Addison Airport - Automatic Weather Observing Systems - 2004

Jim Pierce

From: Bruce Ehly [BEHLY@dot.state.tx.us]
Sent: Thursday, October 07, 2004 8:49 AM
To: Jim Pierce
Subject: Re: AWOS

Yes, I can advise you as to the status of the AWOS. If you want the status, that is another matter; however, I will provide the info to you at no cost.

We are advertising for a new contract for installation of a group of AWOSs in January and you will be included in that group. Unfortunately, the entire process will take approximately 18 mo. from advertisement to installation. So the bottom line is that installation will not be complete until the Fall of 06.

>>> "Jim Pierce" <jpierce@ci.addison.tx.us> 10/5/2004 4:50:35 PM >>>
Bruce: Can you advise the status of our AWOS? The FAA guys want t know for sure, as they can use it as a secondary altimeter reference point. I f we are not going to get it they will have to buy some other equipment. Thanks,

Jim Pierce, P.E.
Assistant Public Works Director
P.O. Box 9010
Addison, TX 75001-9010
972-450-2879

3-3-04

817-831-1068 www.SRH.NOAA gov/fwd

Nat. Weather Svc → Jim Osborne for E.

DOT will determine where it will go.

Close to existing cable runs
Needs a phone line
Needs Power too

Mesquite, Grand Prairie has an AWOS

Temp gage is on top of tunnel now
We can get rid of redundant equipment

Best location near new tower
We will still need a backup system (SAWS)

CLH will maintain the AWOS under contract with TxDOT Minneapolis Company

Cloud Ht. Temp
Visibility Dew Pt.
Pressure Lightning Detection
Wind Direct, Speed, Gusts
Hi Lo temp
Precip every 20 minutes
Rain, Snow, Sleet, ice pellets, hail

Info avail thru Websites, T.V., Weather Svc

flying public will have access

Tower will have a nice display

Ask for additional displays — Airport / Public Works

Addison Airport AWOS 11-23-03

Talked to Allison TxDOT Aviation

AWOS's is included in TxDOTs '04 money. They won't get that money until July '04. They would write our grant then, and ask for $600 &. The rest of the money for our AWOS would be due after Oct 1, 2004, so we could put it in that budget.

DESIGNATION OF SPONSOR'S AUTHORIZED REPRESENTATIVE

I, Ron Whitehead (Name), City Manager (Title),
with the Town of Addison (Sponsor Name) designates Jim Pierce, Asst. Public Wks. Dir. (Name, Title)
as the Addison (Sponsor Name) authorized representative for the, project description, who shall have the authority to make approvals and disapprovals as required on behalf of the Town of Addison (Sponsor Name).

Addison (Sponsor), Texas

Project Description:
Automated Weather Observation System (AWOS)

By: R Whitehead (Signature)

Title: City Manager

Date: 08-23-01

DESIGNATED REPRESENTATIVE

Mailing Address: P.O. Box 9010
Addison, TX 75001-9010

Physical/Overnight Address: 16801 Westgrove Drive
Addison, TX 75001

Telephone Number: 972-450-2879

Fax Number: 972-450-2837

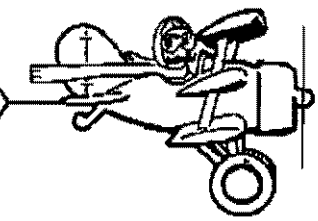
E-Mail Address: jpierce@ci.addison.tx.us

Mailed to Allison Martin
Tx DOT Aviation
8-24-01

TOTAL P.02

FAX TRANSMISSION

TxDOT - Aviation Division
125 E. 11th Street
Austin, Texas 78701-2483
(512) 416-4512 1-800-687-4568
Fax: (512) 416-4510



DATE: 7/18/01

NUMBER OF PAGES: 2

TO: Jim Pierce

FAX NUMBER: 972.450.2837

FROM: Allison Martin
Grant Manager

COMMENTS:

Sorry about the confusion.

AWOS

Allison

$63,750 — Federal
21,250 — Local
$85,000

Actions required by airport sponsor for an AWOS:

_____Return resolution and certification of project funds, designated representative form by **Wednesday July, 18, 2001**

_____Provide local funding of costs by **September 28, 2001** ($21,250 estimated)

Selection options for the AWOS - immediately following receipt of bids

Have electrical power line (30-amp minimum, 120 volt) and telephone line installed to the approved AWOS site (60 days following NTP on contract)- if you have any questions regarding this aspect of the project, please contact Mr. Jim Curl at 512-416-4532.

Attend pre-construction conference in Austin – date to be determined following FAA approval of siting

If all funds are not available by the end of September, follow this timeline:

_____Provide local funding for siting by **September 15, 2001 ($500.00)**

_____Provide local funding for remaining of costs by **November 1, 2001** ($20,750 estimated)

SAMPLE RESOLUTION for AWOS

WHEREAS, the NAME OF SPONSOR desires to install an automated weather observing system at the (name of airport); and

WHEREAS, the NAME OF SPONSOR hereby offers 25% of project costs to match 75% federal funds, currently estimated to be $21,250 in local funds; and

WHEREAS, local funds will be available to meet project expenditures; and

WHEREAS, the NAME OF SPONSOR agrees to operate and maintain the installed automated weather observation system for the useful life of the asset; and

WHEREAS, the NAME OF SPONSOR hereby requests financial assistance from the Texas Department of Transportation for installation of the automated weather observing system; and

WHEREAS, the NAME OF SPONSOR intends to name the Texas Department of Transportation as its agent for the purposes of applying for, receiving and disbursing all funds for these improvements and for the administration of contracts necessary for the implementation of these improvements;

NOW, THEREFORE, BE IT RESOLVED, that the NAME OF SPONSOR hereby directs NAME OR POSITION OF INDIVIDUAL to execute on behalf of the NAME OF SPONSOR, at the appropriate time, and with the appropriate authorizations of this governing body, all contracts and agreements with the State of Texas, represented by the Texas Department of Transportation, and such other parties as shall be necessary and appropriate for the implementation of the improvements to the AIRPORT NAME.

LETTER OF TRANSMITTAL

TOWN OF ADDISON

Public Works / Engineering
16801 Westgrove • P.O. Box 9010
Addison, Texas 75001-9010
Telephone: [972] 450-2871 • Fax: [972] 450-2837

DATE 7-3-01	JOB NO.
ATTENTION	
RE: Addison Airport AWOS	

TO Allison Martin
TxDOT Aviation

GENTLEMAN:

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via _____ the following items:

☐ Shop Drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	6-12-01		Resolution No R01-036 passed by Town of Addison offering funds for the project and naming TxDOT as our Agent
1	6-12-01		Form expressing interest and certifying funds are available

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☒ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

COPY TO _____

SIGNED: _____

If enclosures are not as noted, please notify us at once.

TOWN OF ADDISON

Post Office Box 9010 Addison, Texas 75001-9010 5300 Belt Line Road

(972) 450-7000
FAX (972) 450-7043

TO WHOM IT MAY CONCERN

Please be advised that the attached document is a true and correct copy of Resolution No. R01-036, duly passed by the Addison City Council on the 12th day of June, 2001.

Duly certified by Carmen Moran, City Secretary for the Town of Addison on the 3rd day of July, 2001.

C Moran

City Secretary

ATTEST:

SEAL

RESOLUTION NO. R01-036

A RESOLUTION OFFERING $21,250 OF LOCAL FUNDS FOR THE PROJECT; AGREEING TO OPERATE AND MAINTAIN THE SYSTEM; REQUESTING FINANCIAL ASSISTANCE FROM TXDOT; NAMING TXDOT AS THE AGENT FOR APPLYING FOR, RECEIVING, AND DISPERSING ALL FUNDS FOR THE AWOS SYSTEM; AND NAMING THE CITY MANAGER AS THE INDIVIDUAL TO EXECUTE ALL CONTRACTS RELATED TO THE PROJECT.

WHEREAS, the Town of Addison desires to install an automated weather observation system at the Addison Airport; and

WHEREAS, the Town of Addison hereby offers 25% of project costs to match 75% federal funds, currently estimated to be $21,250 in local funds; and

WHEREAS, local funds will be available to meet project expenditures; and

WHEREAS, the Town of Addison agrees to operate and maintain the installed automated weather observation system for the useful life of the asset; and

WHEREAS, the Town of Addison hereby requests financial assistance from the Texas Department of Transportation for installation of the automated weather observation system; and

WHEREAS, the Town of Addison intends to name the Texas Department of Transportation as its agent for the purposes of applying for, receiving and disbursing all funds for these improvements and for the administration of contracts necessary for the implementation of these improvements;

NOW, THEREFORE, BE IT RESOLVED, that the Town of Addison hereby directs the City Manager to execute on behalf of the Town of Addison, at the

appropriate time, and with the appropriate authorizations of this governing body, all contracts and agreements with the State of Texas, represented by the Texas Department of Transportation, and such other parties as shall be necessary and appropriate for the implementation of the improvements to Addison Airport.

DULY PASSED BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS, this the 12th day of June 2001.

Mayor

ATTEST:

City Secretary

Texas Department of Transportation – Aviation Division
Automated Weather Observation System Program
February 2001

Date: June 12, 2001

The Town of Addison (Sponsor)hereby expresses their interest in acquiring an Automated Weather Observation System for the Addison (Airport Name).

A minimum cash outlay for the local sponsor share is currently estimated to be $21,250.

The Town (Sponsor) estimates that these local funds will be available by:

Presently Available in Airport Fund
(Enter date that funds are anticipated to be available.)

Ron Whitehead
Authorized Local Representative

Ron Whitehead
Typed Name of Authorized Local Representative

City Manager
Title

Note: This commitment for inclusion in the AWOS Program should be signed by the local authorized representative with authority to commit to future financial obligations for the local government.

Return this form by Tuesday, March 13, 2001 to:

Karon Wiedemann
TxDOT, Aviation Division
125 E. 11th Street
Austin, TX 78701

CONSENT AGENDA

#2a - Approval of the Minutes for the May 22, 2001, Council Meeting.

#2b - Consideration of a Resolution authorizing the City Manager to enter into an agreement in an amount not to exceed $111,620.30 with the FAA for installation of a remote transmitter in the Addison Airport Air Traffic Control Tower.

R.01036

#2c - Consideration of a Resolution authorizing the City Manager to enter into an agreement in the estimated amount of $21,250.00 with Texas Department of Transportation for an Automated Weather Observation System (AWOS) at the Addison Airport.

Passed

#2d - Approval of an increase in scope in the amount of $16,212.00 for the update to the Federal Aviation Regulation Part 150 Noise Study at Addison Airport.

Passed

#2e - Approval of a Change Order and additional funding in an amount not to exceed $20,000.00 to Freese and Nichols for an increase in scope of work for the Sanitary Sewer Investigation.

Passed

#2f - Approval of a Change Order in the amount of $20,105.00 and authorization of a final payment in the amount of $11,754.50 to Ed Wilson Inc. for miscellaneous pavement improvements on Midway Road and Quorum Drive.

#2g - Consideration of a Resolution authorizing the City Manager to enter into a contract in the amount of $50,000 with Atlas Enterprises for the Addison Kaboom Town! Fireworks Show.

#2h - Approval of a host site sponsorship agreement in the amount of $40,000.00 with Hand & Associates for Spikefest 2001.

Council Agenda Item: 2C

SUMMARY:

This item is requesting that $21,250 be budgeted for the Addison Airport Automated Weather Observation System (AWOS) and that the attached resolution be passed.

FINANCIAL IMPACT:

Budgeted Amount: N/A. A mid-year budget adjustment will be required.

Cost: $21,250.00

Funds are available in the Airport Fund for this project.

BACKGROUND:

On March 13, 2001, Council passed a resolution (R01-020 - attached) expressing the Town's interest in participating with TxDOT Aviation Division in the cost of an AWOS for Addison Airport. Total project cost is estimated to be $85,000. Addison's share is estimated to be $21,250. 25%

TxDOT has advised the Town that our airport has been tentatively selected to receive an AWOS in FY 2002. TxDOT has requested the City Council pass the attached resolution offering $21,250 of local funds for the project; agreeing to operate and maintain the system; requesting financial assistance from TxDOT; naming TxDOT as the agent for applying for, receiving, and dispersing all funds for the AWOS system; and naming the City Manager as the individual to execute all contracts related to the project.

