June 28, 2024

Mayor Rossman
City Councilmembers

City of Medina
501 Evergreen Point Road
Medina, WA 9039

*VIA EMAIL - Council@medina-wa.gov, akellerman@medina-wa.gov*

**RE: Response to May 28, 2024, Council Meeting Comments**
**T-Mobile Coverage Improvements in the City of Medina**

Dear Mayor Rossman and Councilmembers:

Thank you for providing T-Mobile with feedback on its plans to improve wireless coverage within the City of Medina at the May 28th Council meeting. The purpose of this letter is to provide additional responses and materials to address some of the questions and concerns raised by Councilmembers. Included with this response are the following attachments:

- May 28th Presentation Materials
- Monopine Manufacturer Information:
  - Solar Communications International, Inc ("SCI") company profile
  - SCI Website: www.RFTransparent.com
  - Company Contact: Jennifer Smith, SCI President & CFO, (951) 698-5985, jsmith@rftransparent.com
- Overlake Golf Course Monopine Photosimulations

**T-Mobile's improvements are primarily intended to benefit City of Medina residents:**
In summary, T-Mobile is proposing to substantially improve the coverage and capacity of T-Mobile's network by upgrading and collocating on existing wireless facilities, without the need to construct any new towers.

The service improvements will provide several important benefits to the City, including:

- Improved coverage that will support reliable wireless services for Medina residents;
- Access to the latest wireless 5G technology;
- Substantial improvements to network capacity that enable home broadband internet service; and
- High-quality upgrades to existing infrastructure that are designed to blend into the surrounding settings.

There were some questions from Councilmembers about whether the upgraded facilities would provide coverage to communities outside of Medina, or represented more regional infrastructure that could be accommodated outside of the City.

The "before" coverage maps presented on May 28th clearly show a gap in reliable service at multiple frequency bands within City of Medina neighborhoods, particularly in the south, southwest and northwest

parts of the City that cannot be reached by existing facilities. The "after" maps demonstrate the increased reach of reliable coverage within the City, as well as some limited coverage improvements in Hunts Point and Clyde Hill. These coverage improvements outside the City are clearly incidental, as the primary purpose of the improved service is to benefit the City of Medina. Notably, radio frequency transmissions propagate based on the frequencies used, power levels, topography, "clutter" (vegetation and building density) and other physical characteristics, and not constrained by political boundaries. Consistent with this principle, a substantial portion of T-Mobile's current coverage in Medina comes from facilities that are outside of the City to the east, within Clyde Hill, Hunts Point, and Bellevue.

While SR 520 is a regional transportation corridor, the existing facility at Bellevue Christian School is not a "regional facility." This facility provides coverage to City of Medina residents north and south of SR 520, along Evergreen Point Road, and homes that abut Medina's shoreline. The Bellevue Christian School facility also provides partial coverage to a portion of SR 520 that is within the City of Medina. There are other T-Mobile facilities in Hunts Point and communities further east that provide coverage to the stretches of SR520 that traverse their areas. More importantly, coverage of this portion of the City of Medina cannot be replicated from outside of the City, particularly given the topography around Evergreen Point Road (which is the crest of the hill that drops on either side, to the east and to the west).

Further, the collocations of T-Mobile's facilities on the existing Distributed Antenna System ("DAS") network of utility poles (operated by American Tower) are located primarily on the south and west ends of the City of Medina. The short facility heights limit the quality and extent of coverage each location can provide. Improvements to coverage, like the upgrades planned to the existing tower locations, are primarily to benefit City of Medina residents.

**T-Mobile's improvements are the least intrusive means of improving service within Medina:**
One Councilmember asked why a DAS network or other technological solution should not be used to improve service in Medina, instead of replacing the existing tower facilities.

In short, **both** DAS and tower improvements are needed to improve T-Mobile's service in Medina. T-Mobile is already working to collocate on the existing DAS network to improve service to the City of Medina to the maximum extent feasible through that infrastructure. The replacement of the existing tower at Bellevue Christian School is substantially the same height as the existing tower. The replacement of the Overlake Golf Course tower, to the same height as what exists (and is proposed) at Bellevue Christian School, is required because of the significant buildings/clutter that have been developed since the original construction of the tower. Currently, both towers are extremely constrained physically, and they must be replaced regardless for T-Mobile to provide the frequencies, technology, and services that it is licensed and/or allowed to provide under federal law.

T-Mobile's engineering team has determined that the existing DAS network alone cannot address the coverage deficiencies within the City or provide the seamless coverage that T-Mobile's customers within the City expect. However, T-Mobile has sought to upgrade and collocate on existing sites within the City, to minimize the disruption and concern over new tower locations that inevitably would be needed to address coverage gaps if these existing facilities are underutilized.

**Monopine design preferred at Bellevue Christian School tower location:**
We understand from Council that the preference for the replacement tower at Bellevue Christian School is the monopine design, instead of the enlarged 80" canister design. A Councilmember also requested some additional information from the monopine manufacturer. A company profile and contact information is included with this response.

