

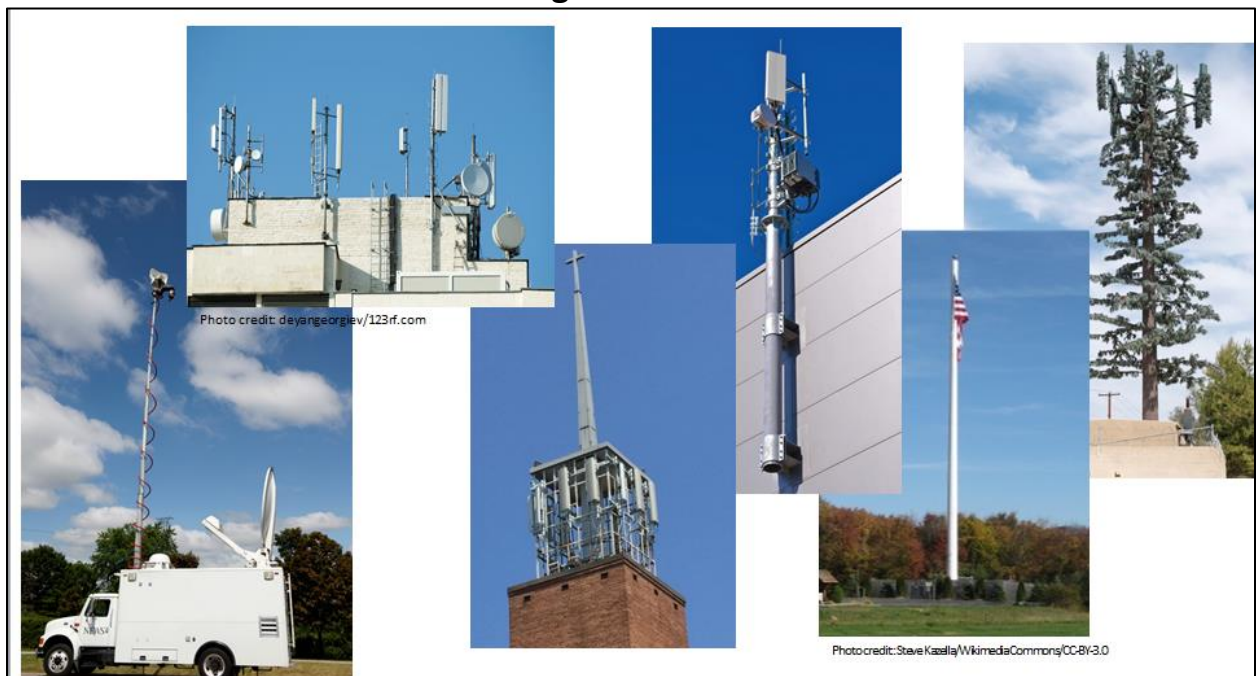
6. Hazard Identification for RF Radiation

Regulations, guidelines, and programs are intended to prevent workers and the public from exposure to hazardous levels of RF radiation, but they are only protective if employers and their employees are able to identify whether or not a hazard is present. The two main challenges facing construction employers are:

- Identifying the presence of RF generating devices in the areas where work needs to be performed; and
- Once identified, determine if the FCC's exposure limits are being exceeded and what steps to take to protect their employees.

As shown in Figure 6-A, antennas that generate RF radiation come in different shapes and sizes, and emit RF radiation in different directions. Some may even be concealed, which only creates additional challenges.

Figure 6-A



The following sections describe several steps that construction employers can take to identify the presence of RF generating devices.

6.1 Check with the Building Owner

One step that construction employers can take is to ask the building owner or site manager if antennas or other RF generating devices are present. Although site owners and managers are not responsible for site compliance with the FCC's human exposure guidelines regulations (the

antenna owner is responsible), they should know whether telecommunications equipment is present, the contact information for the owner of each device, and if and where signs are posted.

As noted in Section 5.1, the FCC requires telecommunications providers – the licensees or owners of the equipment – to conduct radiofrequency (RF) emission studies to ensure that their sites do not present a health risk. This compliance study and report is supposed to be maintained on site, and should contain information on the hazardous areas and contact information for the antenna owner or their designee.

Boston University, for example, maintains a [publicly accessible online list](#) that includes the location of RF devices (address & campus) and the type and quantity of required sign(s). (Figure 6-B) For example, the antenna located at 840 Harrison Ave. requires one warning sign and two caution signs. The website also includes whom to contact for more specific information about the antennas.

Figure 6-B

Current RF Signage Postings

<i>Address</i>	<i>Campus</i>	<i>Sign Required</i>	<i>Qty.</i>	<i>Sign Required #2</i>	<i>Qty. #2</i>
840 Harrison Ave.	BUMC	Warning	1	Caution	2
72. E Concord	BUMC	Notice	1		
750 Albany St	BUMC	Warning	1		
855 Comm. Ave.	CRC	Caution	1		
765 Commonwealth Ave.	CRC	Warning	1	Caution	2
725 Commonwealth Ave	CRC	Caution	1	Notice	2
675 Commonwealth Ave	CRC	Caution	1	Notice	1
44 Cummington St.	CRC	Notice	1		
700 Commonwealth Ave.	CRC	Warning	1	Notice	3
110 Cummington	CRC	Caution	1		
881 Comm. Ave	CRC	Notice	1		
33 Harry Agganis Way	CRC	Notice	1		
512 Beacon St.	CRC	Notice	1		

*Last updated 06/17/2015

Sources: RF Compliance Studies, accessed April 28, 2016.

<http://wirelessestimator.com/content/industryinfo/64>

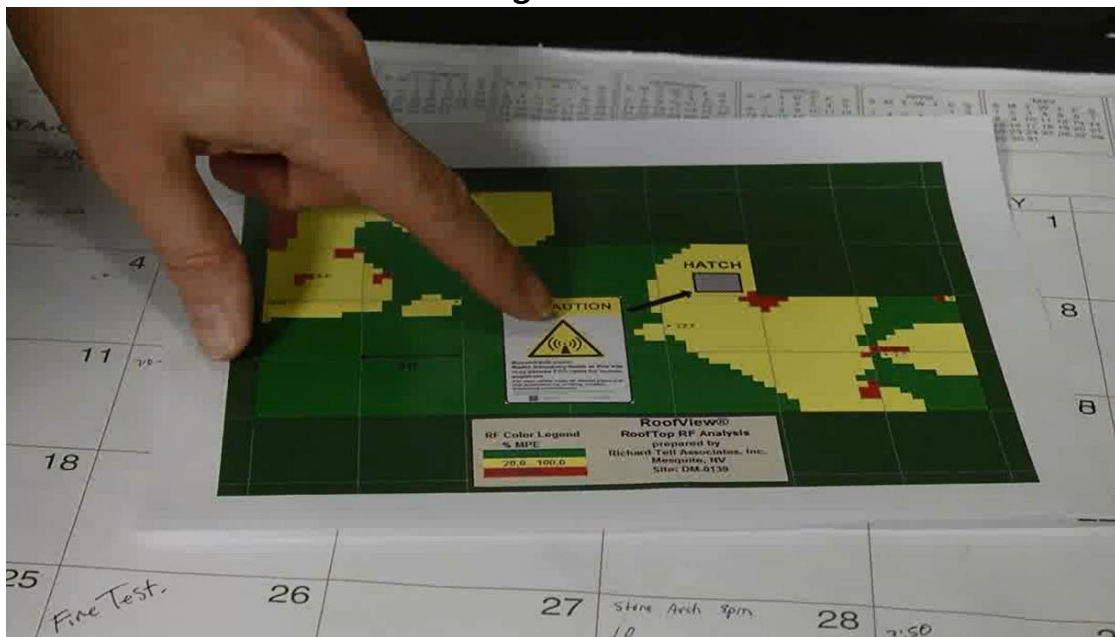
Boston University – Current RF Signage Postings, accessed April, 2016.

