

**SPECIFICATIONS AND  
CONTRACT DOCUMENTS  
FOR**

**SCOTTSDALE MUNICIPAL AIRPORT  
TAXIWAY AND APRON  
PAVEMENT PRESERVATION AND DRAINAGE  
SCOTTSDALE, ARIZONA**

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**Gilbertson Associates, Inc.**

Consulting Civil Engineers

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SPECIFICATIONS AND  
CONTRACT DOCUMENTS  
FOR

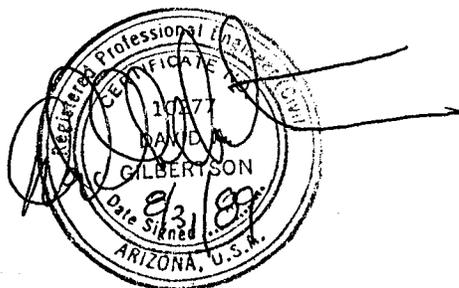
SCOTTSDALE MUNICIPAL AIRPORT  
TAXIWAY AND APRON  
PAVEMENT PRESERVATION AND DRAINAGE  
SCOTTSDALE, ARIZONA

BID NO. 90-04

PROJECT: ADOT TRACS A5912/5010N913  
DESCRIPTION: See Call for Bids  
OWNER: The City of Scottsdale  
ENGINEER: Gilbertson Associates, Inc.  
(602) 951-8131  
BID OPENING TIME: 3:00 p.m. M.S.T.  
BID OPENING DATE: October 6, 1989  
BID OPENING LOCATION: Purchasing Department  
9191 East San Salvador Drive  
Scottsdale, Arizona 85258

Set No. \_\_\_\_\_

1989



BID CALL NO. 90-04  
PROJECT NO. N913

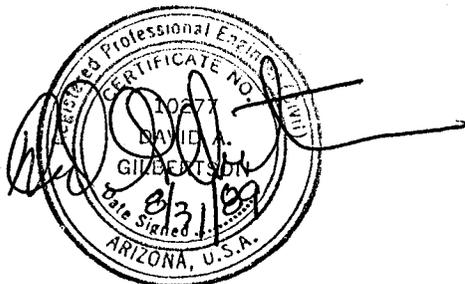
CITY OF SCOTTSDALE - INVITATION TO BIDS

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TAXIWAY AND APRON PAVEMENT  
PRESERVATION AND DRAINAGE  
SCOTTSDALE, ARIZONA

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**Notice Inviting Bids**

BID CALL NO. 90-04  
PROJECT NO. N913

NOTICE INVITING BIDS

NOTICE IS HEREBY GIVEN that the Council of Scottsdale, Maricopa County, State of Arizona, ordered: construction of Scottsdale Municipal Airport taxiway and apron pavement preservation and drainage improvements.

SEALED BIDS WILL BE RECEIVED until 3:00 p.m., M.S.T. October 6, 1989 by the Purchasing director at 9191 East San Salvador Drive, Scottsdale, Arizona 85258. At this time, the bids will be publicly opened and read aloud. Each bid shall be accompanied by a cashier's check or a bid bond acceptable to the City of Scottsdale for a sum of not less than five percent (5%) of the amount of bid, made payable to the order of the City of Scottsdale.

No bid shall be considered unless it is submitted on the bid form provided by the City of Scottsdale.

Contact Vernon Schoeneman, 994-2451, Contract Administrator for additional information.

Plans, specifications, and bid forms may be obtained from the Purchasing Division at 9191 East San Salvador Drive, Scottsdale, Arizona for the sum of \$25.00. This fee is non-refundable.

For those interested in purchasing plans and specifications by mail, there will be an additional advance charge of \$10.00 to cover postage and handling. Therefore, a check made payable to the City of Scottsdale in the amount of \$35.00 should accompany the request.

All bids received in response to this Invitation For Bid shall, where applicable, be in conformance with the City of Scottsdale Standard Bid, Contract and Purchase Commitment Terms and Conditions as incorporated in Scottsdale Revised Code, Section 2-198.

Pre-bid Conference

1. A pre-bid conference to discuss questions that may have arisen regarding this project will be held on September 21, 1989 at 9:30 A.M. at the Airport Manager's Office, Terminal Building, Scottsdale Municipal Airport, Scottsdale, Arizona. All bidders are invited to attend.
2. The purpose of the conference is only for the clarification of the plans and/or specifications. Neither the Engineer nor the City of Scottsdale shall be held responsible for any oral instructions. Any changes in the plans and/or specifications will be in the form of an addendum, which will be forwarded to all bidders.

CITY OF SCOTTSDALE, ARIZONA

By: \_\_\_\_\_  
Larry Franklin  
Purchasing Manager

**Information for Bidders**

## INFORMATION FOR BIDDERS

### 1. SUBMITTING BIDS

- 1.1 No bid will be considered unless it is submitted on the bid forms contained herein and presented, sealed, in the envelope provided herein.
- 1.2 **BIDDERS MUST ENTER THEIR NAME AND ADDRESS IN THE UPPER LEFT CORNER OF THE ENVELOPE PROVIDED AND THE TIME AND DATE OF THE BID OPENING IN THE SPACE PROVIDED IN THE LOWER LEFT CORNER OF THE ENVELOPE.**
- 1.3 Bids received after the time and date specified above will be returned unopened to the bidder. A bid may be withdrawn prior to the time set for opening bids. No bid may be withdrawn for a period of sixty (60) days after the date set for the receipt of bids.
- 1.4 Bids accepted by the City constitute a legally binding offer. In addition, the successful bidder will be required to sign the City of Scottsdale standard construction contract.

### 2. BONDS REQUIRED

- 2.1 Each bid must be accompanied by a cashier's check made payable to the order of City of Scottsdale in the sum of not less than 5% of the total bid, or a bond with sufficient sureties to be approved by the City in the sum equal to 5% of the total bid, and naming the City of Scottsdale as obligee. Such security shall be returned to all except the three lowest responsible bidders within twelve (12) days after the opening of bids, and the three (3) remaining securities returned within three (3) days after the bidder to whom the City Council has awarded the contract has executed the contract.
- 2.2 Bonds in the following amount will be required at the time of executing the formal contract:
  - 1) Contract (Performance) Bond - One Hundred (100%) percent of the contract price.
  - 2) Labor and Materials (Payment) Bond - One Hundred (100%) percent of the Contract Price.
- 2.3 At the time of approval of any additional work by CHANGE ORDER the Contractor may be required to provide an additional amount for Contract (Performance) Bond and/or Labor and Materials (Payment) Bond as deemed appropriate by the Contract Administrator or designee.
- 2.4 Performance and Payment Bonds must be provided on Statutory forms included in these documents.

### 3. INTERPRETATIONS, ADDENDA

- 3.1 **THE CITY OF SCOTTSDALE WILL NOT BE RESPONSIBLE FOR BIDDERS ADJUSTING THEIR BIDS BASED ON ORAL INSTRUCTIONS BY ANY MEMBER OF THE CITY STAFF OR BY THE CITY'S CONTRACTED CONSULTANT OR AGENT. BIDS DEVIATING FROM THE SPECIFICATIONS CONTAINED HEREIN BY ANY**

**MEANS OTHER THAN AN AUTHORIZED ADDENDUM BY THE PURCHASING DIVISION WILL BE SUBJECT TO REJECTION.**

- 3.2 Should a bidder find an ambiguity, inconsistency or error in the drawings or project manual, or should he be in doubt about their meaning, he shall at once notify the Engineer, who will prepare a written addendum. Neither the City nor the Engineer will be responsible for oral instructions or information. In the event questions are received less than four (4) days before the bid opening, a determination will be made by the Purchasing Manager concerning the sending of a written addendum which may result in the establishment of a new bid opening date.
- 3.3 Questions or interpretations required by contractors, suppliers, dealers, and other participants bidding shall be directed to the Engineer. Each bidder shall designate a specific individual from their organization to communicate with the Engineer.
- 3.4 Any Addenda issued by the City during the time of bidding are to be included in the Bid, and will become a part of the Contract. Bidders must acknowledge receipt of all Addenda on the Bid in the space provided.
- 3.5 Addenda will be mailed to each person or firm recorded as having received the Bidding Documents or will be available wherever the Bidding Documents are kept.

4. AWARD/REJECTION OF BIDS

The City Council reserves the right, as the interest of the City requires, to reject any or all bids, to waive any informality in bids received, to award a contract by accepting or rejecting any alternate bid(s) (additive or subtractive) and reserves the right to reject the bids(s) of any bidder who has previously failed to perform competently in any contract with the City.

5. EXECUTION OF CONTRACT

The Contractor shall execute the contract with the City of Scottsdale within ten (10) days after receiving the Notice of Award for the contract.

6. START AND COMPLETION OF WORK

Work shall start as specified within the NOTICE TO PROCEED and shall be completed within 90 calendar days after such issuance.

7. MEASUREMENT AND PAYMENT

Final payment shall be made within forty (40) days after approval of the final invoice by the City Inspector and a Contractor's Affidavit Regarding Settlement of Claims is received. The above affidavit shall be submitted on forms provided in this specifications book.

8. PLANS AND SPECIFICATIONS TO SUCCESSFUL BIDDER

The successful bidder may obtain five (5) sets of Plans and Specifications for this project from the City, or its designee, at no cost. Additional sets will be furnished at cost.

9. CONTRACTOR'S INSURANCE COVERAGE

9.1 Compensation Insurance

The Contractor shall secure and maintain during the life of his contract, Workmen's Compensation Insurance for all his employees at the site of the project, and in case any of the work is sublet, the Contractor shall require each subcontractor similarly to provide Workmen's Compensation Insurance for his employees unless such employees engaged are covered by the Contractor. In the event any class of employees engaged in the work under this contract at the site of the project is not protected by Workmen's Compensation Statute, the Contractor shall provide and similarly shall cause each Subcontractor to provide special insurance for the protection of such employees not otherwise protected.

9.2 Public Liability and Property Damage Insurance

The Contractor shall secure, and maintain during the life of this Contract, such public liability and property damage insurance, both general and automobile liability, as shall protect him, any Subcontractor performing work under this contract, and the City of Scottsdale from all claims for bodily injury, including accidental death, as well as for all claims for property damage arising from operations under this contract, whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by either of them. The Contractor agrees to include the City of Scottsdale as an additional insured in all the insurance policies required under this contract and such insurance shall be primary.

9.3 The Minimum Limits Required Are:

Workmen's Compensation Insurance shall be secured and maintained in accordance with the Workmen's Compensation Laws of Arizona, as revised.

Comprehensive General Liability Insurance including broad form property damage, premises-operations, independent contractors, contractual, and automobile liability shall be secured and maintained in an amount not less than \$5,000,000 combined single limit.

The General Contractor subletting any part of the work awarded to him shall provide a contingent liability policy in the same amount as provided for in his public liability insurance.

9.4 Policy Shall Include Coverage For:

- 1) Damage caused by collapse or structural injury.
- 2) Damage to underground utilities.
- 3) Liability assumed in construction agreements and other types of contracts or agreements in effect in connection with the subject insured operations.
- 4) All owned, hired, or non-owned automotive equipment used in connection with the insured operation.

When the project included construction of a new, or modification of an existing building (in addition to the above types):

Fire and Extended Coverage plus Vandalism and Malicious Mischief for the Full Amount of the Contract, less costs for any foundation, underground utilities and/or landscaping, with the City of Scottsdale named as an additional insured.

9.5 Certificate and Cancellation

The Contractor shall submit a Certificate of Insurance evidencing the required coverage and limits stated above, within ten (10) days of receiving the Notice of Award.

Insurance evidenced by this Certificate shall not expire, be cancelled, or be materially changed without fifteen (15) days prior written notice to the City, and that statement must appear on the Certificate.

If a policy does expire during the life of the Contract, a renewal Certificate of the required coverage must be sent to the City of Scottsdale fifteen (15) days prior to the expiration date.

9.6 Indemnification

The Contractor shall defend, indemnify, and hold harmless the City of Scottsdale and any jurisdiction or agency issuing permits for any work included in the project, their officers, agents, and representatives from all damages, claims or liabilities and expenses (including attorney fees) of any character or nature brought on account of any injuries or damage sustained by any person or property arising out of the work done in fulfillment of the construction of the improvement under the terms of this agreement, on account of any act of omission by the Contractor or his agents, or from any claims or amounts arising or recovered under Workmen's Compensation Laws or any other law, by-law, ordinance, or order or decree.

10. PERMITS

Permits shall be obtained from the City of Scottsdale at no cost to the Contractor.

10.1 City of Scottsdale code, as revised, Sections 11-211 through 11-224 outlines the requirement for Encroachment Permits. Permits when required must be acquired from Development Services.

10.2 Field Engineering must be notified prior to the commencement of work and Field Engineering will represent the City for the purpose of inspecting the work within the right-of-way for conformance to Plans, Specifications and detail as well as public safety requirements as authorized by City code.

10.3 The Contractor shall secure and maintain during the life of the contract, State of Arizona, and City of Scottsdale transaction privilege (sales) tax permits.

10.4 The Contractor shall state his Arizona Contractor's License Number and classification as evidence that he is qualified to contract the work as indicated in the specifications.

11. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

11.1 It is the responsibility of each bidder before submitting a bid to, (a) examine the contract documents thoroughly, (b) visit the site to become familiar with local conditions that may

affect cost, progress, performance, or furnishing of the work, (c) consider federal, state, and local laws and regulations that may affect cost, progress, performance, or furnishing of the work, (d) study and carefully correlate bidder's observations with the contract documents, and (e) notify the Engineer of all conflicts, errors, or discrepancies in the contract documents.

The successful bidder shall not be allowed any extra compensation by reason of any matter or thing which could have been determined by undertaking any of the foregoing actions.

11.2 Information and data reflected in the contract documents with respect to underground facilities at or contiguous to the site is based upon information and data furnished to the Owner and the Engineer by owners of such underground facilities or others, and the Owner does not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Supplementary Conditions.

11.3 Before submitting a bid, each bidder will, at bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests, and studies and obtain any additional information and data which pertain to the physical conditions (surface, subsurface, and underground facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance, or furnishing of the work and any and all difficulties or restrictions relating to the performance of the work and which bidder deems necessary to determine its bid for performance and furnishing of the work in accordance with the time, price and other terms and conditions of the contract documents..

Failure of the successful bidder to examine the conditions of the work will not relieve the successful bidder of his obligation to furnish all materials and labor necessary to carry out the provisions of the contract documents and to complete the contemplated work for the consideration set forth in his bid.

11.4 On request in advance, the Owner will provide each bidder access to the site to conduct such explorations and tests as each bidder deems necessary for submission of a bid. Bidder shall fill all holes, clean up and restore the site to its former condition upon completion of such explorations.

11.5 The submission of a bid will constitute an incontrovertible representation by bidder that the bidder has complied with every requirement of this Article 11, that he has carefully examined and understands the contract documents, that he has carefully read and understands the bidding documents, that without exception the bid is premised upon performing and furnishing the work required by the contract documents and such means, methods, techniques, sequences, or procedures of construction as may be indicated in or required by the contract documents, and that the contract documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the work. The failure of any successful bidder to examine the contract documents or to visit the project site and to acquaint himself with the conditions relating to the work shall not relieve the successful bidder from the obligations as to his bid in any manner.

## 12. REGISTERED/LICENSED

To be considered responsive, the Contractor must be registered/licensed in the State of Arizona if such registration/license is normally a requirement.