One Councilmember suggested placing the new tower on the eastern end of the Bellevue Christian School campus. This is technically infeasible to address the need for reliable service in the vicinity of

Evergreen Point Road, to areas of the City north of SR 520 and homes along the Medina's shoreline. As noted above, Evergreen Point Road extends along the crest of the hill, with topography dropping both to the east and the west. The east end of the Bellevue Christian School campus is approximately 40 feet lower in elevation than the existing tower location. The hill cresting on Evergreen Point Road would create a "shadow" for any relocated tower, even if it was 100 feet tall, which would reduce coverage currently provided by the existing facility, much less extend and improve coverage to these areas.

**Overlake Golf Course monopine is not readily visible from outside of the property:**
Councilmembers expressed concern about the height of the replacement tower at Overlake Golf Course and suggested T-Mobile study the visibility from nearby residences and offer additional landscaping to the Golf Course to surround the tower.

T-Mobile completed a balloon test at the proposed height of the monopine at the Golf Course location and created photosimulations from eight public viewpoints around the neighborhood. These photosimulations (attached) show that the proposed tower is not visible from almost all viewpoints. This is due to the tower being set back significantly from property lines, the dense perimeter of trees around the larger Golf Course property, and the other trees nearby the tower that are of a similar height and obscure the tower when viewed from a distance.

Based on feedback provided by Council, T-Mobile will approach Overlake Golf Course to offer funds for it to install additional landscaping near the tower, outside of T-Mobile's lease area and in an area that Overlake Golf Course deems reasonably appropriate. Since the tower is not generally visible from off-site locations, this landscaping is only expected to benefit the Golf Course.

**Additional clarifications following the Council presentation:**
After reviewing the recording of the Council meeting, we offer the following clarifications to our presentation:

- T-Mobile does have a wireless facility collocated on the Clyde Hill Water Tank.
- The DAS system will have some of T-Mobile's low-band frequencies. However, due to the low height and power of these facilities, the coverage is limited and will not replace the coverage of the upgrades proposed to the existing towers.

We appreciated the opportunity to present T-Mobile's proposed coverage improvements to the City and Council's thoughtful feedback on T-Mobile's build plan. We hope this additional information is helpful in addressing some of the questions and concerns that were raised.

T-Mobile is planning to file applications for the tower upgrades in the next few weeks.

If you have any additional questions or comments, feel free to contact me at (408) 314-1398 or matt.russo4@t-mobile.com.

Sincerely,

Matt Russo
Siting Advocacy Manager, NW Area

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# CITY OF MEDINA

## Improving T-Mobile's network within the City of Medina

# COMMITMENT TO IMPROVE SERVICE IN THE CITY OF MEDINA

- T-Mobile's network provides critical services to City of Medina residents
- Existing T-Mobile service is limited due to constraints on existing facilities, limited opportunities to place new facilities
- Significant improvements can be made to T-Mobile's service by upgrading and collocating on existing facilities without the placement of new towers
- T-Mobile is flexible on design options for upgrading existing facilities that will accommodate additional frequencies and technologies
- T-Mobile requests the City's guidance on which design options are preferred

# IMPORTANCE OF T-MOBILE'S NETWORK IMPROVEMENTS

- Demand for wireless data is expected to grow 20% per year through 2028.
- 97% of Americans have a cell phone and 85% own a smartphone
- Over 72% of households rely on wireless as their only means of telephone communication.
- Over 81% of children live in wireless-only households

240 million calls are made to 911 in the U.S. each year, and in many areas 80% or more are from wireless devices.

*Source: National Emergency Number Association (NENA)*



https://www.ericsson.com/en/reports-and-papers/mobility-report/dataforecasts/mobile-traffic-forecast
https://www.pewresearch.org/internet/fact-sheet/mobile/
https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless202305.pdf

# QUALITY 5G SERVICE REQUIRES COMBINATION OF FREQUENCY BANDS


## High Band

No Plans yet!
Wide bandwidth of spectrum provides vast capacity
Best suited for short range in building and urbanized systems

## Mid Band

Provides blend of wide area coverage, capacity, voice, and primary mobility layer for 5G
Ultra Capacity provides network speeds of up to 10X better than low bands

## Low Band

Provides robust coverage within buildings, but data capacity limited

# EXISTING T-MOBILE SERVICE IN MEDINA

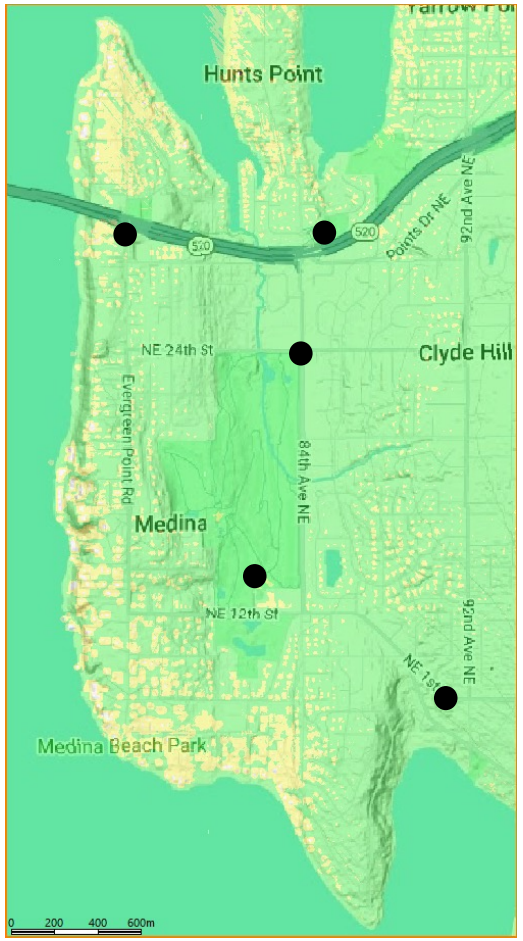
- T-Mobile has two facilities within the City limits
  - Overlake Golf Course (adjacent to maintenance yard)
  - Bellevue Christian School (adjacent to Park & Ride lot)
- Some T-Mobile coverage is provided by facilities located outside of the City
- T-Mobile has FCC Licenses for 7 frequency bands to provide service in Medina
- The existing facility designs are constrained, only support 2 out of 7 frequency bands
- Much of the City does not have reliable, in-building signal levels to support T-Mobile Home Internet and other voice/data services
- Capacity is significantly limited, undermining network speeds and overall reliability of T-Mobile service within the City

