

# Texas Department of Transportation AVIATION DIVISION



## CONSTRUCTION CONTRACT GENERAL PROVISIONS



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# AVIATION CONTRACT PROVISIONS

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**Wage, Labor, EEO Safety  
and  
General Requirements  
(Applicable to Federal Projects Only)**

# WAGE LABOR, EEO, SAFETY AND GENERAL REQUIREMENTS

## SECTION A

(Federal Aviation Administration (FAA) Requirements)

### A-1 Airport and Airway Improvement Program Project

The work in each Department of Transportation, Aviation Division contract which is being undertaken and accomplished by the Sponsor in accordance with the terms and condition of a grant agreement between the Sponsor and the United States, under the Airport and Airway Improvement Act of 1982 (P.L. 97-248) as amended by the Airport and Airway Safety and Capacity Expansion Act of 1987 (P.L. 100-223) and Part 152 of the Federal Aviation Regulations (14 CFR Part 152), pursuant to which the United States has agreed to pay a certain percentage of the costs under those Acts. The United States is not a party to this contract and no reference in this contract to the FAA or any representative thereof, or the United States, by the Contract, makes the United States a party to this contract.

### A-2 Consent to Assignment

The contractor shall obtain the prior written consent of the Sponsor to any proposed assignment of any interest in or part of this contract.

### A-3 Convict Labor.

No convict labor may be employed under this contract.

### A-4 Veterans Preference.

In the employment of labor (except in executive, administrative, and supervisory positions), preference shall be given to veterans of the Vietnam era and disabled veterans as defined in Section 515(c)(1) and (2) of the Act. However, This preference shall apply only where the individuals are available and qualified to perform the work to which the employment relates.

### A-5 Withholding Sponsor from Contractor

Whether or not payments or advance to the Sponsor are withheld or suspended by the FAA, the Sponsor may withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics employed by the contractor or any subcontractor on the work, the full amount of wages required by this contract.

A-6 Nonpayment of Wages.

If the contractor or subcontractor fails to pay any laborer or mechanic employed or working on the site of the work any of the wages required by this contract, the Sponsor may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment or advance of funds until the violations cease.

A-7 FAA Inspection and Review

The contractor shall allow any authorized representative or the FAA to inspect and review any work or materials used in the performance of this contract.

A-8 Subcontracts

The contractor shall insert in each of his subcontracts the provisions contained in paragraphs A-1, A-3, A-4, A-5, A-6, and A-7 requiring the subcontractors to include these provisions in any lower tier subcontracts which they may enter into, together with a clause requiring this insertion in any further subcontracts that may in turn be made.

A-9 Contract termination.

Any violation or breach of the terms of this contract on the part of the contractor or subcontractor may result in the suspension or termination of this contract or such other action which may be necessary to enforce the rights of the parties of this agreement. (49 CFR Part 18).

A-10 Inspection of Records

The contractor shall maintain an acceptable cost accounting system. The Sponsor, the FAA, and the Comptroller General of the United States shall have access to any books, documents, paper, and records or the contractor which are directly pertinent to the specific contract for the purposes of making an audit, examination, excerpts, and transcriptions. The contractor shall maintain all required records for three years after the Sponsor makes final payment and all other pending matters are closed. (49 CFR Part 18).

A-11 Rights to Inventions.

All rights to inventions and materials generated under this contract are subject to regulations issued by the FAA and the Sponsor of the Federal grant under which this contract is executed. Information regarding these rights is available from the FAA and the Sponsor. (49 CFR Part 18).

#### A-12 General Civil Rights Provisions.

The contractor assures that it will comply with pertinent statutes, Executive orders and such rules as are promulgated to assure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or handicap be excluded from participating in any activity conducted with or benefiting from Federal assistance. This provision binds the contractor from the bid solicitation period through the completion of the contract. (Section 520, Airport and Airway Improvement Act of 1982).



## **SECTION B**

(Federal Aviation Administration (FAA) Requirements)

### DAVIS BACON ACT REQUIREMENTS (29 CFR PART 5)

#### B-1 Minimum Wages

- (a) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractor relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section I (b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to laborers or mechanics, subject to the provisions of paragraph (B-1)(d) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under (B-1) (b) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.
- (b) (1) The contracting officer shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met;
- (i) The work to be performed by the classification requested is not performed by a classification in the wage determinations; and

- (ii) The classification is utilized in the area by the construction industry, and
  - (iii) The proposed was rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment, Employment Standards Administration, U.S. Department of labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140).
- (3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives and the control officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall refer the questions, including the views of all interested and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140).
- (4) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (B-1) (b) (2) or (3) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
- (c) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona ride fringe benefit or an hourly cash equivalent thereof.
- (d) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits

under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140).

## B-2 Withholding

The Federal Aviation Administration or the Sponsor shall upon Its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federal-assisted contract subject to David-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, “ helper, employed or working on the site of work, all or part of the wages required by the contract, the Federal Aviation Administration may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

## B-3 Payrolls and Basic Records

- (a) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona ride fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of programs, the registration of the apprentices and trainees, and the ratios and was rates prescribed in the applicable programs. (29 CFR

5.5(a)(3)(1) (Approved by the Office and Budget under OMB Control Number 215-0149).

- (b) (1) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the Federal Aviation Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under paragraph 5.5(a)(3)(i) above. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149).
- (2) Each payroll submitted shall be accompanied by a ‘Statement of Compliance,’ signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following.
- (i) That the payroll for the payroll period contains the information required to be maintained under paragraph B-3 (a) above and that such information is correct and complete;
  - (ii) That each laborer and mechanic (including each helper, apprentice and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations 29 CFR Part 3;
  - (iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract
- (3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the “Statement of Compliance” required by paragraph B-3 (b)(2) of this section.
- (4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

- (c) The contractor or subcontractor shall make the records required under paragraph B-3 (a) of this section available for inspection, copying or transcription by authorized representatives of the Sponsor, the Federal Aviation Administration or the Department of labor, and shall permit such representatives to Interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

#### B-4 Apprentices and Trainees

- (a) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they all employed pursuant to and individually registered in a bona fide apprenticeship program registered with the US. Department of Labor, Employment and training administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an Apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice, who Is not registered or otherwise employed as stated above, shall be paid not less than the apprentice wage rate, on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (b) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employment listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- (c) Equal Employment Opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

#### B-5 Compliance with Copeland Act Requirements

The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

## B-6 Subcontracts

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR Part 5.5(a)(1) through (10) and such other clauses as the Federal Aviation Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

## B-7 Compliance with Davis-Bacon and Related Act Requirements

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

## B-8 Disputes Concerning Labor Standards

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6 and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

## B-9 Certification of Eligibility

- (a) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (b) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (c) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

## B-10 Contract Termination: Debarment

A breach of the contract clauses in paragraph B-1 through B-9 of this section and paragraphs C-1 through C-5 of Section C may be grounds for termination of the contract, and for the debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.



## **SECTION C**

(Federal Aviation Administration (FAA) Requirements)

### CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS (29 CFR PART 5)

#### C-1 Overtime Requirements

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

#### C-2 Violation; Liability for Unpaid Wages; Liquidated Damages

In the event of any violation of the clause set forth in paragraph C-1 above, the contractor or any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contract and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph C-1 above, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph C-1 above.

#### C-3 Withholding for Unpaid Wages and Liquidated Damages

The Federal Aviation Administration or the Sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph C-2 above.

#### C-4 Subcontractors.

The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs C-1 through C-4 and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs C-1 through C-4.

#### C-5 Working Conditions.

No contractor or subcontractor may require any labor or mechanic employed in the performance of any contract to work in surroundings or under working conditions that are unsanitary, hazardous or dangerous to his health or safety as determined under construction safety and health standards (29 CFR Part 1926) issued by the Department of labor.

## **SECTION D**

(Federal Aviation Administration (FAA) Requirements)

### **EQUAL EMPLOYMENT OPPORTUNITY (41 CFR PART 60-1.4(b))**

During the performance of this contract, the contractor agrees as follows:

- D-1 The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following:

Employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

- D-2 The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.
- D-3 The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- D-4 The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- D-5 The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

- D-6 In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedure authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
- D-7 The contractor will include the portion of the sentence immediately preceding paragraph D-1 and the provisions of paragraphs D-1 through D-7 in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provision, including sanctions for noncompliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

## **SECTION E**

(Federal Aviation Administration (FAA) Requirements)

### **CLEAN AIR AND WATER POLLUTION CONTROL REQUIREMENTS**

- E-1 Any other provision herein to the contrary notwithstanding, the contractor in carrying out work under this contract, shall at all times comply with all applicable state and federal air and water quality standards; with all pollution control laws; and with such rules, regulations, and directives as may be lawfully issued by a local, state, or federal agency having within its jurisdiction the protection of the environment in the area surrounding where work under this contractor will be performed. In addition, the contractor shall comply with directives given by the Project Engineer in implementation of the letter and intent of FAA Advisory Circular 150/5370-10, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control. Copies of this Advisory Circular can be obtained from Department of Transportation, Distribution Unit, TAD-4843, Washington, D.C. 20590.
- E-2 Contractors and subcontractors agree:
- a. That any facility to be used in the performance of the contract or subcontractor or to benefit from the contract is not listed on the Environmental Protection Agency (EPA) List of Violating Facilities;
  - b. To comply with all the requirements of Section 114 of the Clean Air Act, as amended, 42 U.S.C. 1857 et seq. and Section 308 of the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq. relating to inspection, monitoring, entry, reports, and information, as well as all other requirements specified in Section 114 and Section 308 of the Acts, respectively, and all other regulations and guidelines issued thereunder;
  - c. That, as a condition for the award of this contract, the contractor or subcontractor will notify the awarding official of the receipt of any communication from the EPA indicating that a facility to be used for the performance of or benefit from the contract is under consideration to be listed on the EPA List of Violating Facilities;
  - d. To include or cause to be included in any construction contract or subcontract which exceeds \$100,000 the aforementioned criteria and requirements.



## **SECTION F**

(Federal Aviation Administration (FAA) Requirements)

### **STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (41 C.F.R. 60-43)**

1. As used in these specifications:
  - a. “Covered area” means the geographical area described in the “solicitation from which this contract resulted;
  - b. “Director” means Director, Office of Federal Contract Compliance (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;
  - c. “Employer identification number” means the Federal social security number used on the Employer’s Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
  - d. “Minority includes:
    - (1) Black (all) persons having origins in any of the Black African racial groups not of Hispanic origin;
    - (2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin regardless of race);
    - (3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
    - (4) American Indian or Alaskan native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
2. Whenever the contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
3. If the contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the US. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the

Plan. Contractors shall be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each contractor or subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other contractors or subcontractors toward a goal in an approved Plan does not excuse any covered contractor's subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in a geographical area where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.
5. Neither the provisions of any collective bargaining agreement nor the failure by a union with whom the contractor has a collective bargaining agreement to refer either minorities or women shall excuse the contractors obligations under these specifications, Executive Order 11246 or the regulations promulgated pursuant thereto.
6. In order for the nonworking training hours of apprentices and to be counted in meeting the goals, such apprentices and trainees shall be employed by the contractor during the training period and the contractor shall have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall be trained pursuant to training programs approved by the U.S. Department of Labor.
7. The contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The contractor shall document these efforts fully and shall implement affirmative action steps at least as extensive as the following.
  - a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the contractor's employees are assigned to work. The contractor, where possible, will assign two or more women to each construction project. The contractor shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the contractor's obligation

maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

- b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
- c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the contractor by the union or, if referred, not employed by the contractor, this shall be documented in the file with the reason therefore along with whatever additional actions the contractor may have taken.
- d. Provide immediate written notification to the Director when the union or unions with which the contractor has a collective bargaining agreement has not referred to the contractor a minority person or female sent by the contractor, or when the contractor has other information that the union referral process has impeded the contractor's efforts to meet its obligations.
- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the contractor's employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources compiled under 7b above.
- f. Disseminate the contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc. by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location when construction work is performed.
- g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific of these Items with onsite supervisory personnel such as superintendents, general foremen, etc, prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

- h. Disseminate the contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the contractor's EEO policy with other contractors and subcontractors with whom the contractor does or anticipates doing business.
  - i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students; and to minority and female recruitment and training organizations serving the contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations, such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
  - j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a contractor's workforce.
  - k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
  - l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel, for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
  - m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the contractor's obligations under these specifications are being carried out.
  - n. Ensure that all facilities and company activities are nonsegregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
  - o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
  - p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the contractor's EEO policies and affirmative action obligations.
8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor union, contractor community, or other similar groups of which the contractor is a member and participant, may be asserted as fulfilling anyone or more of its

obligations under 7a through p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the contractor. The obligation to comply, however, is the contractor's and failure of such a group to fulfill an obligation shall not be a defense for the contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and nonminority. Consequently, if the particular group is employed in a substantially disparate manner (for example, even though the contractor has achieved its goals for women generally,) the contractor may be in violation of the Executive Order if a specific minority group of women is underutilized.
10. The contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
11. The contractor shall not enter into any subcontract with any person or firm debarred from Government contract pursuant to Executive Order 11246.
12. The contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontract as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
13. The contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
14. The contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee, the name, address, telephone number, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at

which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construct as a limitation upon the application of other laws which establish different standards of compliance or upon the applications of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

## **SECTION G**

(Federal Aviation Administration (FAA) Requirement)

### **CONTRACTUAL REQUIREMENTS TO PURSUANT TO CIVIL RIGHTS ACT OF 1964, TITLE VI (49 CFR PART 21)**

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the “contractor”) agrees as follows:

1. **Compliance with Regulations.** The contractor shall comply with the Regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation (hereinafter, “DOT”) Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
2. **Nondiscrimination.** The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or in indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment.** In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor’s obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
4. **Information and Reports.** The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Sponsor or the Federal Aviation Administration (FAA) to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the sponsor or the FAA, as appropriate, and shall set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance.** In the event of the contractor’s noncompliance with the nondiscrimination provisions of this contract, the sponsor shall impose such contract

sanctions as it or the FAA may determine to be appropriate, including, but not limited to:

- a. Withholding of payments to the contractor under the contract until the contractor complies, and/or
  - b. Cancellation, termination, or suspension of the contract in whole or in part.
6. Incorporation of Provisions. The contractor shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the sponsor or the FAA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigations with a subcontractor or supplier as a result of such direction, the contractor may request the Sponsor to enter into such litigation to protect the interest of the sponsor and, in addition, the contractor may request the United States to enter into such litigation to protect the interest of the United States.

## **SECTION H**

(Federal Aviation Administration (FAA) Requirements)

### **TERMINATION OF CONTRACT (49 CFR PART 18)**

1. The Sponsor may, by written notice, terminate this contract in whole or in part at any time, either for the Sponsor's convenience or because of failure to fulfill the contract obligations. Upon receipt of such notice services shall be immediately discontinued (unless the notice directs otherwise) and all materials as may have been accumulated in performing this contract, whether completed or in progress, delivered to the Sponsor.
2. If the termination is for the convenience of the Sponsor, an equitable adjustment in the contract price shall be made, but no amount shall be allowed for anticipated profit on unperformed services.
3. If the termination is due to failure to fulfill the contractor's obligations, the Sponsor may take over the work and prosecute the same to completion by contract or otherwise. In such case, the contractor shall be liable to the Sponsor for any additional cost occasioned to the Sponsor thereby.
4. If, after notice of termination for failure to fulfill contract obligations, it is determined that the contractor had not so failed, the termination shall be deemed to have been effected for the convenience of the Sponsor. In such event, adjustment in the contract price shall be made as provided in paragraph 2 of this clause.
5. The rights and remedies of the sponsor provided in this clause are in addition to any other rights and remedies provided by law or under this contract.



## **SECTION I**

(Federal Aviation Administration (FAA) Requirements)

### **BUY AMERICAN - STEEL AND MANUFACTURED PRODUCTS FOR CONSTRUCTION CONTRACTS (Aviation Safety and Capacity Expansion Act of 1990)**

- a. The Contractor agrees that only domestic steel and manufactured products will be used by the Contractor, subcontractors, materialmen, and suppliers in the performance of this contract, as defined in (b) below.
- b. The following terms apply to this clause:
  1. Steel and manufactured products. As used in this clause, steel and manufactured products include (1) those produced in the United States or (2) a manufactured product produced in the United States, if the cost of its components mined, produced or manufactured in the United States exceeds 60 percent of the cost of all its components and final assembly has taken place in the United States.
  2. Components. As used in this clause, components means those articles, materials, and supplies incorporated directly into steel and manufactured products.
  3. Cost of Components. This means the cost for production of the components, exclusive of final assembly labor costs.



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## GENERAL PROVISIONS

### SECTION 10

#### DEFINITION OF TERMS

Whenever the following terms are used in these specifications, in the contract, in any documents or other instruments pertaining to construction where these specifications govern, the intent and meaning shall be interpreted as follows:

- 10-01 AASHTO.** The American Association of State Highway and Transportation Officials, the successor association to AASHO.
- 10-02 ACCESS ROAD.** The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public highway.
- 10-03 ADVERTISEMENT.** A public announcement as required by local law, inviting bids for work to be performed and materials to be furnished.
- 10-04 AGENT.** The Texas Department of Transportation acting as the “Agent” of TxDOT in accordance with the duly executed Airport Project Participation Agreement.
- 10-05 AIP.** The Airport Improvement Program, a grant-in-aid program, administered by Federal Aviation Administration through TxDOT.
- 10-06 AIR OPERATIONS AREA (AOA)** For the purpose of these specifications, the term air operations area shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron.
- 10-07 AIRPORT.** Airport means an area of land or water that is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any.
- 10-08 APRON.** An area on an airport designated for the parking of aircraft.
- 10-09 ASTM.** The American Society for Testing and Materials.
- 10-10 AWARD.** The owner’s acceptance, with TxDOT’s concurrence, of the successful bidder’s proposal.

- 10-11 BIDDER.** Any individual, partnership, firm, Joint Venture, limited liability partnership (LLP) or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.
- 10-12 BUILDING AREA.** An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.
- 10-13 CALENDAR DAY.** Every day shown on the calendar.
- 10-14 CHANGE ORDER.** A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for the work affected by such changes. The work, covered by a change order, shall be within the scope of the contract.
- 10-15 CONTRACT.** The written agreement covering the work to be performed. The awarded contract shall include, but is not limited to: the advertisement; the contract document; the proposal; the performance bond; the payment bond; any required insurance certificates; the specifications; the plans; and any addenda issued to bidders.
- 10-16 CONTRACT ITEM (PAY ITEM).** A specific unit of work for which a price is provided in the contract.
- 10-17 CONTRACT TIME.** The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.
- 10-18 CONTRACTOR.** The individual, firm, partnership, joint venture, LLP, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.
- 10-19 DRAINAGE SYSTEM.** The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.
- 10-20 ENGINEER.** The individual, firm, partnership, joint venture, LLP, or corporation duly authorized by TxDOT (sponsor) to be responsible for engineering supervision of the contract work and acting directly or through an authorized representative. The engineer shall be understood to be the Engineer of TxDOT or TxDOT's duly authorized representative.

- 10-21 ESCROW.** An account established by the contractor at an approved bank for the deposit of a ten percent retainage on all partial payments.
- 10-22 EQUIPMENT.** All machinery, together with the necessary supplies for upkeep and maintenance, and also all tools and apparatus necessary for the proper construction and acceptable completion of the work.
- 10-23 EXTRA WORK.** An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Engineer to be necessary to complete the work within the intended scope of the contract as previously modified.
- 10-24 FAA.** The Federal Aviation Administration of the U.S. Department of Transportation. When used to designate a person, FAA shall mean the Administrator or his duly authorized representative.
- 10-25 FEDERAL SPECIFICATIONS.** The Federal Specifications and Standards, and supplements, amendments and indices thereto are prepared and issued by the General Services Administration of the Federal Government.
- 10-26 INTENTION OF TERMS.** Whenever, in these specifications or on the plans, the words  
Words “directed,” “required,” “permitted,” “ordered,” “designated,” “prescribed,” or words of the like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer is intended; and similarly, the words “approved,” “acceptable,” “satisfactory,” or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer, subject in each case to the final determination of the owner.
- Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.
- 10-27 LABORATORY.** The official testing laboratories of TxDOT or such other laboratories as may be designated by the Engineer.
- 10-28 LIGHTING.** A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.

- 10-29 MAJOR AND MINOR CONTRACT ITEMS.** A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20 percent of the total amount of the awarded contract. All other items shall be considered minor contract items.
- 10-30 MATERIALS.** Any substance specified for use in the construction of the contract work.
- 10-31 NOTICE TO PROCEED.** A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.
- 10-32 OWNER (SPONSOR).** The term owner shall mean the party of the first part or the contracting agency signatory to the contract. For AIP contracts, the term sponsor shall have the same meaning as the term owner. TxDOT shall be acting by and through the Texas Department of Transportation.
- 10-33 PAVEMENT.** The combined surface course, base course, and subbase course, if any, considered as a single unit.
- 10-34 PAYMENT BOND.** The approved form of security furnished by the Contractor and his surety as a guarantee that he will pay in full all bills and accounts for materials and labor used in the construction of the work.
- 10-35 PERFORMANCE BOND.** The approved form of security furnished by the Contractor and his surety as a guarantee that the Contractor will complete the work in accordance with the terms of the contract.
- 10-36 PLANS.** The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications.
- 10-37 PROJECT.** The agreed scope of work for accomplishing specific airport development with respect to a particular airport.
- 10-38 PROPOSAL.** The written or electronic offer of the to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.
- 10-39 PROPOSAL GUARANTY.** The security furnished with a proposal to guarantee that the bidder will enter into a contract if his proposal is accepted by TxDOT.

- 10-40 RESIDENT PROJECT REPRESENTATIVE (RPR).** An individual who monitors activities on site during construction activities, reporting directly to the Engineer.
- 10-41 RUNWAY.** The area on the airport prepared for the landing and takeoff of aircraft.
- 10-42 SPECIFICATIONS.** A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.
- 10-43 SPONSOR.** See Owner.
- 10-44 STRUCTURES.** Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; flexible and rigid pavements; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.
- 10-45 SUBGRADE.** The soil which forms the pavement foundation.
- 10-46 SUPERINTENDENT.** The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.
- 10-47 SUPPLEMENTAL AGREEMENT.** A written agreement between the Contractor and TxDOT covering: (1) work that would increase or decrease the total amount of the awarded contract, or any major contract item, by more than 25 percent, such increased or decreased work being within the scope of the originally awarded contract; or (2) work that is not within the scope of the originally awarded contract.
- 10-48 SURETY.** The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds which are furnished to TxDOT by the Contractor.
- 10-49 TAXIWAY.** For the purpose of this document, the term taxiway means the portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways or aircraft parking areas.

**10-50 TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT).** The Texas Department of Transportation, Aviation Division, acting as the owner's agent for management of the executed contract in accordance with the owner's grant agreement.

**10-51 WORK.** The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.

**10-52 WORKING DAY.** A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least 6 hours toward completion of the contract. Unless work is suspended for causes beyond the Contractor's control, Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work, requiring the presence of an inspector, will be considered as working days.

**END OF SECTION 10**

## SECTION 20

### PROPOSAL REQUIREMENTS AND CONDITIONS

**20-01 ADVERTISEMENT (Notice to Bidders).** The contents of the advertisement are included elsewhere in this bid package.

**20-02 PREQUALIFICATION OF BIDDERS.** Each bidder shall furnish TxDOT satisfactory evidence of his competency to perform the proposed work. Such evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, a list of equipment that would be available for the work, and a list of key personnel that would be available. In addition, each bidder shall furnish TxDOT satisfactory evidence of his financial responsibility. Such evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the Contractor's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether his financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect his (bidder's) true financial condition at the time such qualified statement or report is submitted to TxDOT.

Each bidder shall submit written evidence from the State Comptroller's office that all applicable franchise taxes owed the State of Texas have been paid. Proposals submitted without submission of Qualifications Statements will not be read.

Unless otherwise specified, a bidder may submit evidence that he is pre-qualified with the Texas Department of Transportation (TxDOT) and is on the current "bidder's list. Such evidence of the Texas Department of Transportation pre-qualification may be submitted as evidence of financial responsibility in lieu of the certified statements or reports required above.

**20-03 CONTENTS OF PROPOSAL FORMS.** TxDOT shall furnish bidders with written proposal forms and sample of electronic forms. All statements, certifications, and other qualifications indicated in "Instruction to Bidders" or attached to the proposal forms are necessary parts.

The plans specifications, and other documents designated in the proposal form shall be considered a part of the proposal whether attached or not. Bidders may use electronically printed forms provided that the bid items are presented in the identical order as that in the written proposal form.

**20-04 ISSUANCE OF PROPOSAL FORMS.** TxDOT reserves the right to refuse to issue a proposal form to a prospective bidder should such bidder be in default for any of the following reasons:

- a. Failure to comply with any pre-qualification regulations of TxDOT, if such regulations are cited, or otherwise included, in the proposal as a requirement for bidding.
- b. Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force (with TxDOT) at the time TxDOT issues the proposal to a prospective bidder.
- c. Contractor default under previous contracts with TxDOT.
- d. Unsatisfactory work on previous contracts with TxDOT.
- e. Identified as “in default” by the Federal Aviation Administration

**20-05 INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES.** An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the contract. TxDOT does not expressly or by implication agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as hereinafter provided in the subsection titled ALTERATION OF WORK AND QUANTITIES of Section 40 without in any way invalidating the unit bid prices.

**20-06 EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE.** The bidder is expected to carefully examine the site of the proposed work, the proposal, plans specifications, and contract documents. He shall satisfy himself as to the character, quality, and quantities of work to be performed, materials to be furnished, and as to the requirements of the proposed contract. The submission of a proposal shall be *prima facie* evidence that the bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the proposed contract, plans, and specifications.

Boring logs and other records of subsurface investigations and tests are available for inspection of bidders. It is understood and agreed that such subsurface information, whether included in the plans, specifications, or otherwise made

available to the bidder, was obtained and is intended for TxDOT's design and estimating purposes only. Such information has been made available for the convenience of all bidders. It is further understood and agreed that each bidder is solely responsible for all assumptions, deductions, or conclusions which he may make or obtain from his examination of the boring logs and other records of subsurface investigations and tests that are furnished by TxDOT.

**20-07 PREPARATION OF PROPOSAL.** Submit the proposal on the form furnished by TxDOT. Make entries in ink. Specify a unit price in dollars and cents for each Item for which an estimated quantity is given. When "Working Days" is an item, submit the number of working days to be used to complete the contract, or phases of the Contract shown on the plans. Include unit bid prices for each Item in the item group or alternate Item group, except for instances when alternate items pertain to foreign steel or iron materials. An item left blank will constitute an incomplete bid and will be handled as prescribed in General Provision 20-08, "Irregular Proposals."

If a proposal contains alternate Items pertaining to foreign steel or iron materials and the Bidders wished to bid using foreign steel or iron materials, submit unit prices for both the regular Items using domestic steel or iron materials and alternate Items using foreign steel or iron materials. If the Bidder wishes to bid using domestic steel or iron materials, submit unit prices only for the regular domestic Items; unit prices for alternate items using foreign steel are not necessary.

Execute the proposal in ink. Provide the complete and correct name of the Bidder submitting the proposal. The person authorized to bind the Bidder or Bidders must sign the proposal. In the case of a joint venture, the complete and correct name of all Bidders submitting the proposal must be provided and all persons authorized to bind the Bidders must sign the proposal.

As an Alternative to hand writing the unit prices in works in ink in the proposal, submit a computer printout signed by the person authorized to bind the Bidder. In the case of a joint venture, the persons authorized to bind the Bidders must sign the computer printout. As a minimum, computer printouts must contain the information in the format shown on the "Example of Bid Prices Submitted by Computer Printout" form in the proposal.

Verify whether addenda have been issued on a proposed Contract. Acknowledge all addenda. Enter the date or dates of the addendum notification letter or letters on the addenda acknowledgement pages in the proposal form.