<http://www.bu.edu/ehs/plans/management-plans/rf-safety/current-rf-signage-postings/>

6.2 Surveys and Plot Plans

The FCC requires RF radiation surveys for registered antennas. Ideally, the building owner, property manager, or antenna owner will have a copy of the survey. These surveys show the location of the antenna, the exposure levels around the antenna, and the location of signs. (Figure 6-C)

Figure 6-C



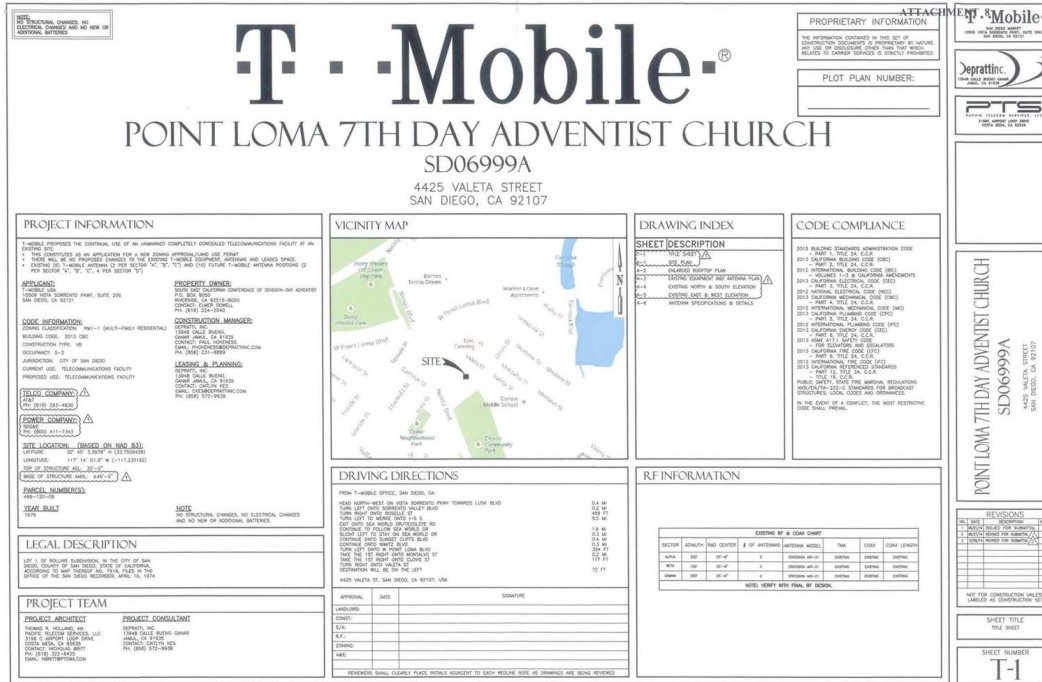
Source: Video – Safe Transmission: RF Awareness for the Construction Industry

Plot plans are another source for details on the placement of the antennas. These plans are often included in applications for permits from a local government and may be provided to the building owner/property manager. The following is an example of a plot plan posted online as part of a permit application in San Diego. (Figure 6-D & 6E) It includes an overview of the

project – a proposal to add 10 additional antennas to a church that already contains 6 antennas, the aerial site plan, enlarged rooftop plan, antenna and equipment plan, sides views (north, south, east, west), and the antenna specifications.

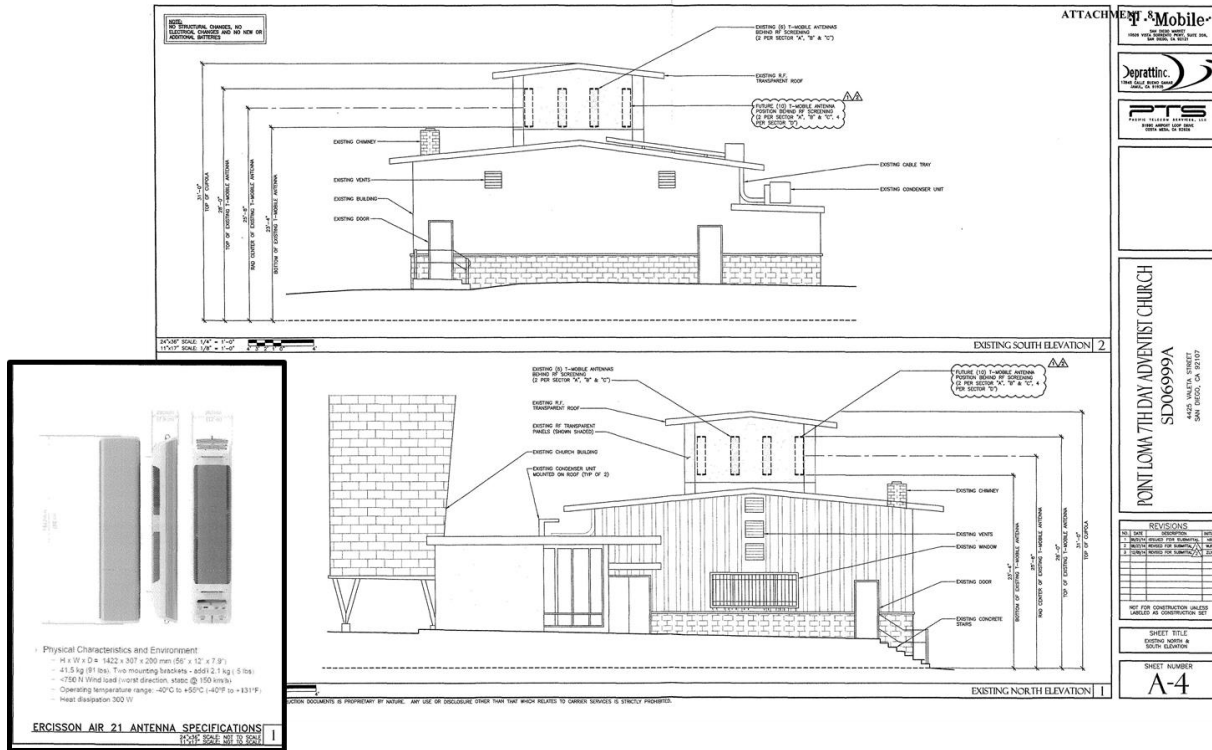
Source: This example comes from a permit application in San Diego. To see the complete plot plan and other application materials, including location maps, photo survey, planning board minutes, and the conditional use permit, visit: <https://www.sandiego.gov/sites/default/files/legacy/development-services/pdf/hearingofficer/reports/2015/HO-15-021.pdf>

Figure 6-D



The image in Figure 6-E shows the north and south elevation of the site. The detailed drawing shows where existing antennas currently are on the church and where the proposed antennas would be added.

Figure 6-E



6.3 Signage

Signs and barriers should be visible to prevent individuals from unknowingly entering areas where exposures could exceed permissible exposure limits. The FCC’s guidance document allows antenna owners to restrict or control access to potentially hazardous areas by using fences and warning signs, as long as the signs are prominent and provide information on the potential risk for exposure and instructions on methods to minimize the exposure risk.