# EXISTING T-MOBILE SERVICE IN MEDINA

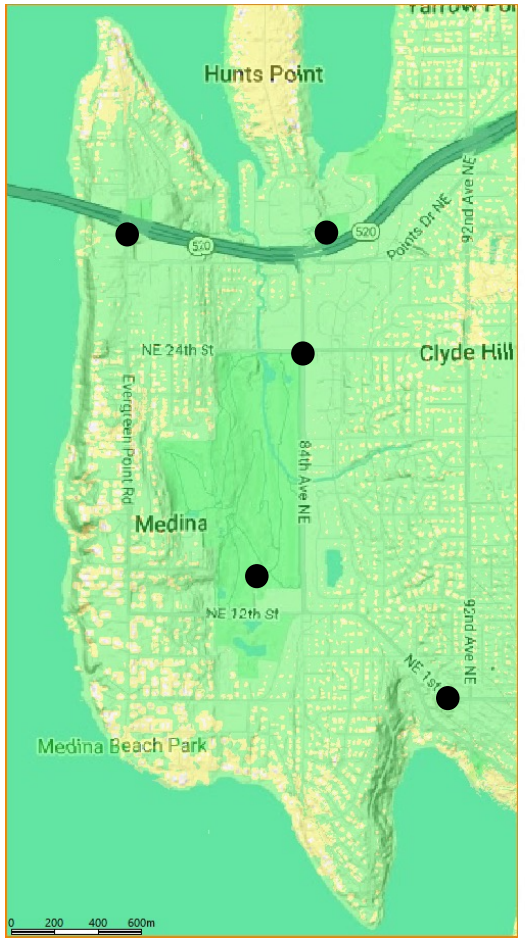
Reliable Coverage
Marginal Coverage

- Existing T-Mobile Facilities

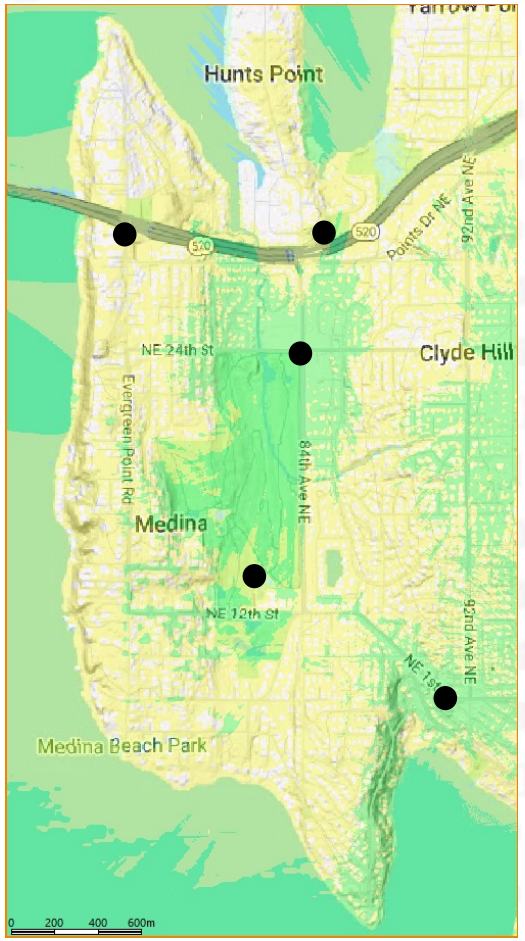
Low band




Mid band




Ultra Capacity




T-Mobile's RF engineers used coverage propagation software systems to predict the coverage provided by the proposed new WCF. The software and T-Mobile's RF engineers considered the general factors outlined below, as well as more project-specific factors such as the type of antenna, antenna tilt, etc. Within coverage areas, network changes, traffic volume, outages, technical limitations, signal strength, customer equipment, obstructions, weather and other conditions may interfere with service quality and availability.



