CITY OF EL PASO, TEXAS
AGENDA ITEM
DEPARTMENT HEAD'S SUMMARY FORM

DEPARTMENT: Fire

AGENDA DATE: July 10, 2018

CONTACT PERSON/PHONE: Mario D' Agostino, Fire Chief, 212-5610
Bruce D. Collins, Director of Purchasing & Strategic Sourcing, 212-1181

DISTRICT(S) AFFECTED: All

STRATEGIC GOAL: NO. 2: **Set the Standard for a Safe and Secure City**

SUBJECT:

That the City Manager be authorized to sign an agreement for physical exams, drug screening, and drug and alcohol testing services for the City's Fire Department between the City and Occupational Health Centers of the Southwest, P.A. dba Concentra Medical Centers for a contract term of three (3) years from the date this Agreement is approved by the City Council, with one (1) option to extend for two (2) additional years, for a total amount of $162,600.00 for the initial term and $271,000.00 if the contract term is extended.

BACKGROUND / DISCUSSION:

The vendor will provide physical examinations, drug and alcohol testing of applicants for uniform positions for the Fire Department and individuals being considered for reinstatement into uniformed positions. The vendor will also provide drug and alcohol testing services of current uniformed employees.

SELECTION SUMMARY:

Solicitation was advertised on 1/23/2018 and 1/30/2018. The solicitation was posted on City website on 1/23/2018. The email (Purmail) notification was sent out on 1/25/2018. Item had a total of forty-three (43) views. Total of thirty-one (31) proposals were solicited; nineteen (19) local vendors. One (1) proposal was received; none being a local vendor. Inadequate competition survey was conducted.

PROTEST

☒ No protest received for this requirement.

☐ Protest received.

CONTRACT VARIANCE:

The difference in cost, based on the comparison to the annual usage from previous contract, is as follows: Annual increase for the two (2) items under this contract increased by $13,612.50. The estimated quantity for pre-hire exams did not change, but price per exam increased. The estimated quantity for drug testing decreased compared to the previous contract and the price per test decreased by 123.75%.

PRIOR COUNCIL ACTION:

Council approved contract 2014-052R on February 25, 2014.

AMOUNT AND SOURCE OF FUNDING:

Amount: $162,600
Funding: 322-100-22010-P2202-521120

BOARD / COMMISSION ACTION:

N/A

**********REQUIRED AUTHORIZATION**********

DEPARTMENT HEAD: Mario M. D'Agostino

COUNCIL PROJECT FORM
(RESOLUTIONS)

**********POSTING LANGUAGE BELOW**********

Please place the following item on the **CONSENT** agenda (under **RESOLUTIONS**) for the Council Meeting of **JULY 10, 2018**.

STRATEGIC GOAL: NO. 2 Set the Standard for a Safe and Secure City

That the City Manager be authorized to sign an agreement for physical exams, drug screening, and drug and alcohol testing services for the City's Fire Department between the City and Occupational Health Centers of the Southwest, P.A. dba Concentra Medical Centers (Solicitation 2018-931R) for a contract term of three (3) years from the date this Agreement is approved by the City Council, with one (1) option to extend for two (2) additional years, for a total amount of $162,600.00 for the initial term and $271,000.00 if the contract term is extended. In accordance with this award the City Manager or designee is authorized to exercise future options if needed.

Contract Variance:

The difference in cost, based on the comparison to the annual usage from previous contract, is as follows: Annual increase for the two (2) items under this contract increased by $13,612.50. The estimated quantity for pre-hire exams did not change, but price per exam increased by 70.75%. The estimated quantity for drug testing decreased compared to the previous contract and the price per test decreased by 123.75%.

****

DATE: 6/28/2018

COMMITTEE SCORE SHEET

Request for Qualifications

SOLICITATION TITLE: PHYSICAL EXAMS AND DRUG SCREENING

SOLICITATION NO: 2018-931R

EVALUATION CRITERIA	WEIGHT	MAX POINTS	Occupational Health Centers Southwest, P.A. dba Concentra Medical Centers Addison, TX
A. Qualifications and number of physicians available to perform the examinations	40%	40	31.40
SUBTOTAL EVALUATION FACTOR A:	40%	40	31.40
B. Wualification and Certificaiton of laboratory performing lab work	20%	20	19.20
SUBTOTAL EVALUATION FACTOR B:	20%	20	19.20
C. Educational background and certifications of staff	15%	15	13.60
SUBTOTAL EVALUATION FACTOR C:	15%	15	13.60
D. Response of References	10%	10	
(D1) Provide services as defined, completes projects on-time. (5 Points)			3.00
(D2) Communicates and interacts with all staff levels and produces high-quality results. (5 Points)			3.00
SUBTOTAL EVALUATION FACTOR D:	10%	10	6.00
E. Location and availability of facilities	15%	15	10.00
(E1) Provide 1 location (5 Points)			
(E1) Provide 2 locations (10 Points)			
(E1) Provide 3 or more locations (15 Points)			
SUBTOTAL EVALUATION FACTOR E:	15%	15	10.00
Grand Total	100%	100	80.20

CITY OF EL PASO
REQUEST FOR QUALIFICATIONS TABULATION FORM

Bid Opening Date: MARCH 7, 2018
Project Name: PHYSICAL EXAMS AND DRUG SCREENING

Solicitation #: 2018-931R
Department: EL PASO FIRE

OCCUPATIONAL HEALTH CENTERS SOUTHWEST, P.A. DBA CONCENTRA MEDICAL CENTERS	ADDISON, TX

RFQs SOLICITED: 31 LOCAL RFQs SOLICITED: 19 RFQs RECEIVED: 1 LOCAL RFQs RECEIVED: 0 NO BIDS: 0

NOTE: The information contained in this RFQ tabulation is for information only and does not constitute actual award/execution of contract.

APPROVED: /s/ **DATE:** 03/07/2018

CONCENTRA MEDICAL CENTERS ATTN: CARLOS M RAMIREZ MD 6320 GATEWAY EAST BLVD EL PASO TX 79925	TRICORE REFERENCE LABORATORIES 1001 WOODWARD PLACE NE ALBUQUERQUE, NM 87102	OCCUPATIONAL TESTING CENTERS ATTN: DR. HICKS 24326 MISSION BLVD. SUITE 3 HAYWARD, CA 94544
GATEWAY IND MEDICAL CLINIC ATTN: BUSINESS OFFICE 6320 GATEWAY EAST BLVD EL PASO TX 79905	ABMC ATTN: ANNE BECKNELL 7680 VILLAGE ROAD PARKER, CO 80134	PROVIDENCE MEMORIAL HOSPITAL ATTN: BUSINESS OFFICE 2110 N OREGON STREET EL PASO TX 79902
RIO VISTA REHABILITATION ATTN: BUSINESS OFFICE HOSPITAL 1740 CURIE DRIVE EL PASO TX 79902		UNIVERSITY MEDICAL CENTER OF EL PASO ATTN: LES RANKIN, DIRECTOR 4824 ALBERTA, 2ND FLOOR ANNEX EL PASO, TX 79905
ADVANCED TOXICOLOGY NETWORK ATTN: HOLLY KULP 3560 AIR CENTR COVE SUITE 101 MEMPHIS, TN 38117	DDS ATTN: JIM PATTERSON 7618 17TH AVENUE BROOKLYN, NY 11214	INSTANT TECHNOLOGIES, INC. ATTN: MARY HANAK 1121 ALSDORF ROAD ENNIS, TX 75119
UNIVERSITY MEDICAL CENTER OF EL PASO ATTN: JESUS MEDRANO, DIRECTOR 4824 ALBERTA, 2ND FLOOR ANNEX EL PASO, TX 79905	RICHARD LABORATORIES INC. ATTN: BUSINESS OFFICE 1601 BROWN STREET EL PASO TX 79902	PATHOLOGY ASSOCIATES OF EP ATTN: BUSINESS OFFICE P. O. BOX 13405 EL PASO TX 79912
COMMUNITY MEDICAL CLINIC 9955 DYER STREET EL PASO TX 79924	WESTSIDE URGENT CARE CENTER ATTN: RENE R FLORES 601 SUNLAND PARK DRIVE EL PASO TX 79912	DEL SOL LIFECARE CENTER ATTN: DORIS ARCHER 10712 SAM SNEAD EL PASO, TX 79935
HEALTH SCIENCES CENTER TEXAS TECH INTERNAL CLINIC 4800 ALBERTA AVENUE EL PASO TX 79905	FEAGIN, INC. DBA DRUG TESTING CENTER ATTN: DARRELL L. FEAGIN P. O. BOX 4326 TALLAHASSEE, FL 32315	MEDICAL EXPRESS CORPORATION ATTN: TAMMY SWAIN 3372 NE 17TH TERRACE OCALA, FL 34479
SIERRA PROVIDENCE MEMORIAL 2001 N OREGON STREET EL PASO TX 79902	BUS OFF LAB CLEARANCE GUIDES AMERICAN DRUG TESTING 10137 MILAN STREET EL PASO TX 79924	LAS PALMAS LIFECARE CENTER ATTN: DAVID TURNER 3333 N MESA EL PASO, TX 79902
FRANKLIN MEDICAL CENTER 836 E REDD ROAD EL PASO TX 79932	MESA MEDICAL CLINIC 2030 N MESA STREET EL PASO TX 79902	

GENESIS DRUG SCREENS INC. ATTN: SAMUEL ROMAN P. O. BOX 13381 EL PASO TX 79913 RETURN TO SENDER	EL PASO MEDICAL LABORATORY ATTN: BUSINESS OFFICE 2616 N OREGON STREET EL PASO TX 79902 RETURN TO SENDER	KROLL LABORATORY SPECIALISTS ATTN: DOMINIQUE DELAGNES 2412 CRUISE DRIVE GRAND PRAIRIE, TX 75054 RETURN TO SENDER
PRINCETON BIOMEDICAL LABROATORIES ATTN: PAUL CENTOFANTI 2921 NEW RODGERS ROAD BRISTOL, PA 19007 RETURN TO SENDER	CONFIDENTIAL DRUG TESTING ATTN: RICHARD ARGUELLES 1551 MONTANA SUITE 100 EL PASO, TX 79902 RETURN TO SENDER	DENVER OCCUPATIONAL & AVIATION MEDICINE CLINIC, PC ATTN: SEAN TWEED 3700 HAVANA SUITE 200 DENVER, CO 80239 RETURN TO SENDER

RESOLUTION

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF EL PASO:

THAT the City Manager be authorized to sign an agreement for physical exams, drug screening, and drug and alcohol testing services for the City's Fire Department between the City and Occupational Health Centers of the Southwest, P.A. dba Concentra Medical Centers (Solicitation 2018-931R) for a contract term of three (3) years from the date this Agreement is approved by the City Council, with one (1) option to extend for two (2) additional years, for a total amount of $162,600.00 for the initial term and $271,000.00 if the contract term is extended. In accordance with this award the City Manager or designee is authorized to exercise future options if needed.

