ORDER

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TERMINAL FACILITY MODERNIZATION/RELOCATION SURVEY AND EVALUATION HANDBOOK

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CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL USE	CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL USE

FOREWORD

This order sets forth procedures for analyzing existing FAA-operated terminal air traffic control facilities relative to the scope of modernization work required or relative to establishing justification for facility relocation. This order shall apply to both FAA-owned and leased facilities.

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Director, Program Engineering
and Maintenance Service

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Appendix 1. Referenced Documents (pages 1 and 2)
Appendix 2. Evaluation and Analysis Worksheets (pages 1 thru 112)
Appendix 3. Cost Estimate Worksheets (pages 1 thru 3)
Appendix 4. FAA Standard Building Designs (pages 1 thru 22)
Appendix 5. Typical Office Layouts (pages 1 and 2)

CHAPTER 1. GENERAL

1. PURPOSE. This order sets forth the procedures for analyzing existing FAA operated terminal air traffic control facilities relative to the scope of modernization work required or relative to establishing justification for facility relocation. This order shall apply to both FAA-owned and leased facilities. A complete list of documents referenced for this order is provided in Appendix 1. The serial designation of each reference shall be the latest year of adoption or revision, unless otherwise specified.

2. DISTRIBUTION. This order is distributed at division level to FAA headquarters, FAA regions, FAA Technical Center, Aeronautical Center, and at branch level to Air Traffic and Airway Facilities in the regional office. Distribution is also made to Airport District Offices, Airway Facilities General NAS Sectors, Airport Traffic Control Towers, and Terminal Radar Approach Control facilities.

3. RESERVED.

4. CHANGES. Recommended additions, deletions, or modifications to this order shall be sent through normal channels to:

a. Airway Facilities Comments.

Structures Program Branch, APM-520
Program Engineering and Maintenance Service
800 Independence Avenue, S.W.
Washington, D.C. 20591

b. Air Traffic Comments.

System Plans and Programs Division, ATR-100
800 Independence Avenue, S.W.
Washington, D.C. 20591

5. APPLICABILITY. This order shall be used to analyze modernization or relocation requirements at existing FAA-owned, leased and FAA-occupied DOD terminal air traffic control facilities. The order will provide an avenue of support to terminal facilities modernization/relocation national program items in response to the annual Facilities and Equipment Call for Estimates.

6. REQUESTS FOR INFORMATION. Refer requests for further information or information on this order to:

Structures Program Branch, APM-520
Program Engineering and Maintenance Service
800 Independence Avenue, S.W.
Washington, D.C. 20591

7. PROCEDURES. The Federal Aviation Administration:

a. Continually monitors terminal air traffic control facilities with regard to suitability for mission performance.

b. Evaluates the need to either undergo a major modernization or relocate terminal air traffic control facilities to maintain a continual 10-year life expectancy for these facilities. (New facilities are expected to have a life expectancy of 20 years.)

c. Maintains a comprehensive national evaluation plan for major modernization or relocation of terminal air traffic control facilities. The comprehensive national evaluation plan is formulated and periodically updated through the use of a nationwide reporting system.

d. Has defined a cost estimating system to be included with major modernization or relocation actions which will indicate the cost versus benefit ratios for solutions which will satisfy operational requirements.

8. OBJECTIVES. The objectives of this order are as follows:

a. Combine in one source, either directly or by reference, all necessary information to establish either the need for a major modernization or relocation of an existing terminal air traffic control facility.

b. Provide uniform lists of evaluation items which will be applied to terminal facilities.

c. Provide guidelines which will establish consistency and uniformity in evaluation results.

d. Implement a standardized, weighted system for scoring facilities deficiencies.

e. Establish a uniform cost estimating system to be applied to all evaluated facilities.

9. SCOPE. This order identifies specific items for evaluating operational/functional requirements, security, materials, building code safety, expansion capability, architectural and structural integrity, mechanical systems, and electrical systems as they relate to major modernization or relocation requirements.

10. thru 21. RESERVED.

CHAPTER 2. DESCRIPTION OF PROCEDURES

SECTION 1 - INTRODUCTION

22. BACKGROUND. Most of the existing FAA terminal air traffic control facilities and supporting space will surpass their 20-year design life prior to the year 2000. The need for major modernization or relocation of these facilities must be determined in order to ensure the continued success of the FAA mission.

23. OBJECTIVES. The procedures set forth in this chapter should be followed to ensure that the evaluation process is uniform throughout the FAA system. (It is recognized that regional resources may not allow complete compliance with the procedures in this chapter however, it is recommended that the procedures be followed as closely as possible).

24. SAFETY. The possibility of electrical shock, falls from elevated platforms, becoming entangled with equipment and other hazards are present when performing the evaluation. Team members must continually be alert for hazardous or potentially hazardous situations and take appropriate action to avoid accidents.

25. thru 34. RESERVED.

SECTION 2 - REGIONAL EVALUATION TEAM

35. PERSONNEL ASSIGNED TO THE EVALUATION TEAM. The most efficient method of conducting the evaluations described in this order is through the use of a multidisciplinary team. The expertise required on this team involves air traffic control, civil engineering (architectural/structural), mechanical engineering, electrical engineering, and electronic engineering.

36. ESTABLISHMENT OF COORDINATOR. If utilizing the team concept, the regional Air Traffic and Airway Facilities division managers should select an appropriate individual from the evaluation team to serve as a coordinator. This will provide continuity for the program.

37. COORDINATOR'S RESPONSIBILITIES. The coordinator's responsibilities would include the following:

a. Serve as a point of contact for the team.

b. Schedule surveys of facilities.

c. Serve as the liaison between the evaluation team and the facility staff as appropriate following regional protocol.

d. Assist in interpreting conflicts or inconsistencies which may exist between the order's descriptions and field conditions.

e. Be responsible for the review of the final evaluation report and cost estimate to monitor consistency and completeness.

f. Review budgeted and planned programs for the facility.

38. thru 47. RESERVED.

SECTION 3 - COORDINATION WITH FACILITY PERSONNEL

48. LINES OF COMMUNICATION. It is important to the success of the evaluation effort that proper lines of communication be established between the evaluation personnel and the Air Traffic and Airway Facilities managers or designated representatives of the facility.

49. SCHEDULING. Scheduling should include dates for field trip, times of interviews with facility staff, any special testing procedures which require coordination with facility operational procedures, and due dates for completed evaluation worksheets, cost estimates, and reports.

50. OBTAINING BACKGROUND MATERIALS. The coordinator should request that all pertinent information about the facility to be surveyed such as drawings, specifications, calculations etc., be available at each facility during the evaluation survey. Individual evaluation team members shall be responsible for obtaining and reviewing any pertinent information which is available from the regional office prior to the field trip.

51. COORDINATION OF SURVEY ACTIVITIES WITH FACILITY STAFF. It is important that all designated facility personnel, both Air Traffic and Airway Facilities, be informed of the survey time and be available to provide any assistance and pertinent information needed by the evaluation team.

52. INITIAL ONSITE MEETING. The meeting should be attended by all members of the evaluation team, both Air Traffic and Airway Facilities, and by facility managers or designated representatives. The primary purpose of this meeting is to discuss known deficiencies in the facility which the evaluation team will need to address and to brief local facility managers or designated personnel on the plan for the evaluation.

53. thru 62. RESERVED.

CHAPTER 3. EVALUATION SYSTEM

63. OBJECTIVES. The objectives of the evaluation system are as follows:

a. Provide worksheets on which to organize and identify individual items and conditions which may require correction at a particular facility.

b. Classify individual items based on the type of impact each item will have on the facility operation and environment.

c. Provide a vehicle for weighting items to ensure that those of more significance have a larger influence on facility score.

d. Limit the amount of subjective rating error introduced by different evaluators.

e. Provide facility evaluation data which the region will use in planning corrective action.

f. Aid in the formulation of an order of magnitude cost estimate for corrective action.

g. Aid in evaluating the merits of modernization versus relocation.

h. Establish a practice for evaluating individual facilities in view of operational and technical deficiencies on an equitable basis.

64. WORKSHEETS. Two sets of evaluation worksheets are provided, one for use by Air Traffic (operational impact) and one for use by Airway Facilities (technical deficiencies). Specific focus on these two major areas allows each group to do an indepth analysis of a facility, identifying significant operational and technical deficiencies in an objective manner. The area just above the remarks column on the front page of each set of forms is provided to list pertinent statistical details about the facility being evaluated.

65. AIR TRAFFIC EVALUATION WORKSHEET. These worksheets are designed for the evaluation of a facility from an Air Traffic view point. It is separated into two parts. Part 1 deals with deficiencies and problems viewed and weighted relative one to another. Part 2 provides a list of specific equipment items found in a terminal facility. These items, individually, may be satisfactory or may have deficiencies which suggest replacement of existing equipment, deletion of outdated equipment or addition of equipment not currently installed at the facility being evaluated.

66. AIR TRAFFIC EVALUATION WORKSHEET - PART 1. Each line on this worksheet is divided into a series of 7 columns. These columns add clarity to the analysis of each item. Complete all items pertinent to the facility being evaluated. Each column, one through seven, is discussed below:

a. Evaluation Item (Column 1). This column lists significant items to be evaluated at each facility. They are designed to highlight specific deficiencies. If additional deficiencies not included in those items listed are present, they may be entered in the blank spaces following each section.

b. Deficiency Score (Column 2). A blank box is provided on each line to record a numeric grade which describes the relative level of facility deficiency. The five possible levels are listed below:

(1) (0) - No deficiency.

(2) (1) - Minor deficiency - A detectable problem which has only a minor affect on the facility.

(3) (2) - Moderate deficiency - An obvious problem which is affecting the facility or its operation and has an impact between minor and significant scores.

(4) (3) - Significant deficiency - A problem which is readily apparent and needs to be dealt with through future action and has an adverse affect on the facility.

(5) (4) - Major deficiency-Efforts to deal with this class of deficiency requires actions which go beyond usual measures.

NOTE: Not all items listed in the evaluation worksheet will be applicable to every site. For all items which do not apply, enter N.A. in this column.

c. Relative Importance Factor (Column 3). A standard weighting factor which indicates the relative importance of each evaluation item. The weights were predetermined to ensure objectivity and consistency. The weighting factor is the multiplier which is used with the deficiency score to form a score for that item. The resulting score is placed in one of the three impact columns (columns 4, 5 and 6) which follow. If additional deficiencies are noted as stated in paragraph a above, the evaluator should assign a relative importance factor based on those assigned to similar items on the worksheet.

d. Impact (Columns 4, 5 and 6). These three columns are used to classify each evaluation item in terms of its impact on the facility. Two boxes on each line are shaded, leaving only one to record the product of the Deficiency Score (column 2) and Relative Importance Factor (column 3). This box was predetermined and is intended to describe the type of impact resulting from the evaluation item. If additional deficiencies are noted as stated in paragraph a above, the evaluator should select the impact column most appropriate. Each category is described below:

(1) Operational Impact (Column 4). This column includes items which have impact predominately in operational areas.

(2) People Impact (Column 5). This column covers those areas which principally affect air traffic control personnel in the facility.

(3) Management Impact (Column 6). This column relates to items which hinder the management of a facility.

e. Remarks (Column 7). This column includes specific remarks which supplement and clarify conditions which are not afforded full credit through a numeric score.

67. AIR TRAFFIC EVALUATION WORKSHEETS - PART 2. Each numbered line on this part of the worksheet lists a piece/part of a system or subsystem of equipment used to support the air traffic operational function of the facility. The intent of the listing is to ensure a full identification of all possible deficiencies. For example, it is possible that an operational problem could be related to a piece of equipment or a lack of such equipment, which would not be covered under evaluation items in Part 1. The equipment evaluation items listed on this worksheet are not included in the narrative of the order (chapter 7). The worksheet consists of six columns. Each column is discussed below:

a. Equipment Item (Column 1). This column lists items/pieces of equipment found in a terminal air traffic control facility. Items of equipment not listed may be added in the blank spaces provided at the end of this worksheet.

b. Problem Exists (Column 2). This column is checked if there is a problem in the present facility which is associated with the piece of equipment listed in column 1. If checked, the problem should be briefly described in the Remarks Column (column 6). Description and comments may be continued, if necessary, on a separate sheet of paper. The continuation should be labeled with the appropriate line number.

c. Equipment Required but not Available (Column 3). This column is checked if an item is needed, or additional units are required to adequately supplement that which exists. The deficiency should be briefly described in the Remarks Column (column 6). Descriptions and comments may be continued, if necessary, on a separate sheet of paper. The continuation should be labeled with the appropriate line number.

d. Should be Considered for Replacement (Column 4). This column is checked if equipment is considered to be out moded. It may not be possible to secure a replacement even during a modernization, however, this column should be checked if the evaluator deems it reasonable of note. The deficiency should be briefly described in the Remarks Column (column 6). Descriptions and comments may be continued, if necessary on a separate sheet of paper. The continuation should be labeled with the appropriate line number.

e. Other (Column 5). This column is checked if a comment is deemed necessary, but which is not covered by preceding columns. The deficiency should be briefly described in the Remarks Column (column 6). Descriptions and comments may be continued, if necessary, on a separate sheet of paper. The continuation should be labeled with the appropriate line number.

f. Remarks (Column 6). Complete if a check mark appears in any one or more of the preceding columns.

68. AIRWAY FACILITIES EVALUATION WORKSHEETS. This worksheet is designed for the evaluation of a facility from an Airway Facilities view point. Each line on this worksheet is divided into eight columns. These columns add clarity to the analysis of each item. Complete all items pertinent to the facility being evaluated. Each column, one through eight, is discussed below:

a. Evaluation Item (Column 1). This column lists significant items to be evaluated at each facility. They are designed to highlight specific deficiencies. If additional deficiencies not included in those items listed are present, they may be entered in the blank spaces following each section.

b. Deficiency Score (Column 2). A blank box is provided on each line to record a numeric grade which describes the relative level of facility deficiency. The five possible levels are listed below:

(1) No work required.

(2) Minor repair required. A detectable problem exists and has only minor affect on the facility.

(3) Moderate repair required. An obvious problem which is affecting the facility or its operation and has an impact between minor and major repair scores.

(4) Major repair required. A problem which is readily apparent and has an adverse impact on facility operations.

(5) Replacement required or item does not exist and must be installed. Efforts to deal with this deficiency requires action which goes beyond usual measures.

(When an individual item requires evaluation by more than one team member, the score will reflect a consensus of all members involved.)

NOTE: Not all items listed in the evaluation worksheet will be applicable to every site. For all items which do not apply, enter N.A. in this column.

c. Relative Importance Factor (Column 3). A standard weighting factor indicates the relative importance of each evaluation item. The weights were predetermined to insure objectivity and consistency. The weighting factor is the multiplier which is used with the deficiency score to form a score for that item. The resulting score is placed in one of the four impact columns (columns 4, 5, 6, and 7).

d. Impact (Columns 4, 5, 6, and 7). These columns are used to classify each evaluation item in terms of its impact on the facility. Three boxes on each line are shaded, leaving only one to record the product of the Deficiency Score (column 2) and Relative Importance Factor (column 3). The scoring box was predetermined to describe the type of impact resulting from each line item.

(1) Operational Impact (Column 4). This column includes items which affect the ability of the facility to perform the FAA mission.

(2) Code (Column 5). This column includes items which deal with code compliance.

(3) Support Function (Column 6). This column includes items which indirectly support facility performance of the FAA mission.

(4) Site Specific (Column 7). This column includes items which are not commonly found at all facilities but are required at specific installations due to unique requirements.

e. Remarks (Column 8). Specific remarks which supplement and clarify conditions which are not afforded full credit through a numeric score are recorded here. Remarks may be continued, if necessary, on a separate sheet of paper. The continuation should be labeled with the appropriate line number.

69. BACKUP SHEETS. Detailed field notes should be compiled during the field survey. These backup sheets should be organized to follow the order of items listed on the evaluation worksheets and should be retained with the final report at the regional office.

70. PHOTOGRAPHS. Photographs may be useful in situations where the evaluation score cannot accurately reflect the actual field conditions. The photographs will be retained with the final report to the region as a tool for documenting unusual conditions. Situations which may require photographic documentation include, but are not limited to, the following:

a. Obstruction of control cab sightlines.

b. Limits to future expansion.

c. Structural deterioration.

71. SPARE CAPACITY. Unless stated otherwise, spare capacity shall be considered adequate if it is capable of accommodating all planned and budgeted future expansion or, if no expansion is planned or budgeted, a minimum of 10 percent future growth.

72. thru 81. RESERVED.

CHAPTER 4. COST ESTIMATE

82. OBJECTIVE. The objective of this chapter is to establish procedures for a universal system of estimating modernization or replacement costs for items or facilities that are found to be substandard or non-existent. Cost estimating procedures from region to region shall be equitable, taking into account variations in construction costs throughout the geographical area of FAA jurisdiction.

83. COST ESTIMATE FORMS.

a. The following forms shall be used in the preparation of engineers cost estimates:

(1) FAA Form 4450-8, Engineering Cost Estimate, see appendix 3, page 2.

(2) FAA Form 4450-9, Engineering Cost Estimate Summary, see appendix 3, page 3.

b. These forms are stocked at the FAA Depot under the NSN numbers and are available through normal supply channels. Unit of issue for each form is sheet. See appendix 3 for a sample of the forms.

84. COST ESTIMATE COORDINATION. Airway Facilities personnel will complete the cost estimate forms for both Airway Facilities and Air Traffic deficiency items. Airway Facilities must evaluate all Air Traffic spaces for physical condition and Air Traffic must brief Airway Facilities concerning the deficiencies noted in this evaluation.

85. ENGINEERING COST ESTIMATE.

a. General. The following sets forth the preferred method for preparing engineering cost estimates. Detailed directions have been excluded and only general direction stated in order to permit a reasonable degree of judgment by the estimator.

b. Preparation of Engineering Cost Estimate. Cost estimates shall be prepared based on field observations. Cost estimate forms have been included in appendix 3. These forms shall be used to list all items included on the Air Traffic evaluation worksheets Part I and the Airway Facilities evaluation worksheets. These forms are to be used for recording remarks pertinent to the completion of FAA Form 4450-8 for each item. The basic details of the estimate shall be prepared on FAA Form 4450-8. Initially, the work usually performed by either the prime-contractor or a subcontractor should be identified and the

estimate divided into categories accordingly. Work items will normally parallel the major work categories contained in a standard facility construction specification index. Each work item shall be subdivided into specific identifiable items of material and/or work. The quantity of each item based on unit measure shall be determined and the unit cost developed. These costs shall be developed by detailed investigations and calculations considering such applicable factors as energy conservation, published cost estimating data, item complexity, impact of large or small quantity on price, local conditions, labor conditions and restrictions, national and local economic factors, seasonal conditions and time of construction, analysis of similar items of work, etc. Individual item costs for each division on the evaluation form shall be grouped together and subtotaled. To this sum shall be added allowances such as subcontractor's overhead and profit, prime-contractor's handling or service charges, and all other costs associated with the specific division. The divisions of work with their individual total costs should be tabulated on FAA Form 4450-9, Engineering Cost Estimate Summary. An aggregate subtotal shall be obtained and to this sum added prime-contractor's job overhead (if not previously included), home office overhead, profit, and bond costs. The grand total of the above items is the engineers cost estimate.

c. Cost Data.

(1) Engineers shall consult Governmental, commercial, and industrial sources of cost data as a basis for preparing engineers cost estimates.

(2) The following estimating data sources are suggested for use as references. This list is not intended as all inclusive, but is for guidance only.

(a) Means, BUILDING CONSTRUCTION COST DATA.

(b) Walker, BUILDING ESTIMATOR'S REFERENCE BOOK.

(c) Marshall and Stevens, MARSHALL'S EVALUATION SERVICE.

(d) Architectural Record.

(e) Engineering News-Record.

(f) Local Contractors and Construction Associations.

(g) Previous FAA Construction Contracts.

(h) Gulf Publishing Company, ESTIMATOR'S MAN-HOUR LIBRARY.

(i) Craftsman Book Company, NATIONAL CONSTRUCTION ESTIMATOR.

d. Documentation. A statement shall be made on the cover sheet of each engineers cost estimate attesting to the date of the estimate, the estimator's name(s), signature(s), facility type, and geographical location on which the estimate is based. Where applicable and if possible, the Engineering News-Record Building Cost Index or some other industry recognized cost index shall be stated and identified as it relates to the date of the estimate and geographical location.

e. Government Furnished Material (GFM). GFM and equipment shall be listed on the Cost Estimating Form 4450-8 in a separate division. The cost of equipment shall be from the latest available price list. All additional procedures shall be as outlined in paragraph b of this section.

86. ESTABLISHMENT OF FACILITY REPLACEMENT COST. Standard designs for terminal air traffic control facilities can be obtained from APM-500. Select the model facility to most adequately replace the existing facility. Obtain the standard cost estimate for this facility and adjust this cost as required for escalation, local conditions, labor conditions and restrictions, national and local economic factors, etc. This entry should be the last figure on all facility cost estimate summaries, FAA Form 4450-9. An exception will occur in the case of leased facilities. See appendix 4 for a description of standard designs available.

87. LEASE AGREEMENTS. In the case where facilities are leased, the last entry on FAA Form 4450-9 shall be 25 percent of the first year's rent minus the total dollar amount spent previously for improvements to the facility during the lease to date. In the case of rent-free or nominal fee lease agreements, the last entry on FAA Form 4450-9 shall be 15% of the fair market value of the property minus the sum of any improvements made in the current year to date and the rent fee, if any, paid in one year. If additional clarification is required, refer to Order 4660.1, Real Property, chapter 10, section 5.

88. thru 97. RESERVED.

CHAPTER 5. MODERNIZATION/RELOCATION ANALYSIS

98. OBJECTIVES. The objectives of this chapter are as follows:

a. Establish a uniform process supporting the decision to recommend initiation of modernization and relocation projects.

b. Provide a system employing both the evaluation process and the engineering cost estimate.

c. Assure that the decision to modernize or relocate a facility will achieve the best cost versus benefit ratio for the agency.

99. ANALYSIS OF EVALUATION WORKSHEETS.

a. General. The analysis procedure outlined below will generate percentage values which may be used to compare different facilities with each other.

NOTE: It is not intended that numeric computations necessarily be the sole means of ranking or validating candidates for projects.

b. Analysis Worksheets. See appendix 2 for a blank worksheet and an example of a completed analysis worksheet. The worksheets are organized into two parts, one for Air Traffic and one for Airway Facilities. The chapters are listed vertically on the left side of the worksheet and broken down into the sections corresponding to the handbook. Listed horizontally across the top of the worksheets are impact (AT) (or division (AF)) columns corresponding to those found on the evaluation worksheets, a totals column, and percentage column.

c. Completion of Analysis Worksheets. The procedure for completing the Air Traffic and Airway Facilities portion of the analysis worksheet are the same with the exception of the impact (AT) or division (AF) listings at the top of the worksheet. (The following narrative uses the term "impact" corresponding to the Air Traffic portion of the worksheet. The Airway Facilities portion will be completed using the same procedures however substitute the word "division" wherever "impact" appears.)

NOTE: See form following this item for location of data entries. Numbers on the form relate to the paragraph numbers below.

(1) Each chapter/section line is divided into two boxes. The top half of each box is used to record (by impact column) the actual facility score for each section. (Calculate this number by summing all the entries in each individual impact column for the chapter/section.) The bottom half of each box is used to record (by impact column) the total possible score each section may achieve. (Calculate this number by summing the relative importance factors for each item scored in each individual impact column and multiplying this sum by the maximum possible score of 4.)

NOTE: The total possible score will be unique for each facility because items that were "not applicable (NA)" will not be summed while any additions made to the evaluation worksheet during the field evaluation will be added.

(2) Once all the impact column boxes for a section have been filled in, sum the actual facilitiy scores (top halves) and the total possible scores (bottom halves) for the section and record in the corresponding box in the "section totals" column.

(3) Divide the section facility total score by the total possible score and multiply by 100. Enter this number in the column labelled "Percentage per Section."

(4) Repeat steps 1 through 3 for each chapter/section.

(5) When all section scores have been recorded for a chapter, calculate the "impact totals" by summing the facility total scores (top halves) and the total possible scores (bottom halves) for each impact column and record in the corresponding boxes in the "impact totals" line.

(6) For each impact column divide the facility total score by the total possible score and multiply by 100. Enter this number in the "Percentage per Impact" line.

(7) Calculate the chapter totals by summing the "impact totals" lines to arrive at the facility total score for the chapter and the total possible score for the chapter and record where indicated on the worksheet.

(8) Divide the chapter facility total score by the chapter total possible score and multiply by 100. Enter this number in the "Percentage this Chapter" box on the worksheet.

(9) Repeat steps 1 through 8 for all chapters.

100. AIR TRAFFIC EVALUATION WORKSHEET PART 2. No analysis of this worksheet is required. The completed worksheet should be included in the final summary report as described in paragraph 102.

101. ANALYSIS OF ENGINEERING COST ESTIMATE.

a. General. The engineering cost estimate shall be analyzed to assure the best cost versus benefit ratio for the agency.

b. Agency Owned Property. A comparison of modernization costs versus facility replacement cost shall be made to establish modernization or relocation action. Divide the modernization cost by the facility replacement cost to

AIR TRAFFIC EVALUATION ANALYSIS WORKSHEET

CHAPTER 6		OPERATIONAL IMPACT	PEOPLE IMPACT	MANAGEMENT IMPACT	SECTION TOTALS	PERCENTAGE PER SECTION
SECTION 1	FACILITY SCORE	1			2	3
	TOTAL POSSIBLE					
SECTION 2	FACILITY SCORE					
	TOTAL POSSIBLE					
SECTION 3	FACILITY SCORE					
	TOTAL POSSIBLE					
SECTION 4	FACILITY SCORE					
	TOTAL POSSIBLE					
IMPACT TOTALS	FACILITY SCORE	5				
	TOTAL POSSIBLE					
PERCENTAGE PER IMPACT		6				

CHAPTER TOTALS

CHAPTER TOTAL FACILITY SCORE 7

CHAPTER TOTAL POSSIBLE SCORE 7

PERCENTAGE THIS CHAPTER 8

establish the percentage value. If modernization costs are 65 percent or greater of the facility replacement cost, relocation should be considered.

c. Agency Leased Property. Property which is occupied by the agency on a leased basis is subject to strict limitations under the Economy Act of 1932. If modernization costs exceed the last entry on FAA Form 4450-9, relocation should be considered. (See chapter 4, paragraph 87.)

102. SUMMARY REPORT.

a. General. The summary report shall be completed and sent to Washington headquarters, APM/ATR, with any request to initiate modernization or relocation projects.

b. Cover Sheet. The facility evaluation summary report (see appendix 2) shall be completed as follows:

(1) Complete the "General" information section including facility name and location, date of field survey, names of facility staff representing Air Traffic and Airway Facilities personnel, and names of all members of the evaluation team with the Coordinator listed first.

(2) Complete the "Cost Estimating" section by:

(a) Entering the total cost of modernization and,

(b) Entering either the facility replacement cost or, in the case of leased property, the maximum amount allowable.

(3) Circle the recommended action, either to modernize or relocate.

(4) Remarks should be as brief as possible but include any pertinent data which should be considered in the decision to initiate a project. If relocation is the recommended action, include specific comments addressing why expansion and/or modernization of the existing facility is not feasible.

c. Evaluation Worksheets. The body of the summary report is composed of the evaluation worksheets organized in the order below:

(1) Evaluation Analysis Worksheets.

(2) Air Traffic Evaluation Worksheet - Part 1.

(3) Air Traffic Evaluation Worksheet - Part 2.

(4) Airway Facilities Evaluation Worksheets.

(5) Engineering Cost Estimate.

103. thru 112. RESERVED.

CHAPTER 6. TOWER STRUCTURES, CONTROL CAB, AND TRACON REQUIREMENTS

NOTE: This chapter provides information to support in depth evaluation of air traffic control functions and areas from an operational point of view. Each paragraph is numbered to coincide with the same numbered item on the Air Traffic Evaluation Worksheet, Part 1. The paragraphs are designed to provide a frame of reference against which an evaluation can reliably and fully judge an Air Traffic Control Facility relative to the need for major modernization or relocation. The entries in this chapter shall be evaluated by Air Traffic personnel; however, Airway Facilities shall evaluate the same areas from a construction, maintenance, and Occupational Health and Safety (OSHA) viewpoint. Airway Facilities shall complete the cost estimate to correct all deficiencies noted, both Air Traffic and Airway Facilities.

SECTION 1 - TOWER STRUCTURES

NOTE: A great variety of space configurations will be encountered. In order to standardize the evaluation approach, the facility being evaluated should be considered in relation to the size/type of standard FAA base building/tower which would be built if the facility were replaced (see appendix 4). This decision must consider the facility level, existing and planned equipment and specific requirements for offices based on the facilities authorized position chart in combination with FAA Order 1100.126E. The replacement facility selection should also consider any planned or programmed future growth. Once the appropriate standard design has been selected, it will serve as the standard for comparison against which the location is evaluated. Typical density levels are presented in the following chart:

TERMINAL TYPES				
TERMINAL LEVEL	NON-APPROACH VFR TOWER	NON-RADAR APPROACH	LIMITED RADAR APPROACH	RADAR APPROACH
I	0 - 34.9	0 - 24.9	---	---
II	35 - 89.9	25 - 79.9	0 - 24.9	0 - 19.9
III	90 OR MORE	80 OR MORE	25 - 59.9	20 - 59.9
IV	---	---	60 OR MORE	60 - 99.9
V	---	---	---	100 OR MORE
TRAFFIC DATA USED:	AIRPORT OPERATIONS	AIRPORT OPS. AND INSTR. OPS	INSTR. OPS	INSTR. OPS
CRITERIA: Hourly Traffic Density Factor (Sum of daily traffic for the busiest 183 days; divided by 183 days; divided by 16 hours or actual hours of operation if a facility is open less than 16 hours). Traffic data to be used is determined by facility type.				

113. LOCATION. Strategic location of an ATCT is required to minimize excessive viewing distances from the control tower to outer aircraft landing and movement areas. The best location for the ATCT will vary depending on the unique runway, taxiway and building configurations found at each location. This is an overall evaluation factor which seeks to consider the ATCT's general location in regard to operational requirements.

114. HEIGHT. While height and depth perception are related, the height factor goes beyond simply being able to distinguish between two aircraft. Adequate height enables the controller to achieve more of an aerial view of the airport. This allows the controller to make judgments on sequence of taxiing aircraft or the position of one aircraft relative to another for control decisions. Major airports are normally subject to greater deficiencies than smaller airports due to size and complexity.

115. ORIENTATION. The tower cab should be oriented to face north or alternately east, south, or west, normally in that order of preference for towers in the northern hemisphere. (In areas where snow accumulates on the ground surface, a southern orientation should be avoided.) Orientation should not be such that the view of a primary runway approach is in line with a rising or setting sun.

NOTE: Operational requirements should be the final determining factor when scoring orientation.

116. RUNWAY/HELIPAD VISIBILITY. A clear, unobstructed view of the approach to the end of the primary instrument runway and all active runways/helipads must be available to the local/helicopter control position. While not mandatory, all operating positions should have this view.

117. TRAFFIC PATTERN VISIBILITY. A clear, unobstructed view of traffic patterns to all active runways/helipads must be available to the local/helicopter controller.

118. TAXIWAY VISIBILITY. A clear, unobstructed and direct view of taxiways and runways must be available to the ground control position. While not mandatory, all operating positions should have this view.

119. OTHER MOVEMENT AREA VISIBILITY. A clear, unobstructed view of helicopter pads (on airport), terminal gates and other movement areas is desired for the ground controller, but not considered mandatory.

120. DEPTH PERCEPTION.

a. General. The ability to differentiate the number and type of grouped aircraft and/or ground vehicles and to observe their movement and position relative to the airport surface area should be available from the control cab.

b. Criteria. To meet the depth perception requirements outlined in "a." above, cab eye level must intersect the grade of all aircraft air traffic control service movement areas at an angle of 35 minutes or greater. As a rule of thumb, multiply the controllers eye level above grade (in feet) times 100. The product is approximately the maximum distance (in feet) which meets this angle requirement.

NOTE: The next two evaluation paragraphs deal with important conditions which vary widely between locations. If conditions at the facility/ location being evaluated are not adequately covered by the factors as written, describe them in detail along with your evaluation grade. These two items are repeated in sections 1, 3, and 4 of the evaluation worksheet; however, do not grade parking or accessibility in more than one section unless required to adequately describe conditions at the facility being evaluated.

121. PARKING. This paragraph considers the factors encountered from the time the employee enters the parking lot until the initial entry to the building complex housing the facility. Conditions may range from parking adjacent to the facility to parking which is located in remote lots requiring either long walks, riding a bus, or some other means of mechanical conveyor. Any unusual restrictions that are encountered in getting to the parking area, such as those associated with military bases or major airports should be considered under this item. The physical condition of the parking area will be evaluated by Airway Facilities and is not to be considered in this score.

122. ACCESSIBILITY. This paragraph is a continuation of parking, paragraph 121. Considered here are those factors involved with the physical access to the administrative and/or operations area after an employee has made the initial entry into the building. Conditions may range from going up a private elevator/stair, passage through areas with locked gates, doors, security check points under another authorities jurisdiction, or crossing the roof of a terminal building. Access to the employee's work area should not cause excessive time to be wasted.

123. PHYSICAL CONDITION/APPEARANCE. Visually inspect for material deterioration, defects, internal or external appearance, leaks or other deficiencies which affect and are not conducive to a professional work environment.

124. FIRE PROTECTION. Inspect areas for existence of smoke alarms and similar devices strategically located. (NOTE: Airway Facilities will evaluate the facility for fire code requirements.)

125. AIR QUALITY. The work environment should be free of noxious odors. Ventilation should be adequate to remove any odor introduced into the work environment and ventilation supply air should not be contaminated by external odor sources. Heating and cooling should be adequate to accommodate changing requirements throughout the day. The use of supplemental fans or space heaters indicates the heating/cooling is inadequate.

126. CATWALKS. A catwalk shall be provided around all control tower cabs, to facilitate washing of windows. (Towers with an operating window washing system are exempt from this requirement.) Airway Facilities will evaluate the catwalks against OSHA standards; however, Air Traffic should evaluate conditions which appear to adversely impact Air Traffic personnel.

127. STAIRS. Tower and cab stairs serve as required means of ingress/egress. Stairs shall be in good state of repair, void of slippery areas and well lighted. Headroom must be of sufficient height to allow unrestricted passage. Stairways must be enclosed to avoid the unsafe conditions brought about by exposure to extreme weather conditions.

128. ELEVATORS. ATCTs where the cab floor is 50 feet or more above the ground should be equipped with an elevator. The elevator should be reliable and in good repair free from dents, scratches, or other damage. The elevator cab must be equipped with emergency communications and should be power ventilated to maintain a comfortable environment.

129. TOILET ROOM. One toilet room is acceptable for ATCT personnel. The room should be located within one floor of the cab level and shall be equipped with a toilet and lavatory with hot and cold running water. The door shall be capable of being locked from the inside without a key. Heating and cooling must be adequate to maintain a comfortable environment and the room must be equipped with an exhaust fan.

130. SECURITY. Adequate locks and communication/surveillance systems shall be provided as required to ensure security.

131. thru 140. RESERVED.

SECTION 2 - CONTROL CAB

141. CAB SIZE. The cab size must be adequate to permit the conduct of all required work functions with maximum staffing levels. Included in this requirement is space to perform on-the-job training without interfering with normal operational procedures.

142. CAB SHAPE. The shape of the cab should not restrict an efficient configuration of operating positions. A cab with many sides and angles may restrict the space available for equipment or controllers view of the airport.

143. LIGHTING - GENERAL. Overhead and floor lighting should be controlled separately by dimmer switches with an off position. Floor lighting should provide adequate illumination to allow for safe controller movement at night.

144. LIGHTING - TASK. Task lighting should adequately illuminate each specific position of operation. This lighting must be controlled from the operating position by a dimmer switch and should originate from ceiling height. Lighting must be shielded to prevent reflections in the cab glass.

145. CEILING - HEIGHT. The cab height should be sufficient to permit proper positioning of the BRITE displays and observation of traffic patterns. Ceilings should be high enough to provide an adequate acoustical environment.

146. CEILING - COLOR. The ceiling should be a dark colored acoustical material to prevent reflections in the cab windows.

147. ACOUSTICS. Acoustics within the cab should allow performance of work at any position of operation without distractions under normal operating conditions.

148. VISIBILITY OBSTRUCTIONS - INTERNAL. The controllers view of movement areas should not be blocked by large pieces of equipment. If pieces of equipment have been placed on console tops or window sills creating obstructions to controller vision, evaluate whether modifications could be made to accommodate this equipment in an appropriate layout.

149. NOISE - EXTERNAL. Question cab personnel concerning interfering external sources. The cab should provide a sufficient acoustical separation so that external noise does not interfere with normal work operations. Examples are runup areas, helicopter landing pads, jet engine test cells, etc.

150. PHYSICAL CONDITION/APPEARANCE. Visually inspect for material deterioration, defects, internal or external appearance, leaks or other deficiencies which affect and are not conducive to a professional work environment.

151. AIR QUALITY. The work environment should be free of noxious odors. Ventilation should be adequate to remove any odor introduced into the cab and ventilation supply air should not be contaminated by external odor sources. Heating and cooling should be adequate to accommodate changing requirements throughout the day. Use of portable supplemental fans or space heaters indicates the heating/cooling is inadequate.

152. GLARE. Question cab personnel concerning existing glare problems. These problems include, but are not limited to, reflections from buildings or hanger roofs or reflections between cab glass at corners.

153. STRAY ILLUMINATION. Night operations are subject to special glare problems which diminish the controllers ability to see aircraft. The problem may be the result of poorly shielded ground lights adjacent to the tower or looking over or into a lighted area such as a parking lot.

154. PROXIMITY TO TRACON ROOM. The cab and TRACON should be in reasonable proximity to facilitate personnel rotation and supervision and to accommodate the use of common equipment such as radio control equipment.

155. PROXIMITY TO TRAINING ROOM. The cab and training room should be in reasonable proximity to facilitate the recall of personnel.

156. PROXIMITY TO BREAK ROOM/LOCKER ROOM. The cab and break room/locker room should be in reasonable proximity to facilitate the recall of personnel.

157. PROXIMITY TO ADMINISTRATIVE AREA. The administrative area provides support to operations personnel. This area should be reasonably accessible to operational personnel and in reasonable proximity to the cab to facilitate access as required by the facility manager and staff.