The ANSI C95.2-1966 sign format is included in several state documents on RF radiation, including California, Oregon, and Arizona, and in OSHA’s general industry standard on non-ionizing radiation – 1910.97(a)(3)(iii). The FCC also currently recommends the ANSI C95.2-1966 format as described in "Radiofrequency Radiation Hazard Warning Symbol;" however, a newer format, included in the FCC’s proposed rules, has become more common place. As of May 2016, the FCC’s proposed rules (Dockets 13-84 & 03-167) recommend signs that, in accordance with the IEEE Std. C95.7-2005, include:

- The signal work and color (e.g., NOTICE – Blue; Caution -- Yellow)
- RF energy advisory symbol
- Explanation (e.g., Radio frequency fields beyond this point may exceed the FCC general public exposure limit...)
- Behavior necessary to comply (e.g., Obey all posted signs...)
- Whom to contact and the contact information for the device, if for example, it needs to be moved or powered down

The signs should be mounted in places that are visible and demarcate areas of limited or no accessibility based on exposure levels. Areas that exceed human limits should also have a permanent barrier – a plastic chain does not qualify according to ANSI Z244. The IEEE Standard C95-7 contains guidance on where to place signs.

The following are examples of signs used to alert construction workers and the public of RF radiation hazards (Figure 6-F), and examples of what these signs may look like in practice and the kind of information provided on them (Figure 6-G).

- The blue “Notice” signs state that the fields beyond that point may exceed the FCC’s general public maximum permissible exposure limit.
- The yellow “Caution” sign states that the area beyond that point may exceed the FCC’s occupational maximum permissible exposure limit.
- The Warning sign indicates that any point beyond the sign exceeds the FCC’s **human** exposure limits – 10x the occupational exposure limit.

Figure 6-F



Source: FourSeasons/123rf.com

Figure 6-G

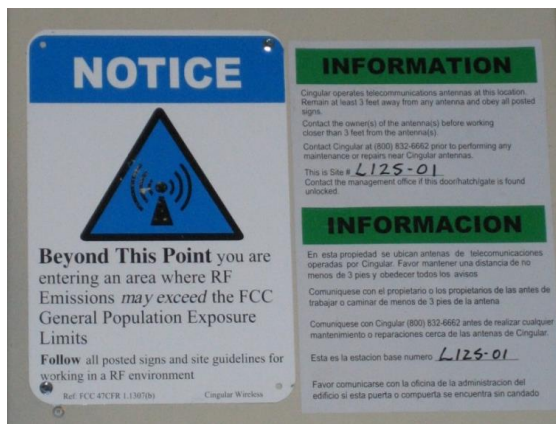


Image Source: Robert Cooper/Wikimedia Commons/CC-BY-2.0



Image Source: Image courtesy of OSHA Presentation "Non-Ionizing Radiation: standards and Regulations," slide 132, Oct. 2002



Image Source: Marc Smith/Wikimedia Commons/CC-BY-2.0

Unfortunately, signs are not always prominently posted or posted at all. Although this is a violation of the FCC requirements, as well as many state, local, and owner requirements, these situations do exist.

Sources:

- Radio-Frequency Radiation Hazard Warning Symbol, accessed April 28, 2016. https://www.osha.gov/OshStd_gif/10qfg_11.gif
- FCC ET Docket No. 13-84 and No. 03-137. First Report and Order, Further Notice of Proposed Rulemaking and Notice of Inquiry 13-39A, March 2013. <https://www.fcc.gov/document/fcc-review-rf-exposure-policies>
- IEEE C95.7™-2014: Recommended Practice for Radio Frequency Safety Programs - 3 kHz to 300 GHz, accessed April 28, 2016. <http://standards.ieee.org/news/swire/sep14.html#std5>

6.4 Conduct a Visual Inspection

At a minimum, employers should do a visual pre-task inspection of the work area to try and determine if an RF hazard exists.

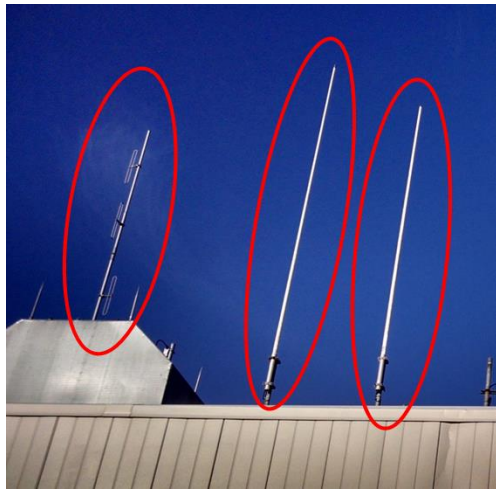
The challenge for construction employers and their employees is that it is not always easy to identify RF generating devices or the hazardous areas because these devices come in different shapes and sizes, and emit RF radiation in different directions. The three types of most concern include:

- Cylindrical or rod-shaped antennas,
- Rectangular panel, dish-shaped, and microwave antennas, and
- Hidden antennas, sometimes referred to as “stealth” antennas.

The following are examples of RF generating devices that construction employers and their employees may encounter:

Cylindrical or Rod-shaped Antennas:

Emit RF radiation in more than one direction up to 360 degrees making it difficult to avoid the RF field.



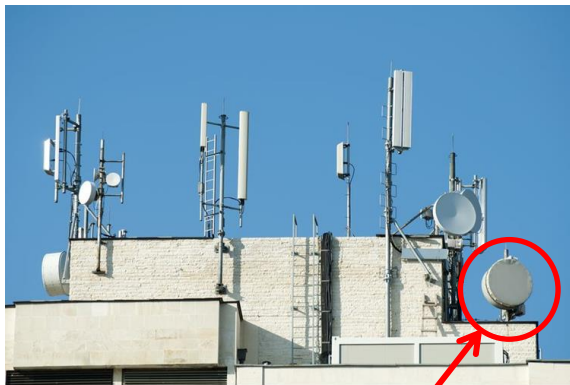
Rectangular Panel Antennas, Dish-shaped, and Microwave Antennas:

Send out RF radiation in one direction. These antennas send out RF radiation in one direction. If the antenna is not facing you or your work area, you are not being exposed. It is important not to confuse dish-shaped transmitting antennas with dish-shaped television receiving antennas, which do not generate RF radiation.

Drum-shaped microwave antennas, like the one circled on the slide, are particularly dangerous and should be avoided. They also emit RF radiation in a single direction out from the face of the antenna, but the RF emitted is much more potent than RF from cellular, satellite, and cylindrical rod antennas.



Anton Petrov/Wikimedia Commons/public domain



deyangeorgiev/123rf.com

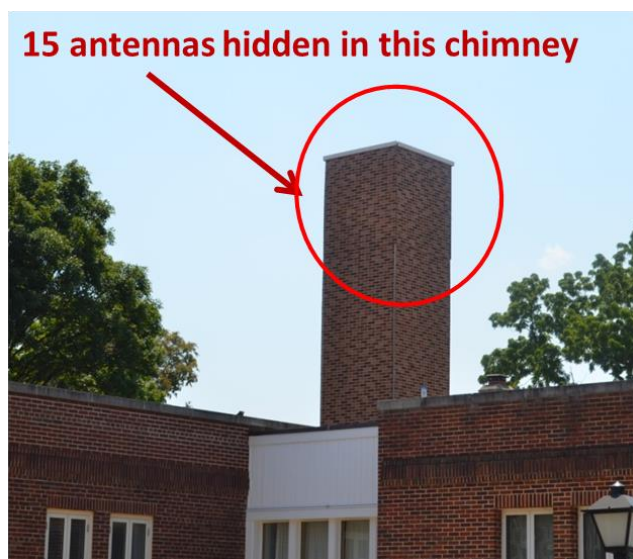
Microwave dish-shaped transmitting antenna

Hidden or "Stealth" Antennas:

Stealth" or hidden antennas are the most difficult to identify because they are designed to blend into their surroundings for aesthetic reasons. These types of antenna can be hidden behind fences, stand-alone fixtures, such as a flag pole or fake tree, a panel that blends into the side of a building, rooftop, sign, or even built on to the top of a chimney. This chimney, which is located on a church, conceals 15 panel antennas. Because these antennas are hard to identify, it is also very difficult to determine the RF radiation emitting direction. These antennas could be cylindrical, panel, or dish-shaped.