**20-08 IRREGULAR PROPOSALS.** A proposal that has one or more of the deficiencies listed below is nonresponsive and will not be considered:

- a. The person or the case of a joint venture, persons do not sign the proposal.
- b. The proposal or bid bond guaranty does not comply with the requirements contained in Section 20-09.
- c. The proposal is in a form other than the official proposal form issued to the Bidder or Bidders.
- d. The proposal was not in the hands of the letting official at the time and location specified in the advertisement.
- e. The proposal submitted has the incorrect number of Items.
- f. A computer printout, when used, is not signed in the name of the Bidder (or joint Bidders, in the case of a joint venture), is not in the proper format, or omits required items or includes an Item or items not shown in the proposal.
- g. The Bidder submits more than one proposal, under the same or different name, for a specific proposed Contract. (A Bidder may submit a bid proposal and participate as a material supplier, subcontractor, or both to any or all Bidders contemplating submitting a proposal for this work..)
- h. The Bidder fails to acknowledge or improperly acknowledges receipt of all addenda issued.
- i. The Bidder modifies the proposal in a manner that alters the conditions or requirements for work as stated in the proposal form.
- j. The Bidder did not attend a specified mandatory pre-bid conference.

TxDOT reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of TxDOT and conforms to local laws and ordinances pertaining to the letting of construction contracts.

**20-09 BID GUARANTY.** Include a proposal guaranty in the amount indicated on the proposal form, in the form of either a guaranty check or a bid bond. The proposal guaranty amount is fixed at the amount indicated on the proposal form on the date the bid proposal is released to the public.

A. **Guaranty Check.** The proposal guaranty must be payable to the **Texas Transportation Commission** and must be a cashier's check, money order, or

teller's check drawn by or on a state or national bank, a savings and loan association, or a state or federally chartered credit union (collectively referred to as "bank"). The type of check or money instrument must be no more than 90 days old. A check must be made by a bank and on a bank; or be payable at or through a bank. The Department will not accept personal checks, certified checks, or other types of money orders as a proposal guaranty.

- B. Bid Bond. The Bid bond must be with powers of attorney attached, in the amount specified on the bid bond form. The bond form must bear the impressed seal of the Surety and be signed by the Bidder and authorized individual of the Surety. Bid bonds will only be accepted from Sureties authorized to execute a bond under an in accordance with state law.

**20-10 DELIVERY OF PROPOSAL.** Each proposal submitted shall be placed in a sealed envelope plainly marked with the project number, location of airport, and name and business address of the bidder on the outside. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. No proposal will be considered unless received at the place specified in the advertisement before the time specified for opening all bids. Proposals received after the bid opening time shall be returned to the bidder unopened.

**20-11 WITHDRAWAL OR REVISION OF PROPOSALS.** A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by TxDOT in writing or by telegram before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.

**20-12 PUBLIC OPENING OF PROPOSALS.** Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Bidders, their authorized agents, and other interested persons are invited to attend. Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.

**20-13 DISQUALIFICATION OF BIDDERS.** A bidder shall be considered disqualified for any of the following reasons:

- a. Submitting more than one proposal from the same partnership, joint venture, LLP, or corporation under the same or different name.
- b. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of TxDOT

until any such participating bidder has been reinstated by TxDOT as a qualified bidder.

- c. If the bidder is considered to be in “default” for any reason specified in the subsection titled ISSUANCE OF PROPOSAL FORMS of this section.

**END OF SECTION 20**

## SECTION 30

### AWARD AND EXECUTION OF CONTRACT

**30-01 CONSIDERATION OF PROPOSALS.** After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit price written in words shall govern, unless obviously incorrect.

Until the award of a contract is made, TxDOT reserves the right to reject a bidder's proposal for either of the following reasons:

- a. If the proposal is irregular as specified in the subsection titled IRREGULAR PROPOSALS of Section 20.
- b. If the bidder is disqualified for any of the reasons specified in the subsection titled DISQUALIFICATION OF BIDDERS of Section 20.

In addition, until the award of a contract is made, TxDOT reserves the right to reject any or all proposals, waive technicalities, if such waiver is in the best interest of TxDOT and is in conformance with applicable federal, state and local laws or regulations pertaining to the letting of construction contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote TxDOT's best interests.

**30-02 AWARD OF CONTRACT.** The award of a contract as follows:

- A. If it is to be awarded, shall be made within 60 calendar days of the date specified for publicly opening bids, unless otherwise specified. No award shall be made until TxDOT has concurred with the owner's recommendation to make such award and has approved the owner's proposed contract to the extent that such concurrence and approval are required in 49 CRF Part 26.

The Bidder shall also submit within the 14 days, a list of all supplies and subcontractors that quoted on the contract. This list shall include names, addresses, telephone numbers and type(s) of work quoted.

Award of the contract shall be made by TxDOT to the lowest, qualified bidder whose proposal conforms to the requirements of the bid documents.

B. As the 76th As the 76th Legislature amended Section 231.006, Family Code as follows:  
**Section 14.52 INELIGIBILITY TO RECEIVE STATE GRANTS OR LOANS OR BID ON STATE CONTRACTS**

A child support obligator who is 30 or more days delinquent in paying child support is not eligible to:

1. Enter into a contract to provide property, materials or services under a contract with the state; or
2. Receive a state-funded grant or loan

The statute required each proposer for a state contract or applicant for a state funded loan or grant to submit a signed, sworn statement accompanying the proposal or offer or application a Joint venture, LLP, that the proposer or applicant is not 30 or more days delinquent in providing child support under a court order or a written repayment agreement.

Completion of the form title: CHILD SUPPORT STATEMENT FOR NEGOTIATED CONTRACTS AND GRANTS is necessary before execution of a contract.

**30-03 CANCELLATION OF AWARD.** TxDOT reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by TxDOT in accordance with the subsection titled APPROVAL OF CONTRACT of this section.

**30-04 RETURN OF PROPOSAL GUARANTY.** All proposal guaranties, except that of the lowest bidder, will be returned immediately after TxDOT has made a comparison of bids as specified in the subsection titled CONSIDERATION OF PROPOSALS of this section. The successful bidder's proposal guaranty will be returned as soon as TxDOT receives the contract bonds as specified in the subsection titled REQUIREMENTS OF CONTRACT BONDS of this section.

**30-05 REQUIREMENTS OF CONTRACT BONDS.** At the time of the execution of the contract, the successful bidder shall furnish TxDOT a surety bond or bonds which have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to TxDOT. Unless otherwise specified in this

subsection, the surety bond or bonds shall be in a sum equal to the full amount of the contract.

**30-06 EXECUTION OF CONTRACT.** The successful bidder shall complete all required documentation, certifications and sign (execute) the necessary agreements, for entering into the contract and return such completed contract to TxDOT, along with the fully executed surety bond or bonds specified in the subsection titled REQUIREMENTS OF CONTRACT BONDS of this section, within 14 calendar days from the date mailed or otherwise delivered to the successful bidder. If the contract is mailed, special handling is recommended.

**30-07 APPROVAL OF CONTRACT.** Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, TxDOT shall complete the execution of the contract in accordance with federal, state, and local laws or ordinances, and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute TxDOT's approval to be bound by the successful bidder's proposal and the terms of the contract.

**30-08 FAILURE TO EXECUTE CONTRACT.** The successful bidder shall provide to TxDOT: an acceptable Certificate of Insurance; required Disadvantaged Business Enterprise (DBE)/Historically Underutilized Business(HUB) information including the list of quoting suppliers and subcontractors; acceptable surety bond or bonds as specified in the subsection titled REQUIREMENTS OF CONTRACT BONDS, and Child Support Certification of this section within 14 days after written notification of the award of the contract.

Failure or refusal of the successful bidder to complete and execute the contract within 14 calendar days after written notification of the award shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidation of damages to TxDOT. A bidder who forfeits his proposal guaranty in accordance with this article will not be considered in future proposals for the same work unless extenuating circumstances exist prior to the forfeiture of the proposal guaranty.

**30-09 BEGINNING OF WORK.** If a Storm Water Pollution Prevention Plan (SW3P) is included in this project, the Contractor, and all subcontractors implementing any measure identified on the SW3P, must submit to the Engineer a signed copy of the certification statement as described **Part II, D.6 of the Texas Pollutant Eliminations Discharge System General Permit TXR150000** no later than 48 hours prior to beginning work. The Contractor must participate in a pre-construction conference before work can begin, at which time these certifications will be required.

**30-10 CERTIFICATE OF INSURANCE.** Within 14 days after receipt of written notification of conditional award of the contract the bidder shall furnish a TxDOT - Aviation Division Certificate of Insurance form covering:

- a. Worker's Compensation Insurance Amount - Statutory
- b. Commercial General Liability Amount-\$500,000 combined single limit
- c. Texas Business Automobile Amount - Bodily Injury - \$200,000 each person; \$500,000 each occurrence
- d. Property Damage - \$20,000 each occurrence

This insurance shall be kept in force until the work described in this contract has been completed and accepted by TxDOT. If for any reason insurance coverage is not maintained, all work will cease until an acceptable Certificate of Insurance is provided to TxDOT.

TxDOT shall be included as an "Additional Insured" by Endorsement to policies issued for coverage's listed in b and c above. A "Waiver of Subrogation Endorsement" in favor of TxDOT shall be a part of each policy for coverage's listed in a, b and c above.

**30-11 HAZARDOUS MATERIALS.** Use materials that are free of hazardous materials as defined in Item 1, "Definition of Terms."

Notify the Engineer immediately when a visual observation or odor indicated that materials in required material sources or on sites owned or controlled by the Department may contain hazardous materials. The Department is responsible for testing and removing or disposing of hazardous materials not introduced by the Contractor on sites owned or controlled by the Department. The Contractor is not required to test, introduce onto the work locations. The Engineer may suspend the work wholly or in part during the testing, removal, and disposition of hazardous materials introduced onto the work locations by the Contractor will be at the Contractor's expense. Working days charges will not be suspended and extensions of working days will not be granted for activities related to handling hazardous material delivered by the Contractor.

When a visual observation or odor indicates that materials delivered to the work locations by the Contractor may contain hazardous materials, have an approved commercial laboratory test the materials for contamination. Remove, remediate and dispose of any of these materials found to be contaminated. Testing, removal, and disposition of hazardous materials introduced onto the work locations by the

Contractor will be at the Contractor's expense. Working day charges will not be suspended and extensions of working days will not be granted for activities related to handling hazardous material delivered by the Contractor.

**30-12 RESPONSIBILITY FOR HAZARDOUS MATERIALS.** Indemnify and save harmless the State and its agents and employees from all suits, actions, or claims and from all liability and damages for any injury or damage to any person or property arising from the generation or disposition of hazardous materials introduced by the Contractor on any work done by the Contractor on State owned or controlled sites. Indemnify and save harmless the State and its representatives from any liability or responsibility arising out of the Contractor's generation or disposition of any hazardous materials obtained, processed, stored, shipped, etc., on sites not owned or controlled by the State. Reimburse the State for all payments, fees, or restitution the State is required to make as a result of the Contractor's actions.

**END OF SECTION 30**



## SECTION 40

### SCOPE OF WORK

**40-01 INTENT OF CONTRACT.** The intent of the contract is to provide for construction and completion, in every detail, of the work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the contract.

**40-02 ALTERATION OF WORK AND QUANTITIES.** TxDOT reserves and shall have the right to make such alterations in the work as may be necessary or desirable to complete the work originally intended in an acceptable manner. Unless otherwise specified herein, the Engineer shall be and is hereby authorized to make such alterations in the work as may increase or decrease the originally awarded contract quantities, provided that the aggregate of such alterations does not change the total contract cost or the total cost of any major contract item by more than 25 percent (total cost being based on the unit prices and estimated quantities in the awarded contract). Alterations which do not exceed the 25 percent limitation shall not invalidate the contract nor release the surety, and the Contractor agrees to accept payment for such alterations as if the altered work had been a part of the original contract. These alterations which are for work within the general scope of the contract shall be covered by “Change Orders” issued by the Engineer. Change orders for altered work shall include extensions of contract time where, in the Engineer’s opinion, such extensions are commensurate with the amount and difficulty of added work.

Should the aggregate amount of altered work exceed the 25 percent limitation specified above, such excess altered work shall be covered by supplemental agreement. If TxDOT and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, TxDOT reserves the right to terminate the contract with respect to the item and make other arrangements for its completion.

For AIP contracts, all supplemental agreements shall be approved by TxDOT and shall include valid wage determinations of the U.S. Secretary of Labor when the amount of the supplemental agreement exceeds \$2,000. However, if the contractor elects to waive the limitations on work that increases or decreases the originally awarded contract or any major contract item by more than 25 percent, the supplemental agreement shall be subject to the same U.S. Secretary of Labor wage determination as was included in the originally awarded contract.

All supplemental agreements shall require consent of the Contractor's surety and separate performance and payment bonds.

- 40-03 OMITTED ITEMS.** The Engineer may, in TxDOT's best interest, omit from the work any contract item, except major contract items. Major contract items may be omitted by a supplemental agreement. Such omission of contract items shall not invalidate any other contract provision or requirement.

Should a contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with the subsection titled PAYMENT FOR OMITTED ITEMS of Section 90.

- 40-04 EXTRA WORK.** Should acceptable completion of the contract require the Contractor to perform an item of work for which no basis of payment has been provided in the original contract or previously issued change orders or supplemental agreements, the same shall be called Extra Work. Extra work that is within the general scope of the contract shall be covered by written change order. Change orders for such extra work shall contain agreed unit prices for performing the change order work in accordance with the requirements specified in the order, and shall contain any adjustment to the contract time that, in the Engineer's opinion, is necessary for completion of such extra work.

When determined by the Engineer to be in TxDOT's best interest, he may order the Contractor to proceed with extra work by force account as provided in the subsection titled PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK of Section 90.

Extra work that is necessary for acceptable completion of the project, but is not within the general scope of the work covered by the original contract shall be covered by a Supplemental Agreement as herein before defined in the subsection titled SUPPLEMENTAL AGREEMENT of Section 10.

Any claim for payment of extra work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by TxDOT.

- 40-05 DIFFERING SITE CONDITIONS.** During the progress of the work, differing subsurface or latent physical conditions may be encountered at the site. The two types of differing site conditions are defined as:

- those that differ materially from those indicated in the Contract and
- unknown physical conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the Contract.

Notify the Engineer in writing when differing site conditions are encountered. Unless directed otherwise, suspend work on the affected items and leave the site undisturbed. The Engineer will investigate the conditions and determine whether differing site conditions exist. If the differing site conditions cause an increase or decrease in the cost or number of working days specified for the performance of the Contract, the Engineer will make adjustments, excluding the loss of anticipated profits, in accordance with the Contract. Additional compensation will be made only if the required written notice has been provided.

**40-06 MAINTENANCE OF TRAFFIC.** It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas of the airport with respect to his own operations and the operations of all his subcontractors as specified in the subsection titled LIMITATION OF OPERATIONS of Section 80. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in the subsection titled CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS in Section 70.

With respect to his own operations and the operations of all his subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying: personnel; equipment; vehicles; storage areas; and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, or maintenance vehicles at the airport.

When the contract requires the maintenance of vehicular traffic on an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep such road, street, or highway open to all traffic and shall provide such maintenance as may be required to accommodate traffic. The Contractor shall furnish erect, and maintain barricades, warning signs, flagmen, and other traffic control devices in reasonable conformity with the manual of Uniform Traffic Control Devices for Streets and Highways (published by the United States Government Printing Office), unless otherwise specified herein. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress

from abutting property or intersecting roads, streets or highways. Unless otherwise specified herein, the Contractor will not be required to furnish snow removal for such existing road, street, or highway.

The Contractor shall make his own estimate of all labor, materials, equipment, and incidentals necessary for providing the maintenance of aircraft and vehicular traffic as specified in this subsection.

The cost of maintaining the aircraft and vehicular traffic specified in this subsection shall not be measured or paid for directly, but shall be included in the various contract items.

**40-07 REMOVAL OF EXISTING STRUCTURES.** All existing structures encountered within the established lines, grades, or grading sections shall be removed by the Contractor, unless such existing structures are otherwise specified to be relocated, adjusted up or down, salvaged, abandoned in place, reused in the work or to remain in place. The cost of removing such existing structures shall not be measured or paid for directly, but shall be included in the various contract items.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plans, the Engineer shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the Engineer in accordance with the provisions of the contract.

Except as provided in the subsection titled RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK of this section, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be utilized in the work as otherwise provided for in the contract and shall remain the property of TxDOT when so utilized in the work.

**40-08 RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK.** Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the contract to be either embankment or waste, he may at his option either:

- a. Use such material in another contract item, providing such use is approved by the Engineer and is in conformance with the contract specifications applicable to such use; or,

- b. Remove such material from the site, upon written approval of the Engineer; or
- c. Use such material for his own temporary construction on site; or,
- d. Use such material as intended by the terms of the contract.

Should the Contractor wish to exercise option a., b., or c., he shall request the Engineer's approval in advance of such use.

Should the Engineer approve the Contractor's request to exercise option a., b., or c., the Contractor shall be paid for the excavation or removal of such material at the applicable contract price. The Contractor shall replace, at his own expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, back-fills, or otherwise to the extent that such replacement material is needed to complete the contract work. The Contractor shall not be charged for his use of such material so used in the work or removed from the site.

Should the Engineer approve the Contractor's exercise of option a., the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of his exercise of option a., b., or c.

The Contractor shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which is located outside the lines, grades, or grading sections established for the work, except where such excavation or removal is provided for in the contract, plans, or specifications.

**40-09 FINAL CLEANING UP.** Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. He shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily, unless the Contractor has obtained the written permission of such property owner.

**END OF SECTION 40**



## SECTION 50

### CONTROL OF WORK

- 50-01 AUTHORITY OF THE ENGINEER.** The Engineer shall decide any and all questions which may arise as to the quality and acceptability of materials furnished, work performed, and as to the manner of performance and rate of progress of the work. He shall decide all questions which may arise as to the interpretation of the specifications or plans relating to the work, the fulfillment of the contract on the part of the Contractor, and the rights of different Contractors on the project. The Engineer shall determine the amount and quality of the several kinds of work performed and materials furnished which are to be paid under the contract.
- 50-02 CONFORMITY WITH PLANS AND SPECIFICATIONS.** All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) in the contract, plans or specifications.

If the Engineer finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications but that the portion of the work affected will, in his opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to TxDOT, he will advise TxDOT of his determination that the affected work be accepted and remain in place. In this event, the Engineer will document his determination and recommend to TxDOT a basis of acceptance which will provide for an adjustment in the contract price for the affected portion of the work. The Engineer's determination and recommended contract price adjustments will be based on good engineering judgment and such tests or retests of the affected work as are, in his opinion, needed. Changes in the contract price shall be covered by contract modifications (change order or supplemental agreement) as applicable.

If the Engineer finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor in accordance with the Engineer's written orders.

If it is found that the material furnished, work performed, or the finished product is not in close conformity with the plans and specifications, the Contractor shall bear all the expenses of such recover, exposure, observation, inspection and testing and of satisfactory reconstruction including compensation for additional

professional services and re-testing, and an appropriate deductive change order shall be issued.

All quality assurance costs associated with replacing or otherwise correcting any work item determined to be unacceptable shall be borne by the Contractor.

For the purpose of this subsection, the term “reasonably close conformity” shall not be construed as waiving the Contractor’s responsibility to complete the work in accordance with the contract, plans, and specifications. The term shall not be construed as waiving the Engineer’s right to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor’s prosecution of the work, when, in the Engineer’s opinion, such compliance is essential to provide an acceptable finished portion of the work.

For the purpose of this subsection, the term “reasonably close conformity,” is also intended to provide the Engineer with the authority to use good engineering judgment in his determinations as to acceptance of work that is not in strict conformity but will provide a finished product equal to or better than that intended by the requirements of the contract, plans and specifications.

**50-03 COORDINATION OF CONTRACT, PLANS, AND SPECIFICATIONS.** All specifications, accompanying plans, all provisions, change orders, and supplemental agreements are intended to work together and be interpreted as a whole.

Numerical dimensions govern over scaled dimensions. Special provisions govern over plans (including general notes), which govern over standard specifications and special specifications. Job-specific plan sheets govern over standard plan sheets.

Notify the Engineer promptly of any omissions, errors, or discrepancies discovered so that necessary corrections and interpretations can be made. Failure to promptly notify the Engineer will constitute a waiver of all claims for misunderstandings or ambiguities that result from the errors, omissions, or discrepancies discovered.

**50-04 COOPERATION OF CONTRACTOR.** The Contractor will be supplied with two copies each of the plans and specifications. He shall have available on the work at all times one copy each of the plans and specifications. The Contractor, for the cost of reproduction, may obtain additional copies of plans and specifications.

The Contractor shall give constant attention to the work to facilitate the progress thereof, and he shall cooperate with the Engineer and his inspectors and with other contractors in every way possible. The Engineer shall allocate the work and designate the sequence of construction in case of controversy between contractors.

The Contractor shall have a competent superintendent on the work at all times who is fully authorized as his agent on the work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the Engineer or his authorized representative.

**50-05 COOPERATION BETWEEN CONTRACTORS.** TxDOT reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

When separate contracts are let within the limits of any one project, each Contractor shall conduct his work so as not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

The Contractor shall arrange his work and shall place and dispose of the materials being used so as not to interfere with the operations of the other Contractors within the limits of the same project. He shall join his work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

**50-06 CONSTRUCTION LAYOUT AND STAKES.** The Engineer shall establish horizontal and vertical control only. The Contractor must establish all layouts required for the construction of the work. Such stakes and markings, as the Engineer may set for either his own or the Contractor's guidance, shall be preserved by the Contractor. In case of negligence on the part of the Contractor, or his employees, resulting in the destruction of such stakes or markings, an amount equal to the cost of replacing the same may be deducted from subsequent estimates due the Contractor at the discretion of the Engineer.

**50-07 AUTOMATICALLY CONTROLLED EQUIPMENT.** Whenever batching or mixing plant equipment is required to be operated automatically under the contract and a breakdown or malfunction of the automatic controls occurs, the equipment may be operated manually or by other methods for a period 48 hours following the breakdown or malfunction, provided this method of operations will produce results which conform to all other requirements of the contract.

**50-08 AUTHORITY AND DUTIES OF INSPECTORS.** The Resident Project Representative (RPR), as the Engineer's agent, will act as directed by and under the supervision of the Engineer, and will confer with the Engineer regarding RPR's actions. The Resident Project Representative's dealings in matters pertaining to the on-site work shall in general be with the Engineer, Agent's Construction Manager and Contractor, keeping the Sponsor advised as necessary. Dealings with the subcontractors shall be conducted with the knowledge of the Contractor.

Duties and Responsibilities: Resident Project Representative will:

1. Conferences. Attend preconstruction conference. Arrange and conduct a schedule of progress/coordination meeting and other job conferences as required in consultation with the Engineer and notify in advance the Agent's Construction Manager, Sponsor's Representative, Contractors and others that will be expected to attend. Record, maintain and circulate copies of minutes to all attendees.
2. Schedules. Review the progress schedule, schedule of submittals and schedule of values prepared by the Contractor and consult with the Engineer concerning their acceptability.
3. Liaison.
  - a. Serve as the Engineer's liaison with the contractor superintendent and assist the superintendent in understanding the intent of the Contract Documents. Assist the Engineer in serving as the Sponsor's liaison with the Contractor when the Contractor's operations affect the Sponsor's on-site operations.
  - b. As requested by the Engineer, assist in obtaining from the Agent's Construction Manager additional details or information, when requested at the job site for proper execution of the work.
4. Submittals
  - a. Receive and record date of receipt of all required Submittals, receive all samples which are furnished at the site by the Contractor, and notify the Engineer of their availability for examination.
  - b. Advise the Engineer and Contractor prior to the commencement of any work requiring a Submittal that has not yet been approved by the Engineer.
5. Review of Work, Rejection of Defective Work, Inspection and Tests.
  - a. Conduct on-site observations of the work in progress to assist the Engineer in determining if the work is proceeding on schedule and in accordance with the Contract Documents and whether completed work will conform to same.

- b. Report immediately to the Engineer and Agent's Construction Manager whenever the RPR believes that any work is unsatisfactory, faulty or defective or does not conform to the Contract Documents, or does not meet the requirements of any inspections, test or approval required to be made or that has been damaged prior to final acceptance; promptly advise the Engineer and Agent's Construction Manager when the RPR believes work should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
        - c. Verify that tests, equipment and systems startups and operating/maintenance procedures are conducted as required by the Contract Documents and in the presence of the required personnel, and that the Contractor maintains adequate records thereof; observe, record (in the Daily Diary) and report to the Engineer and Agent's Construction Manager appropriate details relative to the test procedures and startups.
        - d. Accompany visitors representing public and other agencies having jurisdiction over the Project, record (in the Daily Diary) the outcome of these inspections.
6. Interpretation of Contract Documents. Transmit to Contractor the Engineer's clarification and interpretations of the Contract Documents.
7. Modifications. Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report them with recommendations to the Engineer and Agent's Construction Manager.
8. Records.
  - a. Maintain at the job site orderly files for correspondence, reports of job conferences, Submittals and sample submissions, reproductions of original Contract Documents including all addenda, change orders, field orders, additional Drawings issued subsequent to the execution of the Contract Documents, Daily Reports, test reports and other project related documents.
  - b. Keep a Daily Diary, recording hours on job site (include RPRs) weather conditions, work force, equipment in use and idle, data relative to questions of extras or deductions, list of visitors, daily activities, decisions, observations in general and specific observations in more detail as tin the case of observing test procedures. Send copies to the Engineer and Agent's Construction Manager on a weekly basis.

- c. Maintain on a current basis a set of project drawings marked to show the work as actually constructed and assist the Engineer in the preparation of Record Drawings from the information on these marked drawings.
  - d. Record names, addresses and telephone numbers of all Contractors, subcontractors, testing laboratories and major suppliers of materials and equipment.
9. Report.
- a. Furnish weekly construction reports to the Engineer and Agent's Construction Manager in the form of copies from the Daily Diary (provided by Agent) on a weekly basis.
  - b. Notify the Engineer and Agent's Construction Manager of deficiencies in the Contractor's compliance with the approved progress schedule and/or schedule of Submittals.
  - c. Consult with the Engineer and notify the Agent's Construction Manager in advance of scheduled major tests, inspection or start of important phases of the work.
  - d. Report immediately to the Engineer and Agent upon the occurrence of any accident.
  - e. Report immediately to the Engineer and Agent's Construction Manager any tests or inspections not in compliance with the Contract Documents.
10. Payment Request: Review and approve Contractor pay requests for compliance. Forward them with recommendations to TxDOT and copy of the Engineer, noting particularly quantities, work completed, and materials and equipment delivered at the site but not incorporated in the work.
11. Wage Rates. Review the Contractor's certified payroll and determine whether the Contractor is compensating employees in accordance with the wage rates contained in the Contract Documents and stated in the certified payroll. Submit certified payroll to Agent with weekly construction reports. Interview the Contractor's employees and determine whether the Contractor is compensating employees in accordance with the wage rates contained in the Contract Documents. Document interviews in the Daily Diary.

12. Submittals of Certificates, Maintenance and Operation Manuals. During the course of the work, verify that certificates, maintenance and operations manuals and other Submittal data required to be assembled and furnished by the Contractor are applicable to the items actually installed; and deliver this material to Engineer for his review and forwarding to the Agent prior to final acceptance of the work.

Limitations of Authority: Except upon written instructions from the Engineer and with the Agent's concurrence, the Resident Project Representative:

1. Shall not authorize any deviation from the Contract Documents or approve any substitute materials or equipment.
2. Shall not exceed limitations on the Engineer's authority as set forth in the Contract Documents.
3. Shall not undertake any of the responsibilities of Contractor, subcontractors or Contractor's superintendent to expedite the work.
4. Shall not advise or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the Contract Documents.
5. Shall not advise or issue directions as to safety precautions and programs in connection with the work.
6. Shall not authorize the Sponsor to occupy the Project in whole or in part.
7. Shall not participate in specialized field or laboratory tests.

**50-09 INSPECTION OF THE WORK.** All materials and each part or detail of the work shall be subject to inspection by the Engineer. The Engineer shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed, will be paid for as extra work; but

should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed, will be at the Contractor's expense.

Any work done or materials used without supervision or inspection by an authorized representative of TxDOT may be ordered removed and replaced at the Contractor's expense unless TxDOT's representative failed to inspect after having been given reasonable notice in writing that the work was to be performed.

Should the contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (contract) owner, authorized representatives of Owner/TxDOTs of such facilities shall have the right to inspect such work. Such inspection shall in no sense make any facility owner a party to the contract, and shall in no way interfere with the rights of the parties to this contract.

**50-10 REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK.** All work which does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the Engineer as provided in the subsection titled CONFORMITY WITH PLANS AND SPECIFICATIONS of this section.