13. OTHER

- 13.1 The Contractor must comply with the Provisions of Arizona Executive Order 75-5, dated 28 April 1975 relating to equal opportunity.
- 13.2 Duly authorized representatives of the State of Arizona shall have access to any books, documents, papers, and records of the Contractor which are in any way pertinent to the contract for a period of five years, in accordance with A.R.S. 35-214, for the purpose of making inspections, audits, examinations, excerpts, and transcriptions.
- 13.3 All Contractors and Sub-contractors hired to perform services, shall be in compliance with A.R.S. 32.1101 through 32.1170.03.

**General Conditions**

## GENERAL CONDITIONS

### 1. SCOPE

The work covered by these specifications consists of furnishing all labor, equipment and materials for construction of: Scottsdale Municipal Airport taxiway and apron pavement preservation and drainage improvements in accordance with "THE GENERAL CONDITIONS", the "SPECIAL PROVISIONS", and Drawing Number 70017 consisting of twelve (12) plan sheets, dated June, 1989, herein designated as the "PLANS".

### 2. STANDARD SPECIFICATIONS AND DETAILS

Except as otherwise noted, construction of this project and all work done under this contract shall be in accordance with these specifications and all applicable ARIZONA DEPARTMENT OF TRANSPORTATION, HIGHWAYS DIVISION, STANDARD SPECIFICATIONS for ROAD AND BRIDGE CONSTRUCTION, and STANDARD DETAILS (A.D.O.T.), MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, and UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION sponsored and distributed by Maricopa Association of Governments (MAG) and MAG STANDARD DETAILS including the latest approved revisions and City of Scottsdale supplements thereto in force at the time of bid advertisement, which shall be referred to hereinafter as the "STANDARD SPECIFICATIONS". In all cases where accepted standards (AWWA, ANSI, AASHTO, ADOT, ASTM, etc.) are referred to in the "STANDARD SPECIFICATION", the latest revisions as of bid advertisement shall prevail. Copies of the STANDARD SPECIFICATIONS and supplements may be obtained at the MAG Office at 1820 West Washington, Phoenix, Arizona. Copies of City supplements may be obtained from Development Services at 7447 East Indian School Road.

City of Scottsdale Supplements as revised and the "GENERAL CONDITIONS AND SPECIAL PROVISIONS" of these specifications provide for the supplementation, modification and/or amendments to the "STANDARD SPECIFICATIONS".

In the event of any conflict between the "GENERAL CONDITIONS" and "SPECIAL PROVISIONS" and the requirements of the "STANDARD SPECIFICATION AND DETAILS" or "PLANS", these "GENERAL CONDITIONS AND SPECIAL PROVISIONS" shall prevail.

### 3. DEFINITIONS

Definitions shall be as stated in Section 101.2 of the "MAG STANDARD SPECIFICATIONS" with the following additions:

City: CITY OF SCOTTSDALE

Contract Administrator: VERNON SCHOENEMAN

Design Engineer: GILBERTSON ASSOCIATES, INC.

Owner: CITY OF SCOTTSDALE

### 4. CONSTRUCTION PRACTICE

All construction practices and procedures shall conform to Section 107 of the Contract Works Hours and Safety Standards Act, (US Stat. 96, 40 USC 327) the latest revisions shall prevail.

5. TRAFFIC CONTROL

- a. Complete street closures will not be permitted unless specified in the Special Provisions Section of this bid document.
- b. Adequate barricades and lighted warning signs shall be installed and maintained by the Contractor throughout the duration of the project. All traffic control shall be in accordance with the "City of Phoenix Traffic Control Manual" unless otherwise specified in the Special Provisions section of this bid document.
- c. The City Traffic Engineering Manager shall stipulate the traffic restrictions and/or minimum requirements throughout the construction period.
- d. The Contractor shall submit a construction schedule and traffic supplement for "Street Barricading and Channelization" to the City Traffic Engineer for approval and/or modification before construction is initiated.

6. RESPONSIBILITY FOR PRIVILEGE (SALES) TAXES

The Contractor shall be responsible for payment of all State of Arizona and City of Scottsdale transactions privilege (sales) taxes due on construction income, whether or not such taxes are specifically separated in the bid amount.

7. INSPECTION

- a. Inspectors may be stationed on the work to report to the Contract Administrator or his Designee as to the progress of the work, the manner in which it is being performed, and also to report whenever it appears that materials furnished or work performed by the Contractor fails to fulfill the requirements of the specifications and contract. The Inspector may direct the attention of the Contractor to such failure or infringement but such inspection shall not relieve the Contractor from any obligation to furnish acceptable materials or to provide completed construction that is satisfactory in every particular.
- b. In case of any dispute arising between the Inspector and the Contractor as to material furnished or the manner of performing the work, the Inspector shall have the authority to reject materials or suspend the work until the question and issues can be referred to and decided by the City. Inspectors are not authorized to revoke, alter, enlarge, relax, or release any requirements of the specifications. Inspectors shall in no case act as foremen or perform other duties for the Contractor or interfere with the management of the work by the Contractor.
- c. Inspection or supervision by the Contract Administrator or Designee shall not be considered as direct control of the individual workman and his work. The direct control shall be solely the responsibility of the Contractor.

8. HINDRANCES AND DELAYS

In the event that the Contractor sustains damages as a result of expenses incurred by a delay for which the City is responsible, the Contractor and the City shall negotiate to determine the amount of such damages. This provision is made pursuant to Arizona Revised Statutes Section 34-221 (C) and is effective only if the delay caused by the City is unreasonable under the

circumstances and was not within the contemplation of the parties. This provision shall not be construed to void any provision of this contract pertaining to notice of delays, arbitration or other settlement provisions applicable to disputes, or provisions relating to liquidated damages.

9. LIQUIDATED DAMAGES

The Contractor shall pay as liquidated damages the sum of 500.00 Dollars for each consecutive calendar day of work after the date established as the contract completion date. This amount replaces amounts specified in Section 108.9 of the MAG Standard Specifications.

10. LOSS AND DAMAGES

All losses or damage arising out of the nature of the work to be done or from the action of the elements, or from any foreseen circumstances, in the prosecution of the same, or from any unusual obstructions or difficulties which may be encountered in and/or during the prosecution of the work, or from any casualty whatsoever of every description, shall be sustained and borne by the Contractor at his own cost and expense.

11. PROTECTION OF FINISHED OR PARTIALLY FINISHED WORK

The Contractor shall properly guard and protect all finished or partially finished work, and shall be responsible for the same until the entire contract is completed and accepted by the City.

Any payment for completed portions of the work shall not release the Contractor from such responsibility, however, he shall turn over the entire work in full accordance with these specifications before final settlement shall be made.

In case of suspension of the work for any cause whatever, the Contractor shall be responsible for the project and shall take such precautions as may be necessary to prevent damage to the project and shall erect any necessary temporary structures, signs, or other facilities at no cost to the City.

12. CLEAN UP

After all work under the Contract is completed, the Contractor shall remove all loose concrete, lumber, wire, reinforcing, debris, and other materials not incorporated in the work from the site of the work. Clean up shall include the removal of all excess pointing mortar materials within pipes.

13. FINAL ACCEPTANCE

"Final Acceptance" shall mean a written final acceptance of the work by the Contract Administrator in the form of the Notice of Final Acceptance. The Contract Administrator or his Designee shall make the final acceptance promptly after all work under the contract has been completed in accordance with the contract documents and after final inspection.

14. RIGHTS-OF-WAY

The MAG Standard Specifications 107.12 shall hereby be modified to read as follows: The Contractor, at his own expense, is responsible for the acquisition of any necessary temporary easements for construction purposes, storage and maintenance purposes, which are required in

addition to existing easements and/or rights-of-way secured by the City as indicated upon the plans.

15. DUST PREVENTION

The Contractor shall take whatever steps, procedures, or means required to prevent abnormal dust conditions due to his construction operations in connection with this contract. The dust control measures shall be maintained at all times during the construction of the project, to the satisfaction of the City, in accordance with the requirements of the Maricopa County Health Department Air Pollution Control Regulations. This is not a pay item. MAG Subsection 104.2.5 shall apply.

16. EXISTING UTILITIES TO BE RELOCATED

If any utility is relocated or rebuilt to accommodate the Contractor's construction methods and available equipment, the expense shall be borne by the Contractor.

17. DAMAGED DOMESTIC WATER LINES

Any water lines damaged during construction shall be replaced at the Contractor's expense as per the requirements of the MAG Standard Specifications.

18. DAMAGED SEWER LINES

Any sanitary sewer line damaged during construction shall be replaced by a Contractor properly licensed to install sanitary sewers. All work shall be done as per MAG Standard Specifications.

19. EXISTING TRAFFIC AND STREET SIGNS AND TRAFFIC SIGNAL EQUIPMENT

The Contractor shall use due care when excavating at or near intersections where traffic signal underground conduit is located. The Contractor shall notify the Traffic Engineering Office twenty-four (24) hours in advance of any work at such intersections. The Contractor shall be responsible for the installation and maintenance of temporary overhead traffic signal cable as specified by the Traffic Engineering Manager when underground conduit is to be severed by excavations at the intersection. At no charge, the Traffic Engineering Manager shall have all traffic signal underground conduit located, and he shall provide the necessary City technicians to assist the Contractor in the transfer of the wiring to the temporary cables installed by the Contractor. The Contractor shall provide an off-duty uniformed Police Officer to direct traffic while the traffic signal is turned off and the wiring is transferred. The Contractor shall be responsible as specified by the Traffic Engineering Manager for the repair and restoration of all traffic signal overhead and underground items that have been damaged or modified.

The City does not permit the splicing of Magnetic Detector Loops.

20. DUMPING AND DISPOSAL OF WASTE

The Contractor is responsible for the cost to dispose of all waste products including excess earth material which will not be incorporated into the work under this contract. The waste product referred to herein shall become the property of the Contractor.

21. EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this contract, the Contractor will follow the Federal Government's Affirmative Action guidelines to ensure that employees or applicants applying for employment will not be discriminated against because of race, color, religion, sex, or national origin.

22. SUPERVISION BY CONTRACTOR

The Contractor will supervise and direct the work. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor will employ and maintain on the work a qualified supervisor or superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The representative shall have full authority to act on behalf of the Contractor and all communications given to the representative as shall be as binding as if given to the Contractor. The representative shall be present on the site at all times as required to perform adequate supervision and coordination of the work. Where appropriate, all Provisions of MAG Section 105.5 will be applicable.

23. CHANGES IN THE WORK

The City may at any time, as the need arises, delete items or order changes within the scope of the WORK without invalidating the contract. If such changes increase or decrease the amount due under the contract documents, or in the time required for performance of the work, an equitable adjustment shall be authorized by written Change Order.

The City will execute a formal Change Order based on detailed written quotations from the Contractor for work related changes and/or a time of completion variance. All Change Orders are subject to approval by the City.

The City, also, may at any time, by issuing a written Field Order, make changes in the details of the work not affecting contract price or time. The Contractor shall proceed with the performance of any changes in the work so ordered unless the Contractor believes that such written Field Order entitles him to a change in contract price or time, or both, in which event he shall give the Owner written notice thereof within one (1) day after the receipt of the Field Order, and the Contractor shall not execute such changes pending the receipt of an executed Change Order. If the Contractor performs work authorized under a Field Order and subsequently requests a change order for that work, the City shall not be obligated to issue a Change Order.

24. CHANGES IN CONTRACT PRICE

The Contract Price may be changed only by a written Change Order issued by the City and approved by A.D.O.T. Aeronautics Division. The Engineer shall not be permitted to issue change orders. The value of any work covered by a Change Order or of any claim for increase or decrease in the Contract Price shall be determined by one or more of the following methods in the order of precedence listed below:

- a. Unit prices previously approved.
- b. An agreed lump sum.
- c. The Provision of MAG 109.5.

25. CONSTRUCTION STAKES

Construction Staking shall be furnished by the City.

Construction stakes shall be provided in conformance with the Provisions of MAG 105.8 unless specified otherwise within the Special Provisions.

26. TESTING OF MATERIALS

All tests shall be made and results certified by an independent laboratory approved by the City. The Contractor shall pay for all tests required to certify the suitability of materials. The City of Scottsdale will arrange and pay for required construction tests on a one time basis. Additional tests or retests required as a result of initial test rejections or failures will be paid for by the Contractor.

Rejected materials shall be immediately removed from the site and shall not be used in any form for any other part of the work.

27. SOURCE OF MATERIALS

No material source has been designated by the City for use on this project.

MAG Specification, Section 106, shall apply as will ADOT Standard Specifications 1982, Section 106.01, .03, and .11 which outline controls and Section 1001-1, -2, and -4, concerning approval of Contractor-Furnished Source and supplemental agreements in regards to environmental analysis and the liability for materials testing costs.

Contractor-Furnished material sources situated in the 100-year flood plain of any stream or watercourse, and located within 1.0 mile upstream and 2.0 miles downstream of any highway structure or surfaced roadway crossing, shall not be allowed.

A Contractor-furnished source shall be defined as a material source which is neither an ADOT-furnished source nor a commercial source as herein defined.

A commercial source shall be defined as a material source in which the owner or producer has been for at least one year regularly engaged during regular business hours on a regular basis in the processing and selling of sand, rock, ready-mix portland cement concrete, asphaltic concrete and other similar products normally produced and sold to all parties. The company shall have an Arizona retail sales tax license.

The location of any new material source or existing non-commercial material source proposed for use on this project shall be reviewed by the appropriate agency having flood plain management jurisdiction over the area of proposed source location. Contractor shall obtain a letter from the agency addressed to the City Public Engineering Manager certifying that the proposed source location conforms to the conditions herein and such applicable Standard Specifications as referenced.

28. METHOD OF MEASUREMENT AND PAYMENT FOR PAY ITEMS

Except as noted in the Special Provisions, measurement and payment for all bid items in the Bid Form shall be as described in the MAG Standard Specifications, subject to the following:

- a. Payment for each item shall constitute payment in full for the furnishing of all excavation, back filling, materials, equipment, appurtenances, labor, plant and tools, necessary to provide a completely finished, and serviceable project, as shown by the plans and described in the specifications. Each item shall be complete with all necessary connections, testing, and related work accomplished to provide for the satisfactory use and/or operation of the total project.
- b. No additional payments will be made for incidental work related to any items unless specifically noted and called for in the bid. Payment will be made at the unit price or lump sum price bid in the bid. Unit prices in writing will control in event of any dispute.
- c. Measurements of the completed work will be made in place, with no allowance for waste, and as may be more particularly described in the description of the various items of work. Ten percent (10%) of the amount of each progress pay estimate shall be retained or securities shall be posted in accordance with ARS 34-221 until final acceptance by the City of all work.

29. APPROVED EQUALS

Plans and specifications may contain references to equipment and/or materials (patented or unpatented) or "approved equal(s)". Such references shall be regarded as establishing a standard of equality, finish, appearance, performance, or as indicating a selection or design based upon compatibility with existing equipment, materials or details of construction inherent to the project design. Such reference shall not be construed as limiting the selection to a specified item, source or design detail. The use of an alternate or substitute, item or source as an approved equal will be permitted, subject to the following procedure pursuant to ARS 34-104.

- a. The bidder shall submit a written proposal for substitution to the Purchasing Director at least eight (8) days prior to the original deadline. The proposal shall include all information necessary for proof of equality and suitability for substitution including benefits, engineering design and data (calculations) and/or detailed plan modifications which may be required by the substitution. The bidder shall submit additional information and/or samples when required.
- b. The Contract Administrator or his representative, will evaluate the information submitted, perform tests when necessary and make comparisons in order to approve or reject the proposal. If rejected, the Contract Administrator shall give notice of rejection to the City and the Bidder submitting the proposal.
- c. The City, if the proposal is accepted, shall issue a written addendum to the Invitation for Bid specifying the approved equals and publish the modification in the same manner as the original bidding documents.