Steve Kazella/Wikimedia Commons/CC-BY-3.0

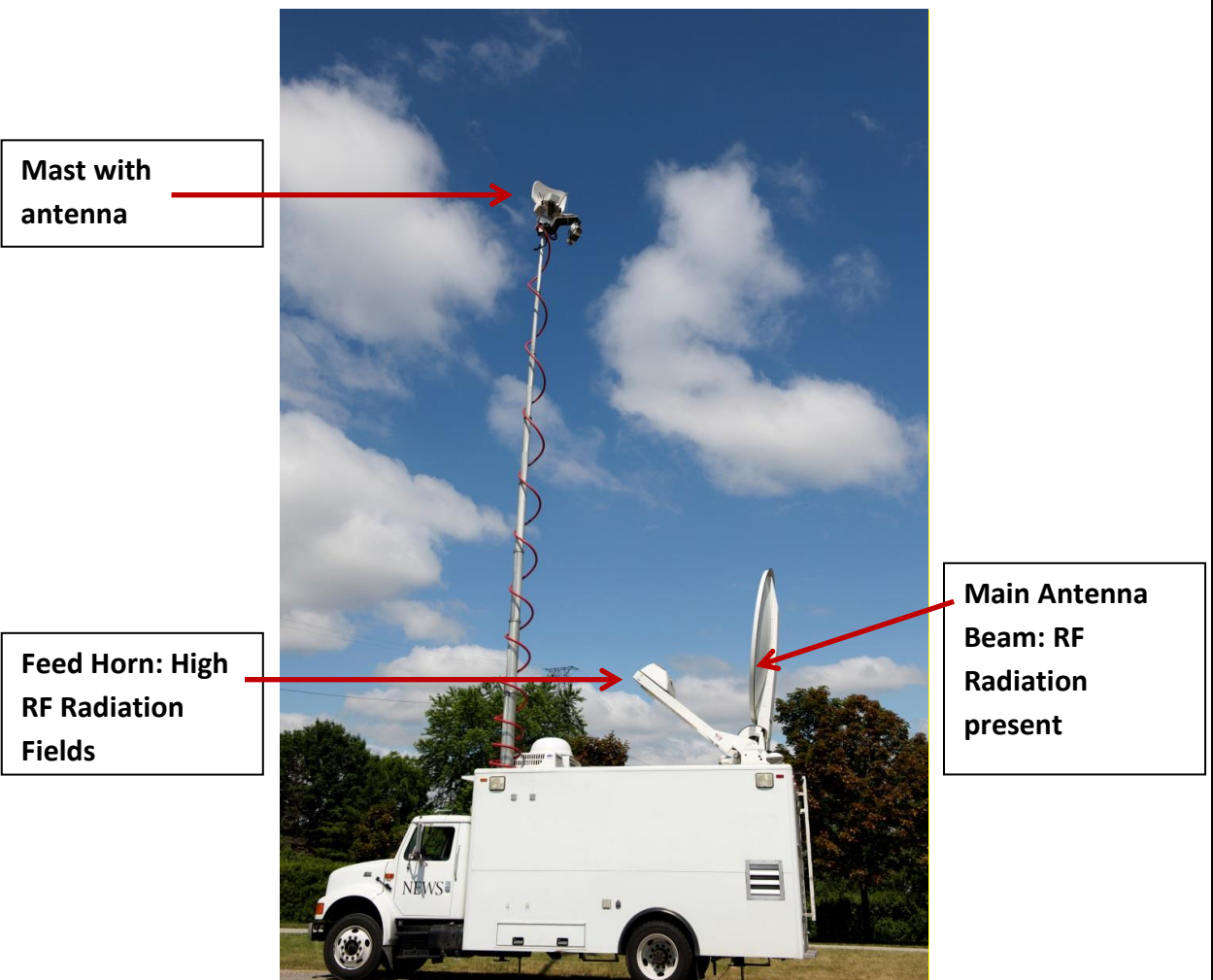


Antennas on Electronic News Gathering Trucks (ENG) & Satellite News Gathering (SNG) Trucks:

ENG and SNG trucks are equipped with antennas that give off RF radiation.

The antennas on the mast of the trucks do not present a hazard unless pointed downward or lower than 8 feet above ground level. The Main Antenna gives off RF radiation in one direction out from the dish and the feed horn gives off extremely high levels.

The area between the main beam and the feed horn is the most hazardous and workers should never be up on the truck when these are energized.



Mast with antenna

Feed Horn: High RF Radiation Fields

Main Antenna Beam: RF Radiation present

Transmitting Cameras:

Cameras used for broadcasting are equipped with transmitting antennas. These transmitters often operate through Ethernet, Wi-Fi, or cellular (through a SIM card).



Photo courtesy of the International Brotherhood of Electrical Workers

These connections fall under the IEEE standard 802[®] Standard for Local and Metropolitan Area Networks. They emit RF similar to cellular phones, and as such must comply with the FCC's specific absorption rate or SAR. SAR is a "measure of the amount of radio frequency energy absorbed by the body."

The equipment should indicate that it is in compliance with the FCC's SAR safety standards. For example:

- *The LiveU website states that "All LiveU products have been thoroughly tested and certified by leading FCC and CE approved labs for SAR and other safety considerations."* <http://www.liveu.tv/general-content/technology>
- *And the Dejero website states that it is "Committed to safety: FCC/IC/CE certified and thoroughly tested in accordance with RF exposure requirements (SAR)."* http://www.dejero.com/assets/files/documents/D-PB114-004_EnGo.pdf

Sources:

- IEEE Std. 802.11 <http://standards.ieee.org/about/get/802/802.1.html>. (available for free)
- IEEE 802.11[™] Wireless Local Area Networks Working Group <http://www.ieee802.org/11/>
- Foster KR (2007). Radiofrequency Exposure from Wireless LANs utilizing Wi-Fi Technology. Healthy Physics Society, Volume 92 (3): 280-289. <http://www.ncbi.nlm.nih.gov/pubmed/17293700>
- FCC. Specific Absorption Rate (SAR) for Cellular Telephones. <https://www.fcc.gov/general/specific-absorption-rate-sar-cellular-telephones>

6.5 Online Resources to Access Antenna Locations

Employers can also take advantage of other private and public sources to find out if towers and antennas are present. The following are examples of online resources, they types of information they include, and how to use them.

AntennaSearch (<http://antennasearch.com/>) is a free, privately maintained online resource. It is easy to use and provides key information on antennas and towers, including the location, the owner, and related contact information. The database covers the entire U.S., can be searched by a specific address, and generates maps showing the location of all existing and planned antennas and towers for the address searched and the surrounding area. The site also generates downloadable spreadsheets that include detailed records for each antenna and tower, including: the street address, licensee or owner of the antenna or tower, the contact person's name and phone number and/or email. The spreadsheet also includes the service type such as mobile-commercial, meaning it is a cellular antenna, the call sign, which is the FCC identifier, and details about the location and frequencies of the devices.