While the local share of funding is presently estimated to be $21,250 additional funds will be needed by the Town for electrical power supply, and a telephone line to the site. These costs will not be known until the actual location of the AWOS on the Airport is known.

RECOMMENDATION:

Staff recommends Council pass the attached resolution.

RESOLUTION FOR AUTOMATED WEATHER OBSERVATION SYSTEM (AWOS)

A resolution offering $21,250 of local funds for the project; agreeing to operate and maintain the system; requesting financial assistance from TxDOT; naming TxDOT as the agent for applying for, receiving, and dispersing all funds for the AWOS system; and naming the City Manager as the individual to execute all contracts related to the project.

WHEREAS, the Town of Addison desires to install an automated weather observation system at the Addison Airport; and

WHEREAS, the Town of Addison hereby offers 25% of project costs to match 75% federal funds, currently estimated to be $21,250 in local funds; and

WHEREAS, local funds will be available to meet project expenditures; and

WHEREAS, the Town of Addison agrees to operate and maintain the installed automated weather observation system for the useful life of the asset; and

WHEREAS, the Town of Addison hereby requests financial assistance from the Texas Department of Transportation for installation of the automated weather observation system; and

WHEREAS, the Town of Addison intends to name the Texas Department of Transportation as its agent for the purposes of applying for, receiving and disbursing all funds for these improvements and for the administration of contracts necessary for the implementation of these improvements;

NOW, THEREFORE, BE IT RESOLVED, that the Town of Addison hereby directs the City Manager to execute on behalf of the Town of Addison, at the appropriate time, and with the appropriate authorizations of this governing body, all contracts and agreements with the State of Texas, represented by the Texas Department of Transportation, and such other parties as shall be necessary and appropriate for the implementation of the improvements to Addison Airport.

TOWN OF ADDISON

PUBLIC WORKS DEPARTMENT (972) 450-2871

Post Office Box 9010 Addison, Texas 75001-9010 16801 Westgrove

May 21, 2001

Mr. David S. Fulton, Director
Texas Department of Transportation
Aviation Division
125 E. 11th Street
Austin, TX 78701-2483

Re: Addison Airport AWOS

Dear Mr. Fulton:

We were certainly glad to hear the good news about our tentative selection for an AWOS system at Addison Airport. We are working on the items requested in your letter of May 1, 2001 to Mayor Wheeler.

However, to assist us in making decisions about the options available to the system, and budgeting, would you please send descriptive information and estimated costs regarding the precipitation sensor, thunder strike alert, uninterruptible power supply and NADIN interface mentioned in your letter?

Your attention to this matter will be most appreciated. Please call me at 972-450-2879 if you have any questions.

Very truly yours,

Town of Addison

James C. Pierce, Jr., P.E.
Assistant Public Works Director

cc: Chris Terry, Assistant City Manager
Michael E. Murphy, P.E., Director of Public Works
Mark Acevedo, Buildings and Fleet Manager

5-30-01
Allison Martin advises the $85,000 Budget should cover all of this.
JCP

TOWN OF

ADDISON PUBLIC WORKS

To: Allison Martin

Company: TX Dot Aviation

FAX #: 512-416-4510

Date: 5-9-01

# of pages (including cover): 3

Re: AWOS

From: Jim Pierce, P.E.
Asst. Public Wks. Dir.
Phone: 972/450-2879
FAX: 972/450-2837
jpierce@ci.addison.tx.us

16801 Westgrove
P.O.Box 9010
Addison, TX 75001-9010

☐ Original in mail ☐ Per your request ☐ FYI ☐ Call me

Comments:

Copy of Expression of Interest and Supporting Council Resolution

Texas Department of Transportation – Aviation Division
Automated Weather Observation System Program
February 2001

Date: March 13, 2001

The Town of Addison hereby expresses their interest in acquiring an Automated Weather Observation System for the Addison Municipal Airport.

A minimum cash outlay for the local sponsor share is currently estimated to be $21,250.

The Town of Addison estimates that these local funds will be available by:

Presently Available
(Enter date that funds are anticipated to be available.)

R. W. Whitehead
Authorized Local Representative

Ron Whitehead
Typed Name of Authorized Local Representative

City Manager
Title

Note: This commitment for inclusion in the AWOS Program should be signed by the local authorized representative with authority to commit to future financial obligations for the local government.

Return this form by Tuesday, March 13, 2001 to:

Karon Wiedemann
TxDOT, Aviation Division
125 E. 11th Street
Austin, TX 78701

RESOLUTION NO. R01-020

A RESOLUTION BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS, AUTHORIZING THE CITY MANAGER TO EXPRESS THE TOWN'S INTEREST IN AN AUTOMATED WEATHER OBSERVATION SYSTEM (AWOS) FOR THE ADDISON MUNICIPAL AIRPORT, WITH AN ESTIMATED LOCAL SHARE IN THE AMOUNT OF $21,250.

WHEREAS, the installation of AWOS would provide any pilot exact weather information at Addison Airport by radio ; and

WHEREAS, the weather information would also be available 24 hours per day through the National Weather Service; and

WHEREAS, the $21,250 local share of funding, plus the cost of providing electrical and telephone service would come from the Airport Fund; now, therefore,

BE IT RESOLVED BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS:

THAT, the City Council does hereby authorize the City Manager to express the Town's interest in an Automated Weather Observation System (AWOS) for the Addison Municipal Airport,

DULY PASSED BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS, this the 13th day of March 2001.

Mayor

ATTEST:

City Secretary

COPY

Texas Department of Transportation

AVIATION DIVISION
125 E. 11TH STREET • AUSTIN, TEXAS 78701-2483 • 512/416-4500 • FAX 512/416-4510

May 1, 2001

The Honorable R. Scott Wheeler
Mayor
Town of Addison
PO Box 9010
Dallas, Texas 75001-9010

Dear Mayor Wheeler:

Congratulations! The Addison Municipal Airport has been tentatively selected to receive an Automated Weather Observing System (AWOS) for fiscal year 2002. The state fiscal year begins September 1, 2001.

In order to begin our grant approval process, we must have a signed resolution passed by your governing body, designation of project representative, and a certification of project funds. Copies are attached and should be completed and returned by **July 18, 2001**. Your grant will be scheduled for Transportation Commission approval on August 30, 2001. Additionally, a public hearing will be held on August 6, 2001 at our office for public comments regarding funding for all grants to be issued at this time for this program. While you are certainly welcomed to attend, your attendance is not necessary. These hearings typically last no more than 10 to 15 minutes.

Following Commission approval of your grant, an Airport Project Participation Agreement will be issued. Local funds, currently estimated to be $21,250, should be available by September 28, 2001. If however, your budget will not suffice for this amount of funding, we ask that you do have available $500 for your share of the siting costs for the AWOS. Then the remainder of your funds will be required by November 1, 2001. Please call Allison Martin at 512-416-4512 if this funding schedule does not suffice.

We anticipate bidding the AWOS contract by early October, 2001. Therefore, it is imperative that the above deadlines be met. Contact Allison if you are unable to meet any of these deadlines so appropriate arrangements and changes can be made.

options

Following receipt of the bids, you will be contacted to decide which options you desire to add to your system. The base systems will be AWOS-III with options to upgrade to precipitation sensor, thunder strike alert, uninterruptible power supply and a NADIN interface for reporting of local weather to flight service stations. Additionally, you will be asked to attend at least one pre-construction conference in Austin and to provide power and a telephone line to the AWOS site. Other milestones that you will be required to meet can be found on the attachment to this letter.

Sincerely,

David S. Fulton
Director, Aviation Division

cc: Mr. Jim Pierce, Assistant City Engineer

cc Chris Terry
Mike Murphy
Mark Acevedo
Dave Pearce

Ron

Texas Department of Transportation

AVIATION DIVISION
125 E. 11TH STREET • AUSTIN, TEXAS 78701-2483 • 512/416-4500 • FAX 512/416-4510

May 1, 2001

Carl
TxDOT

The Honorable R. Scott Wheeler
Mayor
Town of Addison
PO Box 9010
Dallas, Texas 75001-9010

Dear Mayor Wheeler:

Congratulations! The Addison Municipal Airport has been tentatively selected to receive an Automated Weather Observing System (AWOS) for fiscal year 2002. The state fiscal year begins September 1, 2001.

In order to begin our grant approval process, we must have a signed resolution passed by your governing body, designation of project representative, and a certification of project funds. Copies are attached and should be completed and returned by **July 18, 2001**. Your grant will be scheduled for Transportation Commission approval on August 30, 2001. Additionally, a public hearing will be held on August 6, 2001 at our office for public comments regarding funding for all grants to be issued at this time for this program. While you are certainly welcomed to attend, your attendance is not necessary. These hearings typically last no more than 10 to 15 minutes.

Following Commission approval of your grant, an Airport Project Participation Agreement will be issued. Local funds, currently estimated to be $21,250, should be available by September 28, 2001. If however, your budget will not suffice for this amount of funding, we ask that you do have available $500 for your share of the siting costs for the AWOS. Then the remainder of your funds will be required by November 1, 2001. Please call Allison Martin at 512-416-4512 if this funding schedule does not suffice.

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Following receipt of the bids, you will be contacted to decide which options you desire to add to your system. The base systems will be AWOS-III with options to upgrade to precipitation sensor, thunder strike alert, uninterruptible power supply and a NADIN interface for reporting of local weather to flight service stations. Additionally, you will be asked to attend at least one pre-construction conference in Austin and to provide power and a telephone line to the AWOS site. Other milestones that you will be required to meet can be found on the attachment to this letter.

Sincerely,

David S. Fulton
Director, Aviation Division

cc: Mr. Jim Pierce, Assistant City Engineer

cc Chris Terry
Mike Murphy
Mark Acevedo
Dave Pearce

Actions required by airport sponsor for an AWOS:

_____Return resolution and certification of project funds, designated representative form by **Wednesday July, 18, 2001**

_____Provide local funding of costs by **September 28, 2001** ($21,250 estimated)

Selection options for the AWOS - immediately following receipt of bids

Have electrical power line (30-amp minimum, 120 volt) and telephone line installed to the approved AWOS site (60 days following NTP on contract)- if you have any questions regarding this aspect of the project, please contact Mr. Jim Curl at 512-416-4532.

Attend pre-construction conference in Austin – date to be determined following FAA approval of siting

If all funds are not available by the end of September, follow this timeline:

_____Provide local funding for siting by **September 15, 2001 ($500.00)**

_____Provide local funding for remaining of costs by **November 1, 2001** ($20,750 estimated)

SAMPLE RESOLUTION for AWOS

WHEREAS, the NAME OF SPONSOR desires to install an automated weather observing system at the (name of airport); and

WHEREAS, the NAME OF SPONSOR hereby offers 25% of project costs to match 75% federal funds, currently estimated to be $21,250 in local funds; and

WHEREAS, local funds will be available to meet project expenditures; and

WHEREAS, the NAME OF SPONSOR agrees to operate and maintain the installed automated weather observation system for the useful life of the asset; and

WHEREAS, the NAME OF SPONSOR hereby requests financial assistance from the Texas Department of Transportation for installation of the automated weather observing system; and

WHEREAS, the NAME OF SPONSOR intends to name the Texas Department of Transportation as its agent for the purposes of applying for, receiving and disbursing all funds for these improvements and for the administration of contracts necessary for the implementation of these improvements;

NOW, THEREFORE, BE IT RESOLVED, that the NAME OF SPONSOR hereby directs NAME OR POSITION OF INDIVIDUAL to execute on behalf of the NAME OF SPONSOR, at the appropriate time, and with the appropriate authorizations of this governing body, all contracts and agreements with the State of Texas, represented by the Texas Department of Transportation, and such other parties as shall be necessary and appropriate for the implementation of the improvements to the AIRPORT NAME.

CERTIFICATION OF PROJECT FUNDS

I, _____, _____,
(Name) (Title)
do certify that sufficient funds to meet the _____
(Sponsor's Name)
share of project costs as identified in the resolution for the project and will be available in accordance with the schedule shown below:

SPONSOR FUNDS

Source	Amount	Date Available

_____, Texas
(Sponsor)

By: _____

Title: _____

Date: _____

Texas Department of Transportation – Aviation Division
Automated Weather Observation System Program
February 2001

Date: _____

The _____(Sponsor)hereby expresses their interest in acquiring an Automated Weather Observation System for the _____(Airport Name).