ADOPTED this _____ day of _____, 2018

THE CITY OF EL PASO

ATTEST:

_____
Dee Margo,
Mayor

_____
Laura D. Prine,
City Clerk

APPROVED AS TO FORM:

_____
Leslie B. Jean-Pierre
Assistant City Attorney

APPROVED AS TO CONTENT:

_____
Mario D'Agostino, Chief
El Paso Fire Department

18-1044-1175/ PL # 792807
Concentra Reso/ LBJ

STATE OF TEXAS	)	**AGREEMENT FOR PHYSICAL EXAMS/DRUG**
	)	**SCREENING AND DRUG-ALCOHOL**
COUNTY OF EL PASO	)	**TESTING FOR FIRE DEPARTMENT**

This Agreement for physical exams/drug screening and drug-alcohol testing for the Fire Department (the "Agreement") is entered into this ____ day of June, 2018, by and between the CITY OF EL PASO, a home rule municipal corporation of the State of Texas, (the "City") and Occupational Health Centers of the Southwest, P.A., dba Concentra Medical Centers, a Texas corporation, (the "Service Provider").

WHEREAS, the City solicited qualifications for the provision of physical exams and drug screening of applicants and individuals considered for reinstatement and drug and alcohol testing services of uniformed Fire Department employees testing pursuant to the City's Policy and DOT and SAMHSA procedures, through a request for qualifications ("***RFQ***") No. 2018-931R Physical Exams/Drug Screening and Drug and Alcohol Testing- Fire Department;

WHEREAS, National Fire Protection Association's publication *NFPA 1582: Standard on Comprehensive Occupational Medical Program for Fire Departments* sets the medical requirements for candidates to become fire fighters; and

WHEREAS, pursuant to 49 C.F.R. Part 40, the U.S. Department of Transportation ("DOT") provides procedures for transportation workplace drug and alcohol testing programs; and

WHEREAS, agency the Substance Abuse and Mental Health Services Administration ("SAMHSA") is the agency within the U.S. Department of Health and Human Services that certifies laboratories to conduct forensic drug testing for the Federal agencies and for some federally regulated industries; and

WHEREAS, the Service Provider possesses the qualifications, certifications, credentials, experience, and expertise to perform said pre-hire physical exams and drug screening as well as drug and alcohol testing services of uniformed Fire Department employees for the City; and

WHEREAS, the City desires to engage the Service Provider to provide physical exams and drug screening of applicants and individuals considered for reinstatement and drug and alcohol testing services of uniformed Fire Department employees; and

IN CONSIDERATION of the mutual promises set forth in this Agreement, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

SECTION I. TERM. The effective date of this Agreement is June 12, 2018 and will remain in effect thereafter for thirty six (36) months from the effective date. The term of this Agreement may be extended for one (1) additional two-year period at the mutual agreement of the parties The City Manager or designee may extend the option to extend.

SECTION II. OTHER DOCUMENTS; CONFLICT. The following documents comprise this Agreement:

A. City's Request for Qualifications No. 2018-931R ("***RFQ***")

B. Service Provider's Proposal ("***Proposal***").

C. This Agreement.

The RFQ, and the Proposal are incorporated herein and made part of this Agreement for all purposes; provided, however, that in case of conflict in the language of the RFQ, the Proposal, and this Agreement, the terms and conditions of this Agreement shall control where they conflict with the RFQ and Proposal, and the terms and conditions of the RFQ shall control where they conflict with the Proposal.

SECTION III. SCOPE OF SERVICES. The Service Provider hereby agrees to perform Physical Examinations and Drug and Alcohol Testing of applicants for uniform positions for the Fire Department and individuals being considered for reinstatement into uniformed positions in accordance with the specifications of the City's RFQ, (attached and incorporated hereto as ***Exhibit A***) and the ***Proposal*** submitted by the Service Provider in response to the RFQ (attached and incorporated hereto as ***Exhibit B***) pursuant to the terms and conditions set forth in this Agreement. The scope of services identified within the RFQ and Proposal and clarified by this Agreement shall be referred to collectively as the "**Services.**" The City shall pay for Services at the rates established in the Proposal Cost in ***Exhibit C***. All services shall be performed with reasonable care, skill, and diligence as would be practiced by the medical and scientific community within the County of El Paso, Texas.

A. Physical Examinations

The Service Provider will perform the Services as requested by the City. All physical exam services shall be performed by a licensed physician. The Service provider shall obtain a HIPPA (Health Insurance Portability and Accountability Act of 1996 (HIPAA) and all subsequent amendments) compliant release from the tested individuals in order to disclose the results to the City. The results of the examinations shall be reported to the City within one week of the initial visit.

B. Drug and Alcohol Testing

All testing Services must be conducted and reported pursuant to the City's Policy, Title 49 Part 40 of the Code of Federal Regulations, and DOT and SAMHSA procedures. Testing services will be prompted by the following:

1. Testing of an applicant; or
2. Testing for reinstatement

Random testing services shall not be part of this Agreement. The Service Provider shall transmit to the Medical Review Officer ("MRO") all test results in a timely manner, preferably on the same day of that review by certifying scientist is completed. The City prefers to get negative test results verified by the MRO reported to the City on the same or next business day of said verification. The Service Provider may not take more than 72 hours to report verified negative test. All other test results, including positive test results shall be reported on the same day or next day of verification by the MRO.

The Service Provider will not provide the City's Fire Department with training materials on substance and alcohol abuse, the testing methodology used by the Service Provider in drug and alcohol testing. The Service Provider will provide information in response to the City's questions regarding processes or procedures of the physical exams.

SECTION IV. COMPLETION OF SERVICES. The Service Provider understands that time is of the essence in completing the Services. The Service Provider shall adhere to the reporting standards set by Section III of this Agreement. The City and the Service Provider agree that the liquidated damages provided in the RFQ will not be assessed in this Agreement. Failure of the Service Provider to meet the specified time for completion of Services shall be cause for termination pursuant to Section XIII of this Agreement.

SECTION V. NON-EXCLUSIVE AGREEMENT. This Agreement is non-exclusive. The City shall be entitled to enter into physical examination service agreements with other properly selected individuals or businesses that qualify to provide physical examination services.

SECTION VI. PRE-REQUISITE TO AGREEMENT. The Service Provider shall comply with applicable state and local licenses, certifications, and other qualification requirements as a prerequisite to entering into this Agreement. Specifically, the Service Provider shall be certified by the College of American Pathologist and the testing laboratory shall be SAMSHA certified. The Service Provider's MRO must be a licensed physician who is certified by the American Associate of Medical Review Officers.

SECTION VII. REPRESENTATIONS OF THE SERVICE PROVIDER. In addition to the
prerequisite qualifications required prior to entering into this Agreement, the Service Provider also agrees to comply with the following requirements:

A. It will comply with all applicable federal, state, and local government laws, rules, regulations and all provisions of the City of El Paso Charter and the El Paso City Code, now existing or as may be amended, in the performance of its duties under this Agreement.

B. The Service Provider, including each certified individual and all other licensed physician employed by the Service Provider and performing the services for the City, shall at all times during the performance of this Agreement maintain the licenses, certifications required by any applicable statute, ordinance, rule or regulation of any regulatory body having jurisdiction over the conduct of its operations hereunder. The

Service Provider warrants that it is duly authorized, licensed, and certified to perform its duties hereunder in the jurisdiction in which it will act. It further warrants that its employees shall maintain all required professional licenses and/or certifications during the term of this Agreement. If the Service Provider receives notice from a licensing or certification authority of a suspension or revocation of a license or certification of the Service Provider's employee(s), the Service Provider shall immediately remove such employee from performing any further services under this Agreement until such license or certification is reinstated and in good standing and within 72 hours, notify the City of such actions. If the Service Provider fails to maintain such licenses or certifications or fails to remove any employee who performs services under this Agreement whose license or certification has expired or been revoked or suspended, the City shall be entitled, at its sole discretion, to immediately terminate this Agreement upon written notice to the Service Provider.

C. The drug and alcohol testing shall be conducted in a Substance Abuse and Mental Health Services Administration (SAMHSA/NIDA) and Department of Health and Human Services certified laboratory. Students and Trainees of the Service Provider shall not conduct drug and alcohol testing. A certified Medical Review Officer shall review and report the results.

D. All individual physicians who will administer the physical examinations under this Agreement shall have knowledge of the fire service job requirements and fit-for-duty expectations according to Section 4.2 of the National Fire Protection Association's publication *NFPA 1582: Standard on Comprehensive Occupational Medical Program for Fire Departments.* The Service Provider's Proposal identified the staff responsible for the services under this Agreement. The City shall be informed of any changes to the staff so that the City Manager may approve the qualifications of the different or additional Service Provider's personnel. Despite the City Manager's approval, the City shall in no event be obligated to any third party.

E. The Service Provider shall not in any fashion discriminate in the performance of this Agreement against any person because of race, color, religion, national origin, sex, age, disability, political belief, sexual orientation or affiliation.

SECTION VIII. INDEPENDENT SERVICE PROVIDER. Nothing herein shall be construed as creating a relationship of employer and employee between the parties hereto. The Service Provider agrees to be responsible for its own acts and omissions and those of its subordinates and employees in the performance of any material services under this Agreement. The Service Provider is an independent Service Provider and nothing contained herein shall constitute or designate the Service Provider or any of his employees as employees of the City. Neither the Service Provider nor his employees shall be entitled to any of the benefits established for City employees, nor be covered by the City's Workers' Compensation Program.

SECTION IX. SUBCONTRACTORS. The Service Provider may subcontract with Quest Diagnostic to analyze testing samples and with Stephen Kracht to provide Medical Review Services. The Service Provider will manage and control all subcontracted services and shall be responsible to the City for the quality of the services. The City Manager shall approve a scope of services for any additional services that will be subcontracted hereunder. The Service Provider shall subcontract only by written agreement and the Service Provider shall incorporate each and every material provision of this Agreement. Compliance by subcontractors with this Agreement shall be the Service Provider's responsibility.

The Company shall identify and provide qualifications of any subcontractor who will perform services under this Agreement and provide a written scope of services to the City Manager and City's Purchasing Manager at least fifteen (15) days prior to the effective date of the proposed subcontract. All subcontractors, however, will be approved by the City Manager in writing, and such consent shall not be unreasonably withheld. Notwithstanding the City Manager's approval of a subcontract or subcontractor, the City shall in no event be obligated to any third party, including any subcontract of the Company, for performance of work or services.

SECTION X. COMPENSATION AND INVOICES. The City shall pay the Service Provider thirty (30) days from receipt of the invoice for each physical examination and laboratory test at the rates set forth in the ***Proposal Cost*** attached hereto as ***Exhibit C.*** The Service Provider services shall be limited to those services delineated in the Section III of this Agreement. It is understood and agreed that the City shall not be liable for any costs that exceed the amount of this Agreement without the prior written approval of the City Manager and compliance with applicable competitive bidding laws and City policies. Said approval must be obtained prior to the Service Provider commencing the services that will result in the cost overrun.

The parties acknowledge and agree that the award of this Agreement is dependent upon the availability of funding. In the event that funds do not become available, the Agreement may be terminated, with a 30-day written notice to the Service Provider by the City. In such an event, the City shall incur no penalty or charge.

The Service Provider shall submit a monthly invoice to the Fire Department for each month in which Services are performed pursuant to this Agreement. Invoices shall not be submitted more frequently than once per month. The services are to be provided according to schedule in Exhibit C and Section III. All invoices shall be made in writing pursuant to Section 2 of the Contract Clauses in Exhibit A and shall specify the number of exams and tests conducted. Discounts will not be taken from the date of receipt of services or date of invoice since the Service Provider did not offer such discounts to the City. Invoices shall be delivered to the Fire Chief. All invoices, including late fee interest, shall be paid in accordance to Texas Government Code Chapter 2251.

