein	

QUOTE PRICE FORM

BASE BID – COMPETITION POOL				
ITEM #	**DESCRIPTION**	**# OF UNITS**	**UNIT**	**ITEM TOTAL ($)**
1	Inspect all areas of pools prior to beginning work.	1	Lump Sum	
2	Inspect all joints, seals, and associated components for leakage.	1	Lump Sum	
3	Remove and reinstall gutters including all plumbing connection grout seals and backing and concrete work.	1	Lump Sum	
4	Pressure test all pool drains and returns to verify that none leak.	1	Lump Sum	
5	Inspect areas of pool drains and returns for seepage and wicking.	1	Lump Sum	
6	Dye test pool if no apparent leaks are found.	1	Lump Sum	
7	Stated Allowance for Unforeseen Items	1	Lump Sum	100,000.00

BASE BID – COMPETITION POOL	
DESCRIPTION	**TOTAL NOT-TO-EXCEED PRICE ($)**
Not-to-Exceed Price to Perform the Work for Items 1-7 as specified herein	

QUOTE PRICE FORM

CONTRACTOR

_____

NAME OF AUTHORIZED OFFICIAL (PLEASE PRINT OR TYPE)

_____

SIGNATURE OF AUTHORIZED OFFICIAL DATE

_____ _____

STATEMENT OF NON-COLLUSION

The following Non-Collusive Bidding Certification as required by General Municipal Law Section 103-d must be signed and submitted with this bid.

By submission of this Bid, each Contractor and each person signing on behalf of any Contractor certifies, and in the case of a joint Bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of Contractor's knowledge and belief:

1. The prices in this Bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any Contractor or with any competitor;

2. Unless otherwise required by law, the prices which have been quoted in this Bid have not been knowingly disclosed by the Contractor and will not knowingly be disclosed by the Contractor prior to opening, directly or indirectly, to any other Contractor or to any competitor; and

3. No attempt has been made or will be made by the Contractor to induce any other person, partnership or corporation to submit or not to submit a Bid for the purpose of restricting competition.

Wherefore, this statement has been subscribed by the Contractor and affirmed by the Contractor as true under penalties of perjury.

Dated: _____20____

Signature: _____

Printed Name & Title: _____

Company: _____

Town Clerk's Office

MEMORANDUM

To: Town Board

Cc: Wendy Cummings, Lisa Miller

From: Erin Trostle

Date: September 8, 2022

Re: Halloween Walk Special Event Permit Application

The Pound Ridge Business Association has submitted a Special Event Permit Application for its annual Halloween Walk, which is scheduled for 4:00 to 6:00 pm on October 31, 2022. The event will have the same format as in years past, with trick-or-treaters visiting shops in the business district. Chief Mulcahy has reviewed and approved the plan (review form attached).

SPECIAL EVENT APPLICATION REVIEW

EVENT: Halloween Walk DATE: 10/31/22

I have reviewed the Special Event Permit Application for the event indicated above.

SIGNATURE: [signature] 8/29/22 NAME: Thomas D. Mulcahy

DEPARTMENT:

- [x] POLICE DEPARTMENT
- [ ] BUILDING DEPARTMENT
- [ ] FIRE DEPARTMENT
- [ ] MAINTENANCE DEPARTMENT
- [ ] RECREATION DEPARTMENT
- [ ] EMERGENCY SERVICES
- [ ] HIGHWAY DEPARTMENT
- [ ] OTHER (PLEASE SPECIFY): _____

APPROVAL/CONDITIONS:

- [x] APPROVED
- [ ] DISAPPROVED
- [ ] APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

Police Dept schedules 2 additional patrols for Halloween so no additional officers are needed. Officers are assigned to Scotts Corners to assist w/ this event and Haunted House at Pound Ridge Fire Dept.

FOR TOWN DEPARTMENTS ONLY:

STAFFING NEEDED:		STAFFING COST:	$
EQUIPMENT NEEDED:		EQUIPMENT COST:	$
OTHER COST ITEMS:		OTHER COST:	$
		TOTAL COST:	$

Please return completed review forms to the Town Clerk (townclerk@townofpoundridge.com).

SPECIAL EVENT PERMIT APPLICATION

Pursuant to Section 91 of the Town Code, a Special Event Permit is required for any sale, festival, or other special event that is conducted on Town property; that exceeds the building envelopes in the Business District; or that significantly impacts available public parking, vehicular or pedestrian traffic, or access to public roads.

However, please note that events in the Town Park or at Conant Hall consistent with the designated purpose of those facilities require only a Recreation Department activity permit or a rental agreement, respectively.