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of the subsection titled CONTRACTOR'S RESPONSIBILITY FOR WORK of Section 70.

Work done contrary to the instructions of the Engineer, work done beyond the lines shown on the plans or as given, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply herein with any order of the Engineer made under the provisions of this subsection, the Engineer will have authority to cause unacceptable work to be remedied or removed and replaced and unauthorized work to be removed and to deduct the costs from any monies due or to become due the Contractor.

**50-11 LOAD RESTRICTIONS.** On airport property contractor shall comply with haul routes as designated by the Engineer. The Contractor shall comply with all load restrictions in the hauling of materials on public roads. The operation of equipment

of such weight or so loaded as to cause damage to public roads will not be permitted.

Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor shall be responsible for all damage done by his hauling equipment in areas other than that designated by the Engineer.

**50-12 MAINTENANCE DURING CONSTRUCTION.** The Contractor shall maintain the work during construction and until the work is accepted. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

In the case of a contract for the placing of a course upon a course or sub-grade previously constructed, the Contractor shall maintain the previous course or sub-grade during all construction operations.

All costs of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various contract items, and the Contractor will not be paid an additional amount for such work.

**50-13 FAILURE TO MAINTAIN THE WORK.** Should the Contractor at any time fail to maintain the work as provided in the subsection titled MAINTENANCE DURING CONSTRUCTION of this section, the Engineer or RPR shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the urgency that exists.

Should the Contractor fail to respond to the Engineer's notification, the Engineer may suspend any work necessary for the Owner or TxDOT to correct such unsatisfactory maintenance condition, depending on the exigency that exists. Any maintenance cost incurred by the Owner or TxDOT shall be deducted from monies due or to become due the Contractor.

**50-14 PARTIAL ACCEPTANCE.** If at any time during the prosecution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit TxDOT, he may request the Engineer to make final inspection of that unit. If the Engineer finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, he may accept it as being completed, and the Contractor may be relieved of further responsibility for

that unit. Such partial acceptance and beneficial occupancy by TxDOT shall not void or alter any provision of the contract.

**50-15 FINAL ACCEPTANCE.** Upon due notice from the Contractor of presumptive completion of the entire project, the Engineer and owner will make an inspection. If all construction provided for and contemplated by the contract is found to be completed in accordance with the contract, plans, and specifications, such inspection shall constitute the final inspection. The Engineer shall notify the Contractor in writing of final acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the Engineer will give the Contractor the necessary instructions for correction of same and the Contractor shall immediately comply with and execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the Engineer will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

**50-16 CLAIMS FOR ADJUSTMENT AND DISPUTES.** If for any reason the Contractor deems that additional compensation is due him for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, he shall notify the Engineer in writing of his intention to claim such additional compensation before he begins the work on which he bases the claim. If such notification is not given or the Engineer is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the Engineer has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional compensation is based has been completed, the Contractor shall, within 60 calendar days, submit his written claim to the Engineer who will present it to TxDOT for consideration.

Nothing in this subsection shall be construed as a waiver of the Contractor's right to dispute final payment based on differences in measurements or computations.

**50-17 COST REDUCTION INCENTIVE.** The provisions of this subsection will apply only to contracts awarded to the lowest bidder pursuant to competitive bidding.

On projects with original contract amounts in excess of \$100,000, the Contractor may submit to the Engineer, in writing, proposals for modifying the plans, specifications or other requirements of the contract for the sole purpose of reducing the cost of construction. The cost reduction proposal shall not impair, in any manner, the essential functions or characteristics of the project, including but not limited to service life, economy of operation, ease of maintenance, desired appearance, design and safety standards. This provision shall not apply unless the proposal submitted is specifically identified by the Contractor as being presented for consideration as a value engineering proposal.

Not eligible for cost reduction proposals are changes in the basic design of a pavement type, runway and taxiway lighting, visual aids, hydraulic capacity of drainage facilities, or changes in grade or alignment that reduce the geometric or functional standards of the project.

As a minimum, the Contractor with each proposal shall submit the following information:

- a. A description of both existing contract requirements for performing the work and the proposed changes, with a discussion of the comparative advantages and disadvantages of each;
- b. An itemization of the contract requirements that must be changed if the proposal is adopted;
- c. A detailed estimate of the cost of performing the work under the existing contract and under the proposed changes;
- d. A statement of the time by which a change order or supplemental agreement adopting the proposal must be issued;
- e. A statement of the effect adoption of the proposal will have on the time for completion of the contract; and
- f. The contract items of work affected by the proposed changes, including any quantity variation attributable to them.

The Contractor may withdraw, in whole or in part, any cost reduction proposal not accepted by the Engineer, within the period specified in the proposal. The

provisions of this subsection shall not be construed to require the Engineer to consider any cost reduction proposal that may be submitted.

The Contractor shall continue to perform the work in accordance with the requirements of the contract until a change order or supplemental agreement incorporating the cost reduction proposal has been issued. If a change order or supplemental agreement has not been issued by the date upon which the Contractor's cost reduction proposal specifies that a decision should be made, or such other date as the Contractor may subsequently have requested in writing, such cost reduction proposal shall be deemed rejected.

The Engineer shall be the sole judge of the acceptability of a cost reduction proposal and of the estimated net savings from the adoption of all or any part of such proposal. In determining the estimated net savings, the Engineer may disregard the contract bid prices if, in the Engineer's judgment such prices do not represent a fair measure of the value of the work to be performed or deleted.

TxDOT may require the Contractor to share in TxDOT's costs of investigating a cost reduction proposal submitted by the Contractor as a condition of considering such proposal. Where such a condition is imposed, the Contractor shall acknowledge acceptance of it in writing. Such acceptance shall constitute full authority for TxDOT to deduct the cost of investigating a cost reduction proposal from amounts payable to the Contractor under the contract.

If the Contractor's cost reduction proposal is accepted in whole or in part, such acceptance will be by a contract change order or supplemental agreement that shall specifically state that it is executed pursuant to this subsection. Such change order shall incorporate the changes in the plans and specifications which are necessary to permit the cost reduction proposal or such part of it as has been accepted and shall include any conditions upon which the Engineer's approval is based. The change order or supplemental agreement shall also set forth the estimated net savings attributable to the cost reduction proposal. The net savings shall be determined as the difference in costs between the original contract costs for the involved work items and the costs occurring as a result of the proposed change. The change order or supplemental agreement shall also establish the net savings agreed upon and shall provide for adjustment in the contract price that will divide the net savings equally between the Contractor and TxDOT.

The Contractor's 50 percent share of the net savings shall constitute full compensation to the Contractor for the cost reduction proposal and the performance of the work.

Acceptance of the cost-reduction proposal and performance of the cost-reduction work shall not extend the time of completion of the contract unless specifically provided for in the contract change order or supplemental agreement.

**END OF SECTION 50**



## SECTION 60

### CONTROL OF MATERIALS

**60-01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS.** The materials used on the work shall conform to the requirements of the contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish complete statements to the Engineer as to the origin, composition, and manufacture of all materials to be used in the work. Such statements shall be furnished promptly after execution of the contract but in all cases, prior to delivery of such materials.

At the Engineer's option, materials may be approved at the source of supply before delivery is stated. If it is found after trial those sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

The Contractor shall furnish airport lighting equipment that conforms to the requirements of cited materials specifications. In addition, where a FAA specification for airport lighting equipment is cited in the plans or specifications, the Contractor shall furnish such equipment that is:

- a. Listed in FAA Advisory Circular (AC) 150/5345-1, Approved Airport Equipment, that is in effect on the date of advertisement; and,
- b. Produced by the manufacturer qualified (by FAA) to produce such specified and listed equipment.

**60-02 SAMPLES, TESTS, AND CITED SPECIFICATIONS.** All materials used in the work shall be inspected, tested, and approved by the Engineer before incorporation in the work. Any work in which untested materials are used without approval or written permission of the Engineer shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the Engineer, shall be removed at the Contractor's expense. Unless otherwise designated, tests in accordance with the cited standard methods of AASHTO or ASTM that is current on the date of advertisement for bids will be made by and at the expense of the Engineer. A qualified representative of TxDOT will take samples. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at his request.

**60-03 CERTIFICATION OF COMPLIANCE.** The Engineer may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's certificates of compliance stating that such materials or assemblies fully comply with the requirements of the contract. The manufacturer shall sign the certificate. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified.

Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time and if found not to be in conformity with contract requirements will be subject to rejection whether in place or not.

The form and distribution of certificates of compliance shall be as approved by the Engineer.

When a material or assembly is specified by "brand name or equal" and the Contractor elects to furnish the specified "brand name," the Contractor shall be required to furnish the manufacturer's certificate of compliance for each lot of such material or assembly delivered to the work. Such certificate of compliance shall clearly identify each lot delivered and shall certify as to:

- a. Conformance to the specified performance, testing, quality or dimensional requirements; and,
- b. Suitability of the material or assembly for the use intended in the contract work.

Should the Contractor propose to furnish an "or equal" material or assembly, he shall furnish the manufacturer's certificates of compliance as herein before described for the specified brand name material or assembly. However, the Engineer shall be the sole judge as to whether the proposed "or equal" is suitable for use in the work.

The Engineer reserves the right to refuse permission for use of materials or assemblies on the basis of certificates of compliance.

**60-04 PLANT INSPECTION.** The Engineer or his authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for his acceptance of the material or assembly.

Should the Engineer conduct plant inspections, the following conditions shall exist:

- a. The Engineer shall have the cooperation and assistance of the Contractor and the producer with whom he has contracted for materials.
- b. The Engineer shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.
- c. If required by the Engineer, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Office or working space should be conveniently located with respect to the plant.

It is understood and agreed that the Engineer shall have the right to retest any material which has been tested and approved at the source of supply after it has been delivered to the site. The Engineer shall have the right to reject only material which, when re-tested, does not meet the requirements of the contract, plans, or specifications.

**60-05 ENGINEER'S FIELD OFFICE AND LABORATORY.** When specified and provided for as a contract item, the Contractor shall furnish a building for the exclusive use of the Engineer as a field office and field testing laboratory. The building shall be furnished and maintained by the Contractor as specified herein and shall become property of the Contractor when the contract work is completed.

**60-06 STORAGE OF MATERIALS.** Materials shall be so stored as to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located so as to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the Engineer. Materials to be stored on airport property shall not create an obstruction to air navigation nor shall they interfere with the free and unobstructed movement of aircraft. Unless otherwise shown on the plans, the storage of materials and the location of the Contractor's plant and parked equipment or vehicles shall be as directed by the Engineer. Private property shall not be used for storage purposes without written permission of TxDOT or lessee of such property. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the Engineer a copy of the property owner's permission.

All storage sites on private or airport property shall be restored to their original condition by the Contractor at his entire expense, except as otherwise agreed to (in writing) by TxDOT or lessee of the property.

- 60-07 UNACCEPTABLE MATERIALS.** Any material or assembly that does not conform to the requirements of the contract, plans, or specifications shall be considered unacceptable and shall be rejected. The Contractor shall remove any rejected material or assembly from the site of the work, unless otherwise instructed by the Engineer.

No rejected material or assembly, the defects of which have been corrected by the Contractor, shall be returned to the site of the work until such time as the Engineer has approved its use in the work.

- 60-08 OWNER FURNISHED MATERIALS.** The Contractor shall furnish all materials required to complete the work, except those specified herein (if any) to be furnished by the Owner or TxDOT.

Owner-furnished materials shall be made available to the Contractor at the location specified herein.

All costs of handling, transportation from the specified location to the site of work, storage, and installing owner-furnished materials shall be included in the unit price bid for the contract item in which such owner-furnished material is used.

After any owner-furnished material has been delivered to the location specified, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies that may occur during the Contractor's handling, storage, or use of such owner-furnished material. TxDOT will deduct from any monies due or to become due the Contractor any cost incurred by TxDOT in making good such loss due to the Contractor's handling, storage, or use of owner-furnished materials.

- 60-09 OPERATION AND MAINTENANCE DOCUMENTATION.** The Contractor shall furnish (3) three copies of all approved catalog cuts, warranties, operation instructions; maintenance data, schedules, and recommendations; parts lists, and names and addresses and telephone numbers of equipment and materials suppliers. Submittals shall be submitted, reviewed, and approved by the Engineer before final payment to the Contractor will be processed.

**END OF SECTION 60**

## SECTION 70

### LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

- 70-01 LAWS TO BE OBSERVED.** The Contractor shall keep fully informed of all Federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders and decrees, and shall protect and indemnify the owner and all his/her officers, agents, or servants against any claim or liability arising from or based on the violations of any such law, ordinance, regulation, order, or decree, whether by himself or his/her employees.
- 70-02 PERMITS, LICENSES, AND TAXES.** The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.
- 70-03 PATENTED DEVICES, MATERIALS, AND PROCESSES.** If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or owner.
- 70-04 RESTORATION OF SURFACES DISTURBED BY OTHERS.** TxDOT reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with TxDOT, such authorized work (by others) is indicated in the Special Conditions or on the plans.

Except as listed above, the Contractor shall not permit any individual, joint venture, LLP,, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the Engineer.

Should the Owner of a public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such owners by arranging and performing the work in this contract so as to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is listed above. When ordered as extra work by the Engineer, the Contractor shall make all necessary repairs to the work, which are due to such authorized work by others, unless

otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

**70-05 FEDERAL AID PARTICIPATION.** For AIP contracts, the United States Government has agreed to reimburse TxDOT for some portion of the contract costs. Such reimbursement is made from time to time upon TxDOT's (sponsor's) request to the FAA. In consideration of the United States Government's (FAA's) agreement with TxDOT, TxDOT has included provisions in this contract pursuant to the requirements of the Airport Improvement Act of 1982, as amended by the Airport and Airway Safety and Capacity Expansion Act of 1987, and the Rules and Regulations of the FAA that pertain to the work.

As required by the Act, the contract work is subject to the inspection and approval of duly authorized representatives of FAA, and is further subject to those provisions of the rules and regulations that are cited in the contract, plans, or specifications.

No requirement of the Act, the rules and regulations implementing the Act, or this contract shall be construed as making the Federal Government a party to the contract nor will any such requirement interfere, in any way, with the rights of either party to the contract.

**70-06 SANITARY, HEALTH, AND SAFETY PROVISIONS.** The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements of the state and local Board of Health or of other bodies or tribunals having jurisdiction.

Attention is directed to Federal, state, and local laws, rules and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work in surroundings or under conditions that are unsanitary, hazardous, or dangerous to his health or safety.

**70-07 PUBLIC CONVENIENCE AND SAFETY.** The Contractor shall control his operations and those of his subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to his own operations and those of his subcontractors and all suppliers in accordance with the subsection titled MAINTENANCE OF TRAFFIC of Section 40 herein before specified and shall limit such operations for the convenience and safety of the traveling public as specified in the subsection titled LIMITATION OF OPERATIONS of Section 80 hereinafter.

**70-08 BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS.** The Contractor shall furnish, erect, and maintain all barricades, warning signs, and markings for hazards necessary to protect the public and the work. When used during periods of darkness, such barricades, warning signs, and hazard markings shall be suitably illuminated.

For vehicular and pedestrian traffic, the Contractor shall furnish, erect, and maintain barricades, warning signs, lights and other traffic control devices in reasonable conformity with the Manual of Uniform Traffic Control Devices for Streets and Highways (published by the United States Government Printing Office).

When the work requires closing an air operations area of the airport or portion of such area, the Contractor shall furnish, erect, and maintain temporary markings and associated lighting conforming to the requirements of the most current version of the FAA, Advisory Circular, Marking of Paved Areas on Airports.

The Contractor shall furnish, erect, and maintain markings and associated lighting of open trenches, excavations, temporary stock piles, and his parked construction equipment that may be hazardous to the operation of emergency fire-rescue or maintenance vehicles on the airport in reasonable conformance to the most current version of the FAA Advisory Circular, Operational Safety on Airports during Construction Activity.

The Contractor shall identify each motorized vehicle or piece of construction equipment in reasonable conformance to the most current version of the FAA Advisory Circular.

The Contractor shall furnish and erect all barricades, warning signs, and markings for hazards prior to commencing work which requires such erection and shall maintain the barricades, warning signs, and markings for hazards until their dismantling is directed by the Engineer.

Open-flame type lights shall not be permitted within the air operations areas of the airport.

**70-09 USE OF EXPLOSIVES.** When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property, including new work. The Contractor shall be responsible for all damage resulting from the use of explosives.

All explosives shall be stored in a secure manner in compliance with all laws and ordinances, and all such storage places shall be clearly marked. Where no laws or ordinances apply, storage shall be provided satisfactory to the Engineer and, in

general, not closer than 1,000 feet (300 m) from the work or from any building, road, or other place of human occupancy.

The Contractor shall notify each property owner and public utility company having structures or facilities in proximity to the site of the work of his intention to use explosives. Such notice shall be given sufficiently in advance to enable them to take such steps as they may deem necessary to protect their property from injury.

The use of electrical blasting caps shall not be permitted on or within 1,000 feet (300 m) of the airport property.

**70-10 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE.**

The Contractor shall be responsible for the preservation of all public and private property, and shall protect carefully from disturbance or damage all land monuments and property markers until the Engineer has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in his manner or method of executing the work, or at any time due to defective work or materials, and said responsibility will not be released until the project shall have been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the no execution thereof by the Contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner.

**70-11 RESPONSIBILITY FOR DAMAGE CLAIMS.**

The Contractor shall indemnify and hold harmless the Engineer and TxDOT and their officers, and employees from all suits actions, or claims of any character brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or from any claims or amounts arising or recovered under the “Worker’s Compensation Act,” or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of his contract as may be considered necessary by TxDOT for such purpose may be retained for the use of TxDOT or, in case no money is due, his surety may be held until such suit or suits, action or actions, claim or claims for injuries or damages as aforesaid shall have been settled and suitable

evidence to that effect furnished to TxDOT, except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that he is adequately protected by public liability and property damage insurance.

**70-12 THIRD PARTY BENEFICIARY CLAUSE.** It is specifically agreed between the parties executing the contract that it is not intended by any of the provisions of any part of the contract to create the public or any member thereof a third party beneficiary or to authorize anyone not a party to the contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the contract.

**70-13 OPENING SECTIONS OF THE WORK TO TRAFFIC.** Should it be necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of TxDOT prior to completion of the entire contract, such “phasing” of the work shall be specified herein and indicated on the plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified. The Contractor shall make his own estimate of the difficulties involved in arranging his work to permit such beneficial occupancy by TxDOT as described below:

Phase or Description
Required Date or Sequence of Owner’s Beneficial Occupancy
Work Shown on Plan Sheet

Upon completion of any portion of the work listed above, such portion shall be accepted by TxDOT in accordance with the subsection titled PARTIAL ACCEPTANCE of Section 50.

No portion of the work may be opened by the Contractor for public use until ordered by the Engineer in writing. Should it become necessary to open a portion of the work to public traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the Engineer, such portion of the work is in an acceptable condition to support the intended traffic. Temporary or intermittent openings are considered to be inherent in the work and shall not constitute either acceptance of the portion of the work so opened or a waiver of any provision of the contract. Any damage to the portion of the work so opened that is not attributable to traffic that is permitted by TxDOT shall be repaired by the Contractor at his expense.

The Contractor shall make his own estimate of the inherent difficulties involved in completing the work under the conditions herein described and shall not claim any added compensation by reason of delay or increased cost due to opening a portion of the contract work.

**70-14 CONTRACTOR'S RESPONSIBILITY FOR WORK.** Until final acceptance of the Contract, take every precaution against injury or damage to any part of the work by the action of the elements or by any other cause, whether arising from the execution or from the nonexecution of the work. Protect all materials to be used in the work at all times, including periods of suspension .

When any runway taxiway or apron or any portion thereof, is in suitable condition for air traffic, it may be opened to traffic as directed. Opening of the air traffic does not constitute final acceptance.

Repair damage to all work until final acceptance. Repair damage to existing facilities in accordance with the Contract or as directed by the Engineer. Repair damage to existing facilities or work caused by Contractor operations at the Contractor's expense. Repair work for damage that was not due to the Contractor's operations will not be paid for except as provided below.

- A. Reimbursable Repair. Except for damage to appurtenances listed in Section 70-14. B.1, "Unreimbursed Repair," the Contractor will be reimbursed for repair of damage caused by:
- Motor-vehicle or aircraft, or
  - vandalism; or
  - Acts of God, such as earthquake, tidal wave, tornado, hurricane, or other cataclysmic phenomena of nature.
- B. Appurtenances.
1. Unreimbursed Repair. Reimbursement will not be made for repair of damage to the following temporary appurtenances, regardless of cause:
    - signs
    - barricades, and
    - other work zone traffic control devices.
  2. Reimbursed Repair. Reimbursement will be made for repair of damage due to the causes listed in Section 70.14 A, "Reimbursable Repair," to appurtenances not listed Section 70.14 B.1 "Unreimbursed Repair."
- C. Contracted Improvements. Until final acceptance, the Contractor is responsible for all work constructed under the Contract. TxDOT will not reimburse the Contractor for repair work to new construction, unless the failure or damage is due to one of the causes listed in Section 70.14 A, "Reimbursable Repair."

The Contractor will not be responsible for the cost for repair of damage or existing infrastructure not caused by the Contractor’s operations.

- D. If the work is suspended for any cause whatever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at his expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seeding and sodding furnished under this contract, and shall take adequate precautions to protect important vegetative growth against injury.

Neither the final certificate of payment nor any provision in the Contract nor partial or entire use of the Improvements embraced in this contract by the Sponsor or the public shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting there from which appear within a period of twelve (12) months from the date of final acceptance of the work.

- E. Basis of Payment. When reimbursement for repair work is allowed and performed, payment will be made in accordance with pertinent Items or Section 40.02 “Changes of work.”

**70-15 CONTRACTOR’S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS.** As provided in the subsection titled RESTORATION OF SURFACES DISTURBED BY OTHERS of this section, the Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by TxDOT to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control his operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, FAA, or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the contract work, the approximate locations have been indicated on the plans and TxDOTs are indicated as follows:

*Utility Service or Facility*

- Person to Contract (Name, Title, Address, & Phone)
- Owner’s Emergency Contact (Phone)

It is understood and agreed that the Engineer does not guarantee the accuracy or the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of his responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify owners of all utility services or other facilities of his plan of operations. Such notification shall be in writing addressed to the individual(s) indicated on the plans. A copy of each notification shall be given to the Engineer.

In addition to the general written notification herein before provided, it shall be the responsibility of the Contractor to keep such individual owners advised of changes in his plan of operations that would affect such owners.

Prior to commencing the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such owner of his plan of operation. If, in the Contractor's opinion, the Engineer's assistance is needed to locate the utility service or facility or the presence of a representative of the Engineer is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner's PERSON TO CONTACT no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the Engineer.

The Contractor's failure to give the two day's notice as stated above shall be cause for the Engineer to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use excavation methods acceptable to the Engineer within 3 feet (90 cm) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, he shall immediately notify the proper authority and the Engineer and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the Engineer continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to his operations whether or not due to negligence or accident. The contract owner reserves the right to deduct such costs from any monies due or which may become due the Contractor, or his surety.

**70-16 FURNISHING RIGHTS-OF-WAY.** TxDOT will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

**70-17 PERSONAL LIABILITY OF PUBLIC OFFICIALS.** In carrying out any of the contract provisions or in exercising any power or authority granted to him by this contract, there shall be no liability upon the Engineer, his authorized representatives, or any officials of TxDOT either personally or as an official of TxDOT. It is understood that in such matters they act solely as agents and representatives of TxDOT.

**70-18 NO WAIVER OF LEGAL RIGHTS.** Upon completion of the work, TxDOT will expeditiously make final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop TxDOT from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall TxDOT be precluded or stopped from recovering from the Contractor or his surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill his obligations under the contract. A waiver on the part of TxDOT of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the contract, shall be liable to TxDOT for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards TxDOT's rights under any warranty or guaranty.

**70-19 ENVIRONMENTAL PROTECTION.** The Contractor shall comply with all Federal, state, and local laws and regulations controlling pollution of the environment. He shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, bitumen's, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

**70-20 ARCHAEOLOGICAL AND HISTORICAL FINDINGS.** Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during his operations, any building, part of a building, structure, or object which is incongruous with its surroundings, he shall immediately cease operations in that location and notify the Engineer. The Engineer will immediately investigate the Contractor's finding and will direct the Contractor to either resume his operations or to suspend operations as directed.

Should the Engineer order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract modification (change order or supplemental agreement) as provided in the subsection titled EXTRA WORK of Section 40 and the subsection titled PAYMENT FOR EXTRA WORK AND FORCE ACCOUNT WORK of Section 90. If appropriate, the contract modification shall include an extension of contract time in accordance with the subsection titled DETERMINATION AND EXTENSION OF CONTRACT TIME of Section 80.

**CERTIFICATION OF NPDES PERMIT.** If a Storm Water Pollution Prevention Plan (SWP3) is included in this project, the Contractor, and all subcontractors implementing any measures identified on the SWP3, must submit to the Engineer a signed copy of the certification statement as described in **Part II, D.6 of the Texas Pollutant Eliminations Discharge System General Permit TXR150000** no later than 48 hours prior to beginning work. The Contractor must participate in a pre-construction conference before the work can begin, at which time these certifications will be required.

**END OF SECTION 70**

## SECTION 80

### PROSECUTION AND PROGRESS

**80-01 SUBLETTING OF CONTRACT.** TxDOT will not recognize any subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person, by a qualified superintendent, or by other designated, qualified representative who is duly authorized to receive and execute orders of the Engineer.

Should the Contractor elect to sublet a portion of his contract, said assignment shall be concurred in by the surety and shall be presented for the consideration and approval of TxDOT. Subletting shall not be for more than seventy percent (70%) of the contract.

If a Storm Water Pollution Prevention Plan (SW3P) is included in this project, no subcontractor who is to implement any measure identified on the SW3P, will be approved for work until the subcontractor has submitted a signed copy of the certification statement described in **Part II, D.6 of the Texas Pollutant Elimination Discharge System General Permit TXR 150000** no later than 48 hours prior to beginning work and the General Provision, "Certification of NPDES Permit." If an approved subcontractor does not comply with the provisions of the permit, approval may be revoked.

**80-02 NOTICE TO PROCEED.** The notice to proceed shall state the date on which it is expected the Contractor will begin the construction and from which date contract time will be charged. The Contractor shall begin the work to be performed under the contract not later than the effective date given by TxDOT in the written notice to proceed, but in any event, the Contractor shall notify the Engineer at least 48 hours in advance of the time actual construction operations will begin.

**80-03 PROSECUTION AND PROGRESS.** Unless otherwise specified, the Contractor shall submit his progress schedule for the Engineer's approval within 10 calendar or work days after the effective date of the notice to proceed. The Contractor's progress schedule, when approved by the Engineer, may be used to establish major construction operations and to check on the progress of the work. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the Engineer's request, submit a revised schedule for completion of the work within the contract time and modify his operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the

prosecution of the work be discontinued for any reason, the Contractor shall notify the Engineer at least 48 hours in advance of resuming operations.

The Contractor shall not commence any actual construction prior to the date on which the notice to proceed is issued by TxDOT.

**80-04 LIMITATION OF OPERATIONS.** The Contractor shall control his operations and the operations of his subcontractors and all suppliers so as to provide for the free and unobstructed movement of aircraft in the AIR OPERATIONS AREAS of the airport.

When the work requires the Contractor to conduct his operations within an AIR OPERATIONS AREA of the airport, the work shall be coordinated with airport management (through the Engineer) at least 48 hours prior to commencement of such work. The Contractor shall not close an AIR OPERATIONS AREA until so authorized by the Engineer and until the necessary temporary marking and associated lighting is in place as provided in the subsection titled BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS of Section 70.

When the contract work requires the Contractor to work within an AIR OPERATIONS AREA of the airport on an intermittent basis (intermittent opening and closing of the AIR OPERATIONS AREA), the Contractor shall maintain constant communications as specified; immediately obey all instructions to vacate the AOA; immediately obey all instructions to resume work in such AOA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until the satisfactory conditions are provided only as indicated on the plans.

**80-05 CHARACTER OF WORKERS, METHODS, AND EQUIPMENT.** The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

All equipment that is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall be such that no injury to previously completed work, adjacent property, or existing airport facilities will result from its use.

When the methods and equipment to be used by the Contractor in accomplishing the work are not prescribed in the contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the contract, plans, and specifications.

