WGPR Antenna Replacement

The existing WGPR Antenna is defective. After a thirty-year service life, environmental damage, as well as several large bullet-holes, have resulted in moisture ingress and component failure. It is no longer possible to operate at the rated power level due to dielectric failure within the antenna. In addition, several heater elements appear to have failed, resulting in increased reflected power and impedance mismatch during periods of significant winter weather. At times, the station's operating power drops to 60 percent of authorized power (due to changes in the weather conditions).

Our plans call for simple replacement of the existing antenna with one of more modern manufacture. In order to prevent lost "air-time" and satisfy the requirements of the antenna site owner, it is our desire to place the new antenna immediately above the existing antenna. A new RF transmission line will then be installed and interconnected with the coaxial transfer switch. This will permit WGPR to replace the existing antenna with no loss of service to the community.

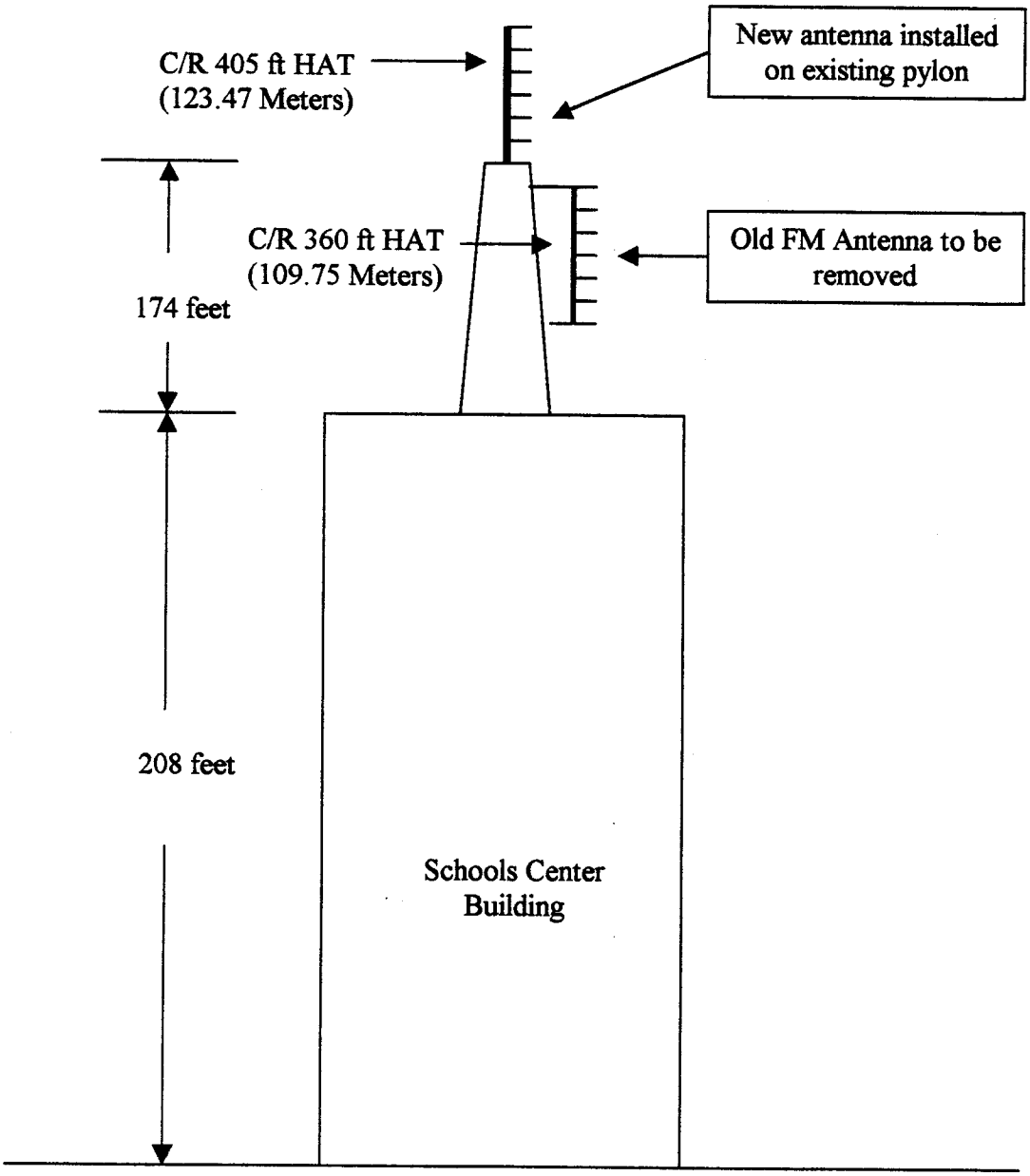
Because the new antenna will be supported at the pylon structure, it is necessary to install a smaller antenna (six bay, circularly polarized). Therefore, transmitter power will be upgraded slightly to compensate for the loss of antenna gain. Total Effective Radiated Power will not exceed the licensed 50 kW level.

The overall increase in height is insignificant; Center of Radiation will change from 109.7 Meters (360 feet) to a new value of 123.47 meters (405 feet). This height is less than the level, which requires de-rating under Part 73.

The antenna will be installed upon the existing tower structure atop the Detroit Schools Center Building. The Center of Radiation will therefore be 60.4 Meters above the rooftop level. The rooftop is restricted from public access through the presence of two locked doors, through which only authorized personnel are permitted access. Calculations as indicated in RF Worksheet No. 1 indicate that this restricted area complies with all Electromagnetic Exposure regulations as outlined in OET-65 and related regulations.

No other FM or other broadcast-service transmitters co-located at the tower site. Several two-way and wireless providers are present, however, field measurements indicate that EME levels do not exceed maximum permitted levels. By slightly increasing the height of the WGPR antenna, EME exposure levels will likely be decreased at rooftop-level.

Profile of Antenna Installation
- Not to scale -



FM Antenna and Transmitter Data

Antenna:

Frequency:	107.5 mHz
Maximum ERP:	50 kW
Antenna:	Harris SKH6-AE Circularly Polarized
Bays:	6
Spacing:	1 wave
Beam Tilt:	0 degree
Max. Gain:	3.162
Length:	45.6 feet

Transmission Line:

Manufacturer:	Andrew
Type:	Semi-flex
Diameter	3 inch
Length:	343 feet*
Loss per 100 ft.	0.147 dB
Loss, total:	0.504 dB
Loss, Power	1.947 kW
Efficiency:	89.04 %

Transmitter Power Output:

17.759 kW

- Exact length of transmission line will be confirmed at completion of installation. If length varies, calculations will be adjusted accordingly and the Commission will be notified.