158. CONSOLE - HEIGHT/DEPTH. The dimensions of the cab consoles should be appropriate for the installation. Consoles which are too large can obstruct the view of controllers especially if the taxiways are close to the tower and consoles which are too small lack the space for writing and equipment installation.

159. DROP TUBES. Drop tubes, where required, shall be capable of being installed between the cab and TRACON room. Excessively long horizontal runs may not provide an acceptable routing path. Existing installations should provide reliable service.

160. POSITION EQUIPMENT LAYOUT. Addition of equipment usually occurs in space that is available rather than in a logical position from an operations point of view. Equipment should be arranged in a logical order to facilitate efficient work operations.

161. INTERPOSITION WORKFLOW. Changing operational and procedural requirements may have adversely impacted the original operational position logic. Evaluate the current workflow patterns to determine if data can be transferred in an efficient manner.

162. POSITION RECONFIGURATION/RELOCATION CAPABILITY. Sufficient space should be available to facilitate relocation of existing positions when required.

163. EQUIPMENT REPLACEMENT CAPABILITY. Consoles shall be in good condition and capable of accepting the electronic equipment required by the current accepted level of technology for the facility activity classification.

164. POSITION EXPANSION CAPABILITY. Sufficient space should be available to accommodate additional new pieces of equipment which had not previously appeared in the console.

165. SUPERVISOR'S WORK AREA. The cab and the TRACON require an area which has access to facility communications and space for supervisory work area. Specific requirements for this area will vary from facility to facility. This area is housed in the operations space to permit close supervision of the operation.

166. CONVENIENCE AREA. This area should be equipped with a sink (with hot/cold water and a drinking fountain), refrigerator, and storage for small utensils, supplies such as coffee, cups, sugar, etc., and controller's lunches. This area must be capable of providing reasonable support for single controllers during periods of low activity.

167. STORAGE. A reasonable amount of space must be provided for storage of forms and other supplies that must be readily available in the operations area. This area should provide for organized storage of material conducive to a professional working environment.

168. CENTRAL VACUUM SYSTEM. These systems are required to support the cleaning of operational areas. The blower unit should be installed in a remote location and use of the system should not produce annoying noise levels.

169. FLOORING. Floor coverings shall be securely attached to the floor, free of rips, tears, missing sections, and other similar defects. The material should have characteristics which permits thorough and efficient cleaning.

170. EXHAUST FANS. These fans remove excessive unwanted smoke/fumes from the operations area. The capacity of this system should allow operations to continue even during periods of poor air quality.

171. EQUIPMENT MAINTENANCE ACCESSIBILITY. To ensure a high degree of reliability, operational equipment must be accessible to Airway Facilities technicians. The controller should not be forced to vacate a position in order for routine maintenance to be performed.

172. HEADSET STORAGE. A "pigeonhole"-type storage area should be provided for temporary storage of operations personnel headsets.

173. thru 181. RESERVED.

SECTION 3 - TRACON

182. SIZE. TRACON size is determined by the number and types of consoles/positions required for the present operation plus additional positions required for future expansion. Included in the requirements for present operations should be adequate space to support on-the-job training (OJT) for all positions.

183. SHAPE. The shape of the TRACON should not restrict the efficient configuration of operational positions.

184. PHYSICAL CONDITION. Visually inspect for material deterioration, defects, internal or external appearance, leaks or other deficiencies which affect and are not conducive to a professional work environment.

185. LIGHTING - GENERAL. Overhead and floor lighting should be controlled separately by dimmer switches with an off position. Floor lighting should provide adequate illumination to allow for safe controller movement.

186. LIGHTING - TASK. Task lighting should adequately illuminate each specific position of operation. This lighting must be controlled from the operating position by a dimmer switch and should not interfere with other positions.

187. CEILING - HEIGHT. Ceiling height should be a minimum of 8 feet.

188. CEILING - COLOR. The ceiling shall be acoustical material with low light reflectance to achieve a darkened room environment.

189. ACOUSTICS. Acoustics within the TRACON should allow performance of work at any position of operation without distractions under normal operating conditions.

190. NOISE - INTERNAL. Question TRACON personnel about any interfering or unusual internal noise problems such as blowers, fans or other equipment noise.

191. NOISE - EXTERNAL. Question TRACON personnel about any interfering or unusual external noise problems such as engine generators, runup areas, or helicopter landing pads.

192. STRAY ILLUMINATION/LIGHT REFLECTIONS. Question facility personnel concerning any unshielded or interfering light sources.

193. AIR QUALITY. The work environment should be free of noxious odors. Ventilation should be adequate to remove any odor introduced into the TRACON and ventilation supply air should not be contaminated by external odor sources. Heating and cooling should be adequate to accommodate changing requirements throughout the day. Use of supplemental fans or space heaters indicates the heating/cooling is inadequate.

NOTE: The next two evaluation paragraphs deal with important conditions which vary widely between locations. If conditions at the facility/location being evaluated are not adequately covered by the factors as written, describe them in detail along with your evaluation grade. These two paragraphs are repeated in sections 1, 3, and 4 of the evaluation worksheet; however, do not grade parking or accessibility in more than one section unless required to adequately describe conditions at the facility being evaluated.

194. PARKING. This paragraph considers the factors encountered from the time the employee enters the parking lot until the initial entry to the building complex housing the facility. Conditions may range from parking adjacent to the facility to parking which is located in remote lots requiring either long walks, riding a bus, or some other means of mechanical conveyor. Any unusual restrictions that are encountered in getting to the parking area, such as those associated with military bases or major airports should be considered under this paragraph. The physical condition of the parking area will be evaluated by Airway Facilities and is not to be considered in this score.

195. ACCESSIBILITY. This paragraph is a continuation of parking, paragraph 194. Considered here are those factors involved with the physical access to the administrative and/or operations area after an employee has made the initial entry into the building. Conditions may range from going up a private elevator/stair, passage through areas with locked gates, doors, security check points under another authorities jurisdiction, or crossing the roof of a terminal building. Access to the employee's work area should not cause excessive time to be wasted.

196. PROXIMITY TO CAB. The cab and TRACON should be in reasonable proximity to facilitate personnel rotation and supervision and to accommodate the use of common equipment such as radio control equipment.

197. PROXIMITY TO TRAINING ROOM. The TRACON and training room should be in reasonable proximity to facilitate the recall of personnel.

198. PROXIMITY TO TOILETS. Toilets should be located within a reasonable distance of the TRACON to minimize the amount of time operational personnel are away from the operating position.

199. PROXIMITY TO BREAK ROOM/LOCKER ROOM. The TRACON and break room/locker room should be in reasonable proximity to facilitate the recall of personnel.

200. PROXIMITY TO ADMINISTRATIVE AREA. The administrative area provides support to operations personnel. This area should be reasonably accessible to operational personnel and in reasonable proximity to the TRACON to facilitate access as required by the facility manager and staff.

201. CONSOLES. Consoles shall be in good condition. The size and design should be adequate to support the functions being performed at each position.

202. POSITION EQUIPMENT LAYOUT. Addition of equipment usually occurs in space that is available rather than in a logical position from an operations point of view. Equipment should be arranged in a logical order to facilitate efficient work operations.

203. INTERPOSITION WORKFLOW. Changing operational and procedural requirements may have adversely impacted the original operational position logic. Evaluate the current work flow patterns to determine if data can be transferred in an efficient manner.

204. POSITION RECONFIGURATION/RELOCATION CAPABILITY. Sufficient space should be available to facilitate relocation of existing positions as required.

205. EQUIPMENT REPLACEMENT CAPABILITY. Consoles shall be in good condition and capable of accepting the electronic equipment required by the current accepted level of technology for the facility activity classification.

206. POSITION EXPANSION CAPABILITY. Sufficient space should be available to accommodate additional new pieces of equipment which had not previously appeared in the console.

207. SUPERVISOR'S WORK AREA. The cab and the TRACON require an area which has access to facility communications and space for supervisory work area. Specific requirements for this area will vary from facility to facility. This area is housed in the operations space to permit close supervision of the operation.

208. DRINKING FOUNTAIN. A drinking fountain should be located in the TRACON room in an area that does not interfere with the operation.

209. STORAGE. A reasonable amount of space must be provided for storage of forms and other supplies that must be readily available in the operations area. This area should provide for organized storage of material conducive to a professional working environment.

210. CENTRAL VACUUM SYSTEM. These systems are required to support the cleaning of operational areas. The blower unit should be installed in a remote location and use of the system should not produce annoying noise levels.

211. FLOORING. Floor coverings shall be securely attached to the floor, free of rips, tears, missing sections, and other similar defects. The material should have characteristics which permits thorough and efficient cleaning.

212. EXHAUST FANS. These fans remove excessive unwanted smoke/fumes from the operations area. The capacity of this system should allow operations to continue even during periods of poor air quality.

213. SECURITY. Adequate locks and communication/surveillance systems shall be provided as required to ensure security.

214. EQUIPMENT CONTROL PANEL. The equipment control panel should be in a location that is convenient to both the supervisor's area and the control positions.

215. DISPLAY BOARDS. Sufficient convenient space should be available for position display boards and status boards as required.

216. EQUIPMENT MAINTENANCE ACCESSIBILITY. To ensure a high degree of reliability, operational equipment must be accessible to Airway Facilities technicians. The controller should not be forced to vacate a position in order for routine maintenance to be performed.

217. FIRE PROTECTION. Inspect areas for existence of smoke alarms and similar devices strategically located (NOTE: Airway Facilities will evaluate the facility for fire code requirements).

218. HEADSET STORAGE. A "pigeonhole"-type storage area should be provided for temporary storage of operations personnel headsets.

219. thru 224. RESERVED.

SECTION 4 - ADMINISTRATIVE SPACE

NOTE: Administrative space includes areas such as offices, lobbies, open bay areas, etc., not specifically included in sections 1, 2, and 3. The many variables associated with existing space configurations, available equipment, monitoring limitations, etc. make rigid standards impossible to establish; however, for evaluation purposes the facility should be graded against the appropriate level/type standard design drawings of the agency (see appendix 4). Only those spaces included in the facilities authorized staffing shall apply.

225. AIR TRAFFIC MANAGER (ATM). Private office required.

226. ASSISTANT AIR TRAFFIC MANAGER (AATM). Private office required.

227. TRAFFIC MANAGEMENT COORDINATOR (TMC). Shared office space adequate.

228. ASSISTANT MANAGER FOR PLANS AND PROCEDURES (AMP). Private office required.

229. ASSISTANT MANAGER FOR TRAINING (AMT). Private office required.

230. ASSISTANT MANAGER FOR AUTOMATION (AMA). Private office required.

231. AREA MANAGER (AM). Private office required.

232. AREA SUPERVISOR (AS). Private office required.

233. TRAINING SPECIALIST (TS). Shared office adequate.

234. PLANS AND PROCEDURES SPECIALIST (PPS). Shared office adequate.

235. AUTOMATION SPECIALIST (AUS). Shared office adequate.

236. QUALITY ASSURANCE SPECIALIST (QAS). Private office required.

237. QUALITY ASSURANCE AND TRAINING SPECIALIST (QATS). Private office required.

238. PROGRAM SPECIALIST (PS). Shared office adequate.

239. ADMINISTRATIVE OFFICER. Shared office adequate.

240. EDUCATION SPECIALIST (EDS). Shared office adequate.

241. RECEPTION AREA. Adequate space required with waiting area.

242. SECRETARIAL AREA. Adequate space required for work stations authorized.

243. TRAINING CLASSROOM. Enclosed room required. This room may also serve as the conference room for the facility.

244. CONFERENCE ROOM. Enclosed room required. This room may also serve as a training classroom for the facility. In the case, grade paragraph 243 only.

245. BREAKROOM/LOCKER ROOM. An enclosed area is required. The breakroom should be equipped with a counter, sink, cabinets, two-burner stove, a rapid heat oven, and a refrigerator. The locker room should be equipped to provide one section of a double (15 by 72 inch) locker with separate coat compartments and upper small compartments for all facility personnel.

246. TOILET ROOMS. Toilet rooms should be in reasonable proximity to the TRACON and in either the junction or subjunction levels of the tower.

247. TAPE PLAYBACK ROOM. An enclosed room located in a quiet, secure area of the building is required. The room should also be soundproofed to the extent possible.

248. STORAGE. An enclosed, secure room is required. The space should contain storage racks, shelves and cabinets. Heating and ventilation is desirable.

249. COMPUTER BASED INSTRUCTION (CBI) LABORATORY. Where this space is provided or planned, adequate space should be available to house this equipment. The size and layout of this space should facilitate learning which is normally conducted in individual study cubicles. Lighting and acoustics should be conducive to the learning task. The CBI area should be readily available to personnel from the training department.

250. JANITORS CLOSET. This area is used for the storage of maintenance equipment and supplies for the building and grounds. Space should be provided for storage racks, shelves, cabinets, mop rack, and slop sink. Convenience outlets, heating and ventilation should be provided for this space.

251. FUNCTIONAL ARRANGEMENT OF ADMINISTRATIVE SPACE. The relationship of individual work areas and support space should conform to and complement the facilities work flow requirements. In general, work should progress with the minimum amount of handling, travel and delays possible.

252. EXPANSION.

a. General. Future expansion refers to the ability of a facility to expand by incremental future additions. If future operational and technical requirements can be accommodated by internal flexibility, this paragraph does not apply.

b. Operational/Technical/Administrative Expansion. Obtain the budgeted and planned expansion program for the facility. Based on these projected future requirements, the facility must be able to accommodate incremented expansion in those areas most likely to experience growth. If a future expansion program has not been formulated for the facility, a ten percent expansion factor should be applied.

c. Support Services. The site must be capable of accepting the building addition and any increase in area required for support buildings, parking lots, access roads, etc.

253. AIR QUALITY. The work environment should be free of noxious odors. Ventilation should be adequate to remove any odor introduced into the work environment and ventilation supply air should not be contaminated by external odor sources. Heating and cooling should be adequate to accommodate changing requirements throughout the day. The use of supplemental fans or space heaters indicates the heating/cooling is inadequate.

254. LIGHTING. Lighting should be of sufficient brightness and distribution to allow work functions to be performed from any location in any given work area. For specific requirements, see paragraph 543.

255. PHYSICAL CONDITION. Visually inspect for material deterioration, defects, internal or external appearance, leaks or other deficiencies which affect and are not conducive to a professional work environment.

256. ACOUSTICS. Acoustic material should be sufficient to maintain noise levels which are not distracting to the work function under normal conditions.

257. SECURITY. Adequate locks and communications/surveillance systems shall be provided as required to ensure security.

258. DRINKING FOUNTAINS. Drinking fountains should be located in or in reasonable proximity of the work area and in good operating condition.

259. NOISE - INTERNAL. Question personnel about any interfering or unusual internal noise problems such as blowers, fans or other equipment noise.

260. NOISE - EXTERNAL. Question personnel about any interfering or unusual internal noise problems such as engine generators, run up areas, or helicopter landing pads.

> NOTE: The next two evaluation paragraphs deal with important conditions which vary widely between locations. If conditions at the facility/ location being evaluated are not adequately covered by the factors as written, describe them in detail along with your evaluation grade. These two paragraphs are repeated in sections 1, 3, and 4 of the evaluation worksheet however, do not grade parking or accessibility in more than one section unless required to adequately describe conditions at the facility being evaluated.

261. PARKING. This paragraph considers the factors encountered from the time the employee enters the parking lot until the initial entry to the building complex housing the facility. Conditions may range from parking adjacent to the facility to parking which is located in remote lots requiring either long walks, riding a bus, or some other means of mechanical conveyor. Any unusual restrictions that are encountered in getting to the parking area, such as those associated with military bases or major airports should be considered under this paragraph. The physical condition of the parking area will be evaluated by Airway Facilities and is not to be considered in this score.

262. ACCESSIBILITY. This paragraph is a continuation of parking, paragraph 261. Considered here are those factors involved with the physical access to the administrative and/or operations area after an employee has made the initial entry into the building. Conditions may range from going up a private elevator/stair, passage through areas with locked gates, doors, security check points under another authorities jurisdiction, or crossing the roof of a terminal building. Access to the employee's work area should not cause excessive time to be wasted.

263. COPY MACHINE SPACE. Adequate space should be available to accommodate copy machine equipment and supplies.

264. WORD PROCESSOR SPACE. Adequate space should be available to accommodate word processing equipment and supplies.

265. thru 274. RESERVED.

CHAPTER 7. AIRWAY FACILITIES BUILDING REQUIREMENTS

NOTE: The following paragraphs apply to general areas of the facility. A great variety of requirements and configurations of the spaces will be encountered and, therefore, the paragraphs listed address general descriptions rather than specific criteria. Additional guidance will be provided by comparing the existing space with the appropriate standard design. (See appendix 4 for a listing of standard designs.) All paragraphs in this chapter shall be evaluated by Airway Facilities personnel.

SECTION 1 - SPACE REQUIREMENTS

275. ADMINISTRATIVE SPACE.

a. General. Administrative space shall include areas such as offices, lobbies, waiting rooms, etc. Some or all Airway Facilities administrative space may be located in rental space separate from the facility being evaluated. In such case, this item applies only to those areas located in the facility being evaluated.

b. Work Flow. The relationship of individuals and support spaces should conform to and compliment work flow requirements. In general, work should progress with the minimum amount of handling, travel, and delays possible.

c. Space Standards. The many variables associated with existing space configuration, available equipment, monetary limitations, etc., make rigid standards impossible to establish. The diagrams contained in the appendix 4 are to be used for general guidance to assure provision of adequate space for specific needs.

d. Safety. Exits, corridors, and stairways shall not contain equipment which will obstruct their use in an emergency.

276. LOCKER SPACE.

a. General. Every facility should have locker space to provide an area for facility personnel to store personal belongings while on or off duty.

b. Size and Location.

(1) The size of the locker rooms provided will be dependent on the number of personnel assigned to the facility. The amount of space required should be calculated as follows:

Airway Facilities Personnel - 5 Square Feet/Person

(2) Airway Facilities lockers may be located in mechanical rooms or equipment rooms as appropriate to the job assignment of these personnel.

c. Locker Quantity. Airway Facilities personnel are normally assigned one full size (12-inch by 60-inch) locker.

277. TOILET ROOMS.

a. General. Toilet facilities shall be evaluated in accordance with the table below. A single toilet is acceptable for occupancies of less than 15 persons.

Number of Employees/Shift	Total Minimum Number of Toilets Required†
1 - 15	1
16 - 35	2
36 - 55	3
56 - 80	4
81 - 110	5
111 - 150	6
Over 150	1 for each additional 40 employees

† Separate men's and women's toilet rooms must be provided except for rooms serving occupancies of less than 15.

b. Equipment and Accessories. Toilet rooms shall be equipped with toilet partitions and accessories including, but not limited to; mirrors, soap dispensers, towel dispensers, waste receptacles, coat hooks, toilet paper holder, grab bars (handicapped toilets), and sanitary napkin and tampon dispenser (women's toilets).

278. COMMUNICATIONS EQUIPMENT ROOM.

a. General. Every facility shall have a secure area to house electronic equipment necessary for radio communications. A locking rack enclosure shall be acceptable in lieu of a separate secure room in low activity level control towers (Level I, Level II).

b. Location. This room may be located in the tower shaft; however, when the facility contains a TRACON, it should be located adjacent to above or below this room. The radar equipment room may be collocated in this area.

c. Size and Shape. The size of the room is determined by the amount of equipment required plus additional expansion space. The ceiling should provide a minimum of 1 foot clear above all equipment for mechanical and electrical installations.

d. Finishes. Exposed ceilings painted white are preferred; however, suspended ceilings are acceptable. Floor surface should be in good condition.

279. RADAR EQUIPMENT ROOM.

a. General. Every facility shall have a secure area to house equipment necessary for radar surveillance of air traffic and/or automated radar terminal system (ARTS) control.

b. Location. This room may be located in the tower shaft; however, when the facility contains a TRACON, it should be located adjacent to above or below this room. The communications equipment room may be collocated in this area.

c. Size and Shape. The size of this room is determined by the number and type of components required for the activity level of the facility and space for future expansion. The ceiling should provide a minimum of 1 foot clear above all equipment for mechanical and electrical installations.

d. Finishes. Exposed ceilings painted white are preferred; however, suspended ceilings are acceptable. Floor surface should be in good condition.

280. TELEPHONE EQUIPMENT ROOM.

a. General. This room contains telephone equipment which is associated with air traffic control operations.

b. Location. This room should be located adjacent to or in proximity to the communications equipment room and the radar equipment room.

c. Size and Shape. The size of this room will be determined by the total number of equipment racks projected to be required for the facility.

d. Exposed ceilings painted white are preferred; however, suspended ceilings are acceptable. Floor surface should be in good condition.

e. Special Requirements. If batteries are used, this space must be adequately ventilated. This room must be a secure area.

f. Special Note. At locations having a planned integrated communication switching system (ICSS), the requirements for this equipment must be evaluated in lieu of the telco room. Basic requirements outlined above for the telco room will apply; however, the size requirements shall be significantly reduced.

281. ENGINE GENERATOR ROOM.

a. General. This room contains the engine generator used to supply emergency power to all equipment on the emergency power circuit.

b. Size and Shape. The room should be sized to provide adequate space for all necessary equipment including a minimum of 2 feet clear space on all sides of equipment for maintenance. See chapter 10, section 3 for clearance requirements around electrical equipment.

c. Acoustics. With engines operating at peak capacity, the noise levels should not exceed NC45. Question the facility staff concerning the amount of vibration which is transferred to adjacent areas.

d. Security. Due to the critical nature of the function served by the engine generators, this area of the building must be secure. All openings into this room greater than 96 square inches should be protected by burglarproof construction such as iron bars spaced not more than 5 inches apart or steel grilles of minimum No. 9 gauge, 2-inch square mesh material. (See FAA Order 1600.6 Protection of Agency Property.)

e. Access. Exterior doors should be large enough to accommodate maintenance and replacement of equipment.

f. Fire Protection. The engine generator room shall be isolated from other areas of the building by construction of not less than 2 hour fire-resistive construction. A fire detector and fire alarm should be provided in this room.

282. MECHANICAL EQUIPMENT ROOM.

a. General. This area houses operating elements of mechanical equipment not located elsewhere such as exterior or on the roof.

b. Size and Shape. The room should be sized to provide adequate space for all necessary equipment including space required for maintenance. Refer to the chapter 9 for ease of maintenance requirements.

c. Acoustics. With equipment operating at peak capacity, the noise levels should not exceed NC45 in the cab, TRACON operations room and office areas, and NC50 in all other areas. Question the facility personnel concerning the amount of vibration and noise interference which is transferred to adjacent areas.

d. Fire Protection. Mechanical rooms shall be isolated from other areas of the building by construction of not less than 1 hour fire-resistive construction.

283. ELECTRICAL EQUIPMENT ROOM. This room provides space for the facility electrical equipment. This area of the building shall be secure and entry to the area controlled to prohibit unauthorized personnel. Refer to chapter 10 for clearance and equipment enclosure requirements.

284. PCS/BATTERY ROOM.

a. General. This area provides space for PCS equipment and batteries. This area of the building shall be secure and entry to the area controlled to prohibit unauthorized personnel.

b. Special Requirements. This area should be adequately ventilated to remove excess heat from the PCS and gases from the battery area. The battery area shall have an eye wash and shower in the room or directly adjacent to it.

285. STORAGE ROOMS.

a. General. Storage rooms should provide for the secure and orderly storage of items required for facility operations and maintenance.

b. Size and Shape. Storage rooms may be any size or shape but should be capable of holding the necessary material or equipment for the area they serve.

c. Security. Storage rooms should be provided with a cylinder lockset. The lockset function shall allow entrance by key only (outer knob always fixed and inner knob always free).

286. CABLE CHASES

a. General. Cable chases provide vertical access ways for communications and electrical cabling.

b. Access. Cable chases should have access openings as required to accommodate installation of additional cable runs.

c. Capacity. Cable chases should be large enough to accommodate all planned or programmed requirements or a minimum of 10 percent future growth.

287. INTERNAL FLEXIBILITY.

a. General. Future flexibility is the ability of a facility to accommodate changing requirements by internal reorganization.

b. Spatial Flexibility. Items to be considered when evaluating internal flexibility include possible reorganization of departments, combination of similar functions into one area, and the amount and utilization of storage space at the facility.

c. Systems Flexibility. The mechanical and electrical systems in the facility must be capable of adapting to future needs. To accommodate these changes, systems must be easily adaptable and have sufficient capacity to provide for increased requirements.

d. Operational Flexibility. Based on projected future requirements, the facility must be able to accommodate change in those areas most likely to be affected. If no projected growth requirements are available, a 10 percent growth factor should be used.

288. BUILDING EXPANSION.

a. General. Future expansion refers to the ability of a facility to expand by incremental future additions. If future operational and technical requirements can be accommodated by internal flexibility, this paragraph does not apply.

b. Operational/Technical/Administrative Expansion. The coordinator should obtain the budgeted and planned expansion program for the facility. Based on these projected future requirements, the facility must be able to accommodate incremented expansion in those areas most likely to experience growth. If a future expansion program has not been formulated for the facility, a 10 percent expansion factor should be applied.

c. Support Services. The site must be capable of accepting not only the building addition but also any increase in area required for support buildings, parking lots, access roads, etc.

289. thru 297. RESERVED.

SECTION 2 - BUILDING CODE

NOTE: The entries in this section are intended to provide general guidance although specific requirements are stated. The evaluator should not downgrade a facility for deminimust dimensional violations.

†Deminimus - A condition which is in violation of any occupational safety or health standard but that has no immediate or direct relationship to safety or health is deminimus; that is, a condition that presents no apparent hazard to employee safety and health, such as minor difference in certain dimensions. While abatement may be desirable, no corrective action is required for deminimus violations.

298. NUMBER OF EXITS

a. General. Every building, structure, or portions thereof shall be provided with exits as outlined in this paragraph.

b. Number of Exits Required.

(1) Buildings or portions thereof complying with the conditions set forth below shall have a minimum of one required exit from each occupied level.

(a) Base buildings having a total floor area of less than 3,000 square feet on one or more stories aboveground. No floor above the ground level shall exceed 1,500 square feet.

(b) Tower shafts, either functional or non-functional.

(c) Control cabs.

(2) All buildings or portions thereof not complying with the provisions established in (1) above shall have a minimum of 2 required exits from each occupied level.

(3) Any room larger than 3,000 square feet or having an occupancy capacity of 30 or more shall have a minimum of 2 exits.

299. EXIT DISTANCE. The maximum distance of travel from any point to an exterior door, horizontal exit, exit passageway, or enclosed fire stair shall not exceed 150 feet.

300. LABELED DOORS.

a. General. The door assembly including the doorway, frame, door, and necessary hardware shall conform to the requirements of this paragraph.

b. Where Required. Areas requiring a fire-resistive enclosure include, but are not limited to, the following:

(1) Two-Hour Enclosure. ("B" 1-1/2-hour label door)

(a) Openings in area separation walls.

(b) Exit stairs.

(c) Horizontal exits.

(d) Shafts (at interior openings in ATCT's over 100 feet and other structures over 4 stories high).

(e) Engine Generator Room.

(2) One-Hour Enclosure. ("B" 1-hour label door)

(a) Hazardous areas such as storage rooms, boiler and furnace rooms, fuel storage, janitor's closets, maintenance shops, kitchens.

(b) Shafts (at interior openings) other than those included in paragraph 300 b (1)(d) above.

(3) Twenty-Minute Doors. All corridor doors in buildings required to have 2 exits by paragraph 298 b (2).

c. Required Assembly. The following conditions must be met to verify that the door assembly provides the degree of fire protection required by paragraph 300 b above.

(1) Both the door and frame must have a label showing the appropriate component fire rating.

(2) Doors must be equipped with a minimum of 3 ball-bearing hinges; a positive latching device, and a closer.

(3) Doors, frame, and hardware must be in good working condition capable of self-closing operation. Doors may be held open by magnetic devices which are deactivated by either the fire alarm system or smoke detectors. Fusible links on closers are not acceptable.

(4) No openings, except a vision panel limited to 100 square inches (maximum) with 1/4-inch wire glass, are permitted in "B" label doors.

301. CORRIDORS.

a. General. This section shall apply to every corridor serving as a required exit for an occupied load of 10 or more.

b. Space Requirements. Every required exit corridor shall be a minimum of 44 inches wide and 7 feet 6 inches high with no projection from the ceiling lower than 6 feet 8 inches from the floor.

c. Dead Ends. Exit corridors shall be so arranged such that it is possible to go in either direction except for dead ends not to exceed 20 feet in length.

302. STAIRWAYS, GENERAL.

a. General. All stairways serving as a required means of egress for a building or portions thereof shall comply with the following criteria:

b. Construction. All stairways shall be non-combustible, permanent construction.

c. Width. Stairway width shall be as follows:

Occupant Load	Required Width
More than 50	44 inches
More than 10 but less than 51	36 inches
10 or less	30 inches

NOTE: Handrails may project into the required width a distance of 3-1/2 inches from each side of a stairway. Other non-structural projections such as trim and similar decorative features may project into the required width 1-1/2 inches on each side.

d. Rise and Run. The rise and run of a stairway shall be as follows:

Occupant Load	Maximum Rise	Minimum Run
More than 10	7-1/2 inches	10 inches
10 or less	8-1/2 inches	9 inches

e. Landings. Landings shall have a dimension, measured in the direction of exit travel, equal to the width of the stairway served. There shall be a maximum of 12 feet 0 inches, measured vertically, between landings.

f. Headroom. Clear headroom in a stairway should be a minimum of 7 feet 6 inches, but in no case shall this dimension be less than 6 feet 8 inches.

g. Handrails. All stairways shall have handrails on both sides at a height of not less than 30 inches and not more than 34 inches above the stair nosing.

303. TOWER STAIRS.

a. General. Tower and cab stairs serve as required means of ingress/egress and shall comply with the requirements of paragraph 302 and the additional provisions below. Stairs shall be in good state of repair, void of slippery areas and well lighted. Stairways must be enclosed to avoid the unsafe conditions brought about by exposure to extreme weather conditions.

b. Special Stairs.

(1) Circular stairs or winders are permitted provided they meet the criteria established above.

(2) Smokeproof enclosures should be provided for exiting all ATCT installations over 50 feet in height. The enclosure shall consist of a stairway extending from the underside of the cab floor to ground level and separated from the tower by either a naturally or mechanically ventilated vestibule. Refer to the latest edition of the Uniform Building Code if further clarification of smokeproof tower construction is required.

304. FIRE WALLS.

a. General. Fire-rated walls are used to separate areas of higher hazard occupancy from other portions of the building and to protect means of egress such as corridors and stairs.

b. Construction. Fire-rated walls shall extend from the floor to the bottom of structure above or may stop at the underside of a fire-rated ceiling assembly. All penetrations through a fire-rated assembly must be completely sealed to prevent the passage of smoke or fire. All openings in fire-rated walls such as doors and windows shall be protected by an appropriate fire-rated assembly. Mechanical ductwork penetrating walls having a fire rating greater than 1 hour shall be equipped with fire dampers.

c. Specific Requirements. The following are examples of assemblies that will provide the fire rating indicated:

(1) One-Hour Rated Assembly.

(a) 3-5/8-inch metal studs with 5/8-inch fire-rated gypsum wallboard each side.

(b) 4-inch metal studs with 3/4-inch plaster each side.

(2) Two-Hour Rated Assembly.

(a) 3-5/8-inch metal studs with 2 layers of 5/8-inch fire-rated gypsum wallboard each side.

(b) 4-inch metals studs with 1-inch plaster on each side.

(c) 6-inch concrete block wall.

305. FIREPROOFING.

a. General. All steel structural members shall be fireproofed with the exception of the following:

(1) Building less the 12,000 square feet in total area.

(2) One story buildings less than 36,000 square feet in total area that are fully sprinklered.

(3) Multi-story buildings less than 24,000 square feet in total area that are fully sprinklered.

(4) ATCTs less than 100 feet high that are fully sprinklered.

b. Condition. Fireproofing should be a uniform thickness. Areas where fireproofing has been damaged or removed should be repaired to match adjacent surfaces.

c. Asbestos. Refer to paragraph 324 for procedures pertaining to facilities containing asbestos material.

306. thru 315. RESERVED.

SECTION 3 - GENERAL REQUIREMENTS

NOTE: The entries in this section shall be evaluated by Airway Facilities personnel. The evaluator must look at all spaces, both Airway Facilities and Air Traffic to completely evaluate the items listed.

316. WINDOWS.

a. General. Windows perform beneficial functions within the structure of the building by admitting natural light to interior spaces and allowing building occupants a view of the area surrounding the facility; however, several drawbacks must also be considered such as infiltration of pollution, penetration of exterior noise, energy loss, and security. Windows are undesirable in control rooms or ground floor electronic equipment rooms.

b. Window Frames.

(1) All window frames should be in good condition.

(2) All operable hardware, latches, etc., should function properly.

(3) All operable windows should be fully weatherstripped to exclude moisture and reduce air infiltration.

(4) All seams between the window frame and surrounding materials should be properly sealed to maintain a weathertight assembly.

c. Glass and Glazing.

(1) All exterior glass should be insulating glass, double glazed type for energy and acoustical considerations. The hermetic seal between lites should be in good condition. If this seal is broken, the insulating property of the glass is lost and the entire lite should be replaced.

(2) Where existing windows are single glazed and in good condition, a storm panel may be installed if practical, to upgrade the window to thermal performance similar to insulating glass.

d. Security. All windows should be designed and installed to prevent unauthorized entry into the structure. Fixed windows are most desirable in fully air conditioned, well ventilated spaces.

317. CAB WINDOWS.

a. General. Window glass must provide maximum visibility for the controller.

b. Material. Windows shall be clear float or polished plate glass, non-polarized, and free of distortions such as warps or waves. If double glazing of glass is used, the units shall have a hermetically sealed space between the panes or a breather hole with a replaceable desiccant air filter canister.

c. Condensation. Question the facility staff to determine if condensation problems cause restriction of visibility.

318. EXTERIOR DOORS.

a. General. Exterior doors provide an operable, secure barrier at building entry and exit points. All exterior doors shall provide this function and any additional specific functions as conditions require.

b. Door Construction. Doors may be of the following types of construction and should follow the criteria established herein for each type:

(1) Doors may be extruded aluminum or steel "stick" type construction, incorporating glass panels in a "storefront" type system. Door material should be the same as the storefront system in which it is installed. Glass panels within the door or sidelights should be fully tempered or laminated safety type.

(2) Doors may be flush type, hollow metal construction. Door frames used with hollow metal doors should be hollow metal. Hollow metal doors with glass lights should use tempered or wire glass.

c. Hardware. All exterior doors shall be provided with hardware necessary for the door to perform the function for which it is intended.

(1) All exterior doors shall be provided with some type of secure locking device to limit or restrict unauthorized entry to the building. This device should be key-operated or electromechanical in operation as the conditions require.

(2) All exterior doors shall be provided with a properly functioning door closer. The type of closer will be determined by the door's function, size, and frequency of use.

(3) All exterior doors should have ball-bearing hinges and outward swinging doors should have non-removable hinge pins.

(4) All door hardware, including hinges, latches, locks, closers, etc., should be in good operable condition.

(5) All exterior doors should be fully weatherstripped including a threshold, to exclude moisture and reduce air infiltration when the door is closed.

d. Door Functions. Doors must meet specific functional criteria based on the purpose they serve in the facility.

(1) Emergency Exits. Doors specifically indicated as emergency exits require hardware sets which will not restrict exiting at any time. Entry through these doors from the exterior may be restricted by the absence of an opening device on the exterior side. Exit through these doors may also be restricted by an alarm sounding door release. All exit doors shall swing in the direction of exit travel.

(2) Personnel Doors. These doors are used exclusively by employees and authorized personnel. Entry from the exterior shall be restricted by use of an electro-mechanical or key lock system. These doors may be used as an approved exit and, in that case, exit shall not be restricted.

(3) Public Entry Doors. Public entry doors are those doors specifically identified to allow entry and exit to visitors to the facility. During normal business hours, these doors should allow unrestricted monitored entry and exit, but shall be secured to prohibit unauthorized entry after business hours.

319. INTERIOR DOORS.

a. General. Interior doors perform various functions serving as a security device by restricting entry or exit to specific areas, separating individual areas or rooms to establish visual, aural, and physical privacy, subdividing the space while continuing to allow access, and as a life safety device to temporarily block the infusion of smoke and fire into safe paths of escape. Each interior door can perform any or all of these functions, as well as any additional functions as conditions require.

b. Door Construction. Doors may be of the following types of construction:

(1) Full flush, hollow metal doors should be used in areas where increased durability and security is required. Hollow metal frames should be used with hollow metal doors.

(2) Interior doors may be full flush, solid core wood doors in areas where hollow metal doors are not required as stated above. The use of hollow core wood doors is not permitted in areas where a fire rating or security is required.

(3) Interior doors may be equipped with glass vision panels or metal louvers. Louvers should be in good condition and appearance. Glass vision panels in a fire-rated door shall be wire glass.

c. Door Hardware. Interior doors shall be provided with all hardware necessary to perform the function for which it is intended. (See paragraph 330 for security requirements.)

(1) All hardware should be fully functional and in good condition.

(2) Hardware on fire-rated doors shall be fire-rated hardware as described in paragraph 300.

d. Fire-Rated Doors. Requirements for fire-rated doors are discussed in paragraph 300.

320. INTERIOR WALLS.

a. General. Walls are the fundamental elements of a building which divide the space into usable, functional components. In addition to the basic division of space, walls may serve other functions such as acoustical separation, fire separation, or as structural components.

b. Condition. Walls in all locations should be in good condition free of marks, holes, stains, cracks, or other imperfections.

c. Material and Finishes. Wall material and finish should be compatible with the room function. If wall material is deteriorating due to inappropriate use, consideration should be given to applying new more durable material over the existing.

d. Special Requirements. The following special requirements apply to walls which serve a specific function.

(1) Acoustical walls should extend from the floor to structure above. The bottom and top shall fit tightly to the structure and should be caulked to assure a complete seal. Acoustical walls should be provided at the control room, training rooms, conference rooms, break room and recorder playback room.

(2) Fire-rated walls are discussed in paragraph 304.

(3) Bearing walls provide structural support to the building. The major concern when evaluating these walls is to make certain that modifications have not compromised the integrity of the structure.

