

**South Hadley, Massachusetts**  
**Telecommunications Site Review**  
**New Support Structure**

**CityScape**

C O N S U L T A N T S , I N C .

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June 1, 2018

Mr. Richard Harris  
Director, Planning & Conservation  
116 Main Street  
South Hadley, MA 01075

**RE: South Hadley**  
**Industrial Tower and Wireless, LLC / T-Mobile / Sprint**

Dear Mr. Harris,

At your request, on behalf of the Town of South Hadley (“Town”), CityScape Consultants, Inc. (“CityScape”) in its capacity as telecommunications consultant for the Town, has considered the merits of the above referenced application submitted by Industrial Tower and Wireless, LLC (“Applicant”) on behalf of T-Mobile Northeast, LLC and Sprint Spectrum L.P., to construct a new wireless telecommunications support structure and associated ground compound off South Hadley Street, South Hadley, Massachusetts, *see Figure 1*. The proposed structure is less than 200 feet and will not require FAA approval or tower lighting. The Applicant has proposed two actual site locations, a little over 300 feet apart. Site 1 is further from residences and Hadley Street, but does not meet the 100% height setback requirement on three sides. Site 2 is closer to the residences and Hadley Street, but does meet the 100% height setback.

This application is proposed to construct a new tower to replace the existing facility at the Mount Tom power station in Holyoke, MA. The power station has been closed and the smokestack that supports the existing facility will be demolished this Summer. The proposal has been evaluated from the following perspectives:

- Whether the proposed facility, as specified, is justified due to technological reasons and is essential for the Applicant to provide its telecommunications service; and,
  - Whether the proposed facility will follow the guidelines of the Telecommunications Act of 1996, the South Hadley Town Bylaws and all other pertinent rules and regulations.
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## **South Hadley Town Bylaws Requirements (§255-40)**

### Special Permit Required

#### (E): Location Criteria

- (1) Existing Towers – None available
- (2) Spacing - complies
- (3) Historic and residential properties - complies
- (4) Elevation – Site 1 exceeds 400 feet AMSL (18-foot waiver requested) & Site 2 exceeds 400 feet AMSL (12-foot waiver requested)
- (5) Holyoke range area - complies
- (6) Waiver for antennas on alternative tower structures – N/A
- (7) Waiver
  - (a) Tower spacing – N/A
  - (b) Distances – N/A
  - (c) Elevation – Site 1 18-foot waiver requested, Site 2 12-foot waiver requested

#### (F): Design and Siting Requirements

- (1) Co-location – Five total arrays (3 additional co-locations) proposed
- (2) Equipment shelter
  - (a) size - complies
  - (b) containment - complies
- (3) Security – An 8-foot chain link fence proposed with locking gate
- (4) Parking
  - (a) complies
  - (b) N/A
- (5) Signage
  - (a) 1-4 complies
  - (b) complies
- (6) Screening – For both sites, Applicant desires to use existing mature vegetation around the compound to meet the screening requirement and is requesting a waiver of the evergreen buffer requirement
- (7) Radiofrequency effect - complies

#### (G): Design and siting requirements for towers

- (1) General - complies
- (2) Height – Site 1: 150 feet proposed (20 feet greater than 130' limit due to 2<sup>nd</sup> carrier), Site 2: 148 feet
- (3) Setbacks – Site 1 requires approval of a waiver; Site 2 complies with Bylaw setback standards
- (4) Pre-engineered fault – Complies (75-foot breakpoint proposed)
- (5) Style of towers – complies (monopole)
- (6) View – Town discretion
- (7) Preservation of vegetation – as noted in the application materials as much of the existing vegetation is proposed to remain on the property
- (8) Lighting – none proposed

