

Lincoln County School District Predictive Design Report

11/26/2025



Name: LCSD-PredictiveDesign-Report

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Executive Summary

Lincoln County School District (LCSD) has engaged Structured Communications (Structured) to create a wireless network predictive design for the Crestview Heights and Waldport High Schools. The WLAN Predictive was designed around the 5GHz and 6GHz spectrum as the primary connectivity for client devices. The 5GHz band provides more bandwidth with better interference avoidance compared with the 2.4GHz band. The 6GHz more than doubles the available channels compared to the 5GHz band and is the newest available spectrum for wireless devices. The 6GHz band offers a cleaner spectrum with significant gains in bandwidth. LCSD has an existing wireless network using Cisco Meraki infrastructure. The current design is a high-density design with an AP in every classroom to support the ever-growing client device demands. Structured has attempted to re-use cable drops to minimize the expenditure of installing new cabling. However, Structured recommends repositioning APs to provide better spacing between access points and provide better coverage. The repositioning of APs can only be possible if there is a service loop for the existing cable drops. Structured also planned additional APs for areas common areas that could potentially have more users congregated.

Structured has selected the Juniper Mist AP36 access points for the WLAN implementation within classrooms. The AP36 is the latest generation of Wi-Fi 7 access points offered by Juniper Networks. The AP36 is a tri-band access points offering support in the 2.4GHz, 5GHz, and 6GHz bands. This AP model is a budget friendly access points that do not include the BLE arrays. The AP37 has 4x4:4 radios chains for the 5/6GHz band and 2x2:2 radios chains for the 2.4GHz band.

For the common areas that will see a greater number of users congregated (Gyms, Cafeterias, etc.), Structured has selected the Juniper Mist AP47 access point. The AP47 is the latest generation of Wi-Fi 7 access points offered by Juniper Networks and is their flag ship AP. The AP47 is a tri-band access point offering support in the 2.4GHz, 5GHz, and 6GHz bands. This AP model is designed for high-capacity areas as it has 4x4:4 radios chains for the 2.4, 5, 6GHz bands.

The selected APs should be mounted to the ceilings, ensuring that the APs are horizontally mounted. If APs are unable to be mounted to a ceiling, it is recommended that 90-degree wall mounts are purchased to orientate the APs appropriately.

Industry best practice aims to provide Primary and Secondary coverage with -67dBm RSSI or better for the 5GHz and 6GHz band. This ensures that client devices can achieve the highest MCS rates, providing higher throughput and provide enough coverage for healthy client device roaming. The 2.4GHz band is considered best effort and only provides Primary Coverage at -67dBm RSSI or better.

The Juniper Mist access points used in the predictive design have their transmit power statically set to the following values:

- 2.4GHz: 6dBm
- 5GHz: 12dBm

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- 6GHz: 15dBm

This follows industry best practice of keeping the 5GHz radios set to 6-10dBm higher than the 2.4GHz radios. The 6GHz radios are configured slightly higher than the 5GHz radios since the 6GHz signal will attenuate slightly faster than the 5GHz radios through objects. In practice, the wireless network infrastructure will typically have a small transmit power range to allow APs to adjust their transmit power dynamically as the environment changes. Using lower transmit power values in the predictive design ensures that APs can use a range of transmit powers once deployed without maxing out the transmit power and leaving coverage gaps.

This predictive WLAN design provides an estimate of wireless coverage based on modeling tools and assumptions. Actual performance may vary due to real-world factors such as building materials and furnishings. In most cases, predictive designs are accurate enough for deployment, but more complex environments may benefit from additional on-site validation.

Based on the predictive design results it was determined that Lincoln County School District will require a total of 70 access points. The models are broken down below:

- Juniper AP36: 53
- Juniper AP47: 17

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Crestview Heights

Summary:

Crestview Heights is primarily a single floor building with one room located on a second level. The school building has several classrooms and offices which will utilize the AP36 access points. The school also has a Gym, Stage, Cafeteria, and a large media room which will require the AP47 access points.

AP Vendor: Juniper Mist AP36 and AP47

Predictive Report:

<https://us.hamina.com/share/1a645705-675b-4a0e-bc0c-b2b43f758b84>

Password: Ts_SYU!c0wWf

APS REQUIRED: 5

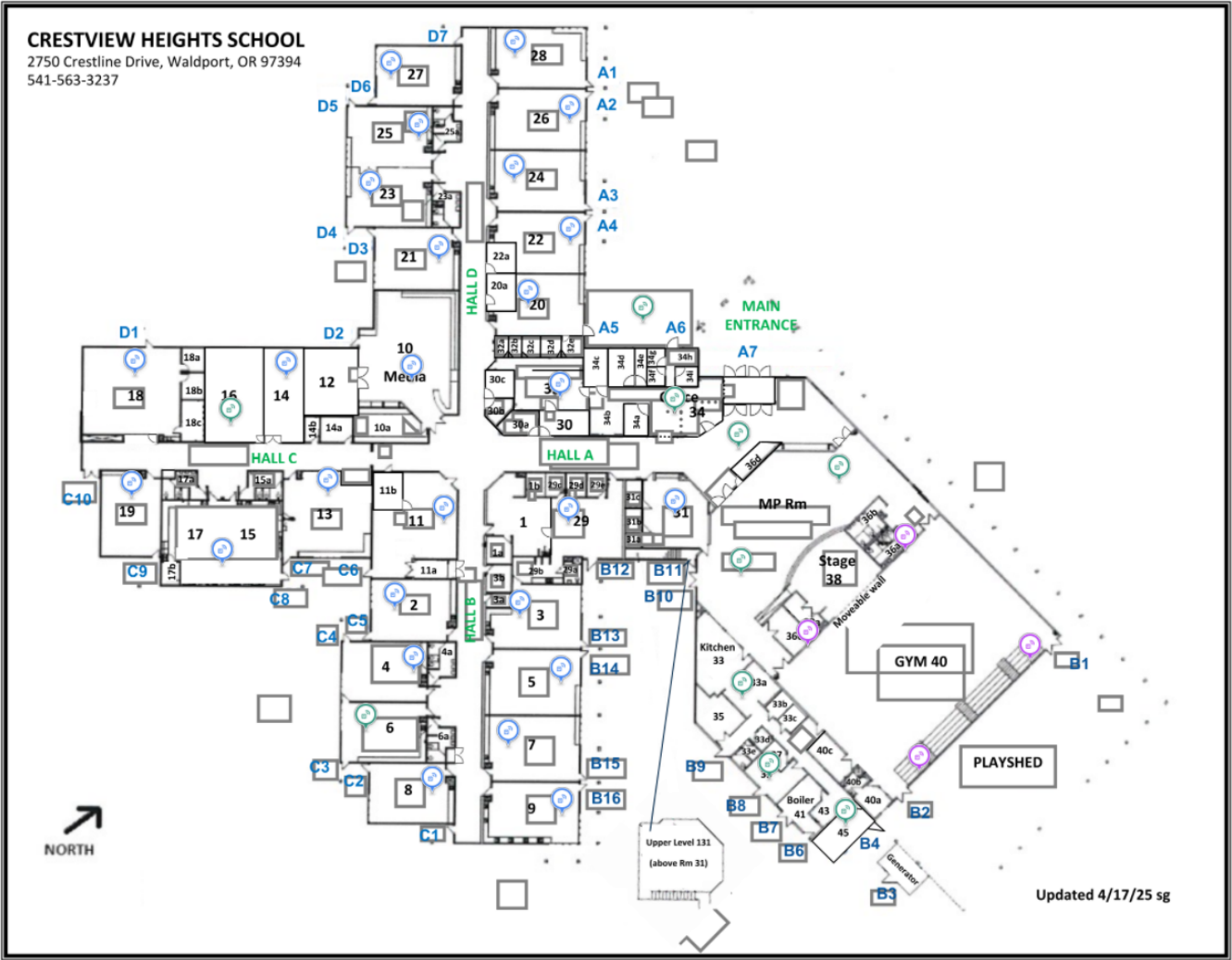
- AP36: 34
- AP47: 7
 - o 4 of them will be wall mounted using 90-Degree wall mounting brackets.

APs are color coded to indicate special characteristics:

- GREEN: New AP Locations requiring new CAT6A cable drops.
- BLUE: AP Mounted where existing APs are located.
 - o Note that the goal is to have APs re-positioned for optimal spacing and coverage. If the existing cable drops do not have a service loop, then LCSD will need to decide if they want to install new CAT6A cables, run longer patch cables to reach the new locations, or simply place APs at the existing locations.
- PINK: New AP Location with a 90-Degree wall mount bracket.

