

**RADIO ADMINISTRATION**  
**ANTENNA STRUCTURE**  
**MARKING AND LIGHTING (COMPLIANCE)**

CONTENTS	PAGE	CONTENTS	PAGE
1. GENERAL . . . . .	2	Fig. 6—NOAA Form 76-10 . . . . .	21
2. GENERAL WORK PRECAUTIONS . . . . .	3	Fig. 7—FAA Form 7460-2 . . . . .	22
3. DEFINITIONS . . . . .	3	Fig. 8—Antenna Structure Lighting Log (Bell System Form E-5176) . . . . .	23
4. ADMINISTRATIVE REQUIREMENTS . . . . .	4	Fig. 9—Antenna Structure Lighting Log for Attended Station With Local Indicators . . . . .	24
5. LOGGING REQUIREMENTS FOR ILLUMINATED ANTENNA STRUCTURES . . . . .	8	Fig. 10—Antenna Structure Lighting Log for Unattended Station With Supplementary Logs at Alarm Center . . . . .	25
6. TECHNICAL REQUIREMENTS . . . . .	10	Fig. 11—Antenna Structure Lighting Log Maintained at Alarm Center With Supplementary Log at Radio Station . . . . .	26
7. APPLICABLE DOCUMENTS . . . . .	12	Fig. 12—Antenna Structure Lighting Log for Station Without Alarm Capability . . . . .	27
8. STATION INSPECTION BY THE FCC . . . . .	13	Fig. 13—Alarm Indication Log (Bell System Form E-3870) . . . . .	28
9. PERMITTEE COMPLIANCE CHECKS . . . . .	13	Fig. 14—Standard Painting and Lighting Specifications for Antenna Structures up to and Including 750 Feet in Height . . . . .	29
<b>LIST OF FIGURES</b>		Fig. 15—Positioning of Side Lights on an Antenna Structure With Definite Plans for Increasing Structure Height . . . . .	30
Fig. 1—Practice Paragraphs Cross- Referenced to FCC Requirements . . . . .	15	Fig. 16—Painting Diagram . . . . .	31
Fig. 2—Heights and Elevations Relative to Antenna Structures . . . . .	16		
Fig. 3—FAA Form 7460-1 (Worksheet and Accompanying Instructions) . . . . .	17		
Fig. 4—Construction Permit for Point-to-Point Microwave Radio Station With Painting and Lighting Requirements Specified Thereon . . . . .	18		
Fig. 5(a)—FCC Form 715 . . . . .	19		
Fig. 5(b)—FCC Form 715A . . . . .	20		

**NOTICE**

Not for use or disclosure outside the  
Bell System except under written agreement

CONTENTS	PAGE
Fig. 17—Painting and Lighting Considerations on Antenna Structure Being Increased in Height . . . . .	32
Fig. 18—♦Permittee Compliance Check List for Antenna Structures (Sheet 1 of 2)♦ . . . . .	33
Fig. 18—♦Permittee Compliance Check List for Antenna Structures (Sheet 2 of 2)♦ . . . . .	34

**Scope**

1.03 The intent of this Practice is to aid Bell System personnel in the understanding and interpretation of regulatory information relating to painting and illumination of antenna structures. It is not intended to replace the applicable Rules and Regulations of the FCC but is provided to assist licensees in complying with those Rules and Regulations. In the event of discrepancies between this Practice and the current issue of the FCC Rules and Regulations, clarification should be obtained from the local company's FCC compliance coordinator.

**1. GENERAL**

**Purpose**

1.01 This Practice provides guidelines to be followed by the operating companies of the Bell System for compliance with the Federal Communications Commission's (FCC) Rules and Regulations governing requirements relating to obstruction marking (painting) and illumination of antenna structures. Each Bell System company, as a radio station licensee or permittee, has the responsibility for fully complying with the Rules and Regulations of the FCC which are applicable to the radio services in which licensed or in which other FCC authorizations are held. Each licensee or permittee is also responsible for compliance with the general parts of those Rules and Regulations.

1.02 The reasons for reissuing this Practice are listed below.

- (a) Add information regarding notification to the FAA on malfunction of one of two top lamps of top light of an antenna structure
- (b) Incorporate FCC Form 715A
- (c) Delete redundant information
- (d) Revise format of information contained in previous issue.

Revision arrows are used to emphasize the more significant changes.

**Note:** In this Practice, where reference is made to a subsection of the FCC Rules and Regulations, it is made in an abbreviated form. For example, a reference to FCC 17.47(a) refers to subparagraph (a) of paragraph 47 of Part 17 of the FCC Rules and Regulations.

**References**

1.04 References which should be consulted along with this Practice are the following applicable Rules and Regulations of the FCC and the Regulations (including Advisory Circulars) of the Federal Aviation Administration (the FAA Regulations are referred to as FAR):

- (a) FCC Part 13—Commercial Radio Operators
- (b) FCC Part 17—Construction, Marking, and Lighting of Antenna Structures
- (c) FCC Part 21—Domestic Public Radio Services (Other Than Maritime Mobile)
- (d) FCC Part 81—Stations on Land in the Maritime Services
- (e) FCC Part 91—Industrial Radio Services
- (f) ♦FCC Part 94—Private Operational Fixed Microwave Service♦
- (g) FAR Part 77—Objects Affecting Navigable Airspace
- (h) ♦FAA Advisory Circular (AC) 70/7460-1 (Obstruction Marking and Lighting)

- (i) FAA Advisory Circular 70/7460-2 (Proposed Construction or Alteration of Objects That may Affect the Navigable Airspace).✦

**1.05** The FCC Rules and Regulations that are pertinent to painting and/or illumination of radio towers were issued and made effective pursuant to the authority contained in Title III of the Communications Act of 1934, as amended (see Section 303(q) of that Act). The FCC standards (FCC Part 17) for painting and lighting of radio towers were developed in conjunction with the Federal Aviation Administration.

**1.06** The requirements for painting and lighting of antenna structures are identical regardless of the radio service involved (FCC Part 17); however, operational requirements may vary among radio services. It is necessary, therefore, to consult that part of the FCC Rules and Regulations which governs the radio service under consideration (see paragraph 1.04 of this Practice).

**1.07** Figure 1 provides a convenient cross reference between specific subsections of the FCC Rules and Regulations relating to antenna structure painting and lighting requirements and the paragraphs of this Practice which relate to those Rules and Regulations.

**1.08** Questions concerning FCC authorization (or the need for same) for additions, deletions, or changes to any antenna structure should be referred to the local company FCC compliance coordinator.

## 2. GENERAL WORK PRECAUTIONS

**2.01** Employees working at radio stations should be thoroughly familiar with all safety measures described in Practices 010-110-001 (General Safety Precautions—Radio, Television, and Carrier Equipment) and 770-280-503 (Maintenance of Antenna Supporting Structures).

## 3. DEFINITIONS (As used in this Practice)

**AGL (Above Ground Level)**—the reference used to indicate heights measured in feet above ground of antenna structures, antenna center lines, appurtenances, and buildings.

**Alarm Center**—the attended location at which alarms and indications are received from remote,

normally unattended, radio stations. Alarms indicating antenna structure lighting failure, power failure, low transmitter power output, and open door are some of the alarms transferred to an alarm center.

**AMSL**—the reference used to indicate ground elevation measured in feet “Above Mean Sea Level.”

**Antenna**—the radio system component which radiates or receives radio signals.

**Antenna Center Line Height**—the height measured in feet from ground level to the midpoint of the radiating section of the antenna under consideration, i.e., to the midpoint of the radiating element of a unipole antenna, or to a point midway between the center elements of a stacked folded dipole antenna, or to the horizontal center line of a parabolic reflector (window of a horn-reflector), or to the horizontal center line of a plane reflector (Fig. 2).

**Antenna Structure**—the term antenna structure includes the radiating and/or receiving system, its supporting structure, and any appurtenances mounted thereon such as lightning rods and obstruction lights.

**Antenna Structure Height**—the height measured in feet from ground level at the base of an antenna structure or from ground level at the base of a building, if the antenna structure is mounted on a building, to the highest point, including appurtenances, on the antenna structure (Fig. 2).

**Code Beacon**—300-mm Fresnel lens equipped with aviation red color filters and two (2) simultaneously flashing incandescent lamps of 620 watts. Flashing rate to be not greater than 40 flashes per minute nor less than 12 flashes per minute. Period of darkness between flashes to be approximately one-half the luminous period.

**Company FCC Compliance Coordinator**—the term referring to the individual or group having overall responsibility for the company as a licensee or permittee concerning (1) the administrative tasks involved in the establishment of a radio station and (2) the technical and related administrative tasks required for station operation in compliance with the FCC Rules and Regulations.

**SECTION 400-100-003**

**Construction Permit (CP)**—the FCC's regular authorization to (1) construct radio facilities or (2) modify previously authorized radio facilities. [In some radio services (telephone maintenance and public coast stations), a CP is not required to construct; only a station license is required for the operation and maintenance of the radio station.]

**Control Point**—an operating position at which an individual responsible for the operation of the transmitter is stationed and which is under the control and supervision of the licensee.

**Engineer-in-Charge**—the FCC representative in charge of one of the FCC's radio districts or monitoring stations.

**FAA**—Federal Aviation Administration.

**FAR**—Federal Aviation Administration Regulation.

**License**—the FCC's instrument of authorization which is required for the use or operation of transmitting apparatus for the provision of radio communication service.

**Licensee**—individual, corporation, or other entity to whom a license is issued by the FCC.

**Maintenance Center**—the central reporting location of a maintenance force delegated the responsibility of maintaining one or more radio stations.

**NOAA**—National Oceanic and Atmospheric Administration.

**Overall Height of Antenna (TIP)**—the height in feet measured from ground level to the uppermost point of the antenna being considered (Fig. 2).

**Permittee**—individual, corporation, or other entity to whom an instrument of authorization [construction permit, license, special temporary authority, 319(d) waiver] is issued by the FCC.

**Radio Station**—one or more transmitters, either fixed or mobile, under a common FCC authorization (construction permit, license, special authority, etc.) including associated passive repeaters, receive-only stations, and other accessory equipment required for providing radio communications service.

**Station Authorization**—any construction permit, license, or other authority granted by the FCC to construct and/or operate a radio station to provide service in accordance with the conditions on the authorization and the applicable Rules and Regulations of the FCC.

**Station Location**—a point, as determined by the location of the transmitting antenna, occupied by one or more radio facilities with the same geographical coordinates.

**Station Records**—records that the permittee or licensee must maintain as required by the FCC Rules and Regulations to document proper control, operation, and maintenance of a radio station, including its associated antenna structure. Station records consist of, but are not limited to, the following:

- (a) Station Authorization
- (b) Transmitter Technical Logs
- (c) Operation Logs/Control Point Logs
- (d) Antenna Structure Lighting Logs
- (e) Alarm Center Logs.

**Tower Height**—the height measured in feet from ground level or, if mounted on a building, the building supports, to the top of the basic tower (Fig. 2).

**4. ADMINISTRATIVE REQUIREMENTS**

**Construction Authorization**

**4.01** Companies proposing to erect new antenna structures or make modifications to existing antenna structures must determine if clearance by the FAA for such construction is required. FCC 17.7 sets forth the criteria for determining whether applications to the FCC requesting authorization for radio tower construction or alteration will require that an FAA clearance be obtained.

**Note:** The FAA in its Advisory Circular 70-7460-2 (alpha character)—see FCC 17.53—provides advice regarding notification requirements for proposed erection or alteration of an object, e.g., antenna structures, that may affect the navigable airspace.

If FAA clearance is required, application for said clearance should be filed with the FAA prior to filing with the FCC an application for a construction permit covering the antenna structure. FAA Form 7460-1 (Fig. 3) is used when applying for FAA clearance (see Practice 400-550-101). The FCC will not grant an authorization for construction or modification of an antenna structure requiring FAA clearance until receiving the FAA's determination regarding that structure.

**4.02** The Antenna Survey Branch of the FCC's Field Operation Bureau, based on the FAA's determination regarding a particular structure, will specify the painting and lighting requirements for the structure. Those specifications will appear on the authorization issued by reference to paragraph numbers (Fig. 4) on FCC Form 715 or 715A (Fig. 5). FCC Forms 715 and 715A, where applicable, will be forwarded by the FCC to the permittee along with the authorization issued.♦

### ***Permittee Responsibility***

**4.03** Compliance with antenna structure painting and lighting requirements as specified by the FCC on an authorization is the responsibility of the permittee named on the authorization. The permittee is responsible for the specified painting and lighting regardless of actual ownership of the antenna structure and regardless of any contract or agreement regarding maintenance of the antenna structure. For example, if an associated company uses space for a telephone maintenance antenna on a tower owned by AT&T—Long Lines, both companies, as permittees, are responsible for (1) painting, (2) lighting, and (3) logging requirements, according to the specifications on their individual authorizations, and both companies are subject to citations for noncompliance with joint requirements. It *is not* necessary that compliance efforts be duplicated, but individual permittees and licensees should cooperate in fulfilling compliance requirements as regards antenna structures.

**4.04** Employees at the transmitter sites should be informed to alert supervisors regarding discrepancies noted in antenna painting and lighting, associated alarm indicator and control circuits, and related records.

### ***Notification to NOAA on Progress of Construction***

**4.05** Pursuant to an authorization issued by the FCC to erect or make changes affecting the height or location of an antenna structure for which painting or lighting is required, permittees must, prior to the start of such construction and again upon completion of construction, notify the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce (FCC 17.57). In addition, notification to the NOAA is required in the event of dismantlement of an antenna structure that is painted or lighted. Notification to the NOAA is provided by submission of a completed NOAA Form 76-10 (Fig. 6). Notification to the NOAA must be provided at least 48 hours prior to the start of construction of the antenna structure and within 24 hours of the time at which the antenna structure reaches its authorized height. Practice 400-550-105 provides detailed information regarding preparation and submittal of notification to the NOAA.