30. LOCAL CONDITIONS, RULES AND REGULATIONS

The bidder shall familiarize himself with the nature and extent of the Contract documents, work to be performed, all local conditions, and federal, state and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the work.

31. WORKMANSHIP

Where not more specifically described, workmanship shall conform to all of the methods and operations of best standards and accepted practices of the trade or trades involved and shall include all items of fabrication, construction, or installation regularly furnished or required for completion.

All work shall be executed by tradesmen skilled in their respective lines of work.

When completed, all work shall have been durably and substantially built and shall present a neat, workmanlike appearance.

32. RECORDS AND AUDIT RIGHTS

Contractor's and Subcontractor's books, records, correspondence, accounting procedures and practices, and any other supporting evidence relating to the contract (all the foregoing hereinafter referred to as "Records") shall be open to inspection and subject to audit and/or reproduction during normal working hours by the City of Scottsdale, or its authorized representative, to the extent necessary to adequately permit evaluation and verification of any invoices, payments, or claims based on Contractor's or Subcontractor's actual costs (including direct and indirect costs and overhead allocations) incurred, or units expended directly in the performance of work under this Contract. For the purpose of evaluating or verifying such actual or claimed costs or units expended, the City of Scottsdale or its authorized representative shall have access to said records from the effective date of this Contract for the duration of the work until three (3) years after the date of final payment by the City of Scottsdale to Contractor pursuant to this Contract.

The City of Scottsdale or its authorized representative shall have access, during normal working hours, to all necessary Contractor and Subcontractor facilities, and shall be provided adequate and appropriate work space, in order to conduct audits in compliance with the provisions of this Article. The City of Scottsdale shall give Contractor or Subcontractor reasonable advance notice of intended audits.

Contractor shall require Subcontractors to comply with the provisions of this Article by insertion of the requirements hereof in any subcontract pursuant to this Contract.

33. NATIVE PLANTS

The Contractor shall take whatever steps, procedures, or means necessary to remove, move, displace, and save all native plants within the contract work area in accordance with the City of Scottsdale's Ordinance No. 1438, Native Plants, and all applicable state and county statutes, ordinances, codes, and other policy requirements and recognized methods, procedures, techniques, and equipment for protection, salvage, and handling of all plants to be moved from the construction area. This is a no pay item unless specified upon the Schedule of Bid Items.

34. GUARANTEE - WARRANTY

The provisions of MAG Section 108.8 shall apply with the following additional requirements:(a)

- a. Should the Contractor fail to begin repairs or corrective work within fourteen (14) calendar days after receipt of written notice from the City, the City may perform the necessary work and the Contractor hereby agrees to reimburse the City for actual cost.

- b. The warranty period on any part of the work so repaired or replaced shall be extended for a period of twelve (12) months from the date of such repair or replacement.
- c. This guarantee will not apply to damage caused by normal wear and tear or by acts beyond the Contractor's control.

35. CANCELLATION OF CITY CONTRACTS

The City may cancel any contract or agreement, without penalty or obligation, if any person significantly involved in initiating, negotiating, securing, drafting or creating the contract on behalf of the City's departments or agencies is, at any time while the contract or any extension of the contract is in effect, an employee of any other party of the contract with respect to the subject matter of the contract. The cancellation shall be effective when written notice from the City is received by all parties to the contract, unless the notice specifies a later time (A.R.S. 38-511).

**Special Provisions**

## SPECIAL PROVISIONS

### 1. OVERTIME COMPENSATION - CONSTRUCTION OBSERVATION SERVICES

In the event the Contractor schedules work beyond the hours of a standard 8-hour work day or 40-hour work week, the Engineer shall be notified 48 hours in advance to make necessary arrangements to provide construction observation services. The Contractor shall reimburse the Engineer for such services at a rate of Forty-Five Dollars (\$45.00) per hour plus reimbursable expenses.

### 2. CONSTRUCTION SCHEDULING

#### A. General

The purpose of this section is to promote safety at Scottsdale Municipal Airport during construction of this project.

The Contractor shall be responsible for delineating the limits of the runway and taxiway operations areas to preclude inadvertent entry into these locations by Contractor's forces. The Contractor shall install and maintain cones or other similar devices acceptable to the Engineer 40 feet from taxiway centerline or 40 feet from edge of any apron and 150 feet from the centerline of the runway when working or hauling near these air operations areas.

The Contractor's equipment and personnel are not permitted within 500 feet of the end of the runway without approval of the Airport Director and airport control tower.

In addition, the Contractor will be required to conduct surfacing and marking operations within 150 feet of the runway centerlines. The Contractor may work in these areas only between the hours of 10:00 a.m. and 2:00 p.m. upon control tower approval, and shall schedule his operations to minimize the time he is working on those areas. At all times the Contractor is working in these areas he shall be in contact with the airport control tower by two-way radio. Radios shall be provided by the Contractor. At the end of each working day or when the Contractor is not actively engaged in work in these areas, the Contractor shall remove all construction equipment and eliminate any rough grades from within this area. Any work in these areas must be approved ten (10) days in advance by the Airport Director.

#### B. Construction Schedule

The Contractor shall provide a detailed construction schedule to the Engineer before or during the preconstruction conference. Scheduling must be acceptable to the Owner prior to the start of construction.

#### C. Opening Sections of the Work to Traffic

It will be necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such "phasing" of the work shall be according to the schedule presented below. Simultaneous construction of phased work will not be permitted. The Contractor shall

complete each portion of work on or before the time specified. The Contractor shall make his own estimate of the difficulties involved in arranging his work to permit such beneficial occupancy by the Owner as described below:

<u>Description</u>	<u>Sequence of Owner's Beneficial Occupancy</u>	<u>Work Shown on Plan Sheet</u>
AREA 1	Work within AREA 1 shall be accomplished in Phase 1. All work shall be completed 14 calendar days after closure.	3 of 12
AREA 2	Work within AREA 2 shall be accomplished in Phase 2. All work shall be completed 14 calendar days after closure.	3 of 12
AREA 3	Work within AREA 3 shall be accomplished in Phase 1. All work shall be completed 10 days after closure.	4 of 12
AREA 4	Work on box culverts shall be completed 45 calendar days after closure of Thunderbird Road. Temporary road shall be in service for a maximum of 45 days. Work on storm drain shall be accomplished in 30 days once construction has started.	5 through 12 of 12
AREA 5	Area 5 shall be accomplished in Phase 3. All work shall be completed in 4 days after closure.	11 of 12

It will be necessary to open portions of the work to traffic for the purpose of providing ingress and egress to hangars located on and adjacent the apron. The Contractor shall make provisions including barricading to accommodate these aircraft movements. Aircraft access to hangars will be permitted prior to 8:00 a.m. and after 5:00 p.m. daily.

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.

3. ADDITIONAL LIMITATIONS, RESTRICTIONS, AND REQUIREMENTS

A. Limitations on Construction

- 1) Open-flame welding or torch cutting operations shall be prohibited.

- 2) Open-trenches, excavations, and stockpiled material at the construction site shall be prominently marked with red flags and lighted by light units during hours of restricted visibility and/or darkness.
- 3) Stockpiled material shall be constrained in a manner to prevent movement resulting from aircraft blast or wind conditions in excess of 10 knots.

**B. Motorized Vehicles**

- 1) When any vehicle other than those routinely used on the apron, taxiways, runways, and runway approach area is required to travel over any portion of that area, it shall be escorted by a vehicle properly identified to operate in the area or provided with a flag on a staff so attached to the vehicle so that the flag will be readily visible. The flag shall be not less than 3 feet square consisting of a checkered pattern of international orange and white squares of not less than 1 foot on each side and displayed in full view above the vehicle. A flag or escort vehicle is not required for vehicles which have been painted, marked, and lighted for routine use on aircraft movement areas. Any vehicle operation on the movement area during the hours of darkness shall be equipped with a flashing yellow dome-type light.
- 2) Vehicular traffic crossing active movement areas must be controlled by two-way radio with the control tower, by escort or flagman. The clearance shall be confirmed by the driver's personal observation that no aircraft is approaching his position. Aircraft have the right-of-way at all times.
- 3) Specific vehicular crossing points across active aircraft movement areas will be designated by the Airport Director, and the Contractor's vehicles may cross the active movement areas only at those locations so designated. Flagman should be posted and check for debris after crossing.
- 4) Any unauthorized intrusion into an active aircraft movement area by the Contractor's (or any subcontractor's) personnel or equipment will result in immediate suspension of the project until such time that the Owner is satisfied that no further intrusions will occur.

**C. Construction Activity**

Details on necessary procedures for marking and lighting taxiway and apron closures may be found in Federal Aviation Administration Advisory Circular 150/5340-1E. Warning signs shall have flashing yellow lights and be located in taxi areas in advance of the construction site.

**D. Debris**

Waste and loose material capable of causing damage to aircraft landing gears, propellers, or being ingested in jet engines shall not be placed on active aircraft movement areas. Material tracked on these areas shall be removed continuously during the work project by means of power vacuum sweepers.

4. ELECTRICAL POWER, TELEPHONE AND WATER

Unless specified otherwise, the Contractor shall make his own arrangements for electrical energy, telephone and water services. Subject to the convenience of the utility, he may be permitted to connect to existing facilities where available, but he shall meter and bear the cost of such as required by the utility companies.

5. CONTRACTOR'S STORAGE AREA AND ACCESS

The Contractor may store equipment and materials only in the area indicated on the plans. Access to the construction will be through the locations shown on the plans. All Contractor's forces must enter and exit the airport at this point only. For areas outside airport property fence, Contractor shall make his own provisions for storage of equipment and materials.

6. REMOVAL OF EXISTING IMPROVEMENTS

Sawcutting of existing improvements shall be included in the per unit price bid. All sawcutting shall conform to M.A.G. Specification 336 and meet the approval of the Engineer.

7. SEEDED RIPRAP

Payment for seeded riprap shall be made at the per unit price bid and shall include all excavation and compaction necessary to meet lines and grades shown on the plans and shall conform to M.A.G. Specification 220 for grouted riprap with additions noted herein.

Rip-rap which will be exposed on the surface shall be hand placed such that all rip-rap is securely embedded in mortar. immediately upon completion of placement, all excess mortar shall be removed from the exposed surfaces by brushing or other approved method. Prior to final acceptance, all mortar shall be removed from exposed rock surfaces by sandblasting or other approved method. The finished surface shall be even and tight and shall not vary from finish grades depicted on plans by more than 3". Rock size shall be 4" to 10" and waste concrete will not be permitted. Concrete shall be cured by a method approved by the engineer and City inspector.

Coloring agent shall be added to mortar per the requirements of the City of Scottsdale.

8. LINED CHANNEL AND SLOPE PROTECTION

Payment for lined channel and slope protection shall be made at the per unit price bid and shall include all excavation and compaction necessary to meet lines and grades shown on the plans.

9. CONCRETE STRUCTURES

All concrete structures, except reinforced box culverts, shall conform to M.A.G. Specification 505 and shall be paid for at the per unit price bid and shall include, but not necessarily be limited to excavation, backfill, compaction, and any incidental work necessary for construction of the structure.

10. SURVEY AND AS-BUILTS

All surveys and as-builts shall be provided by the City.

11. TRAFFIC CONTROL

Traffic control shall conform to the drawing titled "Barricading and Channelization Plan" and Section 5 of the General Conditions. Payment shall be made at the per unit price bid. Contractor shall provide an additional drawing indicating construction equipment and material delivery access routes to construction site.

12. TEMPORARY ROADWAY

Temporary road surface must be maintained by the contractor during construction at contractor's expense to the satisfaction of the engineer and City inspector.

13. EXCAVATION

Payment for all excavation shall be included in the per unit price bid for each item requiring excavation. All excess excavation or spoil material shall be disposed of off-site by the Contractor at no additional cost to the City. Where appropriate, excess material may be used on site if approved by the Contract Administrator.

14. REINFORCED BOX CULVERT

All construction shall conform to ADOT Standard Specifications for road and bridge construction Section 601 and highway division structures section, standard drawings, and shall be paid for at the per unit price bid. Unit price bid shall include, but not necessarily be limited to headwalls, access barrier, excavation, backfill, compaction, and any incidental work necessary for construction of box culverts.

Pay limits for removal and replacing of asphalt concrete pavement, curb and gutter, bikepath, etc., shall be as defined on plans.

Concrete finish shall be a Type II per ADOT Standard Specification 601.

15. STORM DRAIN CONSTRUCTION

The Contractor shall have the option of installing either round reinforced concrete pipe, round rubber gasket reinforced concrete pipe, or "Advanced Drainage Systems, Inc." N-12 pipe, or approved equal where storm drains are called for on the plans subject to the provisions of M.A.G. Specifications Section 618, 620, and 735 including amendments outlined herein.

Conduit shall be class III for reinforced concrete pipe.

Unit price bid shall include excavation, backfill, compaction and any incidental work necessary for installation to meet lines and grades shown on plans.

16. MODIFICATIONS TO MARICOPA ASSOCIATION OF GOVERNMENTS STANDARD SPECIFICATIONS:

A. Trench Excavation, Backfilling, and Compaction - Section 601

601.2.1 Excavation (General) - Add the following:

For those storm drain pipes to be located in existing drainage ditches, the existing ditches must be filled and compacted (per M.A.G. Specification 211) to an elevation of not less than one foot above the elevation of the top of the proposed storm drain pipe prior to the excavation of the trench for the storm drain pipe.

601.3 Protection of Existing Utilities - Add the following:

601.3.5 Existing Storm Drains: Prior to the construction of any new catch basins, manholes, or storm drain pipe, the existing storm drains connecting to the new structures shall be cleaned of existing silt and debris a minimum of 5' by a means acceptable to the engineer.

601.4.2 Foundation, Bedding, Backfilling, and Compaction (Bedding) - Add the following:

Bedding for all pipes may consist of native material providing that the native material contains no pieces larger than 1½ inches and is free of broken concrete, broken pavement, wood, or other deleterious material.

601.4.5 Foundation, Bedding, Backfilling, and Compaction (Compaction Methods) - Delete the first five subparagraphs and add the following:

Water consolidation will not be permitted.

17. SUPPLEMENTAL SPECIFICATIONS

A. CRACK SEALING

1) DESCRIPTION

The work consists of cleaning and routing cracks in existing asphalt concrete pavement, applying herbicide and filling cracks with pre-mixed asphalt-rubber sealant. The work shall be accomplished in accordance with the requirements of these specifications.

2) MATERIAL

a) Crack Filler. Crack filler shall be a pre-packaged sealant, CRAFCO Roadsaver Brand Type 201 Sealant or approved equal.

b) Herbicide. Herbicide shall be Pramitrol 25E by CIBA-GEIGY or approved equal. The herbicide solution to be applied into the cracks shall consist of 15 gallons of Pramitrol 25E mixed with each 100 gallons of water.

3) EQUIPMENT

Routers shall be spindle type or other approved machines that are capable of following a random pavement crack. The machine used for the application of

the asphalt-rubber sealant material shall be an indirect heating, pressure distributor, such as Sahuaro Petroleum Crack Sealer Model SK-250, CRAFCO Sealer Model BC 22, or an approved equivalent.