321. CEILINGS.

a. General. The basic functions of a ceiling system are to define the vertical limits of a space and where appropriate, provide acoustical properties and a finished covering for the plenum area containing mechanical and electrical systems.

b. Condition. Ceiling assemblies in all areas should be in good condition, free of marks, holes, missing panels, stains, dirt, or cracks.

NOTE TO COST ESTIMATOR: Acoustical tile ceilings must be replaced as painting these surfaces severely effects their performance.

c. Support Areas. No finished ceiling is required in support areas such as mechanical rooms, electrical rooms, storage areas, equipment rooms, etc.

322. FLOORS.

a. General. Flooring materials are subjected to a variety of factors that tend to destroy their appearance and shorten their service life.

b. Condition. Flooring materials should be in good condition free of permanent marks, scrapes, dents, cracks, or wear patterns.

c. Special Conditions. Floor areas that are subject to extreme abuse or floors in support areas such as mechanical rooms, electrical rooms, storage areas, etc., may be exposed concrete with a sealer to eliminate chalking of the surface.

323. ROOFING.

a. General. Roofing assemblies provide a waterproof membrane to prevent moisture from entering the building. This membrane is exposed to the effects of rain, snow, hail, ultraviolet rays, freezing, etc., and therefore will deteriorate over time.

b. Drainage. All roofs should provide positive drainage of water to interior roof drains or perimeter gutters with downspouts. Secondary drainage methods such as scuppers should be provided to prevent excessively deep water in the event a primary drain is plugged temporarily or cannot drain extra large amounts of rainfall.

c. Roof Membrane Condition.

(1) Built-Up Roofs. Inspect the roof carefully for evidence of:

(a) Trapped air that has caused ridged bubbles.

(b) Alligatoring of the surface asphalt.

(c) Erosion of the surface asphalt to expose the felt.

(d) If aggregate surface is used, insufficient aggregate exposing the membrane to ultraviolet rays, traffic, or abrasions.

(2) Single-Ply Membrane Roofs. Inspect the roof carefully for evidence of:

(a) Brittle or stiff areas caused by ultraviolet deterioration of the membrane.

(b) Fishmouthing of seam welds.

(c) Other deterioration.

d. Flashing.

(1) Perimeter. Inspect base flashings and cap flashings at parapets and base flashings, gravel stops, and/or gutters at building walls. Evaluate assemblies for water tightness and secure anchorage.

(2) Penetrations. Inspect flashings at penetrations. Note abandoned roof equipment supports and other penetrations.

e. Life Expectancy. Either a built-up or a single-ply roofing system will provide a 20-year serviceable life.

324. ASBESTOS.

a. General. Facilities that were constructed between the years 1944 to 1970 should be examined for possible asbestos-containing materials. Materials that should be suspect are:

(1) Sprayed-on fireproofing and insulation on structure and metal deck.

(2) Acoustical plaster.

(3) Pipe and boiler insulation.

b. Procedure.

(1) Examine record design and construction documents for evidence of asbestos-containing materials having been specified, and inquire of Airway Facilities personnel as to their knowledge of the presence of asbestos-containing materials. (Asbestos-containing floor tile, asbestos/cement board, asbestos roof felts etc., are ordinarily not of concern.)

(2) If it is determined that some of the materials are asbestos-containing and the materials are soft or crumbling, evaluate the system for replacement.

(3) If the survey team cannot determine the composition of suspect materials and the materials are not deteriorating, refer the matter to the facility Airway Facilities personnel.

NOTE TO COST ESTIMATOR: If required modernization work will disturb existing asbestos material, the extent of removal required must be determined and the cost calculated. All removal operations shall be performed in accordance with Naval Facilities Guide Specification (NFGS 02075).

325. CATWALKS.

a. General. Catwalks are provided around control cabs to facilitate washing of windows.

b. Criteria.

(1) Cab catwalk should be a minimum of 36 inches wide with a non-slip finish.

(2) Catwalks should include a 42-inch-high handrail designed to OSHA safety standards. The view from the control cab shall not be obstructed by the catwalk or handrail.

(3) Access to the catwalk should be by an exterior or interior stairway or by an access door from within the cab. The access door shall be below the cab window elevation.

326. EQUIPMENT ACCESS TO THE CAB. A mechanical hoist should be provided to lower control cab equipment to the junction level or the highest level served by the tower elevator if so equipped.

327. EXTERIOR ENVELOPE.

a. General. This paragraph pertains to exterior building materials including insulation. Roofing, windows, and doors are covered in preceding paragraphs.

b. Roof or Attic Insulation. Minimum thermal resistance of the attic or roof assembly should be R-30. Consult record drawings and specification to determine existing conditions.

c. Wall Insulation. Minimum thermal resistance of the walls for heated buildings should be R-19. Minimum thermal resistance for buildings with cooling only should be R-10.

d. Condition. Visually examine the exterior skin of the facility for any signs of deterioration. Particular attention should be given to all building expansion joints, control joints, settlement cracks, and penetrations to confirm that an air and water-tight assembly is intact.

328. ELEVATOR.

a. General. The primary function of elevators is to provide a lift for personnel and freight. Elevators shall be provided for:

(1) ATCT's where cab floor is 50 feet or more above ground level.

(2) Multi-story base buildings with over 3,000 square feet per floor.

b. Standby Power. Elevators shall be served by standby power. An emergency manual transfer switch shall be provided so that the elevator may be switched to an emergency power source.

c. Power Out Operation. If commercial power is interrupted the elevator car shall return safely to the ground level and the doors shall open.

d. Fire Alarm Operation. If the fire alarm is actuated the elevator car shall return to the ground level and ignore calls unless the fire service key switch is actuated.

e. Inspections. Periodic inspections shall be performed by agencies independent of the elevator manufacturer, and the certificate of compliance with standards of safety shall be displayed in the elevator car. (A sign stating that a certificate of compliance is on file in a specific office within the building is also acceptable.) Wherever possible, the inspecting agency shall be the local or state agency responsible for elevator inspection. A current certificate of inspection shall serve as evidence of satisfactory elevator condition and compliance with current ANSI code.

f. Emergency Communications. Every elevator car shall be provided with a two-way communications system connected to an area within the facility or other approved emergency service which is manned 24 hours every day.

329. SIGNAGE.

a. General. Signs for both exterior and interior placement should be used to adequately guide visitors and employees through facilities and to assist in maintaining safety and security. Signs should conform to the FAA signage system, Order 1365.1, Department of Transportation Graphic Standards.

b. Minimum Signage. Each facility should employ the following signs where applicable:

(1) For Guides.

(a) Facility identification at site entrance.

(b) Visitor parking area.

(c) Visitor entrance to facility buildings.

(d) Handicap accessible markings required by this Chapter, section 4.

(e) Restroom markings.

(2) For Safety.

(a) Building exits.

(b) Site exit where applicable exit is not evident from the visitor parking area and there is a choice of directions of travel.

330. SECURITY.

a. General. Physical security controls are designed to minimize the destruction or disruption of the facility mission. It is important to recognize that physical security controls can only serve to deter or delay, but cannot preclude a determined intruder from penetrating a facility.

NOTE: If the facility is located within an airport security system, external security precautions may not be required.

b. Fences (Where Required). Fencing should be at least 7 feet in height plus a top barbed wire guard, and extend to within 2 inches of firm ground. Where fencing traverses culverts, troughs, or other openings greater than 96 square inches, the openings must be protected. Fencing material may be chain link fabric or barbed wire, but shall be constructed and maintained in such a manner to deter entry to the facility property. Access openings should be limited in number and controlled to prevent unauthorized entry.

c. Doors. Doors should be of solid construction with all vulnerable points such as hinges, door panels, and lock in good operational condition.

d. Miscellaneous Openings. Windows, louvers, roof hatches etc., should be equipped or designed to preclude entry.

e. Internal Security. Areas such as the TRACON control room, personnel entrance, control cab, and computer room shall have controlled access such as an electro-mechanical door device to prohibit unauthorized entry. Other less critical areas such as telco room, equipment room, storage rooms, offices, janitors closets etc., shall be provided with door locks.

f. Closed Circuit Television (CCTV). CCTV may be necessary to monitor entrance doors of some facilities. CCTV is typically monitored by the office staff during normal business hours and by the TRACON or control cab after administrative office hours.

331. thur 340. RESERVED.

SECTION 4 - PROVISIONS FOR PHYSICALLY HANDICAPPED

NOTE: The requirements of this section shall apply to all areas of FAA-owned facilities and those areas of leased facilities accessible to handicapped persons. Use good judgment when evaluating areas where existing equipment configuration or hazardous conditions make it impossible for a severely handicapped individual to perform the job required. Tower cabs are exempted from all requirements of this section. The entries in this section shall be evaluated by Airway Facilities personnel. The evaluator should not downgrade items for deminimust dimensional violations.

†Deminimus - A condition which is in violation of any occupational safety or health standard but that has no immediate or direct relationship to safety or health is deminimus; that is, a condition that presents no apparent hazard to employee safety and health, such as minor difference in certain dimensions. While abatement may be desirable, no corrective action is required for deminimus violations.

341. CURB RAMPS.

a. General. Curb ramps shall be provided at the intersection of a walkway and a curb.

(1) Ramp width shall be a minimum of 36 inches, excluding flared sides.

(2) Ramp slope shall be 1:8 maximum, with side slopes of 1:6 maximum.

(3) Ramp shall have 48 inches of clear walkway at top.

(4) Ramp surface shall be of a firm, non-slip material.

b. Built Up Ramps. Built up ramps are the least preferred method of ramp construction, but are acceptable if the ramp does not project into traffic lanes.

342. RAMPS.

a. General. Any walkway with a slope exceeding 1:20 shall be considered a ramp and shall meet the following criteria.

(1) Ramp slope shall be a maximum of 1:12.

(2) Ramp width shall be a minimum of 36 inches clear.

(3) A 60-inch minimum landing shall be provided at the top and bottom of the ramp.

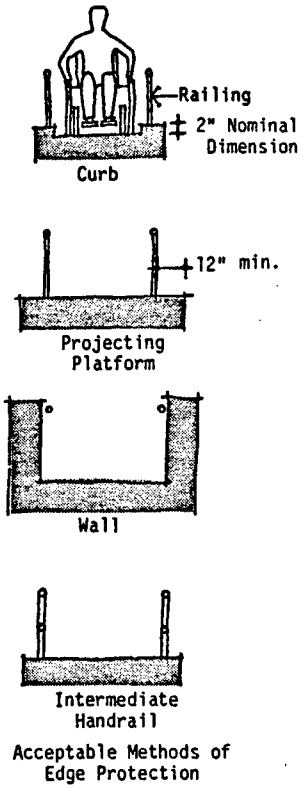
(4) Maximum run of 30 feet 0 inches between landings.

(5) Intermediate landings for a turn of direction, shall be a minimum of 6 feet 0 inches square.

(6) Ramps and landings with a drop off of 6 inches or greater shall have acceptable edge protection to prevent people from slipping off. (See figure 7-1.)

(7) Ramp surface shall be a firm, non-slip material.

Figure 7-1. Handicap Ramps



(8) Handrail.

(a) Handrails shall be provided on both sides of all ramps with a vertical rise in excess of 6 inches.

(8) Handrail.

(a) Handrails shall be provided on both sides of all ramps with a vertical rise in excess of 6 inches.

(b) Handrails shall extend 12 inches beyond the top and bottom of the ramp, and shall be parallel to the floor.

(c) Where the ramp changes direction, inside handrails shall be continuous.

343. ENTRANCE DOORS.

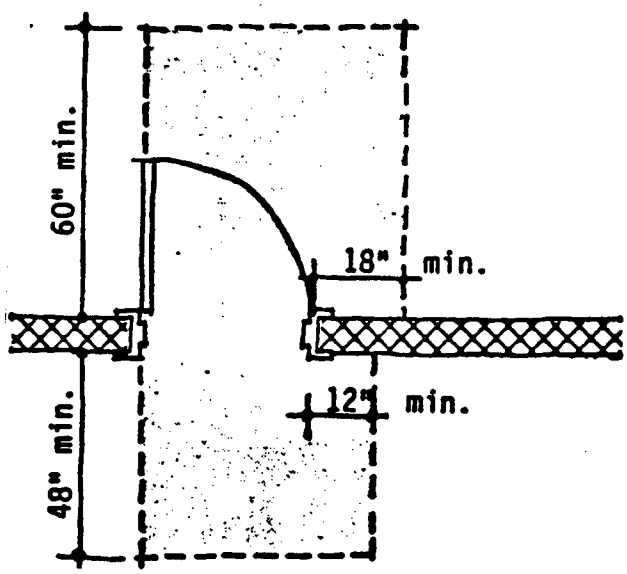
a. General. At least one primary entrance to each facility shall be accessible to the handicapped and shall be clearly identified. All doors and doorways leading into accessible areas shall meet the following criteria.

b. Criteria.

(1) Clear Width. Doorways shall have a minimum clear width of 32 inches. Pairs of doors shall have a minimum clear width of 32 inches per door, with at least one door accessible and active.

(2) Maneuvering Areas. Maneuvering areas at doorways shall be smooth and level. The area shall extend a minimum of 60 inches from the swing side and 48 inches from the other side, and a minimum of 18 inches past the latch side of the door. (See figure 7-2.)

Figure 7-2. Maneuvering Area at Entry



(3) Thresholds. Thresholds shall be a maximum 1/4 inches high with beveled sides.

(4) Kick Plates. Doors shall have a flush, solid bottom rail (glass doors) or a kick plate 9 inches minimum above the bottom of the door.

(5) Any series of doors shall be separated by 7 feet 0 inches minimum to avoid trapping a wheelchair.

(6) Door Hardware. Handles, pulls, latches, etc., shall be an easy to grasp shape, operable with one hand with minimal effort.

344. PASSAGEWAYS.

a. General. Passageways and corridors should meet the following criteria:

(1) Minimum clear width of 5 feet 0 inches.

(2) Doors, signs, lights, and other fixtures shall not protrude into corridor decreasing the required width of the corridor.

(3) Carpet used in corridors shall be high density, low pile type without separate under-lay. Where carpet adjoins other floor surfaces, beveled edge strips not more than 1/4 inches high should be used.

345. STAIRS.

a. General. All stairways interior and exterior for use by the handicapped shall meet the following criteria:

(1) Treads and Risers. All steps in a single flight shall be of uniform tread width and riser height. Open risers are not permitted.

(2) Handrails. Continuous handrails shall be provided at both sides of all stairs.

(a) Handrail shall be 1-1/4 to 1-1/2 inches in diameter.

(b) Handrail shall be mounted 32 to 34 inches above the floor, with 1-1/2-inch clearance between the handrail and the wall.

(c) Handrails shall extend 12 inches minimum beyond top riser and 12 inches plus one tread width beyond bottom riser extensions shall be parallel to floor.

(d) Where a stair changes direction, the inside handrail shall be continuous.

346. TOILETS. Handicapped accessible toilets shall meet the following criteria:

a. Maneuvering Clearances.

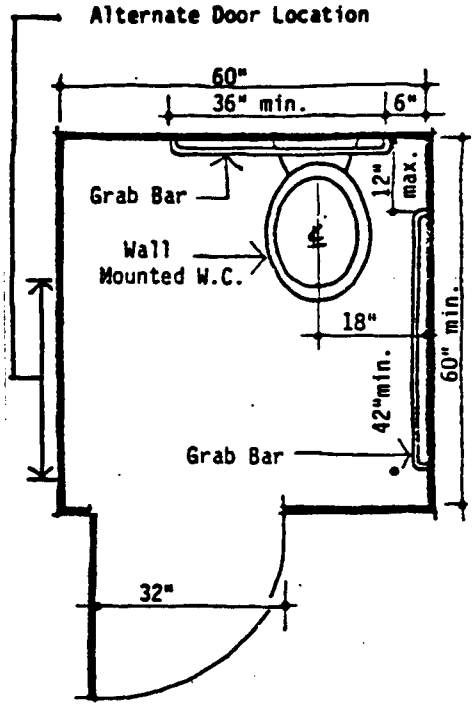
(1) Toilet room interior shall allow a 5-foot 0-inch diameter of clear space, unobstructed by fixtures, 12 inches above the floor.

(2) Approach to the toilet stall from the latch side shall allow 42 inches minimum clearance between the door side and any obstruction.

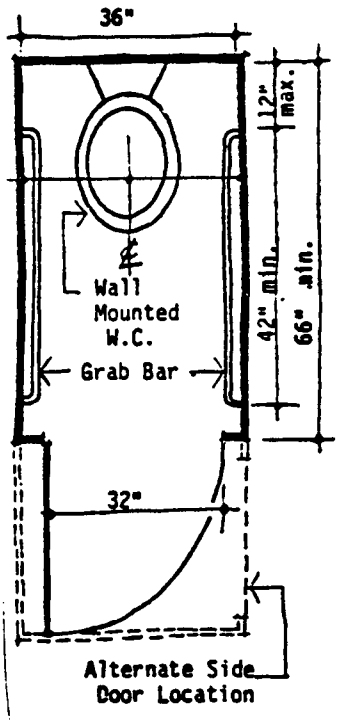
b. Toilet Stalls. At least one accessible toilet stall shall be provided in each toilet room.

(1) Accessible stalls shall be of Type "A" (side transfer) or Type "B" (front transfer). (Refer to diagrams for stall dimensions and grab bar locations for Type "A" and "B" stalls).

Figure 7-3. Toilet Stall Types



Toilet Stall Type "A"



Toilet Stall Type "B"

(2) Accessible stall doors shall have 32 inches minimum clear opening, outward swinging.

c. Fixtures and Accessories.

(1) Water Closets. Water closets shall be mounted 17-19 inches above the floor, with flush controls no higher than 44 inches above floor.

(2) Urinals. Where urinals are provided, provide at least one urinal with an elongated lip, 15-17 inches above the floor, with a 30 x 48 inches unobstructed space in front. Flush controls should be 44 inches (maximum) above the floor.

(3) Lavatories. Provide at least one lavatory with the rim 34 inches (maximum) above the floor, 24 inches from the wall and 29 inches (minimum) clearance below with a 30 x 48 inches unobstructed space in front of the lavatory. Hot water piping and drain piping shall be wrapped with insulating material.

(4) Accessories. Where accessories are provided, such as paper towel dispensers, waste disposals, hand dryers, etc., one of each type shall be provided with operating mechanisms no higher than 40 inches above the floor.

347. HAZARDS. Special provisions for the handicapped in hazardous situations shall meet the following criteria:

a. Tactile Hardware. Where doors lead into areas hazardous to blind persons, the hardware on these doors shall be identifiable to the touch, by knurling or roughening the surface.

b. Fire Alarms and Controls. Fire alarm pull boxes and other controls shall be 40 inches minimum and 48 inches maximum above floor.

348. PARKING. Parking facilities for handicapped individuals shall be provided and shall comply with the following criteria:

NOTE: The provision of this section shall apply to those facilities where the agency provides onsite parking.

a. Number Required. Two percent (2%) of the total number of spaces available or a minimum of 2 spaces, whichever is greater, shall be provided at every facility.

b. Parking Spaces.

(1) Parking spaces shall be a minimum of 96 inches wide and directly adjacent to an accessible aisle a minimum of 54 inches wide. Two spaces may share a common access aisle.

(2) Access aisles shall be smooth and level with a gradual transition between the aisle and the sidewalk. Aisles shall be clearly marked to prevent vehicles from parking within their boundaries.

(3) Accessible parking spaces shall be located as close as possible to an accessible building entrance. The spaces shall be clearly marked by sign and surface painting as handicapped only parking stalls.

349. ELEVATORS. All areas of a multi-storied base building shall be accessible to the handicapped by an elevator. Braille signage shall be provided at all landing call buttons and on in-car control operating panel.

350. MISCELLANEOUS.

a. Drinking Fountains. Provide at least one accessible fountain on each accessible floor of base building and at least one accessible fountain in functional shaft towers.

(1) Drinking fountain shall not reduce the required clear passageway width.

b. Public Telephones. Where public phones are provided, at least one shall be accessible by wheelchair and have provisions for the auditory handicapped.

c. Symbol of Accessibility. All accessible facilities shall be identified with the International Symbol of Accessibility.

d. Exemptions. The requirements established in this Section shall not apply to:

(1) Existing buildings to which the application of these standards is not structurally possible.

(2) FAA leased facilities which are located in an area of a building which is inaccessible to handicapped persons.

(3) Tower cabs.

351. thru 359. RESERVED.

CHAPTER 8. STRUCTURAL

360. GENERAL. The following chapter checklist items apply to both FAA-owned and leased facilities. In the case of the leased facilities, enter either a (0) or (4) rating for each checklist item thus indicating the system/component is either in good condition or poor non-functional condition respectively. All entries in this chapter shall be evaluated by Airway Facilities personnel.

361. SETTLEMENT.

a. General. Minimal uniform settlement is expected in most buildings. However, when settlement becomes extreme or when buildings experience differential settlement, the consequences can have a severe impact on the structural safety of the building.

b. Criteria. The following items may indicate a building settlement problem. If one or more of these items is apparent, the building should be investigated further to determine the extent of the problem and possible corrective action.

(1) Unexplained sloping of interior floors, especially at or near ground level. Cracking of concrete slabs on grade.

(2) Cracking of building foundation walls or other exterior walls.

(3) Visible tilting or lean of exterior walls or entire building.

(4) Exterior doors that are sinking below the edge of their stoop or walk.

(5) Separation of finish materials (both interior and exterior) from the supporting structure.

362. DETERIORATION OF STRUCTURAL MEMBERS.

a. General. Deterioration of structural members is a problem most likely to occur in older structures or in building areas where the structure is exposed to the elements. Visual inspection of the structure should readily indicate any serious problems.

b. Criteria. The following items are possible indicators of deterioration, damage, or overloading of building structural members. If a problem is indicated by initial visual inspection, further investigation should take place to determine the cause of the problem and possible corrective action.

(1) Concrete Construction.

(a) Major cracking of concrete members.

(b) Excessive spalling of concrete.

(c) Excessive deflection.

(d) Any signs of distress in precast connections.

(e) Exposed reinforcing steel.

(2) Steel Construction.

(a) Excessive corrosion of steel structural members and steel connection members.

(b) Bending, warping, or cracking of steel members.

(c) Excessive deflection or misalignment of members.

(d) Shearing of bolts or rivets at structural connections.

363. MODIFICATIONS TO STRUCTURES. Often, during the service life of the building, changes are made to the building (remodeling, additions, reroofing, etc.) that result in modifications of the existing structure. Sometimes these changes are made without regard to any detrimental effects they may have on the capability of the structure to safely support loads; or additional loads are placed on the structure that were not originally designed for. Some examples might be reroofing over an existing roof, cutting or penetrating structural members, addition of equipment that must be supported or suspended from the existing structure, addition of new windows, doors, or other openings in an existing structural bearing wall, or removing fireproofing or other changes that reduce the structures ability to resist heat and fire. Any of these modifications or others, can have an impact on the ability of the existing structure to support loads. If inspection of the structure indicates that some modifications have been made, a closer examination should be made to determine if the modifications will have any detrimental effect on the existing building structure. If there are indications of overstressing of structural members or if an overloading condition exists, action should be taken to correct the problem, to prevent possible structural failure.

364. LIVE LOADS. Through functional analysis, building live loads are determined when a building is initially designed. Certain areas of a building require more live load capacity, such as mechanical and electrical equipment areas, file or storage rooms, libraries and assembly areas. In these areas, the increased live loading results in increased load capacity in the structural members. During the lifetime of the building, changes may have occurred which alter the distribution and amount of the live loads in the building. Changes in room layout or function, addition of equipment, increased storage capacity, building additions, as well as similar changes anticipated in the future, can have significant effect on structural live loads creating an overloading condition. Compare the estimated load capacity of the original structure as initially designed and current and anticipated future loading conditions. The results of this comparison will indicate whether modification of the existing structure or redistribution of live loads is necessary.

365. thru 373. RESERVED.

CHAPTER 9. MECHANICAL SYSTEMS

374. GENERAL. The following chapter checklist items apply to both FAA-owned and leased facilities. In the case of the leased facilities, enter either a (0) or a (4) rating for each section thus indicating the system/equipment is either in good condition or poor, non-functional condition respectively and assign a relative importance factor of 10. (Do not grade every item within the section individually.) All entries in this chapter shall be evaluated by Airway Facilities personnel.

SECTION 1 - HEATING SYSTEMS

375. BOILER (HOT WATER/STEAM, GAS, AND OIL).

a. General Condition. Inspect boilers for signs of metal fatigue (cracks) on shell, corrosion, leakage, burner condition, and condition of insulation. Determine for all system types that a reliable and adequate source (but not excessive) of combustion air is available to the boiler room and/or each combustion chamber and that fans providing same are interlocked with the fuel supply controls.

b. Capacity. Assess present and future anticipated heating/(humidification) load requirements in comparison to existing system capacities to determine if boiler plant will meet all envisioned expansion within ten (10) years of the survey date. If not, replacement or additional plant should be considered. Consider whether stand-by capacity or "back-up" boilers are provided or required for critical building loads.

c. Safety/Code Compliance.

(1) NFPA-211. Exhaust flue/chimney stack must extend at least 3 feet higher than any portion of any building within a 10 foot radius for lined metal or masonry chimneys.

(2) Uniform Mechanical Code.

(a) Exhaust outlets must be at least 4 feet from any outside air intakes, doors, or windows.

(b) Section 506. Fuel supply must be interlocked with burner(s) to provide automatic fuel shut-off in the event of pilot or ignition failure.

(c) Section 2112.2. Boiler must be equipped with at least one approved pressure relief valve.

(d) Section 2109. An approved manual fuel shut-off valve must be installed upstream of all control devices on natural gas systems.

(e) Sections 2111 and 2112. All boilers must be fitted with a low water cut-off device.

(f) Boilers should be elevated above the floor.

d. Ease of Maintenance. There should be sufficient clearances around the boiler for ease of tube removal, burner maintenance, and valve isolation. Generally, a minimum code requirement of 24 inches on all service sides governs as per Uniform Mechanical Code, section 505.

e. Replacement Criteria. Review records (as available) for the five previous years or ascertain from discussion with facility engineering personnel if a significant increase in fuel consumption per rated output of steam or hot water has occurred. If the fuel efficiency has degraded more than 2 percent per year (average), irrespective of whether the boiler plant appears in a clean and well maintained state, replacement should be the considered option; otherwise, efficiency retrofitting equipment and/or servicing is warranted. As a general rule-of-thumb, boilers over 25 years of age should be replaced. New replacement boilers should have a minimum 10:1 turndown ratio to minimize cycling.

376. HEAT EXCHANGERS (SHELL-IN-TUBE).

a. General Condition. Inspect heat exchangers for signs of leakage on covering insulation.

b. Capacity. Check with the facility engineer to ascertain if during peak heating demand periods, all loads are met while the steam supply control valve remains at full throttle or cycles frequently. If this is the case, spare capacity would seem apparent and hence some additional future load should be possible.

c. Safety. All pressurized heat exchanger vessels shall be ASME stamped shells and must be fitted with an approved pressure safety relief valve as per the Uniform Mechanical Code.

d. Ease of Maintenance. Check capability for tube bundle removal without interference with permanent construction. Isolating valves shall not be positioned within the tube pull space.

e. Replacement Criteria. Replacement should be considered if a unit is over 24 years old. If actual temperature rise (read inlet and outlet temperatures if unit is in operation) is less than design rise (by 10 percent or more) while the control valve is fully open, efficiency has degraded and unit replacement should be considered.

377. FEEDWATER/CIRCULATING PUMPSETS.

a. General Condition. Visually inspect pumps for casing cracks or signs of excessive seal leakage, corrosion and misalignment of drive couplings on flexible-coupled pumps.

b. Capacity. Ascertain from facility engineer that equipment served is receiving water at sufficient pressure and flowrates to meet equipment demands. All primary and/or essential systems should be provided with one stand-by pumpset. On multiple pump installations, pumps should be headered on both suction and discharge ends via isolation valve. Headers should be provided with bolted blank flange plates for future extension on at least one end, preferably valved.

c. Safety. Boiler feedwater pumps should be interlocked with boiler high/low water level sensors to lock-out operation. Continuously operated high speed pumps (in excess of 1,750 rpm) which generate noise levels in excess of 85 dB(A) in occupied areas such as engineer's quarters are hazardous to personnel hearing as per OSHA (Occupational Safety and Health Administration Regulation).

d. Ease of Maintenance. Pumps should have sufficient clear (unrestricted) access for both motor and impeller removal as well as for inlet strainer cleaning and valve access. Generally, a minimum of 12 inches on the sides and 18 inches on the ends should be provided.

e. Replacement Criteria. All pumps approaching or in excess of 15 years should be replaced or overhauled as the impeller condition merits. Pumpsets with variable speed drives which track demand should be considered where replacement is warranted.

378. STEAM/CONDENSATE PIPING.

a. General Condition. Visually inspect piping for signs of leakage at valves, strainers, traps and through insulation. Properly guided thermal expansion loops or mechanical bellows where provided should not show signs of cracks or metal fatigue. All piping and fittings should be suitably insulated. All equipment should be preceded with an isolation valve and strainer in the steam supply and followed with a suitable trap in the condensate (return) line.

b. Noise. Noise and/or intermittent pipe rumble usually indicates undersized traps or improperly pitched piping which has created pockets in which condensate collects. Trap replacement or pipe adjustment is required if the condition exists.

c. Critical Equipment. Steam piping servicing critical or major equipment items should be provided with a valved manual bypass of the control valve.

d. Replacement Criteria. If piping is greater than 25 years old, excessive pitting is expected and the piping should be completely replaced. If boiler is equipped with deaeration and automatic blowdown, piping life may be expected to last 20 years or more. If system is equipped with oxygen scavaging type chemical treatment, piping service life is generally estimated at 10-15 years. For systems employing neither deaeration nor chemical treatment, piping service life is assumed at 10 years or less. Systems wasting condensate and utilizing a large make-up water proportion are subject to shorter life than those systems which return condensate for regeneration into steam. (Condensate return also increases system efficiency.) Pipe insulation should be replaced whenever change in its physical property has occurred or whenever the piping itself is replaced.

379. HEATING HOT WATER PIPING.

a. General Condition. Visually inspect piping for signs of leakage at valves, strainers, and through insulation. Properly guided thermal expansion loops or mechanical bellows where provided should not show signs of cracks or metal fatigue. All piping and fittings should be suitably insulated. All equipment should be isolated from the system at both supply and return connections using isolation valves. Check for automatic potable water make-up, ASME approved expansion tank and air separation devices for removal of dissolved corrosive gases.

b. Replacement Criteria. Systems in climate zones experiencing more than 3,600 heating degree days in excess of 30 years of age should be replaced. Systems in major heating climate zones (greater than 5,000 degree days), not employing chemical treatment and older than 20 years of age should be replaced. Systems in these zones employing chemical treatment may be assumed to have a 25-year life. Insulation exposed to weather which has a poor or non-existent vapor barrier jacket should be replaced after 12-15 years. Protected (interior) pipe insulation in good condition should only be replaced with the pipework.

380. FORCED AIR FURNACES (GAS/ELECTRIC/OIL).

a. General Condition. Inspect appliance for rust and check general condition of blower shaft, fan motor, burner (as applies), and electrical/ control wiring insulation. Systems in cold regions using fuel oil should be fitted with an oil heater in the fuel line (tank) prior to the burner assembly.

b. Capacity. Determine from facility engineer if furnace satisfies heating demand during peak load conditions. If so, and if accomplished by frequent cycling of burners (coil), spare capacity for future building envelope load is probable.

c. Safety. Check for combustion air provision, fuel/combustion air interlocks (with forced draft combustion feed systems), auto fuel shut off on ignition/pilot failure and 250 degrees Fahrenheit (F.) (maximum) high temperature limit control as per the Uniform Mechanical Code, section 506. All electrical resistance elements should carry a (visible) Underwriters' Laboratories listing and/or Factory Mutual approval.

d. Ease of Maintenance. Furnace should have adequate unobstructed maintenance clearances without requiring the removal of permanent construction. Generally, a minimum of 30 inches for fuel burning appliances is required on the fuel train/combustion air intake side(s).

e. Replacement Criteria. If commercial grade equipment, average serviceable life is about 15-18 years; whereas, if heavy duty quality, 18-21 years depending on duty (annual usage period). Replacement gas-fired equipment should be of minimum 90 percent efficiency, whereas oil-fired furnaces should be of minimum 85 percent efficiency.

381. FINTUBE/RADIATORS/CONVECTION UNITS.

a. General Condition. Inspect unit cabinets (where applicable) for rust and dent damage, scratches, missing baffle control knobs (where applicable) and chipped or flaking painted surfaces. On hydronic equipment, check for signs of leakage and presence of floor or zone isolation valves on multiple unit installations.

b. Capacity. Ascertain from facility engineer whether or not equipment satisfactorily performs its intended function.

c. Safety. All heating elements within occupant reach should be concealed within an enclosure to prevent direct contact which could cause burns. All electric elements are to carry an Underwriters' Laboratories listing.

d. Replacement Criteria. For steam radiator systems older than 15 years, replacement of the traps and control valve is recommended. Check electric and hydronic systems to determine if the heat exchange fins have been painted during retrofit work (spraying of walls or convector covers). Partially painted surfaces can reduce heat output by 10 percent or more. Cast iron steam radiators, if still architecturally acceptable, should last indefinitely; however, are rated at an average life expectancy of 30 years. Hydronic fintube life is comparable with the piping system as previously discussed; generally rated at a 25-year life. Replacement of electric units should be given consideration after 10-15 years.

382. CABINET UNIT HEATERS (STEAM/HYDRONIC/ELECTRIC).

a. Visually inspect for signs of leakage and/or coil damage on exposed units. Check for ease of filter maintenance and Underwriters' Laboratories listing on electrical coils.

b. Ascertain if thermostat and system (manual/automatic) activation controls are functional and that equipment satisfies heating need when required. Generally, a 15-year serviceable life may be expected.

383. ELECTRIC HEATING COILS (ALL TYPES).

a. General Condition. Visually inspect coils to determine if a fire hazard situation exists. Check that coils are not installed immediately upstream of filter sections or direct drive fans (with motors in airstream) and that coils have sufficient unobstructed maintenance access for coil pulling.

b. Safety.

(1) Uniform Mechanical Code.

(a) Section 506. Coils must be fitted with a 200 degree F. (maximum) outlet temperature controller and element maximum temperature limiter set at 250 degrees F.

(b) Section 509. Coils must be fitted with an electrical service disconnect switch within easy access and visual direct line of sight from coil termination panel.

(2) Coils are to be interlocked with the respective blower system served. Coil activation must rely on a positive airflow (sail switch) contact closure.

c. Replacement Criteria. Coil element life may be considered at 20 years; however, cable (power) and control leads should be replaced whenever insulation "creep" or breakdown has occurred. Relays and other similar devices should be replaced after 15 years. (With many coils it is more economical to replace the entire assembly at such time.)

384. STEAM/HOT WATER HEATING COILS.

a. General Condition. Inspect coils for signs of leakage (green tarnish on tubes and fins) and fin damage.

b. Capacity. Determine from facility engineer if coils meet heating demands needed during peak winter conditions.

c. Safety. Steam coils located in occupied areas operating at pressures in excess of 20 psig should be suitably "shrowded" to prevent severe burns to occupants should a leak develop. Hot water coils should not be located in outside air or mixed air streams where temperatures could drop below 32 degrees F., unless preceded by an electric or steam preheat coil or operated on a rated glycol antifreeze solution.

d. Ease of Maintenance. Check that coil pull space is free from permanent obstruction that could hinder maintenance or repair work.

e. Replacement Criteria. If space temperature can no longer be maintained concurrent with a wide open control valve position (and fin surfaces are clean and free from dirt/dust) then coil should be replaced. In the case of a variable air volume system, the problem usually will be in the thermostat, fan controller, or control valve actuator. Coil replacement is also recommended if the header or tubes are cracked. Replacement (rather than repair) is recommended after 20 years of service.

385. UNIT VENTILATORS. Check unit ventilators similar to cabinet unit heaters. Determine if outside (fresh) air intake dampers are operable (closable). Equipment older than 15 years should be considered for replacement.

386. thru 395. RESERVED.

SECTION 2 - COOLING SYSTEMS

396. LIQUID/REFRIGERANT CHILLERS (WATER COOLED/AIR COOLED).

a. General Condition. Applicable to reciprocating (open, semi-hermetic and hermetic drives) and centrifugal compressor units.

(1) Obtain information from available facility engineering record data to ascertain if design water temperature drop and pressure drop ratings are being met and not exceeded respectively. Similarly, check to determine if compressor motor unbalances or continual overload situations have occurred in the past which would damage or otherwise lessen the normal service life of the equipment.

(2) Check that chillers are suitably isolated from service piping, electrical and structural systems via flexible connectors and vibration dampening springs, snubbers, or similar isolators.

(3) Check that evaporator and condenser bundles (as applies) are fully insulated to prevent efficiency loss.

b. Capacity. Ascertain from facility engineer if chiller(s) meet peak-load cooling demands. Based on actual budgeted and planned future growth (or a minimum of 10 percent) assess the system's capacity to meet future load requirements. If additional chiller(s) are required, physical expansion space availability must enter into the evaluation criteria. Consider whether stand-by chillers or "back-up" capacity exists to provide for critical building loads.

c. Safety/Code Compliance. Ensure suction and discharge sides of refrigerant compressors are provided with adequate control valves, pressure limiting devices, and relief valves as stipulated by the Uniform Mechanical Code; sections 1512, 1513, 1514, and 1515.

d. Ease of Maintenance. Determine if adequate unobstructed maintenance clearance exists for compressor, motor and tube bundle removal in evaporator (and condenser where applicable).

e. Replacement Criteria.

(1) For chillers employing (canned) hermetic type compressors operating under normally heavy or at near rated load conditions, the average replacement life span of the compressor is 8-10 years while that of the entire unit is about 15 years.

(2) For semi-hermetic and open drive reciprocating units, a 20-year life span is expected.

(3) Centrifugal chillers are normally expected to carry a 23-year serviceable life.

(4) Motors serving open drive compressors average 15 years on reciprocating equipment and 20 years to chiller life on centrifugal units depending on operating conditions.

397. SPLIT SYSTEM (DIRECT EXPANSION) CONDENSING UNITS.

a. General Condition. Check for coil (usually fin) damaged by hailstones or similar abuse which can reduce capacity. Check for corrosion of unit casing which could permit water penetration into electrical control/component section.

b. Capacity. To determine if additional load capacity is available, ascertain from facility engineer whether equipment meets existing cooling demands of the space(s) served while cycling frequently. Equipment which runs continuously or at peak current draw during outside/inside design periods should not be considered capable of accepting additional future load.

c. Replacement Criteria. Average serviceable life is generally 15 years for the entire unit and 8-10 years on compressors of the hermetic type.