### ***Notification to FAA on Progress of Construction***

**4.06** The FAA, as in the case of the NOAA, must also be notified regarding the progress of construction or alteration of antenna structures requiring painting and lighting. Notification to the FAA is required as follows:

- (1) At least 48 hours prior to the start of construction or alteration [FAR 77.13(b)]
- (2) Within 5 days of the antenna structure's reaching its authorized height [FAR 77.13(c)]
- (3) ♦Date of dismantlement of antenna structure
- (4) Date of abandonment of project.♦

The above listed notifications are provided by completion and submission to the FAA of FAA Form 7460-2 (Fig. 7). Practice 400-550-101 provides details on completion and submittal of that form.

**Note:** Employees at construction sites and those responsible for construction should be informed to notify the permittee's FCC compliance coordinator in a timely fashion regarding the above so that notifications (see

## SECTION 400-100-003

paragraphs 4.05 and 4.06 of this Practice) can be provided as required.

### ***Antenna Structure Lighting Log***

**4.07** The Bell System procedure of maintaining an Antenna Structure Lighting Log—Bell System Form E-5176 (Fig. 8) for antenna structures that need lighting satisfies the requirements of FCC 17.49 provided that the appropriate entries regarding illumination of antenna structures as required by Part 17 are entered therein and provided that:

(a) the Antenna Structure Lighting Log at a particular location lists all stations by call sign and radio service which will be covered by that log,

**and**

(b) the Technical Log for each station or service listed on a particular Antenna Structure Lighting Log is annotated to the effect that the required entries concerning illumination of the antenna structure for that station or service are contained in the Antenna Structure Lighting Log which is located at: (give locations where logs are kept).

**Note:** Stations listed on a particular Antenna Structure Lighting Log must bear the same set of FCC Form 715 and 715A (Fig. 5) references with the exception of paragraph 22 of FCC Form 715 and paragraph I of FCC Form 715A.

### ***Establishment and Maintenance of Antenna Structure Lighting Log***

**4.08** The permittee of any radio station that has an antenna structure requiring illumination must establish an Antenna Structure Lighting Log at the time that the tower is first required to be lighted. During construction of such a structure, temporary warning lights must be installed and operated at the uppermost level of the structure throughout the construction phase. In addition, as the height of the structure exceeds each level at which permanent lighting will be required, temporary obstruction lights must be installed and operated nightly from sunset to sunrise at that level (see FCC 17.45, paragraph 22, of FCC Form 715 and paragraph I of FCC Form 715A).

Appropriate entries must be made in the Antenna Structure Lighting Log.

**Note:** Individual Antenna Structure Lighting Log sheets should reflect only those entries which are applicable to a particular day or 24-hour period.

**4.09** Personnel making entries in Antenna Structure Lighting Logs are not required to be licensed radio operators; however, entries must be made by an individual with knowledge of the facts recorded. Tower maintenance contractors may make entries relating to tower and lighting maintenance, but these entries remain the responsibility of the permittee. The permittee, therefore, shall insure that entries made by outside contractors comply with the applicable Rules and Regulations of the FCC. The Antenna Structure Lighting Log may be accompanied by a Register of persons likely to be making entries in it.

**4.10** Antenna Structure Lighting Log(s) must be kept neat and orderly and must be readily available for inspection by the FCC (see Part 8 of this Practice).

**4.11** Abbreviations may be used in logs if a key to their use is included in the front of the log. Licensees may comply with this requirement by maintaining a copy of Practice 400-100-001 (Radio Log Abbreviations) with the Antenna Structure Lighting Log.

**4.12** Destruction of logs within the required retention period is not permitted. Refer to the Bell System Practices and the Rules and Regulations of the FCC pertaining to the radio service involved for retention periods. Records no longer required to be retained should be removed from the logbook and destroyed or stored elsewhere according to local company instructions.

**4.13** Station records, including logs, normally must be retained for a period of 1 year. Records involving communications incident to a disaster or which include communications incident to or involved in an investigation by the FCC, of which the licensee has knowledge, shall be retained by the licensee until specifically authorized in writing by the FCC to destroy them. Records incident to or involved in any claim or complaint of which the licensee has knowledge shall be retained by the licensee until such claim or complaint has been

fully satisfied or until the same has been barred by statutes limiting the time for the filing of suits upon such claims.

**4.14** No part of any log may be obliterated or erased. Necessary corrections may be made by the person making the original entry. The erroneous entry should be lined out in a manner that permits it to continue to be legible and the correction entered. Both the portion which is lined out and the new entry should be initialed and dated by the individual making the correction.

***Required Inspections of Antenna Structure Lighting and Associated Control Equipment***

**4.15** The permittee of any radio station having an antenna structure that requires illumination must, pursuant to FCC 17.47, perform the following:

(a) Make an observation of the tower lights at least once each 24 hours, either visually or by observing an automatic and properly maintained indicator that provides an indication of failure of such lights, to insure that all such lights are functioning properly

**or**

(b) Provide and properly maintain an automatic alarm system designed to detect any failure of such lights and to provide indication of such failure

**and**

(c) Perform physical inspection at intervals not exceeding 3 months of all automatic or mechanical control devices, indicators, and alarm systems associated with tower lighting to insure that such apparatus is functioning properly.

Appropriate entries must be made in the Antenna Structure Lighting Log to reflect the inspections of paragraphs 4.15(a) and (c) above (FCC 17.49). See Fig. 9, 10, 11, and 12 for samples of entries made in Antenna Structure Lighting Logs.

***Required Notifications of Extinguishment or Improper Functioning of Antenna Structure Lighting***

**4.16** The permittee of any radio station that has an antenna structure requiring illumination

must, pursuant to FCC 17.48, immediately notify the FAA of any extinguishment or improper functioning of any top steady burning light or any code beacon or flashing obstruction light, regardless of its position on the structure, if that extinguishment or improper functioning is not corrected within 30 minutes (see paragraphs 4.20 and 4.21 of this Practice). The notification may be given by telephone or telegraph to the nearest Flight Service Station or Office of the FAA. The notification given must provide the following information:

- (a) Condition of light or lights involved as known at the time of notification
- (b) Circumstances, if known, which caused failure
- (c) Probable date/time of restoration of light or lights.

**Note:** The telephone number of the FAA office to be notified should be recorded in the Antenna Structure Lighting Log or conspicuously posted at the station.

**4.17** Notification of restoral must be provided to the Flight Service Station or Office of the FAA immediately upon restoration of the malfunctioning light or lights.

**4.18** Notification to the FAA of the extinguishment or improper functioning of steady burning side intermediate lights **is not** required. However, such malfunctioning lights shall be restored as soon as possible.

**4.19** Appropriate entries must be made in the Antenna Structure Lighting Log of **all** improper functioning of antenna structure lighting, restoration of lighting, and notifications to the FAA.

***Notification to FAA on Malfunction of One of Two Lamps of Top Light, Flasher, or Code Beacon***

**4.20** FCC 17.48 as stated in paragraph 4.16 requires that the FAA be immediately notified of any observed extinguishment or improper functioning of any top steady burning light or any flashing obstruction light, regardless of its position on the antenna structure, if the observed malfunction cannot be cleared within 30 minutes. Certain alarm systems presently in service in the Bell System do

**SECTION 400-100-003**

not provide a discrete indication that one of two lamps of a top light, flasher, or code beacon is functioning improperly but do provide an indication of total failures of such obstruction lighting, i.e., failure of both lamps of a top light, flasher, or code beacon (such total failure must be reported to the FAA if not cleared within 30 minutes).

**4.21** Alarms relating to malfunctions/failure of only one of the two lamps of a top light, flasher, or code beacon in certain alarm systems are tied in with alarm indications for side lights on the antenna structure. The FCC Rules and Regulations do not require notification to the FAA regarding malfunctioning side lights. However, because of the tie-in of alarms relating to one of two lamps of a top light, flasher, or code beacon with alarms for side lights, the following procedure should be performed when such an alarm indication is received.

- | STEP | ACTION   |
|------|--|
| (1)  | <p>Within 30 minutes, notify the FAA of the receipt of an alarm which indicates that one of the two lamps of a top steady burning or flashing obstruction light is possibly malfunctioning and inform the FAA that they will be recontacted regarding the status of those lights.</p> <p><b>Note:</b> FAA representatives in certain areas may show a disinterest in receiving such tentative notification on the status of top lights, flasher, or code beacon. However, for compliance with FCC 17.48, it is imperative that such notification be given and that the steps, as here outlined, be accomplished.</p> |
| (2)  | Determine, as soon as possible, the status of lights on the antenna structure.   |
| (3)  | If one of the two lamps of the top steady burning or flashing obstruction light is found to be malfunctioning, promptly provide the FAA with confirmation of such malfunction and inform the   |

FAA of the probable date and time of restoral.

- (4) If the top steady burning or flashing obstruction light is not malfunctioning, promptly notify the FAA to that effect, thus cancelling the notification of Step (1).
- (5) Clear the malfunction which occurred.
- (6) If the top steady burning or flashing obstruction light was malfunctioning, promptly notify the FAA of restoral to an operational status.

**Note:** Notification to the FAA is not required when side lights are restored to operation.♦

**5. LOGGING REQUIREMENTS FOR ILLUMINATED ANTENNA STRUCTURES**

**5.01** The permittee of any radio station with an antenna structure which requires illumination must, pursuant to FCC 17.49, make the following entries in the station record, i.e., the Antenna Structure Lighting Log:

- (a) Daily entry as to the times that the tower lights are turned on and off, if lighting is manually controlled
- (b) Daily entry as to the time at which the daily verification of proper operation of tower lights is made, if an automatic alarm system is not provided
- (c) Details related to extinguishment or improper functioning of lights on tower and action taken for restoration of lights
- (d) Details related to notification given to the FAA of malfunctioning lights and of restoration of such lights [entries made should include (1) date and time of notification to the FAA, (2) FAA office notified, and (3) individual at FAA receiving the notification]
- (e) Quarterly entry of details related to the periodic inspection, i.e., at least every 3

months, of tower lights and associated tower lighting control devices and indicators and alarm systems, including the alarm sending and receiving equipment associated with the remotely located alarm center or control point

- (f) Details related to any adjustments, replacements, or repairs made to insure compliance with antenna structure lighting requirements.

**Note:** Special logging requirements applicable to the Maritime Service are specified in Part 81 of the FCC Rules and Regulations and should be covered in local company instructions.

See Fig. 9, 10, 11, and 12 for samples of entries made in Antenna Structure Lighting Logs.

**5.02** Radio stations may be attended (personnel on duty full time) or unattended (personnel not normally on duty on a full-time basis at the station). An attended station reverts to the unattended category during any period of operation when personnel are not on duty at the station. Logging requirements as noted above are applicable regardless of whether the station is attended or unattended. The responsibility for complying with the various requirements of the FCC for logging, notifications on improper functioning of lights, and inspections may be delegated to personnel at attended stations or to personnel at alarm centers and control points in the case of unattended stations.

#### ***Attended Radio Stations (Responsibilities of Personnel at Station)***

**5.03** Personnel at attended radio stations with an antenna structure that requires illumination shall be responsible for the following activities as regards the illumination of that structure:

- (a) The maintenance of an Antenna Structure Lighting Log reflecting each required action related to the illumination of the antenna structure
- (b) If manual control of antenna structure lighting is utilized, the turnon at local sunset and the turnoff at local sunrise of such lighting unless the turnon and turnoff of lighting is otherwise specified on the authorization issued (entry must be made in Antenna Structure Lighting Log of such turnon and turnoff including entries as to the time of day that such action was taken)

- (c) If automatic alarms for antenna structure illumination are not provided, the accomplishment of a daily check for a verification of the proper operation of tower lighting (verification to be accomplished by visual observation of lighting or by observing an automatic indicator) (entry must be made in Antenna Structure Lighting Log that such check was accomplished including entry as to the time of day that the check was accomplished)

- (d) The prompt performance of (or the arrangement for) maintenance which at any time may be required to insure compliance with the applicable Rules and Regulations of the FCC [entry must be made in Antenna Structure Lighting Log of (1) the nature of any failure or malfunction of antenna lighting, (2) date and time such was observed, (3) adjustments made, (4) repairs or replacements made to clear failures or malfunctions, and (5) preventive/routine maintenance which is performed at any time]

- (e) The provision to the FAA of notification regarding the failure or malfunction of any top light, flasher, or code beacon if such failure or malfunction cannot be cleared within 30 minutes (entry must be made in Antenna Structure Lighting Log of all such notifications) (see paragraphs 4.20 and 4.21 of this Practice)

- (f) The provision to the FAA of notification of restoral as regards any notification provided in (e) above (entry must be made in Antenna Structure Lighting Log of all such notifications of restoral) (see paragraphs 4.16 through 4.21 of this Practice)

- (g) The accomplishment at intervals not exceeding 3 months of a physical inspection of all structure illumination and the associated controls, alarms, and indicators for a verification of proper operation (entry must be made in Antenna Structure Lighting Log of such inspections as to date of said inspections and any repair or adjustment accomplished).

#### ***Unattended Radio Stations***

**5.04** Personnel at alarm centers (see paragraphs 5.06 and 5.07 of this Practice) or control points (see paragraph 5.08) to which unattended stations are connected on an alarm basis are

## SECTION 400-100-003

responsible for compliance activity related to illumination of antenna structures.