4) CONSTRUCTION METHODS

The following construction sequence shall be followed:

Herbicide shall be applied to all cracks.

All cracks 3/8-inch and wider shall be routed and cleaned with compressed air.

All cracks 3/8-inch and wider shall be filled with crack filler.

Cracks to be routed and sealed shall be marked by Owner or Engineer.

- a) Routing and Cleaning of Cracks. All cracks, which have an average clear opening greater than 3/8-inch, shall be sealed. All cracks which have an average clear opening greater than 3/8-inch, shall be routed to a 1/2-inch depth with a 1/2-inch router to neat vertical face. The router shall be centered as nearly as practicable over the crack. The router shall have a bit that is wide enough to cover the size of the crack being routed. Several passes may be necessary to route the cracks. Immediately prior to applying the sealant, the cracks shall be thoroughly cleaned of all loose particles, dust, and other deleterious substances by means of high velocity, compressed air.
- b) Crack Filling. Cracks shall be filled level with the pavement surface without excess material adjacent or above crack. If sealant settles 1/4" or more, the crack shall be resealed. The Contractor will apply blotter material of a type acceptable to and at the direction of the Owner.

Pre-mixed asphalt rubber shall be applied at a temperature ranging from 325° F to 375° F.

The asphalt-rubber mixture shall not be placed during wet weather or under other conditions which will adversely affect the operations. The sealant shall not be placed in cracks which are wet. If weather conditions are such as to affect adversely the operations, the Owner will determine whether or not the operations should cease.

5) MEASUREMENT

Crack sealing shall be measured by the number of linear feet of cracks sealed in the accepted work.

6) BASIS OF PAYMENT

Payment shall be made at the contract price per linear foot of cracks sealed. This price shall be full compensation for furnishing all materials, and for all preparation, mixing, and placing of this material, and for all labor, equipment,

tools, and incidentals necessary to complete the item. Also included as incidental items are cleaning of cracks and applying herbicide.

**B. QUICK SET SLURRY SEAL**

1) **DESCRIPTION**

Quick-set slurry seal shall consist of a mixture of emulsified asphalt, mineral aggregate, water and accelerator, properly proportioned, mixed, and spread evenly on the surfacing or pavement as specified herein and as directed by the engineer. The cured slurry shall have a uniform appearance, adhere firmly to the surface, and have a skid-resistant surface.

2) **MATERIALS**

a) Asphalt. The asphalt emulsion shall be of the anionic quick-set type. It shall meet the following specifications when tested according to appropriate test methods.

Properties	Limits
Viscosity 77° F, Saybolt-Furol, Sec.	20-100
Residue by Distillation, %	57 Minimum
Sieve Test, Retained on 20 mesh, %	0.10 Maximum
Particle Charge, Electroplate	Negative
Tests on Residue from Distillation:	
Penetration, 77° F, 100 g, 5 Sec.	40-110
Solubility in Trichloroethylene, Wt. %	97.5 Minimum
Ductility, 77° F, Cm	40 Minimum

Mix Properties	Limits
Slurry Seal Mixing Test, 70-85° F, Sec. q	120 Minimum
Slurry Seal Setting Test, 70-85° F, (1-hr cure)	No Brown Stain
Slurry Seal Water Resistance Test, 70-85° F, (30-Minute Cure)	No More Than Slight Discoloration
Wet Stripping Test, %, TB #114	90 Minimum
System Capability, TB #115	Pass
Wet Track Abrasion Test (WTAT)	75 grams/FT <sup>2</sup> .Max

b) Accelerator. Shall be Portland Cement, Type I or II. The amount included in the slurry mix will be determined in the field (expected range .25% to 1.5%). However, the amount of accelerator shall be such as to insure that the applied slurry mix can support vehicular traffic 45-60 minutes after last application.

c) Aggregate.

(1) The aggregate shall consist of dust and plaster sand or other sands of similar nature, except that any aggregate or combination of aggregates used in the mixture shall contain not less than 50% of

the product obtained by crushing rock. The material shall be free from vegetable matter and other deleterious substances.

- (2) Percentage composition by weight of the aggregate shall conform with the following gradations.

<u>Sieve Size</u>	<u>Percent Passing Sieves Type II</u>
3/8	100.0
No. 4	85.0 - 100.0
No. 8	65.0 - 95.0
No. 16	45.0 - 70.0
No. 30	30.0 - 50.0
No. 50	18.0 - 30.0
No. 100	10.0 - 21.0
No. 100	5.0 - 15.0
Pounds/Sq. Yd.	12.0 - 16.0
% Residue Asphalt	9.0 - 11.7

3) LABORATORY TESTING

All materials shall be pre-tested in a qualified laboratory as to their suitability for use in the slurry seal. A Wet Track Abrasion Test (W.T.A.T.) will be used for design purposes to establish the percent of emulsified asphalt, water, and accelerator to be used in the specified slurry seal. Testing shall follow the most recent procedures outlined in the International Slurry Seal Association (ISSA) design Testing Bulletins. The maximum wear loss shall be 75 grams per square foot. Testing will be paid for by the Contractor.

4) EQUIPMENT

All equipment, tools, and machines used in the performance of this work shall be maintained in satisfactory working condition.

- a) Mixer. The slurry seal mixing machine shall be a continuous flow mixing unit and be capable of delivering water and also capable to deliver accurately a predetermined proportion of aggregate and asphalt emulsion to the mixing chamber and to discharge the thoroughly mixed product on a continuous basis. The aggregate shall be pre-wet immediately prior to mixing with the emulsion. The mixing unit of the mixing chamber shall be capable of thoroughly blending all ingredients together. No violent mixing shall be permitted.

The mixing machine shall be equipped with an approved fines feeder that provides an accurate metering device or method to introduce a predetermined amount of mineral filler into the mixer at the same time and location that the aggregate is fed. The fines feeder shall be used whenever added mineral filler is a part of the aggregate blend.

The mixing machine shall be equipped with a water pressure system and fog type spray bar, adequate for complete fogging of the surface preceding

the spreading equipment, with a maximum application rate of 0.05 gallons per square yard. A calibrated control for aggregate and asphalt emulsion shall be provided and capable of proportioning accurately the materials.

The machine shall be capable of a minimum speed of 60 feet per minute and shall not be allowed to exceed 180 feet per minute while in operation. Sufficient machine storage capacity to mix properly and apply a minimum of five tons of the slurry shall be provided.

- b) Spreading Equipment. Attached to the mixed machine shall be a mechanical type squeeze distributor equipped with flexible material in contact with the surface to prevent loss of slurry from the distributor. It shall be maintained so as to prevent loss of slurry on varying grades and crown by adjustments to assure uniform spread. There shall be a steering device and a flexible strike-off.
- c) Auxiliary Equipment. Hand squeegees, shovels, and hand equipment shall be provided as necessary to perform work.

5) PREPARATION OF SURFACE

Immediately prior to applying slurry seal, the surface shall be cleaned of all loose material, silt spots, vegetation, and other objectionable material by means of power brooms or sweepers.

6) COMPOSITION OF MIX

The amount of emulsion and water to be blended with the aggregate will be determined by the W.T.A.T..

7) WEATHER LIMITATIONS

The slurry shall not be applied when either atmospheric or pavement temperature is 45° F and falling, but may be applied when the atmospheric and pavement temperatures are 40° F and rising. The slurry shall not be applied during periods of abnormally high relative humidity as determined by the engineer.

8) APPLICATION OF SLURRY SEAL

The surface shall be fogged with water directly preceding the spreader as required by the Engineer. The slurry mixture shall be of the desired consistency when deposited on the surface and no additional elements shall be added. Total time of mixing shall not exceed four minutes. A sufficient amount of slurry shall be carried in all parts of the spreader at all times so that complete coverage is obtained.

Approved squeegees shall be used to spread slurry in non-accessible areas to the slurry mixer.

Excess build up of slurry on longitudinal or transverse joints will not be permitted.

The asphalt slurry seal shall be rolled a minimum of 4 coverages by steel wheel roller.

9) METHOD OF MEASUREMENT

No direct measurement or payment will be made for the work of cleaning, sweeping, and preparing the surface to be slurry sealed, or for rolling of the completed slurry seal.

Emulsified asphalt will be measured by the ton. Water added to the emulsified asphalt will not be measured for payment.

Aggregate will be measured by the ton.

10) BASIS OF PAYMENT

The accepted quantity of quick-set slurry seal, complete in place, measured as provided above, will be paid for at the contract unit price per ton for emulsified asphalt for slurry seal and aggregate. The contract unit price paid per ton of emulsified asphalt for slurry seal and aggregate shall be full compensation for furnishing and applying quick-set slurry seal including accelerators and mineral fillers, surface preparation, sweeping, fog applications and rolling.

C. ASPHALT-RUBBER SEAL COAT

1) DESCRIPTION

The asphalt-rubber seal coat shall consist of furnishing an asphalt-rubber material and applying it to a prepared surface at the locations shown on the project plans and in accordance with the following requirements.

2) MATERIALS

- a) Bituminous Tack Coat Materials. The asphalt for tack coat shall be emulsified asphalt, SS-1h, conforming to the requirements of ADOT Section 1005.
- b) Asphalt-Rubber Material. Asphalt-rubber material shall conform to the requirements specified elsewhere in these specifications for asphalt-rubber materials.
- c) Cover Material.

(1) Stone Chips

The cover material for the paving asphalt binder shall be stone chips having a wear not to exceed 40 at 500 revolutions when tested in accordance with AASHTO T-96.

Sodium Sulphate soundness tests shall be in accordance with AASHTO T-104 and shall not show a loss in excess of 12 percent.

A minimum of 75 percent of the material, by weight, retained on the No. 8 sieve, shall have at least one fractured face produced by crushing.

Aggregate shall meet the requirements of AHD 217 with the following revisions:

- (a) The temperature of the water in the beaker and the water bath during testing shall be  $180 \pm 0.5^\circ$  F rather than  $150 \pm 0.5^\circ$  F.
- (b) Agitation during testing shall be hand stirring with a glass stirring rod for 5 minutes in lieu of mechanical mixing for 30 minutes.
- (c) Following agitation, cold tap water shall be gently run into the beaker until all free binder flows over the side of the beaker.
- (d) A visual estimation of the remaining percent coating is made with a 90 percent retained coating required for acceptance.
- (e) Parts 5e through 5h, 6a and 6b of the test are deleted.

Grading of the stone chips when tested in accordance with AASHTO T-11 and T-27 shall comply with the following:

<u>Sieve Size</u>	<u>Percent Passing (MAG)</u>
	Table 716-2
1/2-inch	100
3/8-inch	70 - 100
1/4-inch	0 - 10
No. 8	0 - 5
No. 200	0 - 2

- d) Blotter Materials. The sand used for blotter material shall meet the requirements of ADOT Section 404 for blotter material.
- e) Contractor-Furnished Samples. The contractor shall furnish the Engineer with samples of bituminous material, asphalt-rubber material, cover material and blotter material.

### 3) CONSTRUCTION REQUIREMENTS

The seal coat shall be constructed in the following sequence:

- Prepare the surface.
- Apply bituminous tack coat, if so directed by the Engineer.
- Apply asphalt-rubber material
- Apply and roll cover material.

- Apply and roll blotter material, if directed by the Engineer.
- Remove loose cover and blotter material.

Asphalt-rubber shall not be placed on the new slurry seal until the slurry seal has cured and all water has evaporated. The minimum waiting time shall be 72 hours; however, no asphalt-rubber will be placed without the Engineer's approval.

- a) Preparing the Surface to be Seal Coated. The surfaces shall be cleaned with power vacuum sweepers as required prior to application of seal coat material.

The contractor shall satisfy himself as to the work equipment necessary to prepare the surface for seal coat.

- b) Application of the Asphalt-Rubber Material. The asphalt-rubber material hereinafter specified shall be applied at the approximate rate of between 0.55 and 0.65 gallons per square yard.

Asphalt-rubber material shall be applied only when the ambient air temperature is at least 65° F; however, despite an ambient air temperature of 65° F, the Engineer, at any time, may require that work cease or that work day be reduced in the event of weather conditions either existing or expected which would have an adverse effect upon the asphalt-rubber material. The surface upon which the asphalt-rubber material is to be applied shall be dry.

Gravity type distributors will not be permitted. Distributor trucks shall be of the pressure type with insulated tanks and capable of applying a uniform, unbroken spread of asphalt-rubber material at controlled rates of from 0.15 to 1.00 gallon per square yard. The distributor truck shall be equipped with a heating system to heat the asphalt-rubber material and maintain it at the manufacturer's specified temperature and an accurate tank-mounted thermometer for determining the temperature of the asphalt-rubber material.

Distributors shall be equipped with full circulating type adjustable spray bars capable of spraying various widths from six inches to at least twelve feet. Extensions shall also be of the full circulating type. The spray bar shall be adjustable to permit positioning at various heights and shall maintain the set height within one-half inch during each spraying run.

Spray bar nozzles shall provide a uniform, unbroken spread of asphalt-rubber material to the surface being treated and shall be operated by positive acting control valves that quickly open or close in one operation.

The distributor truck shall be equipped with a hand hose and a nozzle attachment to be used for spotting areas inaccessible to the distributor.

The distributor shall also be equipped with devices and charts to provide for accurate and rapid determination and control of the amount of asphalt-rubber material being applied; a bitumeter that registers rate of

travel in feet per minute and trip and total distance in feet; a pump for circulating the asphalt-rubber material in the spray bar and tank and that sprays the material through the spray bar or hand spray bar; a pressure gage, pump tachometer, or other approved device for controlling the application rate of asphalt-rubber material; and a gage or other approved means of accurately determining the quantity of asphalt-rubber material in the tank.

Distributor and booster tanks shall be so maintained that no dripping of asphalt-rubber material will occur from any part of the equipment. Prior to using any distributor truck on a project, or periodically during the course of a project, the Engineer may require that the transverse and longitudinal spread rates be checked. The transverse and longitudinal spread rates shall not vary by more than 10 percent nor 0.05 of a gallon per square yard, whichever is less, from the specified application rate.

The Engineer may order the discontinuance of the use of any distributor truck that does not comply with the requirements or that fails to produce a satisfactory application of asphalt-rubber material as specified herein.

Longitudinal joints shall be kept to a minimum.

Longitudinal joints shall be power-broomed immediately prior to the application of the asphalt-rubber material in the adjacent strip. Longitudinal joints shall be a butt joint.

All transverse joints shall be made by placing building paper over the end of the previous application, and the joining application shall start on the building paper. Once the application process has progressed beyond the paper, the paper shall be disposed of as directed by the engineer.

Asphalt-rubber material shall be prevented from spraying upon adjacent pavements, that portion of the traveled way being used by traffic, structures, curbs, trees and shrubbery, adjacent property, and improvements or any other object outside the area designated for spraying.

- c) Application of the Cover Material. The cover material shall be applied at the approximate rate of 25 to 35 pounds per square yard; however, the Engineer will determine the exact rate to be applied.

The cover material shall be applied by means of a self-propelled chip spreader, equipped with a mechanical device which will spread the cover material at a uniform rate over the full width of the asphalt-rubber treated surface in one application.

The chip spreader shall not be operated at speeds which cause the aggregate to bounce or roll over after striking the asphalt-rubber surface. Stockpiling of cover material prior to placing will be permitted; however, any contamination resulting during storage or from reloading operations will be cause for rejection of the cover material.

At the time of application to the roadway, cover material shall be at least as dry as material dried in accordance with the requirement of Section 4.2 of AASHTO T-85.