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless the Engineer authorizes others. If the Contractor desires to use a method or type of equipment other than specified in the contract, he may request authority from the Engineer to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the Engineer determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality, or take such other corrective action as the Engineer may direct. No change will be made in basis of payment for the contract items involved or in contract time as a result of authorizing a change in methods or equipment under this subsection.

**80-06 TEMPORARY SUSPENSION OF THE WORK.** The Engineer shall have the authority to suspend the work wholly, or in part, for such period or periods as he may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for the prosecution of the work, or for such time as is necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract.

In the event that the Contractor is ordered by the Engineer, in writing, to suspend work for some unforeseen cause not otherwise provided for in the contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the Engineer's order to suspend work to the effective date of the Engineer's order to resume the work. Claims for such compensation shall be filed with the Engineer within the time period stated in the Engineer's order to resume work. The Contractor shall submit with his claim information substantiating the amount shown on the claim. The Engineer will forward the Contractor's claim to TxDOT for consideration. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather, for suspensions made at the request of the Contractor, or for any other delay provided for in the contract, plans, or specifications.

If it should become necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction or become damaged in any way. He shall take every precaution to prevent damage or deterioration of the work performed and provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the airport.

**80-07 DETERMINATION AND EXTENSION OF CONTRACT TIME.** The number of calendar or working days allowed for completion of the work shall be stated in the proposal and contract and shall be known as the CONTRACT TIME.

Should the contract time require extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

CONTRACT TIME if based on WORKING DAYS shall be calculated weekly by the Engineer. The Engineer will furnish the Contractor a copy of his weekly statement of the number of working days charged against the contract time during the week and the number of working days currently specified for completion of the contract (the original contract time plus the number of working days, if any, that have been included in approved CHANGE ORDERS or SUPPLEMENTAL AGREEMENTS covering EXTRA WORK).

The Engineer shall base his weekly statement of contract time charged on the following considerations:

- a. No time shall be charged for days on which the Contractor is unable to proceed with the principal item of work under construction at the time for at least 6 hours with the normal work force employed on such principal item. Should the normal work force be on a double-shift, 12 hours shall be used. Should the normal work force be on a triple-shift, 18 hours shall apply. Conditions beyond the Contractor's control such as strikes, lockouts, unusual delays in transportation, temporary suspension of the principal item of work under construction or temporary suspension of the entire work which have been ordered by the Engineer for reasons not the fault of the Contractor, shall not be charged against the contract time.
- b. The Engineer will not make charges against the contract time prior to the effective date of the notice to proceed.
- c. The Engineer will begin charges against the contract time on the first working day after the effective date of the notice to proceed.

- d. The Engineer will not make charges against the contract time after the date of final acceptance as defined in the subsection titled FINAL ACCEPTANCE of Section 50.
- e. The Contractor will be allowed 1 week in which to file a written protest setting forth his objections to the Engineer's weekly statement. If no objection is filed within such specified time, the weekly statement shall be considered as acceptable to the Contractor.

The contract time (stated in the proposal) is based on the originally estimated quantities as described in the subsection titled INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES of Section 20. Should the satisfactory completion of the contract require performance of work in greater quantities than those estimated in the proposal, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in contract time shall not consider either the cost of work or the extension of contract time that has been covered by change order or supplemental agreement and shall be made at the time of final payment.

CONTRACT TIME based on CALENDAR DAYS shall consist of the number of calendar days stated in the contract counting from the effective date of the notice to proceed and including all Saturdays, Sundays, holidays, and non-work days. All calendar days elapsing between the effective dates of the Engineer's orders to suspend and resume all work, due to causes not the fault of the Contractor shall be excluded.

At the time of final payment, the contract time shall be increased in the same proportion as the cost of the actually completed quantity bears to the cost of the originally estimated quantities in the proposal. Such increase in the contract time shall not consider either cost of work or the extension of contract time that has been covered by a change order or supplemental agreement. Charges against the contract time will cease as of the date of final acceptance.

When the contract time is a specified completion date, it shall be the date on which all contract work shall be substantially completed.

If the Contractor finds it impossible for reasons beyond his control to complete the work within the contract time as specified, or as extended in accordance with the provisions of this subsection, he may, at any time prior to the expiration of the contract time as extended, make a written request to the Engineer for an extension of time setting forth the reasons which he believes will justify the granting of his

request. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the Engineer finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, he may extend the time for completion in such amount as the conditions justify. The extended time for completion shall then be in full force and effect, the same as though it was the original time for completion.

**80-08 FAILURE TO COMPLETE ON TIME.** For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in the subsection titled DETERMINATION AND EXTENSION OF CONTRACT TIME of this Section) the sum specified in the contract and proposal as liquidated damages will be deducted from any money due or to become due the Contractor or his surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages that will be incurred by TxDOT should the Contractor fail to complete the work in the time provided in his contract.

Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of TxDOT of any of its rights under the contract.

**80-09 DEFAULT AND TERMINATION OF CONTRACT.** The Contractor shall be considered in default of his contract and such default will be considered as cause for TxDOT and/or Owner to terminate the contract for any of the following reasons if the Contractor:

- a. Fails to begin the work under the contract within the time specified in the "Notice to Proceed," or
- b. Fails to perform the work or fails to provide sufficient workers, equipment or materials to assure completion of work in accordance with the terms of the contract, or
- c. Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable, or
- d. Discontinues the prosecution of the work, or
- e. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or

- f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or
- g. Allows any final judgment to stand against him unsatisfied for a period of 10 days, or
- h. Makes an assignment for the benefit of creditors, or
- i. For any other cause whatsoever, fails to carry on the work in an acceptable manner.

Should the Engineer consider the Contractor in default of the contract for any reason before stated, he shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the Contractor in default and TxDOT's intentions to terminate the contract.

If the Contractor or surety, within a period of 10 calendar or working days after such notice, does not proceed in accordance therewith, then TxDOT will, upon written notification from the Engineer of the facts of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority without violating the contract, to take the prosecution of the work out of the hands of the Contractor. TxDOT may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof, or use such other methods as in the opinion of the Engineer will be required for the completion of said contract in an acceptable manner.

All costs and charges incurred by TxDOT, together with the cost of completing the work under contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay to TxDOT the amount of such excess.

**80-10 TERMINATION FOR NATIONAL EMERGENCIES.** TxDOT shall terminate the contract or portion of the contract by written notice when the Contractor is prevented from proceeding with the construction contract as a direct result of an Executive Order of the President with respect to the prosecution of war or in the interest of national defense.

When the contract, or any portion of the contract is terminated before completion of all items of work in the contract, payment will be made for the actual number of units or items of work completed at the contract price or as mutually agreed for items of work partially completed or not started. No claims or loss of anticipated profits shall be considered.

Reimbursement for organization of the work, and other overhead expenses, (when not otherwise included in the contract) and moving equipment and materials to and from the job will be considered, the intent being that an equitable settlement will be made with the Contractor.

Acceptable materials, obtained or ordered by the Contractor for the work and that are not incorporated in the work shall, at the option of the Contractor, be purchased from the Contractor at actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by the Engineer.

Termination of the contract or a portion of the contract shall neither relieve the Contractor of his responsibilities for the completed work nor shall it relieve his surety of its obligation for and concerning any just claim arising out of the work performed.

**END OF SECTION 80**

## SECTION 90

### MEASUREMENT AND PAYMENT

**90-01 MEASUREMENT OF QUANTITIES.** All work completed under the contract will be measured by the Engineer, or his authorized representatives, using United States Customary Units of Measurement or the International System of Units.

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of 9 square feet (0.8 square meter) or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the Engineer.

Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.

Unless otherwise specified, all contract items which are measured by the linear foot such as electrical ducts, conduits, pipe culverts, under-drains, and similar items shall be measured parallel to the base or foundation upon which such items are placed.

In computing volumes of excavation the average end area method or other acceptable methods will be used.

The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inches.

The term “ton” will mean the short ton consisting of 2,000 pounds (907 kilograms) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, approved scales by competent, qualified personnel at locations designated by the Engineer. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the Engineer directs, and each truck shall bear a plainly legible identification mark.

Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable to the Engineer, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.

When requested by the Contractor and approved by the Engineer in writing, material specified to be measured by the cubic yard (cubic meter) may be weighed, and such weights will be converted to cubic yards (cubic meters) for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Bituminous materials will be measured by the gallon (liter) or ton (kilogram). When measured by volume, such volumes will be measured at 60 F (15 C) or will be corrected to the volume at 60 F (15 C) using ASTM D 1250 for asphalt or ASTM D 633 for tars.

Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when bituminous material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work.

When bituminous materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, may be used for computing quantities.

Cement will be measured by the ton (kilogram) or hundredweight (kilogram).

Timber will be measured by the thousand feet board measure (M.F.B.M.) actually incorporated in the structure. Measurement will be based on nominal widths and thickness and the extreme length of each piece.

The term “lump sum” when used, as an item of payment will mean complete payment for the work described in the contract.

When a complete structure or structural unit (in effect, “lump sum” work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered by the Engineer in connection with force account work will be

measured as agreed in the change order or supplemental agreement authorizing such force account work as provided in the subsection titled PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK of this section.

When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gage, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or be certified permanently installed commercial scales.

Scales shall be accurate within one-half percent of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the RPR before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed one-tenth of 1 percent of the nominal rated capacity of the scale, but not less than 1 pound (454 grams). The use of spring balances will not be permitted.

Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the RPR can safely and conveniently view them.

Scale installations shall have available ten standard 50-pound (2.3-kilogram) weights for testing the weighing equipment or suitable weights and devices for other approved equipment.

Scales must be tested for accuracy and serviced before use at a new site. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end.

Scales ``overweighing'' (indicating more than correct weight) will not be permitted to operate, and all materials received subsequent to the last previous correct weighing-accuracy test will be reduced by the percentage of error in excess of one-half of 1 percent.

In the event inspection reveals the scales have been ``under-weighing'' (indicating less than correct weight), they shall be adjusted, and no additional payment to the Contractor will be allowed for materials previously weighed and recorded.

All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this subsection, for the weighing of materials for proportioning or payment, shall be included in the unit contract prices for the various items of the project.

When the estimated quantities for a specific portion of the work are designated as the pay quantities in the contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the Engineer. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

- 90-02 SCOPE OF PAYMENT.** The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the prosecution thereof, subject to the provisions of the subsection titled NO WAIVER OF LEGAL RIGHTS of Section 70.

When the “basis of payment” subsection of a technical specification requires that the contract price (price bid) include compensation for certain work or material essential to the item, this same work or material will not also be measured for payment under any other contract item which may appear elsewhere in the contract, plans, or specifications.

- 90-03 COMPENSATION FOR ALTERED QUANTITIES.** When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in the subsection titled ALTERATION OF WORK AND QUANTITIES of Section 40 will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or indirectly from his unbalanced allocation of overhead and profit among the contract items, or from any other cause.

- 90-04 PAYMENT FOR OMITTED ITEMS.** As specified in the subsection titled OMITTED ITEMS of Section 40, the Engineer shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of TxDOT.

Should the Engineer omit or order nonperformance of a contract item or portion of such item from the work, the Contractor shall accept payment in full at the contract prices for any work actually completed and acceptable prior to the Engineer's order to omit or non-perform such contract item.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of the Engineer's order will be paid for at the actual cost to the Contractor and shall become the property of TxDOT.

In addition to the reimbursement as stated before, the Contractor shall be reimbursed for all actual costs incurred for the purpose of performing the omitted contract item prior to the date of the Engineer's order. Such additional costs incurred by the Contractor must be directly related to the deleted contract item and shall be supported by certified statements by the Contractor as to the nature the amount of such costs.

**90-05 PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK.** Extra work, performed in accordance with the subsection titled EXTRA WORK of Section 40, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work. When the change order or supplemental agreement authorizing the extra work requires that it be done by force account, such force account shall be measured and paid for based on expended labor, equipment, and materials plus a negotiated and agreed upon allowance for overhead and profit.

- a. Miscellaneous. No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is provided.
- b. Comparison of Record. The Contractor and the Engineer shall compare records of the cost of force account work at the end of each day. Agreement shall be indicated by signature of the Contractor and the Engineer or their duly authorized representatives.
- c. Statement. No payment will be made for work performed on a force account basis until the Contractor has furnished the Engineer with duplicate itemized statements of the cost of such force account work detailed as follows:
  - (1) Name, classification, date, daily hours, total hours, rate and extension for each laborer and foreman.
  - (2) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

- (3) Quantities of materials, prices, and extensions.
- (4) Transportation of materials.
- (5) Cost of property damage, liability and workman's compensation insurance premiums, unemployment insurance contributions, and social security tax.

Statements shall be accompanied and supported by a receipted invoice for all materials used and transportation charges. However, if materials used on the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the invoices the Contractor shall furnish an affidavit certifying that such materials were taken from his stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the Contractor.

**90-06 PARTIAL PAYMENTS.** Partial payments will be made each month as the work progresses. Said payments will be based upon estimates verified by the Engineer or RPR as to the value of the work performed and materials complete in place in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with the subsection titled PAYMENT FOR MATERIALS ON HAND of this section.

No partial payment will be made when the amount due the Contractor since the last estimate amounts to less than five hundred dollars.

From the total of the amount determined to be payable on a partial payment, 5 percent of such total amount will be deducted and retained by TxDOT until the final payment is made, except as may be provided (at the Contractor's option) in the subsection titled PAYMENT OF WITHHELD FUNDS of this section. The balance (95 percent) of the amount payable, less all previous payments, shall be certified for payment. Should the Contractor exercise his option, as provided in the subsection titled PAYMENT OF WITHHELD FUNDS of this section, no such retainage shall be deducted.

When not less than 95 percent of the work has been completed the Engineer may, at his discretion and with the consent of the surety, prepare an estimate from which will be retained an amount not less than twice the contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the Engineer to be a part of the final quantity for the item of work in question.

No partial payment shall bind TxDOT to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in the subsection titled ACCEPTANCE AND FINAL PAYMENT of this section.

Payment Provisions for Subcontractors. Pay the subcontractor for the work performed within 10 days after receiving payment for the work performed by a subcontractor. Also, pay any retainage on a subcontractor's work within 10 days after satisfactory completion of all of the subcontractor's work. Completed subcontractor work includes vegetative establishment, test, maintenance, performance, and other similar periods that are the responsibility of the subcontractor.

For the purpose of this Section, satisfactory completion is accomplished when:

- The subcontractor has fulfilled the Contractor requirements of both the Department and the subcontract for the subcontracted work, including the submittal of all information required by the specifications and the Department; and
- The work done by the subcontractor has been inspected and approved by the Department and the final quantities of the subcontractor's work have been determined and agreed upon.

The inspection and approval of a subcontractor's work does not eliminate the Contractor's responsibilities for all the work as defined in Section 70.14, "Contractor's Responsibility for Work."

The Department may pursue actions against the Contractor, including withholding of estimates and suspending the work, for noncompliance with the subcontract requirements of this Section upon receipt of written notice with sufficient details showing the subcontractor has complied with contractual obligations as describe in this section.

The above requirements are also applicable to all sub-tier subcontractors and the above provisions shall be made a part of all subcontract agreements.

Failure to comply with any of the above requirements may result in postponement of contractor payments and/or suspension of work until the deficiencies are remedied.

**90-07 PAYMENT FOR MATERIALS ON HAND.** Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other sites in the vicinity that are acceptable to TxDOT. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

- a. The material has been stored or stockpiled in a manner acceptable to the Engineer at or on an approved site.
- b. The Contractor has furnished the Engineer with acceptable evidence of the quantity and quality of such stored or stockpiled materials.
- c. The Contractor has furnished the Engineer with satisfactory evidence that the material and transportation costs have been paid.
- d. The Contractor has furnished TxDOT legal title (free of liens or encumbrances of any kind) to the material so stored or stockpiled.

It is understood and agreed that the transfer of title and TxDOT's payment for such stored or stockpiled materials shall in no way relieve the Contractor of his responsibility for furnishing and placing such materials in accordance with the requirements of the contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the contract price for such materials or the contract price for the contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this subsection.

**90-08 PAYMENT OF WITHHELD FUNDS.** At the Contractor's option, he may request that TxDOT accept (in lieu of the 5 percent retainage on partial payments described in the subsection titled PARTIAL PAYMENTS of this section) the Contractor's deposits in escrow under the following conditions.

- a. The Contractor shall bear all expenses of establishing and maintaining an escrow account and escrow agreement acceptable to TxDOT.
- b. The Contractor shall deposit to and maintain in escrow only those securities or bank certificates of deposit as are acceptable to TxDOT and having a value not less than the 10 percent retainage that would otherwise be withheld from partial payment. The Contractor shall maintain deposits in escrow until the Agent authorizes in writing the release of funds.
- c. The Contractor shall enter into an escrow agreement satisfactory to TxDOT.
- d. The Contractor shall obtain the written consent of the surety to the escrow agreement.

**90-09 ACCEPTANCE AND FINAL PAYMENT.** When the contract work has been accepted in accordance with the requirements of the subsection titled FINAL ACCEPTANCE of Section 50, the Engineer will prepare the final estimate of the items of work actually performed. The Contractor shall approve the Engineer's final estimate or advise the Engineer of his objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the Engineer shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the Engineer's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the Engineer's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by TxDOT as a claim in accordance with the subsection titled CLAIMS FOR ADJUSTMENT AND DISPUTES of Section 50.

After the Contractor has approved, or approved under protest, the Engineer's final estimate, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

If the Contractor has filed a claim for additional compensation under the provisions of the subsection titled CLAIMS FOR ADJUSTMENTS AND DISPUTES of Section 50 or under the provisions of this subsection, such claims will be considered by TxDOT in accordance with federal, state and local laws or ordinances.

Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid according to a supplemental final estimate.

**END OF SECTION 90**

## SECTION 100

### CONTRACTOR QUALITY CONTROL PROGRAM

**100-01 GENERAL.** When the specifications require a Contractor's Quality Control Program, the Contractor shall establish, provide, and maintain an effective Quality Control Program that details the methods and procedures that will be taken to assure that all materials and completed construction required by this contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors. Although guidelines are established and certain minimum requirements are specified herein and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

The intent of this section is to enable the Contractor to establish a necessary level of control that will:

- a. Adequately provide for the production of acceptable quality materials.
- b. Provide sufficient information to assure both the Contractor and the Engineer that the specification requirements can be met.
- c. Allow the Contractor as much latitude as possible to develop his or her own standard of control.

At the pre-construction conference, the Contractor shall be prepared to discuss his understanding of the quality control requirements. The Contractor shall not begin any construction or production of materials to be incorporated into the quality-controlled work until the Quality Control Program has been reviewed by the Engineer. No partial payment will be made for materials subject to specific quality control requirements until the Quality Control Program has been reviewed.

The quality control requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the acceptance testing requirements. Acceptance testing requirements are the responsibility of the Engineer.

## **100-02 DESCRIPTION OF PROGRAM.**

- a. **General Description.** The Contractor shall establish a Quality Control Program to perform inspection and testing of all items of work required by the technical specifications, including those performed by subcontractors. This Quality Control Program shall ensure conformance to applicable specifications and plans with respect to materials, workmanship, construction, finish, and functional performance. The Quality Control Program shall be effective for control of all construction work performed under this Contract and shall specifically include surveillance and tests required by the technical specifications, in addition to other requirements of this section and any other activities deemed necessary by the Contractor to establish an effective level of quality control.
- b. **Quality Control Program.** The Contractor shall describe the Quality Control Program in a written document that shall be reviewed by the Engineer prior to the start of any production, construction, or off-site fabrication of quality controlled work. The written Quality Control Program shall be submitted to the Engineer for review at least five (5) days before the pre-pave meeting.

The Quality Control Program shall be organized to address, as a minimum, the following items:

1. Quality control organization;
2. Project progress schedule;
3. Submittals schedule;
4. Inspection requirements;
5. Quality control testing plan;
6. Documentation of quality control activities; and
7. Requirements for corrective action when quality control and/or acceptance criteria are not met.

The Contractor is encouraged to add any additional elements to the Quality Control Program that he deems necessary to adequately control all production and/or construction processes required by this contract.

**100-03 QUALITY CONTROL ORGANIZATION.** The Contractor's Quality Control Program shall be implemented by the establishment of a separate quality control organization. An organizational chart shall be developed to show all quality control personnel and how these personnel integrate with other management/production and construction functions and personnel.

The organizational chart shall identify all quality control staff by name and function, and shall indicate the total staff required to implement all elements of the Quality Control Program, including inspection and testing for each item of work. If necessary, different technicians can be utilized for specific inspection and testing functions for different items of work. If an outside organization or independent testing laboratory is used for implementation of all or part of the Quality Control Program, the personnel assigned shall be subject to the qualification requirements of paragraph 100-03a and 100-03b. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.

The quality control organization shall consist of the following minimum personnel:

- a. Program Administrator. The Program Administrator shall be a full-time employee of the Contractor, or a consultant engaged by the Contractor. The Program Administrator shall have a minimum of 5 years of experience in airport and/or highway construction and shall have had prior quality control experience on a project of comparable size and scope as the contract.

Additional qualifications for the Program Administrator shall include at least 1 of the following requirements:

1. Professional engineer with 1 year of airport paving experience acceptable to the Engineer.
2. Engineer-in-training with 2 years of airport paving experience acceptable to the Engineer.
3. An individual with 3 years of highway and/or airport paving experience acceptable to the Engineer, with a Bachelor of Science Degree in Civil Engineering, Civil Engineering Technology or Construction.
4. Construction materials technician certified at Level III by the National Institute for Certification in Engineering Technologies (NICET).
5. Highway materials technician certified at Level III by NICET.
6. Highway construction technician certified at Level III by NICET.
7. A NICET certified engineering technician in Civil Engineering Technology with 5 years of highway and/or airport paving experience acceptable to the Engineer.

The Program Administrator shall have full authority to institute any and all actions necessary for the successful implementation of the Quality Control Program to ensure compliance with the contract plans and technical specifications. The Program Administrator shall report directly to a responsible officer of the construction joint venture, LLP,. The Program Administrator may supervise the Quality Control Program on more than one project provided that person can be at the job site within 2 hours after being notified of a problem.

- b. **Quality Control Technicians.** A sufficient number of quality control technicians necessary to adequately implement the Quality Control Program shall be provided. These personnel shall be engineers, engineering technicians, or experienced craftsman with qualifications in the appropriate field equivalent to NICET Level II or higher construction materials technician or highway construction technician and shall have a minimum of 2 years of experience in their area of expertise.

The quality control technicians shall report directly to the Program Administrator and shall perform the following functions:

1. Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications and as required by Section 100-06.
2. Performance of all quality control tests as required by the technical specifications and Section 100-07.

Certification at an equivalent level, by a state or nationally recognized organization will be acceptable in lieu of NICET certification.

- c. **Staffing Levels.** The Contractor shall provide sufficient qualified quality control personnel to monitor each work activity at all times. Where material is being produced in a plant for incorporation into the work, separate plant and field technicians shall be provided at each plant and field placement location. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The Quality Control Program shall state where different technicians will be required for different work elements.

**100-04 PROJECT PROGRESS SCHEDULE.** The Contractor shall submit a coordinated construction schedule for all work activities. The schedule shall be prepared as a network diagram in Critical Path Method (CPM), PERT, or other format, or as otherwise specified in the contract. As a minimum, it shall provide information on the sequence of work activities, milestone dates, and activity duration.

The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a twice-monthly basis, or as otherwise specified in the contract. Submission of the work schedule shall not relieve the Contractor of overall responsibility for scheduling, sequencing, and coordinating all work to comply with the requirements of the contract.

**100-05 SUBMITTALS SCHEDULE.** The Contractor shall submit a detailed listing of all submittals (e.g., mix designs, material certifications) and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format and shall include:

- a. Specification item number;
- b. Item description;
- c. Description of submittal;
- d. Specification paragraph requiring submittal; and
- e. Scheduled date of submittal.

**100-06 INSPECTION REQUIREMENTS.** Quality control inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. The Contractor as specified by Section 100-07 shall document all inspections.

Inspections shall be performed daily to ensure continuing compliance with contract requirements until completion of the particular feature of work. These shall include the following minimum requirements:

- a. During plant operation for material production, quality control test results and periodic inspections shall be utilized to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical specifications. All equipment utilized in proportioning and mixing shall be inspected to ensure its proper operating condition. The Quality Control Program shall detail how these and other quality control functions will be accomplished and utilized.
- b. During field operations, quality control test results and periodic inspections shall be utilized to ensure the quality of all materials and workmanship. All equipment utilized in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The Program shall document how these and other quality control functions will be accomplished and utilized.

**100-07 QUALITY CONTROL TESTING PLAN.** As a part of the overall Quality Control Program, the Contractor shall implement a quality control testing plan, as required by the technical specifications. The testing plan shall include the minimum tests and test frequencies required by each technical specification Item, as well as any additional quality control tests that the Contractor deems necessary to adequately control production and/or construction processes.

The testing plan can be developed in a spreadsheet fashion and shall, as a minimum, include the following:

- a. Specification item number (e.g., P-401);
- b. Item description (e.g., Plant Mix Bituminous Pavements);
- c. Test type (e.g., gradation, grade, asphalt content);
- d. Test standard (e.g., ASTM or AASHTO test number, as applicable);
- e. Test frequency (e.g., as required by technical specifications or minimum frequency when requirements are not stated);
- f. *Responsibility (e.g., plant technician); and*
- g. Control requirements (e.g., target, permissible deviations).

The testing plan shall contain a statistically based procedure of random sampling for acquiring test samples in accordance with ASTM D 3665. The Engineer shall be provided the opportunity to witness quality control sampling and testing.

The Contractor as required by Section 100-08 shall document all quality control test results.

**100-08 DOCUMENTATION OF QUALITY CONTROL ACTIVITIES.** The Contractor shall maintain current quality control records of all inspections and tests performed. These records shall include factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.

These records must cover both conforming and defective or deficient features, and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the Engineer daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the Contractor's Program Administrator.

Specific Contractor quality control records required for the contract shall include, but are not necessarily limited to, the following records:

- a. Daily Inspection Reports. Each Contractor quality control technician shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations on a form acceptable to the Engineer. These technician's daily reports shall provide factual evidence that continuous quality control inspections have been performed and shall, as a minimum, include the following:
1. Technical specification item number and description;
  2. Compliance with approved submittals;
  3. Proper storage of materials and equipment;
  4. Proper operation of all equipment;
  5. Adherence to plans and technical specifications;
  6. Review of quality control tests; and
  7. Safety inspection.

The daily inspection reports shall identify inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.

The daily inspection reports shall be signed by the responsible quality control technician and the Program Administrator. The Engineer or RPR shall be provided at least one copy of each daily inspection report on the work day following the day of record.

- b. Daily Test Reports. The Contractor shall be responsible for establishing a system that will record all quality control test results. Daily test reports shall document the following information:
1. Technical specification item number and description;
  2. Test designation;
  3. Location;
  4. Date of test;
  5. Control requirements;
  6. Test results;
  7. Causes for rejection;
  8. Recommended remedial actions; and
  9. Retests.

Test results from each day's work period shall be submitted to the Engineer or RPR prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical quality control charts. The daily test reports shall be signed by the responsible quality control technician and the Program Administrator.

**100-09 CORRECTIVE ACTION REQUIREMENTS.** The Quality Control Program shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the Quality Control Program as a whole, and for individual items of work contained in the technical specifications.

The Quality Control Program shall detail how the results of quality control inspections and tests will be used for determining the need for corrective action and shall contain clear sets of rules to gauge when a process is out of control and the type of correction to be taken to regain process control.

When applicable or required by the technical specifications, the Contractor shall establish and utilize statistical quality control charts for individual quality control tests. The requirements for corrective action shall be linked to the control charts.

**100-10 SURVEILLANCE BY THE ENGINEER.** All items of material and equipment shall be subject to surveillance by the Engineer or RPR at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate quality control system in conformance with the requirements detailed herein and the applicable technical specifications and plans. In addition, all items of materials, equipment and work in place shall be subject to surveillance by the Engineer or RPR at the site for the same purpose.

Surveillance by the Engineer or RPR does not relieve the Contractor of performing quality control inspections of either on-site or off-site Contractor or subcontractor's work.

**100-11 NONCOMPLIANCE.** The Engineer will notify the Contractor of any noncompliance with any of the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Engineer or his authorized representative to the Contractor or his authorized representative at the site of the work, shall be considered sufficient notice.