**5.05** An Antenna Structure Lighting Log may be kept at unattended stations and appropriate entries made therein regarding actions taken **at the station** concerning illumination of the antenna structure. This log should be annotated to reflect all call signs and radio services at the station and should cross-reference the Antenna Structure Lighting Log that is maintained at the associated alarm center or control point.

### ***Alarm Center Responsibility***

**5.06** Personnel at alarm centers associated with unattended stations shall maintain an Antenna Structure Lighting Log for each such station. Entries must be made in those logs of the following:

- (a) The time of day that manually controlled obstruction lighting is turned on and off
- (b) The time of day that the daily check is made for proper operation of obstruction lighting where indicators of such lighting are provided in lieu of alarms
- (c) The nature of any failure or malfunction of obstruction lighting, the date and time such was observed, the nature of adjustment or repair, and the date and time of such adjustment or repair
- (d) The date and time notification was given to the FAA concerning the failure or malfunction of any top light, flasher, or code beacon which is not corrected within 30 minutes. Entry should include the identification of the FAA office notified and the FAA employee receiving the notification
- (e) The date and time notification was given to the FAA concerning restoral of such failure as in (d) and identification of the FAA office and the FAA employee receiving the restoral notification
- (f) The date of completion of the 3-month inspection of lighting controls, alarms, and alarm indicators and the condition of each
- (g) In conjunction with (f), the date and nature of any adjustments, repairs, or other corrective

action taken to insure that compliance requirements were met

(h) In conjunction with (c) and (f), identification of the employee and/or contractor performing the inspection and/or repairs, etc.

**5.07** Personnel at alarm centers receiving alarms from radio stations, in addition to the responsibilities stated in paragraph 5.06 above, shall record in the Alarm Indication Log—Bell System Form E-3870 (Fig. 13) all alarms or indications received which relate to malfunctioning of lights on the antenna structure for those stations and the action taken to clear malfunctions of antenna structure lighting.

### ***Control Point Responsibility***

**5.08** Control points shall be responsible for performing the functions as outlined in paragraphs 5.06 and 5.07 of this Practice for those stations connected to a control point in lieu of an alarm center.

**Note:** Widely separated stations, alarm centers, and control points create a difficult situation in the area of maintenance of Antenna Structure Lighting Logs. It is recommended that each such log contain complete instructions for access to supplementary logs. Employees associated with a station, alarm center, or control point should know the location of all such supplementary Antenna Structure Lighting Logs.

### ***Maintenance Center***

**5.09** Maintenance center personnel shall perform maintenance at radio stations and shall insure that (1) tower lighting malfunctions are corrected, (2) quarterly inspections are accomplished on time, and (3) appropriate entries regarding the same are made in the appropriate Antenna Structure Lighting Log.

## **6. TECHNICAL REQUIREMENTS**

### ***Antenna Structures***

**6.01** Stations at which antenna structures are required to be painted and/or lighted are expected to be in full compliance with the applicable painting and lighting requirements. Individual

permittees are not exempt from compliance by virtue of tower sharing arrangements.

**6.02** The height of any antenna structure includes appurtenances such as lightning rods, whip antennas, etc. The height, type, and orientation of all antennas, including receive-only installations, are specified in the application to the FCC for the station authorization and are specified on the station authorization as issued by the FCC. Discrepancies in the authorization as issued by the FCC should be brought to the attention of the local company FCC compliance coordinator for resolution.

**6.03** The requirement to paint or light an antenna structure is based upon the overall height of the structure above ground level and its distance from the nearest airport or heliport. Once it is determined that painting and/or lighting is required, the lighting and painting specifications (Fig. 14) are based upon the overall height of the antenna tower above ground level or, if mounted on a building, above building level (FCC 17.24 through 17.42).

**6.04** Antennas or other appurtenances are not permitted to extend more than 20 feet above the top light, code, or rotating beacon at the top of a supporting structure. Appurtenances may extend to a maximum of 20 feet above the highest light only if the appurtenance does not affect the visibility of that light from any normal aircraft approach angle. If the appurtenance would affect the visibility of the light, the light must be extended upward. FCC authorization and FAA clearance must include the uppermost appurtenance.

**6.05** Where antenna structures are initially constructed to a height less than called for in the final plans, the intermediate lights may be located according to the height in the final plans (Fig. 15). The final plans must be firm (additional height to be completed within 7 years), and the FAA and FCC notified of the proposed tower light deviation on the initial application for clearance and authorization.

**6.06** The location of intermediate lights may vary by  $\pm 20$  feet from approximately equidistant levels as measured from the highest beacon to the structure's base or ground level. This 20-foot variance allows for the positioning of lights for ease of maintenance and because of structural limitations on placement of antennas and of walkways

which provide the access to these intermediate lights.

**6.07** Certain antenna structures require illumination during construction (FCC 17.45). This requirement, when applicable, will be stated on the station authorization by reference to paragraph 22 of FCC Form 715 or paragraph I of FCC Form 715A.

**6.08** Final painting and lighting requirements for the antenna structure (after completion of construction) are stated on the station authorization in the form of references to paragraphs of FCC Form 715 or 715A attached to the authorization. Once an antenna structure has been required to be painted and lighted, the painting and lighting may not be discontinued without prior authorization from the FCC. Such authorization will be given only if clearance has been received from the FAA for such deletion.

**6.09** Towers, if painting is required, shall be painted throughout their height with alternate bands of aviation surface orange and white (FCC 17.23 and 17.53), terminating with aviation surface orange bands at both top and bottom of the tower (Fig. 16). The bands shall be of equal width, not less than 1-1/2 feet nor more than 100 feet wide.

**6.10** If the height of an existing tower for which painting is required is increased, immediate repainting of the entire structure may not be necessary. As an alternative, the top band of aviation surface orange may be extended provided the resultant band does not exceed twice the width of the other bands on the tower (Fig. 17). In no case, however, may the extended width of the top band exceed 100 feet.

**6.11** If the extension is so great that the criteria of paragraph 6.10 cannot be met, a white band may be added and its width and that of the orange band above it may be reduced to no less than one-half the width of the original bands on the tower (Fig. 17).

**6.12** If either of the procedures outlined in paragraphs 6.10 and 6.11 is followed in painting an addition to an existing tower, the entire structure shall be repainted to comply with the applicable rules at the next scheduled painting, or earlier if painting deteriorates to a condition where repainting is required.

## SECTION 400-100-003

**6.13** All surfaces of a structure, inside and outside, shall be painted except those that are inaccessible or where painting would result in transmission impairment. Paint should be omitted from surfaces where it would result in a hazard to maintenance personnel. Appurtenances mounted on antenna structures must be painted if the structure itself is required to be painted. Included among those appurtenances are antennas, weather (ice) shields, railings, beacons, light supports, etc. Items which need not be painted are the following:

- (a) Weather covers of horn-reflector antennas
- (b) Radome covers on parabolic antennas
- (c) Waveguide
- (d) Mobile whip type antennas
- (e) Passive reflectors, if inaccessible
- (f) Ladders and walkways
- (g) Precision surfaces which are subject to damage, misalignment, or transmission impairment if painted.

**6.14** Lamps at the same level of an antenna structure are required to burn simultaneously and, if required to flash, shall be equipped with a flashing mechanism producing not more than 40 nor fewer than 12 flashes per minute. The period of darkness between flashes shall be approximately one-half the lighted period. All steady burning lights shall burn continuously or shall be controlled as specified on FCC Form 715 or 715A attached to the authorization.

**6.15** Strobe lighting (high-intensity obstruction lighting), when authorized by the FCC, is in lieu of other obstruction marking and lighting specified in FCC 17.23 through 17.37. High-intensity lighting, when authorized, must be exhibited continuously unless otherwise specified on the authorization.

**6.16** Antenna structures which require painting pursuant to the FCC Rules and Regulations and the authorization issued shall be cleaned or repainted as often as necessary to maintain good conspicuity of the structure.

**6.17** All automatic control and alarm devices shall be maintained in a manner that will insure compliance with the applicable FCC Rules.

### *Discontinuance of Service*

**6.18** If radio service is discontinued from an antenna structure, the painting and lighting requirements remain in effect (unless the structure is disposed of) for as long as the antenna structure remains erect and is shown on an authorization as requiring such painting and lighting. Even if the authorization has been returned to the FCC, the painting and lighting requirements must be met unless FAA clearance is obtained for their deletion.

## 7. APPLICABLE DOCUMENTS

### *Documents*

**7.01** Information concerning the handling of construction permits, licenses, and other documents issued by the FCC is available in the following Practices:

- (a) 400-200-020, Domestic Public Land Mobile Operations (Compliance)
- (b) 400-320-002, Maritime Radio Operations (Compliance)
- (c) 400-330-002, Telephone Maintenance Radio and Business Radio Service
- (d) 400-401-000, Microwave Radio—Point-to-Point FCC Compliance Requirements
- (e) 400-520-100, Establishing a Point-to-Point Microwave Radio Station—General Considerations
- (f) 400-521-100, Establishing a Mobile (DPLM) Radio Station—General Considerations
- (g) 400-522-100, Establishing a Rural Radio Station—General Considerations.

### *Rules and Regulations of the FCC*

**7.02** Each radio station must have available for use at that station a current copy (including amendments) of the FCC Rules and Regulations (see paragraph 1.04 of this Practice) pertaining to the radio services authorized at that station.

**7.03** Radio stations with antenna structures required to be painted and lighted should also maintain a current copy of Part 17 of the FCC Rules and Regulations. It is also recommended that Part 13 (Commercial Radio Operators) of the FCC Rules and Regulations be maintained at the station.

#### **8. STATION INSPECTION BY THE FCC**

**8.01** FCC 21.200 states that "the licensee of each station authorized in the Domestic Public Radio Services shall make the station and station records available for inspection by representatives of the Commission at any reasonable hour."

**8.02** Inspections of radio stations by the FCC, when made, are normally accomplished by a representative of the FCC's engineer-in-charge (EIC) of the radio district in which the station is located.

**8.03** Personnel at stations, alarm centers, control points, and maintenance centers should cooperate with properly identified FCC representatives. Guidelines for such cooperation are given in the compliance Practices referenced in paragraph 7.01 of this Practice. Those Practices also provide instruction as to actions to be taken (1) as a result of a visit to a station by the EIC and (2) in the event of the issuance by the EIC of a "Warning" or a "Notice of Violation."

**8.04** Notices of Violation from the FCC are sometimes sent to the alarm or maintenance center designated on the station authorization as a result of monitoring procedures of the FCC's Field Operation Bureau or of station visits by EIC representatives. In the event that any correspondence is received that requires an answer to any office of the FCC, the compliance coordinator must be advised immediately by telephone. The document received should be promptly forwarded to the local company's FCC compliance coordinator for handling.

#### **9. PERMITTEE COMPLIANCE CHECKS**

**9.01** Permittees should conduct periodic inspections of radio stations for verification of compliance with the FCC Rules and Regulations. Such inspections will:

- (a) Maintain an awareness in supervisors and employees at radio stations of their responsibilities concerning compliance.
- (b) Provide positive indications of the need for correction of potential violations in order to avoid official Notices of Violation from the FCC's EIC.
- (c) Insure the most efficient use of the systems and prevent unauthorized operation.

**9.02** Permittee compliance inspections should be made by employees familiar with the applicable Rules and Regulations of the FCC. These personnel may be representatives of the plant and/or engineering departments and may work in teams or individually.

**9.03** Figure 18 provides a check list which is applicable to items related to compliance of antenna structures with painting and lighting requirements.

**9.04** The inspection team should review the marked check list with the station's supervisor after the inspection, calling attention to discrepancies and assisting in resolving any discrepancies found. A copy of the completed check list should be forwarded to the permittee's compliance coordinator.

**9.05** A copy of the completed check list should be forwarded to the appropriate personnel for follow-up action, and the compliance coordinator should be notified when discrepancies have been corrected.