Application of the cover material shall begin immediately following the application of the asphalt-rubber material and shall be maintained within a distance of approximately 100 feet of the asphalt-rubber distributor, and in no case shall the application of the cover material lag more than 150 feet behind the application of the asphalt-rubber material. Cover material can generally be expected to be placed within 2 minutes but in no case shall more than 10 minutes elapse from time of asphalt-rubber application to placement of cover material.

After the cover material has been applied to the asphalt-rubber material, and prior to rolling, any ridges, piles, or uneven distribution shall be carefully removed to insure against permanent ridges, bumps or depressions in the completed surface.

- d) Rolling Cover Materials. Immediately following the spreading of the cover material over the asphalt-rubber treated surface, the entire surface shall be rolled with pneumatic rollers in accordance with these specifications.

The pneumatic-tire rollers shall carry a minimum loading of 3,000 pounds on each wheel and an air pressure of  $100 \pm 5$  pounds per square inch in each tire.

Pneumatic rollers shall be self-propelled of the oscillating wheel type consisting of not less than seven (7) smooth-tread, pneumatic-tired wheels revolving on two (2) axles, and capable of being ballasted to the weight required.

The rollers shall be equipped with a means of increasing or decreasing the air pressure in the tires while the roller is in operation, and the tires on the front and rear wheels shall be so staggered that there is a slight overlap of tire tracks. Each tire shall be equipped with an adequate scraping or cleaning device to prevent the accumulation of material on the tires.

The roller shall operate smoothly and be capable of turning, stopping or reversing direction without scuffing, marring or displacing the materials being rolled.

The Contractor shall furnish the Engineer with a copy of the roller manufacturer's chart or with tables showing the contact areas and average contact pressures for the full range of wheel loadings for each roller furnished. The Contractor shall also furnish the Engineer with a copy of the calibration table or chart for the ballast box which will indicate the volume of the ballast box in cubic feet, each 6-inch increase in the depth of ballast, and the empty or tare weight of the roller.

The Contractor shall furnish sufficient rollers to cover the entire width of the treated surface in one coverage. The first coverage shall be made

immediately behind the spreader, and if the spreading is stopped for any reason, the spreader shall be moved ahead so that the cover material spread may be immediately rolled. The rolling shall continue until a minimum of four complete coverages have been made. Initial rolling shall be completed within one (1) hour after the application of the cover material.

- e) Application of Blotter Material. Blotter material may be required immediately after the initial pass of the rollers, usually four to six (4-6) pound per square yard, to prevent asphalt-rubber bleed-through and pick-up or cover aggregate turnover and pick-up. The use, rate, and locations for blotter material shall be designated by the Engineer. The blotter material shall be uniformly applied using equipment specified herein.

At the time of application, the blotter material shall be at least saturated surface dry in accordance with the requirements of Section 4.1 of AASHTO T-48.

- f) Removing Loose Cover Material. Loose cover material shall be removed from the treated surface in not less than 12 hours nor more than 36 hours after application; however, if the engineer determines that conditions are not conducive to obtaining the best results by removal during this time period, he may determine another time period. Excess cover material will be removed from the aircraft parking apron and deposited on the airport grounds at a location designated by the engineer.

Removal shall be accomplished by means of sweepers and in such a manner that the cover material will not be dislodged from the asphalt-rubber material.

If, for any reason, there is displacement of the embedded cover material, brooming shall be discontinued until such time as there will be a satisfactory retention of cover material.

- g) Final Rolling. After cover materials have been removed, additional rolling shall be accomplished until a minimum of six (6) complete coverages have been made. Loose cover material shall be removed by a power vacuum sweeper from the pavement and deposited as directed by the engineer.

#### 4) METHOD OF MEASUREMENT

No direct measurement or payment will be made for the work of cleaning or preparing the surface to be seal coated, or providing and applying blotter material.

Asphalt-rubber material will be measured by the ton.

The aggregate for cover material will be measured by the ton.

5) BASIS OF PAYMENT

Payment shall be made at the contract unit price per ton for cover material. This price shall be full compensation for furnishing all materials and for all preparation, delivering and applying the materials and for all labor, equipment, tools and incidentals necessary to complete this item.

Payment for cover material will be made at the contract unit price per ton.

Payment for asphalt-rubber material will be made at the contract unit price per ton.

D. ASPHALT-RUBBER MATERIAL (ADOT STANDARD SPECIFICATION SECTION 1009, MODIFIED)

1) MATERIALS

ADD THE FOLLOWING:

The following asphalt-rubber material has been pre-qualified for use based on its known and acceptable performance and may be used:

- OVERFLEX

International Surfacing, Inc.  
6751 West Galveston  
Chandler, Arizona 85226

The asphalt-rubber material selected by the contractor and furnished by the manufacturer shall be of the same composition and quality as the asphalt-rubber materials listed above. The composition and quality of a pre-qualified asphalt-rubber material is based on specific ingredients that are proportioned, pre-blended, and mixed prior to reaction under rigid manufacturer control. The rubber content shall be 22 percent  $\pm$  2 percent by weight of the total mix. The asphalt material shall be produced from a domestic crude source.

One percent (by weight of asphalt cement) of an approved anti-strip agent shall be added to the asphalt-rubber binder during its proportioning and blending operation.

2) METHOD OF MEASUREMENT

Delete Section 1009-7, entitled Method of Measurement.

E. AIRPORT PAVEMENT MARKING

1) DESCRIPTION

This item shall consist of the painting of numbers, markings, and stripes on the surface of the airport pavement applied in accordance with these specifications and at the locations shown on the plans, or as directed by the Engineer.

2) MATERIAL

- a) Paint. Paint shall meet the requirements of Federal Specification TT-P-1952.
- b) Reflective Media. Glass spheres shall meet the requirements of Federal Specification TT-B-1325, Type III, gradation A.

3) CONSTRUCTION METHODS

- a) Weather Limitations. The painting shall be performed only when the surface is dry, when the atmospheric temperature is above 45° F and when the weather is not foggy or windy.
- b) Equipment. All equipment for the work shall be approved by the Engineer and shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an atomizing spray-type marking machine suitable for applications of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall be designed so as to apply markings of uniform cross sections and clear-cut edges without running or spattering.

- c) Preparation of surface. Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other foreign material which would reduce the bond between the paint and the pavement. The area to be painted shall be cleaned by sweeping and blowing or by other methods as required to remove all dirt, laitance and loose materials.
- d) Layout of Markings. On those sections of pavement where no previously applied markings are available to serve as a guide, the proposed markings shall be laid out in advance of the paint application.
- e) Application. Markings shall be applied at the locations and to the dimensions and spacing on the plans. Paint shall not be applied until the Contractor's layout and condition of the surface have been approved by the Engineer.

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at the rate of 100 to 110 square feet per gallon. The addition of thinner will not be permitted. A period of 24 hours shall elapse between placement of bituminous surface course or seal coat and application of the paint.

The edges of the markings shall not vary from a straight line more than one-half inch in 50 feet, and the dimensions shall be within a tolerance of plus or minus 5 percent. Glass spheres shall be distributed to the surface of the marked areas immediately after application of the paint. A dispenser shall be furnished which is properly designed for attachment to

the marking machine and suitable for dispensing glass spheres. The spheres shall be applied at the rate of 10 pounds per gallon of paint.

The Contractor shall furnish certified test reports for the materials shipped to the project. The reports shall not be interpreted as a basis for final acceptance. The contractor shall notify the Engineer upon arrival of a shipment of paint to the job site. All emptied containers shall be returned to the paint storage area for checking by the Engineer. The containers shall not be removed from the airport or destroyed until authorized by the Owner.

- f) Protection. After application of the paint, all markings shall be protected from damage until paint is dry. All surfaces shall be protected from disfiguration by spatter, splashes, spillage, or drippings of paint.

4) METHOD OF MEASUREMENT

The quantity of airport pavement markings to be paid for shall be one complete item in place performed in accordance with the specifications and accepted by the Owner.

5) BASIS OF PAYMENT

Payment shall be made at the contract lump sum for airport pavement marking. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item.

F. PRESERVATIVE SEAL FOR ASPHALT CONCRETE

1) DESCRIPTION

The asphalt concrete preservative seal shall consist of furnishing a petroleum resin-oil base uniformly emulsified with water and apply it to a prepared airfield surface in accordance with the following requirements.

2) MATERIALS

- a) Preservative Seal. The preservative seal shall be Reclamite as manufactured by Witco Chemical Corporation, or an approved equal. The material shall be diluted two parts emulsified rejuvenating agent and one part water and shall be applied at a rate to be determined by the engineer. An application rate of 0.10 gallons per square yard of the diluted material should be used for estimating purposes. The emulsified rejuvenating agent shall meet the requirements of MAG Spec. 718.
- b) Blotter Material. Blotter material shall be a natural sand or crushed sand and shall be free of deleterious amounts of foreign substances.

The grading shall meet the following requirements when tested in accordance with the requirements of Arizona Test Method 201:

Sieve Size

Percent Passing

3/8 inch	100
No. 4	80 - 100
No. 16	45 - 80
No. 200	0 - 5

3) CERTIFICATES

Certificates for preservative seal and blotter material shall be as supplied indicating compliance with specifications.

4) PREPARATION OF SURFACES

Immediately before applying the emulsion, the area to be surfaced shall be cleaned of dirt and loose material by means of power brooms, supplemented by hand brooms if necessary.

5) APPLICATION OF EMULSION

The diluted material shall be well mixed before applying. It shall be applied by a distributor truck at the approximate rate of 0.10 gallon per square yard. The exact rate shall be as directed by the engineer.

The Distributor trucks shall be of the pressure type with insulated tanks. The use of gravity distributors will not be permitted.

Spray bars shall have a minimum length of 9 feet and shall be of the full circulating type. The spray bar shall be adjustable to permit varying height above the surface to be treated.

The distance center to center of the nozzles shall not exceed 6 inches. The valves shall be operated by levers so that one or all valves may quickly be opened or closed in one operation. The valves which control the flow from nozzle shall be of a positive acting design so as to provide a uniform unbroken spread of bituminous material on the surface. The distributor shall be equipped with devices and charts to provide for accurate and rapid determination and control of the amount of bituminous material being applied and with a tachometer of the auxiliary wheel type reading speed in feet per minute. The spreading equipment shall be so designed and articulated that uniform application of a bituminous material, in controlled amounts, may be made ranging from 0.05 to 2.0 gallons per square yard of surface and with a range of pressure from 25 to 75 psi. If a spray bar extension is used to cover a greater width, it shall be of the full circulating type. The distributor shall be equipped with a hose and nozzle attachment to be used for spotting skipped areas and areas inaccessible to the distributor. The distributor shall also be equipped with pressure gauges and an accurate thermometer for determination of the temperature of bituminous material. Distributor and booster tanks shall be so maintained at all times as to prevent dripping of bituminous material from any part of the equipment.

The engineer reserves the right to order the discontinuance of use of equipment, which, in his opinion, fails to produce a satisfactory distribution of asphalt in accordance with the specifications.

6) ROLLING

The asphalt concrete treated with preservative seal shall be rolled a minimum of 4 coverages by a pneumatic-tired roller. The roller shall be a 2 axle tandem type, with a rolling width of not less than 5 feet and a minimum weight of 5 tons.

7) SAND BLOTTER

After the emulsion has been cured for a minimum of 24 hours, a sand blotter shall be applied at a rate of 1-2 pounds per square yard if directed by the engineer. Blotted material shall be removed by sweeping prior to slurry seal application.

8) PROTECTION TO ADJACENT PROPERTY

Care shall be taken to prevent the spraying of emulsion on adjacent pavements and improvements.

9) PROTECTION TO SEAL COAT

The preservative seal shall be protected by barricades until the engineer directs that the pavement is to be opened to traffic.

10) METHOD OF MEASUREMENT

Preservative seal will be measured by the number of square yards of asphalt concrete pavement sealed in the accepted work.

Blotter material will not be measured.

11) BASIS OF PAYMENT

The accepted quantity of preservative seal, complete in place, measured as provided above will be paid at the contract unit price per square yard. This price shall be full compensation for furnishing and applying preservative seal, surface preparation, rolling and blotter material.

G. TIE-DOWN ANCHOR PROTECTION

Tie-down anchor chains and accessories shall be removed from the project area prior to application of surface treatments. The tie-down anchor chains and accessories shall be stored at location and in a manner satisfactory to the Engineer. Any breakage or loss of accessories during removal or storage shall be replaced at Contractor's expense.

Tie-down anchors shall be protected by placing "DUCT" tape or equal, approved by Engineer, across concrete depressed areas of the tie-down.

Tie-down anchors and chains shall be cleaned prior to reinstallation to remove any overspray or spillage of surface treatment material.

Tie-down anchors, chains, and accessories shall be installed prior to marking the pavement, to the satisfaction of the Engineer.

This work is a no pay item.

H. SPECIFICATION FOR GROUNDING RODS

1) DESCRIPTION

This work consists of all the necessary work to install grounding rods in accordance with the plans and as provided in these specifications. Grounding rods serve as electrodes for grounding connectors for aircraft.

2) MATERIALS

Grounding-point fittings with copper cladding (copper-weld), fabricated in accordance with the plans and having a minimum length of 8 feet, rod diameter of not less than 3/4".

Grout, or epoxy cement, when the rod is installed in a bored hole.

3) CONSTRUCTION METHOD

The grounding and fittings shall be installed by boring a hole approximately 10 inches in diameter through the pavement to a depth of 8" at the locations shown on plans. The grounding rod shall be driven; or inserted in a bored hole no greater than 5/8 inch in diameter if it cannot be driven to the required depth. The smaller hole must be centered in the larger hole. The ground resistance of the placed rod shall be measured and may not exceed 10,000 ohms. If this value is exceeded, a longer rod shall be used to achieve a resistance to ground of less than 10,000 ohms. The grounding rod shall then be secured with the eye approximately 1/4 inch below the top of the pavement using portland concrete cement to fill the 10 inch bore and shaping the cup as shown on the plans.

a) Testing. Ground-resistance measurements of each ground rod shall be taken and certified by the Contractor to the Contracting Officer. The Contractor shall submit in writing to the Contracting Officer upon completion of the project, the measured ground resistance of each ground rod and grounding system, as well as the resistance and soil conditions at the time the measurements were made. Ground-resistance measurements shall be made in normally dry weather, not less than 48 hours after rainfall, and with the ground under test isolated from other grounds. The resistance to ground shall be measured using the fall-of-potential method described in IEEE No. 142.

4) METHOD OF MEASUREMENT

The measurement of this item of work shall be per each grounding rod installed which shall include all work necessary to install and test grounding rods as

shown on the plans, performed in accordance with the specifications and accepted by the Engineer.

5) BASIS OF PAYMENT

Payment shall be made at a unit cost contract price for grounding rods. This price shall be full compensation for furnishing all materials; all preparation; all placing of materials and finishing; all labor, equipment, and tools; and all incidentals necessary to complete and test the item.

**Bid Form**

CITY OF SCOTTSDALE, ARIZONA

In compliance with the Advertisement for Bids, by the City of Scottsdale Purchasing Division, the undersigned bidder:

Having examined the Contract Documents, work site, and being familiar with the conditions to be met, hereby submits the following bid for all labor, materials, and equipment, for completion of the work listed and agrees to execute the contract documents and furnish the required bonds and certificates of insurance for the completion of said work, at the locations and for the prices set forth hereinafter.

Understands that construction of the project shall be in accordance with all applicable MAG Standard Specifications, Details, Uniform Codes, Ordinances, and Regulations as otherwise required by the project plans and special provisions.

