

MNHP Wireless Project

Fuller Lodge modifications

Presented to Fuller Lodge Historic Advisory Board-October 2016

Project Sponsor: County Manager

Project Management: ASD-Information Management

The purpose of the Manhattan National Historic Park Wireless Project is to cover the majority of the downtown walking tour with wireless functionality. Manhattan National Historic Park wireless will require placement of access points on the exterior and interior of Fuller Lodge. Placement of the access points will be crucial to wireless coverage for the area around Fuller lodge as well as the extension of wireless inside the lodge. The purpose of this request is to receive approval for installation of outdoor and indoor access points as described below.

The interior devices proposed in this request are the Aruba 270 series outdoor access points.

These will be placed inside the attic area of Fuller Lodge and not visible to the public, they will be utilized to push the signal to the three outdoor antenna devices placed on the chimney.

Outdoor Antenna proposed are the ANT3x3 D100 type devices. Traditional mounting of this device calls for a pole mounted installation, this mounting will be modified to mount as flush to the chimney as possible with allowance for cable behind the antenna. Attached to this summary you will find data sheets on the proposed hardware as well as the proposed path of exterior cabling and hardware placement.

- **Interior Access Points** - No modifications of the building are required for the internal access points. Existing internal conduit will be used from the basement to the third floor. Existing metal tubing will be used to exit the building. Please See attached data sheet: "Aruba 270 Series Outdoor Access Points"
 - Access points would be placed in the 3rd floor attic area of Fuller Lodge
 - Cabling would be run using existing conduit from the basement to the 3rd floor
 - Cabling from Access point to antenna devices would be utilizing the existing metal pipe to the outside.
- **Exterior Antennas** – Aruba 270 series– Three antennas will be mounted to the South Side Chimney. The antennas will be as flush mounted as possible while still maintaining access to the cables from the rear. All cables and antennas are proposed to be painted to match the corresponding exterior surfaces. Please See attached data sheet: "Aruba outdoor mimo antenna"
 - 3 exterior antenna devices are required for omnidirectional coverage.
 - Rock chimney on the south side of the bell tower would be used.
 - Antenna devices would be mounted on the top third of the chimneys.
 - Antenna color can be changed, avoiding lead or metal based paints
- **Cabling**
 - Each antenna device requires 3 outdoor rated cables and would follow the ridge lines and edges of the chimney.
 - Outdoor cabling can be painted to closely match the area.
 - Cabling for each antenna will be secured to follow the ridge line and chimney.
- **Mounting**
 - Each antenna would require a modified mounting bracket to mount as flush to the chimney allowing room for each cable.
 - Each antenna mounting bracket would require drilling into the chimney
 - Existing conduit from the attic to the outside of the building will be modified to include environmental protection and fire caulk.

DATA SHEET

ARUBA 270 SERIES OUTDOOR ACCESS POINTS

Setting a higher standard for 802.11ac

Innovative and aesthetically-designed 270 series outdoor wireless access points deliver gigabit Wi-Fi performance to 802.11ac mobile devices under any weather conditions. The 270 series is also the only outdoor AP that enables 802.11n clients to operate three-times faster at greater distances.

Purpose-built to survive in the harshest outdoor environments, 270 series APs withstand exposure to extreme high and low temperatures, persistent moisture and precipitation, and are fully sealed to keep out airborne contaminants. All electrical interfaces include industrial-strength surge protection.

With a maximum data rate of 1.3 Gbps in the 5-GHz band and 600 Mbps in the 2.4-GHz band, 270 series outdoor APs supports concurrent dual-radio operation at speeds that greatly exceed Fast Ethernet.

WI-FI CLIENT OPTIMIZATION

To eliminate sticky client behavior and ensure consistently high performance, every Aruba AP includes ClientMatch technology, which gathers session performance metrics that steer mobile devices to the best AP and radio on the WLAN in real time.

UNIQUE BENEFITS

- Innovative industrial design
- Eliminates installation complexity
- Inconspicuous design that improves aesthetics
- Delivers IP66- and IP67-rated protection from the elements
- Best-in-class RF management
- Integrated Adaptive Radio Management technology manages the 2.4-GHz and 5-GHz radio bands and ensures that APs stay clear of RF interference



- Reliable and predictable Wi-Fi performance
- Patented ClientMatch technology ensures that roaming clients associate with the best AP to maximize performance
- AppRF technology identifies and prioritizes applications on the network
- Spectrum analysis
- Capable of part-time or dedicated spectrum analysis, which scans the 2.4-GHz and 5-GHz radio bands to identify sources of RF interference
- Limited lifetime warranty – an industry first for outdoors

CHOOSE YOUR OPERATING MODE

The 270 series of outdoor APs offers a choice of operating modes to meet your unique management and deployment requirements.