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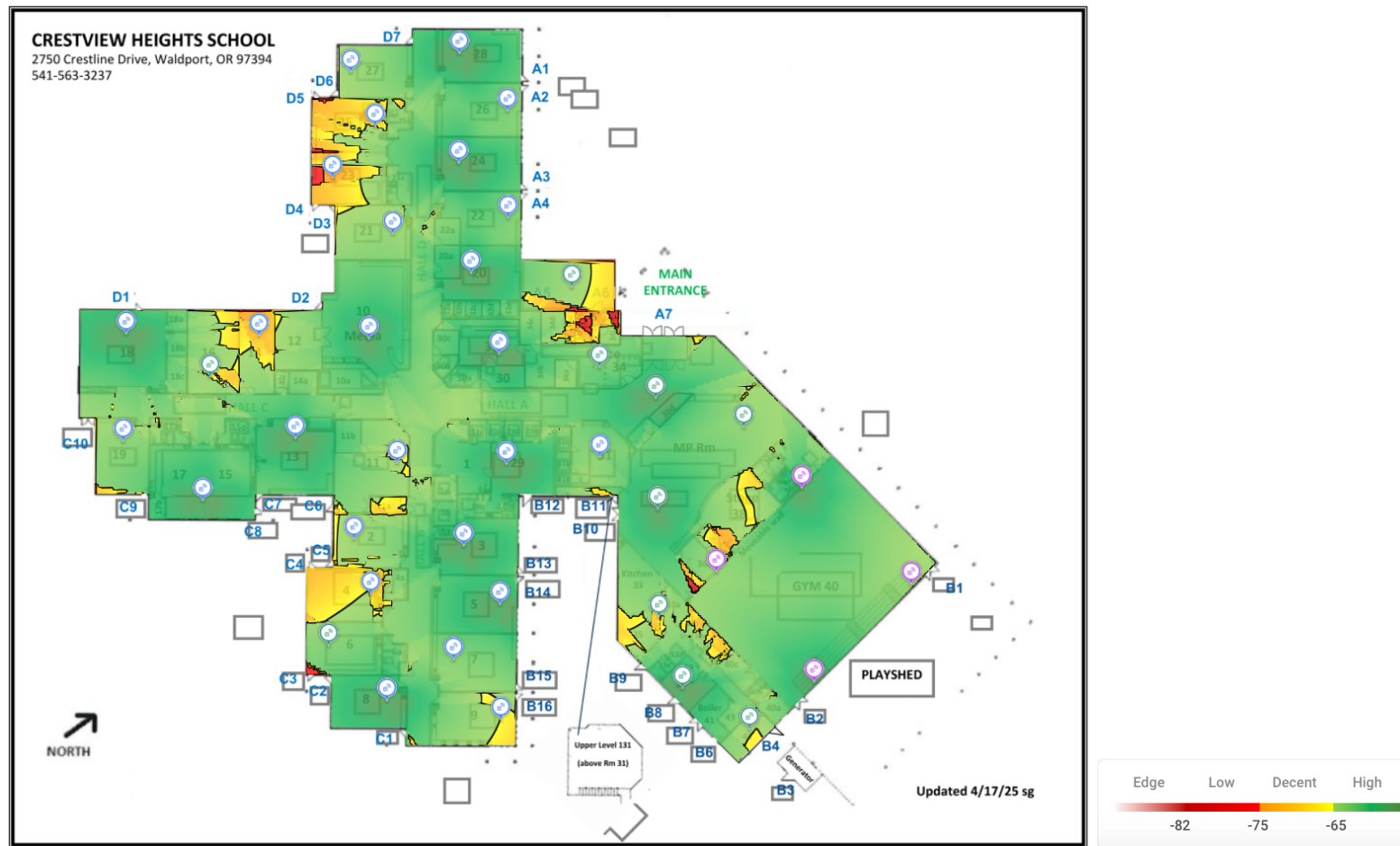
Floor 01



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Primary Coverage for Floor 01 on 2.4 GHz band

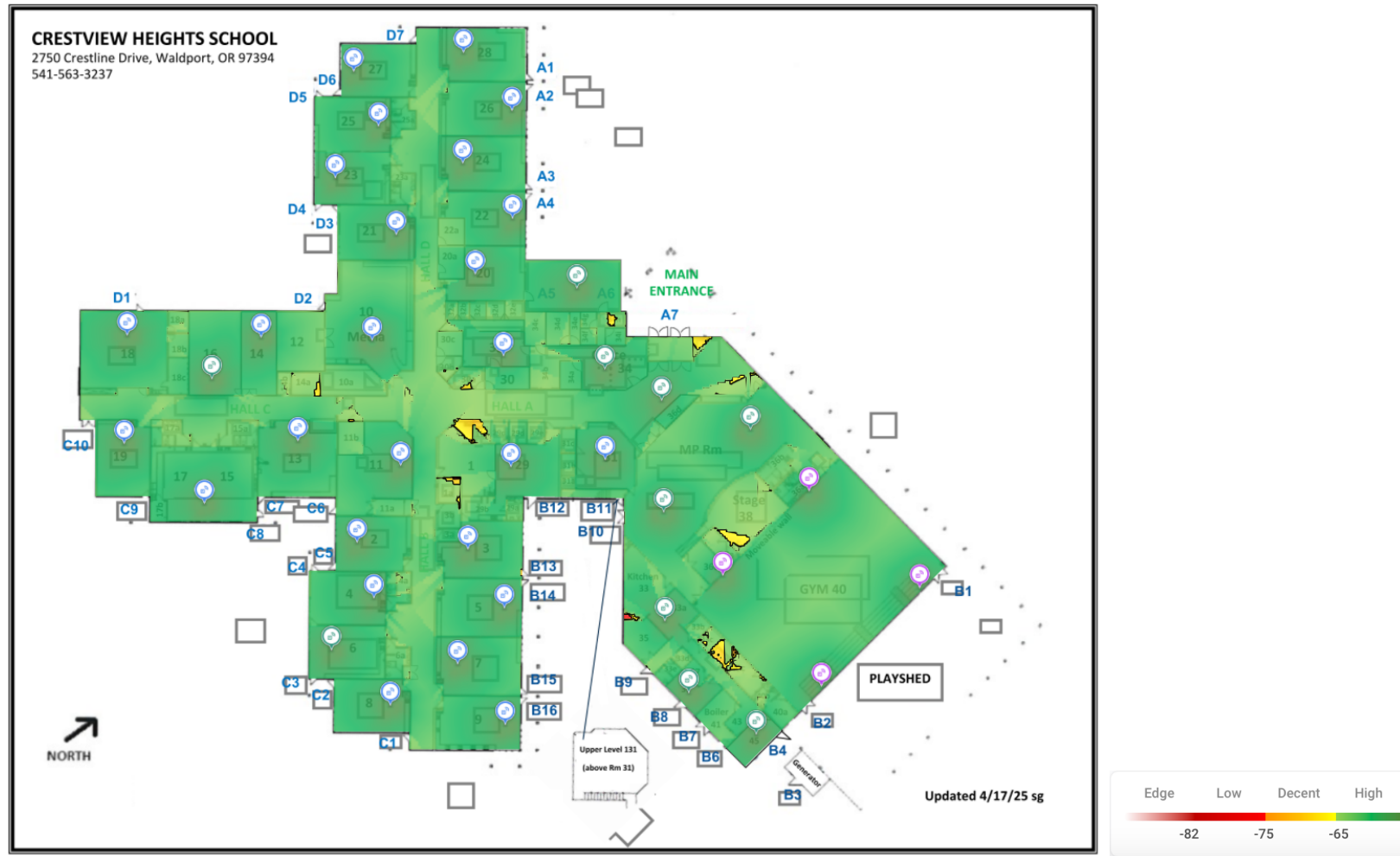
Primary Coverage – Or the strongest signal from the closest AP, is the first requirement for a wireless network. Low Primary Coverage mean unreliable wireless connectivity and slower throughput for client devices. The predictive design is configured to disable unnecessary interfering 2.4GHz radios.