Since this website relies on data collected by the FCC and other public sources, it may not include every antenna or tower, and may not include devices that have recently been moved or replaced. Despite this limitation, it can be a very useful resource when trying to determine if RF generating devices are present or in close proximity to where work will be performed.

The home page (Figure 6-H – retrieved 12/2015) shows the last time the information on the site was updated and is the starting point for finding out if antennas are present. **Step 1) Search** - Enter the street, city, and state (house number and zip code are optional) on the main search page. The site searches within 4 miles of address entered, unless it is a densely populated area. For the example below, the radius was reduced to 1 mile.

Figure 6-H

Welcome to AntennaSearch.com!

Your Free online source for ...

- Detailed information on over 1.9 Million Towers and Antennas in the US!
- Includes Google Maps, Ownership Details, Contact Information and more ...
- Pinpoint Existing Towers, Future Towers and even small, hidden antennas to determine Cell Phone coverage.

Start your search now

Street Address: 062 Wayne Avenue | City: Silver Spring | State: Maryland | Zip (Optional): 20910 | GO

- All Locations of Cell Phone Towers (Existing and Future) and Antennas within 4.0 miles of your address will be returned -
(Database Last updated on: 12/20/2015 - 2,396,381 Towers and Antennas Online!)

- Quick Statistics (as of Sunday 12/20/2015 Weekly Update) -

	Total(US)	Top State
Towers	593,168	Texas (58,023)
Antennas	1,803,213	California (133,174)

(884 Towers and 1,850 Antennas added on 12/20/15 update)

Cell detailed info on:

- Existing Towers:** Registered and Non-Registered structures where antennas are placed. Towers may be used for various services including Cellular, Paging, Microwave and others.
- Future Towers:** Newly filed (or pending) applications to construct new towers. Application info includes location coordinates and detailed ownership data.
- Antennas:** The actual emitters of radio signals. Antennas can be placed on towers (multiple) or can be installed stand alone on top of existing buildings. Stand alone antennas are small (well below 200 ft). You may also check multiple antennas to determine which cell phone carriers are located on a particular tower.

Use it for:

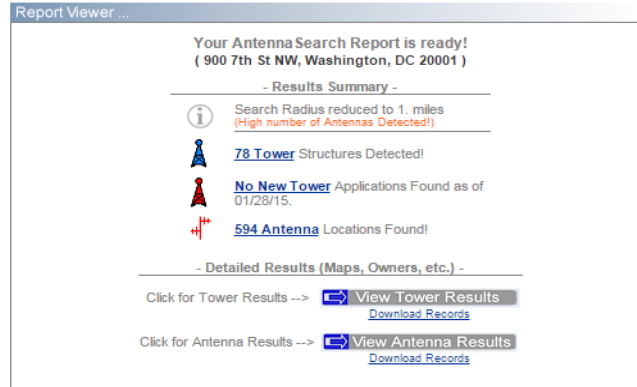
- Cell Reception:** Even if you have the best cell phone on the market, poor carrier coverage can render it useless. Before you sign up for service, find out whether your cell phone carrier (Cingular, T-Mobile, Verizon, etc.) has good or poor coverage in a given area.
- Research and Planning:** Whether you are doing private or commercial research, being able to quickly and easily map tower and antenna locations can be invaluable. Use AntennaSearch to explore tower densities, antenna co-location and much more...
- Other Uses?:** Your imagination is the limit! Feel free to explore and generate as many reports as you need! If you have any questions or special needs simply write us!

Home | FAQs | Contact | Press/News

© 2004-2009 by General Data Resources, Inc.

Step 2) Retrieve Results - The results page includes the search radius, the number of towers, and the number of antennas. (Figure 6-I) You can view or download the results for towers or antennas. Each tower could have multiple antennas.

Figure 6-I



Step 3) Map View – Clicking on “view antenna results” or “view tower results” opens a map. You can click any of the sites on the map; red sites have multiple antennas, the blue sites only have one. You can also scroll through the list of antenna owners below the map, which are grouped by site and described by antenna-owner (licensee), overall height, and distance from address. The example below (Figure 6-J) shows the resulting “View Antenna Results” page.


Figure 6-J



Step 4) Get Details – You can find more details by using your cursor to hover over an antenna on the map and click on a location, or click on an antenna owner listed below the map. (Figure 6-K) The results page includes a street view map of the location and tables of information.

Figure 6-K

Antenna Detail - Site (35) ; Item [1]



A →

Ownership Info

Licensee Contact:	Company:	Federal License Management	Address:	1784 E. 3rd Street Suite 269 Williamsport, PA, 177013862
	Contact:	Eric Z. Wolfe		
	Phone:	(570)505-3884		
	Email:	support@federal-license.com		
Licensee Contact:	Company:	International Brotherhood of Electrical Workers	Attn:	Jason Reidenbach - Chief Engineer
	Contact:	Not Recorded	Address:	900 7th Street NW Washington, DC, 20001
	Phone:	(202)430-9495		
	Email:	none		

B →

Transmitter Characteristics

Service Type:	Mobile-Private	Ground Elev:	190.3 feet
Call Sign:	WOCU741	Height Of Structure:	590.6 feet
Latitude:	38.9014	Overall Height:	600.4 feet
Longitude:	-77.0260	Structure Address:	900 7th Street NW Washington, DC
Structure Type:	NA		
Status:	Unknown		
Date Constructed:	NA		

C →

Transmitter Frequencies

Emmitter	Class	Freq(Num)	Freq(Mhz)	Power(Output)	Power(Radiated)
1	FB2	1	463.6	25w	40w

- A. The first section provides **ownership information**: the licensee contact is the point of contact for the license, and the licensee is the company that owns the antenna.
- B. The second section provides **transmitter (antenna) characteristics**, including: the FCC call sign; latitude, longitude, and street address; structure type; height of structure; and service type.
- C. The last section includes information on **transmitter frequencies**: the number of emitters, the station class (refers to type of antenna), the frequency of each emitter (in MHz), actual power (output), and effective radiated power (ERP).

Step 5) Download Results – From the initial search results, you can also download the antenna results as a .csv/excel file. The spreadsheet contains all the information provided when you view each antenna, except for the power values and the map (Figure 6-L – partial view of spreadsheet). The antennas are listed by site.