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# PROPOSED SERVICE IMPROVEMENTS

- No new tower locations
- Low Impact - Upgrades and collocations on existing sites only
  - Collocation on eight (8) existing Distributed Antenna System node locations
  - Replace existing towers to support new antennas/frequencies, future collocation
- Significant coverage improvements at all frequencies:
  - Low Band (600 MHz, 700 MHz)
  - Mid Band (1900 MHz, 2100 MHz)
  - Mid Band – Ultra Capacity (2.5 GHz)
- Reliable voice/data service, additional capacity that may enable T-Mobile Home Internet
- Up to 10X improvement in network speeds (speeds vary due to network demands and capacity)

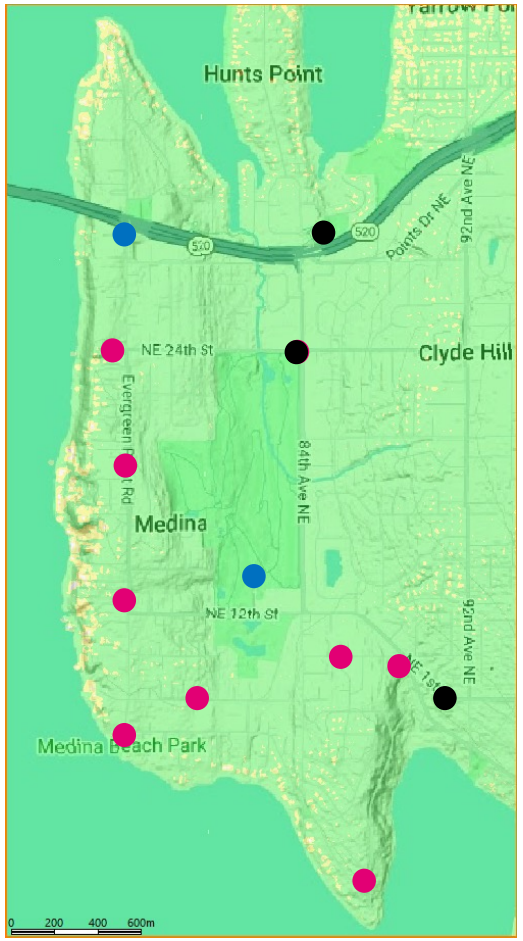
# PROPOSED SERVICE IMPROVEMENTS

Reliable Coverage
Marginal Coverage

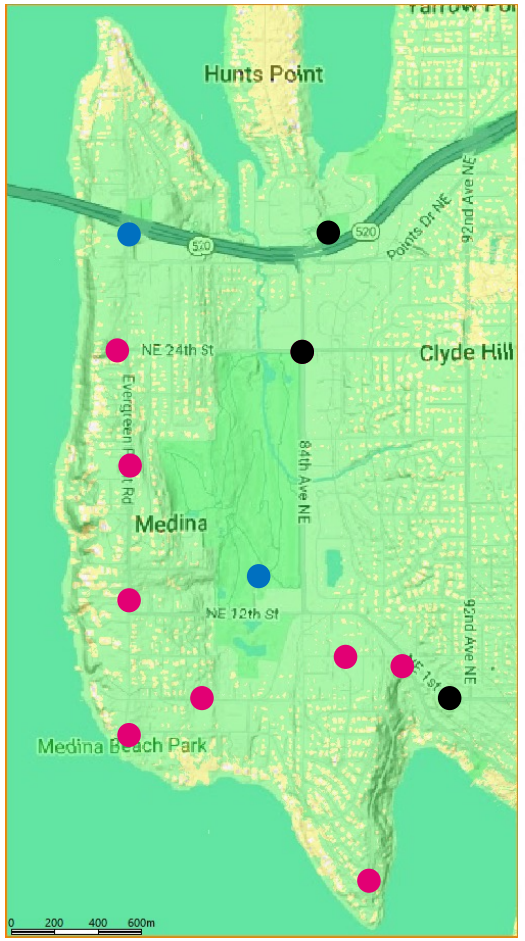
- Existing T-Mobile Facilities
- Collocation on existing Distributed Antenna System
- Upgrades to Existing Sites

T-Mobile's RF engineers used coverage propagation software systems to predict the coverage provided by the proposed new WCF. The software and T-Mobile's RF engineers considered the general factors outlined below, as well as more project-specific factors such as the type of antenna, antenna tilt, etc. Within coverage areas, network changes, traffic volume, outages, technical limitations, signal strength, customer equipment, obstructions, weather and other conditions may interfere with service quality and availability.