SUBJECT	PRACTICE REFERENCE	FCC REQUIREMENT
Alarm Indication Log	5.07	21.108(e) (3)
Antenna Structure Lighting Log	4.07	
• Entries required	4.15, 4.19, 5.01, 5.06	17.49, 81.193, 91.160(e), 94.113(c)
• General requirements	4.07–4.14	21.208(a), (b), (c), and (d); 21.208(i); 81.115; 91.160(f), (g), and (h); 94.113(d), (e), (f), and (g)
• When required	4.08, 4.15	21.208(e) (3) and (f), 81.193, 91.160(e), 94.113(c)
• Where maintained	5.03, 5.05, 5.06	21.208(g), 94.113(b)
Daily Observations	4.15(a), 5.01(a) and (b)	17.47(a) (1) and (a) (2), 21.206, 94.111(a)
• Alarm center	5.06(a) and (b)	
• Attended stations	5.03(b) and (c)	
• Control point	5.08	91.158(a)
• Unattended stations	5.04	
FAA		
• Clearance to construct or alter an antenna structure	4.01	17.4, 17.7, 17.14, 21.15(d)
• Notification on commencement and completion of construction of antenna structure	4.06	
• Notification to on tower light failure and restoration	4.16–4.18, 4.20, 4.21, 5.03(e) and (f), 5.06(d) and (e)	17.48(a), 94.111(b)
FCC Authorization for Construction	4.01	21.3, 81.21, 91.51, 94.23
FCC Station Inspection	8.01–8.04	21.200, 91.157
Maintenance of Tower Illumination and Marking	4.03, 4.04, 6.16, 6.18	17.43, 17.50, 17.53, 17.56, 21.112, 21.117(d), 21.206, 94.111
NOAA, Notification to	4.05, 4.06	17.57
Quarterly Inspection of Tower Illumination Controls and Indicators	4.15(c), 5.03(g)	17.47, 81.193, 91.158(c), 94.111(c)
Rule Compliance		21.13(a) (6)
• Permittee verification	9.01–9.05	21.206
• Responsibility for	1.01, 4.03, 6.01	21.111
Tower Illumination Specifications	4.02, 6.04–6.08, 6.14, 6.15	17.24 through 17.42, 17.45, 17.53, 17.54
Tower Painting Specifications	4.02, 6.08–6.13	17.23, 17.53

Fig. 1—Practice Paragraphs Cross-Referenced to FCC Requirements

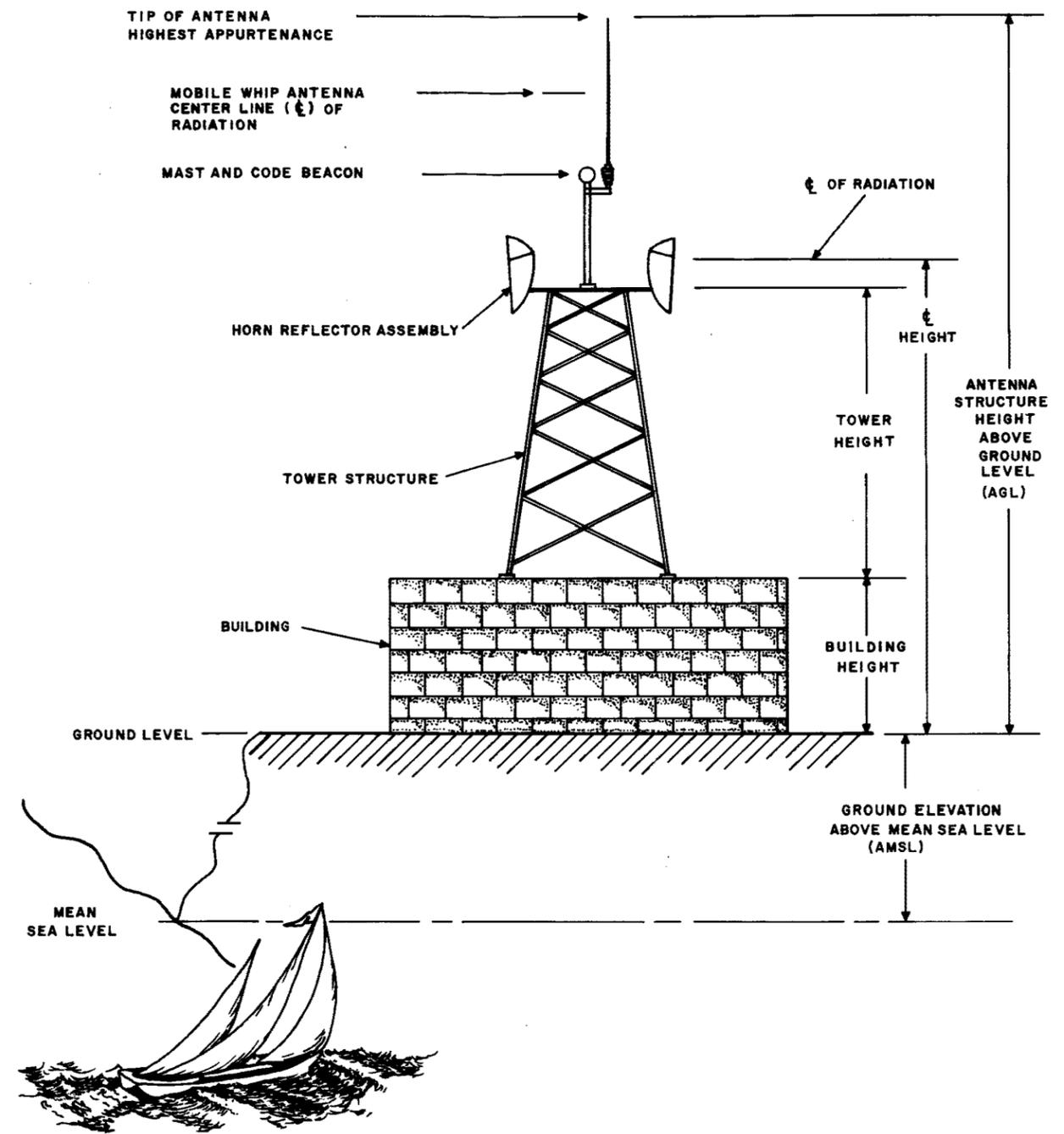


Fig. 2—Heights and Elevations Relative to Antenna Structures



UNITED STATES OF AMERICA  
 FEDERAL COMMUNICATIONS COMMISSION  
**RADIO STATION AUTHORIZATION**  
 CONSTRUCTION PERMIT

FCC FORM 462-B SEPTEMBER 1975

PERMITTEE

CHESAPEAKE AND POTOMAC TELEPHONE  
 COMPANY OF VIRGINIA

COMMON CARRIER  
 POINT TO POINT MICROWAVE

**SAMPLE**

SUBJECT TO THE PROVISIONS OF THE COMMUNICATIONS ACT OF 1934,  
 SUBSEQUENT ACTS, TREATIES, AND ALL REGULATIONS HERETOFORE OR  
 HEREAFTER MADE THEREUNDER, AND FURTHER SUBJECT TO THE CONDI-  
 TIONS SET FORTH IN THIS PERMIT, INCLUDING THOSE CONTAINED ON  
 THE REVERSE HEREOF, AUTHORITY IS HEREDY GRANTED TO CONSTRUCT  
 A RADIO TRANSMITTING STATION TO BE OPERATED AS HERCINAFTER DESCRIBED:

TRANSMIT STATION NAME: BOWLING GRN  
 STREET ADDRESS: 2.2 MILES NORTH OF  
 CITY: BOWLING GREEN STATE: VA COUNTY: CAROLINE  
 ANT STRUCT HT: 245 BLDG HT: GRND ELEV: 220  
 LATITUDE: 30 04 36N LONGITUDE: 077 22 02W

CALL SIGN: KJJ32 FILE NO: 1567-CF-P-77  
 CLASS: FIXED  
 DATE OF GRANT: 10 JUN 1977  
 DATE OF EXPIRATION: 01 JAN 1979

FREQUENCY & POLARIZATION	XMTR NO	RECEIVE STATION NAME	OPER CODE	LINE LOSS	TRANSMITTING ANTENNAS				RECEIVING ANTENNAS				ACT CODE
					PRIMARY CODE	HT	DIVERSITY CODE	HT	PRIMARY CODE	HT	DIVERSITY CODE	HT	
11035.000V	1	RUTHER GLEN		4	G13700	147			G13700	115			A
10875.000V	1	RUTHER GLEN		4	G13700	147			G13700	115			A
11035.000V	1	CORBIN		4	G13700	147			G13700	167			A
10875.000V	1	CORBIN		4	G13700	147			G13700	167			A

RECEIVE STATION INFORMATION

STATION NAME	ST	CALL SIGN	TYPE	FAC	PATH DIST	PATH AZIM	LATITUDE	LONGITUDE	GRND ELEV	STRUCT HT	BLDG HT	ACT CODE
RUTHER GLEN	VA	WCG259	TS		10.5	192.4	37 55 52N	077 24 27W	230	125		A
CORBIN	VA	WCG260	TS		15.1	3.2	38 12 44N	077 21 28W	217	281		A

TRANSMITTER INFORMATION

XMTR NO	XMTR CODE	QTY	MANUFACTURER NAME	TYPE OR MODEL NO	PWR OUT	EMISSION	STABILITY %	MODULE CODE	ACT CODE
1	2P7V03	4	WESTERN ELECTRIC	TN-1	2.500	4000F9Y	.0050		A

ANTENNA INFORMATION

ANT CODE	MANUFACTURER NAME	TYPE OR MODEL NO
G13700	GAURIEL	USR10P-3J107

TOWER MARKING INFORMATION  
 STATION NAME:  
 BOWLING GRN OBSTRUCTION MARKING REQUIRED IN ACCORDANCE WITH PARAGRAPH(S) 1,3,11,21

OF FCC FORM 715.

**ANTENNA MARKING AND LIGHTING REQUIREMENTS**



Fig. 4—Construction Permit for Point-to-Point Microwave Radio Station With Painting and Lighting Requirements Specified Thereon

**OBSTRUCTION MARKING AND LIGHTING SPECIFICATIONS  
FOR ANTENNA STRUCTURES**

It is to be expressly understood that the issuance of these specifications is in no way to be considered as precluding additional or modified marking or lighting as may hereafter be required under the provisions of Section 303(q) of the Communications Act of 1934, as amended.

**PAINTING**

1 Antenna structures shall be painted throughout their height with alternate bands of aviation surface orange and white, terminating with aviation surface orange bands at both top and bottom. The width of the bands shall be equal and approximately one-seventh the height of the structure, provided however, that the bands shall not be more than 100 feet nor less than 1½ feet in width. All towers shall be cleaned or repainted as often as necessary to maintain good visibility.

**TOP LIGHTING**

2 There shall be installed at the top of the tower at least two 116- or 125-watt lamps (A21/TS) enclosed in aviation red obstruction light globes. The two lights shall burn simultaneously from sunset to sunrise and shall be positioned so as to insure unobstructed visibility of at least one of the lights from aircraft at any normal angle of approach. A light sensitive control device or an astronomic dial clock and time switch may be used to control the obstruction lighting in lieu of manual control. When a light sensitive device is used it should be adjusted so that the lights will be turned on at a north sky light intensity level of about thirty-five foot candles and turned off at a north sky light intensity level of about fifty-eight foot candles.

3 There shall be installed at the top of the structure one 300 m/m electric code beacon equipped with two 620- or 700-watt lamps (PS-40, Code Beacon type), both lamps to burn simultaneously, and equipped with aviation red color filters. Where a rod or other construction of not more than 20 feet in height and incapable of supporting this beacon is mounted on top of the structure and it is determined that this additional construction does not permit unobstructed visibility of the code beacon from aircraft at any normal angle of approach, there shall be installed two such beacons positioned so as to insure unobstructed visibility of at least one of the beacons from aircraft at any normal angle of approach. The beacons shall be equipped with a flashing mechanism producing not more than 40 flashes per minute with a period of darkness equal to approximately one-half of the luminous period.

THIS FORM IS A PART OF AND SHALL BE ATTACHED TO THE CURRENT INSTRUMENT OF AUTHORIZATION

*(All previous editions should be destroyed.)*

**INTERMEDIATE LIGHTING  
(BEACONS)**

4 At approximately one-half of the overall height of the tower one similar flashing 300 m/m electric code beacon shall be installed in such position within the tower proper that the structural members will not impair the visibility of this beacon from aircraft at any normal angle of approach. In the event this beacon cannot be installed in a manner to insure unobstructed visibility of it from aircraft at any normal angle of approach, there shall be installed two such beacons. Each beacon shall be mounted on the outside of the tower at the prescribed height.

5 At approximately two-fifths of the over-all height of the tower one similar flashing 300 m/m electric code beacon shall be installed in such position within the tower proper that the structural members will not impair the visibility of this beacon from aircraft at any normal angle of approach. In the event this beacon cannot be installed in a manner to insure unobstructed visibility of it from aircraft at any normal angle of approach, there shall be installed two such beacons. Each beacon shall be mounted on the outside of diagonally opposite corners or opposite sides of the tower at the prescribed height.

6 On levels at approximately two-thirds and one-third of the over-all height of the tower one similar flashing 300 m/m electric code beacon shall be installed in such position within the tower proper that the structural members will not impair the visibility of this beacon from aircraft at any normal angle of approach. In the event these beacons cannot be installed in a manner to insure unobstructed visibility of the beacons from aircraft at any normal angle of approach, there shall be installed two such beacons at each level. Each beacon shall be mounted on the outside of diagonally opposite corners or opposite sides of the tower at the prescribed height.

7 On levels at approximately four-sevenths and two-sevenths of the over-all height of the tower one similar flashing 300 m/m electric code beacon shall be installed in such position within the tower proper that the structural members will not impair the visibility of this beacon from aircraft at any normal angle of approach. In the event these beacons

cannot be installed in a manner to insure unobstructed visibility of the beacons from aircraft at any normal angle of approach, there shall be installed two such beacons at each level. Each beacon shall be mounted on the outside of diagonally opposite corners or opposite sides of the tower at the prescribed height.

8 On levels at approximately three-fourths, one-half and one-fourth of the over-all height of the tower one similar flashing 300 m/m electric code beacon shall be installed in such position within the tower proper that the structural members will not impair the visibility of the beacon from aircraft at any normal angle of approach. In the event these beacons cannot be installed in a manner to insure unobstructed visibility of the beacons from aircraft at any normal angle of approach, there shall be installed two such beacons at each level. Each beacon shall be mounted on the outside of diagonally opposite corners or opposite sides of the tower at the prescribed height.

9 On levels at approximately two-thirds, four-ninths and two-ninths of the over-all height of the tower one similar flashing 300 m/m electric code beacon shall be installed in such position within the tower proper that the structural members will not impair the visibility of this beacon from aircraft at any normal angle of approach. In the event these beacons cannot be installed in a manner to insure unobstructed visibility of the beacons from aircraft at any normal angle of approach, there shall be installed two such beacons at each level. Each beacon shall be mounted on the outside of diagonally opposite corners or opposite sides of the tower at the prescribed height.

10 On levels at approximately four-fifths, three-fifths, two-fifths and one-fifth of the over-all height of the tower one similar flashing 300 m/m electric code beacon shall be installed in such position within the tower proper that the structural members will not impair the visibility of this beacon from aircraft at any normal angle of approach. In the event these beacons cannot be

installed in a manner to insure unobstructed visibility of the beacons from aircraft at any normal angle of approach, there shall be installed two such beacons at each level. Each beacon shall be mounted on the outside of diagonally opposite corners or opposite sides of the tower at the prescribed height.