SECTION XI. WARRANTY- PRICE

A. The price to be paid by the City will be that contained in Exhibit C, which the Service Provider warrants to be no higher than Service Provider's prices on orders by others for products of the kind and specification covered by this contract for similar quantities. In the event the Service Provider breaches this warranty the prices of

the items will be reduced to the Service Provider's current prices on orders by others, or in the alternative, the City may cancel this contract without liability to Service Provider for breach or Service Provider's actual expense.

B. The Service Provider warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for commission, percentage, brokerage, or contingent fee excepting bona fide employees of bona fide established commercial or selling agencies maintained by the Service Provider for the purpose of securing business. For breach or violation of this warranty the City will have the right in addition to any other right or rights to cancel this contract without liability and to deduct from the contract price, or otherwise recover the full amount of such commission, percentage, brokerage or contingent fee.

SECTION XII. MEDICAL RECORDS AND CONFIDENTIALITY OF RECORDS

The Service Provider recognizes that all information and materials received in connection with this Agreement shall be kept in the strictest confidence. All physical examinations and laboratory tests shall be City property for the life of this Agreement. The Service Provider shall keep the records for the life of this Agreement and shall follow the regulations according to the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and all subsequent amendments. The Service Provider shall enter into a separate Business Associate Agreement with the City after the award of this Agreement. Upon termination of this Agreement all records shall be transferred to the City within ten (10) business days of termination at the City's sole expense of such transfer.

SECTION XIII. INSPECTIONS AND AUDITS. The City reserves the right to inspect and audit the Service Provider's records at the City's sole expense. The Service Provider's records subject to review shall include, upon thirty (30) days' written notice to the Service Provider, the records which in the City's discretion, are connected with the Service Provider's work for the City and shall be open to inspection and subject to review and/or reproduction by the City's agent or its authorized representative to the extent necessary to adequately permit evaluation and verification of the Service Provider's compliance with Agreement requirements and to evaluate and verify all costs associated with services of this Agreement.

The Service Provider agrees to provide the City with extracts of data files in computer readable format upon request by the City. Records review as described herein may require inspection and photocopying of selected documents from time to time at reasonable times and places. The Service Provider shall be required to keep such books and records available for such purposes **for at least five (5) years** after the performance under this Agreement ceases. Nothing in this provision shall affect the time for bringing a cause of action nor the applicable statute of limitations.

SECTION XIV. INSURANCE REQUIREMENTS. With no intent to limit the Service Provider's liability or the indemnification provisions set forth hereinafter, the Service Provider shall provide and maintain the following insurance in full force and effect at all times during the term of this Agreement and any extensions thereto. The City shall be provided with certificates of insurance evidencing the required insurance prior to the Effective Date of this Agreement and thereafter with certificates evidencing renewal or replacement of said policies of insurance at least fifteen (15) days prior to the expiration or cancellation of any such policies.

A. **INSURANCES**

1.Worker's Compensation. A third-party policy of Workers' Compensation insurance coverage providing Statutory Benefits according to the Workers Compensation Act of the State of Texas and/or any other state or federal law as may be applicable to the work and shall cover all of the persons engaged in the work.

2.Commercial Liability, Property Damage Liability and Vehicle Liability Insurance. The Service Provider shall procure and shall maintain during the life of this Agreement such Commercial General Liability, Property Damage Liability and Vehicle Liability Insurance as shall protect the Service Provider and the Service Provider's employees performing work covered by this Agreement from claims for damages for personal injury, including accidental death, as well as from claims for property damages, which may arise from services performed under this Agreement, whether such services be performed by the Service Provider or by anyone directly employed by the Service Provider. The minimum limits of liability and coverage shall be as follows:

a) **Commercial General Liability**
Personal Injury or Death
$1,000,000 for each person
$1,000,000 in the aggregate

Property Damage
$1,000,000 for each occurrence
$1,000,000 in the aggregate

b) **Vehicle Liability Combined**
Single Limit
$1,000,000 per accident

B. **ERRORS AND OMISSIONS LIABILITY INSURANCE.** The Service Provider shall procure and maintain, at the Service Provider's sole expense, Professional Liability Insurance (Such as errors and omissions insurance) for the benefit of the City to cover the errors and omissions of the Service Provider, its principals or officers, agents or employees in the performance of this Agreement with a limit of ONE MILLION AND 00/100 DOLLARS ($1,000,000) on a claims made basis.

C. **FORM OF POLICIES.** The insurance required herein may be in one or more policies of insurance, the form of which must be approved by the City's Risk Manager.

D. **ISSUERS OF POLICIES.** The issuer of any policy must have a certificate of authority to transact insurance business in the State of Texas. Each issuer must be responsible, reputable, and have financial capability consistent with the risks covered. Each

issuer shall be subject to approval by the City's Risk Manager in his sole discretion as to conformance with these requirements.

E. INSURED PARTIES. Each policy, except those for Workers' Compensation and Employer's Liability, must name the City of El Paso (and their elected and appointed officials,

officers, agents and employees) as Additional Insured parties on the original policy and all renewals or replacements during the term of this Agreement.

F. MATERIAL CHANGE IN POLICY(IES). Prior to any material change in any policy required herein, the City will be given sixty (60) days advance written notice by registered mail. Further, the City will be immediately notified of any reduction or possible reduction in aggregate limits of any such policy where such reduction, when added to any previous reductions, would exceed twenty-five percent (25%) of the aggregate limits.

H. CANCELLATION. Each policy must expressly state that it may not be canceled or non- renewed unless sixty (60) days advance notice of cancellation or intent not to renew is given in writing to the City's Purchasing Manager by the insurance company. The Service Provider shall also give written notice to the City's Purchasing Manager within fifteen (15) days of the date upon which total claims by any party against the Service Provider reduce the aggregate amount of coverage below the amounts required by this Agreement.

I. DELIVERY OF POLICIES. The originals of all policies referred to above, or copies thereof certified by the agent or attorney-in-fact issuing them together with written proof that the premiums have been paid, shall be deposited by the Service Provider with the City's Purchasing Manager prior to beginning work under this Agreement, and thereafter before the beginning of each subsequent year of the term of this Agreement. Notices and Certificates required by this clause shall be provided to:

City of El Paso
Financial Services Department – Purchasing Division Attn: Purchasing Manager
P.O. Box 1890
El Paso, Texas 79950-1890

Notwithstanding the termination notice provisions in this Agreement, the failure of the Service Provider to provide the City's Purchasing Manager with the above proof of insurance prior to beginning work and thereafter prior to the beginning of each year of the term of this Agreement, shall constitute a default on the part of the Service Provider entitling the City, upon three (3) days written notice to the Service Provider to terminate this Agreement. This default provision shall also apply to the proof of insurance requirements under circumstances where a policy is canceled or expires during a given year of the Agreement. Notwithstanding the proof of insurance requirements set forth above, it is the intention of the parties hereto that the Service Provider, throughout the term of this Agreement, continuously and without interruption, maintain in force the required insurance coverage set forth above. Failure of the Service Provider to comply with this requirement shall

constitute a default of the Service Provider allowing the City, at its option, to terminate this Agreement as referenced above.

SECTION XV. TERMINATION OF AGREEMENT. In addition to those termination provisions otherwise provided herein, this Agreement may be terminated under any one of the following circumstances:

A. TERMINATION FOR CONVENIENCE: This Agreement may be terminated by City and the Service Provider upon written notice, provided such notice specifies an effective date for cancellation of not less than thirty (30) calendar days from the date such notice is received. It is also

understood and agreed that upon such notice of termination, the Service Provider shall cease all services under this Agreement. Upon such termination, the Service Provider shall provide a final invoice for all work completed prior to the City's notice of termination. The City shall compensate the Service Provider in accordance with this Agreement; however, the City may withhold any payment to the Service Provider for the purpose of set off until such time as the exact amount of damages due the City from the Service Provider is determined. Nothing contained herein, or elsewhere in this Agreement, shall require the City to pay for any work which is unsatisfactory, incomplete or not in compliance with the terms of this Agreement and its attachments.

B. TERMINATION FOR DEFAULT: It is further understood and agreed by the Service Provider and the City that either party may terminate this Agreement for cause. Such a termination may be made for failure of one party to substantially fulfill its contractual obligations, pursuant to this Agreement, and through no fault of the other party. No such termination shall be made, unless the other party being terminated is granted: a) written notice of intent to terminate after thirty (30) consecutive calendar days, enumerating the failures for which the termination is being sought; b) a minimum of fifteen (15) consecutive calendar days to cure such failures; and c) an opportunity for consultation with the terminating party prior to such termination.

However, the City retains the right to immediately terminate this Agreement for default if the Service Provider fails to maintain its licenses, certifications and other standards required to be a qualified Service Provider pursuant and the laws of the State of Texas or violates any local, state or federal laws. In the event of termination by the City pursuant to this subsection, the City may withhold payments to the Service Provider for the purpose of set off until such time as the exact amount of damages due the City from the Service Provider is determined.

SECTION XVI. INDEMNIFICATION

SERVICE PROVIDER OR ITS INSURER WILL INDEMNIFY, DEFEND AND HOLD THE CITY, ITS OFFICERS, AGENTS AND EMPLOYEES, HARMLESS FOR AND AGAINST ANY AND ALL CLAIMS, CAUSES OF ACTION, LIABILITY, DAMAGES OR EXPENSE, (INCLUDING BUT NOT LIMITED TO ATTORNEY FEES AND COSTS) FOR ANY DAMAGE TO OR LOSS OF ANY PROPERTY, OR ANY ILLNESS, INJURY, PHYSICAL OR MENTAL IMPAIRMENT, LOSS OF SERVICES, OR DEATH TO ANY

PERSON ARISING OUT OF OR RESULTING FROM THE NEGLIGENT OR INTENTIONAL ACTS OR OMISSIONS OF THE CONTRACTOR. WITHOUT MODIFYING THE CONDITIONS OF PRESERVING, ASSERTING OR ENFORCING ANY LEGAL LIABILITY AGAINST THE CITY AS REQUIRED BY THE CITY CHARTER OR ANY LAW, THE CITY WILL PROMPTLY FORWARD TO SERVICE PROVIDER EVERY DEMAND, NOTICE, SUMMONS OR OTHER PROCESS RECEIVED BY THE CITY IN ANY CLAIM OR LEGAL PROCEEDING SUBJECT TO THE INDEMNIFICATION REQUIREMENTS HEREIN. SERVICE PROVIDER WILL 1) INVESTIGATE OR CAUSE THE INVESTIGATION OF ACCIDENTS OR OCCURRENCES INVOLVING SUCH INJURIES OR DAMAGES; 2) NEGOTIATE OR CAUSE TO BE NEGOTIATED THE CLAIM AS THE SERVICE PROVIDER MAY DEEM EXPEDIENT; AND 3) DEFEND OR CAUSE TO BE DEFENDED ON BEHALF OF THE CITY ALL SUITS FOR DAMAGES EVEN IF GROUNDLESS, FALSE OR FRAUDULENT, BROUGHT BECAUSE OF SUCH INJURIES OR DAMAGES. SERVICE PROVIDER WILL PAY ALL JUDGMENTS FINALLY ESTABLISHING LIABILITY OF THE CITY IN ACTIONS DEFENDED BY SERVICE PROVIDER PURSUANT TO THIS SECTION ALONG WITH ALL ATTORNEYS' FEES AND COSTS INCURRED BY THE CITY INCLUDING INTEREST ACCRUING TO THE DATE OF PAYMENT BY SERVICE PROVIDER, AND PREMIUMS ON ANY APPEAL BONDS. THE CITY, AT ITS ELECTION, WILL HAVE THE RIGHT TO PARTICIPATE IN ANY SUCH NEGOTIATIONS OR LEGAL PROCEEDINGS TO THE EXTENT OF ITS INTEREST. THE CITY WILL NOT BE RESPONSIBLE FOR ANY LOSS OF OR DAMAGE TO THE SERVICE PROVIDER'S PROPERTY FROM ANY CAUSE UNLESS CAUSED SOLELY BY ANY CITY OFFICER, AGENTS, OR EMPLOYEES. NOTHING HEREIN SHALL REQUIRE THE SERVICE PROVIDER TO INDEMNIFY, DEFEND, OR HOLD HARMLESS THE CITY OR ANY OF ITS OFFICERS, AGENTS, OR EMPLOYEES FOR THE NEGLIGENT OR INTENTIONAL ACTS OR OMISSIONS OF THE CITY OR ANY OF ITS OFFICERS, AGENTS, OR EMPLOYEES.