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Primary Coverage for Floor 01 on 5 GHz band

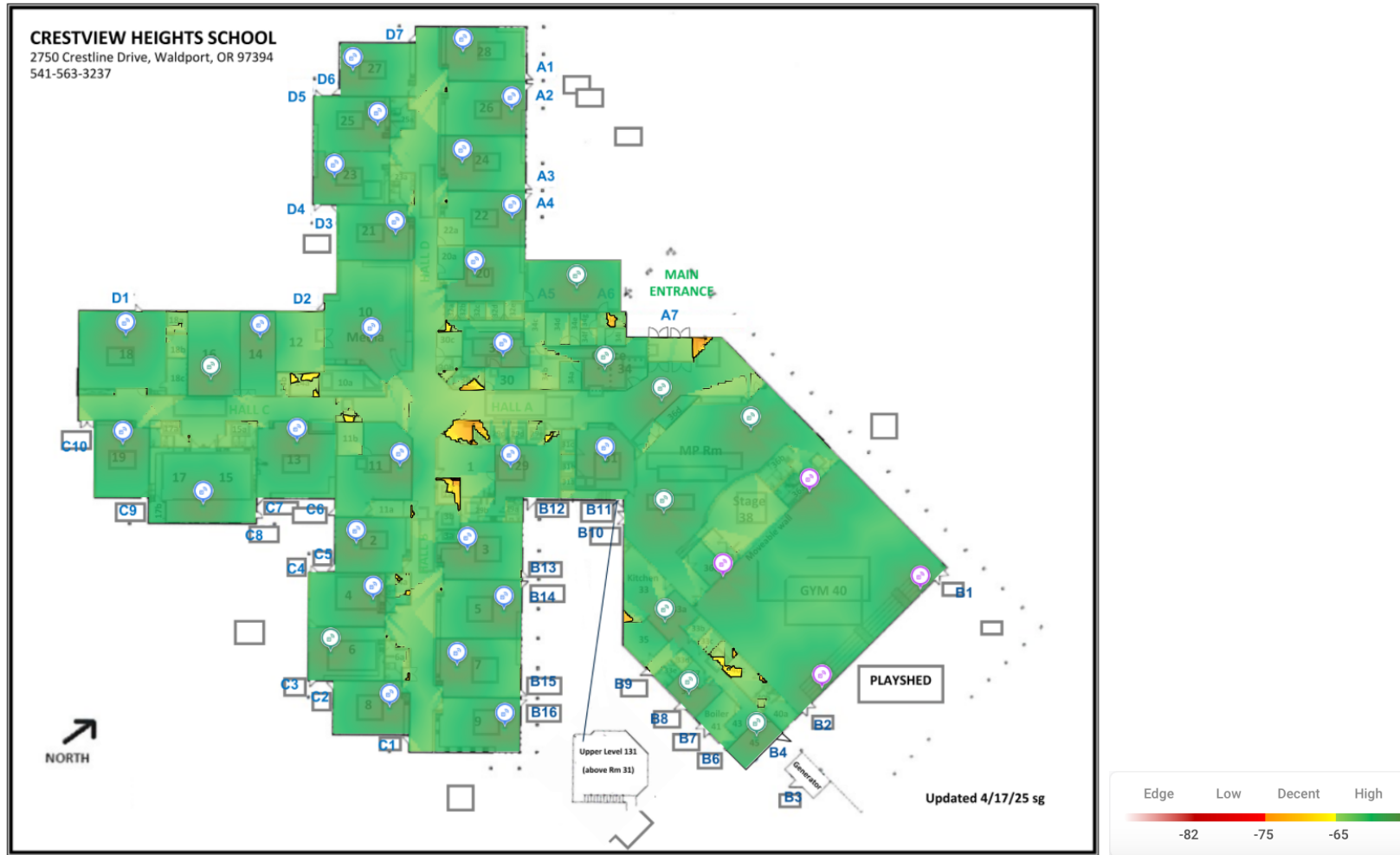
Primary Coverage – Or the strongest signal from the closest AP, is the first requirement for a wireless network. Low Primary Coverage mean unreliable wireless connectivity and slower throughput for client devices.



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Primary Coverage for Floor 01 on 6 GHz band

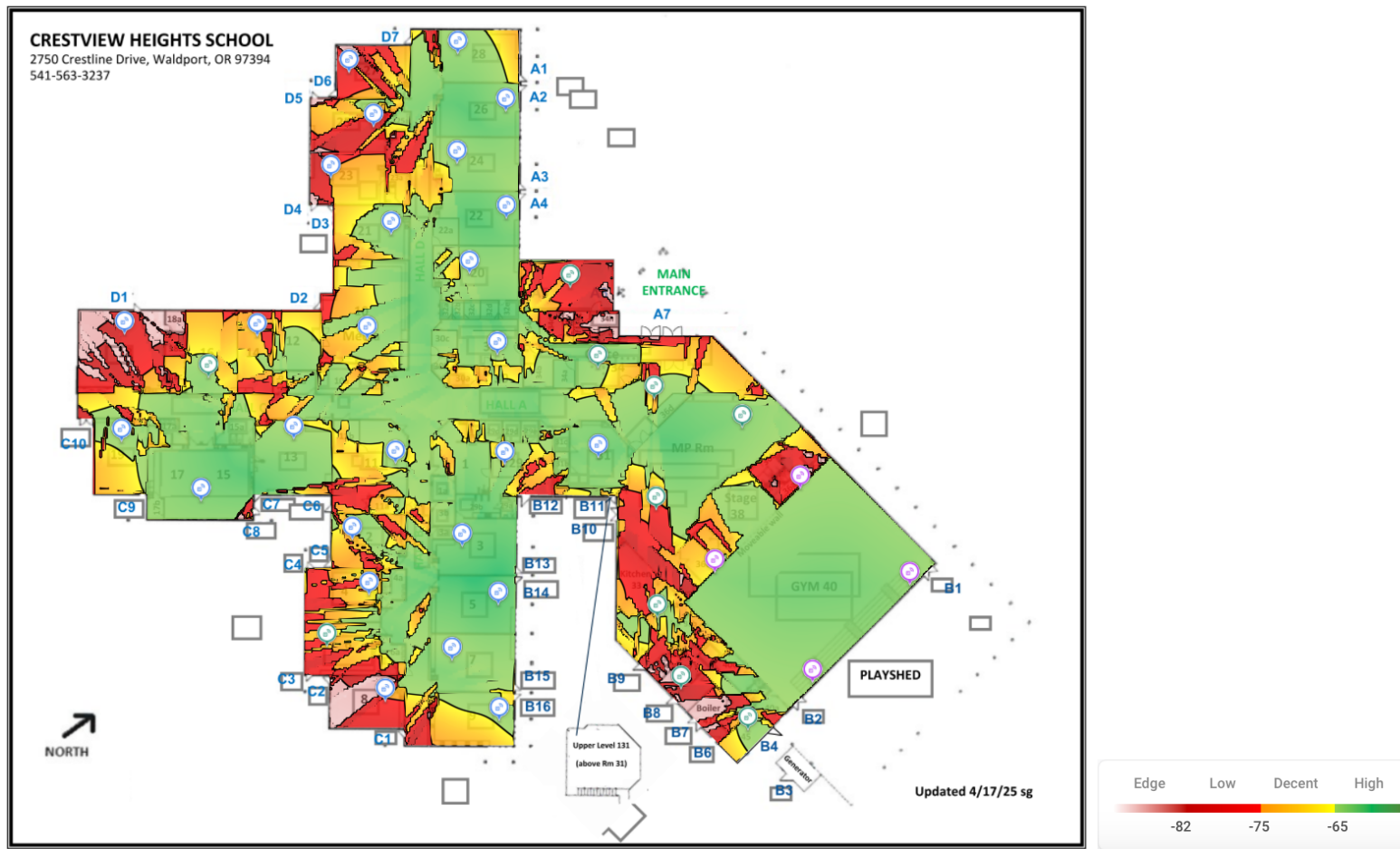
Primary Coverage – Or the strongest signal from the closest AP, is the first requirement for a wireless network. Low Primary Coverage mean unreliable wireless connectivity and slower throughput for client devices.



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Secondary Coverage for Floor 01 on 2.4 GHz band