#### (H): Design and siting requirements for antennas

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- (1) General - complies
- (2) Height – complies (antennas will not extend above tower top)
- (3) Extension – Cannot be verified. Applicant references site plan, but there are no dimensions or indication of how far antennas will extend beyond tower
- (4) Integral part of structure – N/A
- (I): Bond Required – defer to Town
- (J): Cessation of use – N/A
- (K): Submission requirements
  - (1) Site Plan Review – N/A
  - (2) Special Permit
    - (a) Article XII – defer to Town
    - (b) Article IX – defer to Town
    - (c) Authority - complies
    - (d) Conformity – Does not comply due to the height and setback waivers requested
    - (e) Need
      - (1) complies
      - (2) Lesser height is permissible—see discussion
    - (f) Removal Cost - provided
    - (g) Schedules - provided
    - (h) Color photograph - provided
    - (i) View lines – Inadequate (12 required, 4 provided)
    - (j) Balloon Test – conducted (Ordinance requires 3-hour test, test duration unknown)

### Site Justification and Coverage

For a new wireless communications facility to be justified, its need, location and height must be addressed. The application proposes to construct a new one hundred fifty (150) foot *monopole* tower, *see Appendix, Exhibit A*.

The proposal includes justification from two wireless carriers, T-Mobile Northeast, LLC (“T-Mobile”) and Sprint Spectrum L.P. (“Sprint”). Both carriers currently operate from the Mount Tom power station smokestack and are being displaced due to its planned demolition. Thus, this application is proposed as a replacement tower for the Mount Tom facility being decommissioned.

T-Mobile provided coverage maps comparing the existing operation to the proposed tower at three different heights: 130 feet, 150 feet and 170 feet as well as at 60 feet from an existing water tank at the end of Skinner Lane. T-Mobile currently operates at a height of 333 feet AGL (“Above Ground Level”) on the smokestack. While this is much higher than the heights on the proposed tower, the ground elevation at the proposed tower is 139 feet higher than the smokestack.

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This higher elevation will lessen the impact of moving to a lower height tower. T-Mobile's conclusion is that the 150-foot height is needed to continue to provide comparable replacement wireless service to the Town and surrounding areas.

Sprint also provided coverage maps comparing the existing operation to the proposed tower at three different heights: 100 feet, 120 feet and 140 feet. Sprint currently operates at a height of 202 feet AGL on the smokestack, lower than T-Mobile. Their conclusion is that they require a 140-foot height for their antenna at the proposed site.

Study of the proposed coverage maps indicates that in-vehicle service along I-91 and Hadley Street (and other surface streets) is sufficient at the proposed tower location for all heights shown for both carriers, except for 100 feet for Sprint. However, indoor service will be affected more by the shift in site location. For Sprint, the proposed tower appears to be an improvement over Mount Tom at 120 and 140 feet AGL and slightly less at 100 feet. The indoor service shown for Sprint appears to be an improvement in all cases. Thus, it appears that the 120-foot height is the minimum needed for Sprint to continue service on the proposed tower.

Regarding T-Mobile, the lesser ground elevation will impact T-Mobile's indoor service the most. Studies provided quantify the indoor coverage lost in area, but not in population. T-Mobile indoor service will increase in the South Hadley area by moving to the proposed site, east of the Connecticut River, but will be reduced north of the existing site, along Hockanum Road. Except for this area, most of the areas shown to lose T-Mobile indoor service are either uninhabited or roadways, where the stronger indoor service signal level is not needed. The exception to this is north along Hockanum Road where none of the proposed heights from the new site appear to replicate the coverage from the existing Mount Tom site and the Delaney House, across I-91 from the Holyoke County Club.

CityScape believes that for effective replacement of the Mount Tom smokestack site with a new tower at the proposed site, T-Mobile needs a height of 130 feet and Sprint 120 feet (or a tower height of 135-feet). If studies were provided that indicate indoor service (for population) will be significantly reduced at 130 feet, an argument for the requested 150 feet could be made. The Town needs to weigh the impact of the tower at both heights and determine if the extra height is in the best interest of the Town. The additional 15 feet would offer better co-location opportunities for future tenants below Sprint's installation.