SECTION XVII. GENERAL PROVISIONS.

A. TIME IS OF THE ESSENCE. The Service Provider understands and agrees that time is of the essence for all services and deliverables requested herein and that all tasks of this Agreement are to be completed as expeditiously as possible.

B. ADVERTISING. Neither party will advertise or publish, without the other party's consent, the fact that the City has entered into this contract, except to comply with proper requests for information from an authorized representative of the federal, state, or local government.

C. SUCCESSOR AND ASSIGNS. The Service Provider shall not assign or attempt to convey an interest in this Agreement without the prior written consent of the City. This Agreement shall be terminable, at the discretion of the City, without notice to the Service Provider if the Service Provider shall attempt to assign without prior written consent.

D. VENUE. For purpose of determining place of Agreement and the law governing the same, this Agreement is entered into in the City and County of El Paso, the State of Texas, and shall be governed by the laws of the State of Texas. Venue shall be in the County of El Paso, Texas.

E. LEGAL CONSTRUCTION. Every provision of this Agreement is severable, and if any term or provision hereof is illegal or invalid for any reason whatsoever, such illegality or invalidity shall not affect the validity of the remainder of this Agreement. Where the context of the Agreement require, the singular shall include the plural and the masculine gender shall include feminine. Any reference to the City Manager in this Agreement shall mean the City Manager of the City of El Paso or her designee.

F. COMPLIANCE WITH LAW. The Service Provider shall comply with all Federal, State and local laws and ordinances applicable to the work contemplated herein.

G. NOTICE. Any notice, demand, request, consent or approval that either party may or is required to provide to the other party be in writing and either personally delivered or sent via certified mail, return receipt requested, postage prepaid, to the following addresses:

CITY:
City of El Paso
City Manager
P.O. Box 1890
El Paso, Texas 79950-1890

With Copy to:
City Fire Department
Mario D'Agostino
416 N. Stanton, St. 200
El Paso, Texas 79901

SERVICE PROVIDER: Occupational Health Center of the Southwest, P.A. dba Concentra Medical Centers Legal-Contracts
5080 Spectrum Drive, Suite 1200W
Addison, Texas 75001

Changes may be made to the names and addresses noted herein through timely written notice to the other party.

H. FORCE MAJEURE. The Service Provider shall not be responsible or liable for any loss, damages or delay caused by force majeure which is beyond the control of the parties to this Agreement, including but not limited to riot, insurrection, embargo, fire or explosion, the elements, acts of nature, epidemic, war, earthquake, flood or the official act of any government.

I. COMPLETE AGREEMENT. This Agreement constitutes and expresses the entire agreement between the parties hereto in reference to the services described in this Agreement

for the City, and in reference to any of the matters or things herein provided for, or hereinbefore discussed or mentioned in reference to such services, all promises, representations and understanding relative thereto herein being merged.

IN WITNESS WHEREOF the parties hereto have executed this Agreement at El Paso, Texas effective as of the first date appearing heretofore.

(Signatures to follow on the next page)

CITY OF EL PASO

Tomás González
City Manager

APPROVED AS TO FORM:

Leslie B. Jean-Pierre
Assistant City Attorney

APPROVED AS TO CONTENT:

Mario D'Agostino, Fire Chief
City Fire Department

SERVICE PROVIDER

Occupational Health Centers of the Southwest, P.A., Concentra Medical Centers

By: DocuSigned by:
4EE08EDAE81D4D4...

Printed Name: Robert G. Hassett, DO, MPH

Title: President, Treasurer and Corporate Secretary

(Acknowledgments Continue on the Following Page)

ACKNOWLEDGEMENTS

THE STATE OF TEXAS §
§
COUNTY OF EL PASO §

This instrument was acknowledged before me on this_____day of_____, 2018, by **Tomás González**, as **City Manager** of the **City of El Paso, Texas.**

_____
Notary Public, State of Texas

My commission expires:

_____

THE STATE OF TEXAS §
§
COUNTY OF Dallas §

This instrument was acknowledged before me on this 29th day of June, 2018, by Robert G. Hassett, DO, MPH, President, Treasurer and Corporate Secretary of Occupational Health Centers of the Southwest, P.A., dba Concentra Medical Centers.

WENDY A GIBBONS
Notary Public, State of Texas
My Commission Expires
September 13, 2019

Notary Public, State of Texas

My commission expires:

9/13/19

EXHIBIT A

RFQ NO. 2018-931R
PHYSICAL EXAMS/DRUG SCREENING & DRUG-ALCOHOL TESTING

EXHIBIT B

OCCUPATIONAL HEALTH CENTERS OF THE SOUTHWEST, P.A.
PROPOSAL

EXHIBIT C
PROPOSAL
COST

ITEM	DESCRIPTION	ESTIMATED ANNUAL QTY	PRICE	EXTENDED TOTAL (Estimated Annual Qty X Price)	3 – Year Total (Extended Total X 3)
1.	Pre-Hire Exams	100	$502.00	$50,200.00	$150,600.00
2.	Drug Testing	100	$40.00	$4,000.00	$12,000.00
			Grand Total: Items 1-2	$54,200.00	$162,600.00

*El Paso Fire Department Component Breakdown for Pre-Hire Exams

DESCRIPTION	PRICE
Audiogram	$ 30.00
EKG Resting	$ 47.00
Gen Health Panel	$ 101.50
Preplace Physical	$ 39.00
PFT	$ 29.00
RPR (Syphilis Test)	$ 53.50
X-ray Chest 2 View	$ 42.50
X-ray Lumber 3 view	$ 104.50
X-ray Interpretation	$ 55.00
TOTAL	**$ 502.00**
****OPTIONAL SERVICES**	**PRICE**
Glucose Fasting	$ 37.00
Vision Ishihara	$ 43.00
Vision Snelling	$ 38.50

**Services performed upon written request from the City at the prices set forth above

STATE OF TEXAS)
)
COUNTY OF EL PASO)

HIPAA BUSINESS ASSOCIATE AGREEMENT

THIS AGREEMENT is entered into on _____, 2018 by and between the CITY OF EL PASO, TEXAS ("CITY"), as the Covered Entity, and Occupational Health Centers of the Southwest, P.A., dba Concentra Medical Centers, a Texas corporation ("BUSINESS ASSOCIATE") by and through their duly authorized officials, in order to comply with 45 C.F.R. §164.502(e) and §164.504(e), governing protected health information ("PHI") and business associates under the Health Insurance Portability and Accountability Act of 1996 (P.L. 104-191), 42 U.S.C. Section 1320d, et. seq., and regulations promulgated thereunder, as amended from time to time (statute and regulations hereafter collectively referred to as "HIPAA"). Covered Entity and Business Associate may be referred to herein individually as a "Party" or collectively as the "Parties".

RECITALS

WHEREAS, CITY has engaged BUSINESS ASSOCIATE to perform services or provide goods, or both;

WHEREAS, CITY possesses individually identifiable health information that is defined in and protected under HIPAA, and is permitted to use or disclose such information only in accordance with HIPAA;

WHEREAS, BUSINESS ASSOCIATE may receive such information from CITY, or create and receive such information on behalf of CITY, in order to perform certain of the services or provide certain of the goods, or both; and

WHEREAS, CITY wishes to ensure that BUSINESS ASSOCIATE will appropriately safeguard individually identifiable health information;

NOW THEREFORE, CITY and BUSINESS ASSOCIATE agree as follows:

A. HIPAA Terms

1. **Definitions.** The following terms shall have the meaning ascribed to them in this Section. Other capitalized terms shall have the meaning ascribed to them in the context in which they first appear, or as provided in (1)(h) to this Section.

   a. **Agreement** shall refer to this document.

   b. **Business Associate** means Occupational Health Centers of the Southwest, P.A., dba Concentra Medical Centers, a Texas corporation.

c. **HHS Privacy Regulations** shall mean the Code of Federal Regulations ("C.F.R.") at Title 45, Sections 160 and 164, in effect, or as amended.

d. **Individual** shall mean the person who is the subject of the Information, and has the same meaning as the term "individual" is defined in 45 C.F.R. 164.501.

e. **Information** shall mean any "health information" provided and/or made available by the CITY to BUSINESS ASSOCIATE, and has the same meaning as the term "health information" as defined by 45 C.F.R. 160.102.

f. **Parties** shall mean the CITY and BUSINESS ASSOCIATE.

g. **Secretary** shall mean the Secretary of the Department of Health and Human Services ("HHS") and any other officer or employee of HHS to whom the authority involved has been delegated.

h. **Catch-all definition:** The following terms used in this Agreement shall have the same meaning as those terms in the HIPAA Privacy, Security, Breach Notification and Enforcement Rules at 45 C.F.R. Part 160 and 164, in effect, or as amended: breach, data aggregation, designated record set, disclosure, health care operations, protected health information, required by law, subcontractor, and use.

2. **Limits on Use and Disclosure Established by Terms of Agreement.** BUSINESS ASSOCIATE hereby agrees that it shall be prohibited from using or disclosing the Information provided or made available by the CITY for any other purpose other than as expressly permitted or required by this Agreement (ref. 45 C.F.R. 164.504(e)(2)(i).)

3. **Stated Purposes for which BUSINESS ASSOCIATE May Use or Disclose Information.** The Parties hereby agree that BUSINESS ASSOCIATE shall be permitted to use and/or disclose Information provided or made available from CITY for the following stated purposes: To provide public health, research, and related support services (service) to the community of the CITY for the mutual benefit and general welfare of BUSINESS ASSOCIATE and the CITY (ref. 45 C.F.R. 164.504(e)(2)(i); 65 Fed. Reg. 82505.)

4. **Use of Information for Management, Administrative and Legal Responsibilities.** BUSINESS ASSOCIATE is permitted to use Information if necessary for the proper management and administration of BUSINESS ASSOCIATE or to carry out legal responsibilities of BUSINESS ASSOCIATE. (ref. 45 C.F.R. 164.504(e)(4)(i)(A-B)).

5. **Disclosure of Information for Management, Administration and Legal Responsibilities.** BUSINESS ASSOCIATE is permitted to disclose Information received from CITY for the proper management and administration of BUSINESS ASSOCIATE or to carry out legal responsibilities of BUSINESS ASSOCIATE, provided:

a. The disclosure is required by law; or

b. The BUSINESS ASSOCIATE obtains reasonable assurances from the person to whom the information is disclosed that it will be held confidentially and used or further disclosed only as required by law or for the purposes for which it was disclosed to the person, the person will use appropriate safeguards to prevent use or disclosure of the information, and the person immediately notifies the BUSINESS ASSOCIATE of any instance of which it is aware in which the confidentiality of the information has been breached. (ref. 45 C.F.R. 164.504(e)(4)(ii)).