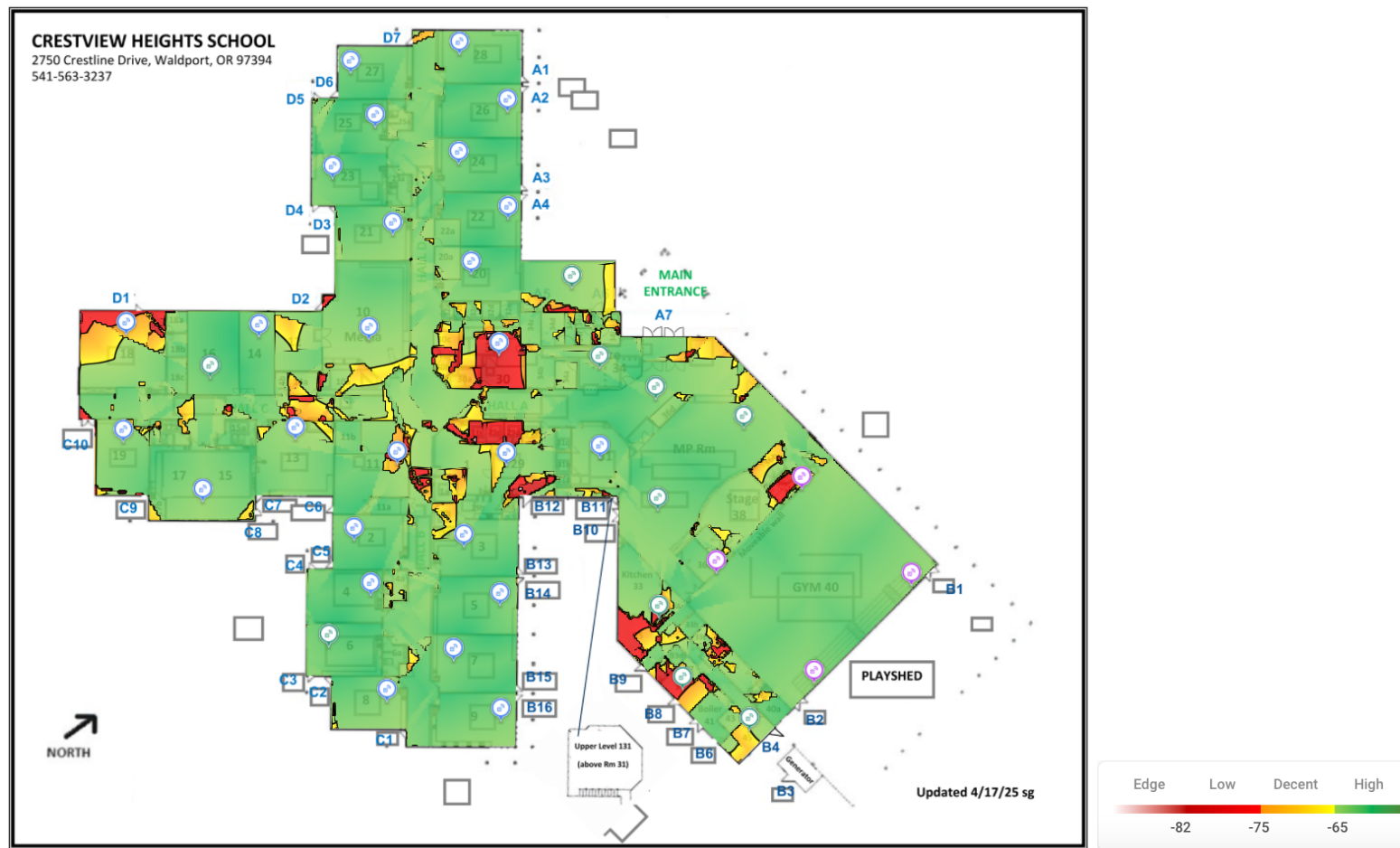
Secondary Coverage - Or second strongest signal from neighboring APs. Secondary Coverage is required to ensure that client devices can roam smoothly before they are disconnected from the AP they were originally associated with. This ensures quality of service for latency-sensitive applications, such as VoIP Calls.



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Secondary Coverage for Floor 01 on 5 GHz band

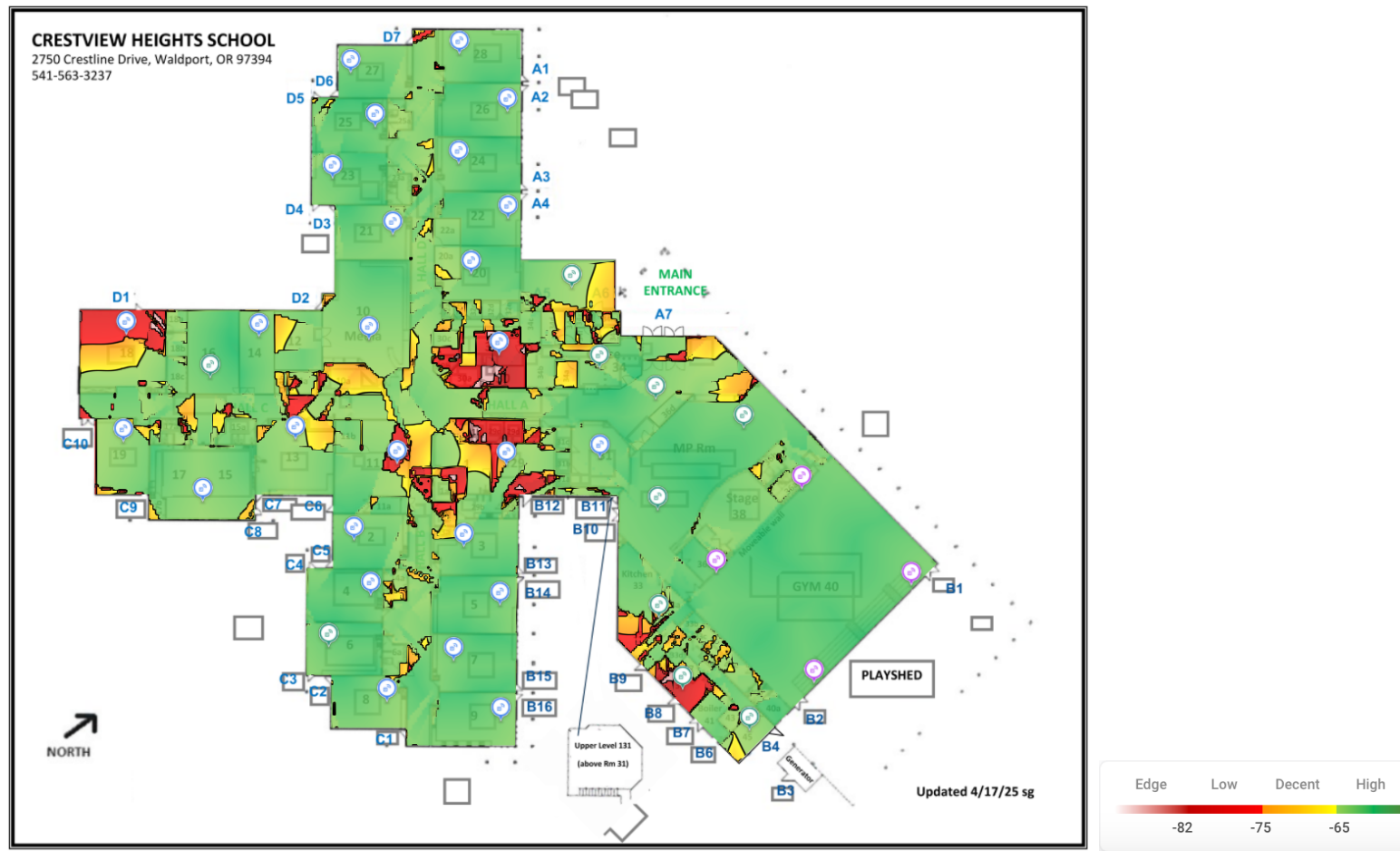
Secondary Coverage - Or second strongest signal from neighboring APs. Secondary Coverage is required to ensure that client devices can roam smoothly before they are disconnected from the AP they were originally associated with. This ensures quality of service for latency-sensitive applications, such as VoIP Calls.



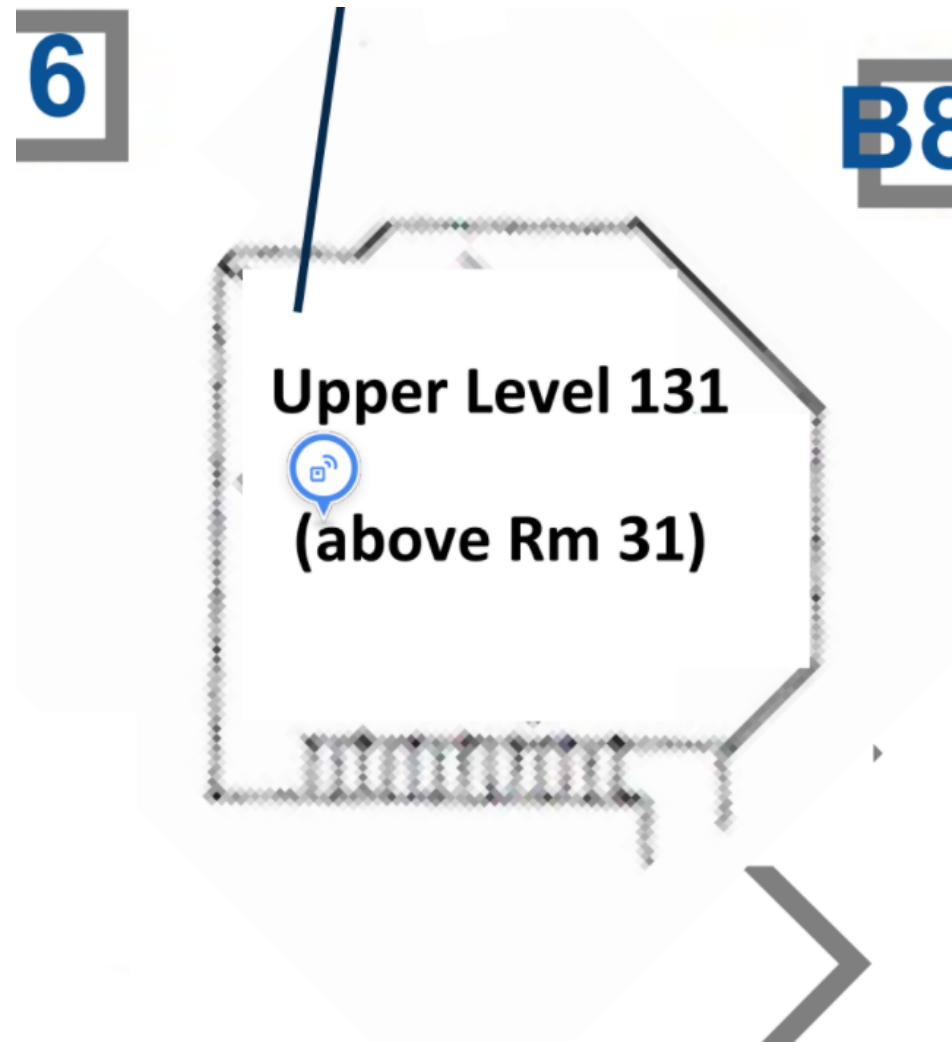
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Secondary Coverage for Floor 01 on 6 GHz band

Secondary Coverage - Or second strongest signal from neighboring APs. Secondary Coverage is required to ensure that client devices can roam smoothly before they are disconnected from the AP they were originally associated with. This ensures quality of service for latency-sensitive applications, such as VoIP Calls.