10.1 On levels at approximately eight-elevenths, six-elevenths, four-elevenths and two elevenths of the overall height of the tower one similar flashing 300 m/m electric code beacon shall be installed in such position within the tower proper that the structural members will not impair the visibility of this beacon from aircraft at any normal angle of approach. In the event these beacons cannot be installed in a manner to insure unobstructed visibility of the beacons from aircraft at any normal angle of approach, there shall be installed two such beacons at each level. Each beacon shall be mounted on the outside of diagonally opposite corners or opposite sides of the tower at the prescribed height.

10.2 On levels at approximately five-sixths, two-thirds, one-half, one-third and one-sixth of the over-all height of the tower one similar flashing 300 m/m electric code beacon shall be installed in such position within the tower proper that the structural members will not impair the visibility of this beacon from aircraft at any normal angle of approach. In the event these beacons cannot be installed in a manner to insure unobstructed visibility of the beacons from aircraft at any normal angle of approach there shall be installed two such beacons at each level. Each beacon shall be mounted on the outside of diagonally opposite corners or opposite sides of the tower at the prescribed height.

10.3 On levels at approximately ten-thirteenths, eight-thirteenths, six thirteenths, four-thirteenths and two-thirteenths of the over-all height of the tower one similar flashing 300 m/m electric code beacon shall be installed in such position within the tower proper that the structural members will not impair the visibility of this beacon from aircraft at any normal angle of approach. In the event these beacons cannot be installed in a manner to insure unobstructed visibility of the beacons from aircraft at any normal angle of approach, there shall be installed two such beacons at each level. Each beacon shall be mounted on the outside of diagonally opposite corners or opposite sides of the tower at the prescribed height.

10.4 On levels at approximately six-sevenths, five-sevenths, four-sevenths, three-sevenths two-sevenths and one-seventh of the over-all height of the tower one similar flashing 300 m/m electric code beacon shall be installed in such position within the tower proper that the structural members will not impair the visibility of this beacon from aircraft at any normal angle of approach. In the event these beacons cannot be installed in a manner to insure unobstructed visibility of the beacons from aircraft at any normal angle of approach, there shall

be installed two such beacons at each level. Each beacon shall be mounted on the outside of diagonally opposite corners or opposite sides of the tower at the prescribed height.

**(SIDE LIGHTS)**

11 At the approximate mid point of the over-all height of the tower there shall be installed at least two 116- or 125-watt lamps (A21/TS) enclosed in aviation red obstruction light globes. Each light shall be mounted so as to insure unobstructed visibility of at least one light at each level from aircraft at any normal angle of approach.

12 On levels at approximately two-thirds and one-third of the over-all height of the tower, there shall be installed at least two 116- or 125-watt lamps (A21/TS) enclosed in aviation red obstruction light globes. Each light shall be mounted so as to insure unobstructed visibility of at least one light at each level from aircraft at any normal angle of approach.

13 On levels at approximately three-fourths and one-fourth of the over-all height of the tower, at least one 116- or 125-watt lamp (A21/TS) enclosed in aviation red obstruction light globe shall be installed on each outside corner of the structure.

14 On levels at approximately four-fifths, three-fifths and one-fifth of the over-all height of the tower, at least one 116- or 125-watt lamp (A21/TS) enclosed in an aviation red obstruction light globe shall be installed on each outside corner of the structure.

15 On levels at approximately five-sixths, one-half, and one-sixth of the over-all height of the tower, at least one 116- or 125-watt lamp (A21/TS) enclosed in an aviation red obstruction light globe shall be installed on each outside corner of structure.

16 On levels at approximately six-sevenths, five-sevenths, three-sevenths and one-seventh of the over-all height of the tower at least one 116- or 125-watt lamp (A21/TS) enclosed in an aviation red obstruction light globe shall be installed on each outside corner of the structure.

17 On levels at approximately seven-eighths, five-eighths, three-eighths and one-eighth of the over-all height of the tower, at least one 116- or 125-watt lamp (A21/TS) enclosed in an aviation red obstruction light globe shall be installed on each outside corner of the structure.

18 On levels at approximately eight-ninths, seven-ninths, five-ninths, one-third and one-ninth of the over-all height of the tower, at least one 116- or 125-watt lamp (A21/TS) enclosed in an aviation red obstruction light globe shall be installed on each outside corner of the structure.

19 On levels at approximately nine-tenths, seven-tenths, one-half, three-tenths and one-tenth of the over-all height of the tower, at least one 116- or 125-watt lamp (A21/TS) enclosed in an aviation red obstruction light globe shall be installed on each outside corner of the structure.

19.1 On levels at approximately ten-elevenths, nine-elevenths, seven-elevenths, five-elevenths, three-elevenths and one-eleventh of the over-all height of the tower at least one 116- or 125-watt lamp (A21/TS) enclosed in an aviation red obstruction light globe shall be installed on each outside corner of the structure.

19.2 On levels at approximately eleven-twelfths, three-fourths, seven-twelfths, five-twelfths, one-fourth and one-twelfth of the over-all height of the tower at least one 116- or 125-watt lamp (A21/TS) enclosed in an aviation red obstruction light globe shall be installed on each outside corner of the structure.

19.3 On levels at approximately twelve-thirteenths, eleven-thirteenths, nine-thirteenths, seven-thirteenths and one-thirteenth of the over-all height of the tower at least one 116- or 125-watt lamp (A21/TS) enclosed in an aviation red obstruction light globe shall be installed on each outside corner of the structure.

19.4 On levels at approximately thirteen-fourteenths, eleven-fourteenths, nine-fourteenths, one-half, five-fourteenths three-fourteenths and one-fourteenth of the over-all height of the tower at least one 116- or 125-watt lamp (A21/TS) enclosed in an aviation red obstruction light globe shall be installed on each outside corner of the structure.

20 All lighting shall be exhibited from sunset to sunrise unless otherwise specified.

21 All lights shall burn continuously or shall be controlled by a light sensitive device adjusted so that the lights will be turned on at a north sky light intensity level of about 35 foot candles and turned off at a north sky light intensity level of about 58 foot candles.

22 During construction of an antenna structure, for which obstruction lighting is required, at least two 116- or 125-watt lamps (A21/TS) enclosed in aviation red obstruction light globes, shall be installed at the uppermost point of the structure. In addition, as the height of the structure exceeds each level at which permanent obstruction lights will be required, two similar lights shall be displayed nightly from sunset to sunrise until the permanent obstruction lights have been installed and placed in operation, and shall be positioned so as to insure unobstructed visibility of at least one of the lights at any normal angle of approach. In lieu of the above temporary warning lights, the permanent obstruction lighting fixtures may be installed and operated at each required level as each such level is exceeded in height during construction.

F.C.C. - WASHINGTON, D.C.

FCC Form 715  
March 1978

FCC Form 715 (back)  
March 1978

FCC Form 715A  
August 1975

### HIGH INTENSITY OBSTRUCTION LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES

It is to be expressly understood that the issuance of these specifications is in no way to be considered as precluding additional or modified marking or lighting as may hereafter be required under the provisions of Section 303(q) of the Communications Act of 1934, as amended.

#### TOP LIGHTING

A. There shall be installed at the top of the antenna structure a white capacitor-discharge omnidirectional light which conforms to FAA/DOD Specification L-856, High Intensity Obstruction Lighting Systems. This light shall be mounted on the highest point of the structure. If the antenna or other appurtenance at its highest point is incapable of supporting the omnidirectional light, one or more such lights shall be installed on a suitable adjacent support with the lights mounted not more than 20 feet below the tip of the appurtenance. The lights shall be positioned so as to permit unobstructed viewing of at least one light from aircraft at any normal angle of approach. The light unit(s) shall emit a beam with a peak intensity around its periphery of approximately 20,000 candelas during daytime and twilight, and approximately 4,000 candelas at night.

B. There shall be installed at the top of the skeletal or other main support structure three or more high intensity light units which conform to FAA/DOD Specification L-856, High Intensity Obstruction Lighting Systems. The complement of units shall emit a white high intensity light and produce an effective intensity of not less than 200,000 candelas (daytime) uniformly about the antenna structure in the horizontal plane. The effective intensity shall be reduced to approximately 20,000 candelas at twilight, and to approximately 4,000 candelas at night. The light units shall be mounted in a manner to insure unobstructed viewing from aircraft at any normal angle of approach, and so that the effective intensity of the full beam is not impaired by any structural member of the skeletal framework. The units will normally be adjusted so that the center of the beam is in the horizontal plane.

#### INTERMEDIATE LIGHTING

C. At the approximate one-half level of the skeletal tower there shall be installed three or more high intensity light units which conform to FAA/DOD Specification L-856, High Intensity Obstruction Lighting Systems. The complement of units shall emit a white high intensity light and produce an effective intensity of not less than 200,000 candelas (daytime) uniformly about the antenna structure in the horizontal plane. The effective intensity shall be reduced to approximately 20,000 candelas at twilight, and to approximately 4,000 candelas at night. The light units shall be mounted in a manner to insure unobstructed viewing from aircraft at any normal angle of approach, and so that the effective intensity of the full beam

is not impaired by any structural member of the skeletal framework. The normal angular adjustment of the beam centers above the horizontal shall be two degrees ( $2^{\circ}$ ).

D. At the approximate one-third and two-thirds levels of the skeletal tower there shall be installed three or more high intensity light units which conform to FAA/DOD Specification L-856, High Intensity Obstruction Lighting Systems. The complement of units shall emit a white high intensity light and produce an effective intensity of not less than 200,000 candelas (daytime) uniformly about the antenna structure in the horizontal plane. The effective intensity shall be reduced to approximately 20,000 candelas at twilight, and to approximately 4,000 candelas at night. The light units shall be mounted in a manner to insure unobstructed viewing from aircraft at any normal angle of approach, and so that the effective intensity of the full beam is not impaired by any structural member of the skeletal framework. The normal angular adjustment of the beam centers above the horizontal shall be two degrees ( $2^{\circ}$ ) at the one-third level and one degree ( $1^{\circ}$ ) at the two-thirds level.

E. At the approximate one-fourth, one-half and three-fourths levels of the skeletal tower there shall be installed three or more high intensity light units which conform to FAA/DOD Specification L-856, High Intensity Obstruction Lighting Systems. The complement of units shall emit a white high intensity light and produce an effective intensity of not less than 200,000 candelas (daytime) uniformly about the antenna structure in the horizontal plane. The effective intensity shall be reduced to approximately 20,000 candelas at twilight, and to approximately 4,000 candelas at night. The light units shall be mounted in a manner to insure unobstructed viewing from aircraft at any normal angle of approach, and so that the effective intensity of the full beam is not impaired by any structural member of the skeletal framework. The normal angular adjustment of the beam centers above the horizontal shall be three degrees ( $3^{\circ}$ ) at the one-fourth level, two degrees ( $2^{\circ}$ ) at the one-half level and one degree ( $1^{\circ}$ ) at the three-fourths level.

F. At the approximate one-fifth, two-fifths, three-fifths and four-fifths levels of the skeletal tower there shall be installed three or more high intensity light units which conform to FAA/DOD Specification L-856, High Intensity Obstruction Lighting Systems. The complement of units shall emit a white high intensity light and produce an effective intensity of not less than 200,000 candelas (daytime) uniformly about the

antenna structure in the horizontal plane. The effective intensity shall be reduced to approximately 20,000 candelas at twilight, and to approximately 4,000 candelas at night. The light units shall be mounted in a manner to insure unobstructed viewing from aircraft at any normal angle of approach, and so that the effective intensity of the full beam is not impaired by any structural member of the skeletal framework. The normal angular adjustment of the beam centers above the horizon shall be three degrees ( $3^{\circ}$ ) at the one-fifth level, two degrees ( $2^{\circ}$ ) at the two-fifths level, one degree ( $1^{\circ}$ ) at the three-fifths level and zero degrees ( $0^{\circ}$ ) at the four-fifths level.

G. At the approximate one-sixth, one-third, one-half, two-thirds and five-sixths levels of the skeletal tower there shall be installed three or more high intensity light units which conform to FAA/DOD Specification L-856, High Intensity Obstruction Lighting Systems. The complement of units shall emit a white high intensity light and produce an effective intensity of not less than 200,000 candelas (daytime) uniformly about the antenna structure in the horizontal plane. The effective intensity shall be reduced to approximately 20,000 candelas at twilight, and to approximately 4,000 candelas at night. The light units shall be mounted in a manner to insure unobstructed viewing from aircraft at any normal angle of approach, and so that the effective intensity of the full beam is not impaired by any structural member of the skeletal framework. The normal angular adjustment of the beam centers above the horizon shall be three degrees ( $3^{\circ}$ ) at the one-sixth level, two degrees ( $2^{\circ}$ ) at the one-third level, two degrees ( $2^{\circ}$ ) at the one-half level, one degree ( $1^{\circ}$ ) at the two-thirds level and zero degrees ( $0^{\circ}$ ) at the five-sixths level.

H. All lights shall be synchronized to flash simultaneously at 40 pulses per minute. The light system shall be equipped with a light sensitive control device which shall face the north sky and cause the intensity steps to change automatically when the north sky illumination on a vertical surface is as follows:

1. Day to Twilight: Shall not occur before the illumination drops to 60 footcandles, but shall occur before it drops below 30 footcandles.

2. Twilight to Night: Shall not occur before the illumination drops to 5 footcandles, but shall occur before it drops to 2 footcandles.