6. **Data Aggregation Services.** BUSINESS ASSOCIATE is also permitted to use or disclose Information to provide data aggregation services, as that term is defined by 45 C.F.R. 164.501, relating to the health care operations of CITY. (ref. 45 C.F.R. 164.504(e)(2)(i)(B)).

7. **BUSINESS ASSOCIATE OBLIGATIONS:**

a. **Limits on Use and Further Disclosure Established by Agreement and Law.** BUSINESS ASSOCIATE hereby agrees that the Information provided or made available by the CITY shall not be further used or disclosed other than as permitted or required by the Agreement or as required by federal law. (ref. 45 C.F.R. 164.504(e)(2)(ii)(A)).

b. **Appropriate Safeguards.** BUSINESS ASSOCIATE will establish and maintain appropriate safeguards to prevent any use or disclosure of the Information, other than as provided for by this Agreement. (ref. 45 C.F.R. 164.504(e)(2)(ii)(B)).

c. **Reports of Improper Use or Disclosure.** BUSINESS ASSOCIATE hereby agrees that it shall report to CITY **within two (2) days of discovery** any use or disclosure of Information not provided for or allowed by this Agreement. (ref. 45 C.F.R. 164.504(e)(2)(ii)(C)).

d. **Subcontractors and Agents.** BUSINESS ASSOCIATE hereby agrees that any time Information is provided or made available to any subcontractors or agents, BUSINESS ASSOCIATE must enter into a subcontract with the subcontractor or agent that contains the

same terms, conditions and restrictions on the use and disclosure of Information as contained in this Agreement. (ref. 45 C.F.R. 164.504(e)(2)(ii)(D)).

(i) **45 C.F.R. 164.502(e)(1)(ii) and 164.308(b)(2).** In accordance with 45 C.F.R. 164.502(e)(1)(ii) and 164.308(b)(2), if applicable, BUSINESS ASSOCIATE agrees to ensure that any subcontractors that create, receive, maintain, or transmit protected health information on behalf of BUSINESS ASSOCIATE agree in writing to the same restrictions and conditions that apply through this Agreement to BUSINESS ASSOCIATE with respect to such Information.

e. **Right of Access to Information.** BUSINESS ASSOCIATE hereby agrees to make available and provide a right of access to Information by an Individual. This right of access shall conform with and meet all of the requirements of Section 181.102 of the Texas Health and Safety Code, requiring that not later than the 15th business day after the date of the receipt of a written request from a person for the person's electronic health record, BUSINESS ASSOCIATE shall provide the requested record to the person in electronic form unless the person agrees to accept the record in another form, and with any further requirements of 45 C.F.R. 164.524, including substitution of the words "COVERED ENTITY" with BUSINESS ASSOCIATE where appropriate. (ref. 45 C.F.R. 164.504(e)(2)(ii)(E)).

f. **Correction of Health Information by Individuals.** BUSINESS ASSOCIATE shall, upon receipt of notice from the CITY, amend or correct protected health information (PHI) in its possession or under its control.

g. **Amendment and Incorporation of Amendments.** BUSINESS ASSOCIATE agrees to make Information available for amendment and to incorporate any amendments to Information in accordance with 45 C.F.R. 164.504(e)(2)(ii)(F)).

h. **Provide Accounting.** BUSINESS ASSOCIATE agrees to make Information available as required to provide an accounting of disclosures in accordance with 45 C.F.R. 164.528, including substitution of the words "COVERED ENTITY" with BUSINESS ASSOCIATE where appropriate. (ref. 45 C.F.R. 164.504(e)(2)(ii)(G)).

i. **Access to Books and Records.** BUSINESS ASSOCIATE hereby agrees to make its internal practices, books, and records relating to

the use or disclosure of Information received from, or created or received by BUSINESS ASSOCIATE on behalf of the CITY, available to the Secretary or the Secretary's designee for purposes of determining compliance with the HHS Privacy Regulations. (ref. 45 C.F.R. 164.504(e)(2)(ii)(H)).

j. **Return or Destruction of Information.** At the termination of this Agreement, BUSINESS ASSOCIATE hereby agrees to adhere to Section B.3. of this Agreement. (ref. 45 C.F.R. 164.504(e)(2)(ii)(I)).

k. **Mitigation Procedures.** BUSINESS ASSOCIATE agrees to have procedures in place for mitigating, to the maximum extent practicable, any deleterious effect from the use or disclosure of Information in a manner contrary to this Agreement or the HHS Privacy Regulations. (ref. 45 C.F.R. 164.530(f)).

l. **Sanction Procedures.** BUSINESS ASSOCIATE agrees and understands that it must develop and implement a system of sanctions for any employee, subcontractor or agent who violates this Agreement of the HHS Privacy Regulations. (ref. 45 C.F.R. 164.530(e)(1)).

m. **Subpart E of 45 C.F.R. Part 164.** To the extent BUSINESS ASSOCIATE is to carry out one or more of CITY'S obligations under Subpart E of 45 C.F.R. Part 164, BUSINESS ASSOCIATE shall comply with the requirements of Subpart E that apply to CITY in the performance of such obligation(s).

n. **Prohibition against the Sale of Protected Health Information.** The BUSINESS ASSOCIATE shall comply with the requirements of Texas Health and Safety Code Sec. 181.153, and any amendments of that section.

o. **Notice and Authorization Required for Electronic Disclosure of** PHI. The BUSINESS ASSOCIATE shall comply with the requirements of Texas Health and Safety Code Sec. 181.154, and any amendments of that section, regarding the requirement of providing notice to an Individual for whom the BUSINESS ASSOCIATE creates or receives protected health information if the Individual's PHI is subject to electronic disclosure.

p. **State Law on Medical Records Privacy.** The BUSINESS ASSOCIATE shall abide by the requirements set forth in Texas Health and Safety Code Section 181.001 et. seq., and any amendments of that chapter.

8. **Property Rights.** The Information shall be and remain the property of the CITY. BUSINESS ASSOCIATE agrees that it acquires no title or rights to the Information, including any de-identified Information, as a result of this Agreement.

9. **Modifications**. The CITY and BUSINESS ASSOCIATE agree to modify this Business Associate Agreement, in order to comply with Administrative Simplification requirements of HIPAA, as set forth in Title 45, Parts 160 and 164, (Subparts A and E the "Privacy Rule" and Subparts A and C the "Security Rule") of the Code of Federal Regulations.

10. **Automatic Amendment**. Upon the effective date of any amendment to the regulations promulgated by HHS with respect to PHI, this Business Associate Agreement shall automatically amend such that the obligations imposed on BUSINESS ASSOCIATE as a Business Associate remain in compliance with such regulations.

B. Term and Termination

1. **Term.** The Term of this Agreement shall be effective as of date this Agreement is executed, and shall terminate on the same date Contract 2018-931R terminates or on the date covered entity terminates for cause as authorized in paragraph (B.2.) of this Section, whichever is sooner.

2. **Termination for Cause.** Upon the CITY's knowledge of a material breach by BUSINESS ASSOCIATE, the CITY shall:

   a. Provide an opportunity for BUSINESS ASSOCIATE to cure the breach or end the violation, and terminate if BUSINESS ASSOCIATE does not cure the breach or end the violation within the time specified by the CITY.

   b. Immediately terminate the Business Associate Agreement if BUSINESS ASSOCIATE has breached a material term of this Business Associate Agreement and cure is not possible.

   c. Notify the Secretary of HHS if termination is not possible.

3. **Obligations of Business Associate Upon Termination.** Upon termination of this Agreement for any reason, BUSINES ASSOCIATE, with respect to protected health information received from CITY, or created, maintained, or received by BUSINESS ASSOCIATE on behalf of CITY, shall:

   a. Retain only that protected health information which is necessary for BUSINESS ASSOCIATE to continue its proper management and administration or to carry out its legal responsibilities;

b. Return to CITY, or, if agreed to by CITY, destroy, the remaining protected health information that the BUSINESS ASSOCIATE still maintains in any form and BUSINESS ASSOCIATE shall certify to the CITY that the Information has been destroyed;

c. Continue to use appropriate safeguards and comply with Subpart C of 45 CFR Part 164 with respect to electronic protected health information to prevent use or disclosure of the protected health information, other than as provided for in this Section, for as long as BUSINESS ASSOCIATE retains the protected health information;

d. Not use or disclose the protected health information retained by BUSINESS ASSOCIATE other than for the purposes for which such protected health information was retained and subject to the same conditions set out at Section 1.e and 1.f above, which applied prior to termination; and

e. Return to CITY or, if agreed to by CITY, destroy, the protected health information retained by BUSINESS ASSOCIATE when it is no longer needed by BUSINESS ASSOCIATE for its proper management and administration or to carry out its legal responsibilities.

f. Survival. The obligations of BUSINESS ASSOCIATE under this Section shall survive the termination of this Agreement.

C. **Remedies.** If CITY determines that BUSINESS ASSOCIATE has breached or violated a material term of this Agreement, CITY may, at its option, pursue any and all of the following remedies:

1. Exercise any of its rights of access and inspection under Section A.7.e. of this Agreement;

2. Take any other reasonable steps that CITY, in its sole discretion, shall deem necessary to cure such breach or end such violation; and/or

3. Terminate this Agreement immediately.

4. Injunction. CITY and BUSINESS ASSOCIATE agree that any violation of the provisions of this Agreement may cause irreparable harm to CITY. Accordingly, in addition to any other remedies available to CITY at law, in equity, or under this Agreement, in the event of any violation by BUSINESS ASSOCIATE of any of the provisions of this Agreement, or any explicit threat thereof, CITY shall be entitled to an injunction or other decree of

specific performance with respect to such violation or explicit threat thereof, without any bond or other security being required and without the necessity of demonstrating actual damages. The parties' respective rights and obligations under this Section C.4. shall survive termination of the Agreement.

5. Indemnification. BUSINESS ASSOCIATE shall indemnify, hold harmless and defend CITY from and against any and all claims, losses, liabilities, costs and other expenses resulting from, or relating to, the acts or omissions of BUSINESS ASSOCIATE in connection with the representations, duties and obligations of BUSINESS ASSOCIATE under this Agreement. The parties' respective rights and obligations under this Section 5 shall survive termination of the Agreement.

D. Miscellaneous

1. **Regulatory References.** A reference in this Agreement to a HIPAA section means the section as in effect or as amended.

2. **Amendment.** CITY and BUSINESS ASSOCIATE agree that amendment of this Agreement may be required to ensure that CITY and BUSINESS ASSOCIATE comply with changes in state and federal laws and regulations relating to the privacy, security, and confidentiality of protected health information. CITY may terminate this Agreement upon 60 days written notice in the event that BUSINESS ASSOCIATE does not promptly enter into an amendment that CITY, in its sole discretion, deems sufficient to ensure that CITY will be able to comply with such laws and regulations. This Agreement may not otherwise be amended except by written agreement between the parties and signed by duly authorized representatives of both parties.

3. **Interpretation.** Any ambiguity in this Agreement shall be interpreted to permit compliance with HIPAA.

4. **Notices.** Any notice or demand required under this Agreement will be in writing; will be personally served or sent by certified mail, return receipt requested, postage prepaid, or by a recognized overnight carrier which provides proof of receipt; and will be sent to the addresses below. Either party may change the address to which notices are sent by sending written notice of such change of address to the other party.