Figure 6-L

	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	
1	latitude	longitude	call_sign	location_i	location_c	location_l	location_o	ground_height	overall_height	structure	licensee_i	licensee	licensee_last	licensee	licensee_fax	licensee_i	licensee	licensee_i	licensee	licensee_i	licensee	
140	38.89789	-77.0194	WQJL857		Washington	Washington	DC			NA	Washington Metro Area Transit Pol		2.02E+09						600 5th St	Washington	DC	20001
141	38.89789	-77.0197	WNEO878	600 5TH ST	WASHINGTON		DC	11.6	147.973	147.9731	NA	WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY		2.02E+09					600 5TH ST	WASHINGTON	DC	20001
142	38.89789	-77.0194	WQJX861		WASHINGTON	Washington	DC				NA	WASHINGTON METRO AREA TRANSIT AUTHORITY		2.02E+09					600 5TH ST	WASHINGTON	DC	20001
143	38.89789	-77.0194	WRL863	600 5TH ST	WASHINGTON		DC	12	111.554		NA	WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY		2.03E+09					600 5TH ST	WASHINGTON	DC	20001
144	38.89789	-77.0194	KGG518	600 5TH ST	WASHINGTON		DC	12	111.554	111.554	NA	WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY		2.03E+09					600 5TH ST	WASHINGTON	DC	20001
145	38.89789	-77.0191	WII987	9TH G ST	WASHINGTON		DC	11			NA	WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY		2.03E+09					600 5TH ST	WASHINGTON	DC	20001
146	38.89789	-77.0191	KSL841		WASHINGTON	Washington	DC	0			NA	Washington Metro Area Transit Authority		2.03E+09	2029622985				600 5th St	Washington	DC	20001
147	38.89789	-77.0194	WPQE751	600 FIFTH ST	WASHINGTON		DC	12	131.24	150.926	Building	WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY		2.03E+09	2029625299	agnat			600 5TH ST	WASHINGTON	DC	20001
148	38.89728	-77.0203	WPZU699	601 F ST N	WASHINGTON		DC	14	139.771	139.7706	Building	Washington Sports Entertainment		2.03E+09					MCI Center	Washington	DC	20004
149	38.89733	-77.02	WPLX742	601 F ST	WASHINGTON		DC	14	88.587	88.587	Building	WASHINGTON SPORTS ENTERTAINMENT		2.03E+09	2026615219				601 F ST N	WASHINGTON	DC	20002
150	38.89983	-77.0258	WPPH824		Washington	Washington	DC				NA	HYATT CORPORATION DBA GRAND CENTRAL		2.03E+09	2026374959				1000 H ST	WASHINGTON	DC	20001
151	38.89983	-77.0258	WPPH824	1000 H ST	WASHINGTON		DC	15	196.86	196.86	Building	HYATT CORPORATION DBA GRAND CENTRAL		2.03E+09	2026374959				1000 H ST	WASHINGTON	DC	20001
152	38.89983	-77.0258	WNHM92X	1000 H ST	WASHINGTON		DC	15			NA	HYATT CORPORATION DBA GRAND CENTRAL		3.13E+09					1000 H ST	WASHINGTON	DC	20001
153	38.90158	-77.0261	WQGU798	900 10TH ST	WASHINGTON		DC	17	131.24	131.24	Building	1000K LLC DBA EMBASSY SUITES HOTEL		2.03E+09					900 10TH ST	WASHINGTON	DC	20001
154	38.90158	-77.0261	WQGU798		WASHINGTON	Washington	DC				NA	1000K LLC DBA EMBASSY SUITES HOTEL		2.03E+09					900 10TH ST	WASHINGTON	DC	20001
155	38.90144	-77.026	WQCU741		Washington	Washington	DC				NA	International Brotherhood of Electrical Workers		2.02E+09	2022895871	none			900 7th St	Washington	DC	20001
156	38.90144	-77.026	WQCU741	900 7th St	Washington		DC	58	590.58	600.423	NA	International Brotherhood of Electrical Workers		2.02E+09	2022895871	none			900 7th St	Washington	DC	20001
157	38.89789	-77.0175	KSL841		BETWEEN	WASHINGTON	DC	0			NA	Washington Metro Area Transit Authority		2.03E+09	2029622985				600 5th St	Washington	DC	20001
158	38.89833	-77.0178	WPVX388	600 5th St	Washington		DC	13	159.785	178.1583	Building	Washington Metropolitan Area Transit Authority		2.03E+09	2022692031	gojoh			600 Fifth St	Washington	DC	20001

The initial results page also allows you to view or download the tower results. The tower results include ownership information, tower characteristics including the FCC registration number or FAA study number, the structure address, height, and history. Because a tower can have multiple antennas with different owners, the frequency and power information is not included in the tower results.

Source: AntennaSearch, accessed December 2015 and April 28, 2016. <http://antennasearch.com/>

The FCC [Universal Licensing System](http://wireless.fcc.gov/uls/index.htm?job=home) (ULS) (<http://wireless.fcc.gov/uls/index.htm?job=home>) is another online resource. The ULS allows antenna owners to submit their applications online and houses key information in a publicly accessible database including the licensee and their contact information, type of antenna, location, frequencies, and power levels. It also has information for many services such as radio and television broadcast stations and communications base stations. It is important to note that because the FCC gives out some of its licenses for an area – not a specific antenna at an exact location – the ULS is not a comprehensive, transmitter-specific database of all of the services the FCC regulates. (Figure 6-M)

This system can be searched a number of ways. The easiest is by using the FCC Call Sign, which is a unique identifier for each antenna and is one of the items found on AntennaSearch.com’s site.

Figure 6-M

Sources: FCC Universal Licensing System, accessed April 28, 2016. <http://wireless.fcc.gov/uls/index.htm?job=home>

The FCC [Antenna Structure Registration \(ASR\)](#) section of the FCC’s site is similar to the ULS, but provides information on the tower structures registered with the FCC. (Figure 6-N) There are three options for finding a tower: registration number, tower coordinates, or tower location. AntennaSearch includes this information on towers, but only those towers registered with the FCC are listed in the ASR.

Figure 6-N

The ASR Registration Search enables you to search for a wide range of licenses in the Antenna Structure Registration system. The "Search for a Registration" enables you to search on basic elements of a registration, including registration number, FAA study number, FRN, and licensee name. The "Search by Location" enables you to look up a registration based on the location and height of a structure. You can also use the advanced search to perform more sophisticated searches based on numerous criteria.

Source: FCC - Antenna Structure Registration Search, accessed April 28, 2016. <http://wireless2.fcc.gov/UlsApp/AsrSearch/asrRegistrationSearch.jsp>

The FAA [Obstruction Evaluation/Airport Airspace Analysis Database](#) provides further information on towers, registered and unregistered, because it performs Obstruction Evaluation/Airport Airspace Analysis studies for structures built or modified to be over 200 feet above ground level or within a certain distance of an airport. (Figure 6-O) The easiest way to search for past studies is with the “Study Number.” Like the FCC’s “Call Sign,” this is a unique identifier. This FAA number can be found on AntennaSearch.com for unregistered towers or from the FCC ASR search results. The search results include the case number, location, and height. Click on the case number to find the structure type, the location, and frequency and power levels.

Figure 6-O

Provides further information on towers including registered and unregistered

The FAA Study Number retrieved from an FCC search is used as an example.

The ASN (FAA Study Number) retrieves the location. Click on “Case Number” to retrieve details.

Case Number	City	State	Latitude	Longitude	Site Elevation	Structure Height	Total Height
1989-ASA-1303-OE	WASHINGTON	DC	38° 53' 38.40" N	77° 01' 00.91" W	40	168	208

Source: Federal Aviation Administration - Search Archived Cases, accessed April 28, 2016. <https://oeaaa.faa.gov/oeaaa/external/searchAction.jsp?action=showSearchArchivesForm>

For more information on how to search using the FCC and FAA databases, see **Appendix B**.

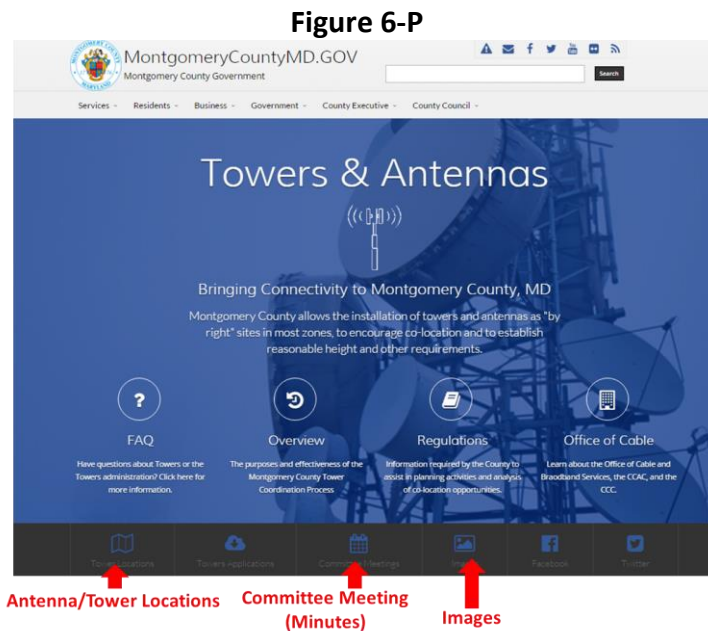
Local Resources to Access Antenna Locations such as state and local departments, agencies and offices that issue building permits, perform inspections, or approve plans may provide information on antennas and towers. These sources may also have information on frequency, power levels, plot plans, photos, or more. The offices can include:

- ❖ Planning & zoning,
- ❖ Permits, Licenses & Inspections
- ❖ Open Data
- ❖ Records
- ❖ Wireless/Telecommunication Facilities, and
- ❖ Building departments.