- Controller-managed AP or Remote AP (RAP) running ArubaOS. When managed by Aruba Mobility Controllers, the 270 series offers centralized configuration, data encryption, policy enforcement and network services, as well as distributed and centralized traffic forwarding.
- Aruba Instant AP running InstantOS. In Aruba Instant mode, one AP automatically distributes the network configuration to other APs. Just power-up one Instant AP, configure it over the air, and plug in the other APs – the entire process takes about five minutes.
- Secure enterprise mesh

DATA SHEET

ARUBA OUTDOOR MIMO ANTENNA

ANT-3x3-D100

ANT-3x3-D100 is a multi polarized antenna with 90° H x 90° V beamwidths. This antenna is well suited for 2.4 and 5 GHz sector coverage for access.

FREQUENCY/MIN GAIN

- 4.9-6.0 GHz/5 dBi min
- 2.4-2.5 GHz/5 dBi min

DIMENSIONS

- 200 x 200 x 33 mm (7.9 x 7.9 x 1.25 inches)

POLARIZATION

- V, and slant +/- 45°

WEIGHT (WITHOUT BRACKET)

- 0.8 kg (1.76 lbs)

BEAMWIDTH

- Horizontal plane: 100°
- Vertical plane: 90°

HOUSING

- Housing: Aluminum
- Radome: Plastic

IMPEDANCE

- 50 ohms

CONNECTORS

- N-type female x3

MAXIMUM INPUT POWER

- 20 watts

OPERATING TEMPERATURE

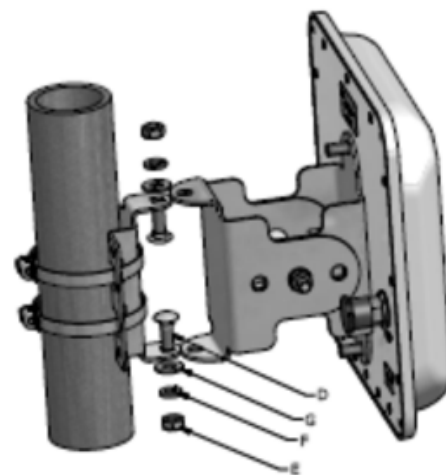
- -45°C to +70°C

VSWR

- 2:1 max

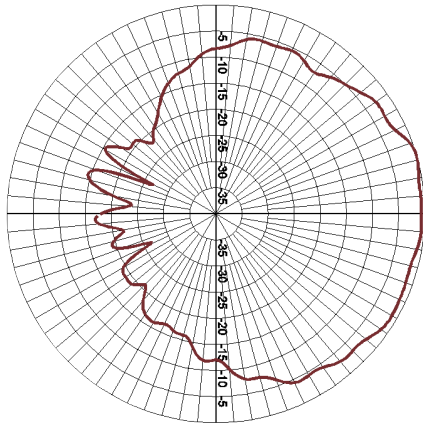
INSTALLATION HARDWARE

- Mount kit for wall and pole included

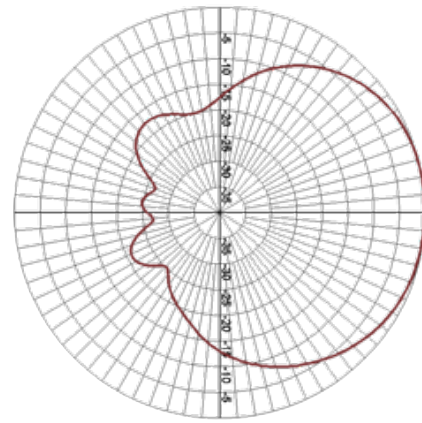


ANTENNA PATTERN PLOTS

Vertical pattern

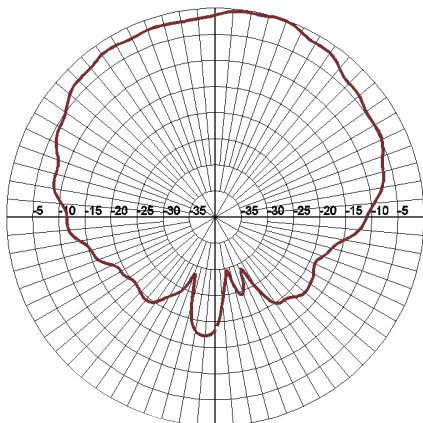


5 GHz

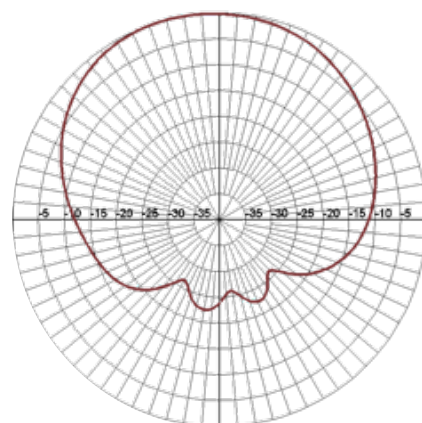


2.4 GHz

Horizontal pattern



5 GHz



2.4 GHz

Proposed External Cabling and Antenna Placement:

3 external rated wireless antennas flush mounted on chimney

Cabling to exit building at existing metal conduit with L bracket added for physical protection of the cable.

Cabling to burrow into existing façade from exit point and along eaves to chimney.

Cable will be secured with building appropriate material.

All cable, Access points and mounting equipment will be painted to camouflage into exterior.