398. COOLING TOWERS.

a. General Condition. Visually inspect tower for corrosion (if galvanized steel) and water tightness of external wall sheeting. Check that fill and drift eliminator baffling is intact (if wood, check for rot; if metal, rust). Look for signs of scale build-up.

b. Capacity.

(1) Verify from facility engineer that cooling tower meets all peak demands and that associated condenser water pumps are delivering the required water flow rate compatible with the tower's matched capacity.

(2) Ascertain from facility engineer whether spare cooling capacity exists during peak demands by comparing design water temperature drop and actual water temperature drop information during a peak cooling demand.

c. Replacement Criteria. Fan assemblies (centrifugal upblast) generally have a 10 to 15-year service life. Galvanized metal and suitably protected wood (redwood) towers have a rated 20-25 year life while ceramic and predominately PVC towers may last upward to 34 years.

399. CLOSED LOOP (AIR COOLED) CONDENSERS.

a. General Condition. Inspect condenser coils for signs of leakage and corrosion. Check that coils are free from obstruction to allow adequate air intake. A 6 to 8 foot minimum clearance is generally required for side air intake units.

b. Capacity. To determine if additional load capacity is available, ascertain from facility engineer whether equipment meets existing cooling demands of the space(s) served while its matched refrigeration compressor(s) cycle frequently.

c. Replacement Criteria. Average serviceable life expectancy is 20-22 years. Equipment located in coastal areas subject to saline-rich atmospheres generally carry service lives of 15 years or less due to the accelerated corrosion of fin surfaces.

400. HEAT PUMPS (AIR-TO-AIR).

a. General Condition. Check for severe coil fin damage or corrosion on outdoor condensing unit which could cause capacity reduction. Also inspect unit casing for corrosion which could permit water penetration into the electrical control/component section.

b. Capacity. To determine if additional load capacity is available, ascertain from facility engineer whether equipment meets existing cooling demands of the space(s) served while cycling frequently. Equipment which runs continuously or at peak current draw during outside/inside design periods should not be considered capable of accepting additional future load. Heating capacity and its adequacy must also be verified with the building engineer or occupants.

c. Replacement Criteria.

(1) For commercial grade air-to-air type equipment outdoor unit serviceable life is generally 15 years while that of indoor evaporator coils is 20 years. Residential quality units (usually less than 5 tons refrigeration) have an average life expectancy of 10 years for the outdoor condensing unit section.

(2) Older style units of the single compressor type which constantly cycle to/from defrost during low ambient conditions should be replaced (when replacement is warranted) with newer generation equipment which are more efficient. Generally, dual compressor models defrost more efficiently because the refrigerant circuits are split and defrosting of one circuit still allows heating by the other, thus reducing the need for auxiliary heating energy. Smaller tonnage units, such as commonly found with control cab use, should have dual compressors because of load shed (staging) capabilities as well as the inherent stand-by provision.

401. SELF-CONTAINED AIR CONDITIONERS.

a. General Condition. This paragraph is applicable to window type or thru-the-wall type (DX) self-contained single piece cooling- only units; usually canned hermetic type compressors. Check for corrosion of casing and for leakage of condensate drain pan onto interior wall/ room surfaces.

b. Noise. If compressor noise is determined as excessive or irritating to staff working in the area(s) served, replacement with a new unit or different cooling system (split type) may be desirable.

c. Replacement Criteria. Typical window units provide a 10- to 12-year serviceable life; however, units with rotary compressors typically lose efficiency quite rapidly within the first 4 years and should be replaced after a maximum of 7 years for optimum performance. Units which no longer are capable of cooling the served space to the design setpoint should be replaced irrespective of age.

402. CHILLED WATER/(CONDENSER WATER) PUMPSETS.

a. General Condition. Visually inspect pumps for casing cracks or signs of excessive seal leakage, corrosion and misalignment of drive couplings on flexible coupled pumps.

b. Capacity.

(1) Ascertain from facility engineer that equipment served is receiving water at sufficient pressure and flow rate to meet equipment demands.

(2) All primary and/or essential systems should be provided with one stand-by pumpset. On multiple pump installations, pumps should be headered on both suction and discharge ends via isolation valves. Headers should be provided with bolted blank flange plates for future extension on at least one end, preferably valved.

c. Safety. Check suction and discharge pressure gages to ascertain that pump casing pressure rating is not being "taxed" or exceeded (generally 150 psig casings may be expected).

d. Ease of Maintenance. Pumps should have sufficient clear (unrestricted) access for both motor and impeller removal as well as for inlet strainer cleaning and valve access. Generally, a minimum of 12 inches on the sides and 18 inches on the ends should be provided.

e. Replacement Criteria. Generally, base mounted pumpsets provide an average 20-year serviceable life, whereas in-line (pipe mounted) pumps should be considered for replacement after 10-12 years service.

403. CHILLED WATER/(CONDENSER WATER) PIPING.

a. General Condition.

(1) Inspect piping for signs of leakage through insulation (generally indicating cracked pipe, welds, or "blown" flange seals) and condensation (indicating insufficient insulation and/or lack of vapor barrier jacket).

(2) Check for automatic potable water make-up provision and ASME approved expansion tank. If open type tank, inspect condition of tank interior for rust/scale/algae which could clog system.

b. Replacement Criteria.

(1) Insulation exposed to weather should be replaced after 15 years. Protected (interior) insulation should be replaced with the replacement of the valves or piping.

(2) Chilled water and closed-loop condenser water piping systems generally provide a 28-30 year service life.

(3) Generally, individual carbon steel body valves provide the following service life: 15-20 years for gate valves, 20-25 years for globe valves, and 10-15 years for butterfly valves. Rising stem type valves are subject to longer service life due to their inherent features allowing for stem and seat replacement as well as gland repacking. Valves having TFE (tetrafluoroetylene) coatings or those having stainless steel bodies and trim generally carry average service lives of 30 and 50 years (+) respectively.

(4) Open-circuit piping and valves which are not protected by chemical inhibitor systems nor blown down regularly will carry an expected overall 15-20 year service life. Systems in areas having high water salt content also carry reduced life spans ranging from 5-10 years less.

404. REFRIGERANT PIPING.

a. General Condition.

(1) Inspect general length for complete insulation of suction lines. Liquid lines passing through areas subject to extremely warm spaces should also be insulated to minimize excessive capacity loss.

(2) On flexible Type 'M' copper pipe installations, check piping route to ensure no kinks exist which could create excessive pressure drops or trapping of oil.

(3) This order does not address leak testing of sectional brazed piping systems; however, sight glasses (where available) may be observed to determine if a line loss (or compressor seal leak) exists.

b. Replacement Criteria.

(1) Insulation exposed to weather should be replaced after 20 years. If "Armaflex" type insulation is found present in climate zones exposed to hot, humid weather, replacement every 10 years is usually warranted.

(2) Unless excessive corrosion exists or system is plagued with recurring multiple leakage at joints, serviceable piping life may be expected for 30-40 years for steel piping and indefinite (building) life on copper systems.

405. CHILLED WATER COILS.

a. General Condition. Check coil fins for rust, damage, excessive galvanic action around coil frame/casing, and general leakage. Coils which permit moisture carry-over into ductwork or air handler casing causing corrosion of ductwork or breakdown of insulation should be considered undersized in regards to face area. Coils upstream of blowers (draw-thru equipment) should be provided with sufficient clearance to prohibit moisture carry-over into fan blades.

b. Capacity. Determine from facility engineer if space cooling setpoint dry bulb and relative humidity levels are satisfactorily being met under peak load conditions.

c. Safety. Determine that coils subject to freezing temperatures are:

(1) Drainable and not required for service during such periods;

(2) Part of an ethylene glycol (antifreeze) water loop capable of withstanding the lowest exposure temperature without freezing; or

(3) Preceded by an electric or steam heating coil with sufficient capacity and temperature sensors to protect the coil from freezing.

d. Ease of Maintenance.

(1) Coils should be valved at both supply and return headers to permit system isolation during coil servicing.

(2) Check for sufficient pull space to enable maintenance without removal of permanent construction.

e. Replacement Criteria. If coil does not satisfactorily meet demand loads; replacement is warranted. Precluding excessive damage or leakage, average serviceable life expectancy is 20 years.

406. REFRIGERANT COILS (EVAPORATOR/CONDENSER).

a. General Condition. Check for excessive fin damage on outdoor coils caused by hailstones, kicking, or similar abuse which can reduce capacity. Observe if rusting of coil tubes or fin surfaces exists which reduces capacity. On condenser coils, check to ensure sufficient clearance exists to allow free airflow through the coil.

b. Capacity. Verify from facility engineer that capacities of coupled evaporator and condenser coils are matched and that same meet the peak cooling demands imposed on them.

c. Safety. Coils which operate under low ambient conditions and/or suction temperatures below 32 degrees F. are subject to freezing. In such cases, check to ensure refrigerant system is provided with a hot gas bypass loop and/or 4-way reversing valve to prevent freezing and/ or facilitate thawing (defrosting) respectively. Evaporator coils operating on outside air cycles which partially freeze under these or similar conditions are capable of increasing system static pressures to the point of inducing moisture carryover into filter banks and subsequently "blowing out" same.

d. Replacement Criteria. Precluding recognized undersizing (either by sensible and/or total capacity) or damage to coil, general serviceable life may be expected at 20 years.

407. thru 416. RESERVED.

SECTION 3 - AIR DISTRIBUTION SYSTEMS

417. AIR-HANDLING (PACKAGED/BUILT-UP) SYSTEMS.

a. General Condition.

(1) Check condition of unit casing for air leakage while unit is in operation. Remove access panel (open access door) and inspect condition of interior insulation or wall (liner on units employing single wall construction). All air-handlers should have some form of thermal insulation; generally, a minimum 1-inch thickness. Interior insulation (fiberglass) should be free from spalling of exposed surface; all joints should be sealed to prevent fiberglass filament fragmentation and insulation should be dry (free from coil or humidifier moisture carry-over).

(2) Check condition of coil condensate pan for rusting, leakage or undrainable pockets which could enhance growth of alqae, mosquito breeding, legionella, or other bacterial growth. Condensate pans should be insulated.

(3) Air-handlers serving occupied areas should be fitted with a filter bank serving the entire supply airstream capable of accepting filters of a minimum 30 percent ASHRAE Test Standard 52-76 efficiency; generally 2 inches thick flat-type (minimum). Filtration requirements and efficiency ratings should comply with the most recent edition of the ASHRAE handbooks (FUNDAMENTALS/APPLICATIONS).

(4) Air-handlers should be isolated from building structure and connecting ductwork by suitable vibration isolators and flexible connectors.

b. Safety.

(1) All belt drives should be suitably covered with protection guards.

(2) A smoke detector downstream of the filter bank in the main supply duct of all air-handling systems over 2,000 CFM (greater than roughly the equivalent area of a 16 by 16 inch duct) shall automatically stop the fan when actuated. A detector is also required in the return airstream (prior to the relief air take-off) on all systems greater than 15,000 CFM (greater than roughly the equivalent area of a 36 by 36 inch duct) to either automatically exhaust smoke-laden air or stop the fan.

c. Ease of Maintenance.

(1) Units should be equipped with sufficient access doors or panels to facilitate inspection and servicing of control, fire or smoke dampers, coils, filters, humidifiers (as applicable), etc.

(2) A minimum unobstructed clearance equal to the largest coil width (side access) or depth (top or bottom access) shall be available for coil pull during servicing. Similar clearance is required for sectional filter changing. For air-handlers employing automatic roll-filters, electronic air cleaners or similar devices, ensure adequate service clearances (front/back) and plenum access are available for servicing. A minimum of 18-inches should be provided all around floor mounted air-handlers for maintenance access. This clearance may be reduced on sides where extended fan bearing grease fittings are provided.

d. Replacement Criteria. Average motor life on non-overloaded systems generally is from 15-20 years. Centrifugal blowers and their respective casings may be rated at a 25-year life if suitably protected from weather. Outside or rooftop handlers generally provide a 15-year serviceable life. Axial wheel blower units usually provide a 20-year life. Check for signs of overextended bearing life (minimum usually 100,000 hours or approximately 11 years of continuous operation).

418. VENTILATION AND EXHAUST FAN SYSTEMS.

a. General Condition.

(1) Check general condition of fans and manually test operation. Direct drive fans are prohibited in high temperature exhaust systems (such as kitchen/range hoods) unless specifically listed for such purpose.

(2) Ensure that all toilet facilities not having a direct external exposure, a window, a vertical duct, or other suitable means for natural ventilation are provided with a mechanical ventilation system.

b. Safety.

(1) All non-ducted fans should be fitted with suitable wire mesh or similar protection guards.

(2) All fans should be provided with an electrical service disconnect switch within reasonable proximity; preferably direct line of sight.

(3) Occupied areas which are exhausted by mechanical ventilation, not having a mechanical ventilating supply air source, and are subject to outside air infiltration must be protected with equipment to ensure 60 degrees F. may be maintained in the winter to over come the effects of outside infiltration air. Unoccupied areas subjected to similar conditions must have the provisions to prevent freezing conditions within the space.

c. Ease of Maintenance. Fans shall be accessible for inspection, service, repair, and replacement without removing permanent construction as per the Uniform Mechanical Code, section 505.

d. Replacement Criteria. General change-out replacement age on propeller type fans is estimated at 15 years; axial fans at 20 years and centrifugal fans at 25 years serviceable life. Rooftop equipment generally has from a 15-20 years serviceable life depending on equipment quality.

419. FANCOIL UNITS.

a. General Condition. Visually inspect units for damage to casing (exposed units) such as dents, scratches, or pealed paint.

b. Capacity. Coils should be checked for general condition to ascertain if fin damage or corrosion exists which could reduce capacity ratings. Adjust respective thermostat control to ascertain if unit operation is properly interlocked and if equipment satisfies setpoint(s) (heating and cooling) if dual coil unit.

c. Replacement Criteria. A 20-year serviceable life may be expected under normal duty for both DX and chilled water units.

420. LOUVERS. Outside air intake louvers should be stormproof (incapable of inducing rain water) unless suitably protected by a suitably trapped drainage pit on the downstream side. Louvers (intake and exhaust) should be fitted with a meshing of minimum size to preclude entry of small birds such as sparrows, spatsies, etc. (1/2 by 1/2 inch mesh usually). Insect screening is generally preferable in hot/warm climate where insect population is great. Insect screening should be easily accessible and removable for cleaning.

421. MIXING BOXES.

a. General. These requirements are applicable to constant and variable air volume terminal boxes, single or double duct, with or without induction, fan powered, bypass and/or reheat options. Mixing boxes are defined as any device which transduces air from a higher system pressure to low velocities for discharge into occupied/conditioned spaces.

b. General Condition.

(1) Generally, check box for casing leakage or leakage at duct terminations.

(2) If box appears to function properly, yet insufficient air delivery to the space is evident, box may be undersized.

c. Replacement Criteria. A 20-year serviceable life may be generally expected on mixing boxes. Electric actuators carry a 10-15 year life, whereas pneumatic controls may be expected to carry a 20-year service life.

422. DUCTWORK/DAMPERS.

a. General Condition (Ductwork).

(1) Check general condition of ductwork systems.

(2) All ductwork serving air handling devices which deliver/receive air at temperatures 10 degrees F. above or below room ambients (generally 75 degrees F.) should be completely insulated with a thermal insulation material (externally wrapped or lined). Ducts carrying cold air (below 65 degrees F.) should also be provided with a vapor barrier jacket over the insulation.

(3) Ductwork should be taped and sealed at joints.

b. General Condition (Dampers).

(1) Smoke dampers must be installed in all ductwork systems (except kitchen grease exhaust or rated smoke relief ductwork) passing through smoke-rated barriers and must be activated by an approved detector linked to the main building fire alarm system as per NFPA-90A.

(2) Ascertain from facility engineer that smoke dampers on air-handling units automatically close when unit is not in operation as per NFPA-90A.

(3) Fire dampers having a minimum 2-hour protection rating must be provided in all ducts passing through fire-rated partitions having ratings in excess of 1 hour (except kitchen grease exhaust or rated smoke relief ductwork).

c. Replacement Criteria. Ductwork generally carries a service life equivalent to that of the building. Damper linkage replacement after 20 years. Insulation should be replaced whenever ductwork itself is replaced.

423. AIR DISTRIBUTION SYSTEM BALANCING.

a. General Condition. This section addresses known air distribution system related imbalances or inherent deficiencies which result in persistent discomfort to facility occupants.

b. It is presumed that such imbalances cannot readily be corrected through mere adjustment or recalibration of existing dampers, valves and control devices as such rectification work would normally be carried out under routine facility maintenance.

c. Verify with the facility engineer if such conditions do exist which cannot be rectified without major modernization work involvement. Generally, air distribution system balancing deficiencies of either airflow quantity, noise, or thermal comfort can normally be traced to one or more of the system components addressed elsewhere within this order. Specifically, the surveyor should consider the following components as possible causes of discomfort unbalance:

(1) Airflow. Undersized (or oversized) ductwork, plenums, air-handling devices (fans/blowers), air intake and delivery devices such as louvers, diffusers, registers or grilles. Drafts are usually attributable to unsuitable (undersized) air delivery devices or their location.

(2) Noise. Any of the items in (1) could contribute to noise generation. Other common factors are highly throttled dampers in close proximity to air delivery devices or insufficient lined ductwork with elbows between the air delivery point and fan (noise) source.

(3) Thermal. Undersized humidification devices cause winter static problems. Large (swing) variance in space temperature may be attributable to thermostat location, or lack of proper or sufficient devices (dampers/valves) associated with heat transfer coils or the coils themselves. In extreme cases, the problem could even originate with undersized primary plan equipment such as boilers, furnaces, airconditioner compressor capacities or insufficient fluid transfer pump flowrates (GPM) or associated total dynamic head (FT - H2O) capabilities.

424. thru 433. RESERVED.

SECTION 4 - HVAC CONTROL SYSTEMS

434. PNEUMATIC SYSTEM/COMPONENTS.

a. General Condition. Inspect air compressors for signs of excessive oil leakage into control air lines. Ascertain that a back-up (stand-by) compressor/receiver is available for systems which serve critical equipment areas.

b. Replacement Criteria.

(1) Generally, air compressors can be maintained up to 20 years service while the motors tend to require replacement every 10-15 years depending on frequency and duty load. Dryer unit serviceable life generally is 10-12 years.

(2) Increased controls or system additions usually warrant replacement of existing compressor/receivers with larger capacity units or augmenting the existing (if in satisfactory condition) with additional units.

(3) Copper air distribution piping, free of kinks and properly mounted, carries an indefinite service life. PVC branch distribution tubing should be considered for replacement after 15-18 years service.

435. ELECTRIC CONTROL WIRING. Wiring in conduit is generally subject to breakdown of insulation resistance due to moisture migration, thermal stress (creep), cracking or brittleness, caused by constant thermal stress or extreme atmospheric conditions. Generally, replacement is warranted after a 20 to 25 year service life for 120-volt and 24-volt systems respectively.

436. CONTROL COMPONENTS (PNEUMATIC/ELECTRIC). Ascertain that readouts, gauges, alarms (both visual and audible), and indicators are functional and accurately calibrated where applicable. Verify from facility engineer that starting relays, automatic damper, and valve actuators function properly.

b. Replacement Criteria.

(1) Most electric and electronic devices such as relays, contactors, transformers and solid state components experiencing frequent cycling "on/off" duty should be replaced after 15 years of service.

(2) Gauges of high quality such as "Magnahelic" (Dwyer controls) carry air average 10-15 years service life depending on severity of temperatures and vibration exposure.

(3) Transducers, depending on magnitude of input currents, range from 1-5 years life expectancy on average.

(4) Generally, flow switches in hot water and fuel oil lines carry a 5-year service life, while in chilled water lines, a 10-year life is typical. Differential air pressure switches can be anticipated to carry a 5-year life.

(5) Pneumatic operators, stats and other controllers and valve actuators (diaphragm type) generally warrant a 20-year service life. One-pipe bleed type controllers usually carry a lesser 10 to 15 year expected service life.

(6) Motor actuators generally provide an average 15-year service life.

(7) Electric stats of quality similar to Johnson Controls, Honeywell, Barber-Colman usually carry a 15-year service life, whereas other brands of lesser quality may be expected to provide an average of 7 to 10 year service life.

437. thru 446. RESERVED.

SECTION 5 - POTABLE WATER SYSTEMS

447. WELL/CIRCULATING/BOOSTER PUMPSETS.

a. For submersible well turbine pumps, inspection is not possible; however, general service life may be anticipated at 10 years.

b. Determine if pump head pressure is satisfactory to deliver sufficient pressure to highest tower fixture. Portable polycarbonate impeller pumps may be expected to provide a 10-year service life while other multi-stage (steel or bronze impellers) pumps can be expected to serve a 15- to 20-year operational life for portable and base-mounted units respectively.

448. DISTRIBUTION PIPING (POTABLE WATER).

a. General Condition. The requirements of this section are applicable to both hot and cold domestic water piping. Check for leakage, sweating at connections causing dripping condensation, and absence of water hammer arrestors (as evident by visible and audible pipe shock after abruptly turning off a fixture). All hot water piping shall be insulated (generally a minimum 1/2-inch thickness) and isolation valves shall be provided at all equipment and fixtures serviced (in addition to sink and lavatory faucets).

b. Adequacy. Determine if sufficient pressures and flow rates are available at serviceable fixtures and other outlets. If not, and city main pressure or booster pump discharge pressure is otherwise sufficient to serve the most remote/highest fixture, piping main and/or branch sizes may be undersized or runs plagued with a multitude of fittings imposing high pressure drops. In such cases, pipe system retrofit is warranted.

c. Replacement Criteria. If copper system, replacement after 35-40 years service "may" be warranted. Valve replacement after 18 years may be needed. For galvanized steel pipe systems, 20-25 years service is normal life expectancy depending on salt content of water supply. Pipe insulation should be replaced with pipework itself or whenever its physical properties have exhibited change.

449. HOT WATER HEATERS (ELECTRIC/GAS).

a. General Condition. The requirements of this section are applicable to both instantaneous and water storage type generators. Steam type conversion heaters are covered in general terms under the shell-intube heat exchanger which is in paragraph 376 hereinbefore discussed. Ascertain from the facility engineer if equipment has a satisfactory recovery rate and storage capacity to provide for peak water usage periods.

b. Replacement Criteria.

(1) Tank type units vary in serviceable life depending on encountered water conditions and liner type. Glass-lined tanks (usually small domestic sized units) can provide satisfactory service for 12-15 years assuming that sacrificial anodes are replaced every 3-5 years. Chemically inert cement lined and copper-silicon lined tanks have generally an indefinite life span, the former typically capable of repair if required.

(2) Separate serviceable "side-arm" or "strap-on" type gas burners generally provide a 20-year life, while electric elements and controls provide a 25- and 15-year life respectively.

(3) Copper tube bundles (gas firing or instantaneous water flow) generally provide a 20-year life.

(4) Overall industry standards indicate that well maintained commercial quality equipment provide a 25-year life whereas domestic equipment generally provide a 15-year life.

450. TANKS (DIAPHRAGM/STORAGE).

a. General Condition. Check tank pressure and determine if it is within safe operating limits as per manufacturer's rating (generally labelled with maximum psig). If booster/well pumps operate at an increased frequency after initial installation (determined from discussion with building engineering staff), either water consumption has increased or tank diaphragm is damaged (ruptured). This indicates the tank no longer is adequate for maintaining system pressure.

b. Replacement Criteria. Unless the tank shells are corroded, the bladder has experienced over-pressurization regularly (above manufacturer's rating), or has been subjected to overcycling of diaphragm as would be the case in an undersized tank, life expectancy at 30 years is not uncommon. Generally, in most installations experiencing either extremely soft or hard water conditions, a 20- to 25-year service life is normal.

451. thru 460. RESERVED.

SECTION 6 - FIRE PROTECTION SYSTEMS

461. AUTOMATIC SPRINKLER SYSTEMS.

a. General. As per the Uniform Building Code, section 3804 and subject to the authority having jurisdiction, communication equipment areas under the exclusive control of a public communication utility agency need not be sprinklered so long as areas are separated from the remainder of the building (if any) by a one-hour minimum fire-rated enclosure and an approved automatic smoke detection system is installed. Either portable fire extinguishers, Class II standpipes or an approved automatic gas extinguishment system (such as HALON or CO 2) must be provided in such areas in lieu of automatic sprinklers.

b. General Conditions.

(1) Spot check sprinkler heads to ensure they are listed types and have not been painted, field altered, are leaking or corroded in any way which would hinder operation.

(2) Inspect ceilings and equipment layouts in various sprinklered spaces to determine if a minimum 18-inch clearance exists between the ceiling and equipment or furniture.

(3) Check main system distribution (and zone) valves and ascertain if they are (locked/chained) in open position and clearly labeled as such. Also check for readily accessible wrenches or wheelhandles required to operate valves.

(4) Check that sprinklered areas subject to freezing conditions are serviced either by suitably charged antifreeze (glycol) legs or dry-pipe legs.

(5) Check fire main service for readily identifiable main isolation valve which ties the service to the potable (city) water service. If valve is located in a street box, check that post indicator valve (or valve pit) is readily accessible from main service roads into site.

(6) Check that siamese (fire department) connections are unobstructed by recent construction, parking, or similar hindrances.

c. Replacement Criteria. Heads over 50 years of age should be sample tested. Valves which are incapable of complete closure when operated should be replaced. Valves in wet pipe systems over 25 years of age should be replaced. Dry sprinkler piping systems have an indefinite life where as wet pipe black steel piping generally provides a 50-year life span. Galvanized steel piping installations if screwed should last beyond 50 years; if welded, life spans comparable to black steel may be expected. Unpainted piping or piping exposed to weather or corrosive atmospheres will not warrant such life spans and individual consideration should be exercised in their evaluation.

462. AUTOMATIC TOTAL FLOODING GAS EXTINGUISHMENT SYSTEMS.

a. General. The requirements of this section are applicable to Halon 1211, 1301, and carbon dioxide gas systems.

b. General Condition.

(1) Check space to determine that all openings into the protected compartmentalized area are provided with automatic closure devices, smoke dampers, or fuseable links to ensure closure prior to agent discharge (unless system is specifically designed to take into account agent loss through such openings).

(2) Inspect agent release actuator for possible mechanical (binding/failure) hindering operation.

c. Replacement Criteria. Smoke detectors should be considered for replacement after 30 years of service or after 2 or 3 actual "smoke" trips during which detectors have been subject to relatively high heat exposure. Electronic control components such as relays in the supervisory panel should be given replacement consideration similar to HVAC controls. Nickel-cadmium (reserve/back-up) batteries should be replaced after 7 years or after their ability to hold a charge less than 24 hours has passed. Mineral insulated copper conductor cable (MICC) where used for terminations to control panel and detectors should never require replacement.

463. thru 472. RESERVED.

SECTION 7 - MISCELLANEOUS SYSTEMS AND EQUIPMENT

473. SANITARY FIXTURES AND FITTINGS.

a. General Condition.

(1) Inspect all vitreous china fixtures such as sinks, lavatories, water closets, urinals, etc. for cracks, chips, and permanent discoloration or leaks.

(2) Check general condition of electric water coolers/drinking fountains.

b. Replacement Criteria. Vitreous china fixtures, unless cracked, severed, or damaged otherwise have an indefinite life. Service valves, flush valves, faucets and similar fittings should be given replacement consideration if they are over 30 years old. If vitreous china fixtures or their fittings are of such age or design that replacement parts or fittings are no longer available, replacement should also be considered.

474. FUEL OIL STORAGE AND DISTRIBUTION PIPING.

a. General/Safety Considerations.

(1) Inspect all visible (exposed or easily exposeable) piping for leaks, cracks, or corrosion.

(2) Verify system as functional with facility engineer.

(3) Ensure that all tanks are properly vented to the exterior terminating at sufficient distances from buildings, property lines, air intakes and other building openings, or high heat areas. Check all above-ground tanks for fuel oil overflow and return piping properly sloped and leading to an underground storage tank or approved (diked) receptor area.

(4) Check that all fuel oil piping passing through occupied building areas is enclosed in at least a minimum one-hour fire rated enclosure or chase.

(5) Check to ensure piping lengths do not run in contact or adjacent to high heat emitting sources such as kitchen exhaust ducts, boiler breeching or exhaust stacks, engine generator exhaust or other chimneys or flues.

(6) Fuel lines (supply and return) passing through unheated areas or areas subject to extreme cold should be insulated.

(7) Check that all aboveground tanks are positioned such that they do not physically block an exit or that a fire condition in the tank could not impede means of egress from the area or building.

b. Adequacy. Ascertain if fuel oil is sole fuel source serving critical or essential equipment. If so, sufficient storage capacity should exist to provide a minimum of 72 hours running time for each of all critical power generators and heating boilers which utilize fuel oil.

c. Replacement Criteria. Underground (bitumastic or similar) coated tanks and piping not exhibiting signs of leakage should last indefinitely (or life of building facility). Aboveground tanks not exhibiting excessive corrosion should last for the duration of the building life. Level controls should be replaced after 15 years service. Valves should be replaced after 35 years service. Transfer pumps (gear and rotary types), if suitably protected with inlet strainers, generally may be expected to last over 40 years service with regular maintenance. Pump motors generally have life spans of between 20 and 30 years depending on frequency of operation, duty load, and exposure to overload conditions.

475. NATURAL GAS DISTRIBUTION PIPING.

a. Check for main shut-off valve at piping entrance to building. All piping should be clearly labelled as "natural gas". Piping should not pass in direct contact or in nearby proximity to high heat emitting sources capable of inciting an explosion.

b. Check to ensure that all equipment served is provided with a main isolation valve.

c. System should have a life span comparable to the building itself, however; severely corroded valves or piping should be replaced wherever they occur.

476. thru 484. RESERVED.

CHAPTER 10. ELECTRICAL SYSTEMS

485. GENERAL. The following chapter checklist items apply to both FAA-owned and leased facilities. In the case of the leased facilities, enter either a (0) or a (4) rating for each checklist item which is owned and maintained by the sponsor thus indicating the system/equipment is either in good condition or poor, non-functional condition respectively. All entries in this chapter shall be evaluated by Airway Facilities personnel.

SECTION 1 - EXTERIOR SYSTEMS

486. OBSTRUCTION LIGHTS. Obstruction lights should conform to Advisory Circular AC 70/7460-1 latest edition, and Part 77 of Federal Aviation Regulation 14CFR77. Obstruction lights should be controlled by a photocell.

487. EXTERIOR BUILDING RECEPTACLES.

a. Criteria.

(1) All outdoor receptacles shall be housed in a weatherproof enclosure.

(2) All outdoor receptacles should have ground-fault circuit interrupter protection.

b. Replacement Criteria. Exterior receptacles may be expected to last the life of the facility.

488. thru 497. RESERVED.

SECTION 2 - BUILDING SERVICE

NOTE: Omit paragraphs 498 and 499 if the primary oil-filled transformer belongs to the Utility Company.

498. PRIMARY SWITCHGEAR.

a. General Condition. Switchgear should not show signs of overheating, arcing, or broken hardware.

b. Ease of Maintenance. There shall be a minimum of 3 feet unobstructed clearance in front of the switchgear.

c. Replacement Criteria. The life expectancy for primary switchgear is roughly 30 years.

499. OIL-FILLED TRANSFORMER.

a. General Condition. Transformers should not show signs of oil leakage.

b. Capacity. The operating temperature of the transformer should not be excessively hot. This means the transformer is at its maximum capacity and a larger size transformer should be installed.

c. Feeder Protection.

(1) The primary feeder shall be protected by a fusible disconnect rated less than 250 percent of the rated primary current, or 300 percent with a circuit breaker.

(2) Overcurrent device should be provided on the secondary side with rating less than 250 percent of the rated secondary current.

d. Ease of Maintenance. Sufficient access and work space should be provided around the transformer to permit adequate air movement, safe operation, and maintenance of the equipment.

e. Space. Space should be available for future expansion.

f. Replacement Criteria. The life expectancy for an oil-filled transformer is roughly 30 years.

500. SECONDARY FEEDERS.

a. General Condition. Conductor insulation at terminals should not be cracked, damaged, or fractured.

b. Loading. Feeders should not have a continuous loading of more than 80% of their rated capacity.

501. thru 510. RESERVED.

SECTION 3 - BUILDING DISTRIBUTION

511. SERVICE DISCONNECT SWITCH.

a. General. The disconnect switch should never have tripped on overloads and should be capable of handling the available short circuit fault.

b. Spare Capacity. Spare capacity shall meet or exceed all budgeted and planned future growth (or a minimum of 10 percent growth).

c. Ground Fault Protection. If the main service is greater than 1000A at 277/480V, 3 phase, 4 wire, the main disconnect switch should have ground fault protection.

d. Ease of Maintenance. There shall be a minimum of 3 feet working space in front of the switch.

e. Replacement Criteria. The life expectancy for the disconnect switch is roughly 25 years.

512. CRITICAL MAIN DISTRIBUTION PANEL.

NOTE: This item applies only to facilities with existing or planned ARTS installation.

a. General. Critical automation equipment defined in FAA Order 6980.27, Power Conditioning Systems in ARTS III Facilities, shall be connected to the critical distribution panel. The critical distribution panel shall be connected to the PCS unit and the stand-by generator set.

b. Spare Capacity. Spare capacity shall meet or exceed all budgeted and planned future growth (or a minimum of 10 percent growth).

c. Ease of Maintenance. Distribution panels should have sufficient unobstructed clearances for safe operation and maintenance. A minimum of 3 feet in front shall be provided.

d. Replacement Criteria. The life expectancy for the distribution panel is roughly 25 years.

513. ESSENTIAL MAIN DISTRIBUTION PANEL.

a. General. The following equipment should be connected to the essential distribution panel:

(1) Panelboards serving FAA essential electronic equipment.

(2) Exit lights and emergency lighting.

(3) For buildings over 65 feet in height:

(a) Smokeproof enclosure mechanical equipment.

(b) Smokeproof enclosure lighting.

(4) Mechanical equipment serving the communication equipment room, Cab, TRACON, radar/ARTS room and telephone room/ICSS.

(5) Fire alarm system.

(6) A transfer switch to control tower cab elevator.

(7) Elevator.

The essential distribution system panels shall be connected to the stand-by generator set.

b. Spare Capacity. Spare capacity shall meet or exceed all budgeted and planned future growth (or a minimum of 10 percent growth). When considering the capacity for the essential bus, the total VA demand of a PCS, if installed, must be taken into account. When recharging an old battery system, the VA demand of the PCS may be in excess of the size of the module rather than the connected load.

c. Ease of Maintenance. Distribution panels should have sufficient unobstructed clearances for safe operation and maintenance. A minimum of 3 feet in front shall be provided.

d. Replacement Criteria. The life expectancy for the distribution panel is roughly 25 years.

514. NON-ESSENTIAL MAIN DISTRIBUTION PANEL.

a. General. All equipment not connected to the critical or essential distribution systems shall be connected to the non-essential distribution system panels.

b. Spare Capacity. Spare capacity shall meet or exceed all budgeted and planned future growth (or a minimum of 10 percent future growth).

c. Ease of Maintenance. Distribution panels should have sufficient unobstructed clearances for safe operation and maintenance. A minimum of 3 feet in front should be provided.

d. Replacement Criteria. The life expectancy for the distribution panel is roughly 25 years.

515. PANELBOARDS.

a. General. Separate panelboards shall be provided to control only the electronic equipment in the following areas:

(1) Control Cab.

(2) Communication Equipment room.

(3) Radar/ARTS Equipment room.

(4) TRACON Operations room.

Separate panelboards should be provided to control ASDE equipment and RML/TML equipment.

b. Spare Capacity. Spare capacity shall meet or exceed all budgeted and planned future growth (or a minimum of 10 percent growth).

c. Ease of Maintenance. Panelboards should have sufficient unobstructed clearances for safe operational and maintenance. A minimum of 3 feet in front should be provided.

d. Replacement Criteria. The life expectancy for a panelboard is roughly 25 years.

516. CIRCUIT BREAKERS/FUSIBLE SWITCHES.

a. General Condition. There shall be no signs of cracks or overheating.

517. DRY TYPE TRANSFORMERS.

a. General. The operating sound level should not be excessive and the operating temperature of the transformer should not be excessively hot. This means the transformer is at its maximum capacity and a larger size transformer should be installed.

b. Environment. There should be adequate ventilation to cool the transformer.

c. Feeder Protection. Feeders shall be protected with overcurrent devices as follows:

(1) The primary feeder shall be protected by an overcurrent device rated at not more than 125 percent of the rated primary current.

(2) If there is an overcurrent device on the secondary side, the rating of the device shall be less than 125 percent of the rated secondary current.

d. Ease of Maintenance. Sufficient access and work space shall be provided around the transformer to permit adequate air movement, safe operation, and maintenance of the equipment. A minimum of 3 feet around two sides should be provided.

e. Space. Space should be available for future expansion.

f. Replacement Criteria. The life expectancy for the transformer is roughly 25 years.

518. CONDUCTORS.

a. General. All wiring shall be installed in conduits.

b. Criteria.

(1) All conductors shall be copper with insulation rated for 600 volt.

(2) All conductors for lighting and power branch circuits shall be #12 AWG.

c. Replacement Criteria. Conductors may be expected to last the life of the facility. Inspect for conductor insulation for deterioration.

519. CONDUITS, CABLE TRAYS, OR WIREWAYS.

a. Criteria.

(1) Galvanized rigid steel conduit shall be used when embedded in concrete or in earth. No set screw connectors are allowed.

(2) EMT or rigid steel conduits shall be used indoors and concealed wherever possible. No set screw connectors are allowed.

(3) A cable tray system should be provided for the electronic and telephone equipment.

b. Ease of Maintenance. Sufficient access and adequate clearance should be provided to all cable trays and wireways to permit maintenance or repair work without removal of permanent construction.

c. Replacement Criteria. Conduits, cable trays, and wireways may be expected to last the life of the facility. If these materials show evidence of physical damage, they should be replaced.

520. RECEPTACLES.

a. General. Convenience outlets shall be provided at a maximum distance of 50 feet apart and additionally as required for facility operational requirements.

b. Specific Requirements. Receptacles installed in washrooms should have ground-fault circuit interrupter protection.

c. Replacement Criteria. Receptacles may be expected to last the life of the facility.