The information available from these offices or agencies varies from city to city, but usually includes information on the location of the antenna and a point of contact.

The following are two examples of the types of information available from local source.

Montgomery County, MD has a [Transmission Facilities Coordinating Group](#) that makes decisions on tower and antenna applications in the county. Their website, shown here, includes antenna and tower **locations**, access to **minutes** from committee meetings, and **images** of antennas. (Figure 6-P) Clicking on “Tower Locations” in the lower left of the screen downloads an Excel spreadsheet of all applications for antennas and towers since July 1996.



Source: *Montgomery County Government – Towers & Antennas*, accessed April 28, 2016.
<http://www.montgomerycountymd.gov/cable/Towers/home.html>


The spreadsheet includes: the application number, the carrier (the antenna owner), the location description and site name, the address, property owner, and information on application actions.

The example highlighted on the spreadsheet is for a T-Mobile application that was approved to add three 54 inch panel antennas to a 15 foot "faux" chimney at St. Luke Lutheran Church. (Figure 6-Q) The application was approved at the February 9, 2005 committee meeting. Looking up the minutes from the committee meeting on this date provides additional details.

Figure 6-Q

A	B	C	D	E	F	G	H	I	J	K
AppfNo	CarrierName	Description	SiteName	PropertyAddress	PropertyStreet	PropertyCity	Zone	PropertyOwner	Rcvd	Action
200406-05	T-Mobile	Existing building	Glen Echo Fire Department	5920	Massachusetts Ave	Bethesda	R-60	Glen Echo Fire Department	26-May-04	Recommended
200406-06	T-Mobile	Existing WSSC tower	WSSC Great Seneca	12800	Great Seneca Hwy	Germantown	RDT	WSSC	26-May-04	Recommended
200406-07	Montgomery County	Existing building	Wheaton Metro Station		Georgia Ave & Prichard Rd	Wheaton	CB-D-3	Montgomery County	27-May-04	Recommended
200407-01	T-Mobile	Existing building	MEP Building	15800	Crabb Branch Way	Rockville	C-O	MEP I & II LLC	01-Jun-04	Recommended
200407-02	T-Mobile	Existing building	Hampshire West Apts	1415	Hampshire West Ct	Silver Spring	R-20	Southern Mgmt	07-Jun-04	Recommended
200407-03	T-Mobile	Existing building	St. Luke Lutheran Church	9100	Colesville Rd	Silver Spring	R-60	St. Luke Lutheran Church	21-Jun-04	Recommended
200407-04	Sprint PCS	Existing transmission tower	PEPCO #102-S	8700	Snouffer School Rd (block of)	Gaithersburg	R-200	PEPCO	21-Jun-04	Recommended
200407-05	T-Mobile	New 143' monopole	Blake High School	500	Nassawood Rd	Cheser Station	RE-2C	MCBS	22-Jun-04	Recommended
200407-06	T-Mobile	New 100' monopole	Farland Elem. School	14315						
200407-07	T-Mobile	Existing transmission tower	PEPCO #011-N	13139-T						
200407-08	T-Mobile	Existing Sprint monopole	Sherwood High School	300						
200407-09	T-Mobile	Existing Sprint monopole	Tiden Middle School	11211						
200407-10	T-Mobile	Existing Sprint monopole	Goshen Church monopole	7700						
200409-01	Comcast Wireless	Existing T-Mobile	Wheaton High School	12501						

L	M	N	O	P	Q
Appvd	DecLat	DecLong	LAT (N)	LONG (W)	Structure
16-Jun-04	38.96277778	-77.12083333	38°57'46.00"	77°7'15.00"	Bldg
16-Jun-04	39.141972	-77.274361	39°8'31.10"	77°16'27.70"	Tower
16-Jun-04	39.038533	-77.049772	39°2'11.52"	77°2'59.18"	Bldg
14-Jul-04	39.11416667	-77.15805556	39°6'51.00"	77°9'29.00"	Bldg
14-Jul-04	39.00833333	-76.98361111	39°0'30.00"	76°59'01.00"	Bldg
09-Feb-05	39.005	-77.02361111	39°0'18.00"	77°1'25.00"	Bldg
14-Jul-04	39.185364	-77.182392	39°11'07.31"	77°10'56.61"	Tower
14-Jul-04	39.1194444	-77.01888889	39°6'43.00"	77°1'08.00"	Monopole
14-Jul-04	39.08972222	-76.95722222	39°5'23.00"	76°57'26.00"	Monopole
14-Jul-04	39.12138889	-77.27111111	39°7'17.00"	77°16'16.00"	Tower
14-Jul-04	39.1485	-77.017194	39°8'54.60"	77°1'01.90"	Monopole
14-Jul-04	39.03833333	-77.12083333	39°2'18.00"	77°7'15.00"	Monopole
14-Jul-04	39.209703	-77.157417	39°12'34.93"	77°9'26.70"	Monopole
11-Aug-04	39.059453	-77.066497	39°3'34.03"	77°3'59.39"	Monopole


DEPARTMENT OF TECHNOLOGY SERVICES

Douglas M. Duncan
County Executive

Alison K. Moore
Chief Information Officer

MEMORANDUM
February 10, 2005

TO: Distribution

FROM: Robert P. Hunicutt, Tower Coordinator
Telecommunications Transmission Facility Coordinating Group (TTEFCG)

SUBJECT: TTEFCG Notice of Action for February 9, 2005 Meeting

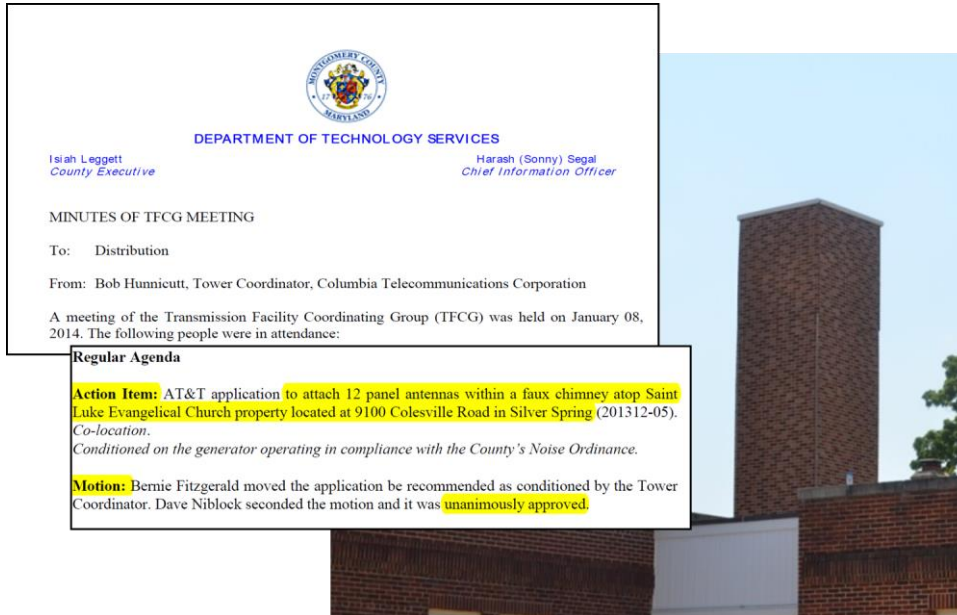
At its meeting of February 9, 2005, the Montgomery County TTEFCG voted to recommend the following applications:

Recommendation conditioned on submission of a structural analysis showing that the faux chimney can accommodate the antennas and cabling, and approval of the siting by the Department of Permitting Services:

52. T-Mobile application to attach three 54" panel antennas to a 15" faux chimney extension to an existing chimney on the existing 25' St. Luke Evangelical Lutheran Church building located at 9100 Colesville Road in Silver Spring (Application #200407-03).