A minimum cash outlay for the local sponsor share is currently estimated to be $21,250.

The _____(Sponsor) estimates that these local funds will be available by:

_____
(Enter date that funds are anticipated to be available.)

_____
Authorized Local Representative

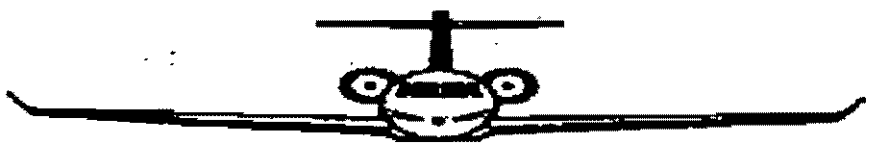
_____
Typed Name of Authorized Local Representative

_____
Title

Note: This commitment for inclusion in the AWOS Program should be signed by the local authorized representative with authority to commit to future financial obligations for the local government.

Return this form by Tuesday, March 13, 2001 to:

Karon Wiedemann
TxDOT, Aviation Division
125 E. 11th Street
Austin, TX 78701



Addison!

JIM PIERCE, P.E.
Assistant Public Works Director
(972) 450-2879
(972) 450-2837 FAX
jpierce@ci.addison.tx.us

Town of Addison 16801 Westgrove Dr. P.O. Box 9010, Addison, Texas 75001-9010

3-15-01

Randy -

FYI

Jim

Agenda Item
Posted 3-13-01

March 5, 2001

MEMORANDUM

To: Chris Terry, Assistant City Manager

Through: Mike Murphy, P.E., Director of Public Works

From: Jim Pierce, P.E., Assistant Public Works Director

Subject: Airport Automated Weather Observation System (AWOS)

We have received a letter (attached) dated February 23, 2001 from TxDOT Aviation Division regarding the installation of an AWOS at Addison Airport. The system would provide any pilot exact weather information at Addison Airport by radio. The weather information would also be available 24 hours per day through the National Weather Service.

Staff believes an AWOS would be a good addition for Addison Airport. The estimated $21,250 local share of funding, plus the cost of providing electrical and telephone service would come from the Airport Fund.

Staff recommends that the City Manager be authorized to express the Town's interest in the AWOS program and return the appropriate form to TxDOT Aviation Division.

Texas Department of Transportation – Aviation Division
Automated Weather Observation System Program
February 2001

Date: March 13, 2001

The Town of Addison hereby expresses their interest in acquiring an Automated Weather Observation System for the Addison Municipal Airport.

A minimum cash outlay for the local sponsor share is currently estimated to be $21,250.

The Town of Addison estimates that these local funds will be available by:

Presently Available
(Enter date that funds are anticipated to be available.)

R. Whitehead
Authorized Local Representative

Ron Whitehead
Typed Name of Authorized Local Representative

City Manager
Title

Note: This commitment for inclusion in the AWOS Program should be signed by the local authorized representative with authority to commit to future financial obligations for the local government.

Return this form by Tuesday, March 13, 2001 to:

Karon Wiedemann
TxDOT, Aviation Division
125 E. 11th Street
Austin, TX 78701

Texas Department of Transportation

AVIATION DIVISION
125 E. 11TH STREET • AUSTIN, TEXAS 78701-2483 • 512/416-4500 • FAX 512/416-4510

February 23, 2001

Mr. Jim Pierce
Asst. City Engineer
PO Box 9010
Addison, Texas 75001-9010

Re: Addison Municipal Airport

Dear Mr. Pierce:

Following the recent successful installation of sixteen Automated Weather Observation Systems (AWOS) at airports across the state, TxDOT Aviation Division is now ready to expand and continue the AWOS program. The program will utilize a statewide contract for siting, installation, and maintenance of groups of AWOS III systems. TxDOT is now accepting letters of interest from eligible airport sponsors for inclusion in the program.

The systems, currently estimated to cost approximately $85,000 per unit, will require a 25% local match of approximately $21,250. However, final costs will be based on actual bid prices. We anticipate including in the bid proposal a three year maintenance agreement for the program, subject to availability of funds. If, due to bid prices, we are unable to include maintenance in the bid package, the sponsor must then assume responsibility for ongoing maintenance costs. Currently, yearly maintenance costs can run about $3,000 per year, not including parts. Additionally, sponsors will be required to bear the costs for installation of necessary electrical power supply and telephone line installation costs.

If your airport would like to be included in this program, please complete and return the enclosed form by Tuesday, March 13, 2001. If you have previously applied for an AWOS, we request that you complete the enclosed form if you are still interested. It is anticipated that local match would be required as early as late summer or early fall 2001, depending on necessary siting approval as required by FAA.

For questions regarding this program, please call Karon Wiedemann at 512-416-4520.

Sincerely,

David S. Fulton
Director

cc: The Honorable R. Scott Wheeler, Mayor

HP LaserJet 3200se

invent

TOALASERJET 3200
9724502837
MAR-14-2001 08:18

Fax Call Report

Job	Date	Time	Type	Identification	Duration	Pages	Result
584	3/14/2001	08:17:21	Send	915124164510	1:13	2	OK

TOWN OF
ADDISON

PUBLIC WORKS

To: Karon Wiedeman

Company: TxDOT Aviation

FAX #: 512-416-4510

Date: 3-14-01

# of pages (including cover): 2

Re: Addison AWOS

From: Jim Pierce, P.E.
Asst. Public Wks. Dir.
Phone: 972/450-2879
FAX: 972/450-2837
jpierce@ci.addison.tx.us

16801 Westgrove
P.O.Box 9010
Addison, TX 75001-9010

☒ Original in mail ☒ Per your request ☐ FYI ☐ Call me

Comments:

Expression of interest/commitment attached

Jim

Texas Department of Transportation – Aviation Division
Automated Weather Observation System Program
February 2001

Date: March 13, 2001

The Town of Addison hereby expresses their interest in acquiring an Automated Weather Observation System for the Addison Municipal Airport.

A minimum cash outlay for the local sponsor share is currently estimated to be $21,250.

The Town of Addison estimates that these local funds will be available by:

Presently Available
(Enter date that funds are anticipated to be available.)

R Whitehead
Authorized Local Representative

Ron Whitehead
Typed Name of Authorized Local Representative

City Manager
Title

Note: This commitment for inclusion in the AWOS Program should be signed by the local authorized representative with authority to commit to future financial obligations for the local government.

Return this form by Tuesday, March 13, 2001 to:

Karon Wiedemann
TxDOT, Aviation Division
125 E. 11th Street
Austin, TX 78701

Administrative Recommendation:

Administration recommends approval.

Item #R9 - Consideration of Resolution authorizing the City Manager to express the Town's interest in an Automated Weather Observation System (AWOS) for the Addison Municipal Airport, with an estimated local share in the amount of $21,250.

Attachments:

1. Memo from Jim Pierce, Assistant Director of Public Works
2. Letter from David Fulton, Director, TxDOT Aviation Division
3. Form

Administrative Recommendation:

Administration recommends approval.

Item #R10 - Consideration of a Resolution authorizing the City Manager to request Texas Department of Transportation Aviation to switch the FY2001 $150,000 entitlement grant from the Terminal Apron Project to an update of the Airport Master Plan.

Attachment:

1. Memo from Jim Pierce, Assistant Director of Public Works

Administrative Recommendation:

Administration recommends approval.

Adjourn Meeting

Posted 5:00 p.m.
March 7, 2001
Carmen Moran
City Secretary

THE TOWN OF ADDISON IS ACCESSIBLE TO PERSONS WITH DISABILITIES. PLEASE CALL (972) 450-2819 AT LEAST 48 HOURS IN ADVANCE IF YOU NEED ASSISTANCE.

Texas Department of Transportation

AVIATION DIVISION

125 E. 11TH STREET • AUSTIN, TEXAS 78701-2483 • 512/416-4500 • FAX 512/416-4510

February 23, 2001

Mr. Jim Pierce
Asst. City Engineer
PO Box 9010
Addison, Texas 75001-9010

Re: Addison Municipal Airport

Dear Mr. Pierce:

Following the recent successful installation of sixteen Automated Weather Observation Systems (AWOS) at airports across the state, TxDOT Aviation Division is now ready to expand and continue the AWOS program. The program will utilize a statewide contract for siting, installation, and maintenance of groups of AWOS III systems. TxDOT is now accepting letters of interest from eligible airport sponsors for inclusion in the program.

The systems, currently estimated to cost approximately $85,000 per unit, will require a 25% local match of approximately $21,250. However, final costs will be based on actual bid prices. We anticipate including in the bid proposal a three year maintenance agreement for the program, subject to availability of funds. If, due to bid prices, we are unable to include maintenance in the bid package, the sponsor must then assume responsibility for ongoing maintenance costs. Currently, yearly maintenance costs can run about $3,000 per year, not including parts. Additionally, sponsors will be required to bear the costs for installation of necessary electrical power supply and telephone line installation costs.

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For questions regarding this program, please call Karon Wiedemann at 512-416-4520.

Sincerely,

David S. Fulton
Director

cc: The Honorable R. Scott Wheeler, Mayor

Texas Department of Transportation – Aviation Division
Automated Weather Observation System Program
February 2001

Date:_____

The Town of Addison hereby expresses their interest in acquiring an Automated Weather Observation System for the Addison Municipal Airport.

A minimum cash outlay for the local sponsor share is currently estimated to be $21,250.

The Town of Addison estimates that these local funds will be available by:

_____
(Enter date that funds are anticipated to be available.)

_____
Authorized Local Representative

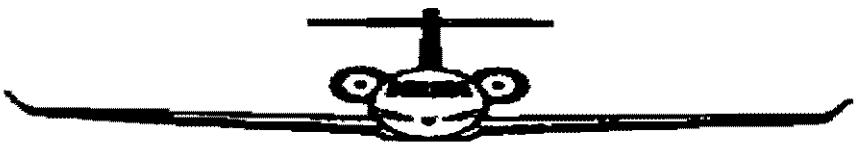
_____
Typed Name of Authorized Local Representative

_____
Title

Note: This commitment for inclusion in the AWOS Program should be signed by the local authorized representative with authority to commit to future financial obligations for the local government.

Return this form by Tuesday, March 13, 2001 to:

Karon Wiedemann
TxDOT, Aviation Division
125 E. 11th Street
Austin, TX 78701



HP LaserJet 3200se

invent

TOALASERJET 3200
9724502837
MAR-2-2001 16:37

Fax Call Report

Job	Date	Time	Type	Identification	Duration	Pages	Result
376	3/ 2/2001	16:35:51	Send	99727889334	1:22	3	OK

TOWN OF
ADDISON **PUBLIC WORKS**

To: Dave Pearce
Company: Washington
FAX #: 972-788-9334
Date: 3-2-01
# of pages (including cover): 3
Re: AWOS Program

From: Jim Pierce, P.E.
Asst. Public Wks. Dir.
Phone: 972/450-2879
FAX: 972/450-2837
jpierce@ci.addison.tx.us

16801 Westgrove
P.O.Box 9010
Addison, TX 75001-9010

☐ Original in mail ☐ Per your request ☐ FYI ☐ Call me

Comments: Dave: Is this something we should do? They don't give us much time. To meet their March 13th deadline, we need to decide Monday 3/5 to get it on the agenda for the 13th. I assume we could get a few days "grace."

We will discuss with Ron & Chris Monday AM.

Jim

ADDISON PUBLIC WORKS

To: Dave Pearce

Company: Washington

FAX #: 972-788-9334

Date: 3-2-01

# of pages (including cover): 3

Re: AWOS Program

From: Jim Pierce, P.E.
Asst. Public Wks. Dir.
Phone: 972/450-2879
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We will discuss with Ron & Chris Monday AM.