In cases where quality control activities do not comply with either the Contractor's Quality Control Program or the contract provisions, or where the Contractor fails to properly operate and maintain an effective Quality Control Program, as determined by the Engineer, the Engineer may:

- a. Order the Contractor to replace ineffective or unqualified quality control personnel or subcontractors.
- b. Order the Contractor to stop operations until appropriate corrective actions are taken.

**END OF SECTION 100**



## SECTION 110

### **METHODS OF ESTIMATING PERCENTAGE OF MATERIAL WITHIN SPECIFICATIONS LIMITS (PWL)**

**110-01 GENERAL.** When the specifications provide for acceptance of material based on the method of estimating percentage of material within specification limits (PWL), the PWL will be determined in accordance with this section. All test results for a lot will be analyzed statistically to determine the total estimated percent of the lot that is within specification limits. The PWL is computed using the sample average ( $\bar{X}$ ) and sample standard deviation ( $S_n$ ) of the specified number ( $n$ ) of sublots for the lot and the specification tolerance limits,  $L$  for lower and  $U$  for upper, for the particular acceptance parameter. From these values, the respective Quality index(s),  $Q_L$  for Lower Quality Index and/or  $Q_U$  for Upper Quality Index, is computed and the PWL for the lot for the specified  $n$  is determined from Table 1.

There is some degree of uncertainty (risk) in the measurement for acceptance because only a fraction of production material (the population) is sampled and tested. This uncertainty exists because all portions of the production material have the same probability to be randomly sampled. The Contractor's risk is the probability that material produced at the acceptable quality level is rejected or subjected to a pay adjustment. TxDOT's risk is the probability that material produced at the rejectable quality level is accepted.

IT IS THE INTENT OF THIS SECTION TO INFORM THE CONTRACTOR THAT, IN ORDER TO CONSISTENTLY OFFSET THE CONTRACTOR'S RISK FOR MATERIAL EVALUATED, PRODUCTION QUALITY (USING POPULATION AVERAGE AND POPULATION STANDARD DEVIATION) MUST BE MAINTAINED AT THE ACCEPTABLE QUALITY SPECIFIED OR HIGHER. IN ALL CASES, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PRODUCE AT QUALITY LEVELS THAT WILL MEET THE SPECIFIED ACCEPTANCE CRITERIA WHEN SAMPLED AND TESTED AT THE FREQUENCIES SPECIFIED.

**110-02 METHOD FOR COMPUTING PWL.** The computational sequence for computing PWL is as follows:

- a. Divide the lot into n sublots in accordance with the acceptance requirements of the specification.
- b. Locate the random sampling position within the subplot in accordance with the requirements of the specification.
- c. Make a measurement at each location, or take a test portion and make the measurement on the test portion in accordance with the testing requirements of the specification.
- d. Find the sample average ( $\bar{X}$ ) for all subplot values within the lot by using the following formula:

$$\bar{X} = (x_1 + x_2 + x_3 + \dots + x_n) / n$$

Where:

$\bar{X}$  = Sample average of all subplot values within a lot

$x_1, x_2$  = Individual subplot values

$n$  = Number of sublots

- e. Find the sample standard deviation ( $S_n$ ) by use of the following formula:

$$S_n = [(d_1^2 + d_2^2 + d_3^2 + \dots + d_n^2) / (n-1)]^{1/2}$$

Where:

$S_n$  = Sample standard deviation of the number of subplot values in the set

$d_1, d_2$  = Deviations of the individual subplot values  $X_1, X_2 \dots$  from the average value  $\bar{X}$

that is:  $d_1 = (x_1 - \bar{X}), d_2 = (x_2 - \bar{X}) \dots d_n = (x_n - \bar{X})$

$n$  = Number of sublots

- f. For single sided specification limits (i.e., L only), compute the Lower Quality Index  $Q_L$  by use of the following formula:

$$Q_L = (\bar{X} - L) / S_n$$

Where:

L = specification lower tolerance limit

Estimate the percentage of material within limits (PWL) by entering Table 1 with  $Q_L$ , using the column appropriate to the total number ( $n$ ) of

measurements. If the value of  $Q_L$  falls between values shown on the table, use the next higher value of PWL.

- g. For double sided specification limits (i.e. L and U), compute the Quality Indexes  $Q_L$  and  $Q_U$  by use of the following formulas:

$$Q_L = (X - L) / S_n \quad \text{and} \quad Q_U = (U - X) / S_n$$

Where:

L and U = specification lower and upper tolerance limits

Estimate the percentage of material between the lower (L) and upper (U) tolerance limits (PWL) by entering Table 1 separately with  $Q_L$  and  $Q_U$ , using the column appropriate to the total number (n) of measurements, and determining the percent of material above  $P_L$  and percent of material below  $P_U$  for each tolerance limit. If the values of  $Q_L$  fall between values shown on the table, use the next higher value of  $P_L$  or  $P_U$ . Determine the PWL by use of the following formula:

$$PWL = (P_U + P_L) - 100$$

Where:

$P_L$  = percent within lower specification limit

$P_U$  = percent within upper specification limit

### EXAMPLE OF PWL CALCULATION

**Project:** Example Project  
**Test Item:** Item P-401, Lot A.

A. PWL Determination for Mat Density.

1. Density of four random cores taken from Lot A.

A-1	96.60
A-2	97.55
A-3	99.30
A-4	98.35

n = 4

2. Calculate average density for the lot.

$$\begin{aligned} X &= (x_1 + x_2 + x_3 + \dots + x_n) / n \\ X &= (96.60 + 97.55 + 99.30 + 98.35) / 4 \\ X &= 97.95 \text{ percent density} \end{aligned}$$

3. Calculate the standard deviation for the lot.

$$\begin{aligned} S_n &= [((96.60 - 97.95)^2 + (97.55 - 97.95)^2 + (99.30 - 97.95)^2 + (98.35 - 97.95)^2) / (4 - 1)]^{1/2} \\ S_n &= [(1.82 + 0.16 + 1.82 + 0.16) / 3]^{1/2} \\ S_n &= 1.15 \end{aligned}$$

4. Calculate the Lower Quality Index  $Q_L$  for the lot. ( $L=96.3$ )

$$\begin{aligned} Q_L &= (X - L) / S_n \\ Q_L &= (97.95 - 96.30) / 1.15 \\ Q_L &= 1.4384 \end{aligned}$$

5. Determine PWL by entering Table 1 with  $Q_L=1.44$  and  $n=4$ .

$$PWL = 98$$

B. PWL Determination for Air Voids.

1. Air Voids of four random samples taken from Lot A.

A-1	5.00
A-2	3.74
A-3	2.30
A-4	3.25

2. Calculate the average air voids for the lot.

$$\begin{aligned} X &= (x_1 + x_2 + x_3 + \dots + x_n) / n \\ X &= (5.00 + 3.74 + 2.30 + 3.25) / 4 \\ X &= 3.57 \text{ percent} \end{aligned}$$

3. Calculate the standard deviation  $S_n$  for the lot.

$$S_n = [((3.57 - 5.00)^2 + (3.57 - 3.74)^2 + (3.57 - 2.30)^2 + (3.57 - 3.25)^2) / (4 - 1)]^{1/2}$$

$$\begin{aligned} S_n &= [(2.04 + 0.03 + 1.62 + 0.10) / 3]^{1/2} \\ S_n &= 1.12 \end{aligned}$$

4. Calculate the Lower Quality Index  $Q_L$  for the lot. ( $L= 2.0$ )

$$\begin{aligned} Q_L &= (X - L) / S_n \\ Q_L &= (3.57 - 2.00) / 1.12 \\ Q_L &= 1.3992 \end{aligned}$$

5. Determine  $P_L$  by entering Table 1 with  $Q_L = 1.40$  and  $n = 4$ .

$$P_L = 97$$

6. Calculate the Upper Quality Index  $Q_U$  for the lot. ( $U= 5.0$ )

$$\begin{aligned} Q_U &= (U - X) / S_n \\ Q_U &= (5.00 - 3.57) / 1.12 \\ Q_U &= 1.2702 \end{aligned}$$

7. Determine  $P_U$  by entering Table 1 with  $Q_U = 1.27$  and  $n = 4$ .

$$P_U = 93$$

8. Calculate Air Voids PWL

$$\begin{aligned} PWL &= (P_L + P_U) - 100 \\ PWL &= (97 + 93) - 100 = 90 \end{aligned}$$

**TABLE 1. TABLE FOR ESTIMATING PERCENT OF LOT WITHIN LIMITS (PWL)**

Percent Within Limits ( $P_L$ and $P_U$ )	Positive Values of Q ( $Q_L$ and $Q_U$ ) Limits					
	n=3	n=4	n=5	n=6	n=7	n=8
99	1.1541	1.4700	1.6714	1.8008	1.8888	1.9520
98	1.1524	1.4400	1.6016	1.6982	1.7612	1.8053
97	1.1496	1.4100	1.5427	1.6181	1.6661	1.6993
96	1.1456	1.3800	1.4897	1.5497	1.5871	1.6127
95	1.1405	1.3500	1.4407	1.4887	1.5181	1.5381
94	1.1342	1.3200	1.3946	1.4329	1.4561	1.4716
93	1.1269	1.2900	1.3508	1.3810	1.3991	1.4112
92	1.1184	1.2600	1.3088	1.3323	1.3461	1.3554
91	1.1089	1.2300	1.2683	1.2860	1.2964	1.3032
90	1.0982	1.2000	1.2290	1.2419	1.2492	1.2541
89	1.0864	1.1700	1.1909	1.1995	1.2043	1.2075
88	1.0736	1.1400	1.1537	1.1587	1.1613	1.1630
87	1.0597	1.1100	1.1173	1.1191	1.1199	1.1204
86	1.0448	1.0800	1.0817	1.0808	1.0800	1.0794
85	1.0288	1.0500	1.0467	1.0435	1.0413	1.0399
84	1.0119	1.0200	1.0124	1.0071	1.0037	1.0015
83	0.9939	0.9900	0.9785	0.9715	0.9672	0.9643
82	0.9749	0.9600	0.9452	0.9367	0.9325	0.9281
81	0.9550	0.9300	0.9123	0.9025	0.8966	0.8928
80	0.9342	0.9000	0.8799	0.8690	0.8625	0.8583
79	0.9124	0.8700	0.8478	0.8360	0.8291	0.8245
78	0.8897	0.8400	0.8160	0.8036	0.7962	0.7915
77	0.8662	0.8100	0.7846	0.7716	0.7640	0.7590
76	0.8417	0.7800	0.7535	0.7401	0.7322	0.7271
75	0.8165	0.7500	0.7226	0.7089	0.7009	0.6958
74	0.7904	0.7200	0.6921	0.6781	0.6701	0.6649
73	0.7636	0.6900	0.6617	0.6477	0.6396	0.6344
72	0.7360	0.6600	0.6316	0.6176	0.6095	0.6044
71	0.7077	0.6300	0.6016	0.5878	0.5798	0.5747
70	0.6787	0.6000	0.5719	0.5583	0.5504	0.5454
69	0.6490	0.5700	0.5423	0.5290	0.5213	0.5164
68	0.6187	0.5400	0.5129	0.4999	0.4924	0.4877
67	0.5878	0.5100	0.4836	0.4710	0.4638	0.4592
66	0.5563	0.4800	0.4545	0.4424	0.4354	0.4310
65	0.5242	0.4500	0.4255	0.4139	0.4073	0.4031
64	0.4916	0.4200	0.3967	0.3856	0.3793	0.3753
63	0.4586	0.3900	0.3679	0.3575	0.3515	0.3477
62	0.4251	0.3600	0.3392	0.3295	0.3239	0.3203
61	0.3911	0.3300	0.3107	0.3016	0.2964	0.2931
60	0.3568	0.3000	0.2822	0.2738	0.2691	0.2660
59	0.3222	0.2700	0.2537	0.2461	0.2418	0.2391
58	0.2872	0.2400	0.2254	0.2186	0.2147	0.2122
57	0.2519	0.2100	0.1971	0.1911	0.1877	0.1855
56	0.2164	0.1800	0.1688	0.1636	0.1607	0.1592
55	0.1806	0.1500	0.1408	0.1363	0.1338	0.1322
54	0.1447	0.1200	0.1125	0.1090	0.1070	0.1057
53	0.1087	0.0900	0.0843	0.0817	0.0802	0.0792
52	0.0725	0.0600	0.0562	0.0544	0.0534	0.0528
51	0.0363	0.0300	0.0281	0.0272	0.0267	0.0264
50	0.0	0.0	0.0	0.0	0.0	0.0

**TABLE 1. TABLE FOR ESTIMATING PERCENT OF LOT WITHIN LIMITS (PWL)**

Percent Within Limits ( $P_L$ and $P_U$ )	Negative Values of Q ( $Q_L$ and $Q_U$ ) Limits					
	n=3	n=4	n=5	n=6	n=7	n=8
49	-.0363	-.0300	-.0281	-.0272	-.0267	-.0264
48	-.0725	-.0600	-.0562	-.0544	-.0534	-.0528
47	-.1087	-.0900	-.0843	-.0817	-.0802	-.0792
46	-.1447	-.1200	-.1125	-.1090	-.1070	-.1057
45	-.1806	-.1500	-.1408	-.1363	-.1338	-.1322
44	-.2164	-.1800	-.1688	-.1636	-.1607	-.1592
43	-.2519	-.2100	-.1971	-.1911	-.1877	-.1855
42	-.2872	-.2400	-.2254	-.2186	-.2147	-.2122
41	-.3222	-.2700	-.2537	-.2461	-.2418	-.2391
40	-.3568	-.3000	-.2822	-.2738	-.2691	-.2660
39	-.3911	-.3300	-.3107	-.3016	-.2964	-.2931
38	-.4251	-.3600	-.3392	-.3295	-.3239	-.3203
37	-.4586	-.3900	-.3679	-.3575	-.3515	-.3477
36	-.4916	-.4200	-.3967	-.3856	-.3793	-.3753
35	-.5242	-.4500	-.4255	-.4139	-.4073	-.4031
34	-.5563	-.4800	-.4545	-.4424	-.4354	-.4310
33	-.5878	-.5100	-.4836	-.4710	-.4638	-.4592
32	-.6187	-.5400	-.5129	-.4999	-.4924	-.4877
31	-.6490	-.5700	-.5423	-.5290	-.5213	-.5164
30	-.6787	-.6000	-.5719	-.5583	-.5504	-.5454
29	-.7077	-.6300	-.6016	-.5878	-.5798	-.5747
28	-.7360	-.6600	-.6316	-.6176	-.6095	-.6044
27	-.7636	-.6900	-.6617	-.6477	-.6396	-.6344
26	-.7904	-.7200	-.6921	-.6781	-.6701	-.6649
25	-.8165	-.7500	-.7226	-.7089	-.7009	-.6958
24	-.8417	-.7800	-.7535	-.7401	-.7322	-.7271
23	-.8662	-.8100	-.7846	-.7716	-.7640	-.7590
22	-.8897	-.8400	-.8160	-.8036	-.7962	-.7915
21	-.9124	-.8700	-.8478	-.8360	-.8291	-.8245
20	-.9342	-.9000	-.8799	-.8690	-.8625	-.8583
19	-.9550	-.9300	-.9123	-.9025	-.8966	-.8928
18	-.9749	-.9600	-.9452	-.9367	-.9325	-.9281
17	-.9939	-.9900	-.9785	-.9715	-.9672	-.9643
16	-1.0119	-1.0200	-1.0124	-1.0071	-1.0037	-1.0015
15	-1.0288	-1.0500	-1.0467	-1.0435	-1.0413	-1.0399
14	-1.0448	-1.0800	-1.0817	-1.0808	-1.0800	-1.0794
13	-1.0597	-1.1100	-1.1173	-1.1191	-1.1199	-1.1204
12	-1.0736	-1.1400	-1.1537	-1.1587	-1.1613	-1.1630
11	-1.0864	-1.1700	-1.1909	-1.1995	-1.2043	-1.2075
10	-1.0982	-1.2000	-1.2290	-1.2419	-1.2492	-1.2541
9	-1.1089	-1.2300	-1.2683	-1.2860	-1.2964	-1.3032
8	-1.1184	-1.2600	-1.3088	-1.3323	-1.3461	-1.3554
7	-1.1269	-1.2900	-1.3508	-1.3810	-1.3991	-1.4112
6	-1.1342	-1.3200	-1.3946	-1.4329	-1.4561	-1.4716
5	-1.1405	-1.3500	-1.4407	-1.4887	-1.5181	-1.5381
4	-1.1456	-1.3800	-1.4897	-1.5497	-1.5871	-1.6127
3	-1.1496	-1.4100	-1.5427	-1.6181	-1.6661	-1.6993
2	-1.1524	-1.4400	-1.6016	-1.6982	-1.7612	-1.8053
1	-1.1541	-1.4700	-1.6714	-1.8008	-1.8888	-1.9520

**END OF SECTION 110**



**FAA Advisory Circular 150/5370-2E,  
Operational Safety on Airports during  
Construction**





U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

# Advisory Circular

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**Subject:** OPERATIONAL SAFETY ON AIRPORTS  
DURING CONSTRUCTION

**Date:** 1/17/03

**AC No:** 150/5370-2E

**Initiated by:** AAS-300

**Change:**

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## 1. THE PURPOSE OF THIS ADVISORY CIRCULAR (AC).

Aviation safety is the primary consideration at airports, especially during construction. This AC sets forth guidelines for operational safety on airports during construction. It contains major changes to the following areas: "Runway Safety Area," paragraph 3-2; "Taxiway Safety Areas/Object-Free Areas," paragraph 3-3; "Overview," paragraph 3-4; "Marking Guidelines for Temporary Threshold," paragraph 3-5; and "Hazard Marking and Lighting," paragraph 3-9.

## 2. WHAT THIS AC CANCELS.

This AC cancels AC 150/5370-2D, *Operational Safety on Airports During Construction*, dated May 31, 2002.

## 3. READING MATERIAL RELATED TO THIS AC.

Appendix 1 contains a list of reading materials on airport construction, design, and potential safety hazards during construction, as well as instructions for ordering these documents. Many of them, including this AC, are available on the Federal Aviation Administration (FAA) Web site.

## 4. WHO THIS AC AFFECTS.

This AC assists airport operators in complying with 14 Code of Federal Regulations (CFR), part 139, Certification and Operation: Land Airports Serving Certain Air Carriers, and with the requirements of airport construction projects receiving funds under the Airport Improvement Program or from the Passenger Facility Charge Program. While the FAA does not require noncertificated airports without grant agreements to adhere to these guidelines, we recommend that they do so as it will help these airports maintain a desirable level of operational safety during construction.

## 5. ADDITIONAL BACKGROUND INFORMATION.

Appendix 2 contains definitions of terms used in this AC. Appendix 3 provides airport operators with boilerplate format and language for developing a safety plan for an airport construction project. Appendix 4 is a sample Notice to Airmen form.

## 6. HAZARD LIGHTING IMPLEMENTATION TIME LINE.

Supplemental hazard lighting must be red in color by October 1, 2004. See paragraph 3-9 for more information.

DAVID L. BENNETT

Director, Office of Airport Safety and Standards

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## CHAPTER 1. GENERAL SAFETY REQUIREMENTS AND RESPONSIBILITIES

### 1-1. OVERVIEW.

Hazardous practices and marginal conditions created by construction activities can decrease or jeopardize operational safety on airports. To minimize disruption of normal aircraft operations and to avoid situations that compromise the airport's operational safety, the airport operator must carefully plan, schedule, and coordinate construction activities. While the guidance in this AC is primarily used for construction operations, some of the methods and procedures described may also enhance day-to-day maintenance operations.

### 1-2. WHO IS RESPONSIBLE FOR SAFETY DURING CONSTRUCTION.

An airport operator has overall responsibility for construction activities on an airport. This includes the predesign, design, preconstruction, construction, and inspection phases. Additional information on these responsibilities can be found throughout this AC.

#### a. Airport operator's responsibilities—

- (1) Develop internally or approve a construction safety plan developed by an outside consultant/contractor that complies with the safety guidelines in Chapter 2, "Safety Plans," and Appendix 3, "Airport Construction Safety Planning Guide," of this AC.
- (2) Require contractors to submit plans indicating how they intend to comply with the safety requirements of the project.
- (3) Convene a meeting with the construction contractor, consultant, airport employees, and, if appropriate, tenant sponsor to review and discuss project safety before beginning construction activity.
- (4) Ensure contact information is accurate for each representative/point of contact identified in the safety plan.
- (5) Hold weekly or, if necessary, daily safety meetings to coordinate activities.
- (6) Notify users, especially aircraft rescue and fire fighting (ARFF) personnel, of construction activity and conditions that may adversely affect the operational safety of the airport via Notices to Airmen (NOTAMs) or other methods, as appropriate. Convene a meeting for review and discussion if necessary.
- (7) Ensure that construction personnel know of any applicable airport procedures and of changes to those procedures that may affect their work.

- (8) Ensure that construction contractors and subcontractors undergo training required by the safety plan.

- (9) Develop and/or coordinate a construction vehicle plan with airport tenants, the airport traffic control tower (ATCT), and construction contractors. Include the vehicle plan in the safety plan. See Chapter 2, section 2, of this AC for additional information.

- (10) Ensure tenants and contractors comply with standards and procedures for vehicle lighting, marking, access, operation, and communication.

- (11) At certificated airports, ensure that each tenant's construction safety plan is consistent with 14 CFR part 139, Certification and Operations: Land Airports Serving Certain Air Carriers.

- (12) Conduct frequent inspections to ensure construction contractors and tenants comply with the safety plan and that altered construction activities do not create potential safety hazards.

- (13) Resolve safety deficiencies immediately.

- (14) Ensure construction access complies with the security requirements of 49 CFR part 1542, Airport Security.

- (15) Notify appropriate parties when conditions exist that invoke provisions of the safety plan (e.g., implementation of low-visibility operations).

#### b. Construction contractor's responsibilities—

- (1) Submit plans to the airport operator on how to comply with the safety requirements of the project.
- (2) Have available a copy of the project safety plan.
- (3) Comply with the safety plan associated with the construction project and ensure that construction personnel are familiar with safety procedures and regulations on the airport.
- (4) Provide a point of contact who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport.
- (5) Provide a safety officer/construction inspector familiar with airport safety to monitor construction activities.
- (6) Restrict movement of construction vehicles to construction areas by flagging and barricading, erecting temporary fencing, or providing escorts, as appropriate.

(7) Ensure that no construction employees, employees of subcontractors or suppliers, or other persons enter any part of the air operations areas (AOAs) from the construction site unless authorized.

**c. Tenant’s responsibilities if planning construction activities on leased property—**

(1) Develop a safety plan, and submit it to the airport operator for approval prior to issuance of a Notice to Proceed.

(2) Provide a point of contact who will coordinate an immediate response to correct any

construction-related activity that may adversely affect the operational safety of the airport.

(3) Ensure that no tenant or construction employees, employees of subcontractors or suppliers, or any other persons enter any part of the AOA from the construction site unless authorized.

(4) Restrict movement of construction vehicles to construction areas by flagging and barricading or erecting temporary fencing.

## CHAPTER 2. SAFETY PLANS

### Section 1. Basic Safety Plan Considerations

#### 2-1. OVERVIEW.

Airport operators should coordinate safety issues with the air carriers, FAA Airway Facilities, and other airport tenants before the design phase of the project. The airport operator should identify project safety concerns, requirements, and impacts before making arrangements with contractors and other personnel to perform work on an airport. These safety concerns will serve as the foundation for the construction safety plan and help maintain a high level of aviation safety during the project.

The airport operator should determine the level of complexity of the safety plan that is necessary for each construction project and its phases. The safety plan may be detailed in the specifications included in the invitation for bids, or the invitation for bid may specify that the contractor develop the safety plan and the airport operator approve it. In the latter case, the invitation for bid should contain sufficient information to allow the contractor to develop and determine the costs associated with the safety plan. In either case, safety plan costs should be incorporated into the total cost of the project. The airport operator has final approval authority and responsibility for all safety plans.

Coordination will vary from formal predesign conferences to informal contacts throughout the duration of the construction project.

Details of a specified safety plan, or requirements for a contractor-developed safety plan, should be discussed at the predesign and preconstruction conferences and should include the following, as appropriate:

- a. Actions necessary before starting construction, including defining and assigning responsibilities.
- b. Basic responsibilities and procedures for disseminating instructions about airport procedures to the contractor's personnel.
- c. Means of separating construction areas from aeronautical-use areas.
- d. Navigational aid (NAVAID) requirements and weather.
- e. Marking and lighting plan illustrations.
- f. Methods of coordinating significant changes in airport operations with all the appropriate parties.

#### 2-2. SAFETY PLAN CHECKLIST.

To the extent applicable, the safety plan should address the following:

- a. Scope of work to be performed, including proposed duration of work.
- b. Runway and taxiway marking and lighting.
- c. Procedures for protecting all runway and taxiway safety areas, obstacle-free zones (OFZs), object-free areas (OFAs), and threshold citing criteria outlined in AC 150/5300-13, *Airport Design*, and as described in this AC. This includes limitations on equipment height and stockpiled material.
- d. Areas and operations affected by the construction activity, including possible safety problems.
- e. NAVAIDs that could be affected, especially critical area boundaries.
- f. Methods of separating vehicle and pedestrian construction traffic from the airport movement areas. This may include fencing off construction areas to keep equipment operators in restricted areas in which they are authorized to operate. Fencing, or some other form of restrictive barrier, is an operational necessity in some cases.
- g. Procedures and equipment, such as barricades (identify type), to delineate closed construction areas from the airport operational areas, as necessary.
- h. Limitations on construction.
- i. Required compliance of contractor personnel with all airport safety and security measures.
- j. Location of stockpiled construction materials, construction site parking, and access and haul roads.
- k. Radio communications.
- l. Vehicle identification.
- m. Trenches and excavations and cover requirements.

- n. Procedures for notifying ARFF personnel if water lines or fire hydrants must be deactivated or if emergency access routes must be rerouted or blocked.
- o. Emergency notification procedures for medical and police response.
- p. Use of temporary visual aids.
- q. Wildlife management.
- r. Foreign object debris (FOD) control provisions.
- s. Hazardous materials (HAZMAT) management.
- t. NOTAM issuance.
- u. Inspection requirements.
- v. Procedures for locating and protecting existing underground utilities, cables, wires, pipelines, and other underground facilities in excavation areas.
- w. Procedures for contacting responsible representatives/points of contact for all involved parties. This should include off-duty contact information so an immediate response may be coordinated to correct any construction-related activity that could adversely affect the operational safety of the airport. Particular care should be taken to ensure that appropriate Airways Facilities personnel are identified in the event that an unanticipated utility outage or cable cut occurs that impacts FAA NAVAIDS.
- x. Vehicle operator training.
- y. Penalty provisions for noncompliance with airport rules and regulations and the safety plan (e.g., if a vehicle is involved in a runway incursion).
- z. Any special conditions that affect the operation of the airport and will require a portion of the safety plan to be activated (e.g., low-visibility operations, snow removal).

## Section 2. Safety and Security Measures

### 2-3. OVERVIEW.

Airport operators are responsible for closely monitoring tenant and construction contractor activity during the construction project to ensure continual compliance with all safety and security requirements. Airports subject to 49 CFR part 1542, Airport Security, must meet standards for access control, movement of ground vehicles, and identification of construction contractor and tenant personnel. In addition, airport operators should use safety program standards, as described in Chapter 3 of this AC, to develop specific safety measures to which tenants and construction contractors must adhere throughout the duration of construction activities.

General safety provisions are contained in AC 150/5370-10, *Standards for Specifying Construction of Airports*, paragraphs 40-05, "Maintenance of Traffic"; 70-08, "Barricades, Warning Signs, and Hazard Markings"; and 80-04, "Limitation of Operations." At any time during construction, aircraft operations, weather, security, or local airport rules may dictate more stringent safety measures. The airport operator should ensure that both general and specific safety requirements are coordinated with airport tenants and ATCT personnel. The airport operator should also include these parties in the coordination of all bid documents, construction plans, and specifications for on-airport construction projects.

### 2-4. VEHICLE OPERATION AND MARKING AND PEDESTRIAN CONTROL.

Vehicle and pedestrian access routes for airport construction projects must be controlled to prevent inadvertent or unauthorized entry of persons, vehicles, or animals onto the AOA. This includes aircraft movement and nonmovement areas. The airport operator should develop and coordinate a construction vehicle plan with airport tenants, contractors, and the ATCT. The safety plan or invitation for bid should include specific vehicle and pedestrian requirements.