Floor 02

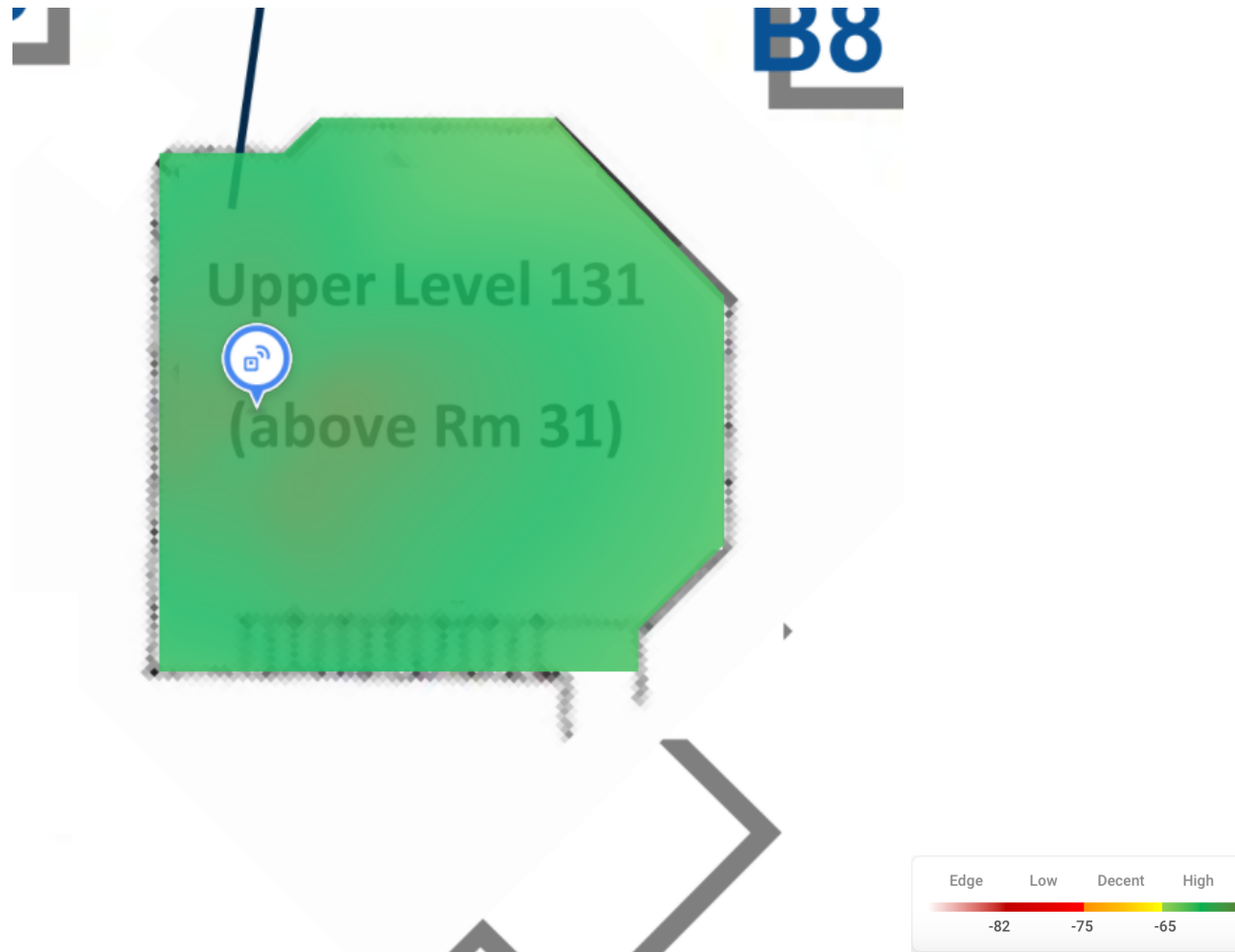


Note: It is unclear if there is an existing AP located in this room or not.

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Primary Coverage for Floor 02 on 2.4 GHz band

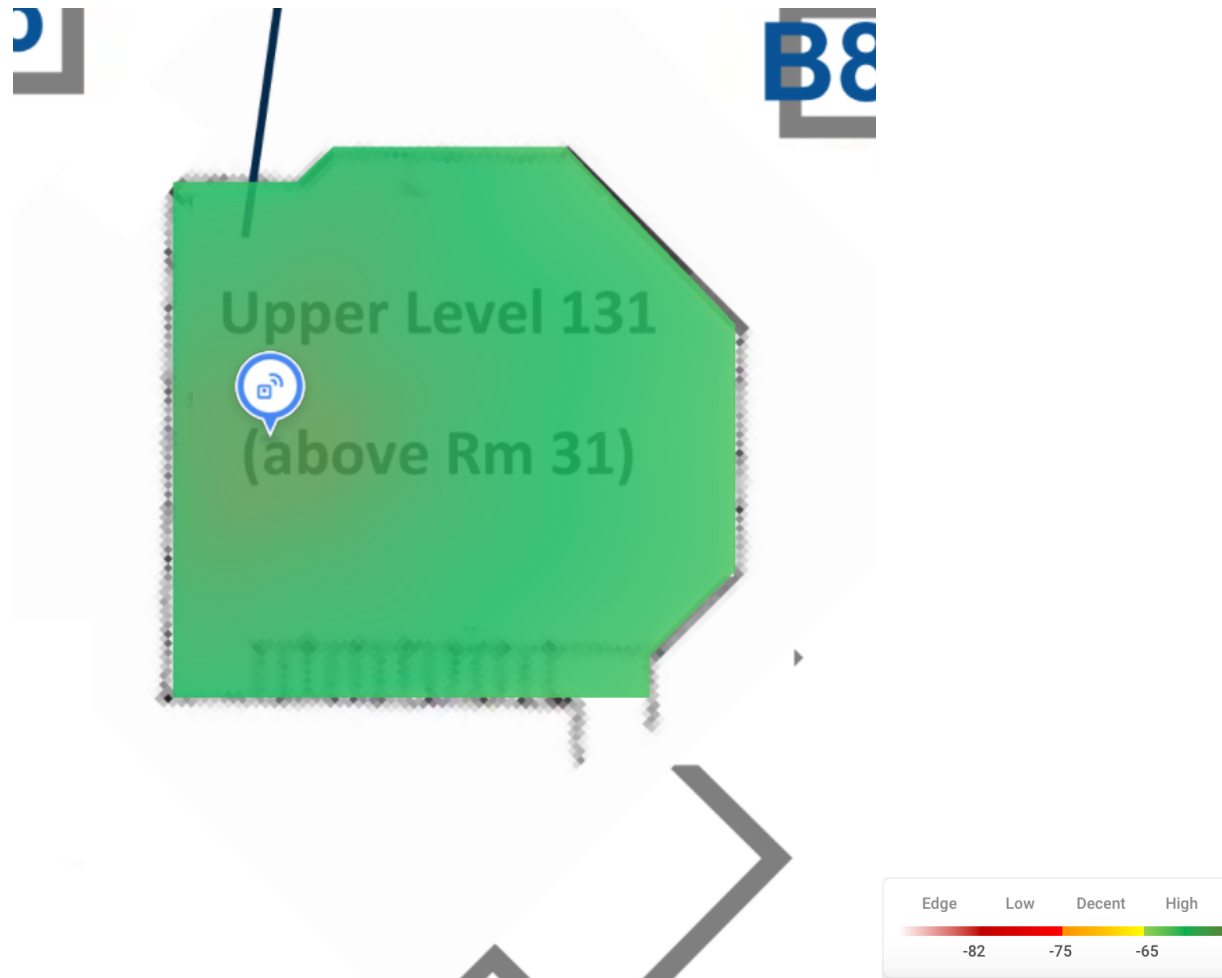
Primary Coverage – Or the strongest signal from the closest AP, is the first requirement for a wireless network. Low Primary Coverage mean unreliable wireless connectivity and slower throughput for client devices.