CITY: City of El Paso
Attn: City Manager
P. O. Box 1890
El Paso, Texas 79950-1890

COPY TO: City of El Paso
Department of Public Health
Attention: Director
5115 El Paso Drive
El Paso, TX 79905

BUSINESS ASSOCIATE: Occupational Health Center of the Southwest, P.A., dba
Concentra Medical Centers
Legal-Contracts
5080 Spectrum Drive, Suite 1200W
Addison, Texas 75001

5. **Non-Waiver.** No failure by any Party to insist upon strict compliance with any term or provision of this Agreement, to exercise any option, to enforce any right, or to seek any remedy upon any default of any other Party shall affect, or constitute a waiver of, any Party's right to insist upon such strict compliance, exercise that option, enforce that right, or seek that remedy with respect to that default or any prior, contemporaneous, or subsequent default. No custom or practice of the Parties at variance with any provision of this Agreement shall affect or constitute a waiver of, any Party's right to demand strict compliance with all provisions of this Agreement.

6. **Headings.** The headings of sections and subsections of this Agreement are for reference only and will not affect in any way the meaning or interpretation of this Agreement.

7. **Governing Law, Jurisdiction.** This Agreement will be governed by and construed in accordance with the laws of the State of Texas, without regard to its principles of conflict of laws, with venue in El Paso County, Texas.

8. **Compliance with Laws.** BUSINESS ASSOCIATE agrees that its obligations pursuant to this Agreement shall be performed in compliance with all applicable federal, state, and/or local rules and regulations. In the event that applicable federal, state or local laws and regulations or applicable accrediting body standards are modified, BUSINESS ASSOCIATE reserves the right to notify CITY in writing of any modifications to the Agreement in order to remain in compliance with such law, rule or regulation.

9. **Severability.** In the event that one or more provision(s) of this Agreement is deemed invalid, unlawful and/or unenforceable, then only that provision will be omitted, and will not affect the validity or enforceability of any other provision; the remaining provisions will be deemed to continue in full force and effect.

10. **No Third Party Beneficiaries.** Nothing express or implied in this Agreement is intended or shall be deemed to confer upon any person other than CITY and BUSINESS ASSOCIATE, and their respective successors and assigns, any rights, obligations, remedies or liabilities.

11. **Entire Agreement; Counterparts.** This Agreement constitutes the entire Agreement between CITY and BUSINESS ASSOCIATE regarding the services to be provided hereunder. Any agreements, promises, negotiations, or representations not expressly set forth in this Agreement are of no force or effect. This Agreement may be executed in any number of counterparts, each of which will be deemed to be the original, but all of which shall constitute one and the same document.

(Signatures follow on next page)

STATE OF TEXAS)
)
COUNTY OF EL PASO)

HIPAA BUSINESS ASSOCIATE AGREEMENT

Signature Page

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement as of the _____ day of_____, 2018.

CITY OF EL PASO

Tomás González
City Manager

BUSINESS ASSOCIATES

Signature:
Name Printed: Robert G. Breighner Jr
Title: Privacy Officer

APPROVED AS TO FORM:

Leslie B. Jean-Pierre
Assistant City Attorney

APPROVED AS TO CONTENT:

Mario D'Agostino, Fire Chief
City of El Paso Fire Department

REQUEST FOR QUALIFICATIONS

ISSUED BY

THE CITY OF EL PASO

PURCHASING & STRATEGIC SOURCING DEPARTMENT

SOLICITATION NO: 2018-931R **DATE ISSUED: JANUARY 23, 2018**

TITLE: PHYSICAL EXAMS & DRUG SCREENING
FIRE DEPARTMENT

An original, signed, sealed, OFFER to furnish the goods and/or services set forth below will be received at the place indicated below, until:
2:00 PM, local time, WEDNESDAY MARCH 7, 2018.

NOTICE **When used in Request for Proposals, the terms 'Offer' and 'Proposal' and 'Offeror' and 'Vendor' are interchangeable.**

ADDRESS OFFERS TO:
PURCHASING DIRECTOR
PURCHASING & STRATEGIC SOURCING DEPARTMENT
CITY OF EL PASO

MAIL TO:

CITY OF EL PASO
PURCHASING & STRATEGIC SOURCING DEPARTMENT
300 N. CAMPBELL, 1ST FLOOR
EL PASO, TX 79901-1153

OR

HAND DELIVER TO:

CITY OF EL PASO
PURCHASING & STRATEGIC SOURCING DEPARTMENT
300 N. CAMPBELL, 1ST FLOOR
EL PASO, TX 79901

FOR ADDITIONAL INFORMATION CONCERNING THIS SOLICITATION, CONTACT:
PAULA SALAS, PURCHASING AGENT
Telephone: [915] 212-1192 Email: SALASpx@elpasotexas.gov

EXPIRATION OF OFFERS

The Offeror agrees, to furnish all items [supplies or services] at the prices offered, and delivered at the designated point or points, within the time set forth below, if this offer is accepted within ONE HUNDRED TWENTY [120] consecutive days from the date set for the receipt of offers. All offers shall expire on the120th day after the offers are open unless the City of El Paso requests an extension of the offers in writing and the offeror agrees to extend in writing.

AMENDMENTS TO SOLICITATION

Receipt of all numbered amendments to Solicitations must be acknowledged:

AMENDMENT	DATED	AMENDMENT	DATED	AMENDMENT	DATED	AMENDMENT	DATED
A001	_____	A002	_____	A003	_____	A004	_____
A005	_____	A006	_____	A931	_____	A008	_____

OFFER SUBMITTED BY

_____
COMPANY NAME AS IT APPEARS ON ORGANIZATION CERTIFICATE ISSUED BY STATE IN WHICH COMPANY WAS ORGANIZED)

_____ ☐ _____ ☐
STREET ADDRESS P.O. BOX NUMBER

_____
CITY, STATE AND ZIP CODE

_____ & _____
TELEPHONE NUMBER FAX NUMBER

_____ ☐ **PLEASE CHECK PREFERRED ADDRESS FOR RECEIVING SOLICITATION DOCUMENTS.**
E-Mail address

OFFER EXECUTED BY [PLEASE PRINT**]**

_____
NAME AND TITLE OF PERSON AUTHORIZED TO OBLIGATE COMPANY

_____
SIGNATURE AND DATE OF OFFER

WITHOUT AN *ORIGINAL* SIGNATURE ON THIS OR OTHER DOCUMENT BINDING THE OFFEROR, THE OFFER WILL BE REJECTED

NOTE: AWARD OF THE CONTRACT RESULTING FROM THIS SOLICITATION WILL BE MADE **TO THE SUCCESSFUL OFFEROR** BY AN AUTHORIZED WRITTEN NOTICE, WHICH MAY BE IN THE FORM OF A LETTER NOTICE OF AWARD OR A PURCHASE ORDER ISSUED BY THE CITY OF EL PASO. THIS IS A ONE TIME CONTRACT ☐

CITY OF EL PASO, TEXAS

RFQ: 2018-931R

REQUEST FOR QUALIFICATIONS

FOR

PHYSICAL EXAMS & DRUG SCREENING

DUE DATE: MARCH 7, 2018

Table of Contents

PART 1 - GENERAL INFORMATION

1.1 Background Information

The City of El Paso is requesting proposals for physical examinations and drug screening services.

The following department will participate in this contract: Fire

Physical examinations and drug screening will be conducted on all applicants being considered for the fire academy and all individuals being considered for reinstatement. Drug-Alcohol drug testing will be conducted for pre-employment, reasonable suspicion, random, post-accident, return-to-duty and follow-up as requested by the City of El Paso Fire Department.

1.2 Solicitation Purpose

The City of El Paso is seeking for a qualified firm to provide physical examinations and drug screening for the El Paso Fire Department. The City shall order all of its services from one successful proposer (contractor) from time to time as needed. Only personnel from Fire Department are authorized to directly place orders against this Contract. Personnel from other City departments may only utilize this contract with express written authorization from the Fire Department and only if the additional usage is within reasonableness given the total awarded amount of the Contract.

PART 2 - NOTICES TO PROPOSERS

2.1 Public Disclosure Proposal Information

Offerors are cautioned that once a bid is opened, all information contained therein will be available to the **PUBLIC** unless the information is excepted from the requirements of Government Code Section 552.021 pertaining to Open Records.

The exception that allows the City to protect information that, if released, would give advantage to a competitor or bidder does not apply after the bidding is complete and the contract has been awarded. *Trade secrets, commercial or financial background data and privileged or confidential information* may be excepted from public inspection. If any information contained in your offer qualifies for an exception because it falls into one of the categories above it should be clearly marked "CONFIDENTIAL" and the basis of your claim of confidentiality should be stated. Data so identified will be maintained as a protected record. Offerors who claim that information contained in a bid should be protected from public disclosure after the award of the contract may be asked to support such claim if the City receives an Open Records request for the information and requests a determination by the Attorney General. [Rev. 04-03-98]

2.2 Bid Net Notification

Note: Any changes in due date or material changes for any RFP's/solicitations will be posted on the solicitations page of the City of El Paso Purchasing & Strategic Sourcing Department's website: http://legacy.elpasotexas.gov/purchasing/ep-invitations.asp

It is the bidder's responsibility to ensure that they have all pertinent information regarding solicitations, including all amendments prior to submitting their offer. Please check the website, even after submitting a bid, to ensure that you have all amendments as they may be posted at any time, up to and including the day of bid opening.

Recommendation(s) for formal awards shall be posted on the City's website the Thursday afternoons prior to the Tuesday City Council Meeting wherein the recommendation shall be presented. Vendors are responsible for monitoring the City's website for said postings and awards.

2.3 Communications

2.3.1 Cone of Silence/Anti Lobbying Policy

The City's Cone of Silence/Anti Lobbying Policy was adopted to ensure a fair and competitive bidding environment by preventing communication between City officials, employees, or representatives and parties involved in the bidding process that could create an unfair advantage to any party with respect to the award of a City contract.

During the period of in which the City has issued a solicitation, including a competitive bid, request for proposal (RFP), request for qualifications (RFQ), highest qualified bid (best value), competitive sealed proposals, design-build, public-private partnership, any other type of solicitation required by law, or the giving of a notice of a proposed project, which shall begin on the day that is advertised and end on the date that the notice of the award has been posted by the City Clerk for placement on the agenda, no person or registrant shall engage in any lobbying activities with City officials and employees.

For an unsolicited or competing proposal for a public-private partnership, the period in which no person or registrant shall engage in any lobbying activities with City officials and employees shall begin on the date that the City receives a notice of intent to submit an unsolicited proposal and end on the date the notice of award has been posted by the City clerk for placement on the agenda.

If contact is required with City employees, such contact will be done in accordance with procedures incorporated into the solicitation document and the City's contracting policies. Any person or entity that violates this provision may be disqualified in accordance with Section 2.94.130 of this chapter. Furthermore, any person who knowingly or intentionally violates the provisions of this policy, with respect to the solicitation or award of a discretionary contract may be prohibited by the City council from entering into any contract with the City for a period not to exceed three years.

The Cone of Silence/Anti Lobbying Policy prohibits any communication or lobbying activities during the Cone of Silence period, by any person, including but not limited to, bidders, lobbyists or consultants of bidders, service providers or potential vendors and any the following:

1. City Staff and City Consultants, including any employee of the City of El Paso, any person retained by the City of El Paso as a Consultant on the project, or any person having participated in the development, design, or review of documents related to the project.

2. City Officials, including the Mayor, Council Representatives and their respective staff.

3. Members of the City's Selection Committee, whether City employees or outside experts appointed or selected by the City.