Jim

AWOS -

Radio

Provides any pilot
exact weather @ airport

Nat. Weather Service
24 hrs

Cell

Rain
Wind
Ceiling
Visibility

Benefits Pilots —

Weather now from tower

Would get some benefit
Need 500' clear Radius

Marginal

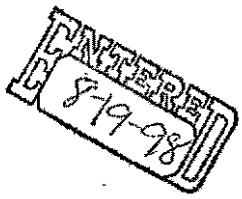
DD

ORDER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

6560.20B

7/20/98



SUBJ: SITING CRITERIA FOR AUTOMATED WEATHER OBSERVING SYSTEMS (AWOS)

1. PURPOSE. This order establishes the siting criteria for AWOS's at airports and heliports. It applies to all airports and heliports. Compliance with this order is required to provide pilots representative weather information.

2. DISTRIBUTION. This order is distributed to the division level in Washington headquarters except to the branch level in the Airway Facilities Service, Air Traffic Plans and Requirements Service, Flight Standards Service, and Office of Air Traffic Systems Development; to the section level of Airway Facilities, Air Traffic, Airports, and Flight Standards in the regions; to the branch level in the Federal Aviation Administration (FAA) Logistics Center and the FAA Academy at the Mike Monroney Aeronautical Center; and a standard distribution to all Airway Facilities field offices.

3. CANCELLATION. Order 6560.20A, Siting Criteria for Automated Weather Observing Systems (AWOS), dated May 14, 1990, is canceled.

4. BACKGROUND. This order is in compliance with the draft Federal Standard for Siting Meteorological Sensors at Airports. Changes to this standard approved by the Federal Coordinator for Meteorological Services and Supporting Research will be reviewed for potential inclusion in this order.

5. DEFINITIONS. Appendix 2, Acronyms, contains acronyms used in the order.

6. APPLICATION. This order implements the siting standards contained in the draft Federal Standard for Siting Meteorological Sensors at Airports (appendix 1). Sensor siting in accordance with this standard meets the requirements of Section 77.15(c) of the Federal Aviation Regulations (FAR) and is exempt from further Part 77 study. Any exceptions to the standard or special situations shall require an FAA obstruction evaluation/airport

airspace analysis (OE/AAA) aeronautical study in accordance with Part 77 of the FAR to determine if a substantial adverse effect would be created for aircraft operations.

7. EXCEPTIONS. If systems are installed in accordance with this order, there is a high probability that, as far as location is concerned, the systems will be able to provide the usable information desired. Since desired locations are not always available due to excessive physical or economic reasons, compromises may have to be considered and less than desired locations may have to be selected. If this occurs, it must be understood that the alternative location must still allow the system to provide accurate information. Actual commissioning of an installed site or sensor may be delayed until it operationally demonstrates the validity of the information provided. If the information meets the requirements, it shall be commissioned/ approved. Corrective action will be required if system/sensor information does not demonstrate valid data. This may mean removal of the sensor, correction of whatever is adversely affecting the sensor, or relocation of the sensor or system. Since the desire is to provide accurate and reliable weather information, and since deviation from the standard may result in less than desired results, economic expediency should not be the sole basis for acceptance of a less than desired site location.

Sandra Hennessy

for Peter H. Challan
Director of Air Traffic
Systems Development

APPENDIX 1. DRAFT FEDERAL STANDARD FOR SITING METEOROLOGICAL SENSORS AT AIRPORTS

FOREWORD

The coordination of weather observing activities in the United States is complex, involving three Federal agencies and the commercial aviation sector. The Departments of Commerce (DOC), Defense (DOD), and Transportation (DOT) all have programs to develop and field automated weather observing systems. The automation programs of these three agencies are closely coordinated to manage the changes due to automation.

There is a critical need to assure commonality and interchangeability of weather information among various Federal and military organizations that provide weather observations. For this reason, the Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM) Working Group for Surface Observations' Task Group for Surface Instrumentation Standards has developed siting standards for automated weather observing systems used at airports and heliports. This document addresses siting characteristics for exposure and placement of sensors. This is essential for the establishment of a standardized meteorological data network, which is necessary for aviation operations, as well as aviation weather forecasting services.

To provide for an orderly transition to metric units, this document includes both English and metric dimensions. The metric dimensions may not be exact, and until there is an official changeover to the metric system, the English dimensions will prevail.

TABLE OF CONTENTS

LIST OF FIGURES

1. INTRODUCTION

1.1 PURPOSE

This document establishes the Federal standard for siting meteorological sensors of automated weather observing systems at airports/heliports to collect meteorological data to support aircraft operations as well as aviation and other weather forecasting. It will be used by Federal agencies as a basis for developing and implementing specific regulatory or technical documents. The standard applies to all Federally-owned and Federally-funded systems, as well as non-Federal systems that are to be approved by the Federal Aviation Administration (FAA) of the DOT or the National Weather Service (NWS)of the DOC. Multiple users of meteorological data exist, and to the greatest practical extent they have been considered in the development of this standard. The standard provides criteria for proper and representative exposure of sensors to assure that data are meteorologically sound (section 2). It also provides criteria for selecting locations for sensors at airports (section 3) as well as at heliport installations (section 4).

1.2 SCOPE

This standard is intended to serve as the most fundamental reference for sensor siting. While this document is not of itself regulatory in nature, it is to be implemented through appropriate agency orders. Likewise, this standard may be modified or enhanced by agency directives. This document does not require agencies to change existing sensor installations solely to comply with this standard. It will be applied as new stations are established. Inclusion of sensors in this document does not imply that such sensors will be used in all system applications.

In applying this document to the planning of an automated weather observing system site at an airport with a control tower, no site shall be finalized without obtaining the approval of the control tower manager or flight service station manager, as appropriate.

Sensor siting in accordance with this standard meets the requirements of Section 77.15(c) of the Federal Aviation Regulations (FAR) and is exempt from further Part 77 study. Any exceptions to the standard or special situations will require an FAA obstruction evaluation/airport airspace analysis (OE/AAA) aeronautical study in accordance with Part 77 of the FAR to determine if a substantial adverse effect would be created for aircraft operations.

The standard covers the following weather elements:

- Surface wind speed and direction
- Ambient temperature
- Dewpoint temperature
- Atmospheric pressure
- Visibility
- Sky condition
- Precipitation type discrimination (rain, snow, drizzle, etc.)
- Precipitation occurrence (Yes/No)
- Freezing precipitation detection
- Precipitation accumulation
- Snowfall-snow depth
- Lightning detection

The standard does not address:

- Details of installation for individual manufacturers' sensors
- Shielding and/or venting of sensors, except in general terms
- Special application systems such as those designed to detect low-level wind shear
- Details of lightning protection

2. SENSOR EXPOSURE

2.1 GENERAL

Sensor siting shall not violate runway or taxiway object free areas, runway or taxiway safety areas, obstacle free zones or instrument flight procedures surfaces as defined in FAA Advisory Circular (AC) 150/5300-13, Airport Design, or FAA Handbook 8260.3, TERPS. Notwithstanding these constraints, the sensor exposure will strive to minimize or eliminate the effects of manmade or geographical obstructions. The tower used to mount the wind sensor is not considered an obstruction to the sensor collection system, but it will (with the exception of the temperature, dewpoint, and pressure sensors) be at least 10 feet (3 meters) away from the other sensors. Sensors should be located as far as practicable from cultivated land to reduce contamination by dust and dirt. It may be necessary to increase the heights of some sensors based on the average maximum snow depth for the location, which will be determined by averaging the maximum annual snow depths over the period of record.

2.2 PRESSURE SENSOR

The pressure sensor will be installed on the airfield, usually in a weatherproof facility (building, shelter, enclosure, etc.). When the pressure sensor is vented to the outside, a vent header will be used. In most cases, internal venting of the pressure sensors may be satisfactory. However, if it is determined that internal venting will affect the altimeter setting value by $\pm$ 0.02 inches of mercury or more, outside venting will be used. A portable transfer standard will be used to resolve any questions regarding the need for external venting. Siting that will cause pressure variations due to air flow over the venting interface should be avoided. The venting interface will be designed to avoid and dampen pressure variations and oscillations due to "pumping" or "breathing" of the pressure sensor venting and porting equipment. Each sensor will have an independent venting interface from separate outside vents (if outside venting is required) through dedicated piping to the sensors. The sensors should also be located in an area free of jarring, vibration, and rapid temperature fluctuations (i.e., avoid locations exposed to direct sunlight, drafts from open windows, air currents from heating or cooling systems, and jet blast). If the pressure sensors are sited outdoors, the height of the vent header shall not be less than one foot above the average maximum snow depth, or 3 feet (1 meter) above ground level, whichever is higher. The field and sensor elevations

above Mean Sea Level (MSL) elevation will be determined to the nearest whole foot by a qualified surveyor. The distance between the elevation of the pressure sensors and the field elevation will not exceed 100 feet (30 meters).

2.2.1 Pressure Sensor for Altimeter-Only Systems. The criteria in paragraph 2.2 are applicable to altimeter-only systems, except: (1) The pressure sensor will be installed within 7 nautical miles of the instrument runway threshold, and (2) provided a temperature correction is used in the algorithm used to compute altimeter setting, the elevational difference between the height of the pressure sensors and the field elevation may be increased to 500 feet (150 meters).

2.3 CLOUD HEIGHT SENSOR

This sensor will be mounted on a platform/pedestal with the sensor optics a minimum of 4 feet (1.2 meters) above ground level or above average maximum snow depth, whichever is higher. The sensor should be located as far as practicable from strobe lights and other modulated light sources.

2.4 VISIBILITY SENSOR

This sensor will be mounted on a platform/pedestal as free as possible from jarring and vibration. Unless otherwise specified by the manufacturer, the receiver will be pointed in a northerly direction. The sensor should be located as far as practicable from strobe lights and other modulated light sources. The sensor should be located where it will yield readings that are representative of the visibility on the runway. It should not be located in an area that is subject to localized obstructions to vision (e.g., smoke, fog, etc.) nor in an area that is usually free of obstructions to vision when they are present in the surrounding area. It will be mounted so the optics are 10 $\pm$ 2 feet (3 $\pm$ 0.6 meters) above ground or 6 feet (2 meters) above the average maximum snow depth, whichever is higher. Ten feet (3 meters) above the ground is the preferred height. Keep the area within 6 feet (2 meters) of the sensor free of all vegetation and well drained and any grass or vegetation within 100 feet (30 meters) of the sensor clipped to a height of about 10 inches (25 centimeters) or less. These precautions are necessary to reduce the probability of carbon-based aerosols (e.g., terpenes) and insects from interfering with sensor performance. In addition, backscatter-type sensors must have a clear area for 300 feet (90 meters) in the forward (north) octant. Some sensors may require additional clear areas. The clear line of sight requirement for the sensor optics will be as specified by the sensor manufacturer.

2.5 WIND SENSOR

This sensor (wind speed and wind direction) will be oriented with respect to true north. The surveyor point used to establish the AWOS wind direction orientation will be permanently installed and marked as a reference benchmark for future use. The system software will be used to make required adjustments to magnetic north. The site should be relatively level, but small gradual slopes are acceptable. The sensor should be mounted at 30 to 33 feet (9 to 10 meters) above the average ground height within a radius of 500 feet (150 meters). It is desired that all obstructions (e.g., vegetation, buildings., etc.) be at least 15 feet lower than the height of the sensor within the 500 foot radius and be no greater than 10 feet above the sensor from 500 to 1000 feet. Where this desired location and clearance is difficult to achieve due to physical or economic reasons, the following definitions should be followed. An object will become a sheltering obstruction if the distance between the sensor and the object is less than ten times the height of the object and the lateral angle from the sensor to the ends of the object exceeds 10 degrees. Sheltering obstructions should be avoided by location choice or removed from the location if possible. Again, if difficult to achieve, a less desirable location may have to be selected; but, after installation, the sensor(s) must demonstrate that accurate and reliable information is being provided. If the wind information is not accurate and reliable, resolution is required. Resolution may require that the sensors be relocated or turned off. Additional wind sensor siting location information is covered in paragraphs 3.2.2 and 3.2.3.1 of this order.

Exception: The height of a wind sensor installed on the Instrument Landing System (ILS) glide slope antenna tower or on a separate tower in area "A," figure 1, section 3, will be reduced, as necessary, such that the height of the complete wind sensor installation (i.e., to include any required air terminal(s) and obstruction lights) does not exceed the height of the glide slope antenna installation. The minimum acceptable height for the wind sensor in this situation is 20 feet (6 meters). If side mounting (i.e., perpendicular to a tower) is necessary, a boom will be used to permit installation of the sensor at a minimum of 3 feet (1 meter) laterally from the tower. Side mounting is to be utilized only if top mounting is not practicable and the tower is of open design to allow for free air flow.