The vehicle plan should contain the following items:

- a. Airport operator's rules and regulations for vehicle marking, lighting, and operation.
- b. Requirements for marking and identifying vehicles in accordance with AC 150/5210-5, *Painting, Marking, and Lighting of Vehicles Used on an Airport*.
- c. Description of proper vehicle operations on movement and nonmovement areas under normal, lost communications, and emergency conditions.
- d. Penalties for noncompliance with driving rules and regulations.
- e. Training requirements for vehicle drivers to ensure compliance with the airport operator's vehicle rules and regulations.
- f. Provisions for radio communication training for construction contractor personnel engaged in construction activities around aircraft movement areas. Some drivers,

such as construction drivers under escort, may not require this training.

**g.** Escort procedures for construction vehicles requiring access to aircraft movement areas. A vehicle in the movement area must have a working aviation-band, two-way radio unless it is under escort. Vehicles can be in closed areas without a radio if the closed area is properly marked and lighted to prevent incursions and a NOTAM regarding the closure is issued.

**h.** Monitoring procedures to ensure that vehicle drivers are in compliance with the construction vehicle plan.

**i.** Procedures for, if appropriate, personnel to control access through gates and fencing or across aircraft movement areas.

## **2-5. CONSTRUCTION EMPLOYEE PARKING AREAS.**

Designate in advance vehicle parking areas for contractor employees to prevent any unauthorized entry of persons or vehicles onto the airport movement area. These areas should provide reasonable contractor employee access to the job site.

## **2-6. CONSTRUCTION VEHICLE EQUIPMENT PARKING.**

Construction employees must park and service all construction vehicles in an area designated by the airport operator outside the runway safety areas and OFZs and never on a closed taxiway or runway. Employees should also park construction vehicles outside the OFA when not in use by construction personnel (e.g., overnight, on weekends, or during other periods when construction is not active). Parking areas must not obstruct the clear line of sight by the ATCT to any taxiways or runways under air traffic control nor obstruct any runway visual aids, signs, or navigational aids. The FAA must also study those areas to determine effects on 14 CFR part 77, *Objects Affecting Navigable Airspace*, surfaces (see paragraph 2-13 for further information).

## **2-7. RADIO COMMUNICATION TRAINING.**

The airport operator must ensure that tenant and construction contractor personnel engaged in activities involving unescorted operation on aircraft movement

areas observe the proper procedures for communications, including using appropriate radio frequencies at airports with and without ATCTs. Training of contractors on proper communication procedures is essential for maintaining airport operational safety. When operating vehicles on or near open runways or taxiways, construction personnel must understand the critical importance of maintaining radio contact with airport operations, ATCT, or the Common Traffic Advisory Frequency, which may include UNICOM, MULTICOM, or one of the FAA Flight Service Stations (FSS), as directed by airport management.

Vehicular traffic crossing active movement areas must be controlled either by two-way radio with the ATCT, escort, flagman, signal light, or other means appropriate for the particular airport. Vehicle drivers must confirm by personal observation that no aircraft is approaching their position when given clearance to cross a runway. In addition, it is the responsibility of the escort vehicle driver to verify the movement/position of all escorted vehicles at any given time.

Even though radio communication is maintained, escort vehicle drivers must also familiarize themselves with ATCT light gun signals in the event of radio failure (see the FAA safety placard "Ground Vehicle Guide to Airport Signs and Markings"). This safety placard may be ordered through the Runway Safety Program Web site at <http://www.faaersp.org> or obtained from the Regional Airports Division Office.

## **2-8. FENCING AND GATES.**

Airport operators and contractors must take care to maintain a high level of safety and security during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel. Temporary gates should be equipped so they can be securely closed and locked to prevent access by animals and people (especially minors). Procedures should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit "piggybacking" behind another person or vehicle. The Department of Transportation (DOT) document DOT/FAA/AR-00/52, *Recommended Security Guidelines for Airport Planning and Construction*, provides more specific information on fencing. A copy of this document can be obtained from the Airport Consultants Council, Airports Council International, or American Association of Airport Executives.

## **Section 3. Notification of Construction Activities**

### **2-9. GENERAL.**

In order to maintain the desired levels of operational safety on airports during construction activities, the safety

plan should contain the notification actions described below.

**2-10. ENSURING PROMPT NOTIFICATIONS.**

The airport operator should establish and follow procedures for the immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of an airport.

**2-11. NOTICES TO AIRMEN (NOTAMS).**

The airport operator must provide information on closed or hazardous conditions on airport movement areas to the FSS so it can issue a NOTAM. The airport operator must coordinate the issuance, maintenance, and cancellation of NOTAMS about airport conditions resulting from construction activities with tenants and the local air traffic facility (control tower, approach control, or air traffic control center. Refer to AC 150/5200-28, *Notices to Airmen (NOTAMS) for Airport Operators*, and Appendix 4 in this AC for a sample NOTAM form. Only the FAA may issue or cancel NOTAMS on shutdown or irregular operation of FAA-owned facilities. Only the airport operator or an authorized representative may issue or cancel NOTAMS on airport conditions. (The airport owner/operator is the only entity that can close or open a runway.) The airport operator must file and maintain this list of authorized representatives with the FSS. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the airport operator.

**2-12. AIRCRAFT RESCUE AND FIRE FIGHTING (ARFF) NOTIFICATION.**

The safety plan must provide procedures for notifying ARFF personnel, mutual aid providers, and other emergency services if construction requires shutting off or otherwise disrupting any water line or fire hydrant on the airport or adjoining areas and if contractors work with hazardous material on the airfield. Notification procedures must also be developed for notifying ARFF and all other emergency personnel when the work performed will close or affect any emergency routes. Likewise, the procedures must address appropriate notifications when services are restored.

**2-13. NOTIFICATION TO THE FAA.**

For certain airport projects, 14 CFR part 77 requires notification to the FAA. In addition to applications made for Federally funded construction, 14 CFR part 157, Notice of Construction, Alteration, Activation, and

Deactivation of Airports, requires that the airport operator notify the FAA in writing whenever a non-Federally funded project involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. Notification involves submitting FAA Form 7480-1, Notice of Landing Area Proposal, to the nearest FAA Regional Airports Division Office or Airports District Office.

Also, any person proposing any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR part 77 must notify the FAA. This includes construction equipment and proposed parking areas for this equipment (i.e., cranes, graders, etc.). FAA Form 7460-1, Notice of Proposed Construction or Alteration, can be used for this purpose and submitted to the FAA Regional Airports Division Office or Airports District Office. (See AC 70/7460-2, *Proposed Construction or Alteration of Objects that May Affect the Navigable Airspace*.)

If construction operations require a shutdown of an airport owned NAVAID from service for more than 24 hours or in excess of 4 hours daily on consecutive days, we recommend a 45-day minimum notice prior to facility shutdown. Coordinate work for a FAA owned NAVAID shutdown with the local FAA Airways Facilities Office. In addition, procedures that address unanticipated utility outages and cable cuts that could impact FAA NAVAIDS must be addressed.

**2-14. WORK SCHEDULING AND ACCOMPLISHMENT.**

Airport operators—or tenants having construction on their leased properties—should use predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction (see AC 150/5300-9, *Predesign, Prebid, and Preconstruction Conferences for Airport Grant Projects*). The airport operator, tenants, and construction contractors should integrate operational safety requirements into their planning and work schedules as early as practical. Operational safety should be a standing agenda item for discussion during progress meetings throughout the project. The contractor and airport operator should carry out onsite inspections throughout the project and immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

## CHAPTER 3. SAFETY STANDARDS AND GUIDELINES

### Section 1. Runway and Taxiway Safety Areas, Obstacle-Free Zones, and Object-Free Areas

#### 3-1. OVERVIEW.

Airport operators must use these safety guidelines when preparing plans and specifications for construction activities in areas that may interfere with aircraft operations. The safety plan should recognize and address these standards for each airport construction project.

However, the safety plan must reflect the specific needs of a particular project, and for this reason, these safety guidelines should not be incorporated verbatim into project specifications. For additional guidance on meeting safety and security requirements, refer to the planning guide template included in Appendix 3 of this AC.

#### 3-2. RUNWAY SAFETY AREA (RSA)/ OBSTACLE-FREE ZONE (OFZ).

A runway safety area is the defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway (see AC 150/5300-13, *Airport Design*). Construction activities within the standard RSA are subject to the following conditions:

##### a. Runway edges.

(1) No construction may occur closer than 200 feet (60m) from the runway centerline unless the runway is closed or restricted to aircraft operations, requiring an RSA that is equal to the RSA width available during construction, or 400 feet, whichever is less (see AC 150/5300-13, Tables 3-1 through 3-3).

(2) Personnel, material, and/or equipment must not penetrate the OFZ, as defined in AC 150/5300-13.

(3) The airport operator must coordinate the construction activity in the RSA as permitted above with the ATCT and the FAA Regional Airports Division Office or appropriate Airports District Office and issue a local NOTAM.

##### b. Runway ends.

(1) An RSA must be maintained of such dimensions that it extends beyond the end of the runway a distance equal to that which existed before construction activity, unless the runway is closed or restricted to aircraft operations for which the reduced RSA is adequate (see AC 150/5300-13). The temporary use of declared distances and/or partial runway closures may help provide the necessary RSA.

In addition, all personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces, as defined in Appendix 2, "Threshold Siting Requirements," of AC 150/5300-13.<sup>1</sup> Consult with the appropriate FAA Regional Airports Division Office or Airports District Office to determine the appropriate approach surface required.

(2) Personnel, material, and/or equipment must not penetrate the OFZ, as defined in AC 150/5300-13.

(3) The safety plan must provide procedures for ensuring adequate distance for blast protection, if required by operational considerations.

(4) The airport operator must coordinate construction activity in this portion of the RSA with the ATCT and the FAA Regional Airports Division Office or appropriate Airports District Office and issue a local NOTAM.

##### c. Excavations.

(1) Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

(2) Open trenches or excavations are not permitted within 200 feet (60m) of the runway centerline and at least the existing RSA distance from the runway threshold while the runway is open. If the runway must be opened before excavations are backfilled, cover the excavations appropriately. Coverings for open trenches or excavations must be of sufficient strength to support the weight of the heaviest aircraft operating on the runway.

#### 3-3. TAXIWAY SAFETY AREAS/OBJECT-FREE AREAS.

a. Unrestricted construction activity is permissible adjacent to taxiways when the taxiway is restricted to aircraft such that the available taxiway safety area is equal

<sup>1</sup>If a full safety area cannot be obtained through declared distances and partial closures, or other methods such as alternate runway use, construction activity may operate in the RSA as long as conditions cited in paragraph 3-1b(2) thru (4) are met. In addition, various surfaces outlined in AC 150/5300-13 and Terminal Instrument Procedures (TERPS) must be protected through an aeronautical study.

to at least ½ of the widest wingspan of the aircraft expected to use the taxiway and the available taxiway object-free area is equal to at least .7 times the widest wingspan plus 10 feet. (See AC 150/5300-13 for guidance on taxiway safety and object-free areas.)

Construction activity may be accomplished closer to a taxiway, subject to the following restrictions:

- (1) The activity is first coordinated with the airport operator.
- (2) Appropriate NOTAMs are issued.
- (3) Marking and lighting meeting the provisions of paragraph 3-9 are implemented.
- (4) Adequate clearance is maintained between equipment and materials and any part of an aircraft. If such clearance can only be maintained if an aircraft does not have full use of the entire taxiway width (with its

main landing gear at the edge of the pavement), then it will be necessary to move personnel and equipment for each passing aircraft. In these situations, flag persons will be used to direct construction equipment, and wing walkers may be necessary to guide aircraft. Wing walkers should be airline/aviation personnel rather than construction workers.

b. Construction contractors must prominently mark open trenches and excavations at the construction site, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness

c. Excavations and open trenches may be permitted up to the edge of a structural taxiway and apron pavement provided the dropoff is marked and lighted per paragraph 3-9, "Hazard Marking and Lighting."

## Section 2. Temporary Runway Thresholds

### 3-4. OVERVIEW.

Construction activity in a runway approach area may result in the need to partially close a runway or displace the existing runway threshold. In either case, locate the threshold in accordance with Appendix 2 of AC 150/5300-13, *Airport Design*. Objects that do not penetrate these surfaces may still be obstructions to air navigation and may affect standard instrument approach procedures. Coordinate these objects with the FAA's Regional Airports Office or appropriate Airports District Office, as necessary. Refer to the current edition of AC 150/5300-13 for guidance on threshold siting requirements. The partial runway closure, the displacement of the runway threshold, as well as closures of the complete runway and other portions of the movement area also requires coordination with appropriate ATCT personnel and airport users.

**Caution regarding partial runway closures:** When filing a NOTAM for a partial runway closure, clearly state to FSS personnel that the portion of pavement located prior to the threshold is not available for landing and departing traffic. In this case, the threshold has been moved for both landing and takeoff purposes (this is different than a displaced threshold).

Example NOTAM: "North 1,000 feet of Runway 18/36 is closed; 7,000 feet remain available on Runway 18 and Runway 36 for arrivals and departures." There may be situations where the portion of closed runway is available for taxiing only. If so, the NOTAM must reflect this condition.

**Caution regarding displaced thresholds:** Implementation of a displaced threshold affects runway length available for aircraft landing over the displacement. Depending on the reason for the displacement (to provide obstruction clearance or RSA),

such a displacement may also require an adjustment in the landing distance available and accelerate-stop distance available in the opposite direction. If project scope includes personnel, equipment, excavation, etc. within the RSA of any usable runway end, we do not recommend a displaced threshold unless arrivals and departures toward the construction activity are prohibited. Instead, implement a partial closure.

### 3-5. MARKING GUIDELINES FOR TEMPORARY THRESHOLD.

Ensure that markings for temporary displaced thresholds are clearly visible to pilots approaching the airport to land. When construction personnel and equipment are located close to any threshold, a temporary visual NAVAID, such as runway end identifier lights (REIL), may be required (even on unlighted runways) to define the new beginning of the runway clearly. A visual vertical guidance device, such as a visual approach slope indicator (VASI), pulse light approach slope indicator (PLASI), or precision approach path indicator (PAPI), may be necessary to assure landing clearance over personnel, vehicles, equipment, and/or above-grade stockpiled materials. If such devices are installed, ensure an appropriate descriptive NOTAM is issued to inform pilots of these conditions. The current edition of AC 150/5340-1, *Standards for Airport Markings*, describes standard marking colors and layouts. In addition, we recommend that a temporary runway threshold be marked using the following guidelines:

a. Airport markings must be clearly visible to pilots; not misleading, confusing, or deceptive; secured in place to prevent movement by prop wash, jet blast, wing vortices, or other wind currents; and constructed of

materials that would minimize damage to an aircraft in the event of inadvertent contact.

(1) Pavement markings for temporary closed portions of the runway should consist of yellow chevrons to identify pavement areas that are unsuitable for takeoff/landing (see AC 150/5340-1). If unable to paint the markings on the pavement, construct them from any of the following materials: double-layered painted snow fence, colored plastic, painted sheets of plywood, or similar materials. They must be properly configured and secured to prevent movement by prop wash, jet blast, or other wind currents.

(2) It may be necessary to remove or cover runway markings, such as runway designation markings and aiming point markings, depending on the length of construction and type of activity at the airport.

(3) When threshold markings are needed to identify the temporary beginning of the runway that is available for landing, use a white threshold bar of the dimensions specified in AC 150/5340-1.

(4) If temporary outboard elevated or flush threshold bars are used, locate them outside of the runway pavement surface, one on each side of the runway. They should be at least 10 feet (3m) in width and extend outboard from each side of the runway so they are clearly visible to landing and departing aircraft. These threshold bars are white. If the white threshold bars are not discernable on grass or snow, apply a black background with appropriate material over the ground to ensure the markings are clearly visible.

(5) A temporary threshold may also be marked with the use of retroreflective, elevated markers. One side of such markers is green to denote the approach end of the runway; the side that is seen by pilots on rollout is red. See AC 150/5345-39, *FAA Specification L-853, Runway and Taxiway Retroreflective Markers*.

(6) At 14 CFR part 139 certificated airports, temporary elevated threshold markers must be mounted with a frangible fitting (see 14 CFR part 139.309). However, at noncertificated airports, the temporary elevated threshold markings may either be mounted with a frangible fitting or be flexible. See AC 150/5345-39.

b. The application rate of the paint to mark a short-term temporary runway threshold may deviate from the standard (see Item P-620, "Runway and Taxiway Painting," in AC 150/5370-10, *Standards for Specifying Construction of Airports*), but the dimensions must meet the existing standards, unless coordinated with the appropriate offices.

c. When a runway is partially closed, the distance remaining signs for aircraft landing in the opposite direction should be covered or removed during the construction.

### 3-6. LIGHTING GUIDELINES FOR TEMPORARY THRESHOLD.

A temporary runway threshold must be lighted if the runway is lighted and it is the intended threshold for night landings or instrument meteorological conditions. We recommend that temporary threshold lights and related visual NAVAIDs be installed outboard of the edges of the full-strength pavement with bases at grade level or as low as possible, but not to exceed 3 inches (7.6cm) above ground. When any portion of a base is above grade, place properly compacted fill around the base to minimize the rate of gradient change so aircraft can, in an emergency, cross at normal landing or takeoff speeds without incurring significant damage (see AC 150/5370-10). We recommend that the following be observed when using temporary runway threshold lighting:

a. Maintain threshold and edge lighting color and spacing standards as described in AC 150/5340-24, *Runway and Taxiway Edge Lighting System*. Battery-powered, solar, or portable lights that meet the criteria in AC 150/5345-50, *Specification for Portable Runway Lights*, may be used. These systems are intended primarily for visual flight rules (VFR) aircraft operation but may be used for instrument flight rules (IFR) aircraft operations, upon individual approval from the Flight Standards Division of the applicable FAA Regional Office.

b. When the runway has been partially closed, disconnect edge and threshold lights with associated isolation transformers on that part of the runway at and behind the threshold (i.e., the portion of the runway that is closed). Alternately, cover the light fixture in such a way as to prevent light leakage. Avoid removing the lamp from energized fixtures because an excessive number of isolation transformers with open secondaries may damage the regulators and/or increase the current above its normal value.

c. Secure, identify, and place any temporary exposed wiring in conduit to prevent electrocution and fire ignition sources.

d. Reconfigure yellow lenses (caution zone), as necessary. If the runway has centerline lights, reconfigure the red lenses, as necessary, or place the centerline lights out of service.

e. Relocate the visual glide slope indicator (VGSI), such as VASI and PAPI; other airport lights, such as REIL; and approach lights to identify the temporary threshold. Another option is to disable the VGSI or any equipment that would give misleading indications to pilots as to the new threshold location. Installation of temporary visual aids may be necessary to provide adequate guidance to pilots on approach to the affected runway. If the FAA owns and operates the VGSI,

coordinate its installation or disabling with the local Airway Facilities Systems Management Office.

f. Issue a NOTAM to inform pilots of temporary lighting conditions.

### Section 3. Other Construction Marking and Lighting Activities

#### 3-7. OVERVIEW.

Ensure that construction areas, including closed runways, are clearly and visibly separated from movement areas and that hazards, facilities, cables, and power lines are identified prominently for construction contractors. Throughout the duration of the construction project, verify that these areas remain clearly marked and visible at all times and that marking and lighting aids remain in place and operational. Routine inspections must be made of temporary construction lighting, especially battery-powered lighting since weather conditions can limit battery life.

#### 3-8. CLOSED RUNWAY AND TAXIWAY MARKING AND LIGHTING.

Closed runway markings consist of a yellow “X” in compliance with the standards of AC 150/5340-1, *Standards for Airport Markings*. A very effective and preferable visual aid to depict temporary closure is the lighted “X” signal placed on or near the runway designation numbers. This device is much more discernible to approaching aircraft than the other materials described. If the lighted “X” is not available, construct the marking of any of the following materials: double-layered painted snow fence, colored plastic, painted sheets of plywood, or similar materials. They must be properly configured and secured to prevent movement by prop wash, jet blast, or other wind currents. In addition, the airport operator may install barricades, traffic cones, activate stop bars, or other acceptable visual devices at major entrances to the runways to prevent aircraft from entering a closed portion of runway. The placement of even a single reflective barricade with a “do not enter” sign on a taxiway centerline can prevent an aircraft from continuing onto a closed runway. If the taxiway must remain open for aircraft crossings, barricades or markings, as described above or in paragraph 3-9, should be placed on the runway.

##### a. Permanently closed runways.

For runways and taxiways that have been permanently closed, disconnect the lighting circuits. For runways, obliterate the threshold marking, runway designation marking, and touchdown zone markings, and place “X’s” at each end and at 1,000-foot (300-m) intervals. For taxiways, place an “X” at the entrance of the closed taxiway.

##### b. Temporarily closed runway and taxiways.

For runways that have been temporarily closed, place an “X” at the each end of the runway. With taxiways, place an “X” at the entrance of the closed taxiway.

##### c. Temporarily closed airport.

When the airport is closed temporarily, mark the runways as closed and turn off the airport beacon.

##### d. Permanently closed airports

When the airport is closed permanently, mark the runways as permanently closed, disconnect the airport beacon, and place an “X” in the segmented circle or at a central location if no segmented circle exists.

#### 3-9. HAZARD MARKING AND LIGHTING.

Provide prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles. Using appropriate hazard marking and lighting may prevent damage, injury, traffic delays, and/or facility closures. Hazard marking and lighting must restrict access and make specific hazards obvious to pilots, vehicle drivers, and other personnel. Barricades, traffic cones (weighted or sturdily attached to the surface), or flashers are acceptable methods used to identify and define the limits of construction and hazardous areas on airports.

Provide temporary hazard marking and lighting to prevent aircraft from taxiing onto a closed runway for takeoff and to identify open manholes, small areas under repair, stockpiled material, and waste areas. Also consider less obvious construction-related hazards and include markings to identify FAA, airport, and National Weather Service facilities cables and power lines; instrument landing system (ILS) critical areas; airport surfaces, such as RSA, OFA, and OFZ; and other sensitive areas to make it easier for contractor personnel to avoid these areas.

The construction specifications must include a provision requiring the contractor to have a person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades. The contractor must file the contact person’s information with the airport.

##### a. Nonmovement areas.

Indicate construction locations on nonmovement areas in which no part of an aircraft may enter by using barricades that are marked with diagonal, alternating orange and white stripes. Barricades may be supplemented with alternating

orange and white flags at least 20 by 20 inches (50 by 50 cm) square and made and installed so they are always in an extended position, properly oriented, and securely fastened to eliminate jet engine ingestion. Such barricades may be many different shapes and made from various materials, including railroad ties, sawhorses, jersey barriers, or barrels. During reduced visibility or night hours, supplement the barricades with red lights, either flashing or steady-burning, which should meet the luminance requirements of the State Highway Department (yellow lights are not acceptable after October 1, 2004). The intensity of the lights and spacing for barricade flags and lights must adequately and without ambiguity delineate the hazardous area.

**b. Movement areas.**

Use orange traffic cones; red lights, either flashing or steady-burning, which should meet the luminance requirements of the State Highway Department (yellow lights are not acceptable after October 1, 2004); collapsible barricades marked with diagonal, alternating orange and white stripes; and/or signs to separate all construction/maintenance areas from the movement area. All barricades, temporary markers, and other objects placed and left in safety areas associated with any open runway, taxiway, or taxiway must be as low as possible to the ground; of low mass; easily collapsible upon contact with an aircraft or any of its components; and weighted or sturdily attached to the surface to prevent displacement from prop wash, jet blast, wing vortex, or other surface wind currents. If affixed to the surface, they must be frangible at grade level or as low as possible, but not to exceed 3 inches (7.6cm) above the ground. Do not use nonfrangible hazard markings, such as concrete barriers and/or metal-drum-type barricades, in aircraft movement areas. Do not use railroad ties on runways.

Use highly reflective barriers with flashing or steady-burning red lights to barricade taxiways leading to closed runways. Evaluate all operating factors when determining how to mark temporary closures that can last from 10 to 15 minutes to a much longer period of time. However, we strongly recommend that, even for closures of relatively short duration, major taxiway/runway intersections be identified with barricades spaced no greater than 20 feet (6m) apart. Mark the barricades with a flashing or steady-burning red light. At a minimum, use a single barricade placed on the taxiway centerline.

**3-10. CONSTRUCTION NEAR NAVIGATIONAL AIDS (NAVAIDS).**

Construction activities, materials/equipment storage, and vehicle parking near electronic NAVAIDS require special consideration since they may interfere with signals essential to air navigation. Evaluate the effect of construction activity and the required distance and direction from the NAVAID for each construction project. Pay particular attention to stockpiling material, as well as

to movement and parking of equipment that may interfere with line of sight from the ATCT or with electronic emissions. Interference from construction may require NAVAID shutdown or adjustment of instrument approach minimums for IFR. This condition requires that a NOTAM be filed. Construction activities and materials/equipment storage near a NAVAID may also obstruct access to the equipment and instruments for maintenance. Before commencing construction activity, parking vehicles, or storing construction equipment and materials near a NAVAID, consult with the nearest FAA Airway Facilities Office.

**3-11. CONSTRUCTION SITE ACCESS AND HAUL ROADS.**

Determine the construction contractor's access to the construction sites and haul roads. Do not permit the construction contractor to use any access or haul roads other than those approved. Construction contractors must submit specific proposed routes associated with construction activities to the airport operator for evaluation and approval as part of the safety plan before beginning construction activities. These proposed routes must also provide specifications to prevent inadvertent entry to movement areas. Pay special attention to ensure that ARFF right of way on access and haul roads is not impeded at any time and that construction traffic on haul roads does not interfere with NAVAIDS or approach surfaces of operational runways.

**3-12. CONSTRUCTION MATERIAL STOCKPILING.**

Stockpiled materials and equipment storage are not permitted within the RSA and OFZ of an operational runway. The airport operator must ensure that stockpiled materials and equipment adjacent to these areas are prominently marked and lighted during hours of restricted visibility or darkness. This includes determining and verifying that materials are stored at an approved location to prevent foreign object damage and attraction of wildlife.

**3-13. OTHER LIMITATIONS ON CONSTRUCTION.**

Contractors may not use open-flame welding or torches unless adequate fire safety precautions are provided and the airport operator has approved their use. Under no circumstances should flare pots be used within the AOA at any time. The use of electrical blasting caps must not be permitted on or within 1,000 feet (300m) of the airport property (see AC 150/5370-10, *Standards for Specifying Construction of Airports*).

### 3-14. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT.

Waste and loose materials, commonly referred to as FOD, are capable of causing damage to aircraft landing gears, propellers, and jet engines. Construction contractors must not leave or place FOD on or near active aircraft

movement areas. Materials tracked onto these areas must be continuously removed during the construction project. We also recommend that airport operators and construction contractors carefully control and continuously remove waste or loose materials that might attract wildlife.

## Section 4. Safety Hazards and Impacts

### 3-15. OVERVIEW.

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. Airport operators and contractors should consider the following when performing inspections of construction activity:

- a. Excavation adjacent to runways, taxiways, and aprons.
- b. Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxilane; in the related object-free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.
- c. Runway resurfacing projects resulting in lips exceeding 3 inches (7.6cm) from pavement edges and ends.
- d. Heavy equipment (stationary or mobile) operating or idle near AOAs, in runway approaches and departures areas, or in OFZs.
- e. Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigational and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.
- f. Tall and especially relatively low-visibility units (i.e., equipment with slim profiles)—cranes, drills, and similar objects—located in critical areas, such as OFZs and approach zones.
- g. Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxilane or in a related safety, approach, or departure area.
- h. Obstacles, loose pavement, trash, and other debris on or near AOAs. Construction debris (gravel,

sand, mud, paving materials, etc.) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.

- i. Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOAs create aviation hazards.
- j. Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOAs create aviation hazards.
- k. Wildlife attractants—such as trash (food scraps not collected from construction personnel activity), grass seeds, or ponded water—on or near airports.
- l. Obliterated or faded markings on active operational areas.
- m. Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.
- n. Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction-related airport conditions.
- o. Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway/taxiway lighting; loss of navigational, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.
- p. Restrictions on ARFF access from fire stations to the runway-taxiway system or airport buildings.
- q. Lack of radio communications with construction vehicles in airport movement areas.
- r. Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport

that could be distracting, confusing, or alarming to pilots during aircraft operations.