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### Concealment

Because the proposed facility is located near existing homes, visibility may be a concern. Concealed options exist that the Town can request of the Applicant, such as a monopine or a slick stick. A monopine is a faux tree that has antennas hidden within the needles and painted to match. A slick stick is a cylindrical pole where the antennas are hidden entirely within the structure (like a thick flagpole, but with no flag). Monopines have a technical advantage over slick sticks in that a full array of antennas can be installed at one level for a carrier while a slick stick, being narrower has limited space for antennas and ventilation of equipment. In many cases, a carrier will have to utilize more than one level to accommodate its equipment, thus requiring more height. For example, a 140-foot monopine would be equivalent to a 135-foot monopole (5 extra feet is needed for the top branches to taper off) while a slick stick would need to be 155 feet to allow for T-Mobile to locate at 150 & 140 feet with Sprint at 130 & 120 feet, depending on what equipment they proposed. The details of each carrier's equipment and number of antennas is not provided. Thus, it cannot be determined if the additional slick stick height is needed. For examples of these structure types, *see Appendix, Exhibit C*.

### Setback

Site 1 requires a waiver of the setback requirements. The Applicant is also proposing breakpoint technology (a smaller engineered fall radius) and asking that the setback be reduced from 1:1 to 0.5:1 (distance to height). Site 2 appears to meet the setbacks. The Town needs to weight such waiver requests to the benefits such as reduced visibility to homes. Any decision for approval of waiver(s) needs to be justified and unique to this situation.

### Height

A proposed tower of 150-feet at Site 1 and 148-feet both require height waivers of 18 feet and 12 feet, respectively. Obviously, reducing the tower height as discussed above would affect or eliminate this waiver need.

### Landscape Buffering

The equipment compound is shown to be 80' X 80', *see Appendix, Exhibit B*. The tower will be surrounded by existing residences, but located within an area of dense trees. The Applicant

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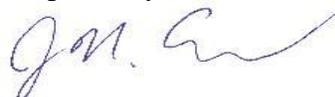
is proposing use this existing vegetation as screening instead of adding new plantings. While this may be adequate today, CityScape always cautions municipalities to consider future development. The approval should include a condition that should the land be developed in the future and the existing trees removed, it will install landscaping to hide the fenced compound from view.

In conclusion, it is the opinion of the undersigned that the Applicant has justified the need for a new one hundred thirty-five (135) foot monopole (or 140-foot monopine) in the immediate area and has complied with Federal guidelines for personal wireless facility deployment. CityScape Consultants, as the wireless expert for the Town, recommends the application be approved only with the following conditions:

1. All feed lines shall be installed within the support structure and antenna ports shall be sealed in a manner to prevent access by birds and any other wildlife; and,
2. At time of permitting, the Applicant shall provide a structural analysis signed by a Massachusetts Professional Engineer, complying with ANSI/EIA/TIA-222-G (as amended) for the approved number of antenna arrays; and,
3. The proposed structure shall not be lighted (unless FAA requires); and,
4. Should the antenna arrays be lowered in the future, to a height that is below a removable section of the monopole, the tower owner shall then remove this upper section that is no longer in use; and,
5. If a power generator is to be provided, the sound level at the nearest property edge shall not exceed 65 dBA, or a sound level value deemed appropriate by the Town; and,
6. Some level of future landscaping be required as part of the permit, should the land be cleared.

I certify to the best of my knowledge all information included herein is accurate at the time of this report. CityScape works for local governments and has unbiased opinions. All recommendations are based on technical merits without prejudice and per prevailing laws and codes.

Respectfully submitted,



Jonathan N. Edwards, P.E.  
CityScape Consultants, Inc.