3. Night to Day: The intensity changes listed in (1) and (2) above shall be reversed in transitioning from the night to day modes.

#### TEMPORARY LIGHTING

I. During construction of an antenna structure for which high intensity lighting is required, at least two 116- or 125 watt lamps (#116 A21/TS or #125 A21/TS) enclosed in aviation red obstruction light globes shall be installed at the uppermost point of the structure. In addition, as the height of the structure exceeds progressive 150 foot levels, two similar lights shall be installed at each such level. The temporary lights shall be operated continuously, except for periods of actual construction, until the permanent obstruction lights have been installed and placed in operation, and shall be positioned so as to insure unobstructed viewing from aircraft at any normal angle of approach. In lieu of the above temporary warning lights, the permanent obstruction lighting fixtures may be installed and placed in operation at each required level as each such level is exceeded in height during construction. NOTE: A battery operated strobe light unit designed for interim use, such as during construction, if available and approved by FAA, may be used in lieu of the red temporary obstruction lights.

THIS FORM IS A PART OF AND SHALL BE ATTACHED TO THE CURRENT INSTRUMENT OF AUTHORIZATION

F.C.C. - WASHINGTON, D. C.

Fig. 5(b) — FCC Form 715A

NOAA FORM 76-10 U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION OMB No. 41-R1558

### REPORT OF RADIO TRANSMITTING ANTENNA CONSTRUCTION, ALTERATION AND/OR REMOVAL

**Purpose:** To provide radio tower information promptly for use on aeronautical charts and related publications in the interest of SAFETY IN AIR NAVIGATION and to comply with the provisions of Section 17.57 of the FEDERAL COMMUNICATIONS COMMISSION RULES AND REGULATIONS, the attached PARTS 1 and 2 shall be completed and mailed at the time stipulated to the addressee indicated.

(See reverse side for definitions)

Detach and mail lower portions

---

**PART 2 MAIL WITHIN 24 HOURS OF COMPLETION OF CONSTRUCTION AND/OR DISPOSITION OF TOWER**

**LOCATION OF TRANSMITTING ANTENNA (As shown on FCC authorization)**

CITY OR TOWN	STATE	CALL SIGN	FREQUENCY
ACTUAL OVERALL HEIGHT OF STRUCTURE ABOVE GROUND INCLUDING ANTENNA, LIGHT, ETC. _____ FT.			DATE STRUCTURE COMPLETED
GROUND ELEV. ABOVE SEA LEVEL AT BASE OF STRUCTURE _____ FT.		LATITUDE	LONGITUDE
DETERMINED BY <input type="checkbox"/> ACTUAL SURVEY <input type="checkbox"/> MAP CONTOURS		STRUCTURE	
<i>(Explain other method under "Remarks")</i>		<input type="checkbox"/> PERMANENT <input type="checkbox"/> TEMP <input type="checkbox"/> NEW <input type="checkbox"/> ALTERATION	

IF OPERATING PREVIOUSLY GIVE DISPOSITION OF TOWER(S) AT FORMER SITE:

<input type="checkbox"/> REMAIN STANDING AND NOT USED FOR TRANSMITTING	OVERALL HEIGHT OF STRUCTURE ABOVE GROUND
<input type="checkbox"/> DISMANTLED: ESTIMATE DATE _____	LATITUDE _____
<i>(Explain under Remarks-note new ownership under Remarks)</i>	LONGITUDE _____

REMARKS

---

NAME OF PERMITTEE OR LICENSEE	SERVICE
BY (Signature and title)	DATE

---

**PART 1 MAIL 48 HOURS PRIOR TO START OF TOWER CONSTRUCTION**

**PROPOSED LOCATION OF TRANSMITTING ANTENNA (As shown on FCC authorization)**

CITY OR TOWN	STATE	LATITUDE 0' " "
DESCRIPTION OF TOWER LOCATION (Street address, if any)		LONGITUDE 0' " "

<input type="checkbox"/> PERM. <input type="checkbox"/> TEMP. <input type="checkbox"/> NEW <input type="checkbox"/> ALTERATION	CALL SIGN	FREQUENCY
STRUCTURE	ACTUAL OVERALL HGT. OF STRUC. ABOVE GROUND INCLUDING ANTENNA, LIGHT, ETC. _____ FT.	
	GROUND ELEV. ABOVE SEA LEVEL AT BASE OF STRUCTURE _____ FT.	
	DATE CONSTRUCTION OF STRUCTURE WILL START	
	ESTIMATED DATE OF STRUCTURE COMPLETION	
RADIO STATION	CLASS OF STATION	
	SERVICE	
	NAME OF PERMITTEE OR LICENSEE	

REMARKS

---

BY (Signature and title)	DATE
--------------------------	------

(Front Side)

### DEFINITIONS

**Structure:** Shall mean the supporting tower including antenna(s).

**Construction:** Shall mean any new construction or any alteration affecting the over-all height of an existing structure, such as the addition of an FM or TV antenna to an existing AM structure thereby increasing the over-all height above ground; the removal of such antenna from existing structures thereby decreasing the over-all height above ground; the rebuilding of a portion of an existing structure in any manner thereby increasing or decreasing the over-all height above ground.

**Relocation:** Move from former site to a new site.

**Completion of Construction:** Shall mean the structure has been constructed to the height authorized by the Federal Communications Commission.

---

NOAA FORM 76-10

U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

OFFICIAL BUSINESS

POSTAGE AND FEES PAID  
U.S. DEPARTMENT OF COMMERCE  
210

AERONAUTICAL CHART DIVISION, ATTN: C421  
NATIONAL OCEAN SURVEY  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
ROCKVILLE, MARYLAND 20852

---

U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

OFFICIAL BUSINESS

POSTAGE AND FEES PAID  
U.S. DEPARTMENT OF COMMERCE  
210

AERONAUTICAL CHART DIVISION, ATTN: C421  
NATIONAL OCEAN SURVEY  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
ROCKVILLE, MARYLAND 20852

(Back Side)

Fig. 6—NOAA Form 76-10

U. S. GOVERNMENT PRINTING OFFICE: 1972-473-027  
 INSTRUCTIONS: For reporting items 1, 4, 5, 6, 7 or 8 remove Part 1 from the form set, complete information requested, and mail. For reporting items 2 and 3, remove Part 2 from the form set, complete information requested, and mail. Part 3 is provided for your use.

<b>A "NOTICE"</b> of the progress is required as indicated (Ref. FAR 77.13). Notice to FAA does not preempt or waive the regulations of any other Government agency.		Form Approved OMB No. 04-R0139	AERONAUTICAL STUDY NO.
LOCATION (City or Town and State)		DESCRIPTION OF LOCATION (Street address, if any)	
COORDINATES (Latitude & Longitude)			
1A. DATE WORK WILL BE STARTED	DATE	6. PROJECT HAS BEEN ABANDONED	DATE
B. ESTIMATED COMPLETION DATE	DATE	7. IF OBJECT IS AN ANTENNA REQUIRING AN FCC LICENSE, COMPLETE THE FOLLOWING:	
2A. STRUCTURE REACHED GREATEST HEIGHT		CALL SIGN	NAME OF FCC PERMITTEE/LICENSEE
8. STRUCTURE HEIGHT		FREQUENCY	DATE FCC CONSTRUCTION PERMIT ISSUED
AGL Ft. AMSL Ft.		C. SITE ELEVATION DETERMINED BY:	
<input type="checkbox"/> ACTUAL SURVEY <input type="checkbox"/> MAP CONTOUR <input type="checkbox"/> OTHER		8. REQUEST DETERMINATION BE EXTENDED—	
3. STRUCTURE IS — <input type="checkbox"/> YES <input type="checkbox"/> NO		<input type="checkbox"/> 6 MONTHS <input type="checkbox"/> 12 MONTHS <input type="checkbox"/> 18 MONTHS	
4. APPLICATION MADE TO FCC FOR CONSTRUCTION PERMIT		SUBMITTED BY (PRINT or TYPE name)	
5. STRUCTURE WAS DISMANTLED		SIGNATURE	DATE

DEPARTMENT OF TRANSPORTATION—FEDERAL AVIATION ADMINISTRATION	FAA Form 7460-2 (7-72)	Part 1
<b>NOTICE OF PROGRESS OF CONSTRUCTION OR ALTERATION</b>	SUPERSEDES FAA FORM 117-1	

DEPARTMENT OF TRANSPORTATION—FEDERAL AVIATION ADMINISTRATION	FAA Form 7460-2 (7-72)	Part 2
<b>NOTICE OF PROGRESS OF CONSTRUCTION OR ALTERATION</b>	SUPERSEDES FAA FORM 117-1	

DEPARTMENT OF TRANSPORTATION—FEDERAL AVIATION ADMINISTRATION	FAA Form 7460-2 (7-72)	Part 3
<b>NOTICE OF PROGRESS OF CONSTRUCTION OR ALTERATION</b>	SUPERSEDES FAA FORM 117-1	

DEPARTMENT OF TRANSPORTATION—FEDERAL AVIATION ADMINISTRATION	FAA Form 7460-2 (7-72)	Part 4
<b>NOTICE OF PROGRESS OF CONSTRUCTION OR ALTERATION</b>	SUPERSEDES FAA FORM 117-1	

RECORD OF TRANSMITTAL TO FLIGHT INFORMATION DIVISION		REMARKS
DATE	BY	

Supplemental notice to FAA relating to an antenna structure for which FAA clearance of proposed structure was required. Part 1 is used to provide (1) notification of start of construction, (2) date that application for construction permit was made to the FCC, (3) date that structure was dismantled, if applicable, (4) date that project was abandoned, if applicable, or (5) to request FAA extension of their determination/clearance.

Supplemental notice to FAA relating to an antenna structure for which FAA clearance of proposed structure was required. Part 2 is used to provide notification (1) that structure has reached its greatest height and (2) that structure is or is not painted and lighted.

Part 3 is provided for permittee's use and record.

Part 4 is for FAA use.

Reverse side of Part 4.

Fig. 7—FAA Form 7460-2



Form E-5176

**RADIO STATION ANTENNA STRUCTURE LIGHTING LOG**

(LIGHTING UNDER CONTINUOUS AUTOMATIC CONTROL OF ALARM SYSTEM) THIS LOG COVERS STATION Downspout 1A

ALARM CENTER None      CALL SIGN KB199 KUK999

F.A.A. TELEPHONE NO. 515-285-5691

DATE	TIME	CHECK ONE		REMARKS	OPERATOR'S SIGNATURE
		Trouble	Routine		
7-1-77	12.30A		✓	Check tower light indicator. All lights OK	R.Y. Fusepop
7-1-77	8.40P	✓		Indication of code beacon failure. Confirmed by visual check. Called Tower Maintenance, Inc. Advised they will be on job at 8:am 7-2-77	R. Edwing
7-1-77	9.10P	✓		Advised FAA Flight Service, Des Moines (515-285-5691) (B.G. Riff) of beacon failure	R. Edwing
7-2-77	12.40A		✓	Check tower light indicator. Code beacon dark, all others OK	R.Y. Fusepop
7-2-77	1.30P	✓		Tower Maintenance reports burned-out lamp in code beacon - replaced	B.L. Ackhak
7-2-77	1.30P	✓		Advised FAA Flight Service, Des Moines (515-285-5691) (R. W. Biff) of code beacon restoral.	B.L. Ackhak
7-2-77	4.30P		✓	Complete 3-month routine. All indicators and flashing mechanism OK. Lubricate flashing mechanism. Remaining lamps replaced by Tower Maintenance	B.L. Ackhak
7-3-77	12.20A		✓	Check tower light indicator. All lights OK.	R.Y. Fusepop
<b>SAMPLE</b>					

**EXPLANATION OF ENTRIES**

- ① Explanation only, not a required entry
- ② Name or location of station
- ③ Call sign of each station using this tower
- ④ Record time of daily check for proper operation of lights. Required because alarms are not provided.
- ⑤ Record nature of any failure and date and time first noted.
- ⑥ Identify FAA station receiving notification of failure of code or rotating beacon or top light not corrected within 30 minutes and of subsequent restoral.
- ⑦ Record nature of work performed to restore failure or malfunction.
- ⑧ Record date of quarterly inspection of lights and control circuits, the condition in which found, and the nature of work performed to insure compliance.
- ⑨ Signature of person having knowledge of the facts to be recorded.
- ⑩ Telephone number of FAA station to be notified of failure or malfunction.

Fig. 9—Antenna Structure Lighting Log for Attended Station With Local Indicators

④ UNATTENDED STATION SUPPLEMENTARY LOGS AT ALARM CENTER (FIG. 11 and 13)

MARITIME RADIO SERVICE Form E-5176  
④ POINT-TO-POINT MICROWAVE RADIO SERVICE  
TELEPHONE MAINTENANCE RADIO SERVICE

**RADIO STATION**  
**ANTENNA STRUCTURE LIGHTING LOG**  
(LIGHTING UNDER CONTINUOUS AUTOMATIC CONTROL OF ALARM SYSTEM)

ALARM CENTER ① 100 S. 19th St. Downsport, IA THIS LOG ② Middle Squegee, IA CALL ③ KBI98  
COVERS STATION SIGN KUK998

F.A.A. TELEPHONE NO. 515-285-5691 ⑧

DATE	TIME	CHECK ONE		REMARKS	OPERATOR'S SIGNATURE
		Trouble	Routine		
⑤ 7-6-77	5:00 P		✓	Complete 3-month inspection of lighting, controls, and alarms — all found OK. Lubricated flasher.	Al Brongebord
⑥ 7-8-77	10:30 A	✓		Side light burned out. Replaced by Jover Maintenance, Inc.	Alex Haggis
⑥ 7-13-77	1:40 P	✓		Replace lamp in code beacon (Jover Maintenance, Inc.)	Alex Haggis
				SAMPLE	

EXPLANATION OF ENTRIES

- ① Alarm center location,
- ② Name or location of antenna structure.
- ③ Call sign of each station using the antenna structure.
- ④ Explanation only; not a required entry.
- ⑤ Date of quarterly inspection, condition of items inspected, and work performed to insure compliance (includes voltage measurements required at maritime stations).
- ⑥ Nature of any work performed to insure compliance and the date performed.
- ⑦ Signature of person having knowledge of facts to be recorded.
- ⑧ Telephone number of FAA station to be notified of failure or malfunction (this case to be notified by alarm center).