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Primary Coverage for Floor 02 on 5 GHz band

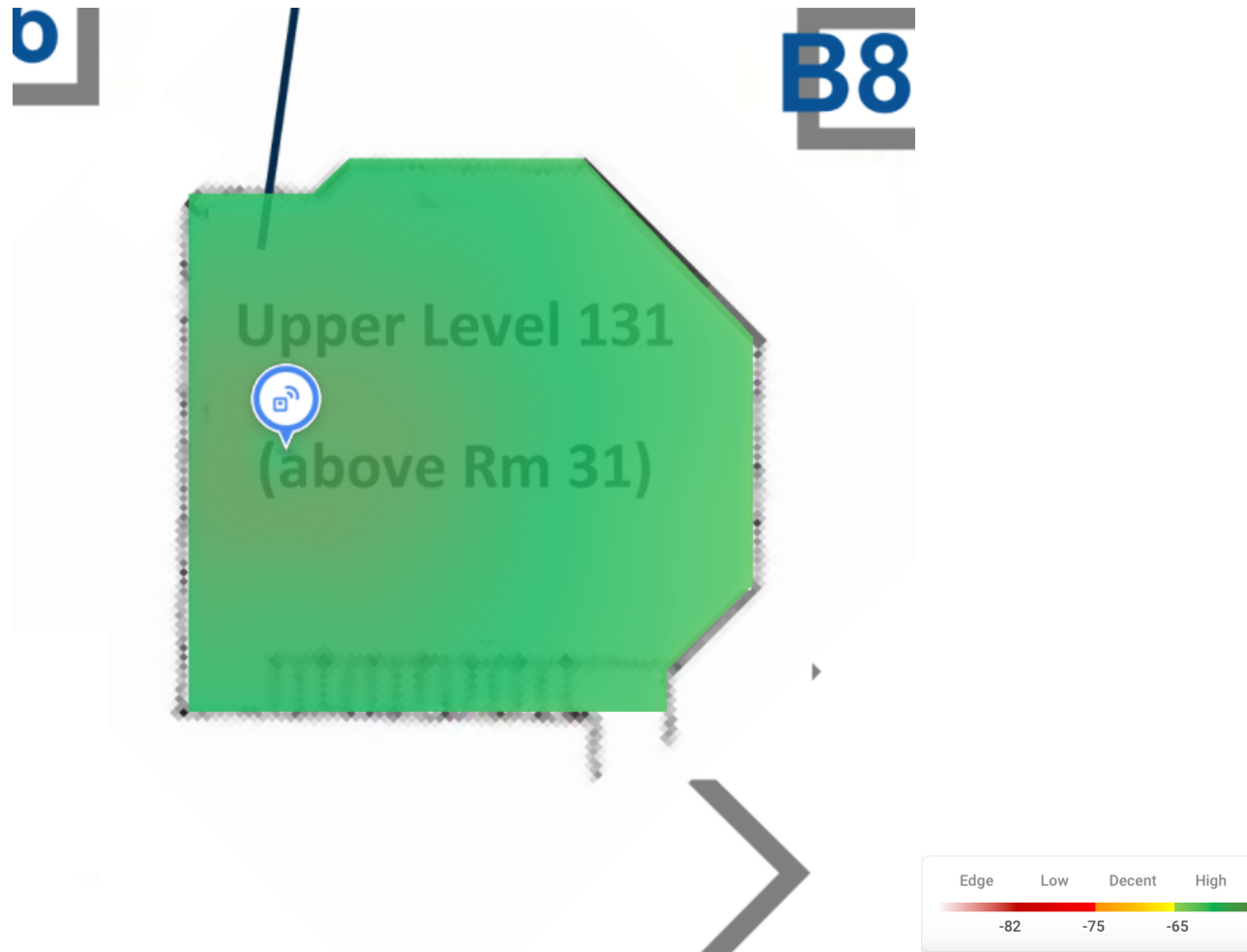
Primary Coverage – Or the strongest signal from the closest AP, is the first requirement for a wireless network. Low Primary Coverage mean unreliable wireless connectivity and slower throughput for client devices.



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Primary Coverage for Floor 02 on 6 GHz band

Primary Coverage – Or the strongest signal from the closest AP, is the first requirement for a wireless network. Low Primary Coverage mean unreliable wireless connectivity and slower throughput for client devices.



Waldport High

Summary:

Waldport High is a smaller school building located next to Crestview Heights. This school building has a single floor consisting of classrooms and offices which will utilize the AP36 access points. There building also have a Gym, Cafeteria, and two other large rooms which will utilize the AP47 access points.

AP Vendor: Juniper Mist AP36 and AP47

Predictive Report:

<https://us.hamina.com/share/c3045f34-64d1-466e-93f2-b3a48ecb27ba>

Password: Ksu3!-v7fjX-

APS REQUIRED: 10

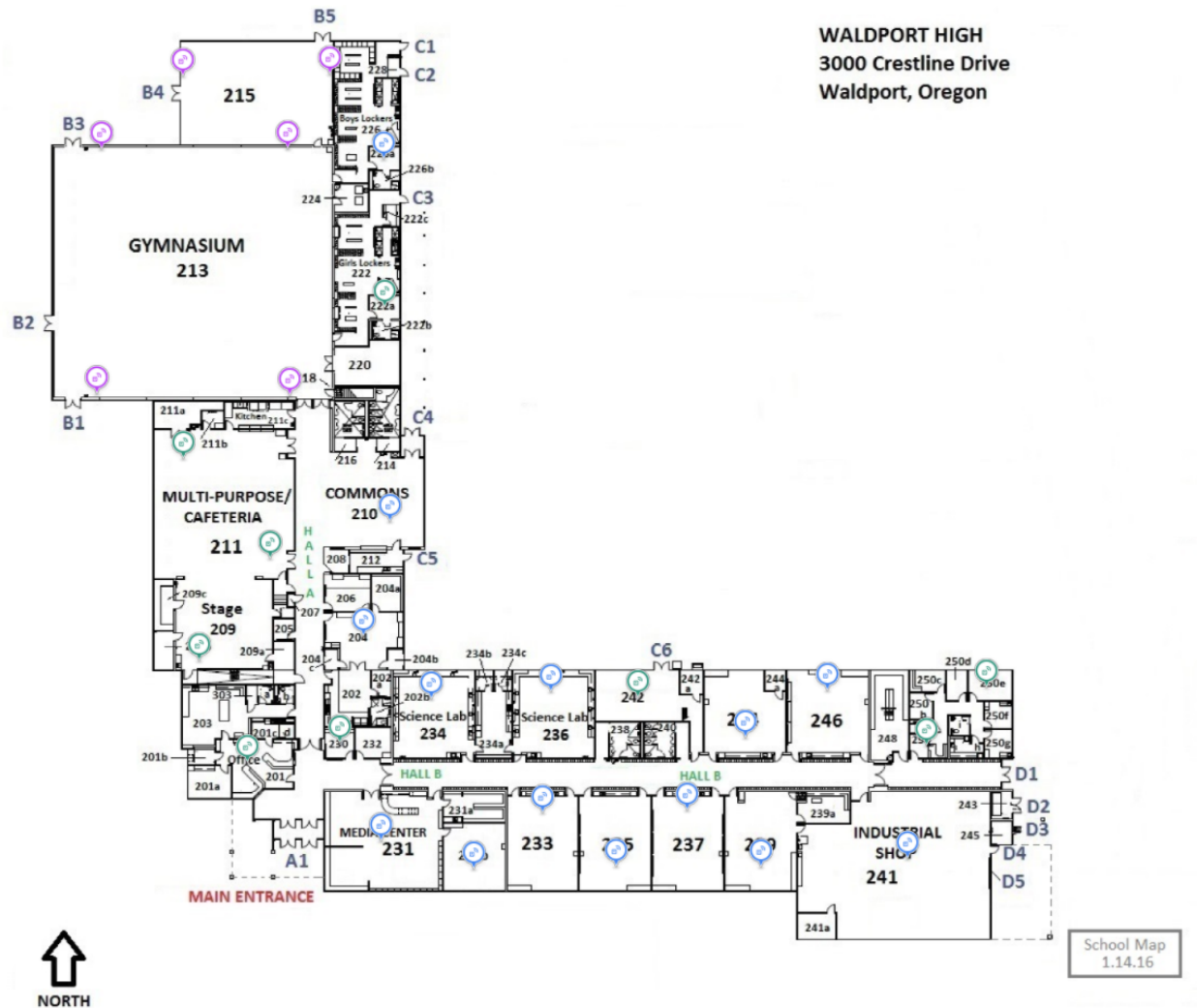
- AP36: 19
- AP47: 10
 - o 6 of them will be wall mounted using 90-Degree wall mounting brackets.