521. thru 530. RESERVED.

SECTION 4 - MOTOR CONTROLS

531. DISCONNECT SWITCHES.

a. General Condition. The disconnect switch shall not exhibit signs of overheating such as discoloration of metal, charred insulation, burnt contacts, or peculiar odor.

b. Criteria. A disconnect switch should be installed within sight of the motor.

c. Protection. All motors shall have overload protection.

d. Ease of Maintenance. There shall be a minimum of 3 feet working space in front of the switch.

e. Replacement Criteria. Disconnect switches have a life expectancy of roughly 25 years.

532. STARTERS.

a. General Condition. Starters shall not exhibit signs of overheating or broken parts.

b. Ease of Maintenance. Starters shall have adequate unobstructed maintenance clearances for ready and safe operation of the equipment. A minimum of 3 feet clearance in front shall be provided.

c. Replacement Criteria. Starters have a life expectancy of roughly 25 years.

533. thru 542. RESERVED.

SECTION 5 - LIGHTING

543. ILLUMINATION LEVELS.

a. General. The general illumination levels in the following areas should meet the minimum requirements outlined below:

(1)	Offices	50 f.c.
(2)	Storage Rooms	5 f.c.
(3)	Service Rooms	20 f.c.
(4)	Communication and Radar/ARTS Equipment Rooms	30 - 50 f.c.
(5)	Corridors	10 f.c.

(6) Stairways 20 f.c.

(7) TRACON Operation Room/ETG Lab Equip w/ dimmers (0-50 f.c.)

(8) ATCT Cab Equip w/ dimmers (0-50 f.c.)

b. Criteria.

(1) TRACON operations room lighting should provide 3-7 f.c. at work areas in proximity to a radar display and 7-10 f.c. at work areas remote from a radar display. Light fixtures shall not cause glare on radar displays.

(2) Control Cab lighting shall comply with the requirements outlined in FAA Order 6000.16, Improvement of Operating Conditions at Tower Cab Facilities.

(3) Glare-free lighting should be provided in the following areas:

(a) TRACON Operations Room/ETG lab.

(b) Tower Cab.

(c) Radar/ARTS Equipment room.

c. Replacement Criteria. Lighting fixtures may be expected to last the life of the facility.

544. EXIT LIGHTS.

a. General. Exit lights shall be located at all required exits and at various locations as required to indicate the direction of the nearest approved exit.

b. Replacement Criteria. Exit lights may be expected to last the life of the facility.

545. LIGHT SWITCHES/DIMMERS.

a. General. Dimmers should be used to control lighting in TRACON operations room/ETG lab and tower cab. Light fixtures in the radar/ARTS equipment room should be complete with individual switches to reduce glare.

b. Replacement Criteria. Dimmers and switches may be expected to last the life of the facility.

546. thru 555. RESERVED.

SECTION 6 - COMMUNICATION SYSTEM

556. FIRE ALARM SYSTEM.

a. General. An automatic fire and smoke detection system shall be provided in all terminal air traffic control facilities.

b. Criteria.

(1) Fire alarm system shall be zoned, non-coded, and electrically supervised.

(2) The fire alarm system shall be connected to a stand-by power system.

c. Specific Requirements.

(1) Manual Pull Station.

(a) A manual pull station should be located within close proximity of each exit door on each floor.

(b) A manual pull station should be installed at a location where the floor area exceeds 10,000 square feet.

(3) Smoke Detectors.

(a) Smoke detectors shall be installed in all occupied areas of the control tower, especially at each enclosed elevator landing or lobby.

(b) Smoke detectors should be installed on both sides of the fire door.

(c) Smoke detectors shall be installed throughout the building and specifically in the following areas:

1 Mechanical and Electrical rooms.

2 Electronic Equipment rooms.

3 Storage rooms.

4 Break rooms.

5 Engine Generator rooms.

6 Top of Vertical shafts.

7 Elevator Machine rooms.

8 Kitchen or cooking areas.

9 Television areas.

(4) Fire Alarm Panel.

(a) The fire alarm panel shall operate the following functions upon activation of any fire alarm initiating devices:

1 Sound alarms throughout the building.

2 Shutdown air-handling units.

3 Illuminate annunciators.

4 Release smoke dampers.

5 Release fire doors.

6 Be capable of transmitting alarm signal to fire department via a dedicated telephone line.

(b) Trouble alarms should be provided in the panel to monitor open or ground fault circuit conditions.

(c) The fire alarm annunciator shall be located at operational quarters.

(5) Batteries.

(a) Batteries shall be capable of operating the fire alarm system for a minimum of 24 hours.

(b) Batteries shall be housed in a lockable enclosure to protect against movement, injury, and moisture.

d. Ease of Maintenance. All fire alarm initiating devices shall be installed in locations where they are unobstructed and readily accessible.

e. Replacement Criteria. The life expectancy for a fire alarm system is roughly 20 years.

557. INTERCOM SYSTEM.

a. General. A door intercom shall be provided at base of the tower cab, TRACON entry, the site entrance gate and every visitor's entry to the building. The intercom should be connected to the building telephone system or the security intercom system.

b. Replacement Criteria. The life expectancy for the system is roughly 10 years.

558. thru 567. RESERVED.

SECTION 7 - STAND-BY POWER SYSTEM

568. CAB DC POWER SYSTEM.

a. General. This section applies only to ATCTs without an engine generator.

b. Criteria. FAA solid-state equipment and traffic light guns shall be connected to the system.

c. Performance. DC system shall be either 12 or 24 volt.

d. Capacity. There should be a sufficient quantity of batteries to supply power at full load for a minimum period of 4 hours and be recharged to its full capacity within 12 hours.

e. Ease of Maintenance. There shall be sufficient access and work space around the unit to permit adequate air movement, safe operation, and maintenance of the equipment.

f. Replacement Criteria. The life expectancy for the system is roughly 15 years.

569. BATTERY OPERATED LIGHTING SYSTEM.

a. General. Battery operated lighting systems shall be provided throughout buildings without an engine generator and are required to be installed in all facilities in the generator room, electrical rooms, and tower shaft.

b. Performance. All battery-operated light fixtures should remain "on" when test button is activated. Battery should have sufficient capacity to provide illumination for a period of not less than 90 minutes.

c. Ease of Maintenance. Battery should have sufficient unobstructed maintenance clearances for ease of monitoring low battery level and trouble alarm. A minimum of 3 feet clearance in front of the battery shall be provided.

d. Replacement Criteria. The life expectancy for the system is roughly 15 years.

570. EMERGENCY LIGHTING.

a. General. All exit signs shall be connected to the stand-by power system. Emergency lighting shall be provided in the following areas:

(1) Electronic Equipment room.

(2) Generator room.

(3) Mechanical/Electrical room.

(4) Cab.

(5) Radar and Communication Equipment room.

(6) TRACON room.

(7) Break room.

(8) Toilet.

(9) Tower stair.

(10) Corridors.

b. Specific Requirements. Illumination levels throughout the means of egress, exits, and stairwells shall not be less than one footcandle measured at the floor. The light fixtures shall be connected to the stand-by power system.

c. Replacement Criteria. Emergency lighting fixtures should last the life of the facility.

571. ENGINE GENERATOR.

a. General. A standby generator is required for all intermediate and major activity terminal facilities based on Order 6030.20C, Electrical Power Policy, and/or all ATCT(s) over 65 feet in height with elevators.

b. Specific Requirements.

(1) Fuel capacity shall not be less than 72 hours operation at full loads.

(2) Batteries shall be equipped with automatic battery charge.

c. Spare Capacity. Spare capacity shall meet or exceed budgeted and planned future growth (or a minimum of 10 percent growth).

d. Replacement Criteria. An average engine life is 12-25 years of operation with proper maintenance. Replacement of the generator is necessary if service and parts are no longer available.

572. TRANSFER SWITCH.

a. General. Transfer switch designed for inadvertent interconnection of normal and emergency power sources shall be automatic.

b. Criteria. The switch should transfer distribution loads to normal or emergency power source in time for the source to assume the load within 15 seconds.

c. Spare Capacity. Spare capacity shall meet or exceed budgeted and planned future growth (or a minimum of 10 percent growth).

d. Replacement Criteria. The life expectancy for the transfer switch is roughly 20 years.

573. thru 582. RESERVED.

SECTION 8 - SPECIAL SYSTEMS

583. GROUNDING.

a. Criteria.

(1) The neutral of an AC power distribution system is to be grounded to the earth electrode system, as per FAA Order 6950.19.

(2) A green equipment ground conductor should be run with each circuit conductor supplying power to the equipment as per FAA Order 6950.19.

(3) A separate signal grounding system should be provided for the electronic equipment per Order 6950.19.

584. LIGHTNING PROTECTION.

a. General. Air terminals shall be mounted at or within 2 feet of corners of the building and at 20 feet maximum intervals except that air terminals 24 inches or higher may be located at 25 feet maximum intervals.

b. Criteria. The lightning protection system should comply with the requirements outlined in FAA Order 6950.19.

c. Performance. Visually inspect the integrity of the lighting protection conductors to ensure all conductors are adequately bonded and electrically continuous with the grounding system.

d. Replacement Criteria. The lightning protection system should be expected to last the life of the facility.

585. SURGE PROTECTION.

a. General. Surge arrester should be provided at the main disconnect switch to ensure high energy transients are not coupled to equipment by AC distribution lines within the facility, as per FAA Order 6950.19.

b. Performance.

(1) The arrester grounding conductor should be securely connected to the system ground.

(2) The input to each phase arrester contained in the surge arrester should be fused to provide protection against overload of, or damage to, the AC supply in the event an arrester should short.

(3) Indicating lights should be provided on the front of the surge arrester enclosure to monitor the status of the fuses.

c. Replacement Criteria. The life expectancy for the surge arrester is roughly 25 years.

586. UNBALANCED AND SINGLE PHASED MAIN FEEDER PROTECTION.

a. General. Omit this Section if main disconnect switch is of circuit breaker type.

b. Protection. Single phasing detection monitors should be provided on the load side of the main fusible switch to detect unbalanced and single phasing voltage conditions in the main feeder.

c. Replacement Criteria. The life expectancy of this system is roughly 25 years.

587. POWER CONDITIONING SYSTEMS (PCS).

a. General. Omit this seciton if PCS unit does not exist.

b. Performance.

(1) Unit should provide uninterrupted, continuous power to critical building loads between normal poweir failure and engine generator start-up.

(2) The operating sound level should not exceed 70dBA.

c. Environment.

(1) The optimum ambient temperature for the batteries is 72 degrees F.

(2) Adequate ventilation and space environment shall be provided for both the PCS unit and the batteries for heat dissipation.

d. Batteries. The batteries should supply power at full load for a minimum period of 30 minutes. (15 minutes for ARTS-III.)

e. Spare Capacity. Spare capacity shall meet or exceed budgeted and planned future growth (or a minimum of 10 percent growth).

f. Replacement Criteria. The life expectancy for a PCS unit is roughly 20 years.

588. thru 596. RESERVED.

CHAPTER 11. SITE SPECIFIC

597. GENERAL. All items in this chapter shall be evaluated by Airway Facilities personnel.

SECTION 1 - SITE WORK

598. ACCESS ROADS.

a. General. There should be an unobstructed access road leading from general traffic circulation areas to a vehicle parking area.

b. Design. The access road to the facility should not be interrupted by major rail crossings, low-lying areas subject to flooding, or any other periodically traffic-blocking obstacle. The slope of the roadway should be limited to provide safe access under adverse conditions. If areas appear to be excessively sloped, consult facility personnel to determine if the area should be modified.

c. Surfacing. Facility access roads should be free of large cracks, holes, ruts, or areas of differential settlement. The surface should be in solid condition with no deteriorated areas.

599. PARKING AREA.

a. Capacity. Parking areas should provide space required to fulfill the following criteria:

(1) Employee parking should have capacity to accommodate the largest concentration of personnel at the facility. This peak will occur at shift changes when all personnel from 2 different shifts may be present.

(2) Visitor parking should be provided as appropriate, consult facility staff for adequacy of current area.

(3) Handicapped parking shall be provided at all base building facilities. Consult chapter 7, section 4, for specific requirements.

(4) All government-owned vehicles required for the operation of the facility should be assigned a parking stall.

b. Surfacing. Facility parking areas should be free of large cracks, holes, ruts, or areas of differential settlement. The surface should be in solid condition with no spalled or deteriorated areas.

600. SIDEWALKS.

a. General. Concrete sidewalks should be provided connecting adjacent parking areas to entrances and as required by the operational requirements of the facility.

b. Pavement. Sidewalks should be concrete free of cracks, holes, or areas of differential settlement. The surface of the pavement should be in solid condition with no spalled or deteriorated areas.

601. STORM DRAINAGE. Local personnel should be consulted relative to site storm drainage problems. Entries on the evaluation form should specify deficient items as nearly as they can be identified by the team.

602. thru 611. RESERVED.

SECTION 2 - MECHANICAL

612. SANITARY DRAINAGE PIPING.

a. General. Ascertain if aboveground piping leaks. All fixtures should be properly trapped and vented or provided with anti-siphonage type traps.

b. Replacement Criteria. Cast iron systems should normally carry at least 40 to 50 year service life (to building life) reduced only by excessive corrosion as encountered by exposure to elements, undrainable pockets, persistent leakage or system waste water throughout that is highly acidic (high in dissolved salt content). Service life on PVC installations usually can be expected to exceed cast iron life, shortened only by cracks usually induced by an external influence.

613. STORM WATER DRAINAGE PIPING.

a. General.

(1) Ascertain if piping is leaking or consistantly backs-up during heavy storms.

(2) Verify that storm water main does not tie into sanitary main unless acceptable by local codes or the authority having jurisdiction.

(3) Generally, interior drain piping should be provided with thermal insulation to inhibit sweating/condensation where it passes through air-conditioned spaces.

b. Replacement Criteria. Unless severely corroded (usually the case with externally exposed downspouts after 30-35 years), piping should last for building life. Internal piping should not be replaced unless a multiple number of pipe sections exhibit pin-hole or larger rust-through spots.

614. SUBSOIL DRAINAGE SYSTEM. As this cannot be visually inspected, ascertain from facility engineer or personnel if flooding of basement areas has occurred during or after storms due to water seepage through walls and/or floor slabs on or below grade.

615. CENTRAL VACUUM SYSTEMS.

a. General. Check with facility engineer if adequate outlets are available (based on consensus of users) ascertain if system operates as intended.

b. Replacement Criteria. Generally the overall system should last the life of the building. Installations 50 years old are not uncommon where operation is intermittent. Usually components requiring replacement are motor bearings after 10-year service.

616. (LP)/PROPANE GAS DISTRIBUTION PIPING.

a. General.

(1) General piping requirements and inspections are as hereinbefore discussed under natural gas distribution piping, paragraph 475. The following are applicable to aboveground external tanks which are considered permanent and refilled on site (over 125 gallon capacity.)

(2) Check containers for (DOT) and/or (ASME) approval stamps as well as "Flammable" markings and type of gas contained (i.e. LPG, BUTANE, PROPANE, etc.).

b. Replacement Criteria. Generally, tank life, if properly maintained, is indefinite, while gages, regulators, valves, flexible hoses, etc., require replacement when failure or leakage becomes evident. Wear on these items vary from system to system. Dented or corroded tanks should be replaced.

617. STANDPIPE SYSTEMS (WET/DRY).

a. General Condition.

(1) Check system pumps (as applies), main service valve operation, presence of backflow preventers, potable water service interface, riser and valve/hose cabinet isolation valve operation and condition of gravity or pressurized storage tanks (if applicable).

(2) As per the Uniform Building Code, section 3805, Class III standpipe systems, including hoses, are required in towers over 150 feet in height. If tower is under 150 feet in height, either Class I, II or III standpipe system must be provided. Class II standpipe system must include hoses. (Aviation Control Towers are classified as a Group B - Division 2 occupancy).

b. Replacement Criteria. Valves which are incapable of complete closure when operated should be replaced. Valves in wet pipe systems over 25 years of age should be replaced. Dry piping systems have an indefinite life where as wet pipe black steel piping generally provides a 50-year life span. Galvanized steel piping installation if screwed should last beyond 50 years; if welded, life spans comparable to black steel may be expected. Unpainted piping or piping exposed to weather or corrosive atmospheres will not warrant such life spans and individual consideration should be exercised in their evaluation. Hoses should be replaced after 15 years.

618. SEISMIC BRACING (EQUIPMENT/PIPING).

a. General. Areas subject to seismic activity should have adequate bracing, supports or similar protection provided on equipment or piping subject to permanent damage, that could cause injury or endanger life safety, or could render critical equipment inoperable due to overturning or sliding.

b. General Conditions.

(1) All equipment which could endanger life safety due to overturning, sliding, swaying, swinging, or due to failure of perimeter legs, vibration isolators, hangers or similar supports should be adequately braced to prevent such movements.

(2) Heavy fixed floor mounted equipment (such as boilers) should be properly anchored with cast-in-place anchor bolts, suitable rigid angles or other hardware.

(3) Floor or base-mounted tanks should be attached to concrete saddles.

(4) Vertical tanks or other similar equipment (domestic type water heaters, computer room air-handlers, PABX, etc.) possessing inherent instability due to high centers of gravity should be braced with vertical steel beams ("strongbacks") spanning floor to floor.

(5) Fixed suspended equipment such as tanks should be crossed-braced in all directions to prevent lateral movement or slippage from the suspension system.

(6) All dynamic equipment with internal moving parts such as pumps, motors (fan systems), compressors and engines should be fitted with approved snubbers at all spring vibration isolation devices to prevent overturning and sliding due to horizontal shear forces and vibrating "short-circuits."

(7) Vibration isolated suspended equipment should be protected against sway.

(8) Piping should be provided with redundant shut-off valves where maximum protection from burns, scalding, flooding or explosive leaks can be afforded.

(9) Piping crossing structural seismic joints should be provided with expansion joints affording lateral as well as torsional movement where possible.

(10) Pipe and duct sleeves through floors and walls should allow movement. Such pipes or ducts should not be anchored in structural wall sleeve with flange plates or similar restraints.

(11) Movable joints should occur at all equipment connections.

(12) Pipework should only be tied to one structural system. Pipework anchored between two structural systems should be provided with properly guided flexible expansion joints or loops.

619. SOLAR COLLECTORS (AIR).

a. General Condition. Inspect general condition of collectors. Determine if system performs as intended and verify with facility engineer that auxillary heating devices are not required to meet normal heating loads to confirm same.

b. Replacement Criteria. Average serviceable lifespan of electroplated absorber surface type collectors is 20-25 years, whereas for painted surface type, a 15 year life is expected.

620. HUMIDIFIERS.

a. General Condition. Verify that equipment is functional and performing as required. Check for Underwriters Laboratory's listing and safety disconnect switch on electric devices and isolation valves serving steam emitting devices separating same from a central supply.

b. Replacement Criteria. Average serviceable life on stainless steel steam grid and "area" type blower units is 15 years and 10 years respectively. Typical pan type units employing wetted drum, wicking plates or similar textured media have an average 5 to 7 year life whereas heated pan types usually provide an 8 to 12 year serviceable life span.

621. EVAPORATIVE (SWAMP) COOLERS AND CONDENSERS.

a. General. Applicable to direct and indirect "swamp" coolers and evaporative condensers. Cooling towers (evaporative cooling condensers) are described elsewhere in this document.

b. General Condition. Inspect condition of unit casing, (eliminator baffles or diffuser piping as applies) supports and sump pan. Check condition of condenser water piping on condensers, potable water make-up piping and isolation valves.

c. Capacity. Ascertain from facility engineer whether cooler meets occupancy cooling requirements. If not, ascertain if equipment is undersized, defective and in need of repair or replacement or whether its suitability is viable for the particular installation.

d. Replacement Criteria. Cooler and condenser life varies significantly with corrosive elements found in air sources and make-up water. Similarly, equipment designs widely vary which inherently affect life span; however, an average expected serviceable life is considered as 20 years. Recirculating pumps usually require replacement between 8-12 years.

622. ABSORPTION CHILLERS.

a. General Condition. Inspect condition of unit(s) and associated piping for corrosions and/or leaks. Verify with facility engineer leak tightness of unit shells (bubble count) as leaks imply efficiency reduction and promote crystallization of lithium bromide solution.

b. Capacity. If unit(s) are sole refrigeration source, verify reliability of steam or hot water driving source. Check for redundancy of steam (hot water) control valves or manual bypass valve provisions. Where units serve critical or essential loads, stand-by equipment (not necessarily absorption type) should be available. Ascertain if unit(s) are capable of maintaining peak cooling requirements under throttled heat source conditions. If so, future additional system load addition is likely possible.

c. Replacement Criteria. Units having irrepairable leaks or other "nonrecoverable" efficiency losses causing them to operate below 0.65 C.O.P. ratings should be replaced. Otherwise, units over 23 years of age (continuous service) should be given replacement consideration.

623. SEWAGE TREATMENT FACILITY.

a. General. Types of facilities and extent of treatment varies widely and hence extensive investigation into specific process equipment or tests for effectiveness are not be addressed under this survey.

b. General Condition. Obtain and/or review in the presence of the facility engineer records confirming that effluent discharge is being maintained in compliance with listed permit standards. Observe general condition of facility including holding tanks, piping and ejector pumps. Be alert for abnormal presence of solids in effluent. Digestors which persistently appear "sudsy" may signal the plant is being overloaded and hence is undersized for the required duty.

c. Replacement Criteria. Average plant life, packaged systems usually range from 10-15 years with 25 years serviceable life at the outside limit on smaller built-up systems.

624. SUMP PUMPS.

a. General. Ascertain from facility engineer that pumps operate satisfactorily. Check for indications that pumps run continuously which may signal undersizing.

625. thru 634. RESERVED.

SECTION 3 - ELECTRICAL

635. SITE LIGHTING.

a. Lighting Levels. The roadway, parking areas or walkways should be adequate illuminated. Review with building engineering personnel to ensure illumination level is satisfactory.

b. Controls.

(1) Site lighting for parking areas and walkways used 24 hours per day should be controlled by a photocell.

(2) Parking lot used only partially during evening hours should be controlled by a photocell and a time clock, which should be connected in series so that lighting can be turned off during selected hours.

636. CAR HEATER RECEPTACLES. Car heater receptacles should be provided in site areas with severe cold winter conditions at parking spaces provided for government vehicles.

637. HEAT TAPES.

a. General. Heat tapes shall be provided on all water pipes (potable or service) exposed to freezing condition.

b. Performance. Check with building engineering personnel to determine if all heat tapes are operational.

c. Replacement Criteria. The life expectancy for all heat tapes is roughly 20 years.

638. thru 647. RESERVED.

APPENDIX 1 - REFERENCED DOCUMENTS

FAA ORDERS

1100.126E	Standard Organization of Air Traffic Control Terminal Facilities
1365.1	Department of Transportation Graphic Standards
1600.6B	Protection of Agency Property
4660.1	Real Property Handbook
6000.16	Improvement of Operating Condition at Tower Cab Facilities
6950.19	Practices and Procedures for Lightning Protection, Grounding, Bonding, and Shielding Implementation
6980.27	Power Conditioning Systems in ART III Facilities

FAA ADVISORY CIRCULARS

No. 70/7460-1 - Obstruction and Marking and Lighting

FEDERAL AVIATION REGULATIONS

Part 77 - Objectives Affecting Navigable Airspace

OTHER PUBLICATIONS

ASHRAE Handbook of Fundamentals

National Fire Protection Codes for Standards and Recommended Practices (NFPA)

Uniform Building Code

Uniform Mechanical Code

APPENDIX 2. EVALUATION AND ANALYSIS WORKSHEETS

SUMMARY REPORT

1. General

Facility Name: _____
Facility Location: _____

Date of Survey: _____

Facility Representatives
Air Traffic: _____
Airway Facilities: _____

Members of the Field Team
Coordinator: _____

_____ _____
_____ _____
_____ _____
_____ _____

2. Cost Estimate

Total Cost for Modernization _____
Replacement Cost of Facility _____
Maximum Allowable Expenditure _____
(Leased Property)

3. Recommended Action

Modernize Relocate

4. Remarks

AIR TRAFFIC EVALUATION ANALYSIS WORKSHEET

CHAPTER 6		OPERATIONAL IMPACT	PEOPLE IMPACT	MANAGEMENT IMPACT	SECTION TOTALS	PERCENTAGE PER SECTION
SECTION 1	FACILITY SCORE					
	TOTAL POSSIBLE					
SECTION 2	FACILITY SCORE					
	TOTAL POSSIBLE					
SECTION 3	FACILITY SCORE					
	TOTAL POSSIBLE					
SECTION 4	FACILITY SCORE					
	TOTAL POSSIBLE					
IMPACT TOTALS	FACILITY SCORE					
	TOTAL POSSIBLE					
PERCENTAGE PER IMPACT						

CHAPTER TOTALS

CHAPTER TOTAL FACILITY SCORE ____

CHAPTER TOTAL POSSIBLE SCORE ____

PERCENTAGE THIS CHAPTER ____

AIRWAY FACILITIES EVALUATION ANALYSIS WORKSHEET

CHAPTER 7		OPERATIONAL IMPACT	CODE	SUPPORT FUNCTION	SITE SPECIFIC	SECTION TOTALS	PERCENTAGE PER SECTION
SECTION 1	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 2	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 3	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 4	FACILITY SCORE						
	TOTAL POSSIBLE						
DIVISION TOTALS	FACILITY SCORE						
	TOTAL POSSIBLE						
PERCENTAGE PER DIVISION							

CHAPTER TOTALS

CHAPTER TOTAL FACILITY SCORE ____

CHAPTER TOTAL POSSIBLE SCORE ____

PERCENTAGE THIS CHAPTER ____

AIRWAY FACILITIES EVALUATION ANALYSIS WORKSHEET

CHAPTER 8		OPERATIONAL IMPACT	CODE	SUPPORT FUNCTION	SITE SPECIFIC	SECTION TOTALS	PERCENTAGE PER SECTION
SECTION 1	FACILITY SCORE						
	TOTAL POSSIBLE						
DIVISION TOTALS	FACILITY SCORE						
	TOTAL POSSIBLE						
PERCENTAGE PER DIVISION							

CHAPTER TOTALS

CHAPTER TOTAL FACILITY SCORE ____

CHAPTER TOTAL POSSIBLE SCORE ____

PERCENTAGE THIS CHAPTER ____

AIRWAY FACILITIES EVALUATION ANALYSIS WORKSHEET

CHAPTER 9		OPERATIONAL IMPACT	CODE	SUPPORT FUNCTION	SITE SPECIFIC	SECTION TOTALS	PERCENTAGE PER SECTION
SECTION 1	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 2	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 3	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 4	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 5	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 6	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 7	FACILITY SCORE						
	TOTAL POSSIBLE						
DIVISION TOTALS	FACILITY SCORE						
	TOTAL POSSIBLE						
PERCENTAGE PER DIVISION							

CHAPTER TOTALS

CHAPTER TOTAL FACILITY SCORE ____

CHAPTER TOTAL POSSIBLE SCORE ____

PERCENTAGE THIS CHAPTER ____

AIRWAY FACILITIES EVALUATION ANALYSIS WORKSHEET

CHAPTER 10		OPERATIONAL IMPACT	CODE	SUPPORT FUNCTION	SITE SPECIFIC	SECTION TOTALS	PERCENTAGE PER SECTION
SECTION 1	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 2	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 3	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 4	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 5	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 6	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 7	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 8	FACILITY SCORE						
	TOTAL POSSIBLE						
DIVISION TOTALS	FACILITY SCORE						
	TOTAL POSSIBLE						
PERCENTAGE PER DIVISION							

CHAPTER TOTALS

CHAPTER TOTAL FACILITY SCORE ____

CHAPTER TOTAL POSSIBLE SCORE ____

PERCENTAGE THIS CHAPTER ____

AIRWAY FACILITIES EVALUATION ANALYSIS WORKSHEET

CHAPTER 11		OPERATIONAL IMPACT	CODE	SUPPORT FUNCTION	SITE SPECIFIC	SECTION TOTALS	PERCENTAGE PER SECTION
SECTION 1	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 2	FACILITY SCORE						
	TOTAL POSSIBLE						
SECTION 3	FACILITY SCORE						
	TOTAL POSSIBLE						
DIVISION TOTALS	FACILITY SCORE						
	TOTAL POSSIBLE						
PERCENTAGE PER DIVISION							

CHAPTER TOTALS

CHAPTER TOTAL FACILITY SCORE ____

CHAPTER TOTAL POSSIBLE SCORE ____

PERCENTAGE THIS CHAPTER ____

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AO _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
CHAPTER 6 - TOWER STRUCTURES, CONTROL CAB AND TRACON REQUIREMENTS						
Section 1 - Tower Structures						
113 Location		10				
114 Height		9				
115 Orientation		7				
116 Runway/Helipad Visibility		10				
117 Traffic Pattern Visibility		10				
118 Taxiway Visibility		10				
119 Other Movement Area Visibility		8				
120 Depth Perception		9				
121 Parking		6				

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
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TYPE _____
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AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
122 Accessibility		6				
123 Physical Condition/Appearance		6				
124 Fire Protection		8				
125 Air Quality		9				
126 Catwalks		2				
127 Stair		5				
128 Elevators		2				
129 Toilet Room		6				
130 Security		8				

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
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EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
CHAPTER 6 - TOWER STRUCTURES, CONTROL CAB AND TRACON REQUIREMENTS						
Section 2- Control Cab						
141 Cab Size		8				
142 Cab Shape		5				
143 Lighting - General		3				
144 Lighting - Task		9				
145 Ceiling - Height		9				
146 Ceiling - Color		6				
147 Acoustics		8				
148 Visibility & Obstructions - Internal		9				
149 Noise External		7				

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY

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FACILITY NAME _____

TYPE _____

LEVEL _____

AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
150 Physical Condition/Appearance		6				
151 Air Quality		7				
152 Glare		10				
153 Stray Illumination		10				
154 Proximity to TRACON Room		5				
155 Proximity to Training Room		5				
156 Proximity to Break Room/ Locker Room		5				
157 Proximity to Administrative Area		1				
158 Console - Height/Depth		8				
159 Drop Tubes		8				
160 Position Equipment Layout		7				

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

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FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
161 Interposition Work Flow		8				
162 Position/Reconfiguration Relocation Capability		5				
163 Equipment Replacement Capability		5				
164 Position Expansion Capability		9				
165 Supervisor's Work Area		5				
166 Convenience Area		5				
167 Storage		1				
168 Central Vacuum System		4				
169 Flooring		5				
170 Exhaust Fans		8				
171 Equipment Maintenance Accessibility		5				

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
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AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
172 Headset Storage		3				

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
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AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
CHAPTER 6 - TOWER STRUCTURES, CONTROL CAB AND TRACON REQUIREMENTS						
Section 3 - TRACON						
182 Size		9				
183 Shape		5				
184 Physical Condition		5				
185 Lighting - General		4				
186 Lighting - Task		9				
187 Ceiling - Height		6				
188 Ceiling - Color		4				
189 Acoustics		5				
190 Noise - Internal		5				

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
191 Noise - External		4				
192 Stray Illumination/Light Reflections		8				
193 Air Quality		7				
194 Parking		6				
195 Accessibility		4				
196 Proximity to Cab		5				
197 Proximity to Training Room		5				
198 Proximity to Toilets		5				
199 Proximity to Break Room/ Locker Rooms		5				
200 Proximity to Administrative Area		1				
201 Consoles		5				

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
202 Position Equipment Layout		7				
203 Interposition Work Flow		5				
204 Position Reconfiguration/ Relocation Capability		5				
205 Equipment Replacement Capability		5				
206 Position Expansion Capability		9				
207 Supervisor's Work Area		5				
208 Drinking Fountain		3				
209 Storage		2				
210 Central Vacuum System		4				
211 Flooring		5				
212 Exhaust Fans		5				

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY

AC _____

ITIN _____

INST _____

AIA _____

FACILITY NAME _____

TYPE _____

LEVEL _____

AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
213 Security		8				
214 Equipment Control Panel		5				
215 Display Boards		7				
216 Equipment Maintenance Accessibility		6				
217 Fire Protection		8				
218 Headset Storage		3				

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
CHAPTER 6 - TOWER STRUCTURES, CONTROL CAB AND TRACON REQUIREMENTS						
Section 4 - Administrative Space						
225 Air Traffic Manager (ATM)		10				
226 Assistant Air Traffic Manager (AATM)		9				
227 Traffic Management Coordinator (TMC)		8				
228 Assistant Manager Plans and Procedures (AMP)		6				
229 Assistant Manager for Training (AMT)		6				
230 Assistant Manager for Automation (AMA)		5				
231 Area Manager (AM)		8				
232 Area Supervisor (AS)		8				
233 Training Specialist (TS)		8				

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
234 Plans and Procedures Specialist (PPS)		8				
235 Automation Specialist (AUS)		8				
236 Quality Assurance Specialist (QAS)		8				
237 Quality Assurance and Training Specialist (QATS)		8				
238 Program Specialist (PS)		8				
239 Administrative Officer (AO)		8				
240 Education Specialist (EDS)		8				
241 Reception Area		1				
242 Secretarial Area		8				
243 Tranining Classroom		10				
244 Conference Room		5				

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
245 Break Room/Locker Room		10				
246 Toilet Rooms		7				
247 Tape Playback Room		8				
248 Storage		7				
249 Computer Based Instruction (CBI) Laboratory		7				
250 Janitor's Closet		1				
251 Functional Arrangment of Administrative Space		8				
252 Expansion		8				
253 Air Quality		7				
254 Lighting		5				
255 Physical Condition		5				

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
256 Acoustics		5				
257 Security		5				
258 Drinking Fountains		3				
259 Noise - Internal		6				
260 Noise - External		5				
261 Parking		4				
262 Accessibility		6				
263 Copy Machine Space		3				
264 Word Processing Space		3				
TOTALS						

AIR TRAFFIC EVALUATION WORKSHEET - PART 2

	NOTE: PLACE A CHECK MARK IN ONE OF THE FOLLOWING FOUR COLUMNS IF AN EQUIPMENT ITEM IS FOUND TO BE DEFICIENT.	PROBLEM EXISTS	EQUIPMENT REQUIRED BUT NOT AVAILABLE	SHOULD BE CONSIDERED FOR REPLACEMENT	OTHER	ANNUAL ACTIVITY AC _____ ITIN _____ INST _____ AIA _____ FACILITY NAME _____ TYPE _____ LEVEL _____ AUTHORIZED STAFFING _____
EQUIPMENT ITEM						**REMARKS**
1 Radar Displays						
2 BRITES						
3 BRITE Remote Control						
4 BANS Remote Control						
5 CONRAC MONITOR						
6 ARTS A/N Keyboard						
7 Transmitters						
8 Receivers						
9 Main Standby Selector Parcel						
10 RDO Control Equipment						

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AIR TRAFFIC EVALUATION WORKSHEET – PART 2

NOTE: PLACE A CHECK MARK IN ONE OF THE FOLLOWING FOUR COLUMNS IF AN EQUIPMENT ITEM IS FOUND TO BE DEFICIENT.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EQUIPMENT ITEM	PROBLEM EXISTS	EQUIPMENT REQUIRED BUT NOT AVAILABLE	SHOULD BE CONSIDERED FOR REPLACEMENT	OTHER	REMARKS
11 FOSP/FDIO					
12 Electrowriter					
13 RVR/RVV					
14 Wind Direction/Velocity					
15 LLWAS					
16 Clocks					
17 Altimeters					
18 NAVAID MONITORS					
19 Airport Lighting Panel					
20 Approach Light Controls					
21 Napers Computer					

AIR TRAFFIC EVALUATION WORKSHEET – PART 2

NOTE: PLACE A CHECK MARK IN ONE OF THE FOLLOWING FOUR COLUMNS IF AN EQUIPMENT ITEM IS FOUND TO BE DEFICIENT.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EQUIPMENT ITEM	PROBLEM EXISTS	EQUIPMENT REQUIRED BUT NOT AVAILABLE	SHOULD BE CONSIDERED FOR REPLACEMENT	OTHER	REMARKS
22 Intercom					
23 Door Release					
24 Light Guns					
25 TELCO Key System					
26 Drop Tube					
27 PCS					
28 ICSS					
29 CCTV Monitor					
30 Hygrothermometer					
31 Cloud Height Indicator					
32 Facility Tape Recorder					

AIR TRAFFIC EVALUATION WORKSHEET - PART 2

	NOTE: PLACE A CHECK MARK IN ONE OF THE FOLLOWING FOUR COLUMNS IF AN EQUIPMENT ITEM IS FOUND TO BE DEFICIENT.	PROBLEM EXISTS	EQUIPMENT REQUIRED BUT NOT AVAILABLE	SHOULD BE CONSIDERED FOR REPLACEMENT	OTHER	ANNUAL ACTIVITY AC _____ ITIN _____ INST _____ AIA _____ FACILITY NAME _____ TYPE _____ LEVEL _____ AUTHORIZED STAFFING _____
EQUIPMENT ITEM						**REMARKS**
33	Data Display System					
34	AWOS Monitor					
35	Video Map Selector					
36	Airport Surface Detection Equipment (ASDE)					
37	ATIS					
38	Transceivers					
39	MSAW Oral Alarm					
40	Conflict Alert Oral Alarm					
41	10 Channel Beacon Decoders					
42	Drinking Fountain					
43	Binoculars					

AIR TRAFFIC EVALUATION WORKSHEET - PART 2

	NOTE: PLACE A CHECK MARK IN ONE OF THE FOLLOWING FOUR COLUMNS IF AN EQUIPMENT ITEM IS FOUND TO BE DEFICIENT.	PROBLEM EXISTS	EQUIPMENT REQUIRED BUT NOT AVAILABLE	SHOULD BE CONSIDERED FOR REPLACEMENT	OTHER	ANNUAL ACTIVITY AC _____ ITIN _____ INST _____ AIA _____ FACILITY NAME _____ TYPE _____ LEVEL _____ AUTHORIZED STAFFING _____
EQUIPMENT ITEM						REMARKS

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
CHAPTER 7 AIRWAY FACILITIES BUILDING REQUIREMENTS							
SECTION 1 - Space Requirements							
275 Administrative Space		5					
276 Locker Space		3					
277 Toilet Rooms		5					
278 Communications Equipment Room		9					
279 Radar Equipment Room		9					
280 Telephone Equipment Room		6					
281 Engine Generator Room		7					
282 Mechanical Equipment Room		6					
283 Electrical Equipment Room		6					