The Cone of Silence/Anti Lobbying Policy does not apply to:

1. Questions of Process and Procedure, including oral communications with the Purchasing Director or Bid Administrator, provided the communications are strictly limited to matters of process or procedure already contained in the solicitation document. A minimum of ten days will be provided for questions during solicitation unless otherwise stated in the Solicitation Schedule of Events in the documents.

2. Pre-Proposal/Pre-Bid Conferences, including oral communications at pre-proposal or pre-bid conferences, oral presentations before selection committees, contract negotiations, and public presentations made to the Mayor and Council Representatives during a duly noticed public meeting.

3. Written Communications, to the Purchasing Analyst/Agent identified in the solicitation.

2.3.2 Wage Theft

The City of El Paso Code – Chapter 3.46

3.46.010 Definition

1. ***Wage Theft Adjudication*** occurs when:

   A. Employer is criminally convicted as an employer pursuant to Section 61.019 of the Texas Labor Code for failure to pay wages; or

   B. Injunctive relief is granted in district court under Section 61.020 of the Texas Labor Code against the employer for repeated failures to pay wages as required by Chapter 61 of the Texas Labor Code; or

   C. A wage payment determination order becomes final under Section 61.055 or Section 61.060 of the Texas Labor Code; or

   D. The Texas Workforce Commission assesses an administrative penalty under Section 61.053 of the Texas Labor Code against the employer for acting in bad faith in not paying wages as required by Chapter 61 of the Texas Labor Code; or

   E. Employer is convicted for Theft of Service under Section 31.04 of the Texas Penal Code; or Court of competent jurisdiction finds that an employer engaged in wage theft.

2. ***Employee*** and ***employer*** have the meanings by Texas Labor Code, Section 61.001.

3. ***Wages*** means compensation owed by an employer for labor or services rendered by an employee, whether computed on a time, task piece, commission or other basis.

4. ***Wage Enforcement Coordinator*** shall mean the person designated by the City Manager to receive and investigate claims of wage theft and to create, maintain a Wage Theft database.

5. ***Wage Theft Complaint*** means a written complaint filed with the Wage Theft Coordinator alleging any instance of wage theft by an employer.

Section 3.46.020 Wage Theft Coordinator

A. Appointment. The City Manager shall designate a Wage Theft Coordinator to perform the duties identified in this Section.

B. Duties. The Wage Theft Coordinator shall:

1. Wage Theft Adjudication Database- the Wage Theft Coordinator shall create and maintain a database of employers located or operating within the City of El Paso who have a Wage Theft Adjudication record. The Wage Theft Database will be created on a “complaint basis” and populated with information provided by third parties. The Wage Theft Coordinator shall be under no obligation to investigate wage theft or to prosecute complaints.

2. Substantiate whether a proposed party to a City Contract has a Wage Theft Adjudication record or part of the Wage Theft Adjudication Database.
3. Receive, review, and process wage theft complaint according to the process established in Section 3.46.040.

4. Coordinate with the Purchasing Director to ensure that the notice of the City's Wage Theft ordinance is included in all the City's bid documents.

5. Provide and present an annual report to City Council regarding the number of employers in the Wage Theft Adjudication Database and an update on the status of the enforcement of the City's Wage Theft ordinance.

Section 3.46.030 Wage Theft Adjudication Database

A. Inclusion in Database. No employer shall be included in the database until the

Wage Theft Coordinator has:

1. Confirmed that an employer has a Wage Theft Adjudication record;

2. Provided written notice at the address provided by the complainant, or on the documents evidencing the wage theft adjudication of the inclusion of the employer in the Wage Theft Adjudication Database.

3. Allowed the employer thirty (30) days from the date of the notice to protest the employer's inclusion in such database and provide the Wage Theft Coordinator evidence that the employer should not be included in the Wage Theft Adjudication Database. In the case of a wage theft judgment, the Wage Theft Coordinator shall not include the employer in the Database upon proof of full payment of outstanding wage theft adjudication judgment.

B. Identity of Employer. An employer operating as a business entity shall be listed by its corporate name, address and type of business organization. If the employer is an individual, the person's name, business address, type of business or occupation shall be included.

C. Removal from Database. An employer shall be removed from the database if:

1. A Wage Theft Adjudication has been annulled, withdrawn, overturned, rescinded or abrogated, and such fact has been confirmed by the Wage Theft Coordinator; or

2. Employer provides proof of full payment of an outstanding wage theft adjudication judgment; or

3. Five (5) years or more has elapsed since the date of the employer's most recent Wage Theft Adjudication.

Section 3.46.040 WAGE THEFT COMPLAINTS PROCEDURE

A. Non- City Contracts. If no City contract is involved, the Wage Theft Coordinator shall assist persons with wage theft complaints by referring the complaint to the Texas Workforce Commission.

B. City Contracts.

1. **Filing a Complaint.** A person employed in connection with a city contract who has a good faith belief that he is the victim of wage theft may file a wage theft complaint with the Wage Theft Coordinator in writing. The complaint shall contain fact including but not limited to: identity of the employer, date(s) on or during which the wages were earned and were due to be paid, the amount of the wages alleged to have been withheld or unpaid.

2. **Notification and Resolution of the Complaint.** The Wage Theft Coordinator shall notify the employer of the receipt of the wage theft complaint. Employer shall attempt to resolve the alleged issue with the affected employee by written agreement within thirty (30) days from the receipt of the City notification. Employer shall notify the Wage Theft Coordinator if the issue was resolved between the Employer and the affected employee.

3. **Texas Workforce Commission.**

   a. If no resolution is achieved, the complainant shall be referred to the Texas Workforce Commission ("Commission").

   b. The Wage Theft Coordinator shall seek to determine status of the complaint at the commission. The Wage Theft Coordinator shall place Employer in the Wage Theft Adjudication Database if it appears that the Commission has made a finding that wage theft occurred.

Section 3.46.050 RETALIATION PROHIBITED

A. No City Contractor shall retaliate against any person who has filed a wage theft complaint pursuant to this Chapter. Retaliation means action to discharge from employment, discipline, or otherwise punish an employee for filing a wage theft complaint in good faith.

B. If the Wage Theft Coordinator determines that retaliation has occurred, the Wage Theft Coordinator shall refer the matter to the City Attorney for appropriate action.

Section 3.46.060. SANCTIONS AND PENALTIES- CITY CONTRACTS

A. **Existing City Agreement.**

1. In the event the City becomes aware of the fact an Employer acting under a contract which was awarded prior to the effective date of this Ordinance has been adjudicated for wage theft, the City may terminate the contract.

2. Prior to terminating the contract the City will provide Employer with thirty (30) days' notice and opportunity to provide full proof of payment of outstanding wage theft adjudication judgment.

3. The award of future City contracts after termination of an existing contract due to an Employer's wage theft adjudication shall be managed as a New City Agreement in this section.

B. **New City Agreement.**

1. In the event the City becomes aware an Employer with a wage theft adjudication record has submitted a bid or proposal for City work prior to the award of a contract, the City shall deem the

Employer non-responsible and refuse to enter into a City Agreement with such Employer for a period of five (5) years after the date of final adjudication.

2. Prior to deeming the Employer as non-responsible, the City will provide the Employer with thirty (30) days' notice and opportunity to provide full proof of payment of outstanding wage theft adjudication judgment.

2.4 Request for Clarification

In order to meet the City's schedule, it is extremely important that requests for clarification or additional information be submitted in writing no later than **February 14, 2018**. Questions submitted after this date may not elicit a response. All proposals or requests for clarification should be sent to the following:

BY E-MAIL

Paula Salas
Purchasing Agent
Email: SALASpx@elpasotexas.gov

IN WRITING (MAIL OR HAND DELIVERY)

City of El Paso
Purchasing & Strategic Sourcing Department
300 N. Campbell, 1ST Floor
El Paso TX 79901-1153
Attn: Paula Salas

2.5 Schedule of Events

The following Schedule of Events represents the City's estimate of the timetable that will be followed in connection with this solicitation:

EVENTS	DATE AND/OR TIME
Release Request for Qualifications	January 23, 2018
Non Mandatory Vendor Conference (Recommended to attend)	February 5, 2018
Last Day for Offerors to Submit Written Questions	February 14, 2018
Answers provided	February 21, 2018
Submission of proposals	March 7, 2018
Evaluations (approx.)	March 28, 2018
Negotiations (approx.)	April 4, 2018
Contract Award Date (approx.)	May 15, 2018

The City reserves the right, at its sole discretion, to adjust this Schedule of Events as it deems necessary. If necessary, the City will communicate adjustments to any event in the Schedule of Events in the form of an amendment. Amendment to this RFQ will only be issued and posted on the City's website at: http://www.elpasotexas.gov/financial_services/invitations.asp

2.6 Contract Period (Initial and Option Terms)

The term of this contract shall be for thirty-six (36) months with a two (2) year option to extend the same terms and conditions. The City Manager or designee may extend the option to extend.

2.7 Notices of Instruction to Offerors

1. Signature of Offer to person Authorized to Sign

All offers shall bear an original signature, in ink, of a responsible officer or agent of the company. Failure to sign the offer portion of the solicitation, offer and award form, or to include a substitute signed document binding the offeror, will be the basis for declaring a proposal non-responsive.

2. Effective Period of Proposals

Proposals should expressly state that the offer (including all rate, fee, or cost proposals submitted in response to this RFQ, as well as the scope and character of the services described in the proposal) will remain in effect until at least 120 consecutive days from the date set for the receipt of offers and may be accepted by the City of El Paso at any time on or before such date.

3. Required Number of Copies

Offer (proposal) must be submitted in original form with five (5) additional copies, unless otherwise stated herein.

4. Offer Submission Instructions

Offer must be sealed when presented to the Purchasing & Strategic Sourcing Department. Offers will be received by the City of El Paso until **2:00 p.m., local time, on Wednesday, January 31, 2018. Proposals will be publicly opened and the Name of the Offeror, and City and State will be read aloud.**

5. Addressing Instructions

The envelope containing the offer must be addressed as follows:

City of El Paso
Purchasing & Strategic Sourcing Department
300 N. Campbell, 1st Floor
El Paso, Texas 79901-1153
Attn: Purchasing Director

Also, write the Request for Qualification Number, Request for Qualification Title, and Proposal Opening Date clearly on a visible section of the envelope.

6. Labeling of Proposals/Bids [Rev 6/15/05]

The Due Date and Solicitation Number must be written on the outside of the package containing the offer. The City Purchasing & Strategic Sourcing Department may open any unlabeled submittal to identify it properly. Offerors are required to identify their package to protect the integrity of their proposals and to fully avail themselves of the evaluation and selection process.

7. Offeror Delivery Responsibility

Proposals received at the Purchasing & Strategic Sourcing Department after the specified date and time will not be accepted. Package delivery services such as FedEx, UPS, etc., deliver packages addressed to the Purchasing Director directly to the Purchasing & Strategic Sourcing Department.

U.S. Postal Service deliveries, **including Express Mail,** are **only delivered to the Mail Room** at City Hall Bldg. #2 and may or may not be delivered by the Mail Room to the Purchasing & Strategic Sourcing Department by the time and place proposals are recorded.

The offeror accepts all responsibility for delivering its offer to address stated above within the specified time or the offer will be considered non-responsive and will be mailed back unopened. If the envelope does not reflect a return address, it will be opened for the sole purpose of obtaining the return address.

8. Descriptive Literature

Descriptive literature, where applicable, containing complete scope of services or other information sufficient for the City to determine compliance with the specifications must accompany each proposal, in duplicate. If an Offeror wishes to furnish additional information more sheets may be added.