APs are color coded to indicate special characteristics:

- GREEN: New AP Locations requiring new CAT6A cable drops.
- BLUE: AP Mounted where existing APs are located.
 - o Note that the goal is to have APs re-positioned for optimal spacing and coverage. If the existing cable drops do not have a service loop, then LCSD will need to decide if they want to install new CAT6A cables, run longer patch cables to reach the new locations, or simply place APs at the existing locations.
- PINK: New AP Location with a 90-Degree wall mount bracket.

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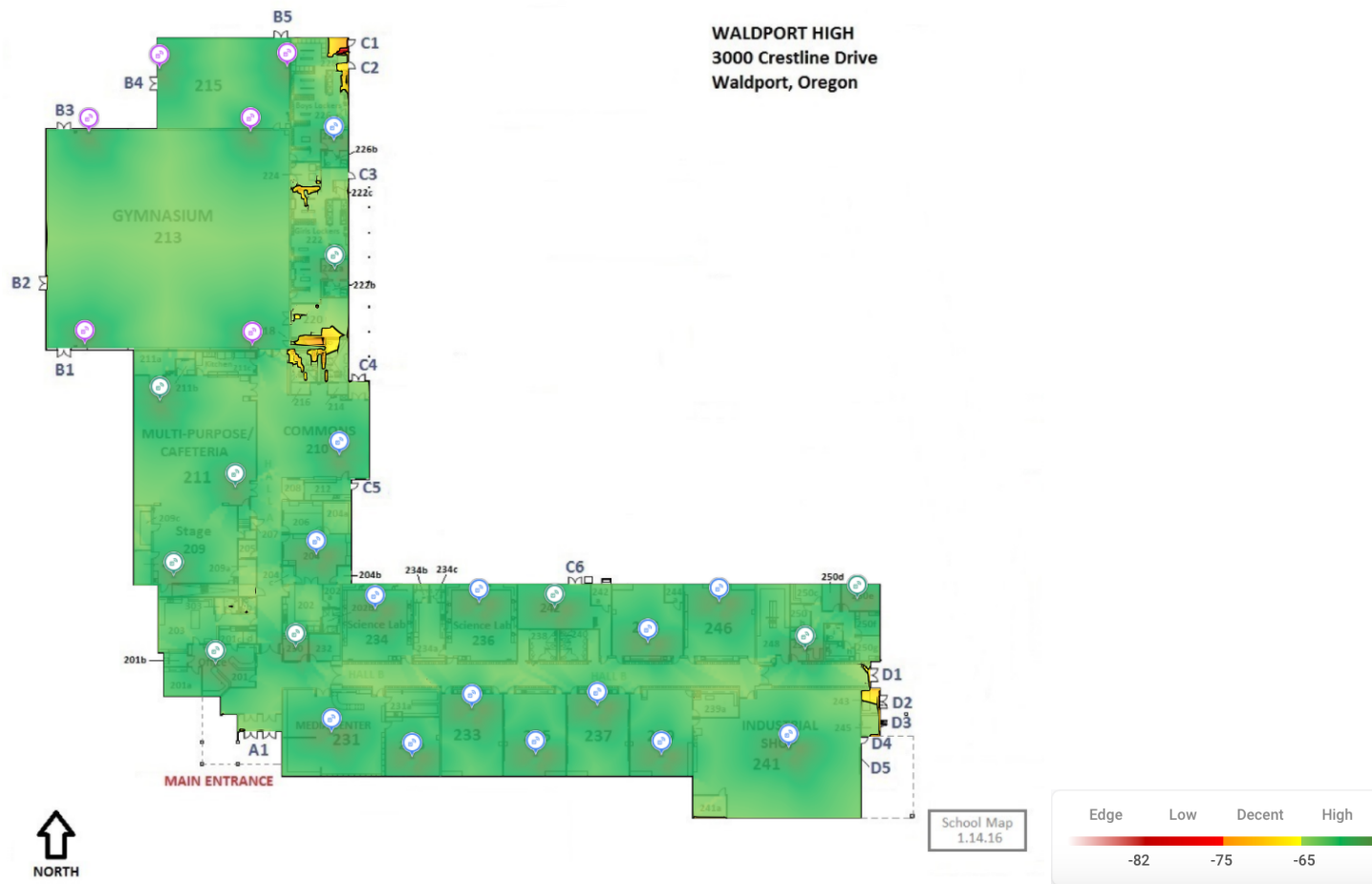
Floor 01



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Primary Coverage for Floor 01 on 2.4 GHz band

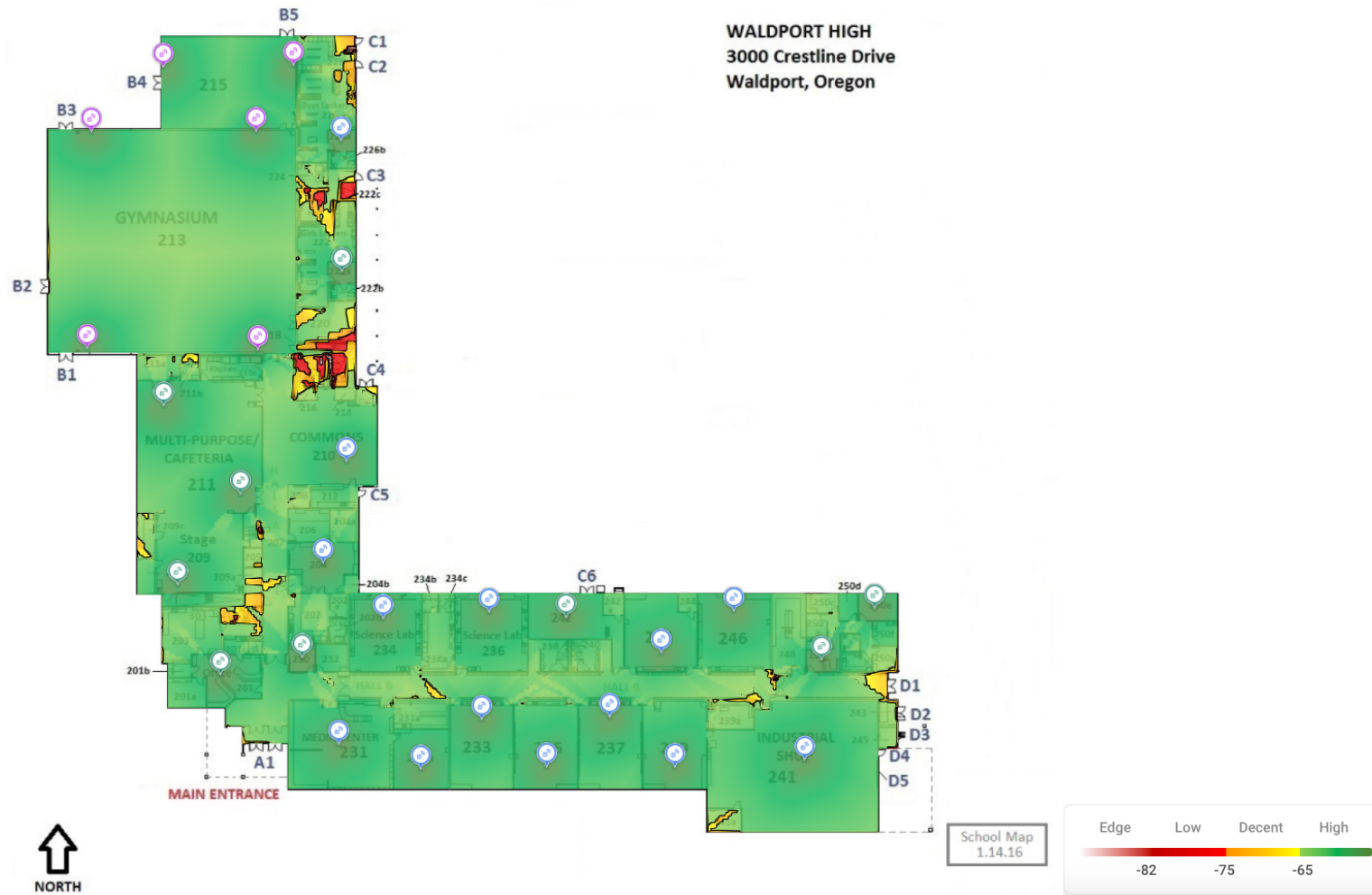
Primary Coverage – Or the strongest signal from the closest AP, is the first requirement for a wireless network. Low Primary Coverage mean unreliable wireless connectivity and slower throughput for client devices. **The predictive design is configured to disable unnecessary interfering 2.4GHz radios.**



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Primary Coverage for Floor 01 on 5 GHz band