Special Event Permit applications and supporting materials must be submitted to the Town Clerk a minimum of sixty days before the event. After reviewing the application, the Town Clerk presents it to the Town Board for approval, which may be subject to conditions that must be met before a permit can be issued. A permit must be issued before the start of the event.

Please direct questions to the Town Clerk (townclerk@townofpoundridge.com; 914-764-5549).

INSTRUCTIONS FOR APPLICANTS

1. Complete as much of the **Special Event Permit Application** form as you can. There may be some details that will not be available when you submit your application.
2. Prepare a **Site Plan**. You may choose to include parking and traffic information on the site plan or to provide a separate **Traffic/Parking Plan**.
3. Complete the **Weather Plan**.
4. If your event will include vendors, complete the **Vendor List** form. If you don't have complete information on all vendors, provide the information you do have.
5. Send the application and other documents to departmental and other reviewers, along with the **Special Event Application Review** form. The form lists town departments and others who may need to review your application. If you aren't sure who should review your application, please call or email the Town Clerk. Reviewers can return the completed forms to you or send them directly to the Town Clerk.
6. Submit your application and supporting documents to the Town Clerk.
7. Attend the Town Board meeting when your application is being considered.

8. If the application is approved, you will receive an application approval form that will list any conditions that need to be met before the permit can be issued.
9. If approval is conditional, provide documentations that the conditions have been met in order to receive a permit.

APPLICANT INFORMATION

The ***applicant*** is the individual, group, or entity organizing the event. Examples of applicant ***type*** include nonprofit organization, town board or commission, school club, etc.

Applicant name: Pound Ridge Business Association
Applicant type: Non Profit
Address: Po Box 268
Mailing address: Pound Ridge, ny 10576
Phone number: 914-763-1310
Email address: lisa@cottageantiqueshome.com

EVENT INFORMATION

In addition to indicating event ***type*** (eg, street fair, festival, road race, parade, concert, etc.), please provide a detailed event description. Examples of event ***purpose*** include fundraising, promoting awareness, providing education, building community spirit, promoting local businesses, etc. ***If the event is a fundraiser, the purpose should include information about how the resulting funds will be used.*** Identify all locations where event activity will take place, including parking.

Event name: Halloween Walk
Event type: Childeen's Parade
Description: Safe walk to Trick or Treat
Purpose: Building Community Spirit

Event date: 10-31-22 Alternate date:

Event start time: 4:00 pm Event end time: 6:00 pm

Setup start time: Setup end time:

Takedown start: Takedown end:

Location(s): Up and down Westchester Avenue

On private property? ☐ Yes ☑ No

Parking location(s):

On private property? ☐ Yes ☑ No

Road closure(s) requested:

Closure times requested:

Admission fee? ☐ Yes ☑ No

Parking fee? ☐ Yes ☑ No

VENDORS/LICENSES

If the answer to any of the questions below is yes, you must also complete the ***Vendor/License Information Form***. If you are unable to complete the form at the time application is submitted, please note that a complete form will be required before the permit can be granted.

Will the event include food and/or beverage vendors?

☐ Yes ☑ No ☐ Number, if any

Will any food or beverages be served without charge in conjunction with the event?

☑ Yes ☐ No Handing out candy

Will the event include non-food vendors?

☐ Yes ☑ No ☐ Number, if any

Will the event include alcoholic beverage vendors?

☐ Yes ☑ No ☐ Number, if any

Will any alcohol be served without charge in conjunction with the event?

☐ Yes ☑ No

Will the event include gambling of any kind?

☐ Yes ☑ No

CONTACTS

Primary contact name: Wendy W. Cummings

Cell phone number: 914-522-7381 Email address: Wendy1949@aol.com

Event day contact name: Same as above

Cell phone number: Email address:

Weather contact name:

Cell phone number: Email address:

LOGISTICS

CROWD MANAGEMENT

Anticipated attendance: 500

Describe crowd control plan:

Describe perimeter control plan:

Emergency services be present? ☐ Yes ☐ No

Will event be ADA compliant? ☐ Yes ☐ No

VOLUNTEERS

Indicate number of volunteers:

Describe role(s) of volunteers:

SANITATION/GARBAGE

Portable toilets provided? ☐ Yes ☑ No

If so, how many?