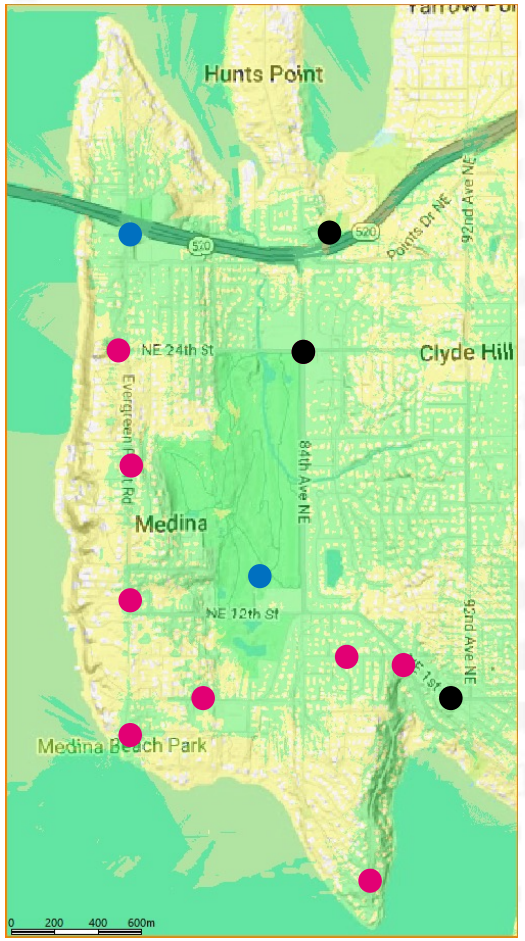
Low band




Mid band




Ultra Capacity

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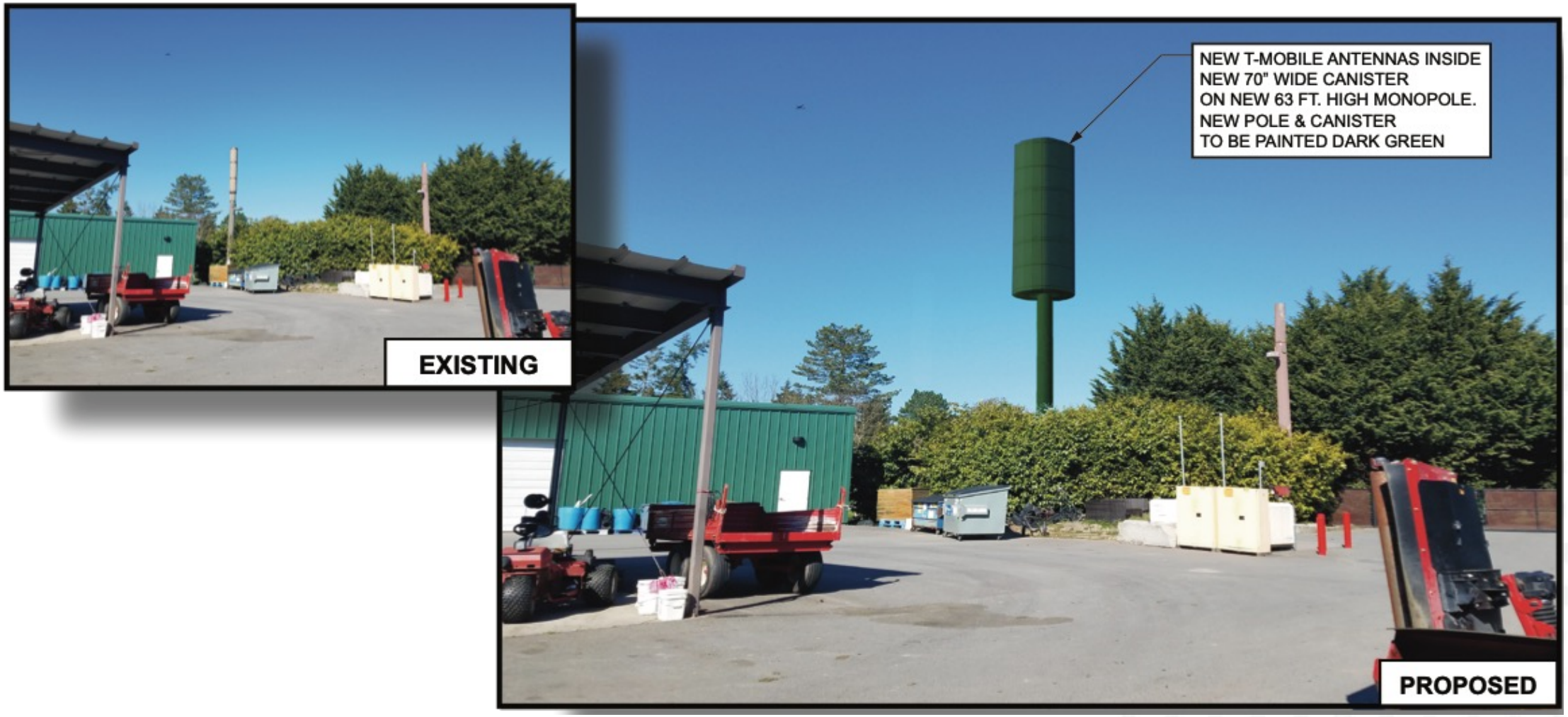
# DESIGN OPTIONS

- Connection to existing DAS system (owned/operated by American Tower)
- Existing towers constrain T-Mobile's coverage, frequency and technology improvements
  - Overlake Golf Course – only supports 2100 MHz today
  - Bellevue Christian School – only supports 700 MHz and 2100 MHz today
- T-Mobile is flexible on tower upgrade design options, provided that additional frequencies and engineering requirements are met:
  - Canister Option – Minimum 70" diameter canisters now required to accommodate large multi-band antennas, mechanical tilt of antennas
  - Flush-Mount Option – Antennas/equipment painted to match, tower required to be taller to accommodate multiple elevations of antennas
  - Stealth Tree Option – Antennas concealed within shape of tree, allows for future T-Mobile growth and collocation by other carriers without visual change