Understands that the bid shall be submitted with a bid guarantee of cashier's check or surety bond for an amount not less than five percent (5%) of the amount bid.

Agrees that upon receipt of Notice of Award, from the City of Scottsdale, to execute the contract documents.

Work shall be completed within ninety (90) calendar days, beginning with the day following the starting date specified in the Notice to Proceed. The time allowed for completion of the work includes lead time for obtaining the necessary material and/or equipment. No additional time will be awarded the contract if any additional alternates are accepted.

The bidder hereby acknowledges receipt of and agrees his bid is based on the following addenda:

ADDENDUM: \_\_\_\_\_ DATED: \_\_\_\_\_

ADDENDUM: \_\_\_\_\_ DATED: \_\_\_\_\_

Only bids responding to all items contained in the proposal will be considered.

The undersigned agrees to construct this project at the prices shown on the Schedule of Bid Items, totaling:

BASE BID: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_).  
This amount constitutes the Base Bid.

ADDITIONAL ALTERNATE I: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_).  
This amount constitutes the Additional Alternate I

ADDITIONAL ALTERNATE II: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_).  
This amount constitutes the Additional Alternate II

ADDITIONAL ALTERNATE III: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_).  
This amount constitutes the Additional Alternate III

TOTAL BID: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_).  
This amount constitutes the Total of Base Bid & Additional Alternates I, II, and III.

Amounts shall be shown in words and figures. In case of discrepancy, the amount in words shall govern.

The City reserves the right to reject any or all bids.

Contractor's License Number and classification: \_\_\_\_\_  
\_\_\_\_\_

THIS BID IS SUBMITTED BY: \_\_\_\_\_  
a corporation organized under the laws of the State of \_\_\_\_\_,  
a partnership consisting of \_\_\_\_\_  
or individual trading as \_\_\_\_\_  
of the City of \_\_\_\_\_.

By submitting this bid (I), (WE) hereby agree to enter into the contract included in the bid documents and (I), (WE) further agree that this bid incorporates by reference to the same extent as if set forth herein in full, all of the terms and conditions contained in said bid documents identified as BID NO. 90-04, including Plans, Standard Specifications and Details, Project Manuals, Special Provisions, Addenda (if any), Performance Bond, Payment Bond, and Certificate of Insurance.

Respectfully submitted,

DATE: \_\_\_\_\_

FIRM: \_\_\_\_\_

ADDRESS: \_\_\_\_\_  
\_\_\_\_\_

TELEPHONE NO.: \_\_\_\_\_

BY: \_\_\_\_\_  
OFFICER AND TITLE (SEAL)

\_\_\_\_\_  
WITNESS: If bidder is an individual.

**Schedule of Bid Items**

**SCHEDULE OF BID ITEMS**

BID NO. 90-04

PROJECT: PAVEMENT PRESERVATION AND DRAINAGE

Item No.	Quantity and Unit	Description	Unit Bid Price: Dollars and Cents	Amount Bid: Dollars and Cents
<b>BASE BID</b>				
1	115.1 TON	ASPHALT RUBBER MATERIAL		
2	768 TON	COVER MATERIAL		
3	82 TON	EMULSIFIED ASPHALT FOR SLURRY SEAL (UNDILUTED)		
4	512 TON	AGGREGATE FOR SLURRY SEAL		
5	1 LS	MARKING		
6	16 EA	GROUNDING RODS		
7	257 SY	REMOVE A.C. PAVEMENT		
8	500 LF	REMOVE VERTICAL CURB AND GUTTER		
9	552 SF	REMOVE CONCRETE BIKE PATH		
10	257 SY	SUBGRADE PREPARATION		
11	257 SY	2" A.C./10" ABC PAVEMENT		
12	500 LF	6" VERTICAL CURB AND GUTTER		
13	489 SF	8' BIKE PATH		
14	1 LS	DBL 10'x3' RBC W/WINGS (2 EA), ACCESS BARRIER (1 EA)		
15	93 LF	HANDRAIL		
16	2 EA	CATCH BASIN C.O.P., "M-1", 17' WING, & CONN. PIPE		
17	1 LS	WATERLINE VERTICAL REALIGN, W/VALVE & ADJUSTMENT		
18	1,606 SY	CONSTRUCTION AND REMOVAL OF TEMPORARY ROAD		
19	1 EA	BARRICADE AND CHANNELIZATION		
20	1 LS	UTILITIES RELOCATION		
<b>ADDITIONAL ALTERNATE I</b>				
21	1 LS	REMOVE CONCRETE HEADWALL		
22	520 LF	24" STORM DRAIN		
23	51.1 LF	30" STORM DRAIN		
24	270 LF	42" STORM DRAIN		
25	1 EA	24" END SECTION		

**SCHEDULE OF BID ITEMS**

BID NO. 90-04

PROJECT: PAVEMENT PRESERVATION AND DRAINAGE

Item No.	Quantity and Unit	Description	Unit Bid Price: Dollars and Cents	Amount Bid: Dollars and Cents
ADDITIONAL ALTERNATE I (CONTINUED)				
26	1 EA	42" END SECTION		
27	1 EA	TYPE I CATCH BASIN		
28	1 EA	JUNCTION BOX		
29	101 SY	SEEDED RIPRAP		
30	27 SY	SLOPE PROTECTION		
31	1 LS	UTILITIES RELOCATION		
ADDITIONAL ALTERNATE II				
32	7,500 LF	CRACK SEAL		
33	36,300 SY	PRESERVATIVE SEAL		
34	52.3 TON	EMULSIFIED ASPHALT FOR SLURRY SEAL (UNDILUTED)		
35	327 TON	AGGREGATE FOR SLURRY SEAL		
36	1 LS	MARKING		
ADDITIONAL ALTERNATE III				
37	100 SY	REMOVE A.C. PAVEMENT		
38	1 EA	CATCH BASIN STRUCTURE		
39	434 LF	36" STORM DRAIN		
40	2 EA	36" END SECTION		
41	1,440 SY	LINED CHANNEL		
42	78 SY	SEEDED RIPRAP		
43	1 LS	REMOVE EXISTING PIPE		
44	80 LF	FENCE REMOVAL AND REPLACE		

**Bid Bond**

BID BOND

BID NO. 90-04

KNOW ALL MEN BY THESE PRESENTS: That we \_\_\_\_\_, as Principal, and \_\_\_\_\_, as Surety, are held and firmly bound unto the City of Scottsdale in the penal sum of five percent (5%) of Bid Amount, Dollars (\$ \_\_\_\_\_) lawful money of the United States of America, to be paid to the order of the City of Scottsdale, for which payment, well and truly to be made, we bind ourselves, our successors and assigns, signed with our seals and dated \_\_\_\_\_, 19\_\_\_\_.

The conditions of the above obligation are such that whereas the City Council of The City of Scottsdale, did order the following works to be done, to wit:

PROJECT NO.: N913

WHEREAS, \_\_\_\_\_, the principal herein in answer to the Notice Inviting Proposals or bids issued by the City of Scottsdale, put in its bid for the making of said improvements.

NOW THEREFORE, of the bid of \_\_\_\_\_, as aforesaid to be accepted by the City Council of the City of Scottsdale, and

\_\_\_\_\_ shall enter into a contract to make said improvements at the price specified in its bid, then this obligation to be void of no effect, otherwise to remain in full force and virtue.

ATTEST

\_\_\_\_\_  
ATTORNEY IN FACT

\_\_\_\_\_  
PRINCIPAL (SEAL)

BY: \_\_\_\_\_

\_\_\_\_\_  
SURETY

BY: \_\_\_\_\_

\_\_\_\_\_  
AGENCY OF RECORD

\_\_\_\_\_  
AGENCY ADDRESS

**Notice of Award**

NOTICE OF AWARD

TO: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PROJECT DESCRIPTION: Taxiway and Apron Pavement Preservation and Drainage

The City of Scottsdale has considered the BID submitted by you for the above described WORK in response to the Advertisement for Bids dated \_\_\_\_\_, 1989.

You are hereby notified that you were awarded this Bid by the Scottsdale City Council on \_\_\_\_\_ in the amount of \$ \_\_\_\_\_. You are required by the Terms and Conditions of this bid to execute the Construction Contract and to furnish Contractor's Performance and Payment Bonds and submit the appropriate Certificate(s) of Insurance within ten (10) days from the date of this Notice.

If you fail to execute the Construction Contract, furnish the required bonds, and submit Insurance Certification(s) within ten (10) days from the date of this Notice, the City will consider this as a forfeiture of your Bid Bond. The City will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of the NOTICE OF AWARD to the City of Scottsdale.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 1989.

CITY OF SCOTTSDALE

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

ACCEPTANCE OF NOTICE:

Receipt of the above NOTICE OF AWARD is hereby acknowledged.

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 19\_\_\_\_.

\_\_\_\_\_  
NOTARY PUBLIC

\_\_\_\_\_  
My Commission Expires

**Contract**

**CITY OF SCOTTSDALE  
CONSTRUCTION CONTRACT**

BID NO.: 90-04  
PROJECT NO.: N913  
PROJECT NAME: Taxiway and Apron Preservation and Drainage

THIS CONTRACT, made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_ by and between \_\_\_\_\_ herein after designated "Contractor" and the City of Scottsdale, County of Maricopa, and State of Arizona, a municipal corporation, organized and existing under and by virtue of the laws of the State of Arizona, hereinafter designated "OWNER".

WITNESSETH: That the said Contractor, for and in consideration of the sum to be paid him by the said Owner, in the manner and at the time hereinafter provided, and of the other covenants and agreements herein contained and under the penalties expressed in the bonds provided, hereby agrees, for himself, his heirs, executors, administrators, successors, and assigns as follows:

**ARTICLE I - SCOPE OF WORK:** The Contractor shall furnish any and all labor, materials, equipment, transportation, utilities, services and facilities required to perform all work for Bid No. 90-04, Project No. N913 and to completely and totally construct the same and install the material therein for the Owner, in a good workmanlike and substantial manner to the satisfaction of the Owner and under the direction and supervision of the Owner, or other properly authorized agents and strictly pursuant to and in conformity with the Plans and Specifications prepared for the Owner, and with such modifications of the same and other documents that may be made by the Owner or other properly authorized agents, as provided herein.

The Contractor agrees that this Contract, as awarded, is for \_\_\_\_\_, in the amount of \$ \_\_\_\_\_ and understands that payment for the total work will be made on the basis of the indicated amount(s), as bid in the Bid Form.

**ARTICLE II - CONTRACT DOCUMENTS:** Bid No. 90-04, Plans, Standard Specifications and Details, Project Manuals, General and Special Provisions, Addenda, if any, and Contractor's Bid, as accepted by the Mayor and Council. Performance Bond, Payment Bond, Certificates of Insurance, and Change Orders, if any, are by this reference made a part of this Contract to the same extent as if set forth herein in full.

**ARTICLE III - TIME OF COMPLETION:** The Contractor further covenants and agrees at his own proper cost and expense, to do all work as aforesaid for the construction of said improvements and to completely construct the same and install the material therein, as called for by this agreement free and clear of all claims, liens, and charges whatsoever, in the manner and under the conditions specified within the time, or times, stated in the bid form.

**ARTICLE IV - PAYMENTS:** For and in consideration of the faithful performance of the work herein embraced as set forth in the Contract Documents, which are a part hereof and in accordance with the directions of the Owner, through its Engineer or other properly authorized agent and to Owner's satisfaction, the Owner agrees to pay the said Contractor the amount earned, computed from actual quantities of work performed and accepted or materials furnished at the unit bid and/or lump sum price on the Bid Form and made a part hereof. Any progress payments made shall be in accordance with the

BID NO.: 90-04  
PROJECT NO.: N913  
PROJECT NAME: Taxiway and Apron Pavement Preservation and Drainage

General Conditions as set forth in the Contract Documents which are a part hereof and final payment shall be made within forty (40) days after final inspection and acceptance of the work.

ARTICLE V - CONTRACTOR ADMINISTRATOR: shall be Salvatore Misseri, P.E. or designee.

IN WITNESS WHEREOF, three (3) identical counterparts of this contract each of which shall for all purposes be deemed an original thereof, have been duly executed by the parties herein above named, on the date and year first above written.

ATTEST:

CITY OF SCOTTSDALE

Mark G. Mazzie  
City Clerk

By: \_\_\_\_\_  
Mayor Herbert R. Drinkwater  
Mayor

By: \_\_\_\_\_  
Deputy City Clerk

Reviewed:

Contractor:

\_\_\_\_\_  
(Company Name)

\_\_\_\_\_  
Sandy Spain  
Purchasing Director

\_\_\_\_\_  
(Individual Name/Title)

\_\_\_\_\_  
George Wendt  
Risk Management Director

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
Thomas J. Wilson  
City Attorney

CORPORATE SEAL

**Contract (Performance) Bond**

**CONTRACT BOND**

**STATUTORY PERFORMANCE BOND PURSUANT TO TITLE 34,  
CHAPTER 2, ARTICLE 2, OF THE ARIZONA REVISED STATUTES  
(Penalty of this bond must be 100% of the Contract Amount)**

KNOW ALL MEN BY THESE PRESENTS:

That, \_\_\_\_\_  
(hereinafter called the Principal), as Principal and

\_\_\_\_\_ a corporation organized and existing under the laws of the State of \_\_\_\_\_ with its principal office in the City of \_\_\_\_\_, (hereinafter called the Surety), as Surety, are held and firmly bound unto the City of \_\_\_\_\_, County of Maricopa, State of Arizona in the amount of \_\_\_\_\_ Dollars (\$\_\_\_\_\_), for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, The Principal has entered into a certain written contract with the City of \_\_\_\_\_, dated the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_ for \_\_\_\_\_ which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if said Principal shall faithfully perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract any extension thereof, with or without notice to the Surety, and during the life of any guaranty required under the contract and shall also perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety being hereby waived; then the above obligation shall be void, otherwise to remain in full force and effect.

The prevailing party in a suit on this bond shall be entitled to such reasonable attorney's fees as may be fixed by a judge of the Court.

WITNESS our hands this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_\_.

\_\_\_\_\_  
Principal Seal

By: \_\_\_\_\_

\_\_\_\_\_  
Surety Seal

\_\_\_\_\_  
Agency of Record

\_\_\_\_\_  
Agency Address

**Labor and Materials  
(Payment) Bond**

**LABOR AND MATERIALS BOND**

**STATUTORY PAYMENT BOND PURSUANT TO TITLE 34,  
CHAPTER 2, ARTICLE 2, OF THE ARIZONA REVISED STATUTES  
(Penalty of this bond must be 100% of the Contract Amount)**

KNOW ALL MEN BY THESE PRESENTS:

That, \_\_\_\_\_  
(hereinafter called the Principal), as Principal and \_\_\_\_\_  
a corporation organized and existing under the laws of the State of \_\_\_\_\_ with its principal  
office in the City of \_\_\_\_\_, (hereinafter called the Surety), as Surety, are held and firmly  
bound unto the City of \_\_\_\_\_, County of Maricopa, State of Arizona (hereinafter called the  
Obligee), in the amount of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), for the payment whereof;  
the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and  
assigns, jointly and severally, firmly by these presents.

WHEREAS, The Principal has entered into a certain written contract with the Obligee, dated  
the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_\_, for \_\_\_\_\_  
which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied  
at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if said  
Principal shall promptly pay all monies due to all persons supplying labor or materials to him or his  
subcontractors in the prosecution of the work provided for in said Contract, then this obligation shall be  
void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Title 34,  
Chapter 2, Article 2, of the Arizona Revised Statutes, and all liabilities on this bond shall be determined  
in accordance with the provisions of said Title, Chapter and Article, to the extent as if it were copied at  
length herein.