Garbage/recycling bins provided? ☐ Yes ☑ No

Describe garbage/recycling plan:

NEIGHBORHOOD IMPACT/NOTIFICATION

Will there be noise impacts? ☐ Yes ☑ No

If so, will there be amplified music? ☐ Yes ☑ No

Will there be light impacts? ☐ Yes ☑ No

Have neighbors been notified? ☐ Yes ☑ No

STRUCTURES/SAFETY

Tents or canopies? ☐ Yes ☑ No

If yes, please describe:

Stage or other structures? ☐ Yes ☑ No

If yes, please describe:

Fireworks or open flame? ☐ Yes ☑ No

If yes, please describe:

UTILITIES

Water access needed? ☐ Yes ☑ No

If yes, please describe:

Electricity needed? ☐ Yes ☑ No

If yes, please describe:

WiFi access needed? ☐ Yes ☑ No

If yes, indicate number of users:

PROMOTION

Banner permission requested? ☐ Yes ☑ No

If so, indicate location and dates:

Other signage? ☐ Yes ☑ No

If so, please describe:

TOWN RESOURCES

Town bus needed? ☐ Yes ☑ No

If so, please indicate time period:

Barricades or cones needed? ☐ Yes ☑ No

If so, please specify:

Other town-owned property needed? ☐ Yes ☑ No

If so, please specify:

OUTSIDE RESOURCES

Outside bus transportation? ☐ Yes ☑ No

If so, please describe:

Outside parking assistance? ☐ Yes ☐ No

If so, please describe:

Other outside resources? ☐ Yes ☐ No

If so, please describe:

SUPPORTING DOCUMENTS

Please indicate which supporting documents you are providing, including review forms being submitted directly by the reviewers.

MAPS/PLANS

☐ Yes	☐ No	Event map (may incorporate parking/traffic plan)
☐ Yes	☐ No	Parking/traffic plan (may be separate from event map)
☐ Yes	☐ No	Weather plan
☐ Yes	☐ No	Vendor List (and applicable licenses or permits)

REVIEW FORMS

☐ Yes	☐ No	Police Department review form
☐ Yes	☐ No	Highway Department review form
☐ Yes	☐ No	Maintenance Department review form
☐ Yes	☐ No	Building Department review form
☐ Yes	☐ No	Recreation Department review form
☐ Yes	☐ No	Fire Department review form
☐ Yes	☐ No	EMS review form
☐ Yes	☐ No	Other review form

LEGAL DOCUMENTS

☐ Yes	☐ No	Insurance certificate(s)
☐ Yes	☐ No	Indemnity agreement(s)

☐ Yes ☐ No Permits/Licenses (other than for vendors)

☐ Yes ☐ No **OTHER (specify):**

DEPOSITS/FEES

Damage deposit paid (indicate amount):

Waiver requested: ☐ Yes ☐ No

Application fee paid (indicate amount):

Waiver requested: ☐ Yes ☐ No

ENDORSEMENT

I certify that I have reviewed all application materials and that the information contained therein is, to the best of my knowledge, accurate and truthful.

I understand that Town Board approval of my application does not constitute a permit; that if the application is approved, I must meet any and all conditions specified by the Town Board before a permit can be issued; and furthermore, that under no circumstances may the event take place unless and until a permit has been issued.

Wendy W. Cummings
(signature)

8-19-22
(date)

Wendy W. Cummings
(printed name)

MEGAN BATES

M: (914) 334 - 2269 **E:** meganfbates@gmail.com

Strategic Real Estate leader with twenty years of experience across North America & UK markets. Strong deal maker with network of key landlords & brokerage community. Innovative Omni-channel approach by utilizing technology & data analytics.

Real Estate Strategy Lease Negotiation Landlord Relationships Analytical Platforms

EXPERIENCE

TAPESTRY, INC. (acquired Kate Spade & Company July 2017)
VP of Business Development (May 2019 – Current)
Senior Director of Real Estate (September 2017 – April 2019)
Responsible for North America Real Estate strategy across ~650+ stores. Oversee deal making, analytics, legal negotiations, tenant allowance & lease payment functions. Responsible for a team of ten.

- Proficient knowledge of key North American corridors and strong relationships with landlord & brokerage community
- Implemented analytics & demographic tool to drive an Omni-channel market view which supports Real Estate & Merchandising decision making
- Strong communicator & collaborator; responsible for presenting to Brand CEOs & TPR Exec. Committee
- Liaison with Global Environments in regards to store design & construction
- Member of the Leadership Integration team which guided the KS&C acquisition into TPR
- Sublease of high profile properties as well as corporate real estate
- Secured significant rent relief during Covid 19 & renegotiated leases accordingly

May 2012-July 2017 Kate Spade & Company, NY
Senior Director of Real Estate, Store Design, Construction (April 2017 - September 2017)
Senior Director of Real Estate (December 2014 - March 2017)
Director of Real Estate (May 2012 - December 2014)
Responsible for KS&C Real Estate Department in North America & United Kingdom. Created infrastructure and scalable processes to support KS&C's growth from $350m to $1.4bn.