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION				REMARKS
				OPERATIONAL IMPACT	CODES	SUPPORT FUNCTION	SITE SPECIFIC	
284	PCS/Battery Rooms		7					
285	Storage Rooms		3					
286	Cable Chases		6					
287	Internal Flexibility		7					
288	Building Expansion		7					
289-297	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION				REMARKS
				OPERATIONAL IMPACT	CODES	SUPPORT FUNCTION	SITE SPECIFIC	
	SECTION 2 - Building Code							
298	Number of Exits		10					
299	Exit Distance		8					
300	Labeled Doors		8					
301	Corridors		6					
302	Stairways, General		8					
303	Tower Stairs		8					
304	Fire Walls		6					
305	Fireproofing		6					
306-315	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 3 - General Requirements							
316 Windows		3					
317 Cab Windows		8					
318 Exterior Doors		5					
319 Interior Doors		4					
320 Interior Walls		2					
321 Ceilings		2					
322 Floors		2					
323 Roofing		5					
324 Asbestos		9					
325 Catwalk		5					

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION				REMARKS
				OPERATIONAL IMPACT	CODES	SUPPORT FUNCTION	SITE SPECIFIC	
326	Equipment Access to the Cab		5					
327	Exterior Envelope		5					
328	Elevator		5					
329	Signage		2					
330	Security		8					
331-340	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 4 - Provisions for Physically Handicapped							
341 Curb Ramps		2					
342 Ramps		5					
343 Entrance Doors		5					
344 Passageways		5					
345 Stairs		6					
346 Toilets		4					
347 Hazards		4					
348 Parking		3					
349 Elevators		5					
350 Miscellaneous		5					

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION				REMARKS
			OPERATIONAL IMPACT	CODES	SUPPORT FUNCTION	SITE SPECIFIC	
351-360 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
CHAPTER 8 - STRUCTURAL							
361 Settlement		9					
362 Deterioration of Structural Members		10					
363 Modifications to Structures		6					
364 Live Loads		6					
365-374 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	CHAPTER 9 - MECHANICAL SYSTEMS							
	SECTION 1 - Heating Systems							
375	Boilers (Hot Water/Steam Gas, and Oil)		9					
376	Heat Exchangers (Shell-in-Tube)		8					
377	Feedwater/Circulating Pumpsets		8					
378	Steam/Condensate Piping		6					
379	Heating Hot Water Piping		6					
380	Forced Air Furnaces (Gas/Electric/Oil)		9					
381	Fintube/Radiators/Convection Untis		4					
382	Cabinet Unit Heaters (Steam/Hydronic/Electric)		4					
383	Electric Heating Coils (All Types)		5					

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
384 Steam/Hot Water Heating Coils		6					
385 Unit Ventilators		4					
386-395 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	SECTION 2 - Cooling Systems							
396	Liquid/Refrigerant Chillers (Water Cooled/Air Cooled)		9					
397	Split Systems (Direct Expansion) Condensing Units		9					
398	Cooling Towers		7					
399	Closed Loop (Air Cooled) Condensers		7					
400	Heat Pumps (Air to Air)		9					
401	Self-Contained Air Conditioners		5					
402	Chilled Water/(Condenser Water) Pumpsets'		7					
403	Chilled Water/(Condenser Water) Piping		6					
404	Refrigerant Piping		6					
405	Chilled Water Coils		7					

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
406 Refregerant Coils (Evaporator Condenser)		7					
407-416 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 3 - Air Distribution Systems								
417	Air Handling (Packaged/Built-Up) Systems		8					
418	Ventilation and Exhaust Fan Systems		4					
419	Fancoil Units		5					
420	Louvers		2					
421	Mixing Boxes		5					
422	Ductwork/Dampers (General)		4					
423	Air Distribution System Balancing		5					
424-433	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION				REMARKS
			OPERATIONAL IMPACT	CODES	SUPPORT FUNCTION	SITE SPECIFIC	
SECTION 4 - HVAC Control Systems							
434 Pneumatic Systems/Components		8					
435 Electric Control Wiring		8					
436 Control Components (Pneumatic/Electric)		8					
437-446 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 5 - Potable Water Systems							
447 Well/Circulating/Booster Pumpsets		4					
448 Distribution Piping (Potable Water)		3					
449 Hot Water Heaters (Electric/Gas)		3					
450 Tanks Diaphragm/Storage)		3					
451-460 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	SECTION 6- Fire Protection Systems							
461	Automatic Sprinkler Systems		10					
462	Automatic Total Flooding Gas Extinguishment Systems		10					
463-472	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 7 - Miscellaneous Systems and Equipment							
473 Sanitary Fixtures and Fittings		2					
474 Fuel Oil Storage and Distribution Piping		7					
475 Natural Gas Distribution Piping		8					
476-485 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
CHAPTER 10 - ELETRICAL SYSTEMS							
SECTION 1 - Exterior Systems							
486 Obstruction Lights		4					
487 Exterior Building Receptacles		3					
488-497 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION				REMARKS
				OPERATIONAL IMPACT	CODES	SUPPORT FUNCTION	SITE SPECIFIC	
	SECTION 2 - Building Service							
498	Primary Switchgear		8					
499	Oil-Filled Transformer		8					
500	Secondary Feeders		6					
501-510	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	SECTION 3 - Building Distribution							
511	Service Disconnect Switch		10					
512	Critical Main Distribution Panel		10					
513	Essential Main Distribution Panel		9					
514	Non-essential Main Distribution Panel		5					
515	Panelboards		5					
516	Circuit Breakers/Fusible Switches		4					
517	Dry Type Transformers		3					
518	Conductors		6					
519	Conduits, Cable Trays or Wireways		5					
520	Receptacles		3					

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION				REMARKS
			OPERATIONAL IMPACT	CODES	SUPPORT FUNCTION	SITE SPECIFIC	
521-530 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 4 - Motor Controls							
531 Disconnect Switches		4					
532 Starters		6					
533-542 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 5 - Lighting							
543 Illumination Levels		4					
544 Exit Lights		8					
545 Light Switches/Dimmers		4					
546-555 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 6 - Communication System							
556 Fire Alarm System		10					
557 Intercom System		3					
558-567 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRE

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION				REMARKS
				OPERATIONAL IMPACT	CODES	SUPPORT FUNCTION	SITE SPECIFIC	
	SECTION 7 - Standby Power System							
568	CAB DC Power System		10					
569	Battery Operated Lighting System		7					
570	Emergency Lighting		8					
571	Engine Generator		10					
572	Transfer Switch		10					
573-582	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 8 - Special Systems							
583 Grounding		7					
584 Lightning Protection		6					
585 Surge Protection		5					
586 Unbalanced and Single-Phased Main Feeder Protection		7					
587 Power Conditioning System (PCS)		8					
588-597 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
CHAPTER 11 - SITE SPECIFIC							
SECTION 1 - Sitework							
598 Access Roads		4					
599 Parking Area		4					
600 Sidewalks		4					
601 Storm Drainage		3					
602-611 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	SECTION 2 - Mechanical							
612	Sanitary Drainage Piping		4					
613	Storm Water Drainage Piping		3					
614	Subsoil Drainage Piping		3					
615	Central Vacuum Systems		4					
616	(LP)/Propane Gas Distribution Piping		8					
617	Standpipe Systems (Wet/Dry)		10					
618	Seismic Bracing (Equipment/Piping)		8					
619	Solar Collectors (Air)		4					
620	Humidifiers		5					
621	Evaporator (Swamp) Coolers and Condensers		7					

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
622 Absorption Chillers		9					
623 Sewage Treatment Facility		7					
624 Sump Pumps		4					
625-634 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 3 - Electrical							
635 Site Lighting		3					
636 Car Heater Receptacles		3					
637 Heat Tapes		3					
638-647 Reserved							

AIR TRAFFIC EVALUATION ANALYSIS WORKSHEET

CHAPTER 6		OPERATIONAL IMPACT	PEOPLE IMPACT	MANAGEMENT IMPACT	SECTION TOTALS	PERCENTAGE PER SECTION
SECTION 1	FACILITY SCORE	89	89	0	178	34%
	TOTAL POSSIBLE	332	192	0	524	
SECTION 2	FACILITY SCORE	290	41	45	376	47%
	TOTAL POSSIBLE	596	132	68	796	
SECTION 3	FACILITY SCORE	161	84	26	271	34%
	TOTAL POSSIBLE	500	224	72	796	
SECTION 4	FACILITY SCORE	0	148	292	440	47%
	TOTAL POSSIBLE	0	308	632	940	
IMPACT TOTALS	FACILITY SCORE	540	362	363		
	TOTAL POSSIBLE	1428	856	772		
PERCENTAGE PER IMPACT		38%	42%	47%		

CHAPTER TOTALS

CHAPTER TOTAL FACILITY SCORE 1265

CHAPTER TOTAL POSSIBLE SCORE 3056

PERCENTAGE THIS CHAPTER 41%

AIRWAY FACILITIES EVALUATION ANALYSIS WORKSHEET

CHAPTER 7		OPERATIONAL IMPACT	CODE	SUPPORT FUNCTION	SITE SPECIFIC	SECTION TOTALS	PERCENTAGE PER SECTION
SECTION 1	FACILITY SCORE	37	0	139	18	194	56%
	TOTAL POSSIBLE	100	0	196	48	344	
SECTION 2	FACILITY SCORE	0	52	0	0	52	22%
	TOTAL POSSIBLE	0	240	0	0	240	
SECTION 3	FACILITY SCORE	16	0	45	0	61	24%
	TOTAL POSSIBLE	64	0	180	9	253	
SECTION 4	FACILITY SCORE	0	54	0	0	54	31
	TOTAL POSSIBLE	0	176	0	0	176	
DIVISION TOTALS	FACILITY SCORE	53	106	184	18		
	TOTAL POSSIBLE	164	416	376	57		
PERCENTAGE PER DIVISION		32%	25%	49%	32%		

CHAPTER TOTALS

CHAPTER TOTAL FACILITY SCORE 361

CHAPTER TOTAL POSSIBLE SCORE 1013

PERCENTAGE THIS CHAPTER 36%

AIRWAY FACILITIES EVALUATION ANALYSIS WORKSHEET

CHAPTER 8		OPERATIONAL IMPACT	CODE	SUPPORT FUNCTION	SITE SPECIFIC	SECTION TOTALS	PERCENTAGE PER SECTION
SECTION 1	FACILITY SCORE	0	0	6	0	6	5%
	TOTAL POSSIBLE	0	0	124	0	124	
DIVISION TOTALS	FACILITY SCORE	0	0	6	0		
	TOTAL POSSIBLE	0	0	124	0		
PERCENTAGE PER DIVISION				5%			

CHAPTER TOTALS

CHAPTER TOTAL FACILITY SCORE 6

CHAPTER TOTAL POSSIBLE SCORE 124

PERCENTAGE THIS CHAPTER 5%

AIRWAY FACILITIES EVALUATION ANALYSIS WORKSHEET

CHAPTER 9		OPERATIONAL IMPACT	CODE	SUPPORT FUNCTION	SITE SPECIFIC	SECTION TOTALS	PERCENTAGE PER SECTION
SECTION 1	FACILITY SCORE	0	9	22	22	53	32%
	TOTAL POSSIBLE	0	36	72	56	164	
SECTION 2	FACILITY SCORE	14	0	30	0	44	23%
	TOTAL POSSIBLE	64	0	124	0	188	
SECTION 3	FACILITY SCORE	0	0	23	0	23	17%
	TOTAL POSSIBLE	0	16	116	0	132	
SECTION 4	FACILITY SCORE	0	0	16	0	16	25%
	TOTAL POSSIBLE	0	0	64	0	64	
SECTION 5	FACILITY SCORE	0	0	13	0	13	25%
	TOTAL POSSIBLE	0	0	52	0	52	
SECTION 6	FACILITY SCORE	0	0	0	0	0	0%
	TOTAL POSSIBLE	0	40	0	0	40	
SECTION 7	FACILITY SCORE	0	0	8	0	8	22%
	TOTAL POSSIBLE	0	28	8	0	36	
DIVISION TOTALS	FACILITY SCORE	14	9	112	22		
	TOTAL POSSIBLE	64	120	436	56		
PERCENTAGE PER DIVISION		22%	8%	26%	39%		

CHAPTER TOTALS

CHAPTER TOTAL FACILITY SCORE 157

CHAPTER TOTAL POSSIBLE SCORE 676

PERCENTAGE THIS CHAPTER 23%

AIRWAY FACILITIES EVALUATION ANALYSIS WORKSHEET

CHAPTER 10		OPERATIONAL IMPACT	CODE	SUPPORT FUNCTION	SITE SPECIFIC	SECTION TOTALS	PERCENTAGE PER SECTION
SECTION 1	FACILITY SCORE	0	0	12	0	12	43%
	TOTAL POSSIBLE	0	16	12	0	28	
SECTION 2	FACILITY SCORE	22	0	0	0	22	25%
	TOTAL POSSIBLE	88	0	0	0	88	
SECTION 3	FACILITY SCORE	29	0	49	0	78	33%
	TOTAL POSSIBLE	76	0	164	0	240	
SECTION 4	FACILITY SCORE	0	0	16	0	16	40%
	TOTAL POSSIBLE	0	0	40	0	40	
SECTION 5	FACILITY SCORE	0	8	16	0	24	38%
	TOTAL POSSIBLE	0	32	32	0	64	
SECTION 6	FACILITY SCORE	0	10	6	0	16	31%
	TOTAL POSSIBLE	0	40	12	0	52	
SECTION 7	FACILITY SCORE	55	0	0	0	55	31%
	TOTAL POSSIBLE	180	0	0	0	180	
SECTION 8	FACILITY SCORE	46	0	28	0	74	71%
	TOTAL POSSIBLE	76	0	28	0	104	
DIVISION TOTALS	FACILITY SCORE	152	18	127	0		
	TOTAL POSSIBLE	420	88	288	0		
PERCENTAGE PER DIVISION		36%	20%	44%	0%		

CHAPTER TOTALS

CHAPTER TOTAL FACILITY SCORE 297

CHAPTER TOTAL POSSIBLE SCORE 796

PERCENTAGE THIS CHAPTER 37%

AIRWAY FACILITIES EVALUATION ANALYSIS WORKSHEET

CHAPTER 11		OPERATIONAL IMPACT	CODE	SUPPORT FUNCTION	SITE SPECIFIC	SECTION TOTALS	PERCENTAGE PER SECTION
SECTION 1	FACILITY SCORE	0	0	16	0	16	27%
	TOTAL POSSIBLE	0	0	60	0	60	
SECTION 2	FACILITY SCORE	0	0	9	0	9	11%
	TOTAL POSSIBLE	0	0	76	4	80	
SECTION 3	FACILITY SCORE	0	0	9	0	9	75%
	TOTAL POSSIBLE	0	0	12	0	12	
DIVISION TOTALS	FACILITY SCORE	0	0	34	0		
	TOTAL POSSIBLE	0	0	148	4		
PERCENTAGE PER DIVISION		-	-	23%	0		

CHAPTER TOTALS

CHAPTER TOTAL FACILITY SCORE 34

CHAPTER TOTAL POSSIBLE SCORE 152

PERCENTAGE THIS CHAPTER 23%

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
CHAPTER 6 - TOWER STRUCTURES, CONTROL CAB AND TRACON REQUIREMENTS						
Section 1 - Tower Structures						
113 Location	0	10	0			
114 Height	2	9	18			
115 Orientation	0	7	0			
116 Runway/Helipad Visibility	1	10	10			
117 Traffic Pattern Visibility	1	10	10			
118 Taxiway Visibility	1	10	10			
119 Other Movement Area Visibility	1	8	8			
120 Depth Perception	3	9	27			
121 Parking	2	6		12		

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
122 Accessibility	2	6		12		
123 Physical Condition/Appearance	4	6		24		
124 Fire Protection	1	8		8		
125 Air Quality	2	9		18		
126 Catwalks	3	2	6			
127 Stair	3	5		15		
128 Elevators	0	2		0		
129 Toilet Room	0	6		0		
130 Security	0	8	0			

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
CHAPTER 6 - TOWER STRUCTURES, CONTROL CAB AND TRACON REQUIREMENTS						
Section 2- Control Cab						
141 Cab Size	3	8	24			
142 Cab Shape	0	5	0			
143 Lighting - General	1	3	3			
144 Lighting - Task	2	9	18			
145 Ceiling - Height	0	9	0			
146 Ceiling - Color	0	6	0			
147 Acoustics	3	8	24			
148 Visibility & Obstructions - Internal	1	9	9			
149 Noise External	2	7	14			

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
150 Physical Condition/Appearance	4	6	24			
151 Air Quality	1	7		7		
152 Glare	2	10	20			
153 Stray Illumination	1	10	10			
154 Proximity to TRACON Room	3	5			15	
155 Proximity to Training Room	3	5			15	
156 Proximity to Break Room/ Locker Room	2	5		10		
157 Proximity to Administrative Area	1	1			1	
158 Console - Height/Depth	2	8	16			
159 Drop Tubes	0	8	0			
160 Position Equipment Layout	3	7	21			

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
161 Interposition Work Flow	2	8	16			
162 Position/Reconfiguration Relocation Capability	4	5	20			
163 Equipment Replacement Capability	4	5	20			
164 Position Expansion Capability	4	9	36			
165 Supervisor's Work Area	2	5			10	
166 Convenience Area	0	5		0		
167 Storage	4	1			4	
168 Central Vacuum System	0	4	0			
169 Flooring	0	5		0		
170 Exhaust Fans	3	8		24		
171 Equipment Maintenance Accessibility	3	5	15			

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
172 Headset Storage	0	3		0		

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
CHAPTER 6 - TOWER STRUCTURES, CONTROL CAB AND TRACON REQUIREMENTS						
Section 3 - TRACON						
182 Size	0	9	0			
183 Shape	0	5	0			
184 Physical Condition	3	5		15		
185 Lighting - General	1	4	4			
186 Lighting - Task	1	9	9			
187 Ceiling - Height	0	6	0			
188 Ceiling - Color	0	4	0			
189 Acoustics	2	5	10			
190 Noise - Internal	2	5	10			

AIR TRAFFIC EVALUATION WORKSHEET - PART. 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
191 Noise - External	2	4	8			
192 Stray Illumination/Light Reflections	1	8	8			
193 Air Quality	3	7		21		
194 Parking	3	6		18		
195 Accessibility	3	4		12		
196 Proximity to Cab	3	5			15	
197 Proximity to Training Room	0	5			0	
198 Proximity to Toilets	0	5		0		
199 Proximity to Break Room/ Locker Rooms	0	5		0		
200 Proximity to Administrative Area	0	1			0	
201 Consoles	1	5	5			

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
202 Position Equipment Layout	1	7	7			
203 Interposition Work Flow	2	5	10			
204 Position Reconfiguration/ Relocation Capability	4	5	20			
205 Equipment Replacement Capability	2	5	10			
206 Position Expansion Capability	4	9	36			
207 Supervisor's Work Area	1	5			5	
208 Drinking Fountain	0	3		0		
209 Storage	3	2			6	
210 Central Vacuum System	0	4	0			
211 Flooring	0	5		0		
212 Exhaust Fans	2	5		10		

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
213 Security	0	8	0			
214 Equipment Control Panel	1	5	5			
215 Display Boards	1	7	7			
216 Equipment Maintenance Accessibility	2	6	12			
217 Fire Protection	1	8		8		
218 Headset Storage	0	3		0		

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
CHAPTER 6 - TOWER STRUCTURES, CONTROL CAB AND TRACON REQUIREMENTS						
Section 4 - Administrative Space						
225 Air Traffic Manager (ATM)	2	10			20	
226 Assistant Air Traffic Manager (AATM)	2	9			18	
227 Traffic Management Coordinator (TMC)	NA	8			NA	
228 Assistant Manager Plans and Procedures (AMP)	1	6			6	
229 Assistant Manager for Training (AMT)	1	6			6	
230 Assistant Manager for Automation (AMA)	2	5			10	
231 Area Manager (AM)	2	8			16	
232 Area Supervisor (AS)	3	8			24	
233 Training Specialist (TS)	1	8			8	

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
234 Plans and Procedures Specialist (PPS)	2	8			16	
235 Automation Specialist (AS)	2	8			16	
236 Quality Assurance Specialist (QAS)	1	8			8	
237 Quality Assurance and Training Specialist (QATS)	NA	8			NA	
238 Program Specialist (PS)	2	8			16	
239 Administrative Officer (AO)	1	8			8	
240 Education Specialist (ES)	1	8			8	
241 Reception Area	3	1			3	
242 Secretarial Area	3	8		24		
243 Tranining Classroom	3	10		30		
244 Conference Room	2	5		10		

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
245	Break Room/Locker Room	2	10			20	
246	Toilet Rooms	2	7			14	
247	Tape Playback Room	0	8			0	
248	Storage	4	7			28	
249	Computer Based Instruction (CBI) Laboratory	NA	7			NA	
250	Janitor's Closet	1	1			1	
251	Functional Arrangment of Administrative Space	2	8		16		
252	Expansion	4	8			32	
253	Air Quality	1	7		7		
254	Lighting	2	5		10		
255	Physical Condition	3	5		15		

AIR TRAFFIC EVALUATION WORKSHEET - PART 1

DEFICIENCY SCORE	
0	NO DEFICIENCY
1	MINOR DEFICIENCY
2	MODERATE DEFICIENCY
3	SIGNIFICANT DEFICIENCY
4	MAJOR DEFICIENCY

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH IMPACT COLUMN.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	IMPACT: OPERATIONAL IMPACT	IMPACT: PEOPLE IMPACT	IMPACT: MANAGEMENT IMPACT	REMARKS
256 Acoustics	1	5		5		
257 Security	1	5			5	
258 Drinking Fountains	0	3		0		
259 Noise - Internal	1	6		6		
260 Noise - External	1	5		5		
261 Parking	2	4		8		
262 Accessibility	2	6		12		
263 Copy Machine Space	NA	3			NA	
264 Word Processing Space	3	3			9	
TOTALS						

AIR TRAFFIC EVALUATION WORKSHEET – PART 2

NOTE: PLACE A CHECK MARK IN ONE OF THE FOLLOWING FOUR COLUMNS IF AN EQUIPMENT ITEM IS FOUND TO BE DEFICIENT.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EQUIPMENT ITEM	PROBLEM EXISTS	EQUIPMENT REQUIRED BUT NOT AVAILABLE	SHOULD BE CONSIDERED FOR REPLACEMENT	OTHER	REMARKS
1 Radar Displays					
2 BRITES					
3 BRITE Remote Control	✓				
4 BANS Remote Control					
5 CONRAC MONITOR		✓			
6 ARTS A/N Keyboard					
7 Transmitters					
8 Receivers					
9 Main Standby Selector Parcel	✓				
10 RDO Control Equipment					

AIR TRAFFIC EVALUATION WORKSHEET - PART 2

NOTE: PLACE A CHECK MARK IN ONE OF THE FOLLOWING FOUR COLUMNS IF AN EQUIPMENT ITEM IS FOUND TO BE DEFICIENT.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EQUIPMENT ITEM	PROBLEM EXISTS	EQUIPMENT REQUIRED BUT NOT AVAILABLE	SHOULD BE CONSICERED FOR REPLACEMENT	OTHER	REMARKS
11 FOSP/FDIO					
12 Electrowriter	✓				
13 RVR/RVV					
14 Wind Direction/Velocity		✓			
15 LLWSAS					
16 Clocks			✓		
17 Altimeters		✓			
18 NAVAID MONITORS					
19 Airport Lighting Panel	✓				
20 Approach Light Controls					
21 Napers Computer					

AIR TRAFFIC EVALUATION WORKSHEET – PART 2

NOTE: PLACE A CHECK MARK IN ONE OF THE FOLLOWING FOUR COLUMNS IF AN EQUIPMENT ITEM IS FOUND TO BE DEFICIENT.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EQUIPMENT ITEM	PROBLEM EXISTS	EQUIPMENT REQUIRED BUT NOT AVAILABLE	SHOULD BE CONSIDERED FOR REPLACEMENT	OTHER	REMARKS
22 Intercom			✓		
23 Door Release					
24 Light Guns			✓		
25 TELCO Key System					
26 Drop Tube					
27 PCS			✓		
28 ICSS		✓			
29 CCTV Monitor					
30 Hygrothermometer					
31 Cloud Height Indicator					
32 Facility Tape Recorder			✓		

AIR TRAFFIC EVALUATION WORKSHEET – PART 2

NOTE: PLACE A CHECK MARK IN ONE OF THE FOLLOWING FOUR COLUMNS IF AN EQUIPMENT ITEM IS FOUND TO BE DEFICIENT.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EQUIPMENT ITEM	PROBLEM EXISTS	EQUIPMENT REQUIRED BUT NOT AVAILABLE	SHOULD BE CONSIDERED FOR REPLACEMENT	OTHER	REMARKS
33 Data Display System					
34 AWOS Monitor					
35 Video Map Selector	✓				
36 ASDS					
37 ATIS					
38 Transceivers					
39 MSAW Oral Alarm					
40 Conflict Alert Oral Alarm					
41 10 Channel Beacon Decoders					
42 Drinking Fountain					
43 Binoculars					

AIR TRAFFIC EVALUATION WORKSHEET – PART 2

NOTE: PLACE A CHECK MARK IN ONE OF THE FOLLOWING FOUR COLUMNS IF AN EQUIPMENT ITEM IS FOUND TO BE DEFICIENT.

ANNUAL ACTIVITY
AC _____
ITIN _____
INST _____
AIA _____

FACILITY NAME _____
TYPE _____
LEVEL _____
AUTHORIZED STAFFING _____

EQUIPMENT ITEM	PROBLEM EXISTS	EQUIPMENT REQUIRED BUT NOT AVAILABLE	SHOULD BE CONSIDERED FOR REPLACEMENT	OTHER	REMARKS

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
CHAPTER 7 AIRWAY FACILITIES BUILDING REQUIREMENTS							
SECTION 1 - Space Requirements							
275 Administrative Space	2	5			10		
276 Locker Space	1	3			3		
277 Toilet Rooms	1	5	5				
278 Communications Equipment Room	3	9			27		
279 Radar Equipment Room	3	9			27		
280 Telephone Equipment Room	3	6			18		
281 Engine Generator Room	1	7	7				
282 Mechanical Equipment Room	2	6				12	
283 Electrical Equipment Room	1	6				6	

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION				REMARKS
				OPERATIONAL IMPACT	CODES	SUPPORT FUNCTION	SITE SPECIFIC	
284	PCS/Battery Rooms	1	7	7				
285	Storage Rooms	4	3			12		
286	Cable Chases	3	6	18				
287	Internal Flexibility	2	7			14		
288	Building Expansion	4	7			28		
289-297	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	SECTION 2 - Building Code							
298	Number of Exits	0	10		0			
299	Exit Distance	0	8		0			
300	Labeled Doors	1	8		8			
301	Corridors	1	6		6			
302	Stairways, General	2	8		16			
303	Tower Stairs	2	8		16			
304	Fire Walls	1	6		6			
305	Fireproofing	0	6		0			
306-315	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	SECTION 3 - General Requirements							
316	Windows	3	3			9		
317	Cab Windows	1	8	8				
318	Exterior Doors	1	5			5		
319	Interior Doors	1	4			4		
320	Interior Walls	1	2			2		
321	Ceilings	0	2			0		
322	Floors	0	2			0		
323	Roofing	0	5			0		
324	Asbestos	0	9				0	
325	Catwalk	0	5			0		

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
326	Equipment Access to the Cab	3	5			15		
327	Exterior Envelope	1	5			5		
328	Elevator	1	5			5		
329	Signage	0	2			0		
330	Security	1	8	8				
331-340	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 4 - Provisions for Physically Handicapped							
341 Curb Ramps	2	2		4			
342 Ramps	0	5		0			
343 Entrance Doors	1	5		5			
344 Passageways	0	5		0			
345 Stairs	3	6		18			
346 Toilets	2	4		8			
347 Hazards	0	4		0			
348 Parking	3	3		9			
349 Elevators	1	5		5			
350 Miscellaneous	1	5		5			

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION				REMARKS
			OPERATIONAL IMPACT	CODES	SUPPORT FUNCTION	SITE SPECIFIC	
351-360 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	CHAPTER 8 - STRUCTURAL							
361	Settlement	0	9			0		
362	Deterioration of Structural Members	0	10			0		
363	Modifications to Structures	1	6			6		
364	Live Loads	0	6			0		
365-374	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
CHAPTER 9 - MECHANICAL SYSTEMS								
SECTION 1 - Heating Systems								
375	Boilers (Hot Water/Steam Gas, and Oil)	1	9		9			
376	Heat Exchangers (Shell-in-Tube)	NA	8				NA	
377	Feedwater/Circulating Pumpsets	2	8				16	
378	Steam/Condensate Piping	1	6				6	
379	Heating Hot Water Piping	NA	6				NA	
380	Forced Air Furnaces (Gas/Electric/Oil)	NA	9				NA	
381	Fintube/Radiators/Convection Untis	2	4			8		
382	Cabinet Unit Heaters (Steam/Hydronic/Electric)	1	4			4		
383	Electric Heating Coils (All Types)	NA	5			NA		

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
384	Steam/Hot Water Heating Coils	1	6			6		
385	Unit Ventilators	1	4			4		
386-395	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

	EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	SECTION 2 - Cooling Systems							
396	Liquid/Refrigerant Chillers (Water Cooled/Air Cooled)	0	9	0				
397	Split Systems (Direct Expansion) Condensing Units	NA	9	NA				
398	Cooling Towers	NA	7	NA				
399	Closed Loop (Air Cooled) Condensers	NA	7	NA				
400	Heat Pumps (Air to Air)	NA	9	NA				
401	Self-Contained Air Conditioners	1	5			5		
402	Chilled Water/(Condenser Water) Pumpsets'	2	7	14				
403	Chilled Water/(Condenser Water) Piping	2	6			12		
404	Refrigerant Piping	1	6			6		
405	Chilled Water Coils	1	7			7		

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
406 Refregerant Coils (Evaporator Condenser)	0	7			0		
407-416 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 3 - Air Distribution Systems								
417	Air Handling (Packaged/Built-Up) Systems	1	8			8		
418	Ventilation and Exhaust Fan Systems	0	4		0			
419	Fancoil Units	2	5			10		
420	Louvers	0	2			0		
421	Mixing Boxes	0	5			0		
422	Ductwork/Dampers (General)	0	4			0		
423	Air Distribution System Balancing	1	5			5		
424-433	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	SECTION 4 - HVAC Control Systems							
434	Pneumatic Systems/Components	1	8			8		
435	Electric Control Wiring	NA	8			NA		
436	Control Components (Pneumatic/Electric)	1	8			8		
437-446	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 5 - Potable Water Systems								
447	Well/Circulating/Booster Pumpsets	1	4			4		
448	Distribution Piping (Potable Water)	1	3			3		
449	Hot Water Heaters (Electric/Gas)	0	3			0		
450	Tanks Diaphragm/Storage)	2	3			6		
451-460	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	SECTION 6- Fire Protection Systems							
461	Automatic Sprinkler Systems	0	10		0			
462	Automatic Total Flooding Gas Extinguishment Systems	NA	10		NA			
463-472	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	SECTION 7 - Miscellaneous Systems and Equipment							
473	Sanitary Fixtures and Fittings	1	2			2		
474	Fuel Oil Storage and Distribution Piping	0	7		0			
475	Natural Gas Distribution Piping	NA	8		NA			
476-485	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	CHAPTER 10 - ELETRICAL SYSTEMS							
	SECTION 1 - Exterior Systems							
486	Obstruction Lights	0	4		0			
487	Exterior Building Receptacles	4	3			12		
488-497	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	SECTION 2 - Building Service							
498	Primary Switchgear	1	8	8				
499	Oil-Filled Transformer	1	8	8				
500	Secondary Feeders	1	6	6				
501-510	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	SECTION 3 - Building Distribution							
511	Service Disconnect Switch	1	10			10		
512	Critical Main Distribution Panel	2	10	20				
513	Essential Main Distribution Panel	1	9	9				
514	Non-essential Main Distribution Panel	1	5			5		
515	Panelboards	1	5			5		
516	Circuit Breakers/Fusible Switches	1	4			4		
517	Dry Type Transformers	1	3			3		
518	Conductors	1	6			6		
519	Conduits, Cable Trays or Wireways	2	5			10		
520	Receptacles	2	3			6		

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION				REMARKS
			OPERATIONAL IMPACT	CODES	SUPPORT FUNCTION	SITE SPECIFIC	
521-530 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 4 - Motor Controls							
531 Disconnect Switches	1	4			4		
532 Starters	2	6			12		
533-542 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 5 - Lighting							
543 Illumination Levels	3	4			12		
544 Exit Lights	1	8		8			
545 Light Switches/Dimmers	1	4			4		
546-555 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 6 - Communication System							
556 Fire Alarm System	1	10		10			
557 Intercom System	2	3			6		
558-567 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM	DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
SECTION 7 - Standby Power System							
568 CAB DC Power System	1	10	10				
569 Battery Operated Lighting System	3	7	21				
570 Emergency Lighting	3	8	24				
571 Engine Generator	0	10	0				
572 Transfer Switch	0	10	0				
573-582 Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION				REMARKS
				OPERATIONAL IMPACT	CODES	SUPPORT FUNCTION	SITE SPECIFIC	
	SECTION 8 - Special Systems							
583	Grounding	0	7		0			
584	Lightning Protection	3	6	18				
585	Surge Protection	4	5	20				
586	Unbalanced and Single-Phased Main Feeder Protection	4	7			28		
587	Power Conditioning System (PCS)	1	8	8				
588-597	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	CHAPTER 11 - SITE SPECIFIC							
	SECTION 1 - Sitework							
598	Access Roads	1	4			4		
599	Parking Area	1	4			4		
600	Sidewalks	2	4			8		
601	Storm Drainage	0	3			0		
602-611	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	SECTION 2 - Mechanical							
612	Sanitary Drainage Piping	0	4			0		
613	Storm Water Drainage Piping	0	3			0		
614	Subsoil Drainage Piping	0	3			0		
615	Central Vacuum Systems	1	4			4		
616	(LP)/Propane Gas Distribution Piping	NA	8			NA		
617	Standpipe Systems (Wet/Dry)	NA	10		NA			
618	Seismic Bracing (Equipment/Piping)	NA	8		NA			
619	Solar Collectors (Air)	NA	4				NA	
620	Humidifiers	1	5			5		
621	Evaporator (Swamp) Coolers and Condensers	NA	7				NA	

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
622	Absorption Chillers	NA	9				NA	
623	Sewage Treatment Facility	NA	7				NA	
624	Sump Pumps	0	4				0	
625-634	Reserved							

AIRWAY FACILITIES EVALUATION WORKSHEET

DEFICIENCY SCORE	
0	NO WORK REQUIRED
1	MINOR REPAIR REQUIRED
2	MODERATE REPAIR REQUIRED
3	MAJOR REPAIR REQUIRED
4	REPLACEMENT OR INSTALLATION REQUIRED

NOTE: ENTER THE DEFICIENCY SCORE x THE RELATIVE IMPORTANCE FACTOR IN EACH DIVISION COLUMN

EVALUATION ITEM		DEFICIENCY SCORE	RELATIVE IMPORTANCE FACTOR	DIVISION: OPERATIONAL IMPACT	DIVISION: CODES	DIVISION: SUPPORT FUNCTION	DIVISION: SITE SPECIFIC	REMARKS
	SECTION 3 - Electrical							
635	Site Lighting	3	3			9		
636	Car Heater Receptacles	NA	3				NA	
637	Heat Tapes	NA	3				NA	
638-647	Reserved							

APPENDIX 3. COST ESTIMATE WORKSHEETS

ENGINEERING COST ESTIMATE	DATE PREPARED	SHEET OF
PROJECT		BASIS FOR ESTIMATE ☐ STANDARD DESIGN ☐ PROJECT DESIGN ☐ GOVERNMENT ESTIMATE ☐ OTHER (SPECIFY) _____
LOCATION	DRAWING REF. NO.	
PREPARING ORGANIZATION UNIT	SPEC. REF. NO.	
CLASS OF WORK	ESTIMATOR	CHECKED BY

ITEM	QUANTITY		MATERIAL COST-$		LABOR COST-$		-------COST-$			TOTAL ITEM COST-$
	UNIT MEAS.	NO UNITS	PER UNIT	TOTAL	PER UNIT	TOTAL	PER UNIT	TOTAL		

FAA Form 4450-8 (6-67)

C FAA AC 74-7841

ENGINEERING COST ESTIMATE SUMMARY

DATE PREPARED

SHEET OF

PROJECT

LOCATION

PREPARING ORGANIZATION UNIT

BASIS FOR ESTIMATE

☐ STANDARD DESIGN
☐ PROJECT DESIGN
☐ GOVERNMENT ESTIMATE
☐ OTHER (SPECIFY) ____________

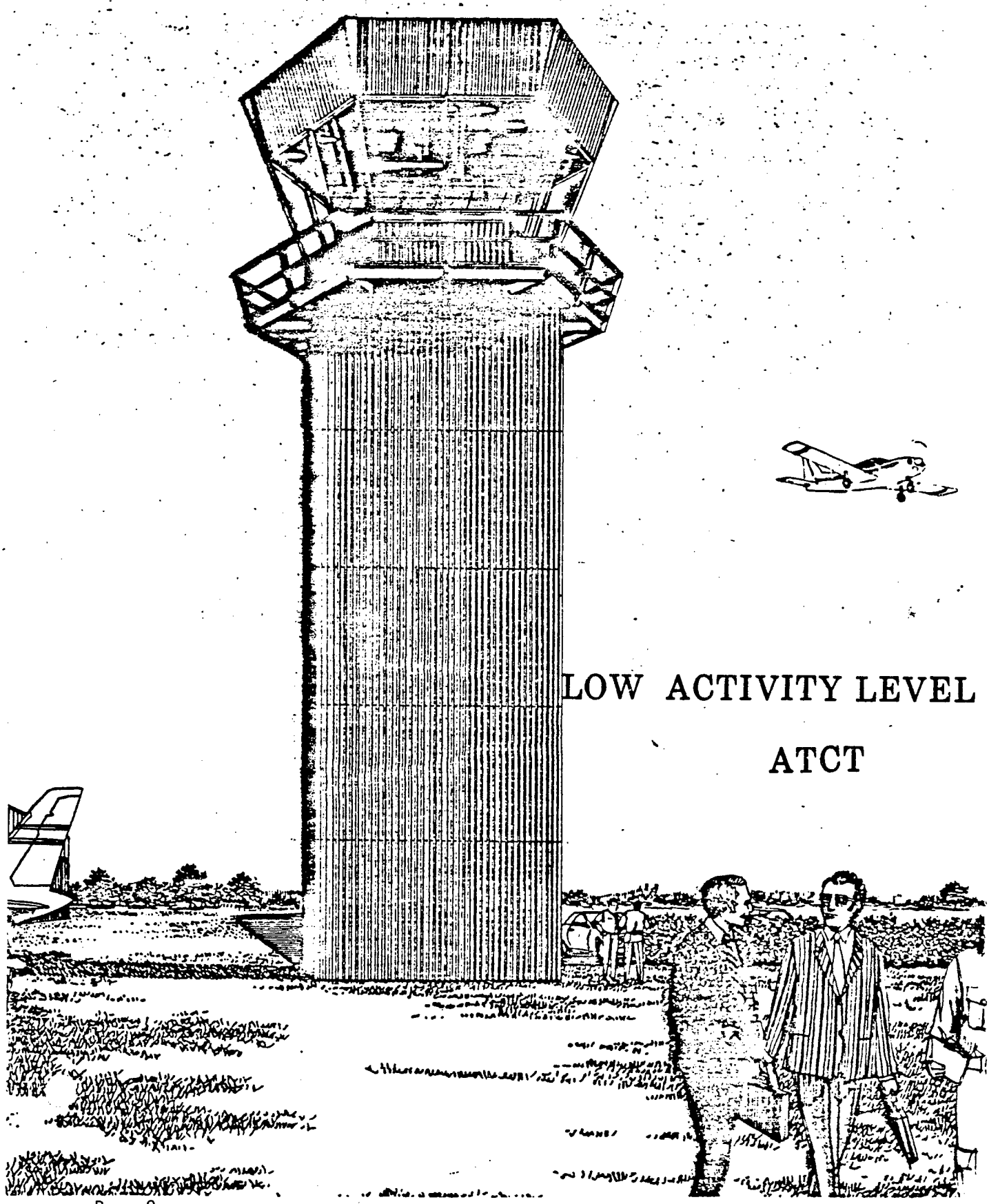
DRAWING NO. AND SPEC. NO.