The prevailing party in a suit on this bond shall be entitled to such reasonable attorney's fees as  
may be fixed by the judge of the Court.

WITNESS our hands this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_\_.

\_\_\_\_\_  
Principal Seal

By: \_\_\_\_\_

\_\_\_\_\_  
Surety Seal

\_\_\_\_\_  
Agency of Record

\_\_\_\_\_  
Agency Address

**Certificate of Insurance**

# CERTIFICATE OF INSURANCE

BID CALL #90-04 PROJECT #

PROJECT TITLE

NAME AND ADDRESS OF INS AGENCY	INS. COMPANIES AFFORDING COVERAGES Company Letter A
NAME AND ADDRESS OF INSURED	Company Letter B Company Letter D Company Letter E

THIS IS TO CERTIFY THAT POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUE TO THE INSURED NAMED ABOVE AND ARE IN FORCE AT THIS TIME.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	EFFECTIVE DATE	EXPIRE DATE	ALL LIMITS IN THOUSANDS
	<input type="checkbox"/> GENERAL LIABILITY <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> OWNER'S & CONTRACTORS PROTECTIVE <input type="checkbox"/> OCCURENCE				GENERAL AGGREGATE PRODUCTS COMP/ OPS AGGREGATE PERSONAL & ADVERTISING INJURY EACH OCCURENCE FIRE DAMAGE (ANY ONE FIRE) MEDICAL EXPENSE (ANY ONE PERSON) \$ 5,000
	<input type="checkbox"/> AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS <input type="checkbox"/> GARAGE LIABILITY				CSL BODILY INJURY (PER PERSON) BODILY INJURY (PER ACCIDENT) PROPERTY DAMAGE SAME AS ABOVE
	<input type="checkbox"/> EXCESS LIABILITY <input type="checkbox"/> OTHER THAN UMBRELLA FORM				EACH OCCURENCE AGGREGATE STATUTORY (\$100)
	WORKERS COMPENSATION AND EMPLOYERS LIABILITY				\$ EACH ACCIDENT \$ DISEASE POLICY LIMIT \$ DISEASE EACH EMPLOYEE

When the project includes construction of a new or modifications of existing City building or structure a course of construction policy covering the perils of fire extended coverage and vandalism and malicious mischief in the amount of the contract (less landscaping) shall be provided with the City of Scottsdale named therein as a "Loss Payee" and the insurer shall waive subrogation rights against the City of Scottsdale.

The City of Scottsdale is added as an additional insured as respects work done for City by the named insured or if required by City Ordinance. It is agreed that any insurance maintained by the City of Scottsdale may only apply in excess of the coverages and limits of insurance available from other sources. It is further agreed that no policy shall expire, be canceled or materially changed without (30) thirty days written notice to the City. THIS CERTIFICATE IS NOT VALID UNLESS COUNTERSIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE INSURANCE COMPANY.

NAME AND ADDRESS OF CERTIFICATE HOLDER  
 CITY OF SCOTTSDALE  
 9191 E. SAN SALVADOR DRIVE  
 SCOTTSDALE, ARIZONA 85258

DATE ISSUED \_\_\_\_\_

AUTHORIZED REPRESENTATIVE \_\_\_\_\_

**Notice to Proceed**

**NOTICE TO PROCEED**

TO: \_\_\_\_\_ DATE: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PROJECT NAME/DESCRIPTION: \_\_\_\_\_  
\_\_\_\_\_

In accordance with the Contract dated \_\_\_\_\_, 19\_\_\_\_,  
you are hereby notified to commence work on \_\_\_\_\_, 19\_\_\_\_  
and you are to complete the WORK within \_\_\_\_\_ consecutive calendar days thereafter. The date  
of completion of all WORK is therefore \_\_\_\_\_, 19\_\_\_\_.  
Official time extensions thereto shall be considered and authorized in strict conformance with General  
Condition or M.A.G. Standard Specifications.

CITY OF SCOTTSDALE  
BY: \_\_\_\_\_

**ACCEPTANCE OF NOTICE**

Receipt of the above NOTICE TO PROCEED is hereby acknowledged.

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_

\_\_\_\_\_  
NOTARY PUBLIC

\_\_\_\_\_  
My Commission Expires

**Affidavit Regarding  
Settlement of Claims**

**CONTRACTOR'S AFFIDAVIT  
REGARDING  
SETTLEMENT OF CLAIMS**

BID NO.: 90-04  
PROJECT NO.: N913  
PROJECT NAME: Taxiway and Apron Pavement Preservation and Drainage

Date: \_\_\_\_\_

To the City of Scottsdale, Arizona:

This is to certify that all lawful claims for materials, rental of equipment and labor used in connection with the construction of the above project, whether by subcontractor or claimant in person, have been duly discharged.

The undersigned, for the consideration of \$ \_\_\_\_\_, as set out in the final pay estimate, as full and complete payment under the terms of the contract, hereby waives and relinquishes any and all further claims or right of lien under, in connection with, or as a result of the above described project. The undersigned further agrees to indemnify and save harmless the City of Scottsdale against any and all liens, claims of liens, suits, action, damages, charges and expenses whatsoever, which said City may suffer arising out of the failure of the undersigned to pay for all labor performances and materials furnished for the performance of said project construction items and/or services.

Signed and dated this \_\_\_\_ day of \_\_\_\_\_, 19 \_\_\_\_.

\_\_\_\_\_  
CONTRACTOR

\_\_\_\_\_  
BY

STATE OF ARIZONA        )  
                                  ) ss  
COUNTY OF MARICOPA    )

The foregoing instrument was subscribed and sworn to before me this \_\_\_\_ day of \_\_\_\_\_, 19 \_\_\_\_.

\_\_\_\_\_  
Notary Public

\_\_\_\_\_  
My Commission Expires

**Final Pay Estimate**

CONTRACTOR'S NOTICE OF  
FINAL PAY ESTIMATE

BID NO.: 90-04  
PROJECT NO.: N913  
PROJECT NAME: Taxiway and Apron Pavement Preservation and Drainage

Date: \_\_\_\_\_

To the City of Scottsdale, Arizona:

The final pay estimate of \$ \_\_\_\_\_, which represents total and complete payment under the terms of the contract, fully and completely reflects the actual quantities of work performed. Said final quantities were mutually measured and agreed upon by authorized representatives of the undersigned and the City of Scottsdale.

Signed and dated this \_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

FOR: \_\_\_\_\_

STATE OF ARIZONA            )  
  ) ss  
COUNTY OF MARICOPA        )

The foregoing instrument was subscribed and sworn to before me this \_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

\_\_\_\_\_  
Notary Public

\_\_\_\_\_  
My Commission Expires

**Final Acceptance**

**CONTRACTOR'S NOTICE OF  
FINAL ACCEPTANCE**

BID NO.: 90-04  
PROJECT NO.: N913  
PROJECT NAME: Taxiway and Apron Pavement Preservation and Drainage

TO: \_\_\_\_\_ DATE: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Construction on the above project was completed on \_\_\_\_\_  
and on \_\_\_\_\_ a final inspection was made of the  
subject improvements by this office. The work substantially conforms to the approved plans and  
specifications. We, therefore, accept those portions within the public R/W into our system for  
maintenance.

Approved By:

\_\_\_\_\_  
Contract Administrator

Recommended By:

\_\_\_\_\_  
Field Engineering Manager

cc: City Clerk  
Accounting Director  
Risk Management Director  
Audit Director  
Purchasing Director  
Other:

**Assignment of  
Time Certificates**

**ASSIGNMENT OF TIME CERTIFICATES OF DEPOSIT  
IN LIEU OF TEN PERCENT RETENTION**

TIME CERTIFICATE NO. \_\_\_\_\_

TIME DEPOSIT RECEIPT ACCOUNT \_\_\_\_\_

\_\_\_\_\_, hereinafter referred to as "Assignor", having been awarded a construction contract to build the \_\_\_\_\_ for the City of Scottsdale, and desiring to take advantage of A.R.S. 34-221 (A) (3), and assign certain time certificates of deposit in lieu of ten percent (10%) retention of the contract proceeds as required by said statute, hereby assigns to the City of Scottsdale, hereinafter referred to as "Assignee", all of Assignor's right, title and interest in and to the above identified time certificate of deposit up to the sum of \$ \_\_\_\_\_.

This assignment shall remain in full force and effect until the construction project identified above is completed and accepted by "Assignee", at which time the "Assignee" will release all of its interest in the assignment.

BY: \_\_\_\_\_

ITS: \_\_\_\_\_

RECEIPT AND WAIVER

The undersigned financial institution hereby acknowledges to the City of Scottsdale that it has received written notice from Assignor \_\_\_\_\_ of the assignment to the City of Scottsdale of time certificates of deposit in the amount of \$ \_\_\_\_\_, account no. \_\_\_\_\_, time certificate no. \_\_\_\_\_.

Undersigned financial institution further hereby waives any and all rights or powers of setoff of said financial institution against either the City of Scottsdale or \_\_\_\_\_ in relation to the above listed deposits or certificates. The undersigned financial institution further warrants to the City of Scottsdale that it has on deposit the time certificates described in the foregoing assignment and in the amount assigned. Undersigned further warrants that the certificates described in the assignment do not contain any prohibition against such assignment and that undersigned is not aware of any assignment, lien, encumbrance, hold, claim or other obligation against the above identified account other than the assignment thereof to the City of Scottsdale and that it will not pay said funds to any party other than the City of Scottsdale until such time as the City has released the foregoing assignment.

Date this \_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

BY: \_\_\_\_\_

ITS: \_\_\_\_\_

STATE OF ARIZONA            )  
  ) ss  
COUNTY OF MARICOPA        )

Acknowledged before me this \_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_ by \_\_\_\_\_.

\_\_\_\_\_  
Notary Public

My Commission Expires

\_\_\_\_\_



U.S. Department  
of Transportation  
Federal Aviation  
Administration

# Advisory Circular

Subject: OPERATIONAL SAFETY ON AIRPORTS  
DURING CONSTRUCTION

Date: 5/31/84  
Initiated by: AAS-300

AC No: 150/5370-2C  
Change:

1. PURPOSE. This advisory circular (AC) sets forth guidelines concerning the operational safety on airports during construction, to assist airport operators in complying with Part 139, Certification and Operation: Land Airports Serving Certain Air Carriers, of the Federal Aviation Regulations (FAR), and with the requirements of Federally-funded construction projects. Construction activity is defined as the presence and movement of personnel, equipment, and materials in any location which could infringe upon the movement of aircraft. For noncertificated airports and airports with no grant agreements, application of these provisions will help maintain the desired level of operational safety during periods of construction.
2. CANCELLATION. AC 150/5370-2B, Operational Safety on Airports With Emphasis on Safety During Construction, dated October 9, 1981, is canceled.
3. RELATED READING MATERIAL. All references cited herein are available for inspection in any Federal Aviation Administration (FAA) regional office.
  - a. The Federal Aviation Regulations are sold by the Superintendent of Documents (AC 00-44, Status of Federal Aviation Regulations, current edition, contains a price list and ordering instructions).
  - b. AC 150/5370-10, Standards for Specifying Construction of Airports, is also sold by the Superintendent of Documents (AC 00-2, Advisory Circular Checklist, current edition, contains ordering instructions).
4. BACKGROUND. Various AC's which detail all major elements of safe, efficient airport design and construction are available. However, operational safety on airports may be degraded by construction hazards or marginal conditions that develop after an airport has been opened or approved for operation. This AC addresses that problem. NOTE: Airports which have received Federal assistance (grants, real or personal property) and airports certificated under FAR Part 139 have mandatory requirements related to this subject.

AC 150/5370-2C

5. GENERAL.

a. The airport operator is responsible for full compliance with the requirements of FAR Part 139 for certificated airports and with the provisions of Federal grant agreements when applicable. Adherence to the following provisions will materially assist the airport operator in providing the level of safety required. Local FAA Airports offices have technical expertise to assist airport operators in all safety matters on airports. (See AC 150/5000-3, Address List for Regional Airports Divisions and Airports District/Field Offices, current edition.)

b. Each bidding document (construction plans and/or specifications) for airport development work or air navigation facility (NAVAID) installation involving aircraft operational areas should incorporate a section on safety on airports during the construction activity. The section, as a minimum, should contain the appropriate provisions outlined in appendix 1 to this AC.

c. The airport operator should pay particular attention to the pullback distances and clearances for any maintenance activities and emergencies that occur on airports. These include activities which involve maintenance equipment--such as mowing machines, snowplows, lighting equipment--as well as emergency standbys for firefighting and rescue equipment.

d. Where feasible and where operational safety is not affected, the airport operator may choose to keep open operational areas adjacent to construction activity during construction rather than close them to aircraft activity.

e. At airports that are undergoing a multi-year major redevelopment, a comprehensive construction safety plan should be developed. This safety plan may contain deviations from the criteria outlined in appendix 1 of this AC so long as they are based upon a commitment by the airport operator and the users to provide the maximum clearances possible between construction activities and aircraft within the limits imposed by local conditions.

6. COORDINATION OF AIRPORT CONSTRUCTION ACTIVITIES. Construction activities on an airport, in proximity to, or affecting aircraft operational areas or navigable airspace, should be coordinated with the FAA and airport users prior to initiating such activities. In addition, basic responsibilities and procedures should be developed and disseminated to instruct construction personnel in airport procedures and for monitoring construction activities for conformance with safety requirements. These and other safety considerations should be addressed in the earliest stages of project formulation and incorporated in the contract specifications. Construction areas located within safety areas requiring special attention by the contractor should be clearly delineated on the project plans. The airport operator should closely monitor construction activity throughout its duration to ensure continual compliance with safety requirements.

a. Formal Notification. A formal notification to the FAA is required by regulation for certain airport projects. For instance, FAR Part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports, requires that FAA be notified in writing whenever a non-Federally funded project involves the

5/31/84

AC 150/5370-2C

construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; and the deactivating or abandoning of an entire airport. Formal notification is made by submitting FAA Form 7480-1, Notice of Landing Area Proposal, to the nearest FAA district office or FAA regional office. (See AC 70-2, Airspace Utilization Considerations in the Proposed Construction, Alteration, Activation and Deactivation of Airports, current edition.) Also, any person proposing any kind of construction or alteration of objects that affect navigable airspace, as defined in FAR Part 77, Objects Affecting Navigable Airspace, is required to notify the FAA. FAA Form 7460-1, Notice of Proposed Construction or Alteration, should be used for this purpose. (See AC 70/7460-2, Proposed Construction or Alteration of Objects That May Affect the Navigable Airspace, current edition.)

b. Work Scheduling and Accomplishment. Predesign, preconstruction, and prebid conferences provide excellent opportunities to introduce the subject of airport operational safety during construction. All parties involved, including the sponsor's engineer and contractors, should integrate operational safety requirements into their planning and work schedules as early as practical. Also, responsibilities should be clearly established for continuous monitoring and compliance with the requirements assigned and for vigilance to detect areas needing attention due to oversight or altered construction activity. When construction is being planned on FAR Part 139 certificated airports, the responsible airport safety (certification) inspector should be directly involved at all stages, from pre-design through final inspection.

c. Safety Considerations. The following is a partial list of safety considerations which experience indicates will need attention during airport construction.