**s.** Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.

**t.** Spillage from vehicles (gasoline, diesel fuel, oil, etc.) on active pavement areas, such as runways, taxiways, ramps, and airport roadways.

**u.** Failure to maintain drainage system integrity during construction (e.g., no temporary drainage provided when working on a drainage system).

**v.** Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.

**w.** Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.

**x.** Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.

**y.** Site burning, which can cause possible obscuration.

**z.** Construction work taking place outside of designated work areas and out of phase.

## APPENDIX 1. RELATED READING MATERIAL

1. Obtain the latest version of the following free publications from the FAA on its Web site at <http://www.faa.gov/arp/>. In addition, these ACs are available by contacting the U.S. Department of Transportation, Subsequent Distribution Office, SVC-121.23, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.
  - a. AC 150/5200-28, *Notices to Airmen (NOTAM) for Airport Operators*. Provides guidance for the use of the NOTAM System in airport reporting.
  - b. AC 150/5200-30, *Airport Winter Safety and Operations*. Provides guidance to airport owners/operators on the development of an acceptable airport snow and ice control program and on appropriate field condition reporting procedures.
  - c. AC 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports*. Provides guidance on locating certain land uses having the potential to attract hazardous wildlife to public-use airports.
  - d. AC 150/5210-5, *Painting, Marking, and Lighting of Vehicles Used on an Airport*. Provides guidance, specifications, and standards for painting, marking, and lighting vehicles operating in the airport air operations areas.
  - e. AC 150/5220-4, *Water Supply Systems for Aircraft Fire and Rescue Protection*. Provides guidance for the selection of a water source and standards for the design of a distribution system to support aircraft rescue and fire fighting service operations on airports.
  - f. AC 150/5340-1, *Standards for Airport Markings*. Contains FAA standards for markings used on airport runways, taxiways, and aprons.
  - g. AC 150/5340-14B, *Economy Approach Lighting Aids*. Describes standards for the design, selection, siting, and maintenance of economy approach lighting aids.
  - h. AC 150/5340-18, *Standards for Airport Sign Systems*. Contains FAA standards for the siting and installation of signs on airport runways and taxiways.
  - i. AC 150/5345-28, *Precision Approach Path Indicator (PAPI) Systems*. Contains the FAA standards for PAPI systems, which provide pilots with visual glide slope guidance during approach for landing.
  - j. AC 150/5380-5, *Debris Hazards at Civil Airports*. Discusses problems at airports, gives information on foreign objects, and explains how to eliminate such objects from operational areas.
  - k. AC 70/7460-2, *Proposed Construction or Alteration of Objects that May Affect the Navigable Airspace*. Provides information to persons proposing to erect or alter an object that may affect navigable airspace and explains the need to notify the FAA before construction begins and the FAA's response to those notices, as required by 14 CFR part 77.
2. Obtain copies of the following publications from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Send a check or money order made payable to the Superintendent of Documents in the amount stated with your request. The Government Printing Office does not accept C.O.D. orders. In addition, the FAA makes these ACs available at no charge on the Web site at <http://www.faa.gov/arp/>.
  - a. AC 150/5300-13, *Airport Design*. Contains FAA standards and recommendations for airport design, establishes approach visibility minimums as an airport design parameter, and contains the object-free area and the obstacle free-zone criteria. (\$26. Supt. Docs.) SN050-007-01208-0.
  - b. AC 150/5370-10, *Standards for Specifying Construction of Airports*. Provides standards for construction of airports. Items covered include earthwork, drainage, paving, turfing, lighting, and incidental construction. (\$18. Supt. Docs.) SN050-007-0821-0.

## APPENDIX 2. DEFINITIONS OF TERMS USED IN THE AC

- 1. AIR OPERATIONS AREA (AOA).** Any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runways, taxiways, or aprons.
- 2. CONSTRUCTION.** The presence and movement of construction-related personnel, equipment, and materials in any location that could infringe upon the movement of aircraft.
- 3. CERTIFICATED AIRPORT.** An airport that has been issued an Airport Operating Certificate by the FAA under the authority of 14 CFR part 139, Certification and Operation: Land Airports Serving Certain Air Carriers, or its subsequent revisions.
- 4. FAA FORM 7460-1, NOTICE OF PROPOSED CONSTRUCTION OR ALTERATION.** The form submitted to the FAA Regional Air Traffic or Airports Division Office as formal written notification of any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR part 77, Objects Affecting Navigable Airspace (see AC 70/7460-2, *Proposed Construction or Alteration of Objects that May Affect the Navigable Airspace*, found at <http://www.faa.gov/arp/>).
- 5. FAA FORM 7480-1, NOTICE OF LANDING AREA PROPOSAL.** Form submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification whenever a project without an airport layout plan on file with the FAA involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport (found at <http://www.faa.gov/arp/>).
- 6. MOVEMENT AREA.** The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and aircraft parking areas (reference 14 CFR part 139).
- 7. OBSTRUCTION.** Any object/obstacle exceeding the obstruction standards specified by 14 CFR part 77, subpart C.
- 8. OBJECT-FREE AREA (OFA).** An area on the ground centered on the runway, taxiway, or taxilane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes (see AC 150/5300-13, *Airport Design*, for additional guidance on OFA standards and wingtip clearance criteria).
- 9. OBSTACLE-FREE ZONE (OFZ).** The airspace below 150 feet (45m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches (refer to AC 150/5300-13 for guidance on OFZs).
- 10. RUNWAY SAFETY AREA (RSA).** A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with AC 150/5300-13.
- 11. TAXIWAY SAFETY AREA.** A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, in accordance with AC 150/5300-13.
- 12. THRESHOLD.** The beginning of that portion of the runway available for landing. In some instances, the landing threshold may be displaced.
- 13. DISPLACED THRESHOLD.** The portion of pavement behind a displaced threshold that may be available for takeoffs in either direction or landing from the opposite direction.
- 14. VISUAL GLIDE SLOPE INDICATOR (VGSI).** This device provides a visual glide slope indicator to landing pilots. These systems include precision approach path indicators (PAPIs), visual approach slope indicators (VASIs), and pulse light approach slope indicators (PLASIs).

## APPENDIX 3. AIRPORT CONSTRUCTION SAFETY PLANNING GUIDE

### Aviation Safety Requirements During Construction

**PURPOSE.** *This appendix provides airport operators with boilerplate format and language for developing a safety plan for an airport construction project. Adapt this appendix, as applicable, to specific conditions found on the airport for which the plan is being developed. Consider including a copy of this safety plan in the construction drawings for easy access by contractor personnel. Plans should contain the following:*

#### 1. GENERAL SAFETY REQUIREMENTS.

Throughout the construction project, the following safety and operational practices should be observed:

- Operational safety should be a standing agenda item during progress meetings throughout the construction project.
- The contractor and airport operator must perform onsite inspections throughout the project, with immediate remedy of any deficiencies, whether caused by negligence, oversight, or project scope change.
- Airport runways and taxiways should remain in use by aircraft to the maximum extent possible.
- Aircraft use of areas near the contractor's work should be controlled to minimize disturbance to the contractor's operation.
- Contractor, subcontractor, and supplier employees or any unauthorized persons must be restricted from entering an airport area that would be hazardous.
- Construction that is within the safety area of an active runway, taxiway, or apron that is performed under normal operational conditions must be performed when the runway, taxiway, or apron is closed or use-restricted and initiated only with prior permission from the airport operator.
- The contracting officer, airport operator, or other designated airport representative may order the contractor to suspend operations; move personnel, equipment, and materials to a safe location; and stand by until aircraft use is completed.

#### 2. CONSTRUCTION MAINTENANCE AND FACILITIES MAINTENANCE.

Before beginning any construction activity, the contractor must, through the airport operator, give notice [using the

Notice to Airmen (NOTAM) System] of proposed location, time, and date of commencement of construction. Upon completion of work and return of all such areas to standard conditions, the contractor must, through the airport operator, verify the cancellation of all notices issued via the NOTAM System. Throughout the duration of the construction project, the contractor must—

- a. Be aware of and understand the safety problems and hazards described in AC 150/5370-2, *Operational Safety on Airports During Construction*.
- b. Conduct activities so as not to violate any safety standards contained in AC 150/5370-2 or any of the references therein.
- c. Inspect all construction and storage areas as often as necessary to be aware of conditions.
- d. Promptly take all actions necessary to prevent or remedy any unsafe or potentially unsafe conditions as soon as they are discovered.

#### 3. APPROACH CLEARANCE TO RUNWAYS.

Runway thresholds must provide an unobstructed approach surface over equipment and materials. (Refer to Appendix 2 in AC 150/5300-13, *Airport Design*, for guidance in this area.)

#### 4. RUNWAY AND TAXIWAY SAFETY AREA (RSA AND TSA).

Limit construction to outside of the approved RSA, as shown on the approved airport layout plan—unless the runway is closed or restricted to aircraft operations, requiring a lesser standard RSA that is equal to the RSA available during construction (see AC 150/5370-2 for exceptions). Construction activity within the TSA is permissible when the taxiway is open to aircraft traffic if adequate wingtip clearance exists between the aircraft and equipment/material; evacuations, trenches, or other conditions are conspicuously marked and lighted; and local NOTAMs are in effect for the activity (see AC 150/5300-13 for wingtip clearance requirements). The NOTAM should state that, "personnel and equipment are working adjacent to Taxiway \_\_\_\_."

##### a. Procedures for protecting runway edges.

- Limit construction to no closer than 200 feet (60m) from the runway centerline—unless the runway is closed or restricted to aircraft operations, requiring a lesser standard RSA

- that is equal to the RSA available during construction.
- Prevent personnel, material, and/or equipment, as defined in AC 150/5300-13, Paragraph 306, "Obstacle Free Zone (OFZ)," from penetrating the OFZ.

- Coordinate construction activity with the Airport Traffic Control Tower (ATCT) and FAA Regional Airports Division Office or Airports District Office, and through the airport operator, issue an appropriate NOTAM.

Complete the following chart to determine the area that must be protected along the runway edges:

Runway	Aircraft Approach Category* A, B, C, or D	Airplane Design Group* I, II, III, or IV	RSA Width in Feet Divided by 2*
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

\*See AC 150/5300-13, *Airport Design*, to complete the chart for a specific runway.

**b. Procedures for protecting runway ends.**

- Maintain the RSA from the runway threshold to a point at least the distance from the runway threshold as existed before construction activity—unless the runway is closed or restricted to aircraft operations, requiring an RSA that is equal to the RSA length available during construction in accordance with AC 150/5300-13. This may involve the use of declared distances and partial runway closures (see AC 150/5370-2 for exceptions).
- Ensure all personnel, materials, and/or equipment are clear of the applicable threshold siting criteria surface, as defined in Appendix 2, "Threshold Siting Requirements," of AC 150/5300-13.
- Prevent personnel, material, and/or equipment, as defined in AC 150/5300-13, from penetrating the obstacle-free zone.
- Ensure adequate distance for blast protection is provided, as needed.
- Coordinate construction activity with the ATCT and FAA Regional Airports Division Office or Airports District Office, and through the airport operator, issue an appropriate NOTAM.
- Provide a drawing showing the profile of the appropriate surfaces of each runway end where construction will take place. Where operations by turbojet aircraft are anticipated, review takeoff procedures and jet blast characteristics of aircraft and incorporate safety measures for construction workers in the contract documents.

Complete the following chart to determine the area that must be protected before the runway threshold:

Runway End Number	Airplane Design Group* I, II, III, or IV	Aircraft Approach Category* A, B, C, or D	Minimum Safety Area Prior to the Threshold*	Minimum Unobstructed Approach Slope
_____	_____	_____	_____ : FEET	____ : 1 to (threshold)
_____	_____	_____	_____ : FEET	____ : 1 to (threshold)
_____	_____	_____	_____ : FEET	____ : 1 to (threshold)
_____	_____	_____	_____ : FEET	____ : 1 to (threshold)

\*See AC 150/5300-13, *Airport Design*, to complete the chart for a specific runway.

**5. MARKING AND LIGHTING FOR TEMPORARY THRESHOLDS.**

Marking and lighting for a temporary threshold is \_\_\_/is not \_\_\_ required. The airport owner or contractor, as specified in the contract, will furnish and maintain markings for temporary thresholds. Precision approach path indicators (PAPIs) or runway end identification lights (REIL) are \_\_\_/are not \_\_\_ required. The airport owner or contractor, as specified in the contract, will furnish and install all temporary lighting. Include appropriate items per AC 150/5370-2, Chapter 3, "Safety Standards and Guidelines." *If marking and lighting for the temporary threshold is not required, delete this section of the safety plan. If visual aids and/or markings are necessary, provide details. (Include applicable 14 CFR part 77 surfaces in the contract documents.)*

**6. CLOSED RUNWAY MARKINGS AND LIGHTING.**

The following must be specified for closed runways. Closed runway marking are \_\_\_/are not \_\_\_ required. Closed runway markings will be as shown on the plans \_\_\_/as furnished by the airport owner \_\_\_/other \_\_\_ (specify). Barricades, flagging, and flashers are \_\_\_/are not \_\_\_ required at Taxiway \_\_\_ and Runway \_\_\_ and will be supplied by the airport \_\_\_/other \_\_\_ (specify).

**7. HAZARDOUS AREA MARKING AND LIGHTING.**

Hazardous areas on the movement area will be marked with barricades, traffic cones, flags, or flashers (specify). These markings restrict access and make hazards obvious to aircraft, personnel, and vehicles. During periods of low visibility and at night, identify hazardous areas with red flashing or steady-burning lights (specify). The hazardous area marking and lighting will be supplied by

the airport operator/contractor, as specified in the contract, and will be depicted on the plans.

**8. TEMPORARY LIGHTING AND MARKING.**

Airport markings, lighting, and/or signs will be altered in the following manner (specify) during the period from \_\_\_ to \_\_\_\_\_. The alterations are depicted on the plans.

**9. VEHICLE OPERATION MARKING AND CONTROL.**

Include the following provisions in the construction contract, and address them in the safety plans:

a. When any vehicle, other than one that has prior approval from the airport operator, must travel over any portion of an aircraft movement area, it will be escorted and properly identified. To operate in those areas during daylight hours, the vehicle must have a flag or beacon attached to it. Any vehicle operating on the movement areas during hours of darkness or reduced visibility must be equipped with a flashing dome-type light, the color of which is in accordance with local or state codes.

b. It may be desirable to clearly identify the vehicles for control purposes by either assigned initials or numbers that are prominently displayed on each side of the vehicle. The identification symbols should be at minimum 8-inch (20-cm) block-type characters of a contrasting color and easy to read. They may be applied either by using tape or a water-soluble paint to facilitate removal. Magnetic signs are also acceptable. In addition, vehicles must display identification media, as specified in the approved security plan. *(This section should be revised to conform to the airport operator's requirements.)*

c. Employee parking shall be \_\_\_\_\_ (specify location), as designated by the airport manager \_\_\_\_\_/project engineer \_\_\_\_\_/other \_\_\_\_\_ (specify).

d. Access to the job site shall be via \_\_\_\_\_ (specify route), as shown on the plans \_\_\_\_\_/designated by the engineer \_\_\_\_\_/designated by the superintendent \_\_\_\_\_/designated by the airport manager \_\_\_\_\_/other \_\_\_\_\_ (specify).

e. At 14 CFR part 139 certificated and towered airports, all vehicle operators having access to the movement area must be familiar with airport procedures for the operation of ground vehicles and the consequences of noncompliance.

f. If the airport is certificated and/or has a security plan, the airport operator should check for guidance on the additional identification and control of construction equipment.

## 10. NAVIGATIONAL AIDS.

The contractor must not conduct any construction activity within navigational aid restricted areas without prior approval from the local FAA Airway Facilities sector representative. Navigational aids include instrument landing system components and very high-frequency omnidirectional range, airport surveillance radar. Such restricted areas are depicted on construction plans.

## 11. LIMITATIONS ON CONSTRUCTION.

Additional limitations on construction include—

a. Prohibiting open-flame welding or torch cutting operations unless adequate fire safety precautions are provided and these operations have been authorized by the airport operator (*as tailored to conform to local requirements and restrictions*).

b. Prominently marking open trenches, excavations, and stockpiled materials at the construction and lighting these obstacles during hours of restricted visibility and darkness.

c. Marking and lighting closed, deceptive, and hazardous areas on airports, as appropriate.

d. Constraining stockpiled material to prevent its movement as a result of the maximum anticipated aircraft blast and forecast wind conditions.

## 12. RADIO COMMUNICATIONS.

Vehicular traffic located in or crossing an active movement area must have a working two-way radio in contact with the control tower or be escorted by a person in radio contact with the tower. The driver, through personal observation, should confirm that no aircraft is approaching the vehicle position. Construction personnel may operate in a movement area without two-way radio communication provided a NOTAM is issued closing the area and the area is properly marked to prevent incursions. Two-way radio communications are \_\_\_\_\_/are not \_\_\_\_\_ required between contractors and the Airport Traffic Control Tower \_\_\_\_\_/FAA Flight Service Station \_\_\_\_\_/Airport Aeronautical Advisory Stations (UNICOM/CTAF) \_\_\_\_\_. Radio contact is \_\_\_\_\_/is not \_\_\_\_\_ required between the hours of \_\_\_\_\_ and \_\_\_\_\_. Continuous monitoring is required \_\_\_\_\_/or is required only when equipment movement is necessary in certain areas \_\_\_\_\_. (*This section may be tailored to suit the specific vehicle and safety requirements of the airport sponsor.*)

## 13. DEBRIS.

Waste and loose material must not be placed in active movement areas. Materials tracked onto these areas must be removed continuously during the work project.

**APPENDIX 4. SAMPLE NOTAM**

\_\_\_\_\_ AIRPORT

**FAA NOTAM #** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**AIRPORT I.D. #** \_\_\_\_\_ **TIME:** \_\_\_\_\_

**NOTAM TEXT:**

**NOTIFICATON:**

#### TOWER	_____	_____	_____	_____
	PHONE #	INITIALS	TIME	CALLED IN BY

#### FSS	_____	_____	_____	_____
	PHONE #	INITIALS	TIME	CALLED IN BY

AIRLINES

_____	_____
_____	_____
_____	_____

**CANCELLED:**

**NOTIFICATON:**

#### TOWER	_____	_____	_____	_____
	PHONE #	INITIALS	TIME	CALLED IN BY

#### FSS	_____	_____	_____	_____
	PHONE #	INITIALS	TIME	CALLED IN BY

AIRLINES

_____	_____
_____	_____
_____	_____

**FAA Order SW Region - SW 5200.5B  
Airport Safety During FAA-Funded  
Airport Construction and FAA  
Facilities Maintenance**

**ORDER**

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

SW 5200.5B

SOUTHWEST REGION

2/15/96

SUBJ: AIRPORT SAFETY DURING FAA-FUNDED AIRPORT CONSTRUCTION AND FAA FACILITIES MAINTENANCE

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1. **PURPOSE.** This Order establishes airport safety standards for FAA-funded construction (Airport Improvement Program and Facilities and Equipment Program) and FAA facilities maintenance.
2. **DISTRIBUTION.** This Order is distributed to the Section level in the Airports and Airway Facilities Divisions, to the Branch level in the Flight Standards, Air Traffic, and Civil Aviation Security Divisions, to the Fort Worth Flight Procedures Office, to all Southwest Region field offices and facilities, and to F & E Field Installation/Construction Representatives.
3. **CANCELLATION.** Order SW 5200.5A, Airport Safety During FAA-Funded Airport Construction and FAA Facilities Maintenance, dated 6/6/89, is canceled.
4. **EXPLANATION OF CHANGES.** This Order revises and updates safety criteria for consistency with current FAA publications and updates references to regional organizations.
5. **DEFINITIONS.**
  - a. **Airport Elevation** - the highest point on the landing surface of an airport.
  - b. **Certificated Airport** - an airport which, by law, is safety-regulated by the FAA under Part 139 of the Federal Aviation Regulations, and which operates under specific safety requirements which apply to maintenance and construction activities on the airport. Certificated airports are listed in Appendix 2.
  - c. **Displaced Threshold** - A threshold that is located at a point on the runway other than the designated beginning of the runway. A temporary displacement may be used to provide landing aircraft adequate clearance over construction equipment or other objects in the approach area of a runway or adjacent to a runway.

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Distribution: A-X-3(FS,AT,AP,CS); A-X-4(AF);  
A-FOF-0 (maximum); A-FAF-10; A-FAS-1

Initiated By: ASW-620

d. Obstacle Free Zone (OFZ) - an FAA airport design standard for a volume of airspace above a runway. The components are the Runway OFZ, Inner-transitional surface OFZ, and Inner-Approach OFZ.

e. Obstruction - any structure, natural growth, vehicle or construction material which penetrates any airport imaginary surface defined by FAR Part 77, including primary, transitional, approach, horizontal, and conical surfaces.

f. Relocated Threshold - a runway end which is not located at the physical end of the pavement. This may occur if part of a runway is closed, and a relocated threshold is established at the beginning of the usable pavement. (Note: this term is not used in the Notice to Airmen system.)

g. Safety Area - the ground surface next to runways, taxiways, and aircraft parking areas which is expected to be graded, drained and free of any hazardous surface variations and nonfrangible objects, the purpose of which is to reduce the risk of damage to an aircraft inadvertently leaving airport pavement.

h. Small Aircraft - an aircraft weighing 12,500 lbs or less maximum certificated takeoff weight.

i. Large Aircraft - an aircraft weighing more than 12,500 lbs. maximum certificated takeoff weight.

6. PROCEDURES. Aviation safety is a primary consideration during airport construction and facilities maintenance. These activities shall be planned and scheduled to minimize disruption of normal aircraft ground and air traffic. For airports subject to FAR Part 107, Airport Security, the airport operator's security program standards shall be observed in the areas of access control, and movement and identification of construction and FAA personnel and vehicles.

a. These standards shall be used to develop specific safety measures which FAA employees, grantees, and contractors shall adhere to during these activities on all airports in the Southwest Region. They provide a reasonable level of safety, but aircraft operations, weather, security, or local airport rules may require use of more stringent safety measures. Use of less stringent measures and changes that impact security controls are permitted only after coordination between Airports, Air Traffic, Airway Facilities, Flight Standards, and Civil Aviation Security Divisions, airport management, and affected aviation users.

b. Bid documents for on-airport construction or maintenance projects shall include general and specific safety requirements, based on Appendix 1 to this Order, so that contractors are aware of the costs and constraints which will apply during the project to maintain a high level of aviation safety.

c. If the clearances and restrictions described in this Order cannot be maintained while construction or maintenance is underway, action will be taken as appropriate to:

- (1) close runways, taxiways, or aprons,
- (2) relocate or displace runway thresholds temporarily,
- (3) perform work at night or during periods of minimal aircraft activity,
- (4) close affected areas to certain types of aircraft,
- (5) restrict aircraft use by weight, wingspan, approach speed, or other characteristic,
- (6) shut down or restrict use of navigational or approach aids.

d. FAA employees who are responsible for construction or maintenance activities on airports shall coordinate project safety and security requirements and impacts with the airport sponsor as soon as the impacts have been identified, but before commitments are made with contractors or others to perform work on an airport. Coordination will vary from formal predesign conferences to informal contacts with the airport manager or responsible sponsor official before starting work.

7. SAFETY IMPACTS. Potentially hazardous conditions which may occur during airport construction and maintenance include the following:

- a. Excavations, trenches , and stockpiled material on or near runways, taxiways and aprons.
- b. Construction equipment on aircraft operating areas or in runway approaches or departure areas.
- c. Inadequate construction area marking or lighting.
- d. Lack of control over vehicle access to aircraft operating areas, unauthorized entry of personnel, vehicles, or animals.
- e. Inadequate vehicle marking or lighting.
- f. Deficient marking and lighting of temporary runway thresholds.
- g. Failure to issue, update, or cancel Notices to Airmen concerning airport or runway closures or other construction-related airport condition.
- h. Failure to mark and identify utilities or power cables, resulting in loss of airport lighting; navigational, visual, or approach aids; weather reporting service; or communications.

i. Unauthorized vehicle operations in localizer or glide slope critical areas, resulting in electronic interference or facility shutdown.

j. Construction debris (gravel, sand, mud, paving material, etc.) on airport pavements, resulting in aircraft prop, turbine engine, or tire damage.

k. Exposed pavement edges (drop-offs) from runways, taxiways and aprons to adjacent pavement sections or shoulders.

l. Construction activities which hamper aircraft rescue/firefighting access from fire stations to the runway-taxiway system or airport buildings.

m. Lack of radio communication with construction and maintenance vehicles in aircraft operating areas.

8. SAFETY STANDARDS. Paragraphs a through h below define safety standards and guidelines for FAA-funded construction and FAA maintenance activities on airports.

a. Obstacle Free Zone

(1) Objects, vehicle, and stockpiled material normally are not permitted to penetrate an OFZ. OFZs are shown on Figures 1 - 4.

(a) Runway OFZs are applicable at any time the runway is open for aircraft use. On precision runways with approach lights, the inner-approach and inner-transitional surface OFZs must be kept free of penetrations only when the weather conditions are below an 800 ft. ceiling or less than 2 miles visibility and aircraft are using an Instrument Landing System (ILS) for approaches.

(b) Objects which do not penetrate an OFZ still may require notice to the FAA under FAR Parts 77 or 152 and may be obstructions to air navigation. Those objects which exceed FAR Part 77 obstruction standards are to be appropriately obstruction-marked and, if used at night, obstruction-lighted. Cranes or other equipment of unusual height may require special consideration and coordination with FAA operating Divisions and airport users.

(2) The Runway OFZ is a volume of airspace extending from the runway surface up to 150 feet above the runway. It extends 200 feet beyond each end of the runway and has the following width:

Runways Serving:	Visibility Minimums lower than 3/4 mile	Other Runways
Small Aircraft	300 feet	250 feet
Large Aircraft	400 feet	

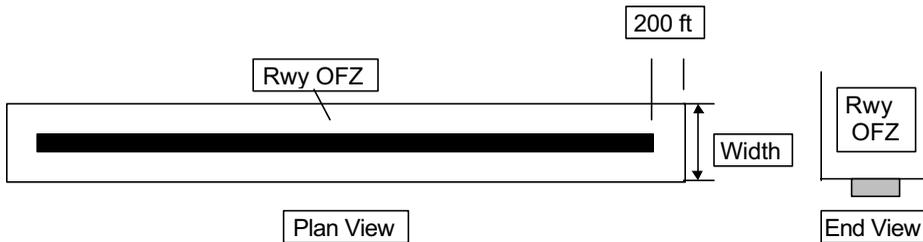


Figure 1

OFZ - Visual Runways and Runways with visibility minimums not lower than 3/4 mile

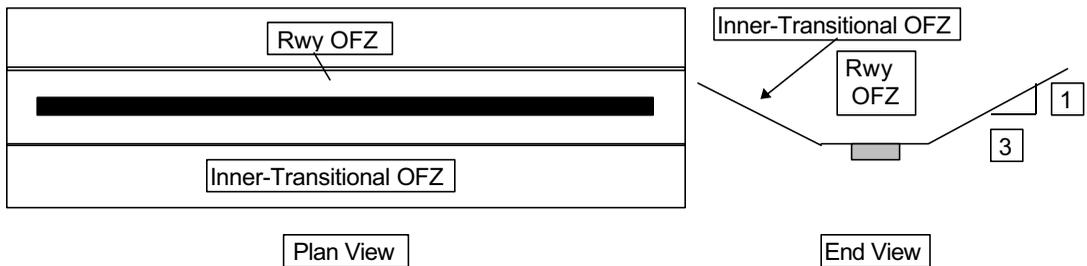


Figure 2

OFZ - Small airplanes exclusively with visibility minimums lower than 3/4 mile

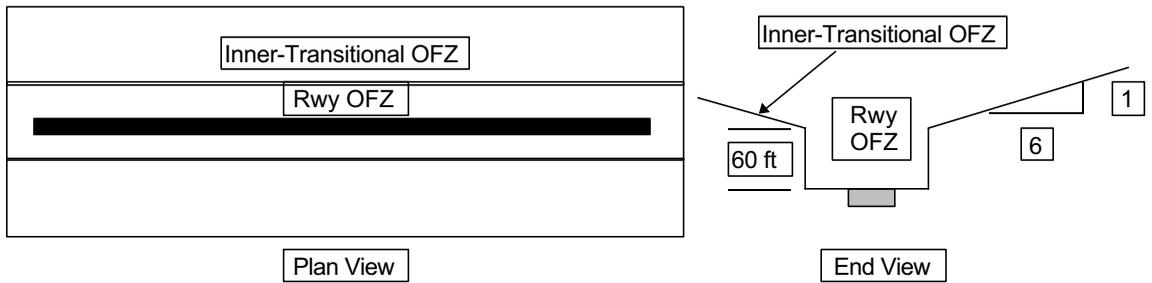


Figure 3. OFZ - Runways serving large aircraft - visibility minimums lower than 3/4 mile

(3) The Inner-Approach OFZ, shown in Figure 4, applies only to runways with approach lighting systems. It begins 200 feet from the runway threshold and ends 200 feet beyond the last light unit in an approach lighting system, and has a 50:1 slope, beginning at runway end elevation.