2.6 TEMPERATURE AND DEWPOINT SENSORS

These sensors will be mounted so that the aspirator intake is 5 ± 1 feet (1.5 ± 0.3 meters) above ground level or 2 feet (0.6 meters) above the average maximum snow depth, whichever is higher. Five feet (1.5 meters) above ground is the preferred height. The sensors will be protected from radiation from the sun, sky, earth, and any other surrounding objects, but at the same time, be adequately ventilated. The sensors will be installed in such a position as to ensure that measurements are representative of the free air circulating in the locality and not influenced by artificial conditions such as large buildings, cooling towers, and expanses of concrete and tarmac. Keep any grass and vegetation within 100 feet (30 meters) of the sensor clipped to height of about 10 inches (25 centimeters) or less.

2.7 LIGHTNING DETECTION (THUNDERSTORM) SENSOR

This sensor will be sited and mounted in accordance with the manufacturer's recommendations/specifications. For a single station sensor, metal obstructions will be no closer than two times their height above the sensor.

2.8 PRECIPITATION TYPE DISCRIMINATION SENSOR

This sensor detects precipitation and discriminates type (e.g., rain, snow). It will be mounted so that the optics are 10 ± 2 feet (3 ± 0.6 meters) above ground or 6 feet (2 meters) above the average maximum snow depth, whichever is higher. Ten feet (3 meters) above ground is the preferred height. If the system is double ended, the optical axis will be oriented generally north-south with the receiver facing north. The terrain between the receiver and transmitter should be relatively flat.

2.9 PRECIPITATION OCCURRENCE (YES/NO) SENSOR

The precipitation occurrence sensor will be mounted in accordance with the manufacturer's specifications at a convenient height but not less than 6 feet (2 meters) above ground level or 4 feet (1.2 meters) above the average maximum snow depth, whichever is higher. Care must be taken to avoid shielding of the sensor by structures, buildings, and obstacles.

2.10 FREEZING RAIN DETECTION SENSOR

The siting requirements for the freezing rain sensor are the same as for the precipitation occurrence sensor.

2.11 PRECIPITATION ACCUMULATION (LIQUID OR LIQUID EQUIVALENT) SENSOR

This sensor will be mounted so that the orifice is horizontal and in an area where the terrain is relatively flat. The orifice is defined as the upper rim edge of the collector mouth. The height of the orifice will be as close to ground level as practicable. In determining the height of the orifice, consideration will be given to keeping the orifice above accumulated/drifting snow and minimizing the potential for splashing into the orifice. Surrounding objects will be no closer to the sensor than a distance equal to two times their height above the gage orifice. An object is considered an obstruction if the included lateral angle from the sensor to the ends of the object is 10 degrees or more. In order to reduce losses due to wind, an alter-type windshield is recommended to be installed on gages in areas where 20 percent or more of the annual average precipitation falls as snow. The surrounding ground can be covered with short grass or be of gravel, but a hard flat surface such as concrete gives rise to splashing and should be avoided. Separate sensors may be used to measure liquid and frozen precipitation accumulation (e.g., rain and snow) in which case the above criteria will be followed for each installation.

2.12 SNOWFALL-SNOW DEPTH SENSOR

This sensor will be mounted at least 15 feet (4.5 meters) away from the wind tower over an area which would be expected to have snow cover which is representative of the area of interest. It will be mounted in accordance with manufacturer specifications and recommendations.

2.13 COMBINATION VISIBILITY, PRECIPITATION OCCURRENCE, AND PRECIPITATION ACCUMULATION SENSOR

The siting requirements for the visibility sensor apply to this combination sensor or any other combinations of the precipitation parameters and visibility.

3. SITING CRITERIA FOR SENSOR PLACEMENT AT AIRPORTS

3.1 GENERAL

This section provides criteria for placement of sensors at airports based upon runway category (i.e., visual/nonprecision, precision without Runway Visual Range (RVR) instrumentation, and precision with RVR instrumentation). Special care is necessary in selecting appropriate locations for installation of sensors to assure that the resultant observations are representative of the meteorological conditions affecting aviation operations. Users of these criteria should consider future plans for the airport that could impact placement of sensors, e.g., installation of an Instrument Landing System (ILS), Microwave Landing System (MLS), runway construction, etc. Critical power availability should also be considered along with all other factors when siting an AWOS.

3.2 CLOUD HEIGHT, VISIBILITY, WIND, TEMPERATURE, DEWPOINT, AND PRECIPITATION SENSORS

3.2.1 General. No sensor siting shall violate runway or taxiway object free areas, runway or taxiway safety areas, obstacle free zones, or instrument flight procedures surfaces in AC 150/5300-13, Airport Design, or FAA Handbook 8260.3, TERPS. These sensors (cloud height, visibility, wind, temperature, dewpoint, and precipitation) should be located together near available power and communications. However, the temperature, dewpoint, and precipitation sensors can be placed at any convenient location on the airport that meets the sensor exposure criteria outlined in section 2. The AWOS visibility sensor shall not be located in known areas of concentrated local ground fog. These would include river banks, lake shores, and other locations where at certain times of the year, a small, very localized fog pocket appears that is not an indicator of the overall weather in the area, and does not obscure the runway. FAA SMO Manager approval is required for the use of any FAA facilities such as power, communications, shelters, towers, etc.

3.2.2 Airports with Only Visual and/or Nonprecision Runways. The preferred siting of the cloud height, visibility, and wind sensors and associated data collection platform (DCP) is adjacent to the primary runway 1,000 feet (300 meters) to 3,000 feet (900 meters) down runway from the threshold. The primary runway is considered to be the runway with the lowest minimums. The minimum distance from runway centerline shall be 500 feet (150 meters). The maximum distance from runway centerline shall not exceed 1,000 feet (300 meters). The minimum distance of 500 feet (150 meters) assumes flat terrain. If the elevation of

the wind sensor site is above or below the runway elevation, the minimum distance is adjusted by 7 feet for every foot of elevation difference. The adjustment is negative (i.e., the minimum distance is less than 500 feet) if the sensor site elevation is less than the runway elevation. The adjustment is positive (i.e., the minimum distance is greater than 500 feet) if the sensor site elevation is greater than the runway elevation. This preferred siting should be appropriate for most airports with only visual and/or nonprecision runways. Should this siting prove to be unnecessarily restrictive, the cloud height, visibility, and wind sensors and associated DCP may be sited at an alternate location on the airport provided the alternate location: (1) will assure that the resultant observations are representative of the touchdown zone of the primary runway, and (2) meets the sensor exposure criteria outlined in section 2. However, in no case shall the site selected result in a violation of a runway or taxiway object free area, runway or taxiway safety area, obstacle free zone or instrument flight procedures surface described in AC 150/5300-13, Airport Design, or FAA Handbook 8260.3, TERPS.

3.2.3 Airports with Precision Instrument Runways and Without RVR Instrumentation. There are two preferred options for siting at these airports.

3.2.3.1 Option #1.

The cloud height, visibility, and wind sensors and associated DCP shall be located adjacent to the primary instrument runway 1,000 feet (300 meters) to 3,000 feet (900 meters) down runway from the threshold. The minimum distance from runway centerline shall be 750 feet (230 meters). The maximum distance from runway centerline shall not exceed 1,000 feet (300 meters). The minimum distance of 750 feet (230 meters) assumes flat terrain. If the elevation of the wind sensor site is above or below the runway elevation, the minimum distance is adjusted by 7 feet for every foot of elevation difference. The adjustment is negative (i.e., the minimum distance is less than 750 feet) if the sensor site elevation is less than the runway elevation. The adjustment is positive (i.e., the minimum distance is greater than 750 feet) if the sensor site elevation is greater than the runway elevation. In no case shall the site result in a violation of a runway or taxiway object free area, runway or taxiway safety area, obstacle free zone, or instrument flight procedures surface as described in AC 150/5300-13, Airport Design, or FAA Handbook 8260.3, TERPS.

3.2.3.2 Option #2.

The cloud height and visibility sensors and associated DCP shall be located behind the glide slope shelter/MLS elevation station used for the primary precision instrument runway (area "B", figure 1).

The wind sensor shall be located either on the glide slope antenna tower or on a separate tower. The preferred location is on the glide slope antenna tower as this eliminates the potential safety concerns caused by a separate wind sensor tower. This option shall be implemented at airports that have FAA Airway Facilities technicians available and who will not be relocated as a result of remote maintenance monitoring. Under no conditions shall anyone have access to an FAA glide slope antenna tower without an FAA technician being present. When mounted on the glide slope antenna tower, the wind sensor shall: (1) not extend above the top of the tower, (2) be mounted on a boom a minimum of 3 feet (1 meter) laterally from the tower, (3) be a minimum of 3 feet vertically from any antenna, and (4) be mounted on the side of the tower opposite from the glide slope antenna face.

If joint use of the glide slope antenna tower is not practical, a separate wind sensor tower shall be installed immediately behind the glide slope antenna tower (area "A", figure 1). The height of the complete installation (i.e., tower plus air terminal(s) and obstruction lights) shall not exceed the height of the glide slope antenna tower when installed in this area.

Exceptions: Sensors shall not be sited in area "A" or "B", figure 1, if the glide slope installation is in violation of a runway or taxiway object free area, runway or taxiway safety area, obstacle free zone, or instrument flight procedures surface as defined in AC 150/5300-13, Airport Design, or FAA Handbook 8260.3, TERPS. An OE/AAA study shall be performed if the glide slope installation is decommissioned or relocated subsequent to the siting of the sensors in areas "A" and "B", figure 1.

One of the above options should be appropriate for most airports with precision instrument runways and without RVR instrumentation. Should both options prove to be unnecessarily restrictive, the cloud height, visibility, and wind sensors and associated DCP may be sited at an alternate location on the airport provided the alternate location: (1) will assure that the resultant observations are representative of the touchdown zone of the primary instrument runway, and (2) meets the sensor exposure criteria outlined in section 2. However, in no case shall the site selected result in a violation of a runway or taxiway object free area, runway or taxiway safety area, obstacle

free zone, or instrument flight procedures surface as described in AC 150/5300-13, Airport Design, or FAA Handbook 8260.3, TERPS.

3.2.4 Airports with Precision Instrument Runways and with RVR Instrumentation. The cloud height, visibility, and wind sensors and associated DCP shall be sited at a location on the airport that will assure the resultant observations are representative of the meteorological conditions affecting aviation operations, and that meets the sensor exposure criteria outlined in section 2. However, no sensor siting shall violate runway or taxiway object free areas, runway or taxiway safety areas, obstacle free zones, or instrument flight procedures surfaces as described in AC 150/5300-13, Airport Design, or FAA Handbook 8260.3, TERPS.

3.3 PRESSURE, LIGHTNING DETECTION SENSORS

3.3.1 Pressure. The pressure sensors are not functionally constrained to be at any specific location and may be located anywhere that meets the exposure requirements in paragraphs 2.2 and 2.2.1.

3.3.2 Lightning Detection (Thunderstorm). The single station detection sensor shall be installed at any location on the airport that meets the requirements of paragraph 2.7.