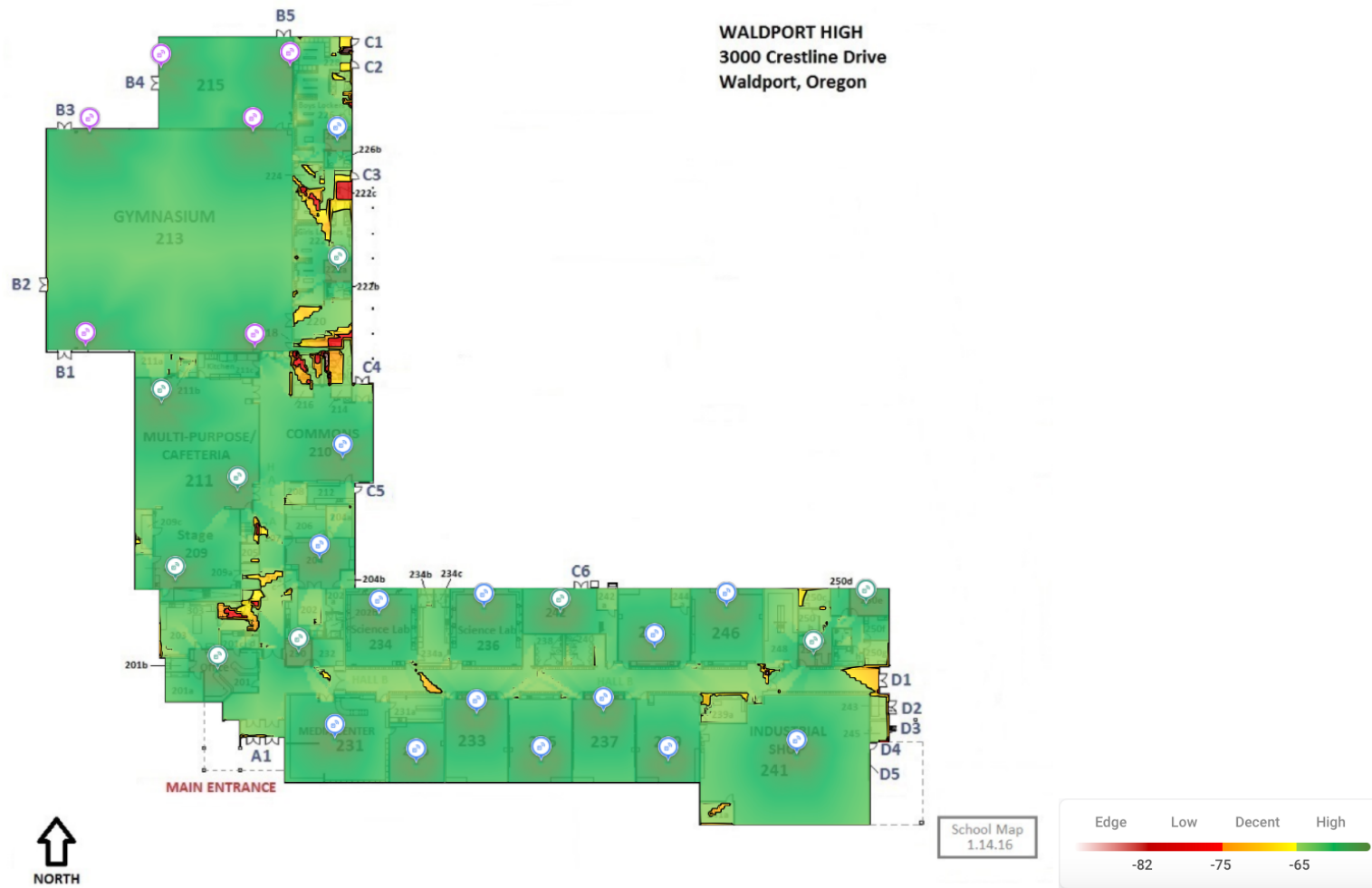
Primary Coverage – Or the strongest signal from the closest AP, is the first requirement for a wireless network. Low Primary Coverage mean unreliable wireless connectivity and slower throughput for client devices.



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Primary Coverage for Floor 01 on 6 GHz band

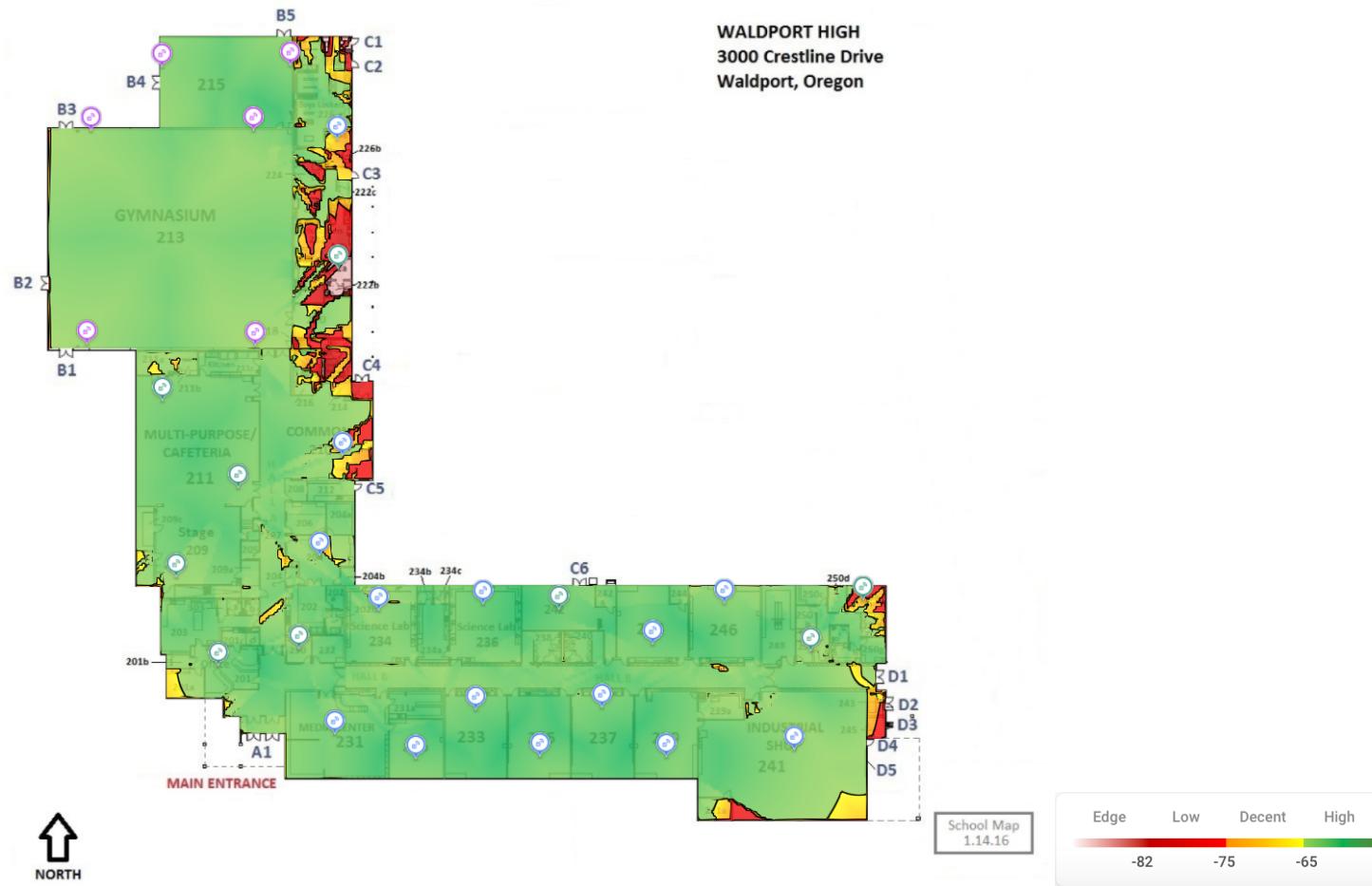
Primary Coverage – Or the strongest signal from the closest AP, is the first requirement for a wireless network. Low Primary Coverage mean unreliable wireless connectivity and slower throughput for client devices.



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Secondary Coverage for Floor 01 on 2.4 GHz band

Secondary Coverage - Or second strongest signal from neighboring APs. Secondary Coverage is required to ensure that client devices can roam smoothly before they are disconnected from the AP they were originally associated with. This ensures quality of service for latency-sensitive applications, such as VoIP Calls.



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Secondary Coverage for Floor 01 on 5 GHz band

Secondary Coverage - Or second strongest signal from neighboring APs. Secondary Coverage is required to ensure that client devices can roam smoothly before they are disconnected from the AP they were originally associated with. This ensures quality of service for latency-sensitive applications, such as VoIP Calls.



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Secondary Coverage for Floor 01 on 6 GHz band

Secondary Coverage - Or second strongest signal from neighboring APs. Secondary Coverage is required to ensure that client devices can roam smoothly before they are disconnected from the AP they were originally associated with. This ensures quality of service for latency-sensitive applications, such as VoIP Calls.