# OVERLAKE GOLF COURSE – 70” CANISTER DESIGN OPTION




Visual renderings are approximate, actual results may vary

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# OVERLAKE GOLF COURSE – FLUSH-MOUNTED ANTENNA DESIGN OPTION


Visual renderings are approximate, actual results may vary

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# OVERLAKE GOLF COURSE – STEALTH TREE DESIGN OPTION



Visual renderings are approximate, actual results may vary

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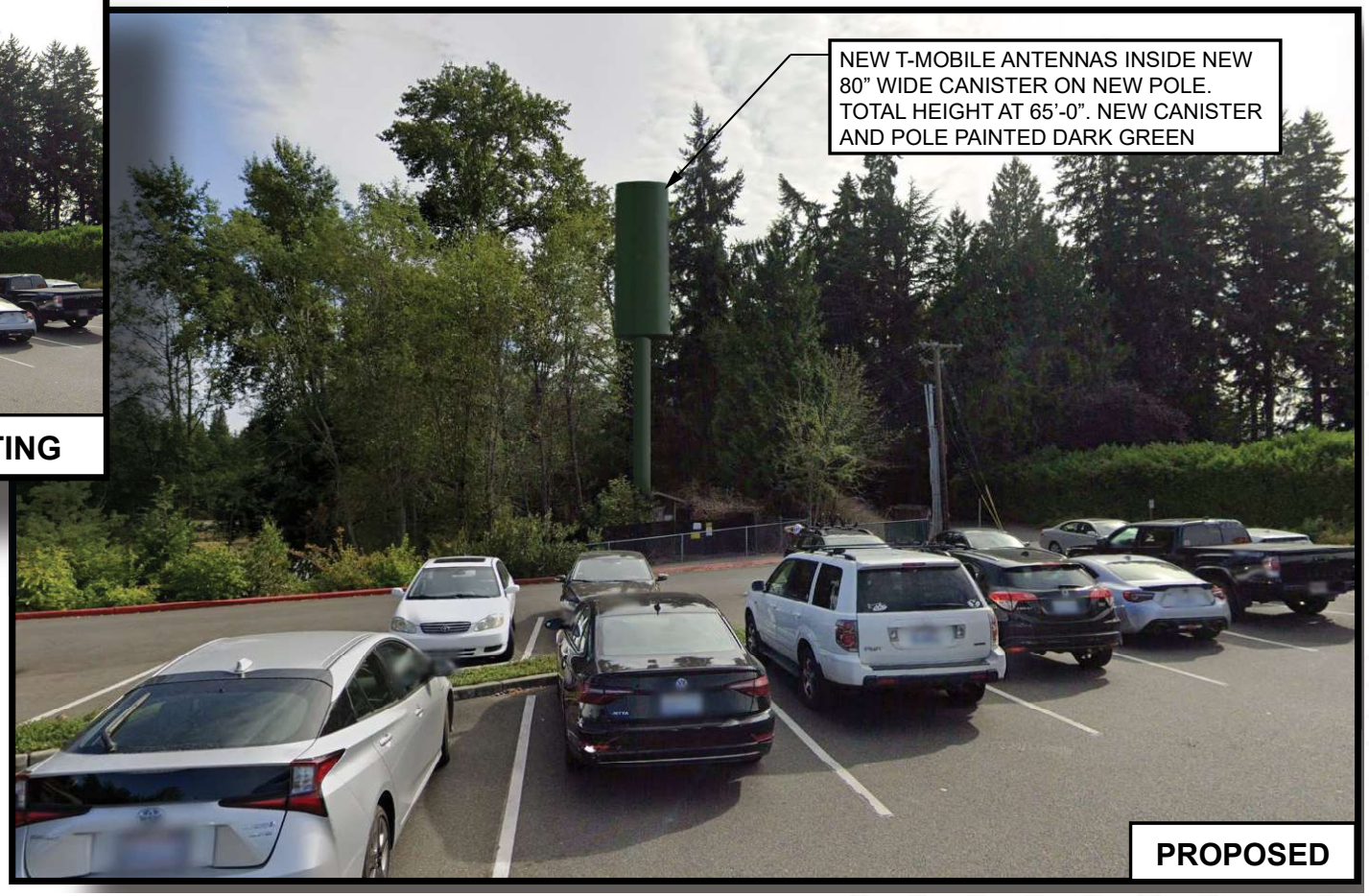
# BELLEVUE CHRISTIAN SCHOOL – 80” CANISTER DESIGN OPTION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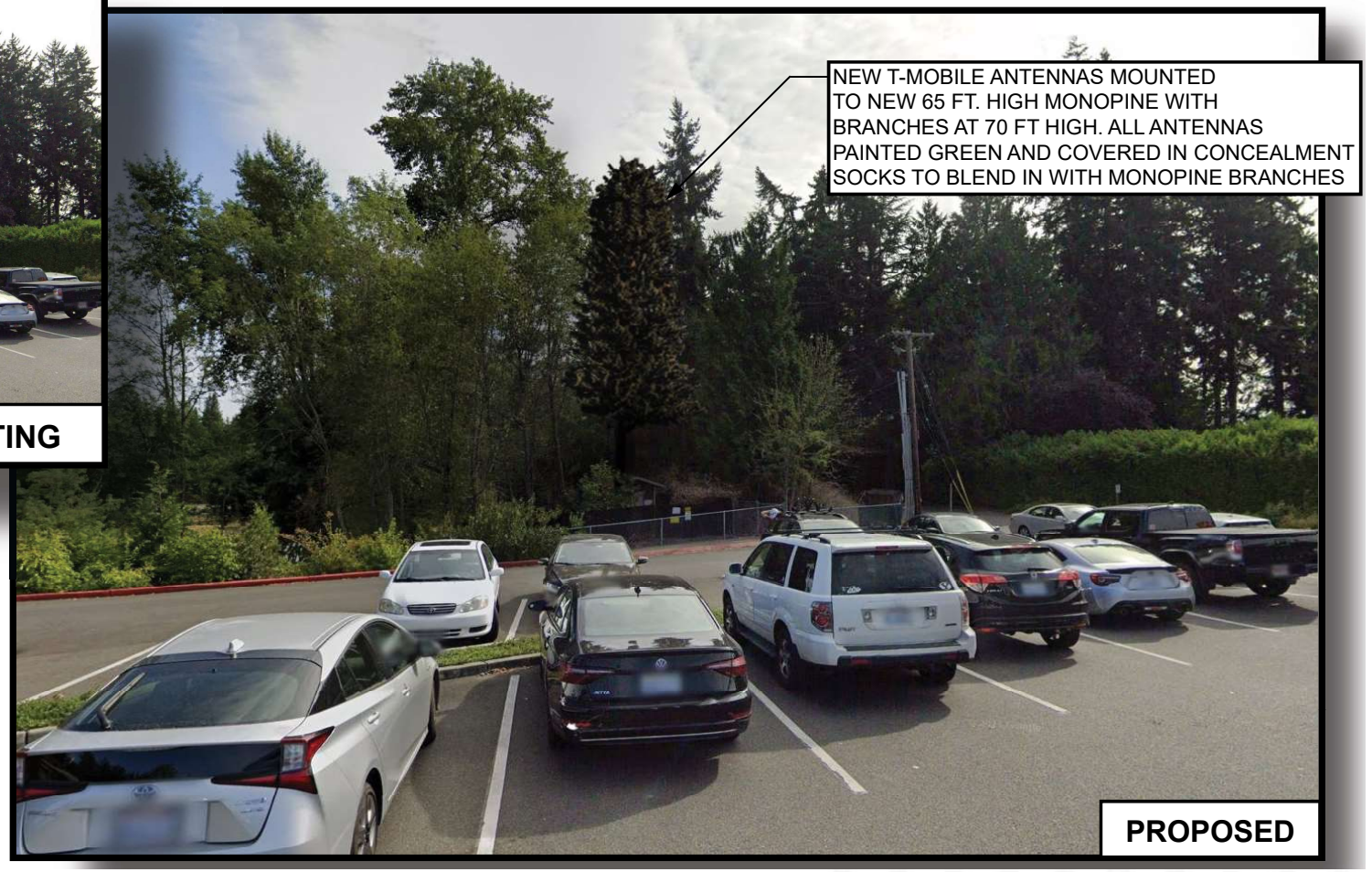
# BELLEVUE CHRISTIAN SCHOOL – STEALTH TREE DESIGN OPTION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# PROPOSED MEDINA SCI MONOPINES