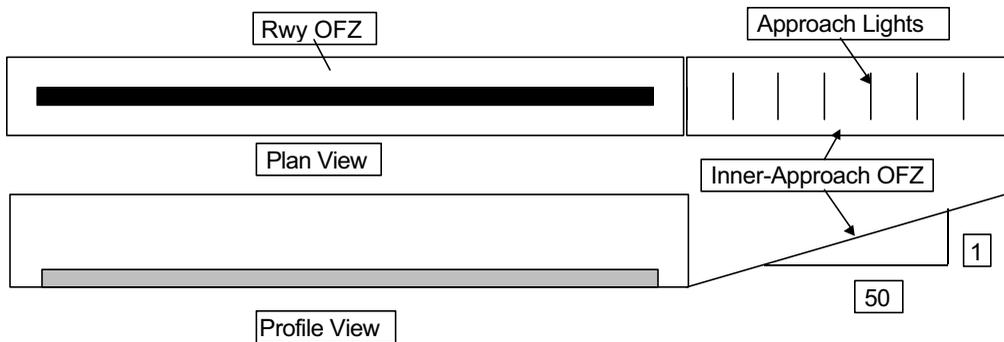
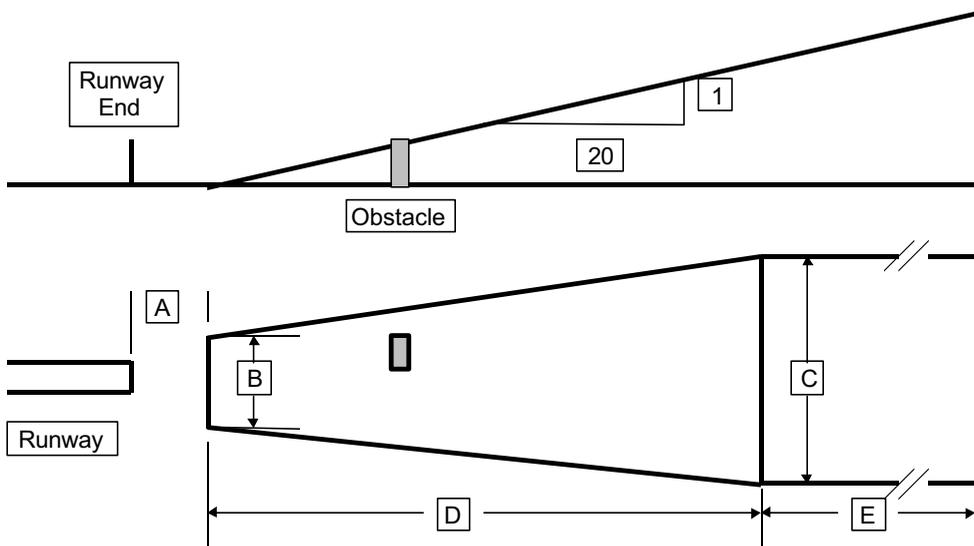


Figure 4. Inner-Approach OFZ - Runways with approach lighting systems

b. Approach Clearance Over Equipment and Material

(1) Construction activity in a runway approach may result in a need to displace the landing threshold temporarily. If an object penetrates a surface shown in Fig. 5, displace the threshold to a point where the surface is not penetrated.

(2) Objects which do not penetrate these surfaces still may be obstructions to air navigation and/or may affect standard instrument approach procedures. Coordinate these with the Fort Worth Flight Procedures Office, and the Air Traffic System Management Branch, ASW-530, as necessary.



Dimension (Feet)	Small Aircraft	Large Aircraft
A	0	200
B	250	400
C	700	1000
D	2250	1500
E	2750	8500

Figure 5. 20:1 Threshold Location Surface

c. Partial Runway Closure For Equipment On The Runway .

(1) When equipment or construction/maintenance activity must be on a runway and a decision is made to keep part of the runway open for aircraft, part of the runway must be closed as shown in Figure 6. The dimensions shown are recommended; however, a larger closed area than shown may be necessary depending on aircraft use, level of activity, pilot technique, and equipment height, and a smaller closed area may be possible under some circumstances. These recommendations are based on equipment heights of about 15 feet; higher objects may require special considerations.

(2) Use the following distances from the construction/maintenance activity to the relocated threshold:

- Small aircraft (12,500 lbs or less) - 500 feet
- Large aircraft (More than 12,500 lbs.) - 1000 feet

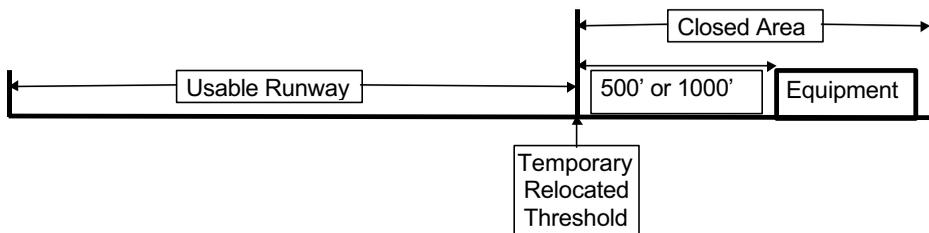
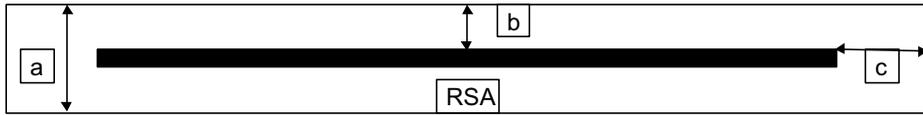


Figure 6. Relocated Threshold for Equipment on the Runway

d. Runway and Taxiway Safety Areas .

(1) Runway safety areas - construction or maintenance activity is prohibited in runway safety areas (RSA) while the full length of the runway is open. Normal FAA maintenance of visual, approach, and navigational aids is permissible within safety areas provided vehicles, material, and excavations do not penetrate a runway OFZ and requirements of paragraph 8b for approach clearance over vehicles, equipment and material are met.

(2) Runway safety area dimensions are shown in Figure 7. Existing safety areas at a particular airport may be larger or smaller than the standard dimensions listed. If construction or maintenance activity must take place within the specified safety area, it is also acceptable to restrict the runway use to a smaller size of aircraft and use a narrower and/or shorter safety area dimension for the duration of the activity.



Aircraft Approach Category	Runway Safety Area Dimensions (Feet)					
	Airplane Design Group (See Appendix 3)					
A and B	I	II	III	IV		
visual runways and not lower than 3/4 mi approach visibility minimums	Dimen. a	120	150	300	500	
	b	30	40	100	175	
	c	240	300	600	1000	
lower than 3/4 mi approach visibility minimums	a	300	300	400	500	
	b	100	100	150	175	
	c	600	600	800	1000	
C and D	I	II	III	IV	V	
	a	All 500				
	b	All 150				
	c	All 1000				

Note 1: Use dimension a or b, whichever results in the greater distance from the runway centerline.

Note 2: Use dimension c or the existing safety area length, whichever is less, but no less than 200 feet.

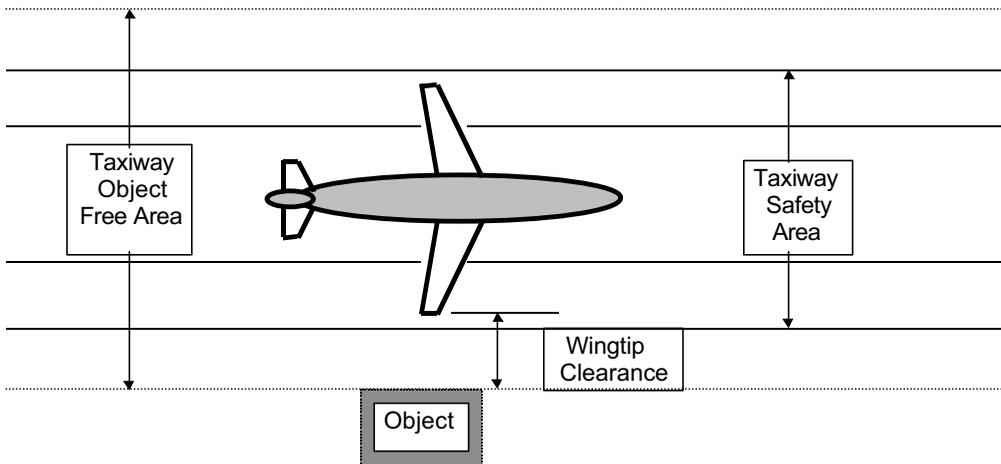
Note 3: Some certificated airports have or permit use of 400-foot wide runway safety areas during construction and maintenance. Coordinate proposals with the Airports Division, Safety and Standards Branch, ASW-620.

Figure 7. Runway Safety Areas

(3) Taxiway safety areas/object free areas - see Figure 8.

Construction/maintenance activity is permissible in taxiway object free areas and safety areas if the activity is hazard-marked and/or lighted and NOTAMs are in effect. Special consideration must be given to the height of barricades, flashers and other warning devices to clear aircraft wingtips, propellers, engines etc. Other actions may be necessary such as:

- Using “wingwalkers” to guide aircraft past hazards,
- Using temporary taxiway marking/lighting to detour aircraft clear of the area,
- Moving equipment and personnel well clear to allow aircraft to pass safely.



Airplane Design Group (See Appendix 3)					
Item	I	II	III	IV	V
Taxiway Safety Area Width (Feet)	49	79	118	171	214
Taxiway Object Free Area Width (Feet)	88	130	186	260	320

Figure 8. Taxiway Safety Area and Object Free Area

## e. Marking and Lighting

## (1) Temporary displaced runway threshold:

(a) Mark with white arrows and a white threshold bar as shown in Advisory Circular 150/5340-1, or

## (b) Use alternate marking which is:

- 1 Clearly visible to the pilot,
- 2 Not misleading, confusing, or deceptive,
- 3 Secured in place to prevent movement,
- 4 Made of material which will minimize damage to aircraft which come in contact with the marking.

## (2) Temporary relocated runway threshold (partial closure of a runway):

(a) Mark with yellow chevrons as shown in A.C. 150/5340-1, or use alternate marking as described in par. (1)(b) above.

(b) Runway distance remaining signs may need to be covered or removed during the closure to avoid misleading runway length indications to pilots.

(3) Temporary runway thresholds must be lighted if all or part of a runway is to be open at night during construction and maintenance. The airport operator may already have temporary threshold lighting available, but this should be determined in advance.

(a) Use light lens colors and spacing in A.C. 150/5340-24, Runway and Taxiway Edge Lighting System.

(b) Disable runway lighting on closed parts of runways and adjust amber lenses (caution zone) if necessary. On some lighting systems, it may be necessary to cover a light rather than removing the lamp or fixture.

(c) Disable visual glide slope indicators (VASI, PAPI, PLASI, etc.), REIL, and approach lights which would otherwise give misleading indications to pilots as to the threshold location. Installation of temporary visual aids may be necessary to provide adequate guidance for pilots on approach to the affected runway. These may be funded or provided by the FAA or the sponsor.

## (4) Closed runway marking:

(a) Use yellow "X" marking as shown in A.C. 150/5340-1.

(b) Closed runway marking is not required on airports with 24-hour Control Towers if the closed runway cannot be mistaken by pilots for nearby open runways and the airport operator consents to omitting them. In some cases, closed runway marking could interfere with the use of the runway for aircraft taxiing if this is to be allowed while the runway is closed for landing and takeoffs.

(c) Closed runway marking is not required on runways which are closed only at night provided that:

1 Runway lighting and visual aids are turned off,

2 NOTAMs are in effect regarding the closure.

## (5) Hazard Marking (barricades, traffic cones, flashers, etc.) shall be used:

(a) To outline construction/maintenance areas which are accessible to aircraft, persons, or vehicles,

(b) To identify isolated hazards such as open manholes, small areas under repair, stockpiled material, waste areas, etc.,

(c) To prevent aircraft from taxiing onto a closed runway for takeoff,

(d) To identify FAA, airport, and National Weather Service facilities, cables, power lines, ILS critical areas and other sensitive areas, in order to prevent damage, interference, and facility shutdown.

## f. Navigation Aids and Instrument Approach Procedures

(1) The need to shut down navigational, approach, or visual aids shall be determined on a case-by-case basis. Flight Standards, Air Traffic, Airports, Airway Facilities, the Flight Procedures Office, and the airport sponsor shall be involved in the decision as necessary. Work within an ILS critical area may affect the radiated signals and interfere with aircraft navigation. ILS critical areas may be shown on the Airport Layout Plan, or contact the local Airway Facilities office or Airport Traffic Control Tower for information on critical area location and dimensions.

(2) Construction on or near runways may severely restrict the use of Standard Instrument Approach Procedures, and all phases of the project shall be coordinated with the Fort Worth Flight Procedures Office to determine the effects.

g. Notices to Airmen (NOTAM)

(1) Responsibility for issuing NOTAMs shall be determined before construction or maintenance begins. Refer to Order 7930.1, National Notice to Airmen System, or Advisory Circular 150/5200-28, Notices to Airmen for Airport Operators.

(2) NOTAMs on shutdown or irregular operation of FAA-owned facilities shall be issued and canceled only by FAA employees. Flight Data Center (FDC) NOTAMs on instrument approach procedures are issued by the Fort Worth Flight Procedures Office. NOTAMs on airport conditions and non-Federal navigational aids shall be issued and canceled only by the airport sponsor. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate shall notify the responsible person.

h. Vehicle Identification . FAA employees who operate vehicles on an airport shall comply with the airport owner's rules for vehicle marking, lighting, and operations, unless FAA requirements are more stringent. Vehicles operated by FAA employees on active runways, taxiways, or safety areas shall be marked with orange and white flags or flashing yellow beacons during daylight hours, and with flashing yellow beacons at night. Contractors and suppliers shall be informed of the applicable requirements of the airport sponsor by the FAA or airport sponsor employee responsible for the work.

i. Controlling Access To Aircraft Operational Areas

(1) Vehicle and pedestrian access routes for airport construction and maintenance shall be controlled as necessary to prevent inadvertent or unauthorized entry of persons, vehicles, and animals. The amount of construction traffic or local security/safety rules may require use of personnel to control access through gates or fencing, or across aircraft movement areas. Radio communications may be required between these personnel and a Control Tower if equipment and personnel must enter or cross an active Aircraft Movement Area.

(2) Vehicle parking areas for FAA and contractor employees shall be designated in advance to minimize vehicle traffic in aircraft operating areas while still providing reasonable employee access to the job site.

9. STANDARD SAFETY SPECIFICATIONS . General safety provisions which apply during contract work on airports are contained in the following documents:

a. Facilities and Equipment Program (F & E) projects - Additional General Provisions, FAA P-1, Clause No. 75, "Special Precautions for Work at Operating Airports."

b. Airport Improvement Program (AIP) projects - Advisory Circular 150/5370-10, "Standards for Specifying Construction of Airports," General Provisions 40-05, Maintenance of Traffic; 70-08, Barricades, Warning Signs, and Hazard Marking; 80-04, Limitation of Operations.

10. PROJECT SPECIFICATIONS. Specific safety requirements for a project may be developed using the guide in Appendix 1 of this Order, or may be written or provided in other forms which provide similar guidance. The project safety requirements shall be included in the plans and specifications, as applicable, when an invitation for bids is issued.

Clyde M. DeHart, Jr.  
Regional Administrator

### Appendix 1. SAFETY SPECIFICATION GUIDE

1. General Safety Requirements: During performance of this contract, the airport runways, taxiways, and aircraft parking aprons shall remain in use by aircraft to the maximum extent possible. Aircraft use of areas near the contractor's work will be controlled to minimize disturbance to the contractor's operation. The contractor shall not allow his/her employees, subcontractor, suppliers, or any person over whom he/she has control to enter or remain in any part of the airport which would be hazardous to persons or to aircraft operations. Whenever aircraft operations require, the (Contracting Officer, Engineer, etc.) may order the contractor to suspend operations, move plant, personnel, equipment, and materials to a safe location and stand by until aircraft use is completed.

2. Obstacle Free Zone: Construction activity within an Obstacle Free Zone will require closing part or all of the affected runway. See Figures 1 - 4.

3. Approach Clearance to Runways: Runway landing thresholds shall be located to provide an unobstructed approach surface with an approach ratio over equipment and material as shown on Figures 5 and 6.

4. Runway and Taxiway Safety Areas: Construction activity within a runway safety area will require closing part or all of the affected runway. Construction activity within taxiway safety areas/object free areas is permissible when the taxiway is open to aircraft traffic if:

- a. Adequate wingtip/empennage clearance exists between the aircraft and equipment/materiel,
- b. Excavations, trenches, or other conditions are conspicuously marked and lighted,
- c. Notices to Airmen are in effect concerning the activity, usually "Personnel and equipment adjacent to Taxiway \_\_\_\_."

Safety Area dimensions are shown on Figures 7 and 8.

5. Threshold Marking and Lighting:

- a. Temporary threshold marking is (required, not required). Threshold marking will be furnished by the (airport owner, contractor, etc.).
- b. Temporary threshold lighting is (required, not required). Threshold lighting will be furnished and maintained by the (airport owner, contractor, etc.).

c. Temporary visual aids (VASI, PAPI, REIL, etc.) are (required, not required). The visual aid(s) will be furnished and maintained by the (airport owner, FAA, Contractor, etc.).

6. Closed Runway Marking/Hazard Marking:

a. Closed runway marking is (required, not required). Closed runway marking shall be (as shown on the plans, furnished by the owner, etc.).

b. Hazard marking and lighting shall be as required by the (airport owner, project superintendent, engineer, etc.), and shall be as (described in Section \_\_\_ of the specifications, as shown on the plans, etc.).

7. Vehicle Identification and Parking:

a. Contractor vehicles and equipment shall be identified by (describe marking and lighting).

b. Employee parking shall be (specific location, or as designated by the engineer, superintendent, airport manager, etc.).

8. Construction Site Access and Haul Roads: Access to the job site shall be via (specific route, as shown on the plans, designated by the engineer, superintendent, airport manager, etc.).

9. Radio Communications: Radio communications are (required between the contractor's representative and the Control Tower), (not required). (Specify communications requirements in as much detail as possible.)

Appendix 2. FAA-CERTIFICATED AIRPORTS IN SOUTHWEST REGION  
(As of March 1996)

ARKANSAS

Fayetteville Drake (FYV)  
Fort Smith Regional (FSM)  
Hot Springs Memorial (HOT)  
Little Rock Adams Field (LIT)  
Texarkana Regional (TXK)

LOUISIANA

Alexandria Esler Regional (ESF)  
Alexandria Intl (AEX)  
Baton Rouge Ryan (BTR)  
Lafayette Regional (LFT)  
Lake Charles Chennault (CWF)  
Lake Charles Regional (LCH)  
Monroe Regional (MLU)  
New Iberia Acadiana Regional (ARA)  
New Orleans International (MSY)  
New Orleans Lakefront (NEW)  
Shreveport Regional (SHV)  
Tallulah Vicksburg-Tallulah Reg. (TVR)

NEW MEXICO

Albuquerque International (ABQ)  
Farmington Four Corners Reg. (FMN)  
Hobbs - Lea County (Hobbs) (HOB)  
Las Cruces International (LRU)  
Los Alamos (LAM)  
Roswell Industrial (ROW)  
Ruidoso Sierra Blanca Reg. (SRR)

OKLAHOMA

Lawton Municipal (LAW)  
Oklahoma City Will Rogers (OKC)  
Stillwater Municipal (SWO)  
Tulsa International (TUL)

TEXAS

Abilene Regional (ABI)  
Amarillo International (AMA)  
Austin Robert Mueller (AUS)  
Beaumont Jefferson Co. (BPT)  
Brownsville South Padre Is. (BRO)  
College Station Easterwood (CLL)  
Corpus Christi International (CRP)  
Dallas/Fort Worth International (DFW)  
Dallas Love (DAL)  
El Paso International (ELP)  
Fort Worth Alliance (AFW)  
Fort Worth Meacham Intl (FTW)  
Galveston Scholes (GLS)  
Harlingen Valley Intl (HRL)  
Houston Ellington (EFD)  
Houston Hobby (HOU)  
Houston Intercontinental (IAH)  
Killeen Municipal (ILE)  
Laredo International (LRD)  
Longview Gregg County (GGG)  
Lubbock International (LBB)  
McAllen Miller International (MFE)  
Midland International (MAF)  
Paris Cox Field (PRX)  
San Angelo Mathis Field (SJT)  
San Antonio International (SAT)  
Temple Draughon-Miller Cen. Tx (TPL)  
Tyler Pounds Field (TYR)  
Victoria Regional (VCT)  
Waco Regional (ACT)  
Wichita Falls Muni/Sheppard AFB (SPS)

Appendix 3. AIRPLANE DESIGN GROUPS

Some safety standards in this Order are based on the "Airplane Design Group" from Advisory Circular 150/5300-13, Airport Design. These Design Groups are based on aircraft wingspan, with typical aircraft in each Design Group shown below.

Design Group	Wingspan
I	<u>Up to but not including 49 feet</u> Piper Navajo, Cessna 421, Fairchild Metro, Beech King Air, Mitsubishi MU-2, Rockwell Sabre 75, Lear 35/36, BAE/Hawker-Siddley HS-125/800
II	<u>49 feet up to but not including 79 feet</u> Cessna 441, Embraer 120 Brasilia, SAAB 340, Rockwell Sabre 65, Cessna Citation II/III, Beech 1900 Airliner, Gulfstream I/II/III/IV/V
III	<u>79 feet up to but not including 118 feet</u> ATR 42/72, BAE-146, Boeing 727/737, Convair 580, DeHavilland Dash 7, DC-9 (All), Fokker 100, MD-80, Fairchild F-27
IV	<u>118 feet up to but not including 171 feet</u> Boeing 707, 757, 767, DC-8, Lockheed L-1011, DC-10/MD-11
V	<u>171 feet up to but not including 214 feet</u> Boeing 747, 777

## APPENDIX 4. FAA OFFICE DIRECTORY

Following are the FAA offices with responsibilities for construction and/or maintenance on airports:

Office	Telephone	Functions
Airports Division, Safety and Standards Branch, ASW-620	817-222-5620	Airport safety, FAR 139, airport design standards, Airport Improvement Program project management
Air Traffic Division, System Management Branch, ASW-530	817-222-5530	Obstruction Evaluation, Air Traffic Procedures, obstruction marking and lighting, Control Tower line-of-sight
Aviation System Standards, Fort Worth Flight Procedures Office	817-222-4131	Instrument approach procedures, Flight Data Center NOTAMs
<u>Automated Flight Service Stations (AFSS)</u> Jonesboro, AR DeRidder, LA Albuquerque, NM McAlester, OK Conroe, TX Fort Worth, TX San Angelo, TX	Administration: 501-932-4608 318-462-6111 505-242-4442 918-421-6000 409-760-4201 817-654-2205 915-944-8791	Notices to Airmen - Call 1-800- 544-1709 423-9347 525-9963NM 342-7635TX 722-4223 (OK only) 833-5602 722-6209 433-8102
Civil Aviation Security Division, ASW-700	817-222-5700	Airport Security, FAR 107
<u>Airway Facilities Division</u> Resource Mgt. Branch NAS Implementation Br. Operations Branch <u>System Maintenance Office</u> Albuquerque (NM, W. Tx) Dallas/Fort Worth (Metro) Houston (S. Tx, LA) Oklahoma City (OK, AR)	817-222-4200 817-222-4500 817-222-4700  505-764-6700 214-453-4900 713-986-7100 405-798-2000	NAVAID Planning NAVAID Implementation NAVAID Maintenance  FAA Facilities Maintenance

APPENDIX 5. POCKET SAFETY GUIDE

This Pocket Guide is printed back-to-back and is intended to be cut out and used as a quick-reference guide.

POCKET GUIDE FOR AIRPORT CONSTRUCTION & MAINTENANCE SAFETY

**1. Runway Obstacle Free Zone (OFZ)**  
No construction activity or equipment within OFZ - extends 200 feet beyond runway end and 150' above rwy

**Plan View**

① Visual rwys & vis min. not < 3/4 mile  
② Small acft, vis min. < 3/4 mile  
③ Large acft, vis min. < 3/4 mile  
W = 400' large acft, 300' small acft vis < 3/4 mile, 250' others

**2. Approach Clearance over Object In Runway Approach**

Dimension (ft)	Small Aircraft	Large Aircraft
a	0	200
b	250	400
c	700	1000
d	2250	1500
e	2750	8500

**3. Equipment on the Runway - Partial Closure**

500' or 1000'  
Equipment  
Closed area  
Temporary Relocated Threshold

Small Aircraft (12,500# or less) - 500 feet  
Large Aircraft (More than 12,500#) - 1000 feet

Based on equipment height of about 15 feet; higher objects may require special consideration.

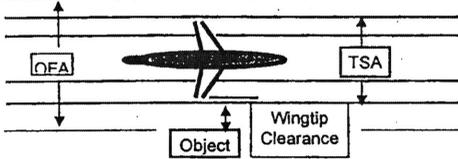
**4. Runway Safety Area (Use dimension a or b, whichever results in the greater distance from the runway centerline.)**

Acf Appch Cat.	Runway Safety Area Dimensions(feet)					
	ADG	I	II	III	IV	V
Visual Rwys and Not Lower than 3/4 Mi Visibility	a	120	150	300	500	
	b	30	40	100	175	
	c	240	300	600	1000	
Lower than 3/4 Mi Visibility	a	300	300	400	500	
	b	100	100	150	175	
	c	600	600	800	1000	
C and D	All:	a - 500, b - 150, c - 1000				

APPENDIX 5. POCKET SAFETY GUIDE (CONTINUED)

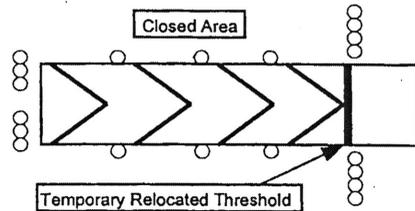
POCKET GUIDE FOR AIRPORT CONSTRUCTION & MAINTENANCE SAFETY

**5. Taxiway Object Free Area (OFA) and Safety Area**  
Construction or maintenance activity ok if hazard-marked and lighted and NOTAM is in effect. Check height of barricades & lights for wingtip, prop, and engine clearance.

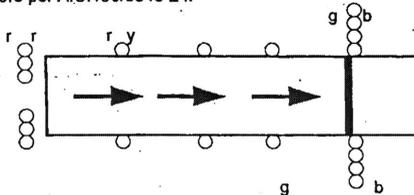


Airplane Design Gp →	I	II	III	IV	V
Taxiway Safety Area Width (Feet)	49	79	118	171	214
Taxiway Object Free Area Width (Feet)	88	130	186	260	320

**7. Marking and Lighting Temporary Relocated Thresholds**  
Use yellow chevrons per A.C.150/5340-1, disable lighting in closed area. Alternate marking: same criteria as #6.



**6. Marking and Lighting Temporary Displaced Thresholds**  
Use white arrows & threshold bar per A.C.150/5340-1, lighting colors per A.C.150/5340-24.



Alternate marking: clearly visible to pilot, not misleading, secured in place, material which will not damage aircraft.

**Notices to Airmen:** identify responsible sponsor official, issue through FAA Flight Service Station, monitor regularly.

**Closed Runway Marking:** Yellow "X" - 60 feet by 10 feet, closes entire runway, place at both ends

**Monitor:** Jet blast and propwash near construction areas, ILS critical areas, airport security, vehicle identification and access to aircraft operational areas, cranes or other objects of unusual height, utilities and cables for lighting, NAVAIDs and weather reporting facilities, debris on runways, taxiways, and aprons, pavement lips, access to aircraft firefighting and rescue stations, fencing and gates, vehicle communications.

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