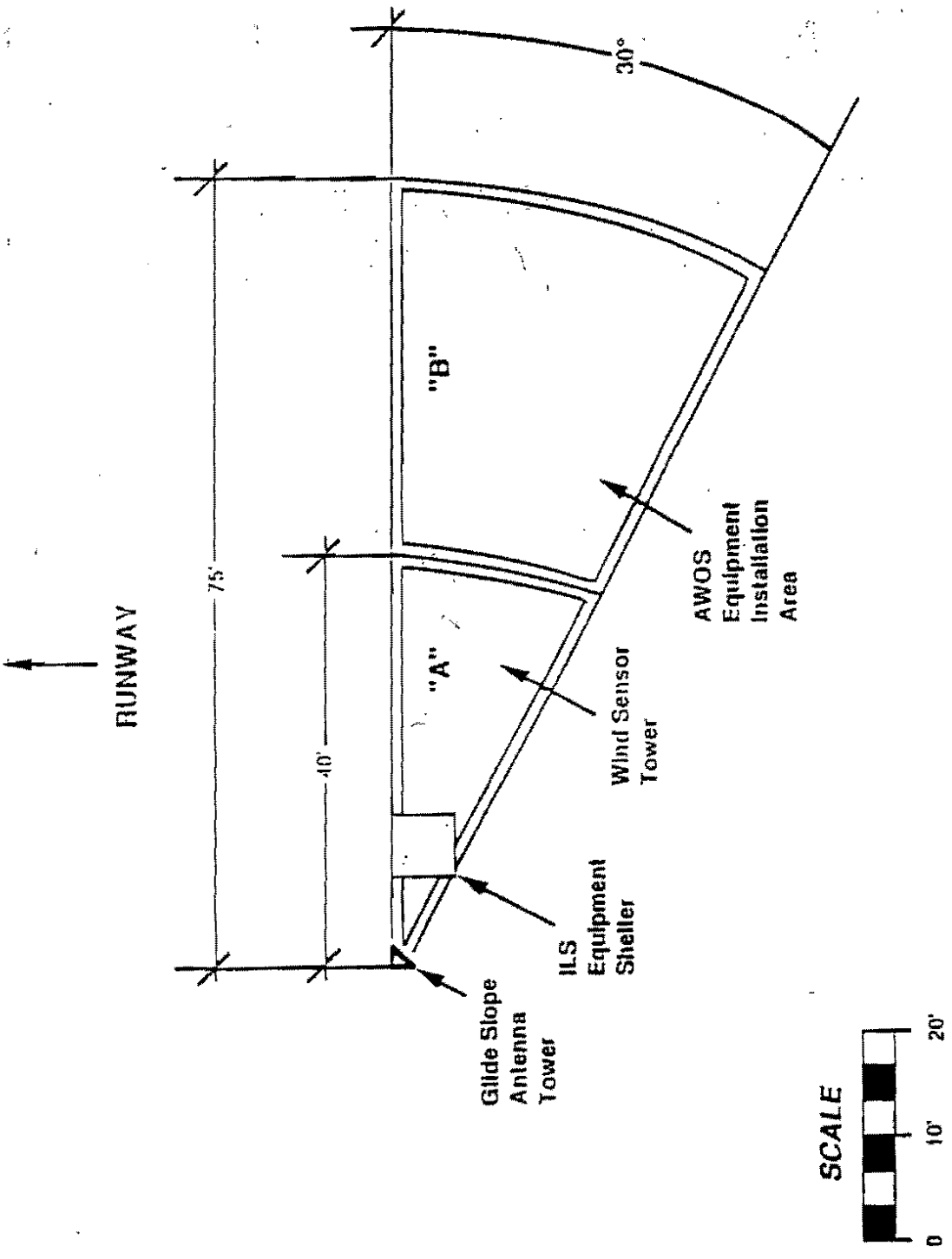


Figure 1. Precision Instrument Runway Siting (Plan View)

4. HELIPORT SITING CRITERIA

4.1 NON-AIRPORT HELIPORT SITING CRITERIA

Automated weather observing system installations at nonairport heliport locations shall place the sensors in the vicinity of the takeoff and landing area, and where helicopter operations will not influence the environment by causing transient sensor performance (e.g., rotor downwash and blowing dust causing spurious wind and visibility observations). However, no installation shall penetrate the approach and departure surfaces defined in FAA Handbook 8260.3, TERPS, or the surfaces defined in AC 150/5390-2, Heliport Design. In choosing a location, consideration will be given to both Visual Flight Rules and Instrument Flight Rules approach and departure paths and hover/taxi operations. Testing has shown no significant effect on sensors located as close as 100 feet (30 meters) from a medium weight helicopter. Another prime concern is the need to locate the sensors so as to avoid, to the maximum extent possible, conditions (sheltering and other local influences) which may result in unrepresentative weather observations. This may be a particular problem for heliports located in urban areas and on rooftops. The sensors, except the pressure sensors, should be located no more than 700 feet (215 meters) from the edge of the takeoff and landing area. The pressure sensor is not constrained to be at any specific location on the heliport, except to be free of rotor-induced or other pressure variations. The other sensors should be clustered for ease of installation and maintenance, but problems with unrepresentative sensor data or other factors may necessitate a separated location of a sensor(s). Specific criteria for the siting of individual sensors follows, with siting at airports referring to section 2.

4.2 PRESSURE SENSORS

Same as for airports, except the height above or below MSL shall be determined for the heliport takeoff and landing area.

4.3 SENSORS IN VICINITY OF TAKEOFF AND LANDING AREA

These sensors for cloud height, visibility, wind, temperature/dewpoint, precipitation, lightning detection (thunderstorm) shall be sited as indicated in paragraphs 4.3.1 through 4.3.6.

4.3.1 Cloud Height Sensor. The sensor location is the same as for airports, except the height is with respect to takeoff and landing area.

4.3.2 Visibility Sensor. The sensor location is the same as for airports, except the height is with respect to the takeoff and landing area. To reduce the influence of dust due to rotorwash on the reported visibility, the visibility sensor should not be sited in a location which is downwind (considering the prevailing wind direction) from the takeoff and landing area.

4.3.3 Wind Sensor. This sensor will be oriented with respect to true north. The system software will be used to make required adjustments to magnetic north. The sensor will be mounted 20-33 feet (6 to 10 meters) above the heliport takeoff and landing area. If side mounting on a tower is necessary, a boom will be used to permit installation of the sensor a minimum of 3 feet (1 meter) laterally from the tower. Side mounting is to be utilized only if top mounting is not practicable and the tower is of open design to allow for free air flow.

4.3.3.1 Wind Sensor at Ground Level Heliports. The wind sensor should be located to the side of the preferred approach and departure track. The sensor should be removed from the sheltering influence of buildings or large trees as per paragraph 2.5 of this order.

4.3.3.2 Wind Sensor at Rooftop Heliports. The wind sensor on a building or other elevated landing structure should be located at least 20 feet (6 meters) above the highest structure to minimize the Bernoulli effect. Rooftop size may require siting of the wind sensor elsewhere to preclude penetration of an obstacle identification surface(s). In these situations, siting on an adjacent building may be a viable or even preferred option. It should be noted that many buildings are constructed to the maximum height that would not constitute a hazard to air navigation. Therefore, the above described siting may not be acceptable from an obstruction evaluation standpoint. In these cases, alternatives such as siting on an adjacent building may be necessary.

4.3.4 Temperature and Dewpoint Sensors. The sensor location is the same as for airports, except the height is with respect to the takeoff and landing area.

4.3.5 Precipitation Sensor(s). The sensor location is the same as for airports, except the height is with respect to the takeoff and landing area.

4.3.6 Lightning Detection (Thunderstorm). The sensor location is the same as for airports.

4.4 AIRPORT HELIPORT SITING CRITERIA

When an automated weather observing system is to be sited at an airport which has, or is planned to have a heliport, a site should be chosen which will provide service to both runway and heliport users. The following options, in priority order, will be considered under such circumstances.

4.4.1 Option #1.

If siting in accordance with the applicable airport siting criteria (section 3) would also comply with the criteria of paragraph 4.1, the system will be sited in accordance with the applicable airport siting criteria.

4.4.2 Option #2.

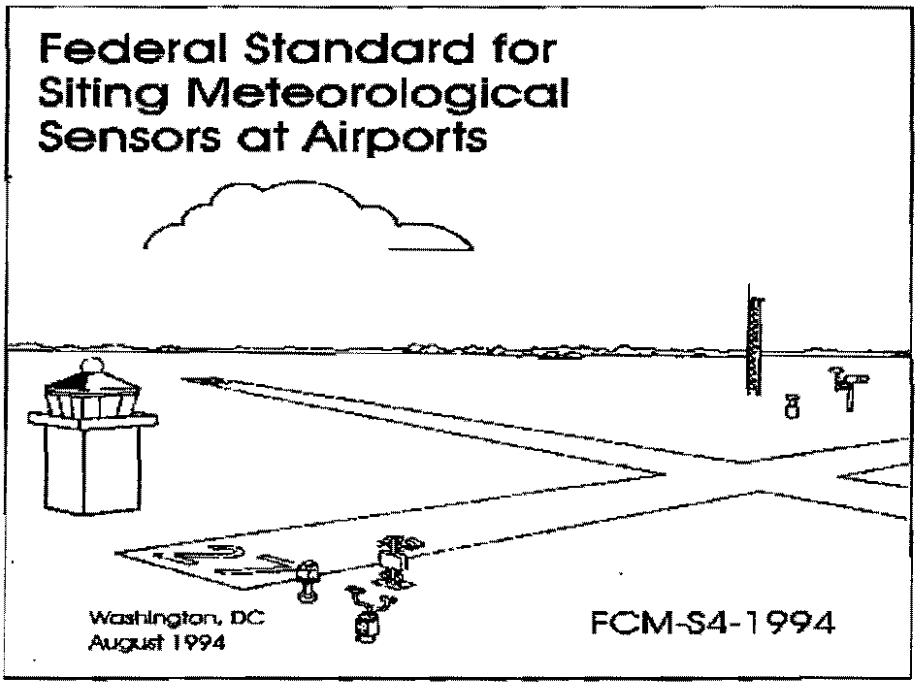
If siting complying with Option 1 is not appropriate, consideration will be given to an alternate location if such a location would enhance the representativeness of the data at the heliport without degrading the representativeness of the data at the primary airport runway. If such an alternate site is selected, a deviation will be processed in accordance with the directives of the responsible agency.

4.4.3 Option #3.

If siting in compliance with Option 1 or 2 is not possible, the system will be sited in accordance with section 3 or paragraph 4.1, taking into consideration such factors as volume of fixed-wing/helicopter traffic. If siting according to paragraph 4.1 is more appropriate, a deviation to use the non-airport siting will be processed in accordance with the responsible agency's directives.

APPENDIX 2. ACRONYMS

AC	Advisory Circular
AWOS	Automated Weather Observing System
DCP	Data Collection Package
DOC	Department of Commerce
DOD	Department of Defense
DOT	Department of Transportation
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
ILS	Instrument Landing System
MLS	Microwave Landing System
MSL	Mean Sea Level
NWS	National Weather Service
OE/AAA	Obstruction Evaluation/Airport Airspace Analysis (U.S. standard for)
OFCM	Office of the Federal Coordinator for Meteorological Services and Supporting Research
TERPS	Terminal Instrument Approved Procedures



FEDERAL COORDINATOR

FOR

METEOROLOGICAL SERVICES AND

SUPPORTING RESEARCH

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FEDERAL STANDARD FOR SITING

METEOROLOGICAL SENSORS AT AIRPORTS

FCM-S4-1994

Washington, D.C.

August 1994

FOREWORD

The coordination of weather observing activities in the United States is complex. In addition to the Departments of Commerce (DOC), Defense (DOD), and Transportation (DOT), this effort requires the participation of commercial aviation interests who represent a large segment of the users of meteorological information.

This diversity mandates that the meteorological information distributed among Federal agencies and commercial users comply to established standards.

The Office of the Federal Coordinator for Meteorology (OFCM) through the Working Group for Surface Observations' Task Group for Surface Instrumentation Standards (TG/SIS) has developed standards for siting automated weather observing systems used at airports and heliports. This document addresses siting characteristics for exposure and placement of sensors. Siting characteristics are essential for the establishment of a standardized meteorological data network and necessary for aviation and other weather forecasting purposes.

While these siting standards define and establish specifications and guidelines, they contain sufficient flexibility for agencies to achieve the requirements through agency specific procedures.

To provide for an orderly transition to metric units, this document includes both English and metric dimensions. Until there is an official conversion to the metric system, English units will prevail.

Julian M. Wright, Jr.
Federal Coordinator

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CHAPTER 1

INTRODUCTION

1.1 PURPOSE.

This document establishes the Federal standard for siting meteorological sensors of automated weather observing systems at airports/heliports to collect meteorological data in support of aircraft operations as well as aviation and other weather forecasting. It will be used by Federal agencies as a basis for developing and implementing specific regulatory or technical documents. The standard applies to all Federally-owned and Federally-funded systems, as well as non- Federal systems that are to be approved by the Department of Transportation's (DOT) Federal Aviation Administration (FAA) or the Department of Commerce's (DOC) National Weather Service (NWS). Multiple users of meteorological data exist, and to the greatest practical extent, they have been considered in the development of this standard.