- Oversaw 180+ transactions and $200+ million of capital investment in new stores; expansions; repositions; closures; relocations; and remodels
- Managed $500m active portfolio across Retail & Corporate Real Estate
- Responsible for closures & conversions of Juicy Couture, KS Saturday & Jack Spade stores
- Partnered on key strategic initiatives within global business (long range planning, store of the future concept, store conversion project, etc.)
- Co-leader of Cultural Ambassador Program which was responsible for driving culture and creating career development for employees enrolled in the program.

2011-2012 What If Innovation (USA), NY
Producer
Innovation consultant on projects that spanned diverse consumer product industries such as retail, food & drug and technology. Facilitated client groups to uncover consumer trends to help businesses understand their market space and solve project specific problems.

2009-2011 Pret A Manger (USA), NY
Director of Real Estate
Responsible for the Real Estate & Construction department, a member of the US Management Team, and reported directly to the company President. Instrumental in creating a platform for national growth through the development of new markets, which included research, real estate location scouting, lease negotiation, shop design and construction

- Responsible for deal making and oversaw national broker network
- Created research tools which drove the US market plan and new store financial model
- Led the design team that developed new concept stores that were rolled out in the US
- Responsible for maintenance & on boarded new systems to support maintenance issues

2005-2009 CB Richard Ellis, Trammell Crow Company, NY
Associate – NY Real Estate Brokerage License
Worked on the Bank of America account and secured store placement in NYC and Philadelphia, PA. Gained approval for over 60 full service Banking Centers and 30 ATM locations in the New York City and Philadelphia markets

2002-2005 Northwest Atlantic Real Estate Services, White Plains, NY
Intern
Real Estate Brokerage House that represented brands such as Starbucks, Whole Foods, Jamba Juice, Washington Mutual, Costco, Papyrus, etc.

EDUCATION
University of Vermont, Class of 2005, Burlington, VT
Bachelor of Arts in English Literature - English Departmental Honors, Dean's List

EXECUTIVE PROGRAMS & VOLUNTEER ACTIVITIES

- Panelist at Future Stores Miami & Seattle Conference – 2017 & 2019
- Participant in Tapestry's 2019 Emerging Leaders Program – program for next generation of leaders (25 global participants per year)
- Tapestry People Advisory Group – group of leaders who advise on TPR's HR initiatives
- Completed Center for Creative Leadership Course - 2022
- Member of Employee Relations Groups - Asian Alliance, Black Alliance & LGBTQ Alliance
- Chief – C-Suite networking group for women
- Mentor – Dream It Real Program
- Enjoys hiking, reading and photography

From: Shepherd, Caroline
To: Nicole Engel
Cc: Laurie Sturz
Subject: Hopes Door Signage Request
Date: Monday, September 12, 2022 11:01:39 AM
Attachments: Outlook-m4ujopri.png

To:

The Town of Pound Ridge Board:

As representatives of Hopes Door, Laurie Sturz and I are requesting as of October 1st through October 31st, to place signs (photo attached) along with purple ribbons in Pound Ridge.

The sign is 18 x 24 inches in diameter. We were granted permission last year and placed signs and ribbons along and near the lampposts all the way through town beginning at the Town House location.

On behalf of Hopes Door, we thank you for your consideration.

Sincerely,

Caroline Shepherd & Laurie Sturz

CAROLINE shepherd

Caroline Shepherd
Associate Real Estate Broker | Houlihan Lawrence
Accredited Staging Professional from AHS&D
M. 914.393.2795 | cshepherd@houlihanlawrence.com
Visit My Website
Village Green Empire Building | Bedford, NY

Put my experience to work for you.

Like Comment Share

	Kevin	Les	Ali	Carla	Dan	Diane	Other
Boards & Commissions							
Audit Bills				X			
Board of Assessment Review							N/A
Board of Ethics							N/A
Conservation Board				X			
Drug Abuse Prevention Council		X					
Economic Development Committee						X	
Energy Action Committee				X			
Housing Board					X		
Human Rights Advisory Committee			X				
Landmarks & Historic District					X		
OEM	X						
Old Pound Road Committee				X			
Open Space					X		
Planning Board				X			
Police Deparment	X						
Recreation Commission						X	
Water Control Commission		X					
Zoning Board of Appeals					X		
Other							
BCSDNY	X						
East of Hudson Watershed		X					
Environmental Initiatives Advisors							Elyse/Bill Harding
Fire District	X						
Insurance							Harvey Dann
Library Board	X						
New Dawn					X		
Westchester County Shared Services	X						
Sustainable Westchester				X			
WEMS							Dave Ryan
Wireless Communication						X	
Water Wastewater Task Force			X				