ESTIMATOR

CHECKED BY

CLASS OF WORK	SPEC. SECT. NO.	QUANTITY	PRIME CONTRACTOR COST-$	SUB CONTRACTOR COST-$	TOTAL COST-$

APPENDIX 4. FAA STANDARD BUILDING DESIGNS



LOW ACTIVITY LEVEL

ATCT

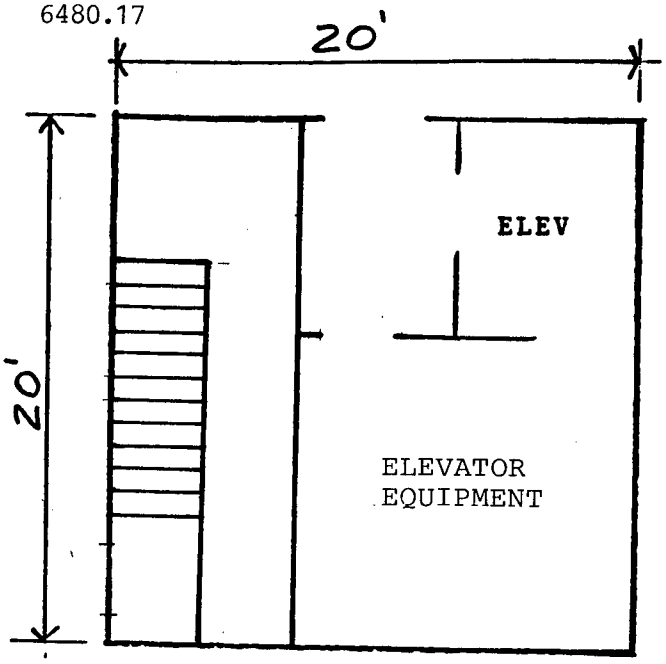
Low Activity Designs

a. Tower Only (Fig. 1.1) - The standard drawing series for the low activity ATCT is D-6055. The standard construction specification is FAA-C-2450C. Height to cab floor may be specified from 40 to 90 feet at 10-foot intervals. Plan dimensions of the shaft are 18 feet x 18 feet. The cab is 225 square feet. This standard satisfies minimum space requirements for staff, training, and equipment at the lower heights with increased capability of approximately 100 square feet of space for each 10 feet of height added.

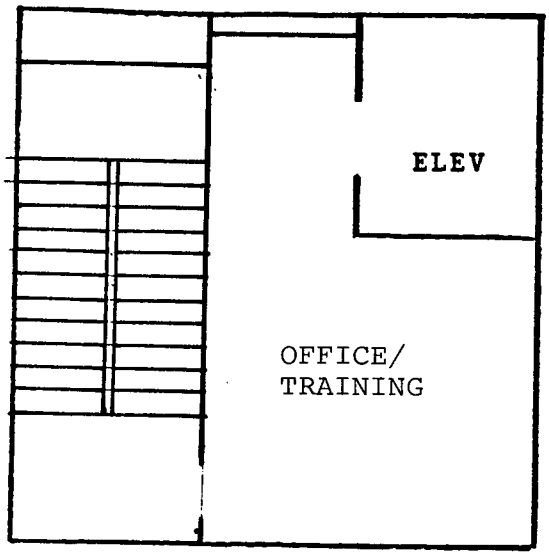
Major Space Considerations

One Air Traffic Manager (ATM)
One (if applicable) Quality Assurance and Training Specialist (QATS)
Training Area
Break Area
9-20 controllers (approximate)

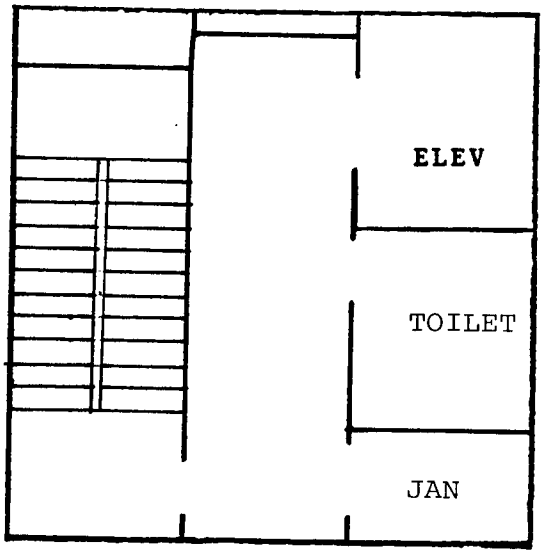
b. Administrative Base Building (Fig. 1.2) - The drawing series and specification for the standard low activity administrative base building is D-6208 and FAA-C-2717 respectively. Projects requiring additional administrative space due to inadequate space in the low activity tower should utilize this design.



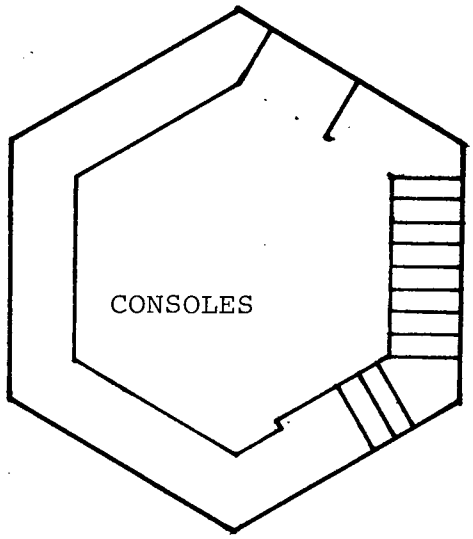
BASE LEVEL



INTERMEDIATE LEVELS



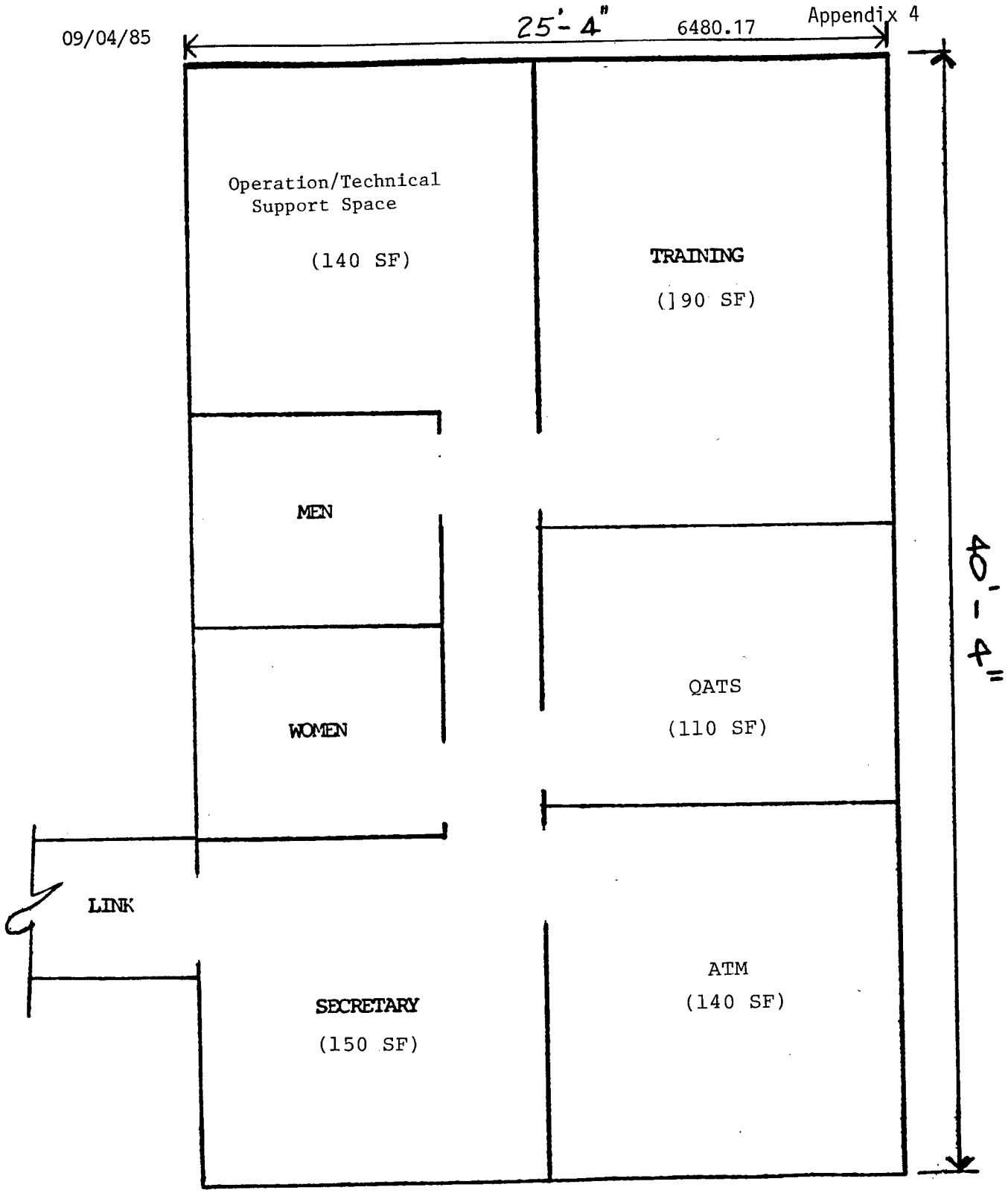
JUNCTION LEVEL



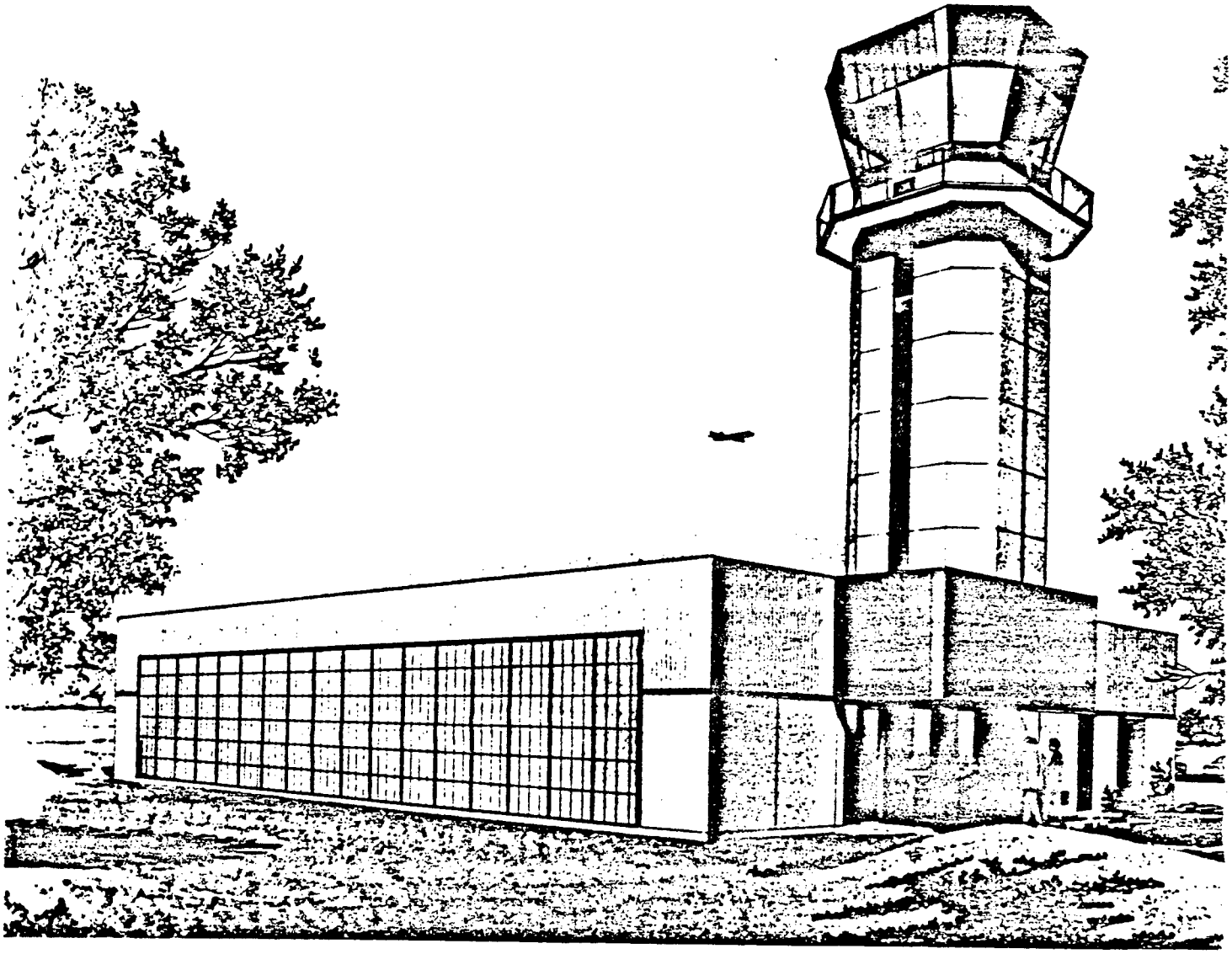
CAB FLOOR PLAN

LOW ACTIVITY LEVEL
AIRPORT TRAFFIC CONTROL TOWER
FIG. 1.1

225 S.F. CAB
DRAWING SERIES D-6055



FLOOR PLAN
LOW ACTIVITY
ADMINISTRATIVE BASE BUILDING
FIG. 1.2
1000 SF
DRAWING SERIES D-6208



INTERMEDIATE ACTIVITY LEVEL
ATCT/TRACON

Intermediate Activity Designs

a. Tower (Fig. 2.1) - The standard drawing series for the intermediate activity tower is E-6161. The tower shall be constructed adjacent to one of the base buildings listed below. The standard construction specification for the tower with any TRACON base building is FAA-C2693. The cab size is 350 square feet. The tower height to cab floor is 60, 76, 93, 109 or 125 feet. The tower shaft is nonfunctional. Shaft dimensions are 22' x 22'.

Tower Series

E-6161 - 60, 76, or 93 feet for use in seismic zone 3 (or under) locations

E-6161A - 60, 76, or 93 feet for use in seismic zone 4 locations

E-6161B - 109 and 125 feet for use in seismic zone 3 (or under) locations

E-6161C - 109 and 125 feet for use in seismic zone 4 locations

b. Administrative Base Building (Fig. 2.2) - This base building accompanies the tower where the project requires "Tower Only" construction. Administrative and equipment space is outlined below. The building has solar assist space heating available. The standard drawing series for this building is E-6194. The standard specification for the intermediate activity tower with this base building is FAA-C-2715.

Drawing Series

E-6194 - Solar for use in seismic zone 3 (or under) locations

E-6194A - Solar for use in seismic zone 4 locations

E-6194B - No solar for use in seismic zone 4

Major space considerations

One Air Traffic Manager (ATM)
One Assistant Air Traffic Manager (AATM)
One Quality Assurance and Training Specialist (QATS)
One secretary
Three additional offices

Comm equipment
Brites
40 controllers
Training

c. TRACON Base Building (Fig. 2.3) 5,000 Square Feet - This base building accompanies the tower for projects requiring installation of ARTS II or TPX-42 equipped TRACON operations with up to six radar and associated handoff/flight data positions. Administrative, equipment and operational spaces are defined below. The base building shall also be utilized for projects requiring "Building Only" with similar TRACON requirements. The standard drawing series for this building is E-6158.

Drawing Series

E-6158 - TRACON base building

E-6158A - No solar alternative with opposite hand floor plan

E-6158B - Opposite hand floor plan

E-6158C - No solar alternative

Major Space Considerations

One Air Traffic Manager (ATM)
One Assistant Air Traffic Manager (AATM)
One PPS
One Automation Specialist (AUS)
One Quality Assurance and Training Specialist (QATS)
Two secretaries
Area Supervisor (AS)
One Sector Field Office (SFO) chief
Two unit chiefs Optional Use
ARTS II Radar
Comm Equipment
Brites
Six radar/flight data positions
Training

d. TRACON Base Building (Fig. 2.4) 8,000 Square Feet - This base building accompanies the tower for projects requiring installation of ARTS II or TPX-42 equipped TRACON operations with up to 10 radar and associated handoff positions. Administrative, equipment, and operational spaces are defined below. The base building is also utilized for projects requiring "Building Only" with similar TRACON requirements. The standard drawing series for this building is E-6180.

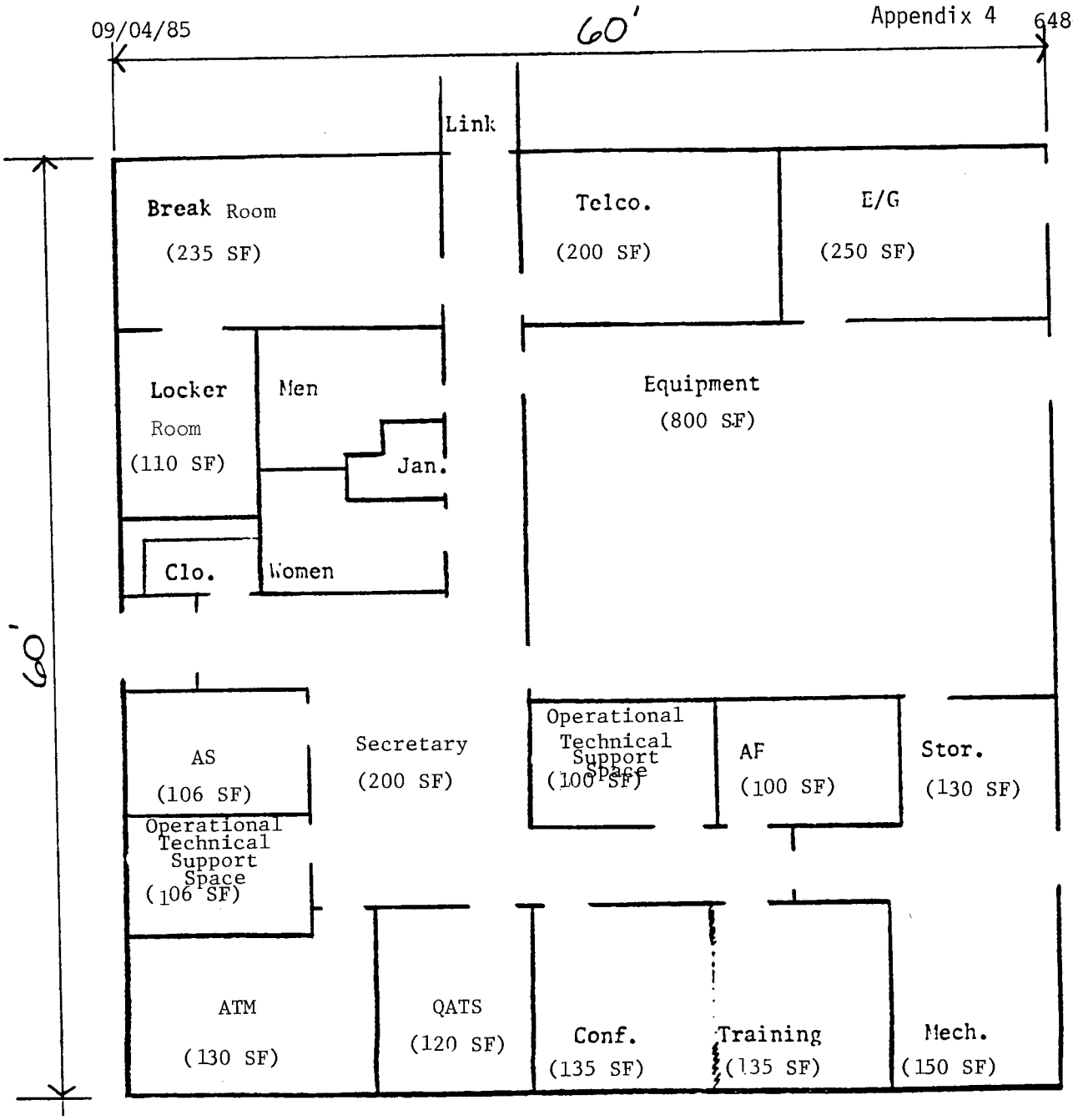
Drawing Series

E-6180 - TRACON base building

E-6180A - Opposite hand floor plan

Major Space considerations

One Air Traffic Manager (ATM)
One Assistant Air Traffic Manager (AATM)
One Assistant Manager for Plans and Programs (AMP)
Two - three Training Specialist/Quality Assurance Specialist (TS/QAS)
One - two Automation Specialist (AUS)
Two additional offices
Area Supervisor (AS)
One SFO chief
Two unit chiefs
ARTS II radar
Comm equipment
Ten radar/flight data positions
80 controllers
Training
Two secretaries
Additional staff work areas

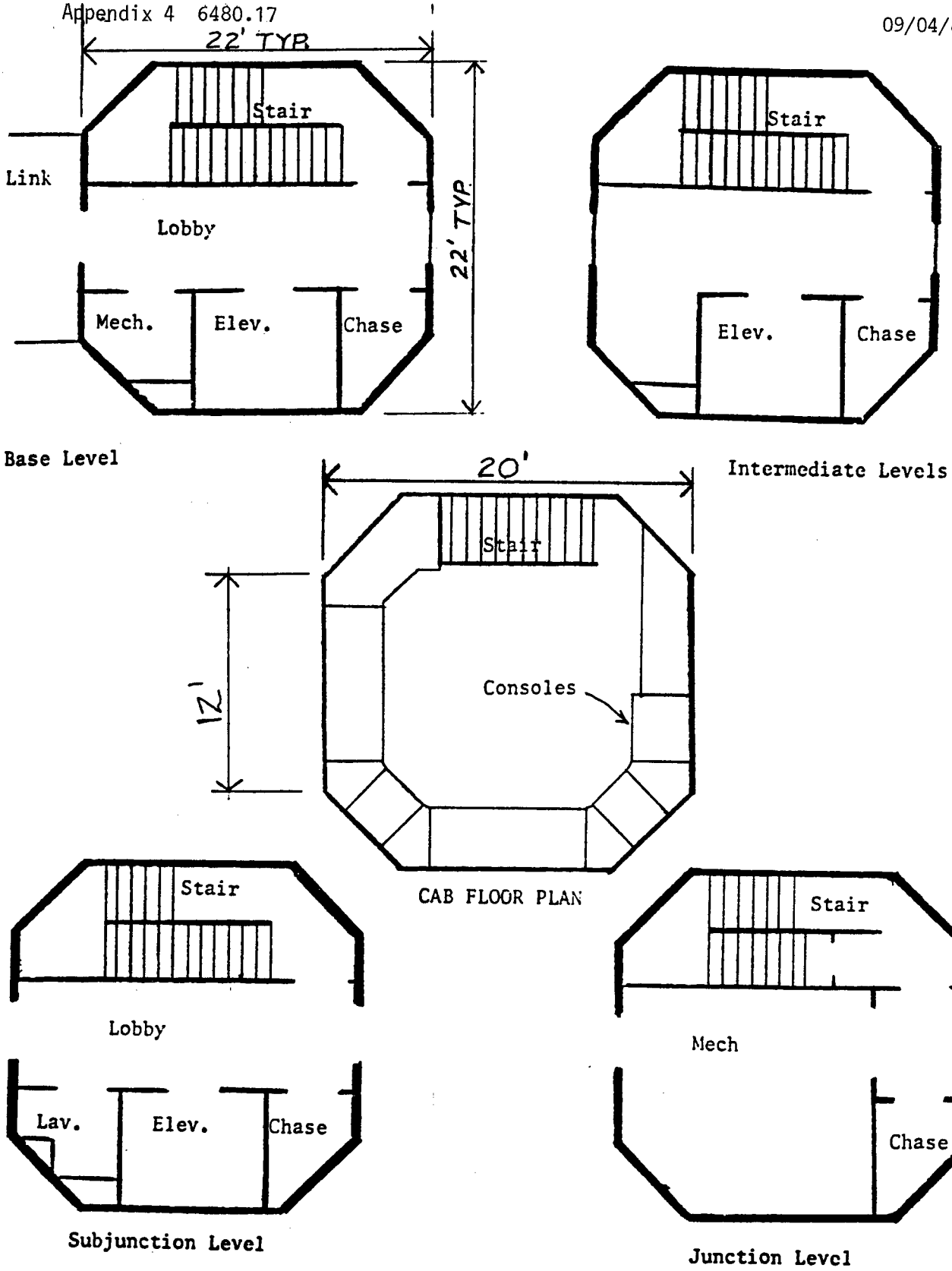


FLOOR PLAN

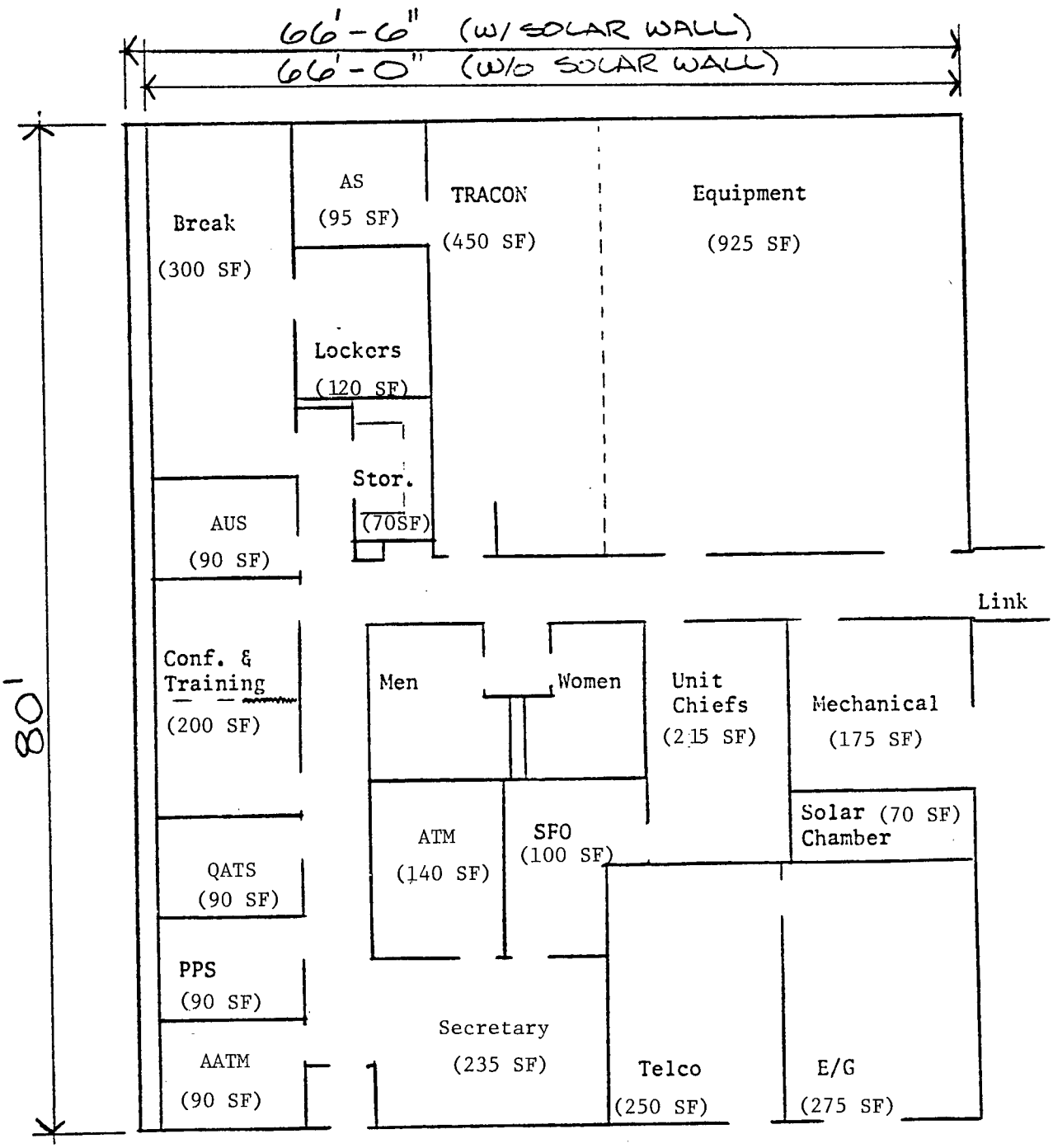
INTERMEDIATE ACTIVITY LEVEL

ADMINISTRATIVE BASE BUILDING

Figure 2.2.
3600 SF
DRAWING SERIES E-6194



INTERMEDIATE ACTIVITY LEVEL
AIRPORT TRAFFIC CONTROL TOWER
FIG. 2.1
350 SF CAB
DRAWING SERIES E-6161

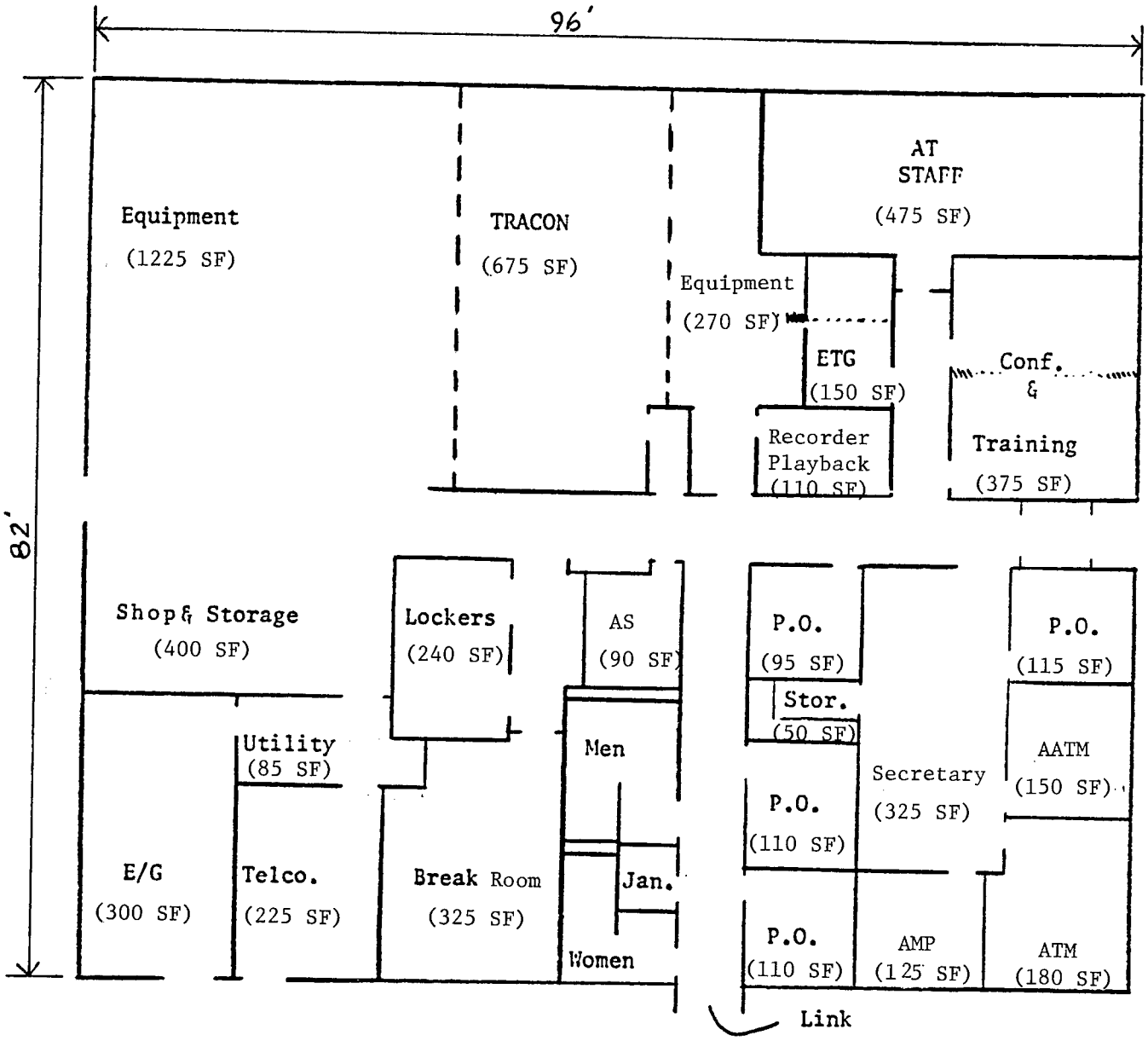


FLOOR PLAN

INTERMEDIATE ACTIVITY LEVEL

TRACON BASE BUILDING

Figure 2.3
5000 SF
DRAWING SERIES E-6158

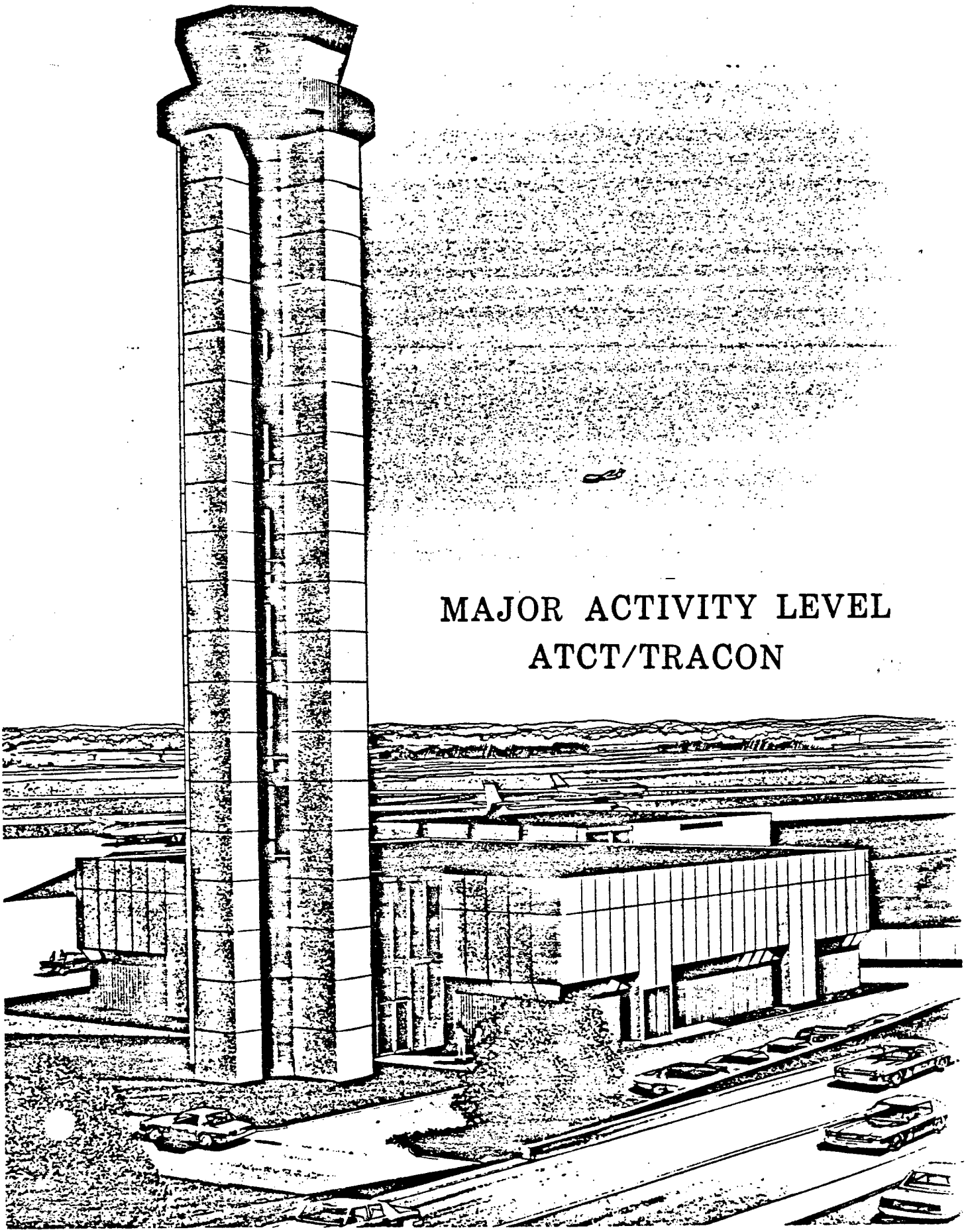


FLOOR PLAN

INTERMEDIATE ACTIVITY LEVEL

TRACON BASE BUILDING

Figure 2.4
8000 SF
DRAWING SERIES E-6180



MAJOR ACTIVITY LEVEL
ATCT/TRACON

Major Activity Designs

a. Tower (Fig. 3.1) - The standard drawing series for the major activity tower are E-5960 and E-5964. The tower shall be constructed adjacent to one of the base buildings listed below. The cab size is 525 square feet. The tower height is 120 feet to 180 feet at 30-foot increments. The tower shaft is nonfunctional with dimensions of 40 feet in diameter. Standard specifications vary with the accompanying base building.