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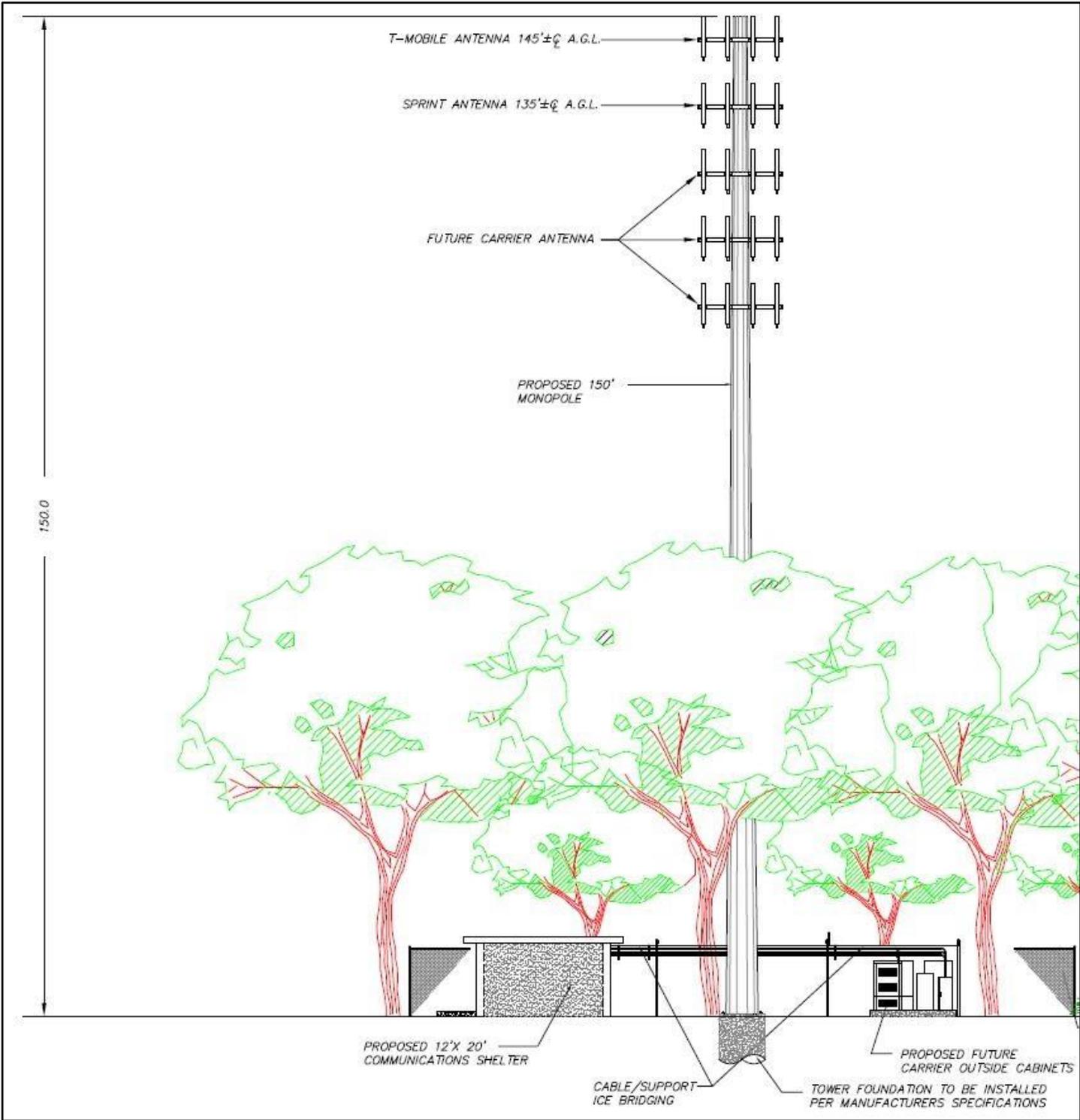