In Chapter 2, the standard provides criteria for proper and representative exposure of sensors to assure that data are meteorologically sound. Chapter 3 provides criteria for selecting locations for sensors at airports; Chapter 4 addresses heliport installations.

1.2 SCOPE.

This standard is intended to serve as the most fundamental reference for sensor siting. While this document is not of itself regulatory in nature, it is to be implemented through appropriate agency orders. Likewise, this standard may be modified or enhanced by agency directives. This document does not require agencies to change existing sensor installations solely to comply with this standard. It will be applied as new stations are established. The inclusion and description of a particular sensor in this document does not imply that such sensors will be used in all system applications.

In applying this document to the planning of an automated weather observing system site at an airport with a control tower, no site shall be finalized without consulting with representatives of both NWS and FAA.

Sensor siting in accordance with this standard meets the requirements of Section 77.15(c) of the Federal Aviation Regulations (FAR) and is exempt from further Part 77 study. Any exceptions to the standard or special situations will require an FAA Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) study in accordance with Part 77 of the FAR to determine if a substantial adverse effect would be created for aircraft operations.

The standard covers the following weather elements:

- Surface wind speed and direction
- Ambient air temperature
- Dew point temperature
- Atmospheric pressure
- Visibility
- Sky condition
- Precipitation type discrimination (rain, snow, drizzle, etc.)
- Precipitation occurrence (Yes/No)
- Freezing precipitation detection
- Precipitation accumulation
- Snowfall-snow depth
- Lightning detection

The standard does not address:

- Details of installation for individual manufacturers' sensors
- Shielding and/or venting of sensors, except in general terms
- Special application systems such as those designed to detect low-level wind shear
- Details of lightning protection

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CHAPTER 2

SENSOR EXPOSURE

2.1 GENERAL.

Sensor siting shall not violate runway or taxiway object free areas, runway or taxiway safety areas, obstacle free zones, or instrument flight procedures surfaces as defined in FAA Advisory Circular (AC) 150/5300-13, Airport Design, or FAA Handbook 8260.3, TERPS. Notwithstanding these constraints, the sensor exposure will strive to minimize or eliminate the effects of manmade or geographical obstructions. The tower used to mount the wind sensor is not considered an obstruction to the sensor collection system, but it will (with the exception of the temperature, dew point, and pressure sensors) be at least 10 feet (3 meters) away from the other sensors. Sensors should be located as far as practicable from cultivated land to reduce contamination by dust and dirt. It may be necessary to increase the heights of some sensors based on the average maximum snow depth for the location, which will be determined by averaging the maximum annual snow depths over the period of record.

2.2 PRESSURE SENSOR.

The pressure sensor will be installed on the airfield, usually in a weatherproof facility (building, shelter, enclosure, etc.). When the pressure sensor is vented to the outside, a vent header will be used. In most cases, internal venting of the pressure sensors may be satisfactory. However, if it is determined that internal venting will affect the altimeter setting value by ± 0.02 inches of mercury or more, outside venting will be used. A portable transfer standard will be used to resolve any questions regarding the need for external venting. Siting that will cause pressure variations due to air flow over the venting interface should be avoided. The venting interface will be designed to avoid and dampen pressure variations and oscillations due to "pumping" or "breathing" of the pressure sensor venting and porting equipment. Each sensor will have an independent venting interface from separate outside vents (if outside venting is required) through dedicated piping to the sensors. The sensors should also be located in an area free of jarring, vibration, and rapid temperature fluctuations (i.e., avoid locations exposed to direct sunlight, drafts from open windows, and air currents from heating or cooling systems). If the pressure sensors are sited outdoors, the height of the vent header shall not be less than one foot above the average maximum snow depth, or 3 feet (1 meter) above ground level, whichever is higher.

Pressure sensor derived values are of critical importance to aviation safety and operations. Great care shall be taken to ensure that pressure sensor siting is suitable and accurate. The field and sensor elevations above Mean Sea Level (MSL) elevation shall be determined to the nearest whole foot in accordance with agency procedures. The distance between the elevation of the pressure sensors and the field elevation will not exceed 100 feet (30 meters).

The above criteria are applicable to altimeter-only systems, except: (1) the pressure sensor will be installed within 6 miles (9.6 kilometers) of the instrument runway threshold, (2) a temperature correction is used in the algorithm to compute altimeter setting, and (3) the elevation difference between the height of the pressure sensors and the field elevation may be increased to 500 feet (150 meters).

2.3 CLOUD HEIGHT SENSOR.

The cloud height sensor will be mounted on a platform/pedestal with the sensor optics a minimum of 4 feet (1.2 meters) above ground level or above maximum snow depth, whichever is higher. The sensor should be located as far as practicable from strobe lights and other modulated light sources.

2.4 VISIBILITY SENSOR.

The visibility sensor will be mounted on a platform/pedestal as free as possible from jarring and vibration. Unless otherwise specified by the manufacturer, the receiver will be pointed in a northerly direction. The sensor should be located as far as practicable from strobe lights and other modulated light sources. It should neither be located in an area that is subject to localized obstructions to vision (e.g., smoke, fog, etc.) nor in an area that is usually free of obstructions to vision when they are present in the surrounding area. It will be mounted so the optics are 10 ± 2 feet (3 ± 0.6 meters) above ground or 6 feet (2 meters) above the average maximum snow depth, whichever is higher. Ten feet (3 meters) above the ground is the preferred height. The area within 6 feet (2 meters) of the sensor should be free of all vegetation and well-drained. Any grass or vegetation within 100 feet (30 meters) of the sensor should be clipped to a height of about 10 inches (25 centimeters). These precautions are necessary to reduce the probability of carbon-based aerosols (e.g., terpenes) and insects from interfering with sensor performance. In addition, backscatter-type sensors must have a clear area for 300 feet (90 meters) in the forward (north) octant. Some sensors may require additional clear areas. The clear line of sight requirement for the sensor optics will be as specified by the sensor manufacturer.

2.5 WIND SENSOR.

The wind sensors (wind direction and wind speed) will be oriented with respect to true north. The system software will be used to make required adjustments to magnetic north. The site should be relatively level, but small gradual slopes are acceptable. It will be mounted 30 to 33 feet (9 to 10 meters) above the average ground height within a radius of 500 feet (150 meters). The sensor height shall not exceed 33 feet (10 meters) except as necessary to: (a) be at least 15 feet (4.5 meters) above the height of any obstruction (e.g., vegetation, buildings, etc.) within a 500 foot (150 meters) radius, and (b), if practical, be at least 10 feet (3 meters) higher than the height of any obstruction outside the 500 foot (150 meter) radius, but within a 1,000 foot (300 meter) radius of the wind sensor. An object is considered to be an obstruction if the included lateral angle from the sensor to the ends of the object is 10 degrees or more.

Exception: The height of a wind sensor installed on the Instrument Landing System (ILS) glide slope antenna tower or on a separate tower in area "A", Figure 1 will be reduced, as necessary, such that the height of the complete wind sensor installation (i.e., to include any required air terminal(s) and obstruction lights) does not exceed the height of the glide slope antenna installation. The minimum acceptable height for the wind sensor in this situation is 20 feet (6 meters). If side mounting (i.e., perpendicular to a tower) is necessary, a boom will be used to permit installation of the sensor at a minimum of 3 feet (1 meter) laterally from the tower. Side mounting is to be utilized only if top mounting is not practicable and the tower is of open design to allow for free air flow.

Figure 1 Precision Instrument Runway Siting

2.6 TEMPERATURE AND DEW POINT SENSORS.

The temperature and dew point sensors will be mounted so that the aspirator intake is 5 ± 1 feet (1.5 ± 0.3 meters) above ground level or 2 feet (0.6 meters) above the average maximum snow depth, whichever is higher. Five feet (1.5 meters) above ground is the preferred height. The sensors will be protected from radiation from the sun, sky, earth, and any other surrounding objects but at the same time be adequately ventilated. The sensors will be installed in such a position as to ensure that measurements are representative of the free air circulating in the locality and not influenced by artificial conditions, such as large buildings, cooling towers, and expanses of concrete and tarmac. Any grass and vegetation within 100 feet (30 meters) of the sensor should be clipped to height of about 10 inches (25 centimeters) or less.

2.7 LIGHTNING DETECTION (THUNDERSTORM) SENSOR.

The lightning detection (thunderstorm) sensor will be sited and mounted in accordance with the

manufacturer's recommendations/specifications. For a single station sensor, metal obstructions will be no closer than two times their height above the sensor.

2.8 PRECIPITATION TYPE DISCRIMINATION SENSOR.

The precipitation type discrimination sensor detects precipitation and discriminates type (e.g., rain, snow). It will be mounted so that the optics are 10 ± 2 feet (3 ± 0.6 meters) above ground or 6 feet (2 meters) above the average maximum snow depth, whichever is higher. Ten feet (3 meters) above ground is the preferred height. If the system is double ended, the optical axis will be oriented generally north-south with the receiver facing north. The terrain between the receiver and transmitter should be relatively flat.

2.9 PRECIPITATION OCCURRENCE (YES/NO) SENSOR.

The precipitation occurrence sensor will be mounted in accordance with the manufacturer's specifications at a convenient height but not less than 6 feet (2 meters) above ground level or 4 feet (1.2 meters) above the average maximum snow depth, whichever is higher. Care must be taken to avoid shielding of the sensor by structures, buildings, and other obstacles.

2.10 FREEZING RAIN DETECTION SENSOR.

The siting requirements for the freezing rain sensor are the same as for the precipitation occurrence sensor.

2.11PRECIPITATION ACCUMULATION (LIQUID OR LIQUID EQUIVALENT) SENSOR.

The precipitation accumulation sensor will be mounted so that the orifice is horizontal and in an area where the terrain is relatively flat. The orifice is defined as the upper rim edge of the collector mouth. The height of the orifice will be as close to ground level as practicable. In determining the height of the orifice, consideration will be given to keeping the orifice above accumulated/drifting snow and minimizing the potential for splashing into the orifice. Surrounding objects will be no closer to the sensor than a distance equal to two times their height above the gage orifice. An object is considered an obstruction if the included lateral angle from the sensor to the ends of the object is 10 degrees or more. In order to reduce losses due to wind, an alter-type windshield is recommended to be installed on gages in areas where 20 percent or more of the annual average precipitation falls as snow. The surrounding ground can be covered with short grass or be of gravel composition, but a hard flat surface, such as concrete, gives rise to splashing and should be avoided. Separate sensors may be used to measure liquid and frozen precipitation accumulation (e.g., rain and snow) in which case the above criteria will be followed for each installation.

2.12SNOWFALL-SNOW DEPTH SENSOR.

The snowfall-snow depth sensor will be mounted at least 15 feet (4.5 meters) away from the wind tower over an area which would be expected to have snow cover and is representative of the area of interest. It will be mounted in accordance with manufacturer's specifications and recommendations.

2.13COMBINATION VISIBILITY, PRECIPITATION OCCURRENCE, AND PRECIPITATION ACCUMULATION SENSOR.

The siting requirements for the visibility sensor apply to this combination sensor or any other combinations of the precipitation parameters and visibility.

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CHAPTER 3

SITING CRITERIA FOR SENSOR PLACEMENT AT AIRPORTS

3.1 GENERAL.

This Chapter provides criteria for placement of sensors at airports based upon runway category (i.e., visual/nonprecision, precision without Runway Visual Range (RVR) instrumentation, and precision with RVR instrumentation). Special care is necessary in selecting appropriate locations for installation of sensors to assure that the resultant observations are representative of the meteorological conditions affecting aviation operations. Users, in applying these criteria, should consider future plans for the airport that could impact placement of sensors, e.g., installation of an Instrument Landing System (ILS), Microwave Landing System (MLS), runway construction, etc.

The site chosen for locating backup sensors shall be within 11,000 feet (3.4 kilometers) of the primary sensor array and shall have exposure and terrain equivalent to the primary sensor array site.