- (1) Minimum disruption of standard operating procedures for aeronautical activity.
- (2) Clear routes from firefighting and rescue stations to active airport operations areas and safety areas.
- (3) Chain of notification and authority to change safety-oriented aspects of the construction plan.
- (4) Initiation, currency, and cancellation of Notice to Airmen (NOTAM's).
- (5) Suspension or restriction of aircraft activity on airport operations areas.
- (6) Threshold displacement and appropriate temporary lighting and marking.
- (7) Installation and maintenance of temporary lighting and marking for closed or diverted aircraft routes on airport operations areas.
- (8) Revised vehicular control procedures or additional equipment and manpower.
- (9) Marking/lighting of construction equipment.

- (10) Storage of construction equipment and materials when not in use.
- (11) Designation of responsible representatives of all involved parties and their availability.
- (12) Location of construction personnel parking and transportation to and from the work site.
- (13) Marking/lighting of construction areas.
- (14) Location of construction offices.
- (15) Location of contractor's plants.
- (16) Designation of waste areas and disposal.
- (17) Debris cleanup responsibilities and schedule.
- (18) Identification of construction personnel and equipment.
- (19) Location of haul roads.
- (20) Security control on temporary gates and relocated fencing.
- (21) Noise pollution.
- (22) Blasting regulation and control.
- (23) Dust control.
- (24) Location of utilities.
- (25) Provision for temporary utilities and/or immediate repairs in the event of disruption.
- (26) Location of power and control lines for electronic/visual navigational aids.
- (27) Additional security measures required if FAR Part 107, Airport Security, is involved.
- (28) Marking and lighting of closed airfield pavement areas.
- (29) Coordination of construction activities during the winter with airport snow removal plan.
- (30) Phasing of work.
- (31) Shutdown and/or protection of airport electronic/visual navigational aids.

- (32) Smoke, steam, and vapor controls.
- (33) Notify crash/fire/rescue personnel when working on water lines.
- (34) Provide traffic directors/wing walkers, etc., as needed to assure clearance in construction areas.

d. Guidelines for Proximity of Construction Activity to Airport Operations Areas. The guidelines contained in appendix 1 are for use in the preparation of plans and specifications when construction activities are to be conducted in locations which may interfere with aircraft operations. They should be adapted to the needs of a particular project and should not be incorporated verbatim into project specifications.

7. EXAMPLES OF HAZARDOUS AND MARGINAL CONDITIONS. Analyses of past accidents and incidents have identified many contributory hazards and conditions. A representative list follows:

- a. Excavation adjacent to runways, taxiways, and aprons.
- b. Mounds or stockpiles of earth, construction material, temporary structures, and other obstacles in proximity to airport operations areas and approach zones.
- c. Runway surfacing projects resulting in excessive lips greater than 1 inch (2.54 cm) for runways and 3 inches (7.62 cm) for edges between old and new surfaces at runway edges and ends.
- d. Heavy equipment, stationary or mobile, operating or idle near airport operations areas or in safety areas.
- e. Proximity of equipment or material which may degrade radiated signals or impair monitoring of navigational aids.
- f. Tall but relatively low visibility units such as cranes, drills, and the like in critical areas such as safety areas and approach zones.
- g. Improper or malfunctioning lights or unlighted airport hazards.
- h. Holes, obstacles, loose pavement, trash, and other debris on or near airport operations areas.
- i. Failure to maintain fencing during construction to deter human and animal intrusions into the airport operation areas.
- j. Open trenches along side pavement.
- k. Improper marking or lighting of runways, taxiways, and displaced thresholds.
- l. Attractions for birds such as trash, grass seeding, or ponded water on or near airports.

m. Inadequate or improper methods of marking temporarily closed airport operations areas including improper and unsecured barricades.

n. Obliterated markings on active operational areas.

NOTE: Safety area encroachments, improper ground vehicle operations, and unmarked or uncovered holes and trenches in the vicinity of aircraft operating surfaces are the three most recurring threats to safety during construction.

8. ASSURING OPERATIONAL SAFETY. The airport operator is responsible for establishing and using procedures for the immediate notification of airport users and the FAA of any conditions adversely affecting operational safety at the airport. If construction operations require shutdown of a navigational aid from service for more than 24 hours or in excess of 4 hours daily on consecutive days, a 45-day minimum notice is desirable prior to the facility shutdown. Notification of construction, rough pavement, weather-caused effects, bird hazards, and other conditions affecting the use of the airport is usually made by NOTAM issued by Flight Service Stations. FAA Air Traffic facilities and Airports district/field offices will assist in the notification process. Airmen or other persons engaged in aviation activities are encouraged to report safety-related airport conditions to airport management, the FAA or through the use of the National Aeronautics and Space Administration's Aviation Safety Reporting System.

9. VEHICLES ON AIRPORTS. Vehicular activity on airport movement areas should be kept to a minimum. Where vehicular traffic on airport operation areas cannot be avoided, it should be carefully controlled. A basic guiding principle is that the aircraft always has the right-of-way. Some aspects of vehicle control and identification are discussed below. It should be recognized, however, that every airport presents different vehicle requirements and problems and therefore needs individualized solutions so that vehicle traffic does not endanger aircraft operations.

a. Visibility. Vehicles which routinely operate on airport operations areas should be marked/flagged for high daytime visibility and, if appropriate, lighted for nighttime operations. Vehicles which are not marked and lighted should be escorted by one that is equipped with temporary marking and lighting devices. (See AC 150/5210-5, Painting, Marking, and Lighting of Vehicles Used on an Airport, current edition.)

b. Identification. It is usually desirable to be able to identify visually specific vehicles from a distance. It is recommended that radio equipped vehicles which routinely operate on airport operations areas be permanently marked with identifying characters on the sides and roof. (See AC 150/5210-5.) Vehicles needing intermittent identification could be marked with tape or with magnetically attached markers which are commercially available. Whenever possible, vehicles should be purchased with the recommended markings and lighting.

c. Noticeability. Construction vehicles/equipment should have automatic signalling devices to sound an alarm when moving in reverse.

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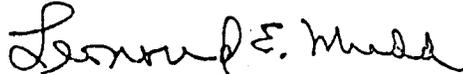
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d. Movement. The control of vehicular activity on airport operations areas is of the highest importance. Airport management is responsible for developing procedures, procuring equipment, and providing training regarding vehicle operations to ensure aircraft safety during construction. This requires coordination with airport users and air traffic control. Consideration should be given to the use of two-way radio, signal lights, traffic signs, flagmen, escorts, or other means suitable for the particular airport. The selection of a frequency for two-way radio communications between construction contractor vehicles and the air traffic control (ATC) tower must be coordinated with the ATC tower chief. At nontower airports, two-way radio control between contractor vehicles and fixed-base operators or other airport users should avoid frequencies used by aircraft. It should be remembered that even with the most sophisticated procedures and equipment, systematic training of vehicle operators is necessary to achieve safety. Special consideration should be given to training intermittent operators, such as construction workers, even if escort service is being provided.

10. INSPECTION. Frequent inspections should be made by the airport operator or a representative during critical phases of the work to ensure that the contractor is following the prescribed safety procedures and that there is an effective litter control program.

11. FAA SAFETY RESPONSIBILITIES. FAA Airports engineers and certification inspectors have specific responsibilities regarding operational safety on certificated airports before and during periods of construction activity. Their particular area of concern will be directed towards construction within safety areas, and they will be involved in the following functions:

- a. Review of plans to determine limits of work and possible safety problem areas.
- b. Give special attention to the development of the safety plan which is a part of the plans and specifications.
- c. Advise FAA elements such as regional Flight Standards, Air Traffic, and Airway Facilities of the construction activities and the safety plan.
- d. Ensure that users of the facilities have ample warning of the proposed construction so that they may make advanced plans to change their operations.
- e. FAA Airports engineers and certification inspectors should participate in the predesign and preconstruction conferences if the project involves a complex safety plan. Also, they should participate in construction inspections and in the inspection of the finished work to determine that there are no safety violations to FAR Part 139.

  
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APPENDIX 1. SPECIAL SAFETY REQUIREMENTS DURING CONSTRUCTION

1. RUNWAY ENDS. Construction equipment normally should not penetrate the 20:1 approach surface.
2. RUNWAY EDGES. Construction activities normally should not be permitted within 200 feet of the runway centerline. However, construction may be permitted within 200 feet of the runway centerline on a case-by-case basis with approval of the airport operator, the FAA and the users.
3. TAXIWAYS AND APRONS. Normally, construction activity set-back lines should be located at a distance of 25 feet plus one-half the wingspan of the largest predominant aircraft from the centerline of an active taxiway or apron. However, construction activity may be permitted up to the taxiway and aprons in use provided that the activity is first coordinated with the airport operator, the FAA and the users; NOTAM's are issued; marking and lighting provisions are implemented; and it is determined the height of equipment and materials is safely below any part of the aircraft using the airport operations areas which might overhang those areas. An occasional passage of an aircraft with wingspan greater than 165 feet should be dealt with on a case-by-case basis.
4. EXCAVATION AND TRENCHES.
  - a. Runways. Excavations and open trenches may be permitted up to 200 feet from the centerline of an active runway, provided they are adequately signed, lighted and marked. In addition, excavation and open trenches may be permitted within 200 feet of the runway centerline on a case-by-case basis, i.e., cable trenches, pavement tie-ins, etc., with the approval of the airport operator, the FAA and the users.
  - b. Taxiways and Aprons. Excavation and open trenches may be permitted up to the edge of structural taxiway and apron pavements provided the drop-off is adequately signed, lighted and marked.
5. STOCKPILED MATERIAL. Extensive stockpiled materials should not be permitted within the construction activity areas defined in the preceding four sections.
6. MAXIMUM EQUIPMENT HEIGHT. Notice of proposed construction shall be submitted to the appropriate Airports district office for review prior to the placement of construction equipment on airports. The guiding criteria involving FAR Part 139 certificated airports and grant agreement airports is that all construction plans and specifications require direct coordination with the appropriate Airports district, field, or regional office. In addition, airports should file FAA Form 7460-1 when equipment is expected to penetrate any of the surfaces defined above in paragraphs 1, 2, and 3. Airport operators are reminded that FAR Part 157 requires prior notice to construct, realign, alter, or activate any runway/landing area or associated taxiway for any project which is non-Federally funded.
7. PROXIMITY OF CONSTRUCTION ACTIVITY TO NAVIGATIONAL AIDS. Construction activity in the vicinity of navigational aids requires special consideration. The effect of the activity and its permissible distance and direction from the aid must be evaluated in each instance. A coordinated evaluation by the airport operator and the

FAA is necessary. Technical involvement by FAA regional Airports, Air Traffic, Flight Standards, and Airway Facilities Specialists is needed as well as construction engineering and management input. Particular attention needs to be given to stockpiling materials as well as to the movement and parking of equipment which may interfere with line-of-sight from the tower or interfere with electronic emissions. (See AC 150/5300-2D, Airport Design Standards--Site Requirements for Terminal Navigational Facilities, current edition, for critical areas of NAVAIDS.)

8. CONSTRUCTION VEHICLE TRAFFIC. With respect to vehicular traffic, aircraft safety during construction is likely to be endangered by four principle causes: increased traffic volume, nonstandard traffic patterns, vehicles without radio communication and marking, and operators untrained in the airport's procedures. Because each construction situation differs, airport management must develop and coordinate a construction vehicle traffic plan with airport users, air traffic control and the appropriate construction engineers and contractors. This plan, when signed by all participants becomes a part of the contract. The airport operator is responsible for coordinating and enforcing the plan.

9. LIMITATION ON CONSTRUCTION.

a. Open-flame welding or torch-cutting operations should be prohibited unless adequate fire and safety precautions are provided and have been approved by the airport operator. All vehicles are to be parked and serviced behind the construction restriction line and/or in an area designated by the airport operator.

b. Open trenches, excavations, and stockpiled material at the construction site should be prominently marked with orange flags and lighted with flashing yellow light units (acceptable to the airport operator and the FAA) during hours of restricted visibility and/or darkness. Under no circumstances are flare pots to be near aircraft turning areas.

c. Stockpiled material should be constrained in a manner to prevent movement result of aircraft blast or wind. Material should not be stored near aircraft turning areas or movement areas.

10. MARKING AND LIGHTING OF CLOSED OR HAZARDOUS AREAS ON AIRPORTS. The construction specifications should include a provision requiring the contractor to have a man on call 24 hours per day for emergency maintenance of airport hazard lighting and barricades.

a. Permanently Closed Runways and Taxiways. For runways and taxiways which have been permanently closed, the lighting circuits should be disconnected. With runways, the threshold markings, runway designation marking, and touchdown zone markings should be obliterated, and crosses should be placed at each end at 1,000-foot (300 m) intervals. With taxiways, a cross is placed at each entrance of the closed taxiway.

b. Temporarily Closed Runways and Taxiways. Temporarily closed runways are treated in the same manner as in paragraph 10a. except runway markings are not obliterated. Rather, crosses are usually of the temporary type (constructed of

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material such as fabric or plywood), and they are required only at runway ends. The crosses should be located on top of the runway numerals. For temporary marking, the dimensions of the crosses may be reduced to permit use of standard sheets of 4-by-8-foot (1.22 by 2.44 m) plywood. Temporarily closed taxiways are usually treated as an unusable area as explained in paragraph 10d.

c. Closed Airports. When all runways are closed temporarily, the runways are marked as in paragraph 10b, and the airport beacon is turned off. When all runways are closed permanently, the runways are marked as in paragraph 10a, the airport beacon is disconnected, and a cross is placed in the segmented circle or at central location if no segmented circle exists.

d. Hazardous Areas. Hazardous areas, in which no part of an aircraft may enter, are indicated by use of barricades with alternate orange and white markings. The barricades are supplemented with orange flags at least 20 by 20 inches (50 by 50 cm) square and made and installed so that they are always in the extended position and properly oriented. For nighttime use, the barricades are supplemented with flashing yellow lights. The intensity of the lights and spacing for barricades, flags, and lights must be such to delineate adequately the hazardous area.

e. Notices to Airmen (NOTAM's). The airport operator should provide information on closed or hazardous conditions to the local air traffic control facility (control tower, approach control, center, flight service station) so that a NOTAM can be issued.

f. Stabilized Areas. Holding bays, aprons, and taxiways are sometimes provided with shoulder stabilization to prevent blast and water erosion. This stabilization may have the appearance of a full strength pavement but is not intended for aircraft use. Usually the taxiway edge marking will define this area, but conditions may exist such as stabilized islands or taxiway curves where confusion may exist as to which side of the edge stripe is the full strength pavement. Where such a condition exists, the stabilized area should be marked with 3-foot (1 m) stripes perpendicular to the edge stripes. On straight sections, the marks should be placed at a maximum of 100-foot (30 m) spacing. On curves, the marks should be placed a maximum of 50 feet (15 m) apart between the curve tangents. The stripes should be extended to 5 feet (1.5 m) from the edge of stabilized area or to 25 feet (7.5 m) in length, whichever is less.

g. Runway Shoulder Marking. Usually the runway side stripes will indicate the edges of the full strength pavement. However, conditions may exist, such as exceptionally wide runways, where there is a need to indicate the area not intended for use by aircraft. In such cases, chevrons should be used.

11. TEMPORARY RUNWAY THRESHOLD DISPLACEMENTS. Identification of temporary runway threshold displacements should be located outboard of the runway surface. These could include outboard lights, Runway End Identification Lights (REILS), and markings. The extent of the marking and lighting should be directly related to the duration of the displacement as well as the type and level of aircraft activity.