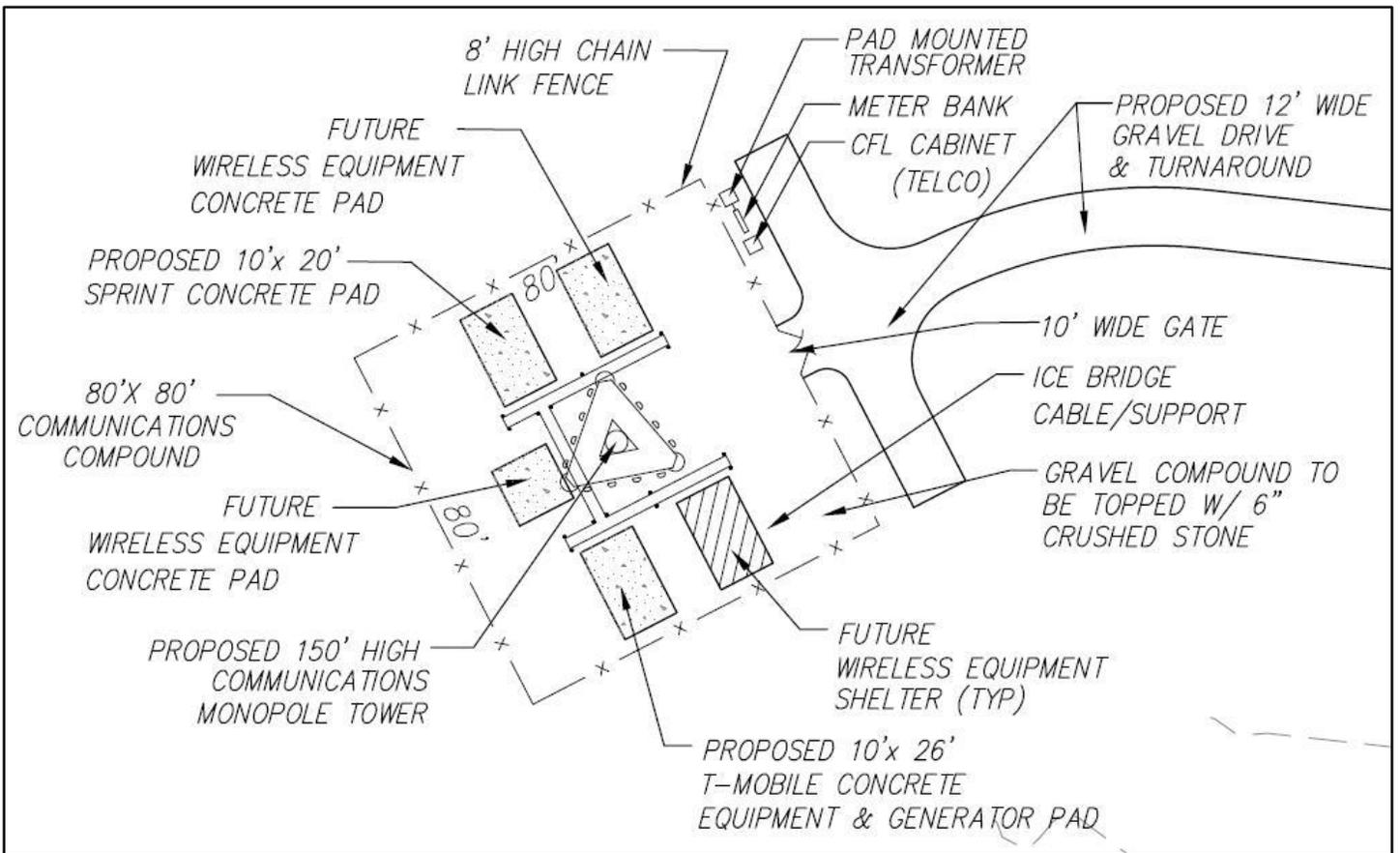
**Figure 2 – Aerial Site Location**

## Appendix

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**Exhibit A - Proposed Support Structure**



**Exhibit B – Proposed Ground Compound**



**Exhibit C – Concealment Options**