3.2 CLOUD HEIGHT, VISIBILITY, WIND, TEMPERATURE, DEW POINT, AND PRECIPITATION SENSORS.

3.2.1 General. No sensor siting shall violate runway or taxiway object free areas, runway or taxiway safety areas, obstacle free zones, or instrument flight procedures surfaces as described in AC 150/5300-13, Airport Design, or FAA Handbook 8260.3, TERPS. These sensors (cloud height, visibility, wind, temperature, dew point, and precipitation) should be located together near available power and communications. However, the temperature, dew point, and precipitation sensors can be placed at any convenient location on the airport that meets the sensor exposure criteria outlined in Chapter 2. FAA Sector Manager approval is required for the use of any FAA facilities, such as power, communications, shelters, towers, etc.

3.2.2 Airports with Only Visual and/or Nonprecision Runways. The preferred siting of the cloud height, visibility, and wind sensors and associated data collection platform (DCP) is adjacent to the primary runway 1,000 feet (300 meters) to 3,000 feet (900 meters) down the runway from the threshold. The primary runway is considered to be the runway with the lowest minimums. The minimum distance from the runway centerline shall be 500 feet (150 meters); the maximum distance shall not exceed 1,000 feet (300 meters). The minimum distance of 500 feet (150 meters) assumes flat terrain. If the elevation of the wind sensor site is above or below the runway elevation, then the minimum distance is adjusted by 7 feet (2.1 meters) for every foot (0.3 meters) of elevation difference. The adjustment is negative (i.e., the minimum distance

is less than 500 feet [150 meters]) if the sensor site elevation is less than the runway elevation. The adjustment is positive (i.e., the minimum distance is greater than 500 feet [150 meters]) if the sensor site elevation is greater than the runway elevation.

The preferred siting should be appropriate for most airports with only visual and/or nonprecision runways. If this siting proves to be unnecessarily restrictive, the cloud height, visibility, and wind sensors and associated DCP may be sited at an alternate location on the airport provided the alternate location: (1) will assure that the resultant observations are representative of the touchdown zone of the primary runway, and (2) meets the sensor exposure criteria outlined in Chapter 2. In no case shall the site selected result in a violation of a runway or taxiway object free area, runway or taxiway safety area, obstacle free zone or instrument flight procedures surfaces described in AC 150/5300-13, Airport Design, or FAA Handbook 8260.3, TERPS.

3.2.3 Airports with Precision Instrument Runways and Without RVR Instrumentation. There are two preferred options for siting at these airports.

3.2.3.1 Option #1.

The cloud height, visibility, and wind sensors and associated DCP shall be located adjacent to the primary instrument runway 1,000 feet (300 meters) to 3,000 feet (900 meters) down the runway from the threshold. The minimum distance from the runway centerline shall be 750 feet (230 meters); the maximum distance shall not exceed 1,000 feet (300 meters). The minimum distance of 750 feet (230 meters) assumes flat terrain. If the elevation of the wind sensor site is above or below the runway elevation, the minimum distance is adjusted by 7 feet (2.1 meters) for every foot (0.3 meters) of elevation difference. The adjustment is negative (i.e., the minimum distance is less than 700 feet [213 meters]) if the sensor site elevation is less than the runway elevation. The adjustment is positive (i.e., the minimum distance is greater than 750 feet [230 meters]) if the sensor site elevation is greater than the runway elevation. In no case shall the site result in a violation of a runway or taxiway object free area, runway or taxiway safety area, obstacle free zone, or instrument flight procedures surfaces as described in AC 150/5300-13, Airport Design, or FAA Handbook 8260.3, TERPS.

3.2.3.2 Option #2.

The cloud height and visibility sensors and associated DCP shall be located behind the glide slope shelter/MLS elevation station used for the primary precision instrument runway (area "B", Figure 1).

The wind sensor shall be located either on the glide slop antenna tower or on a separate tower. The preferred location is on the glide slope antenna tower as this eliminates the potential safety concerns caused by a separate wind sensor tower. This option shall be implemented at airports that have FAA Airway Facilities technicians available and who will not be relocated as a result of remote maintenance monitoring. Under no conditions shall anyone have access to an FAA glide slope antenna tower without an FAA technician being present.

When mounted on the glide slope antenna tower, the wind sensor shall: (1) not extend above the top of the tower, (2) be mounted on a boom a minimum of 3 feet (1 meter) laterally from the tower, (3) be a minimum of 3 feet (1 meter) vertically from any antenna, and (4) be mounted on the side of the tower opposite from the glide slope antenna face.

If joint use of the glide slope antenna tower is not practical, a separate wind sensor tower shall be installed immediately behind the glide slope antenna tower (area "A", Figure 1). The height of the complete installation (i.e., tower plus air terminal(s) and obstruction lights) shall not exceed the height of the glide slope antenna tower when installed in this area.

Exceptions: Sensors shall not be sited in area "A" or "B", Figure 1, if the glide slope installation is in violation of a runway or taxiway object free zone, runway or taxiway safety area, obstacle free zone, or instrument flight procedures surfaces as defined in AC 150/5300-13, Airport Design, or FAA Handbook 8260.3, TERPS. An OE/AAA study shall be performed if the glide slope installation is decommissioned or relocated subsequent to the siting of the sensors in areas "A" and "B", Figure 1.

One of the above options should be appropriate for most airports with precision instrument runways and without RVR instrumentation. If both options prove to be unnecessarily restrictive, then the cloud height, visibility, and wind sensors and associated DCP may be sited at an alternate location on the airport provided the alternate location: (1) will assure that the resultant observations are representative of the touchdown zone of the primary instrument runway and (2) meets the sensor exposure criteria outlined in Chapter 2. In no case shall the site selected result in a violation of a runway or taxiway object free area, runway or taxiway safety area, obstacle free zone, or instrument flight procedures surfaces as described in AC 150/5300-13, Airport Design, or FAA Handbook 8260.3, TERPS.

3.2.4 Airports with Precision Instrument Runways and With RVR Instrumentation.

The cloud height, visibility, and wind sensors and associated DCP shall be sited at a location on the airport that will assure the resultant observations are representative of the meteorological conditions affecting aviation operations, and that meets the sensor exposure criteria outlined in Chapter 2. No sensor siting shall violate runway or taxiway object free areas, runway or taxiway safety areas, obstacle free zones, or instrument flight procedures surfaces as described in AC 150/5300-13, Airport Design, or FAA Handbook 8260.3, TERPS.

3.3 PRESSURE, LIGHTNING DETECTION SENSORS.

3.3.1 Pressure. The pressure sensors are not functionally constrained to be at any specific location and may be located anywhere that meets the exposure requirements in paragraphs 2.2 and 2.2.1.

3.3.2 Lightning Detection (Thunderstorm). The single station detection sensor shall be installed at any convenient location on the airport and in accordance with requirements described in paragraph 3.3.2.

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CHAPTER 4

HELIPORT SITING CRITERIA

4.1 NON-AIRPORT HELIPORT SITING CRITERIA.

Installation of automated weather observing systems at non-airport, heliport locations shall place the sensors in the vicinity of the takeoff and landing area, and where helicopter operations will not induce transient sensor performance (e.g., rotor downwash and blowing dust causing spurious wind and visibility observations). However, no installation shall penetrate the approach and departure surfaces defined in FAA Handbook 8260.3, TERPS, or the surfaces defined in AC 150/5390-2, Heliport Design. In choosing a location, consideration will be given to both Visual Flight Rules and Instrument Flight Rules approach and departure paths and hover/taxi operations. Testing has shown no significant effect on sensors located as close as 100 feet (30 meters) from a medium weight helicopter. Another prime concern is the need to locate the sensors so as to avoid, to the maximum extent possible, conditions (sheltering and other local influences) which may result in non-representative weather observations. This may be a particular problem for heliports located in urban areas and on rooftops. The sensors, except the pressure sensors, should be located no more than 700 feet (213 meters) from the edge of the takeoff and landing area. The pressure sensor is not constrained to be at any specific location on the heliport, except to be free of rotor-induced or other pressure variations. The other sensors should be clustered for ease of installation and maintenance, but problems with non- representative sensor data or other factors may necessitate a separated location of a sensor(s).

Specific criteria for the siting of individual sensors follows (siting at airports refers to Chapter 2):

4.2 PRESSURE SENSORS.

Same as for siting at airports, except the height above or below MSL shall be determined for the heliport takeoff and landing area.

4.3 SENSORS IN VICINITY OF TAKEOFF AND LANDING AREA.

Cloud height, visibility, wind, temperature/dew point, precipitation, lightning detection (thunderstorm) sensors shall be sited as indicated in paragraphs 4.3.1 through 4.3.6.

4.3.1 Cloud Height Sensor.

The cloud height sensor location is the same as for siting at airports, except the height is with respect to the heliport takeoff and landing area.

4.3.2 Visibility Sensor.

The visibility sensor location is the same as for siting at airports, except the height is with respect to the takeoff and landing area. To reduce the influence of dust due to rotorwash on the reported visibility, the visibility sensor should not be sited in a location which is downwind (considering the prevailing wind direction) from the takeoff and landing area.

4.3.3 Wind Sensor.

The wind sensor will be oriented with respect to true north. The system software will be used to make required adjustments to magnetic north. The sensor will be mounted 20-33 feet (6-10 meters) above the heliport takeoff and landing area. If side mounting on a tower is necessary, a boom will be used to permit installation of the sensor a minimum of 3 feet (1 meter) laterally from the tower. Side mounting is to be utilized only if top mounting is not practicable and the tower is of open design to allow for free air flow.

4.3.3.1 Wind Sensor at Ground Level Heliports.

The wind sensor should be located to the side of the preferred approach and departure track should be away from the sheltering influence of buildings or large trees.

4.3.3.2 Wind Sensor at Rooftop Heliports.

The wind sensor on a building or other elevated structure should be located at least 20 feet (6 meters) above the highest structure to minimize the Bernoulli effect. Rooftop size may require siting of the wind sensor elsewhere to preclude penetration of an obstacle identification surface(s). In these situations, siting on an adjacent building may be a viable or even preferred option. It should be noted that many buildings are constructed to the maximum height that would not constitute a hazard to air navigation. Therefore, the above described siting may not be acceptable from an obstruction evaluation standpoint. In these cases, alternatives such as siting on an adjacent building may be necessary.

4.3.4 Temperature and Dew Point Sensors.

The temperature and dew point sensor location is the same as for siting at airports, except the height is with respect to the heliport takeoff and landing area.

4.3.5 Precipitation Sensor(s).

The precipitation sensor location is the same as for siting at airports, except the height is with respect to the heliport takeoff and landing area.

4.3.6 Lightning Detection (Thunderstorm) Sensor.

The lightning detection (thunderstorm) sensor location is the same as for siting at airports.

4.4 AIRPORT HELIPORT SITING CRITERIA.

When an automated weather observing system is to be sited at an airport which has, or is planned to include a heliport, a site should be chosen which will provide service to both runway and heliport users. The following options, in priority order, will be considered under such circumstances:

4.4.1 Option #1.

If siting in accordance with the applicable airport siting criteria (Chapter 3) would also comply with the criteria of paragraph 4.1, the system will be sited in accordance with the applicable airport siting criteria.

4.4.2 Option #2.

If siting in compliance with Option 1 is not appropriate, consideration will be given to an alternate location if such a location would enhance the representativeness of the data at the heliport without

degrading the representativeness of the data at the primary airport runway. If such an alternate site is selected, a deviation will be processed in accordance with the directives of the responsible agency.

4.4.3 Option #3.

If siting in compliance with Option 1 or 2 is not possible, the system will be sited in accordance

with Chapter 3, or paragraph 4.1, taking into consideration such factors as volume of fixed-wing versus helicopter traffic. If siting in conformance with paragraph 4.1 is more appropriate, a deviation to use the non-airport siting will be processed in accordance with the directives of the responsible agency.

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APPENDIX A

ACRONYMS

AC	Advisory Circular
AWOS	Automated Weather Observing System
DCP	Data Collection Package
DOC	Department of Commerce
DOD	Department of Defense
DOT	Department of Transportation
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
ILS	Instrument Landing System
MLS	Microwave Landing System
MSL	Mean Sea Level
NWS	National Weather Service
OE/AAA	Obstruction Evaluation/Airport Airspace Analysis
OFCM	Office of the Federal Coordinator for Meteorological Services and Supporting Research
TERPS	Terminal Instrument Approved Procedures

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