- Manufactured by Solar Communications International (“SCI”)
- Up to 50% more expensive than monopines from other manufacturers
- High branch density > 3 branches per foot
- SCI on-staff architect and crews will install branching to ensure camouflage is effective

# PROPOSED SCI MONOPINE EXAMPLES




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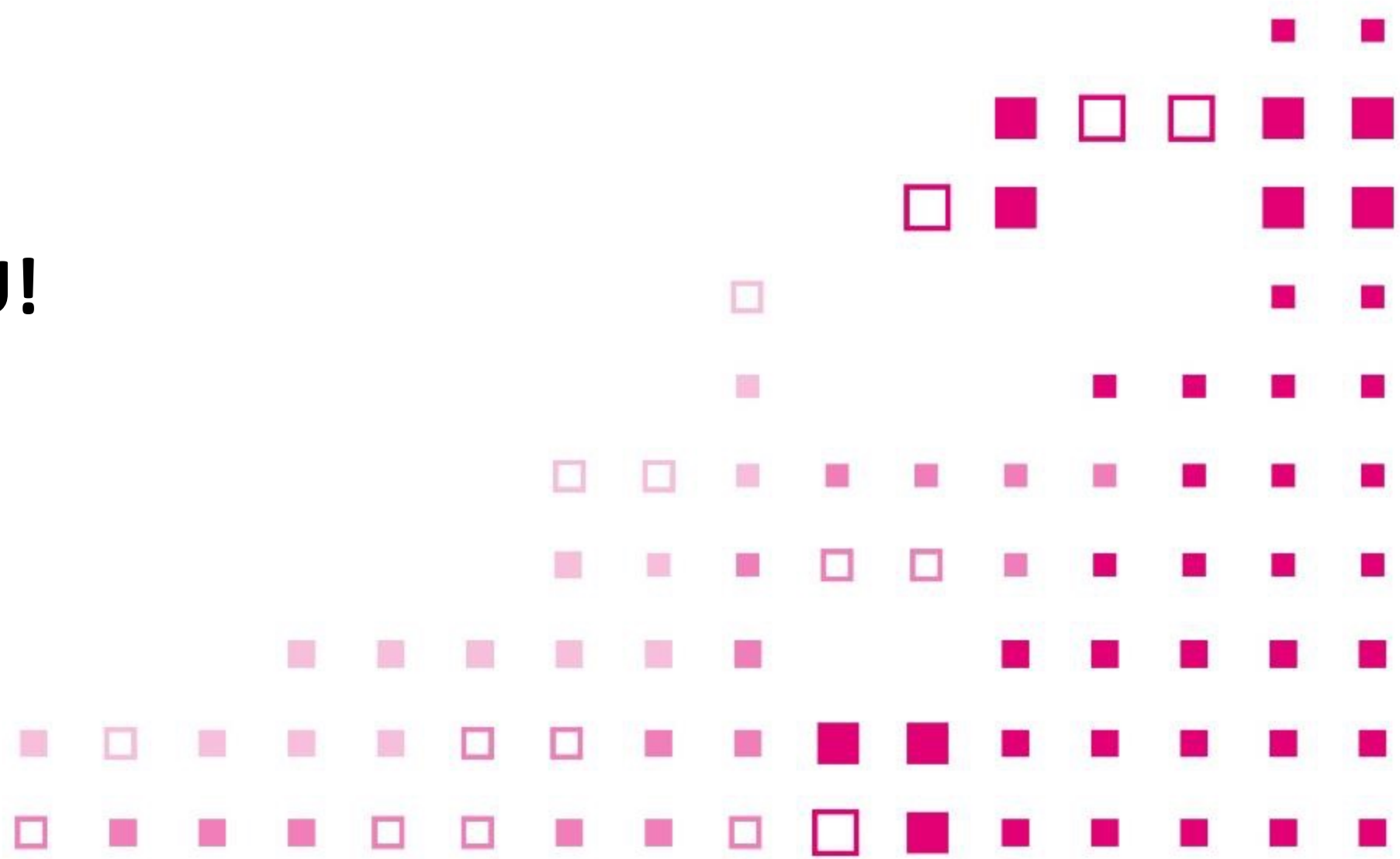
# THANK YOU!