Fig. 10—Antenna Structure Lighting Log for Unattended Station With Supplementary Logs at Alarm Center

ALARM CENTER COPY SUPPLEMENTARY LOG AT STATION (Fig. 9 and 10)

MARITIME RADIO SERVICE Form E-5176  
 ④ POINT-TO-POINT MICROWAVE RADIO SERVICE  
 TELEPHONE MAINTENANCE RADIO SERVICE

**RADIO STATION ANTENNA STRUCTURE LIGHTING LOG**  
 (LIGHTING UNDER CONTINUOUS AUTOMATIC CONTROL OF ALARM SYSTEM)

ALARM CENTER ① 1005 19<sup>th</sup> St. Downsport, IA THIS LOG ② Middle Squeeze IA CALL SIGN ③ KKK 999 KBI 98 KUK 998

F.A.A. TELEPHONE NO. 515-285-5691 ⑨

DATE	TIME	CHECK ONE		REMARKS	OPERATOR'S SIGNATURE
		Trouble	Routine		
⑤ 7-6-77	5 00P		✓	Complete 3-month inspection of alarms. All found operating properly - No maintenance required.	B.L. Ackhart
⑥ 7-8-77	8:15A	✓		Side light failure. Called Lower Maintenance Inc.	R.V. Freepop
⑥ 7-8-77	10:30A	✓		Aloy Haggis advises side light bulb replaced - light alarms clear.	R.V. Freepop
⑥ 7-13-77	3 15A	✓		Code beacon fail. Called Lower Maintenance Inc. Advised they will report for work at 10:30 AM 7-13-77.	A.G. Bell
⑦ 7-13-77	3 30A	✓		Advised FAA Flight Service, Des Moines Airport (515-285-5691, W. A. Tergate) of beacon failure.	A.G. Bell
⑥ 7-13-77	1 40P	✓		Lower Maintenance reports lamp replaced in code beacon	R.V. Freepop
⑦ 7-13-77	1 45P	✓		Alarm check shows all lights OK. Advised FAA Flight Service, Des Moines Airport (515-285-5691, R.O. Biff) of restoral	R.V. Freepop

SAMPLE

EXPLANATION OF ENTRIES

- ① Record alarm center location.
- ② Name or location of antenna structure.
- ③ Call sign of each station using the antenna structure.
- ④ Explanation only, not a required entry.
- ⑤ Record date of quarterly inspection of lights and control circuits, the condition in which found, and the nature of work performed to insure compliance.
- ⑥ Record the date and time of any failure and work performed to insure compliance.
- ⑦ Identify FAA station receiving notification of failure of code or rotating beacon or top light not corrected in 30 minutes and of subsequent restoral.
- ⑧ Signature of person having knowledge of the facts to be recorded.
- ⑨ Telephone number of FAA station to be notified of failure or malfunction.

Fig. 11—Antenna Structure Lighting Log Maintained at Alarm Center With Supplementary Log at Radio Station

ALARMS NOT PROVIDED		RADIO STATION		Form E-5176	
ANTENNA STRUCTURE LIGHTING LOG		(LIGHTING UNDER CONTINUOUS AUTOMATIC CONTROL OF ALARM SYSTEM)			
① CONTROL POINT ALARM CENTER <u>195 Broadway, Slippery Rock, IA</u>		② THIS LOG COVERS STATION <u>Slippery Rock Tel Mtce</u>		③ CALL SIGN <u>KUK 997</u>	
		F.A.A. TELEPHONE NO. <u>515-285-5691</u> ⑨		⑧ OPERATOR'S SIGNATURE	
		TROUBLE - Make entry giving nature of failure On clearance make another entry on nature of adjustments or repairs made. When FAA notified on failure of lights enter in addition name of FAA station and time notified. On clearance add time FAA station was notified. SEE BSP ROUTINE - Enter condition of lights, control devices, alarm system and any repairs, adjustments or replacements made. SEE BSP 410-100-010 Also FCC 21,206. and 91.160			
DATE	TIME	CHECK ONE		REMARKS	
		Trouble	Routine		
④ 7-1-77	9.30P		✓	Visual check of tower lights. Code beacon dark - side lights OK called Tower Maintenance, Inc. Will arrive 10:30 AM 7-2-77	Haigen Haig
⑤ 7-1-77	10.00P	✓		Advised FAA Flight Service, Des Moines Airport (515-285-5691, B.O. Riff) of code beacon failure	Haigen Haig
⑥ 7-2-77	12.50P	✓		Tower Maintenance reports both bulbs out in code beacon-replaced	Annis Simult
⑤ 7-2-77	12.55P	✓		Advised FAA Flight Service, Des Moines Airport (515-285-5691, B.O. Riff) of code beacon restored	Annis Simult
④ 7-2-77	9.30P	✓		Visual check of tower lights - all OK	Haigen Haig
⑦ 7-2-77	11.30A	✓		3 month check of tower lights and control. All found OK Lubricate flasher	Annis Simult
④ 7-3-77	9.15P	✓		Visual check of tower lights - all OK	Haigen Haig
SAMPLE					

EXPLANATION OF ENTRIES

- ① Record control point location.
- ② Name or location of antenna structure.
- ③ Call sign of each station using the antenna structure.
- ④ Record time of daily check of tower lighting.
- ⑤ Identify the FAA station receiving notification of failure of code or rotating beacon or top light not corrected within 30 minutes and of subsequent restoral.
- ⑥ Record nature of failure, date, time, and nature of work performed to correct failure.
- ⑦ Record date of quarterly inspection of lights and control circuits, the condition in which found, and the nature of work performed to insure compliance.
- ⑧ Signature of person having knowledge of the facts to be recorded
- ⑨ Telephone number of FAA station to be notified of the failure or malfunction.

Fig. 12—Antenna Structure Lighting Log for Station Without Alarm Capability



- ☐ STEADY BURNING LAMP
- ☀ CODE BEACON
- ① ONE LAMP AT EACH OUTSIDE CORNER AT EACH LEVEL
- ② MINIMUM TWO LAMPS PER LEVEL

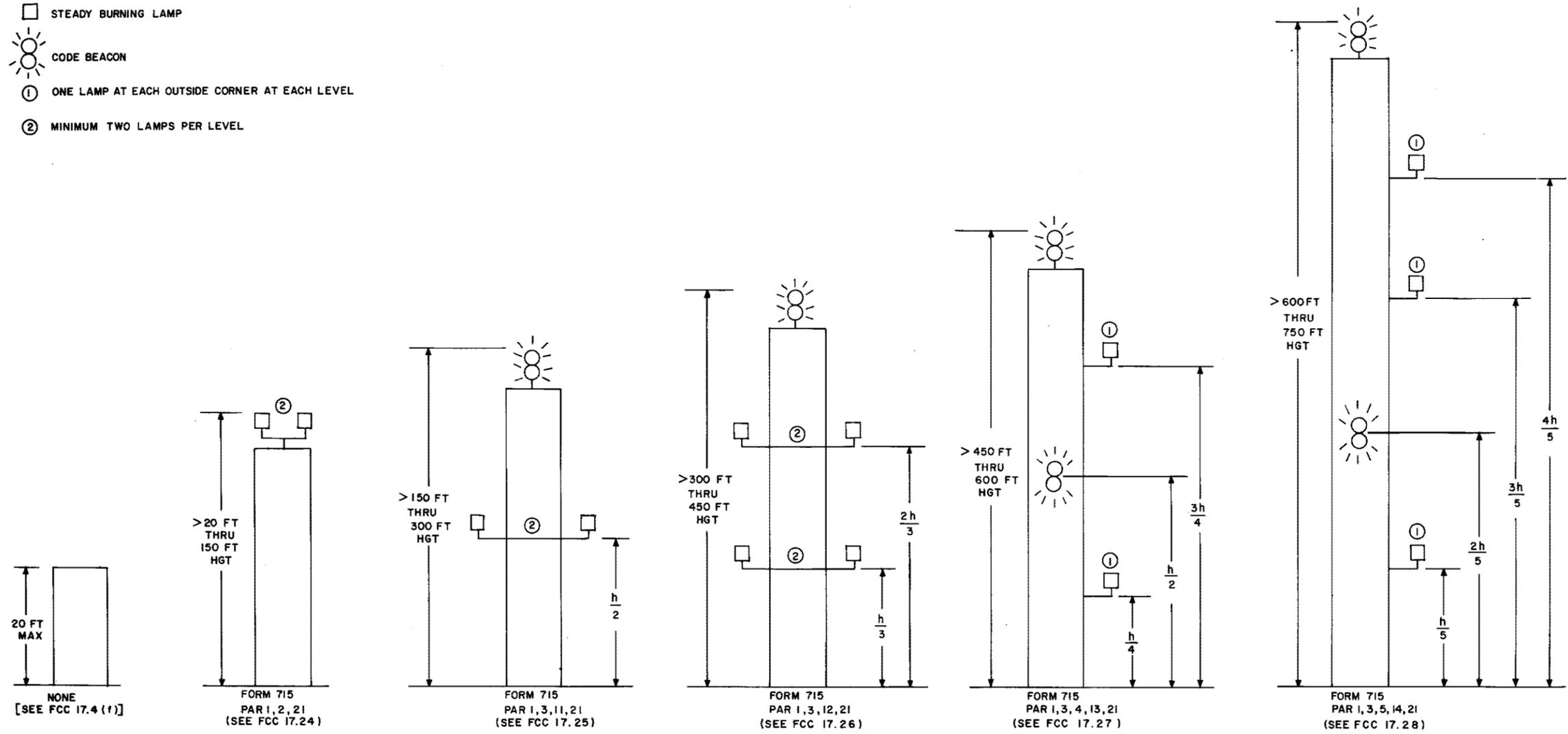


Fig. 14—Standard Painting and Lighting Specifications for Antenna Structures up to and Including 750 Feet in Height

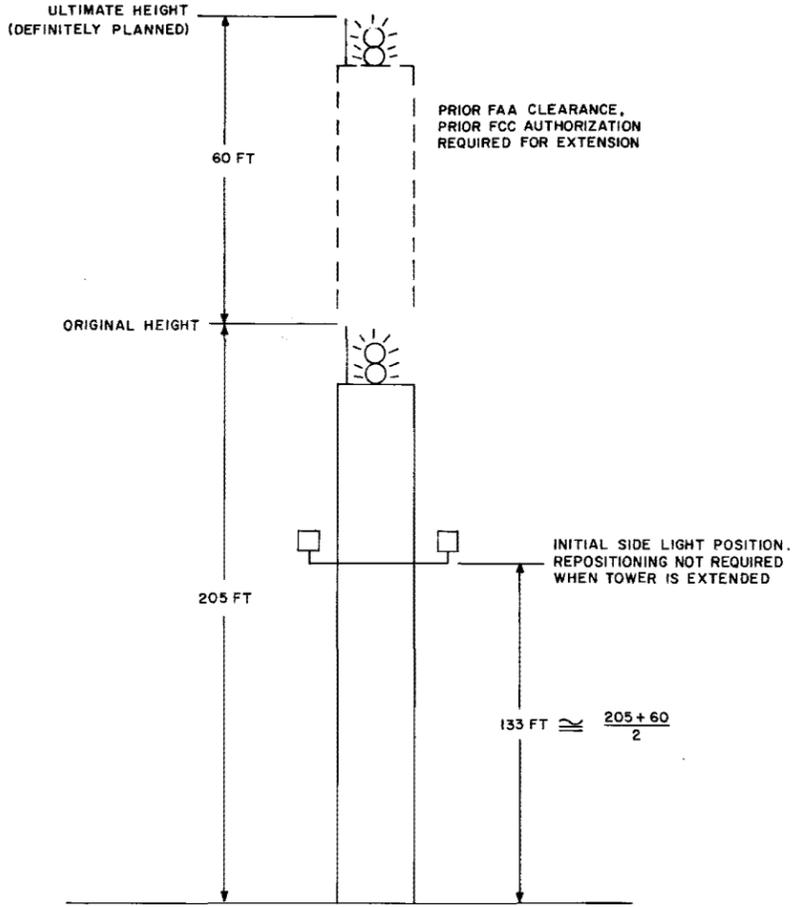


Fig. 15—Positioning of Side Lights on an Antenna Structure With Definite Plans for Increasing Structure Height