The sample Committee meeting minutes from January 2014 minutes shows that AT&T applied and was approved to attach 12 more panel antennas within the same faux chimney at St. Luke's Church as long as the generator complies with the County's Noise Ordinance. (Figure 6-R) The information available on Montgomery County's Transmission Facilities Coordinating Group indicates that there are 15 panel antennas inside the faux chimney at this location.

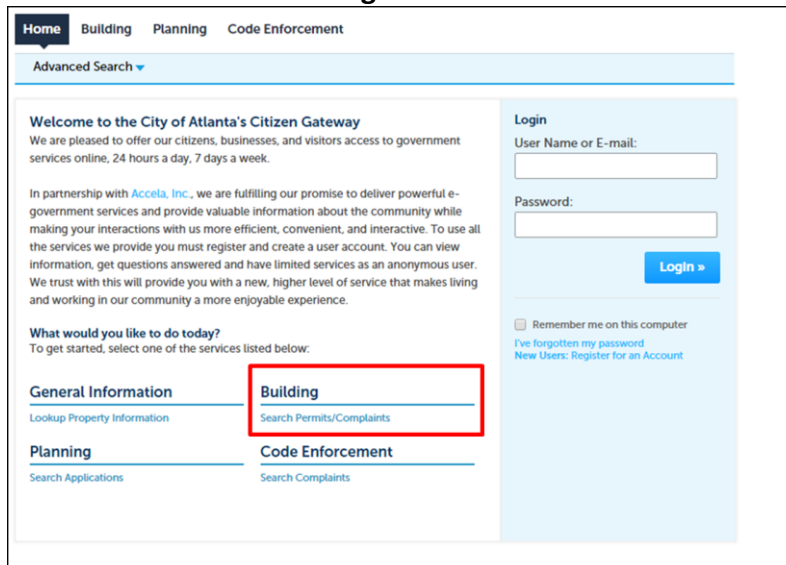
Figure 6-R



Other cities and counties may not have a group or department dedicated to antenna structures, but an employer may be able to find antenna and tower information online or in the offices where building permits are issued, plans approved, or inspections conducted.

The **City of Atlanta** allows you to search for this information online. Permits issued by the city after 2009 can be searched on [Atlanta's Citizen Gateway](#). You do not need to log in to search. Just click Search Permits/Complaints under "Building" on the main tab. (Figure 6-S)

Figure 6-S



Source: City of Atlanta's Citizen Gateway, accessed April 28, 2016.
https://aca.accela.com/Atlanta_Ga/Default.aspx

A user can search with just the address or narrow their search by including the type of building permit. For example, in Atlanta a “Commercial Miscellaneous Non-Structural” permit includes most devices on non-historic buildings. (Figure 6-T) If you do not know the type of permit, you can leave this field blank and all permits for the address you entered will be retrieved.

Figure 6-T

General Search General Search ▾

Record Number: Permit Type: Commercial Miscellaneous Non-Strn ▾

Permit Name:

Start Date: End Date:

License Type: --Select-- ▾ State License Number:

First: Last: Name of Business:

Street No.: - Quadrant: --Select-- ▾

Street Name: Street Type: PL ▾

Unit Type: --Select-- ▾ Unit No.: Parcel No.:

City: State: Zip:

Commercial Misc. Non-Structural permits include most antenna devices.

Only street number and name are necessary. If multiple addresses appear, you can narrow it down with quadrant or street type

For permit information between 2000 and 2009, you can search another online permit [section](#) of Atlanta’s website. The records are organized by year, and within that by street name. Each record contains the permit number, date, owner, and scope. The permit scope in the example below states that it was to “Add/Alter Communications Tower.” (Figure 16-U)

Both Atlanta search options provide the owner, description, date, and permit number, as well as how to contact the Office of Buildings, which issues these permits, if more information is needed.

Figure 6-U

Home Government Residents Visitors Doing Business Newsroom How Do I...

Mayor's Office
Atlanta City Council
Departments
Aviation
Corrections
Finance
Fire
Human Resources
Information Technology
Law
Parks & Recreation
Planning & Community Development
Office of Buildings
Office of Housing
Office of Planning
View Online Permit Information

Government » Departments » Planning & Community Development

View Online Permit Information

Listen

Font Size: + - + Share & Bookmark Print [+] Feedback

All Permits (Plumbing, Electrical, HVAC, & BUILDINGS) must be posted on the job site in a conspicuous place.

TO SEARCH PERMITS

...issued since November 30, 2009, please use our new online permitting web page. Click to launch [Accela Citizen Access](#) in a new browser window.

...issued prior to November 30, 2009, use the links below:

Permits issued in 2009:
Street Names: [A-G](#) [H-M](#) [N-S](#) [T-Z](#)

Permits issued in 2008:
Street Names: [A-G](#) [H-M](#) [N-S](#) [T-Z](#)

Permits issued in 2007:
Street Names: [A-G](#) [H-M](#) [N-S](#) [T-Z](#)

Permits issued in 2006:

Permit No: BB200900084	NPU: E02	Issued: 01/12/2009
Address: 159 ARMOUR DR NE		
Inspector: BUILDING ZONE 5	Scope: ADD/ALTER COMMUNICATIONS TOWER	Cost: \$50,000.00
Contractor: INFINITY CONSTRUCTION SOLUTIONS	Owner: AMERICAN TOWER	

OFFICE OF BUILDINGS 55 Trinity Avenue
3rd Floor - Suite 3900
Atlanta, Georgia 30303
Phone: (404) 330-6150

Michael Nagy
Interim Director
mnagy@atlantaga.gov

CONTACT US
[Click here](#) for a list of Contacts for the Office of Buildings

*Source: City of Atlanta - View Online Permit Information, accessed April 28, 2016.
<http://www.atlantaga.gov/index.aspx?page=327>*

Information on the local resources available for the following list of metropolitan areas is included in **Appendix C**.

- ❖ Atlanta, GA
- ❖ Boston, MA
- ❖ Chicago, IL
- ❖ Dallas-Fort Worth, TX
- ❖ Denver, CO
- ❖ Houston, TX
- ❖ Los Angeles, CA
- ❖ Madison, WI
- ❖ New York City Metro Area
- ❖ Philadelphia, PA
- ❖ Phoenix, AZ
- ❖ Pittsburgh, PA
- ❖ Portland, OR
- ❖ Sacramento, CA
- ❖ Saint Louis, MO
- ❖ Salt Lake City, UT
- ❖ San Francisco, CA
- ❖ Twin Cities, MN
- ❖ Washington, DC Metro Area

If you have information for where to find information on antennas in your city or county, please send it to cpwr-r2p@cpwr.com so it can be added to the appendix.