SOLAR COMMUNICATIONS INTERNATIONAL

## *Company Profile*

Founded in 1997, Solar Communications International, Inc., SCI, is a full service company providing innovative concealment products for the deployment of wireless communications systems. We are experienced providers of screening materials, monotrees & monopoles, installation services, architecture and engineering services. Our professional services and custom products meet the highest standards of performance and efficiency.

SCI strives to create harmony between the needs of the carrier and the concerns of the community. SCI understands that stricter ordinances and community demand for aesthetics could make optimal sites unobtainable to the carrier. SCI works proactively to overcome such barriers by creating an alliance among carriers, landlords and communities with zoning packages & presentation materials—and, of course, beautiful products.

RFTransparent™, our carrier and community friendly products, overcome potential site deployment obstacles in sensitive jurisdictions by blending antennas and poles into the existing environment. SCI's RFTransparent™ screening materials are superior for general and custom screening applications such as cupolas, parapet extensions, roof tiles, shingles & siding, corrugated panels and a variety of architectural features including chimneys, window boxes and cornices. Our RFTransparent™ materials are the ideal solution for concealing sites and hastening zoning approval.

To further ensure that we meet the needs of the wireless industry, SCI manufactures top quality monopalms, monopines, commercial signs, clock towers, water tank towers and flagpoles, each of which provide the needed height without cluttering the panorama.

SCI welcomes all projects big or small, intricate or routine. Our in-house technical experts will work directly from plans or assist your technical team with the design of wireless sites & retrofits using SCI's RFTransparent™ products.

Technology without Intrusion®

**41745 Anza Road • Temecula, CA 92592 • Office: 951-698-5985**
WWW.RFTRANSPARENT.COM


TIM BRADLEY IMAGING

PHOTO LOCATOR MAP

T-Mobile

# OVERLAKE GOLF CLUB

## 8000 NE 16TH STREET, MEDINA, WA

T-Mobile

# OVERLAKE GOLF CLUB

8000 NE 16TH STREET, MEDINA, WA

CURRENT

VIEW #1 LOOKING NORTHWEST
FROM NE 12TH STREET


PROPOSED

TIM BRADLEY IMAGING

TIM BRADLEY IMAGING

VIEW #2
PROPOSED MONOPINE NOT SEEN

T-Mobile

# OVERLAKE GOLF CLUB

8000 NE 16TH STREET, MEDINA, WA

TIM BRADLEY IMAGING

VIEW #3
PROPOSED MONOPINE NOT SEEN

T-Mobile

# OVERLAKE GOLF CLUB

8000 NE 16TH STREET, MEDINA, WA

T-Mobile

# OVERLAKE GOLF CLUB

8000 NE 16TH STREET, MEDINA, WA

CURRENT

VIEW #4 LOOKING NORTHWEST
ON 84TH AVENUE NE


PROPOSED

TIM BRADLEY IMAGING


TIM BRADLEY IMAGING

VIEW #5
PROPOSED MONOPINE NOT SEEN

T-Mobile

# OVERLAKE GOLF CLUB

8000 NE 16TH STREET, MEDINA, WA

TIM BRADLEY IMAGING

VIEW #6
PROPOSED MONOPINE NOT SEEN

T-Mobile

# OVERLAKE GOLF CLUB

8000 NE 16TH STREET, MEDINA, WA

TIM BRADLEY IMAGING

VIEW #7
PROPOSED MONOPINE NOT SEEN

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# OVERLAKE GOLF CLUB

8000 NE 16TH STREET, MEDINA, WA

TIM BRADLEY IMAGING

VIEW #8
PROPOSED MONOPINE NOT SEEN

T-Mobile

# OVERLAKE GOLF CLUB

8000 NE 16TH STREET, MEDINA, WA