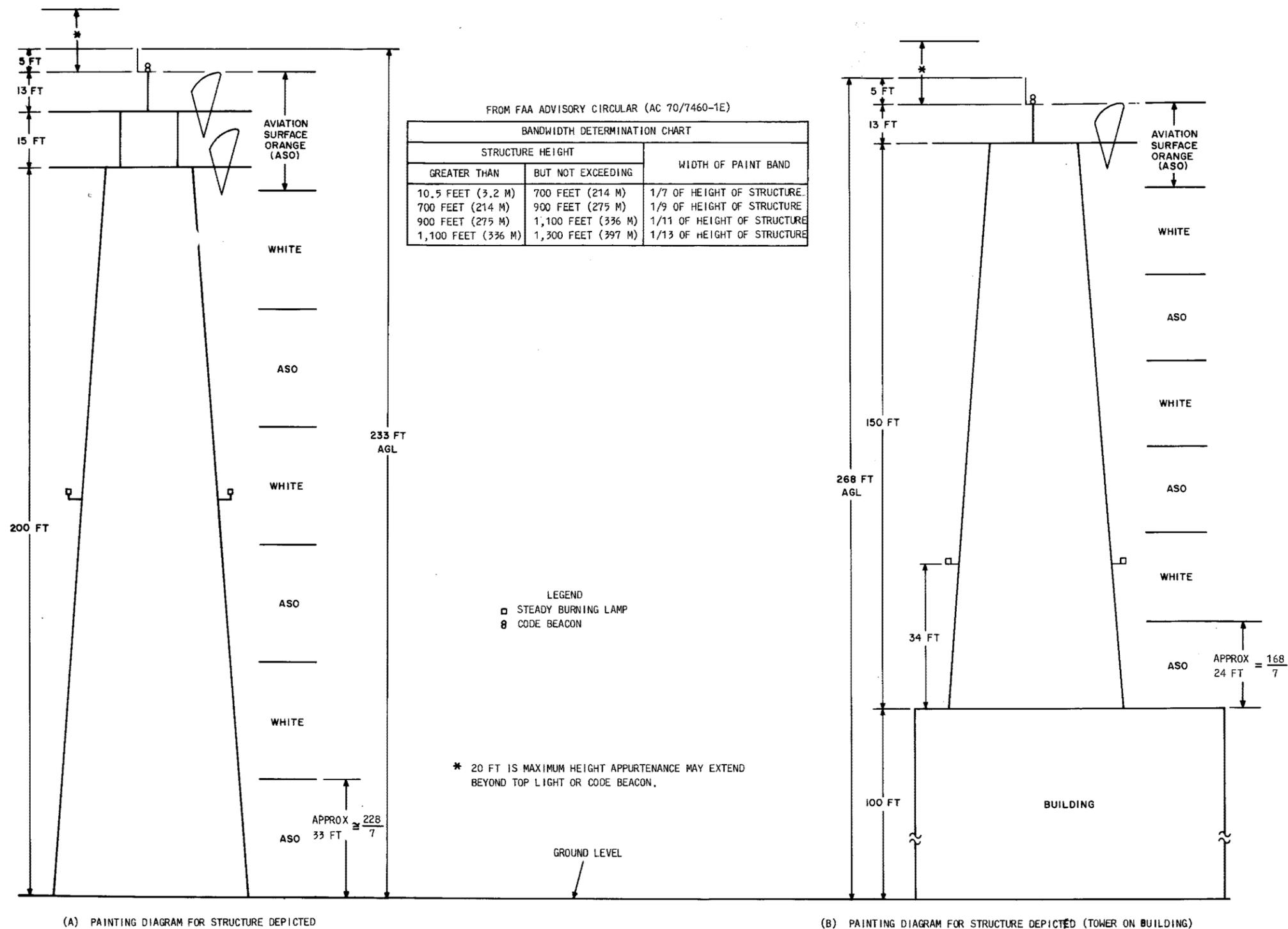
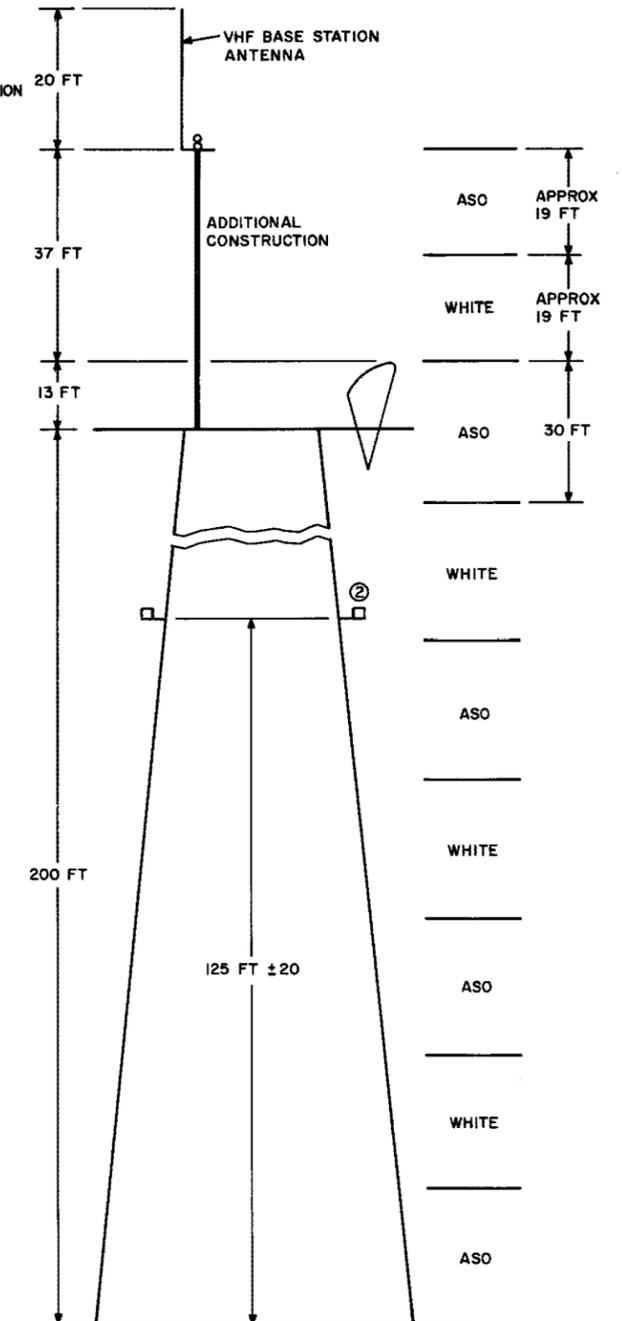
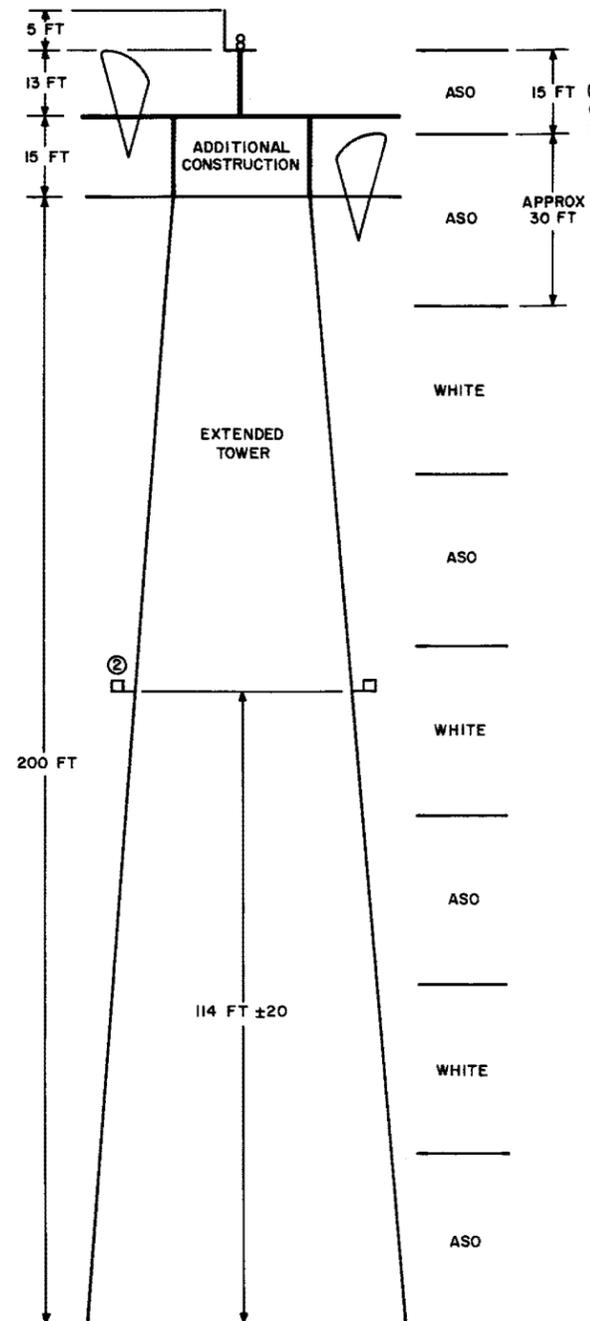
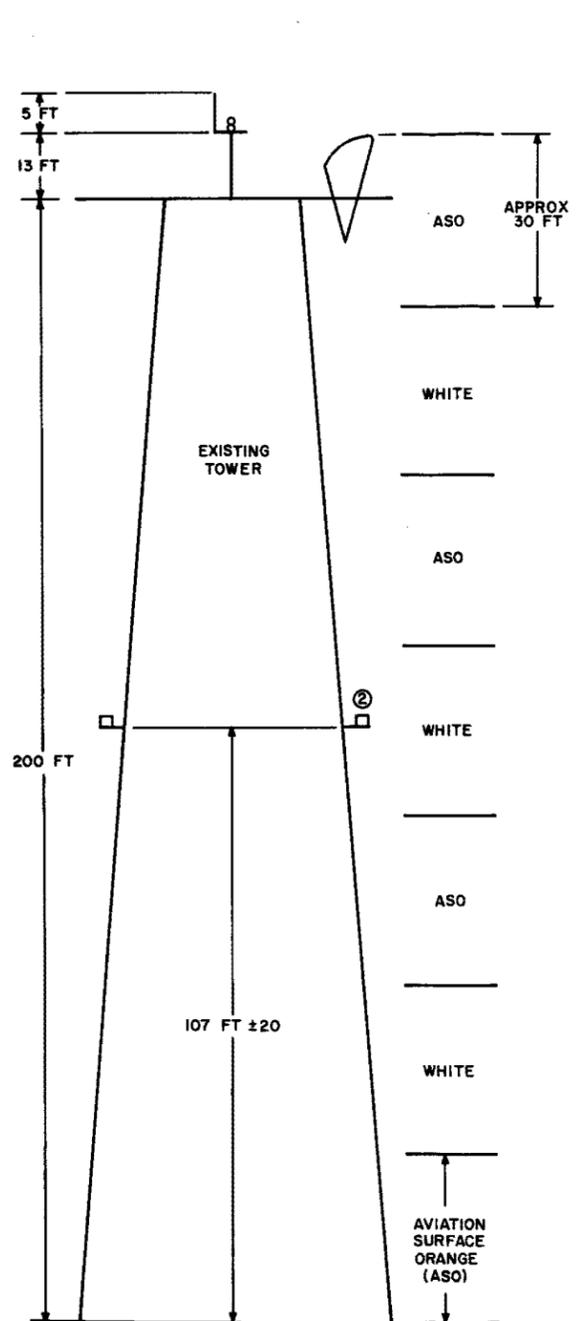


Fig. 16—Painting Diagram



LEGEND  
 □ STEADY BURNING LAMP  
 Ⓢ CODE BEACON  
 ① ONE LAMP AT EACH OUTSIDE CORNER AT EACH LEVEL  
 ② MINIMUM TWO LAMPS PER LEVEL

HEIGHT OF ADDITIONAL CONSTRUCTION DOES NOT EXCEED WIDTH OF EXISTING BANDS OF ASO AND WHITE. WIDTH OF TOP BAND MAY BE EXTENDED TO TOTAL WIDTH OF 60 FT.

HEIGHT OF ADDITIONAL CONSTRUCTION EXCEEDS WIDTH OF EXISTING BANDS OF ASO AND WHITE. PAINT EXTENSION IN EQUAL BANDS NOT LESS THAN 15 FT IN WIDTH.

PAINT TOWER WITH SEVEN EQUAL BANDS OF ASO AND WHITE AT NEXT SCHEDULED PAINTING OR EARLIER IF PAINT CONDITION REQUIRES.

Fig. 17—Painting and Lighting Considerations on Antenna Structure Being Increased in Height





Call Sign:		Antenna Structure Marking and Lighting		
Location:		Radio Service		
Inspected by:				
Date:				
	REFERENCE	ITEM	YES	NO
FCC	17.49(d) 81.193 91.160(e) 94.113(c) (4)	13. Does the lighting log show that the tower lights and associated control, alarm, or indicator systems were inspected within the last 3 months?		
FCC	17.49(d) 81.193 91.160(e) 94.113(c) (4)	14. Does the lighting log show the date and nature of any repairs, adjustments, or replacements made to insure compliance?		
FCC	21.208(b) 81.194(a) 91.160(g) 94.113(e)	15. Are lighting log entries made by persons having knowledge of the facts to be recorded?		
FCC	81.194(b) 91.160(f) 94.113(d)	16. Are logs neat and orderly?		
		17. If abbreviations are used, is a key to their use included in the log?		
ITEM	DEFECTS NOTED			

Call Sign:		Antenna Structure Marking and Lighting		
Location:		Radio Service		
Inspected by:				
Date:				
	REFERENCE	ITEM	YES	NO
FCC	21.208(c) 81.194(c) 91.160(h) 94.113(f)	18. If errors are corrected, are they lined out and are both the lined-out entry and the corrected entry initialed and dated?		
FCC	21.208(d) 81.115 91.160(i) 94.113(g)	19. Are logs retained in station records for the required time?		
FCC	21.204	20. Is a current copy of Part 17 of the FCC Rules available for use by station personnel?		
ITEM	DEFECTS NOTED			

Fig. 18—Permittee Compliance Check List for Antenna Structures (Sheet 2 of 2)