Alternate Tower Series

E-6206 - For tower heights of 180' and 195 ' with an additional equipemnt level below the subjunction level.

b. Admininstrative Base Building (Fig. 3.2) 5,000 Square Feet - This base building accompanies the tower when the project requires "Tower Only" construction. The standard drawing series for this design is E-6195 and the standard specification for tower and base building is FAA-C-2708. The building has solar assist space heating available. Administrative and equipment spaces are outlined below.

Drawing Series

E-6195 - Administrative base building with solar assist heating

E-6195A - No solar alternative

Major Space Considerations

Air Traffic Manager (ATM)
Assistant Air Traffic Manager (AATM)
One Plans and Programs Specialist (PPS)
One - two Training Specialist/Quality Assurance Specialist (TS/QAS)
Area Supervisor (AS)
Two Secretaries

One Sector Field Office (SFO) chief
Two unit chiefs Optional Use
Comm equipment
Brites
Training
40 controllers
One additional office

c. TRACON Base Building (Fig. 3.3) 11,000 Square Feet - The base building accompanies the tower for projects requiring installation of ARTS III/IIIA equipped TRACON operations with up to ten radar positions and associated flight data handoff positions. Administrative, operational and equipment spaces are outlined below. The base building shall also be utilized for projects requiring "Building Only" with similar TRACON requirements. The standard drawing series for this facility is E-6156, and the standard specification for tower and building is FAA-C-2694. This series is complete for construction alternates of "Building Only" or building with major activity tower. Solar assist space heating is available.

Drawing Series

E-6156 - TRACON base building with solar assist heating

E-6156A - No solar alternative

E-6156B - Opposite hand floor plan

E-6156C - TRACON building only

Major Space Considerations

One Air Traffic Manager (ATM)
One Assistant Air Traffic Manager (AATM)
One Assistant Manager for Plans and Programs (AMP)
One Plans and Programs Specialist (PPS)
Two - three Training Specialist/Quality Assurance Specialist (TS/QAS)
Three Automation Specialist (AUS)
Two additional offices
Two secretaries
One Sector Field Office (SFO)
Three unit chiefs
ART IIIA radar
Comm equipment
Brites
Ten radar/flight data positions
Training and ETG
64 controllers
Area Supervisor (AS)

d. TRACON Base Building (Fig 3.4) 14,500 Square Feet - This base building accompanies the tower for projects requiring installation of ARTS III/IIIA equipped TRACON operations with up to 16 radar positions and associated flight data/handoff positions; and/or AF sector manager administrative space; and/or dual radar equipment. Administrative, equipment, and operational spaces are shown below. This base building shall also be utilized for projects requiring "Building Only" with similar TRACON, administrative, and/or equipment requirements stated above. The standard drawing series for this building is E-6079. The standard specification for tower and base building construction is FAA-C-2654. Solar domestic hot water is available.

Drawing Series

E-6079 - TRACON base building

E-6079A - Opposite hand floor plan

E-6079B - TRACON building only

Major Space Considerations

Air Traffic Manager (ATM)
Assistant Air Traffic Manager (AATM)
Two - Three Training Specialist/Quality Assurance Specialist (TS/QAS)
Three Automation Specialist (AUS)
One Assistant Manager for Plans and Programs (AMP)
Two Plans and Programs Specialist (PPS)
Five additional offices
Two secretaries
Sector managers space - optional
One - Two ARTS IIIA radars - OR - Two ARTS II radars
Comm Equipment
Brites
16 radar/flight data positions
100 controllers (approsimate)
Training
Area Supervisor (AS)

e. TRACON Base Building (Fig. 3.5) 20,000 Square Feet - The building shall accompany the tower for ATCT/TRACON projects with ARTS IIIA TRACON operations requiring up to 20 radar positions and associated flight data/handoff positions. Sector manager administrative space is provided. Administrative, equipment, and operational spaces are shown below. The base building shall also be utilized for projects requiring "Building Only" with similar operational/administrative requirements. The standard drawing series is E-6168. The standard specification is FAA-C-2707. An additional stairway and elevator is provided in lieu of tower link for "Building Only" construction.

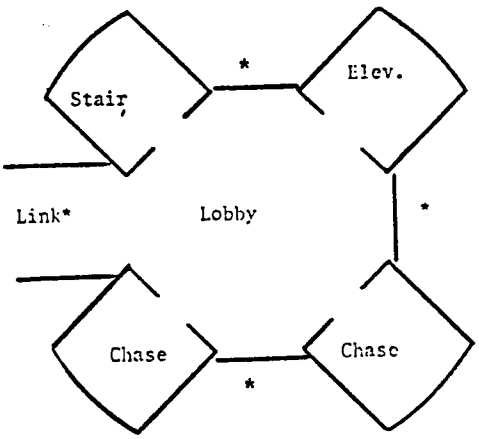
Drawing Series

E-6168 - TRACON base building

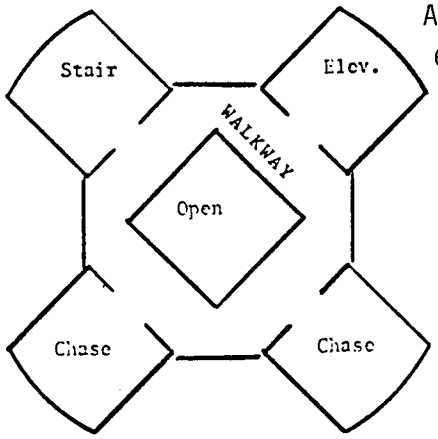
E-6168A - TRACON building only alternative

Major Space Considerations

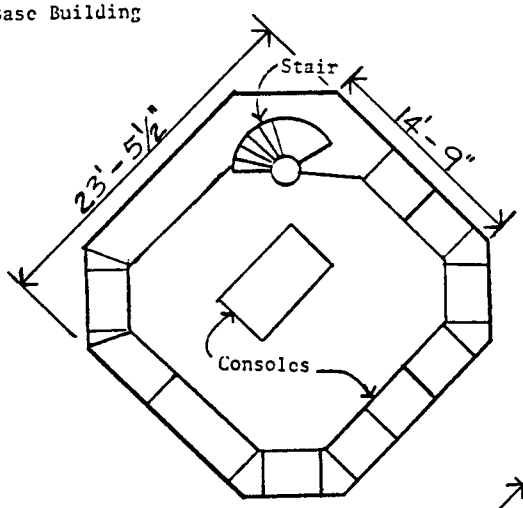
One Air Traffic Manager (ATM)
One Assistant Air Traffic Manager (AATM)
Two Secretaries
Three Training Specialist/Quality Assurance Specialist (TS/QAS)
Three PPS (+)
One Assistant Manager for Training (AMT)
One Assistant Manager for Plans and Programs (AMP)
One Assistant Manager for Automation (AMA)
Six Automation Specialist (AUS)
Area Manager (AM)
Area Supervisor (AS)
Administrative Officer (AO)
Sector manager space - Optional
Four Technician-in-Depth (TID(S))
Four unit chiefs
Two ARTS IIIA radars
ARTS IIIA Assembly Site
Comm Equipment
Brites
132 controllers
20 radar/flight data positions
Three additional staff areas
Training and ETG



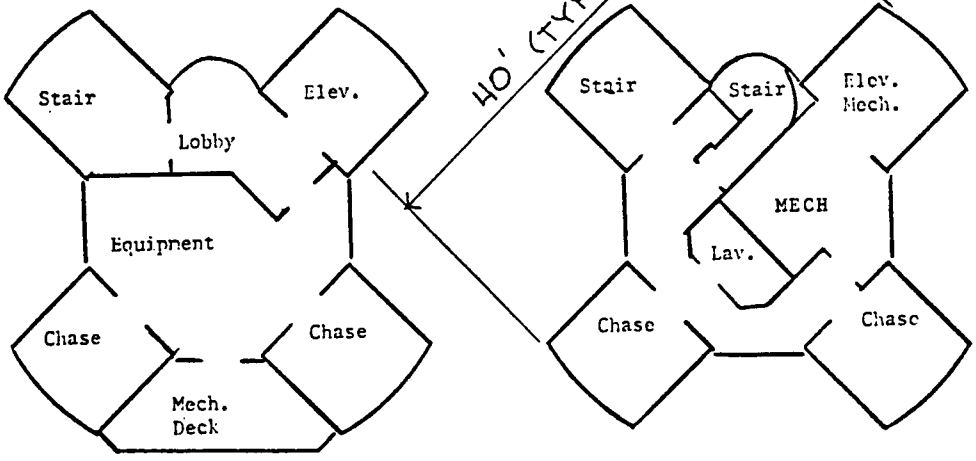
First Floor Plan
Note: Similar for Second Floor with Level V Base Building



Cable Access Level Plan



CAB FLOOR PLAN



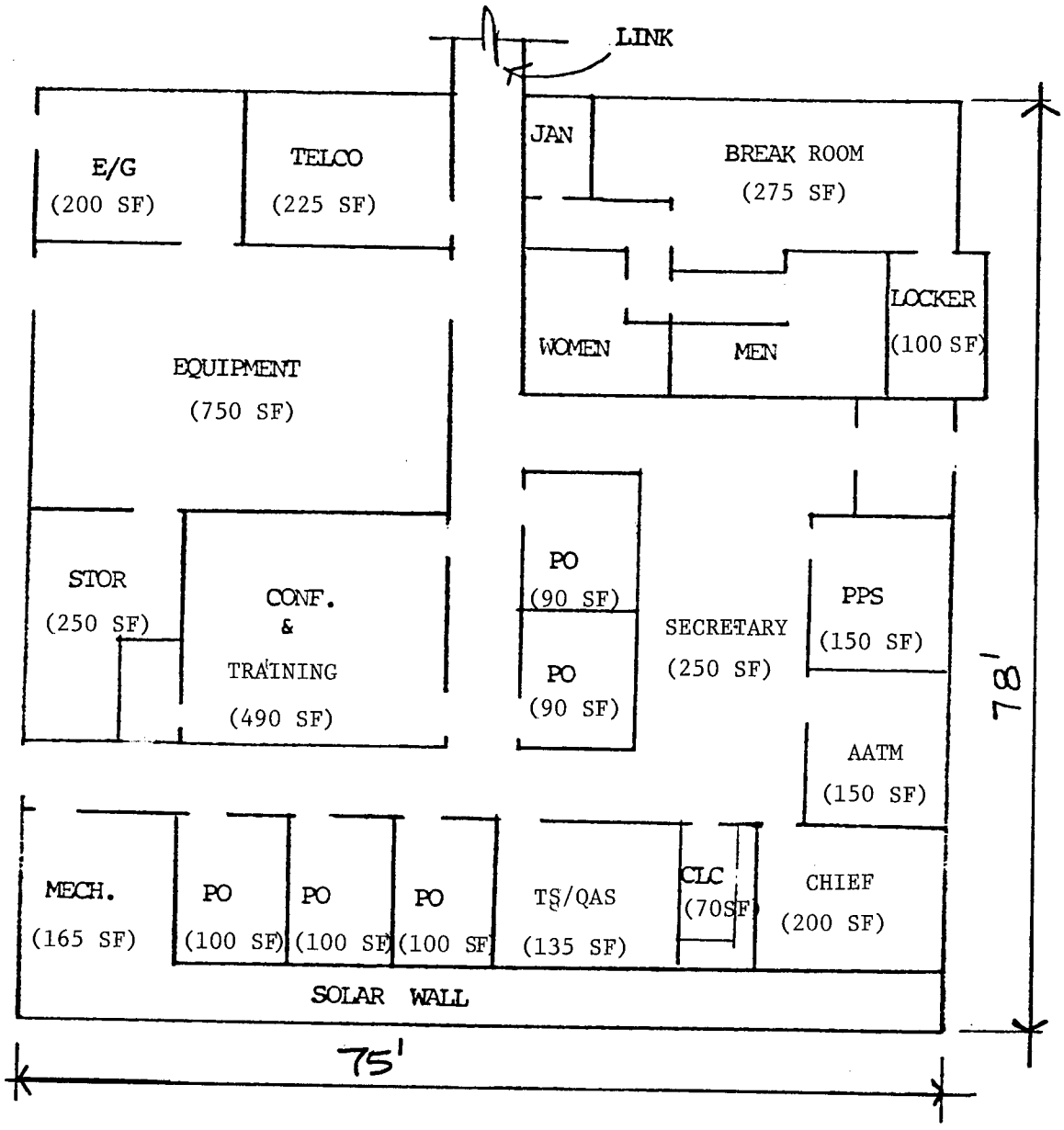
Subjunction Level Plan

Junction Level Plan

MAJOR ACTIVITY LEVEL
AIRPORT TRAFFIC CONTROL TOWER

Figure 3.1
525 SF CAB

DRAWING SERIES E-5960 AND E-5964



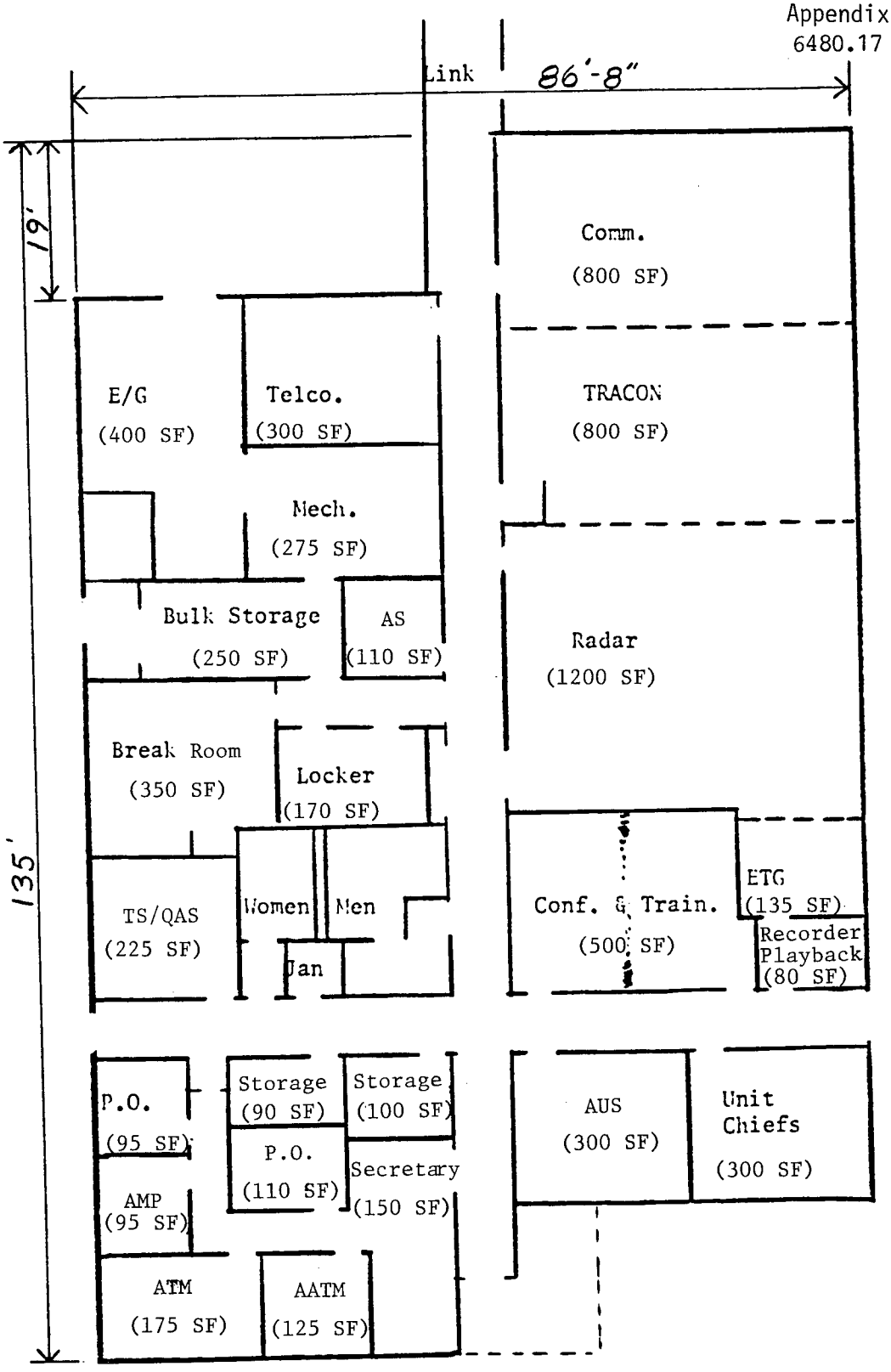
FLOOR PLAN

MAJOR ACTIVITY LEVEL

ADMINISTRATIVE BASE BUILDING

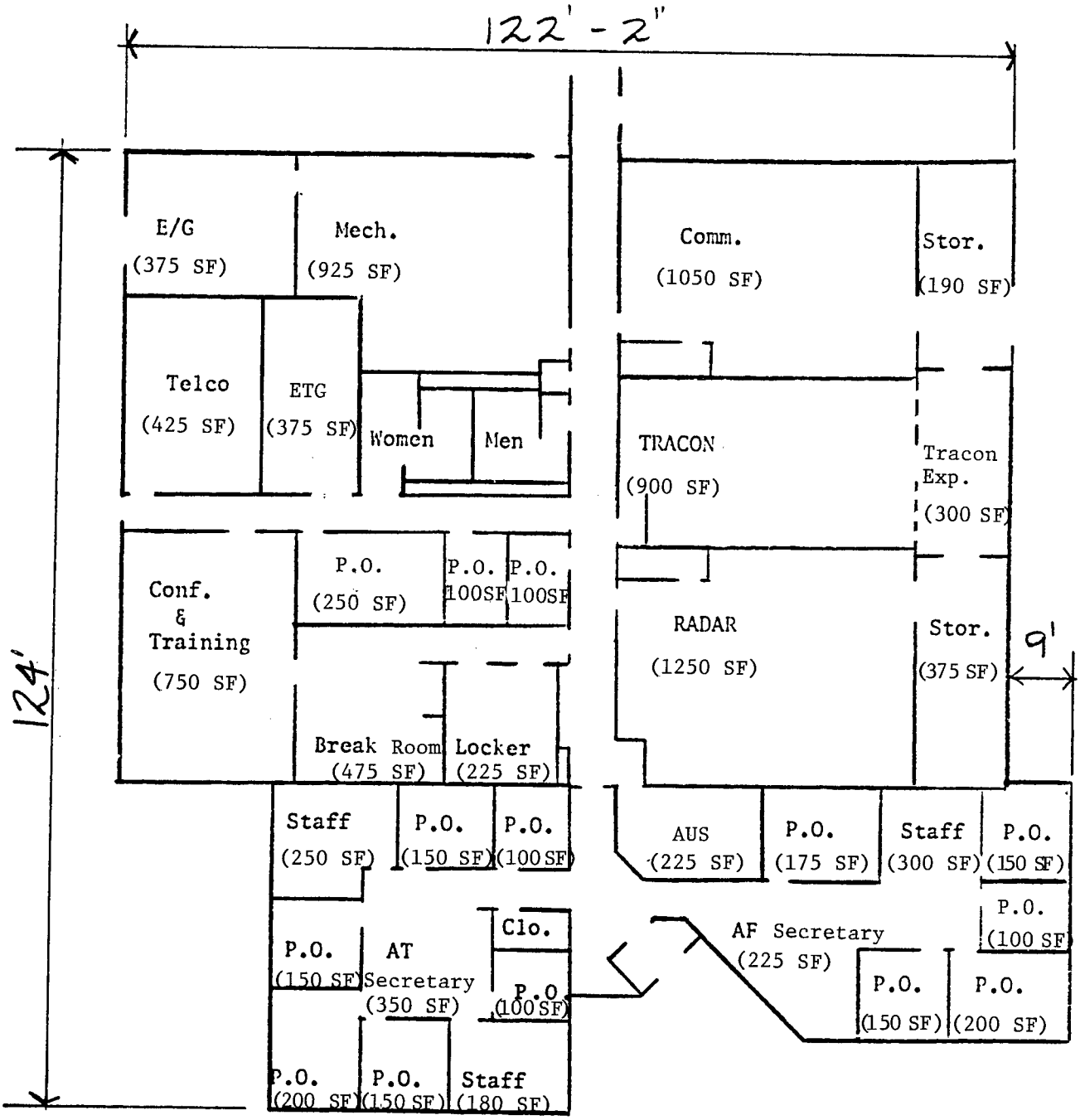
Figure 3.2
5000 SF

DRAWING SERIES E-6195



FLOOR PLAN
MAJOR ACTIVITY LEVEL
TRACON BASE BUILDING

Figure 3.3
11,000 SF
DRAWING SERIES E-6156



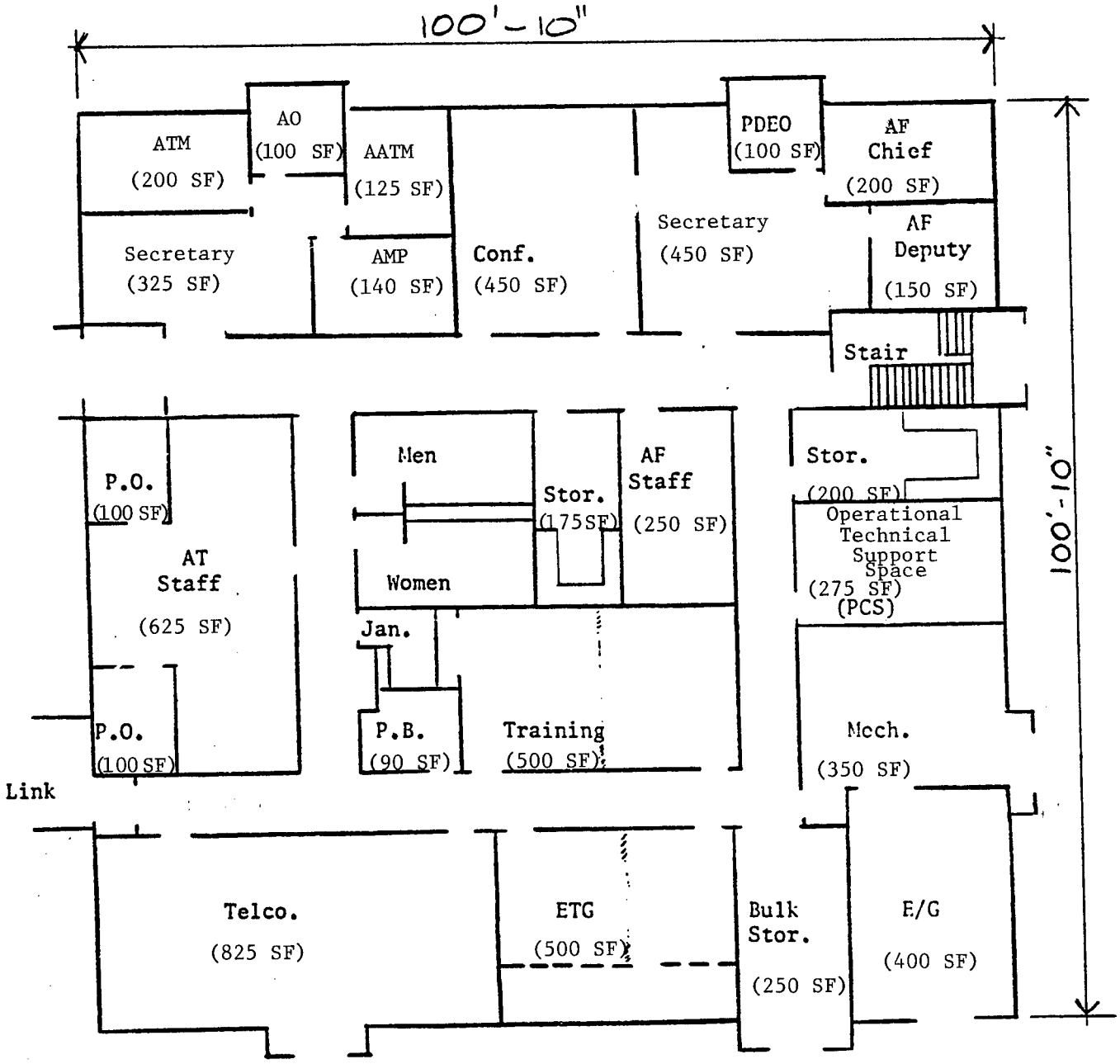
FLOOR PLAN

MAJOR ACTIVITY LEVEL

TRACON BASE BUILDING

Figure 3.4
14,500 SF

DRAWING SERIES E-6079



FIRST FLOOR PLAN

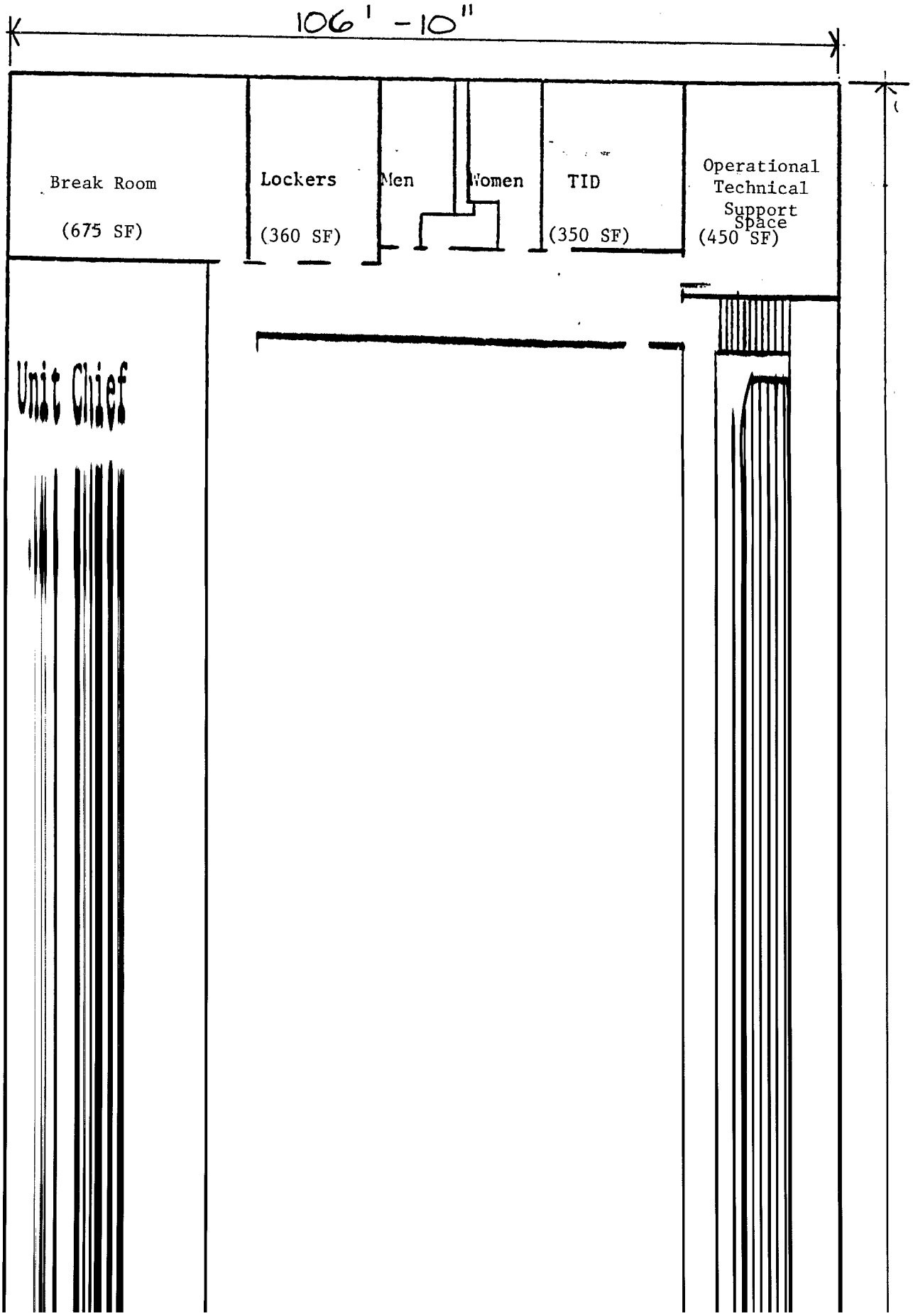
LEVEL V BASE BUILDING

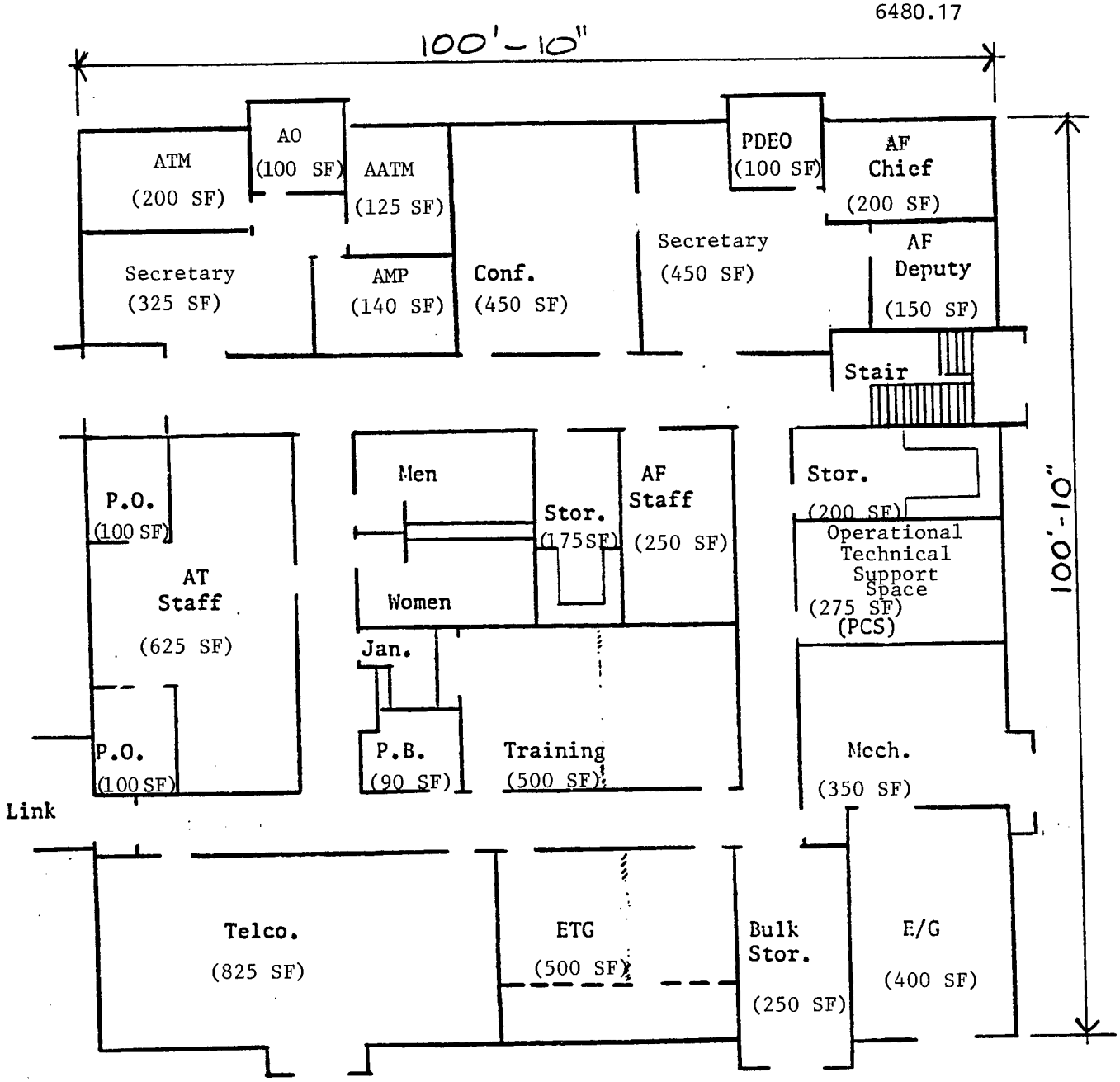
Figure 3.5

20,000 SF

DRAWING SERIES E-6168

09/04/85


106' - 10"
Break Room
(675 SF)
Lockers
(360 SF)
Men
Women
TID
(350 SF)
Operational
Technical
Support
Space
(450 SF)
Unit Chief



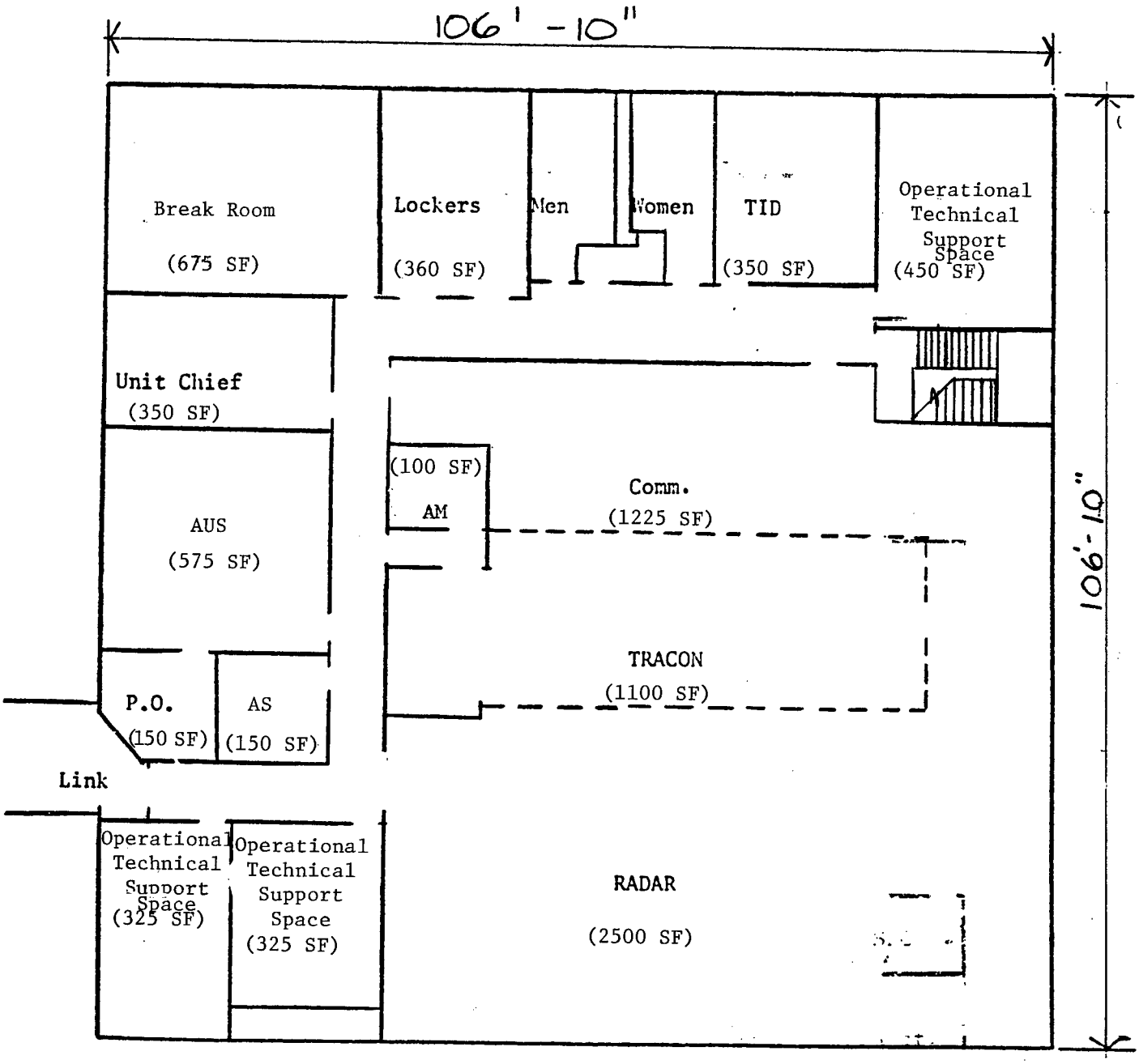
FIRST FLOOR PLAN

LEVEL V BASE BUILDING

Figure 3.5

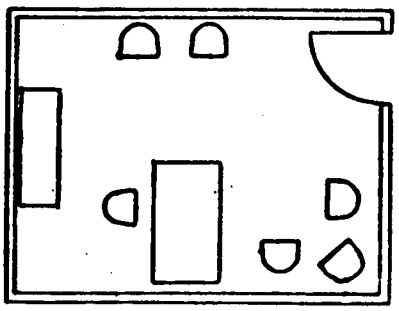
20,000 SF

DRAWING SERIES E-6168

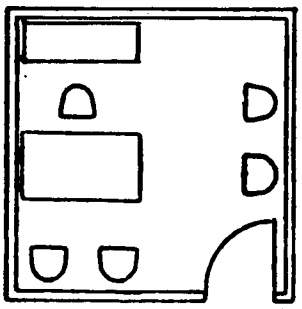


SECOND FLOOR PLAN
LEVEL V BASE BUILDING
Figure 3.5

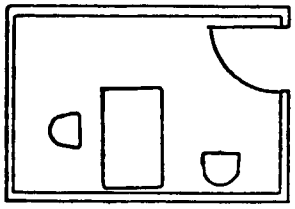
APPENDIX 5. TYPICAL OFFICE LAYOUTS



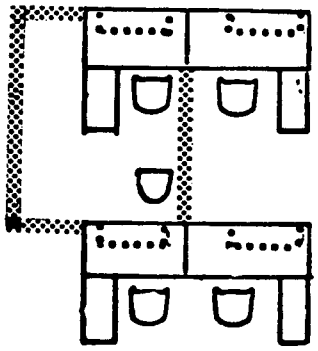
Private Office #102
192 square feet, 12' x 16'



Private Office #104
144 square feet 12' x 12'



Private Office #105
96 square feet, 8' x 12'



Work Station #2
68 square feet, 7.5' x 9.0'

Standard Government office layouts showing typical dimensions of various sized offices and typical furniture layouts.