The City is not responsible for locating or securing any information that is not identified in the offer and reasonably available to the City, and the City will not be responsible for locating or securing information not included with the offer. In conducting its assessment, the City may use data provided by the Offeror and data obtained from other sources, but while the City may elect to consider data obtained from other sources the burden of providing thorough and complete information rests with the Offeror.

9. Offer Documents, Supporting Literature and Related Data

Related data, where applicable, will be made part of the proposal. All documents, literature and related data submitted as an offer become the property of the City of El Paso.

10. Alternate Offers

The City of El Paso is not accepting alternate proposals for review, evaluation and/or consideration.

11. Solicitation Changes or Clarifications

Requests for changes or clarifications to this solicitation are welcomed by the Purchasing & Strategic Sourcing Department for its consideration, provided the requests are in writing and received by **February 14, 2018.** Requests received after that time may not elicit a response. Refer to Requests for Clarification in Communication Section for more details.

12. Acknowledgement of Solicitation Amendments

All Amendments will be acknowledged on the *Solicitation of Offers* form (first page of this solicitation). Failure to do so may cause the proposal to be rejected. It is the Offeror's responsibility to ensure that all information regarding the RFP, including all amendments, is included in the offer. Amendments may be posted at any time up to and including the due date.

13. Proposal Preparation Cost

This solicitation does not commit the City of El Paso to pay any costs incurred in preparing and submitting the proposal or to contract for the services specified. This RFQ is not to be construed as a contract or a commitment of any kind, nor does it commit the City of El Paso to pay for any costs incurred in the preparation of a formal presentation, or for any costs incurred prior to the execution of a formal contract.

14. Additional Information

For further procedural information concerning this Request for Qualifications contact the point of contact for contract administration (refer to in the Communication Section for contact details).

15. Notification to Unsuccessful Offerors

All awards are made by the City Council of the City of El Paso. All City Council agenda are posted on the City of El Paso's Web Page for review by all Offerors. The URL is: http://www.elpasotexas.gov.

16. Acceptance or Rejection of Proposals

The City reserves the right to accept or reject any or all proposals, to waive all minor technicalities, and to accept the proposal or proposal determined to be the most advantageous to the City. Additionally, the City may accept a proposal subject to an exception if, in the sole judgment of the City, the proposal meets or exceeds the City's specifications.

17. Failure to Respond to Solicitations

Any offeror who fails to respond to three consecutive solicitations will be purged from the mailing list. It is the offeror's responsibility to remain on the mailing list under his requested commodity classes.

18. Time

[RESERVED]

19. Debriefing Requests

A written request for a debriefing should be directed to the Analyst identified in **Request for Clarification in Part 2, Item 2.3.2** within five (5) days after the date of award. Debriefing requests will be scheduled with the appropriate evaluation committee and Purchasing representative.

Only an Offeror who has actually submitted a proposal may appeal an award decision.

Failure to follow the requirements of the Protest procedures established by the City of El Paso, Texas, shall constitute a waiver of all protest rights. Protest must be made after the Council agenda has been posted and by 5 p.m. the day before the Council meeting in which the award will be made. The Offeror must write a letter to Bruce D. Collins, Purchasing Director, using the phrase "Proposal Protest" to the address listed above. Protest must be sent by certified or registered mail or delivered in person. Note: the recommendation for award is posted on the City's website at least 72 hours before each Tuesdays Council meeting.

The written protest should include 1) the Request for Proposal number and should clearly state, with particularity, the relevant facts believed to constitute an error in the award recommendation, or desired remedy; 2) a specific identification of the statutory or regulatory provision that the Protesting Offeror alleges has been violated and the provisions entitling the Protesting Offeror to relief; 3) a specific factual description, with particularity, of each action by the City that the Protesting Offeror alleges to be a violation of the statutory or regulatory provision that the Protesting Offeror has identified pursuant to item (2) of this paragraph (mere disagreement with the decisions of City employees does not constitute grounds for protest). If there is no disputed issue of the material fact, the Protest must indicate this as well.

Only the information provided within the protest period will be considered for response.

PART 3 - SCOPE OF WORK

3.1 Scope of Work and Minimum Requirements

SCOPE OF WORK

I. Physical Examinations

Scope of Services and Method of Compensation

A. Contractor will perform physical examinations on all applicants for uniformed positions for the Fire Department, and on all individuals being considered for reinstatement into uniformed positions for the Fire Department.

B. The general physical examination must be sufficient to screen for the diseases and conditions outlined on NFPA 1582 (see Attachment A - Fire with subsequent updates).

C. The physical examination shall be a complete physical examination, including, but not limited to an electrocardiogram, chest x-ray (two views), and lumbar spine (three views), auditory and visual testing. The general physical examination and medical standards for Fire and EMS employees must be covered in the physical examination as outlined on NFPA 1582 (see Attachment A - Fire with subsequent updates).

D. Physical examinations must include auditory and visual testing:

1. Auditory testing must be done with an audiometer, preferably in a sound-proof room. Offeror should indicate the type and model of equipment to be used and qualifications of technicians administering tests. Additionally, the Offeror must guarantee that the equipment is calibrated as recommended by the manufacturer.

2. Vision testing must include testing for:

    a. near visual acuity
    b. far visual acuity
    c. peripheral vision
    d. refractive error
    e. color vision

    Offerors should specify method and equipment to be used to test vision and state qualifications of technicians who will administer tests. Additionally, the Offerors must guarantee that the equipment is calibrated as recommended by the manufacturer.

3. These physical examinations must be conducted by a licensed physician.

4. The licensed physician conducting the physical examination shall complete an examination form as provided by the City on each individual for Fire identifying and reporting the presence of Category A or disqualifying Category B medical conditions if present, and whether or not the candidate is medically certified to safely perform the essential job tasks, as appropriate, and return this form to the Departmental Human Resources Manager.

5. Contractor shall return all results of the physical examinations, as specified above, to the Departmental Human Resources Manager within one week of the initial visit. The Departmental Human Resources Manager must be notified of any rescheduling of appointments. Any rescheduling must be within two (2) days of original appointment.

6. Contractor will perform clinical laboratory tests as follows:

   a. Contractor will perform clinical laboratory tests only for eligible individuals selected as applicants for uniformed positions in the Fire department, and all individuals being considered for reinstatement into uniformed positions in those departments as follows:

      Serology: CBC, STS, FBS, SMA, WBC, and RBC
      Urinalysis: SPG, Blood, Albumin, Microscopic
      EKG: Computerized with three channels and physical reading
      Radiology: Chest X-Ray (two views), Lumbar Spine, (three views) to include Radiologist's interpretation
      Spirometry: To include physical interpretation

      The abbreviations used above are defined as follows:

      CBC: Complete Blood Count
      Blood: Hemoglobin Platelet Count
      WBC: White Blood Count Hematocrit
      RBC: Red Blood Count
      SPG: Specific Gravity
      FBS: Fasting blood sugar
      EKG: Electrocardiogram
      STS: Standard test for syphilis
      SMA: Sequential modular analysis

   b. City shall not pay for any additional testing done without City's prior authorization.

7. All results of clinical laboratory testing, as specified above, must be returned to the Departmental Human Resources Manager, within one week of the initial visit. Contractor expressly understands and agrees that all results from the tests to be performed by the Contractor under the terms and conditions of this contract shall at all times remain strictly confidential.

8. Physical examinations are subject to the terms and conditions as specified in this contract and the terms and conditions of NFPA 1582 (see Attachment A - Fire with subsequent updates).

II. Drug-Alcohol Drug Testing

A. Testing shall be conducted for pre-employment, reinstatements, and follow-up as requested by the City of El Paso Fire Department.

Students and Trainees of the Contractor are forbidden to work on company specimens.

Charge to include all collection, chain of custody, testing, and storage procedures, MRO, and any other services, materials, equipment or other expense, duty or obligation of the Contractor, its assignees, delegates, independent contractors, or other parties acting on behalf of the Contractor, in the performance of drug and alcohol screening.

1. **CERTIFIED LABORATORY.** The testing laboratory shall be certified by the Substance Abuse and Mental Health Service Administration (S.A.M.H.S.A./N.I.D.A.) and the Department of Health and Human Services.

2. **EMIT TEST.**

   A. The FDA approved EMIT TEST (Enzyme-Multiplied Immunoassay Method) must be used to test participants urine sample.

   B. All positive (EMIT) results must be confirmed with the Gas Chromatography/Mass Spectrometry Test (GC/MS).

3. **COLLECTION SITES AND HOURS**. Contractor shall furnish at least one (1) collection site within the El Paso City limits which must be available on a twenty-four (24) hour basis. The locations and hours of all collection sites must be provided. Changes to hours of operation or the location of such sites must be available to the City within twenty-four (24) hours.

   A. Contractor shall furnish a certified Medical Review Officer (MRO) review and reporting service.

4. **REGULATED AND UNREGULATED URINE SPECIMENS**

   A. Regulated urine specimens will be analyzed for the following drugs:

      a. Marijuana (THC metabolite)
      b. Cocaine
      c. Amphetamines
      d. Opiates (including heroin)
      e. Phencyclidine (PCP)

   B. Unregulated urine specimens will be analyzed for at least the following drugs and any adultrants (others may be added):

      a. Marijuana (THC metabolite)
      b. Cocaine
      c. Amphetamines
      d. Opiates (including heroin)
      e. Phencyclidine (PCP)
      f. Barbiturates
      g. Benzodiazepines
      h. Methodone
      i. Methaqualone
      j. Propoxyphene

   C. Contractor shall furnish all supplies needed for the collection kits and shipping material to include Custody and Control Form.

   D. Contractor shall furnish transportation of specimen to the NIDA certified laboratory.

   E. Contractor shall furnish a computer generated unbiased random testing and record maintenance program.

   F. Contractor shall provide records/results storage and administration of test.

5. **UPDATES AND MANAGEMENT**

Contractor shall also provide regulation compliance updates and management.

6. **REPORTING OF TEST RESULTS**

a. The Contractor shall report all test results using a signed and dated legible photocopy of Copy 2 of the Custody and Control Form (CCF). If Copy 2 of the CCF is not used, a written report must be provided as outlined in 49 CFR, Section 40.163. All negative test results verified by the MRO shall be reported on the same day or next business day of said verification. All other results (including positive test results, adulterated or substituted specimen results, and refusal to test) shall be reported on the same day or next business day of verification by the MRO. Additionally, positive results shall follow the proper procedures using MRO and 49 CFR part 40. A hard copy of all results shall be transmitted to the City of El Paso within two (2) days of verification. Transmission of results may occur by fax, courier, mail or electronic form. The Contractor shall report positive results only to the City Human Resources Director or designated employer representative.

b. If a drug analysis indicates the positive presence of a controlled substance, the MRO or his/hers designee will be responsible for contacting the employee in person or by telephone and conducting an interview with the employee to determine if there is an alternative medical explanation for the drugs found in the employee's urine specimen. If the employee provides appropriate documentation and the MRO or his/her designee determines that it is legitimate medical use of the prohibited drug, the drug test results should be reported as negative to the employer. Supporting documentation must support such results.

c. If an alcohol screening indicates a confirmed positive presences of alcohol the contractor shall inform the supervisor accompanying the employee and the Departmental Human Resources Manager or designated representative of the results.

7. **SERVICE FEATURES**

A. All regulated results will be returned to the MRO by the laboratory. The MRO will transmit results to the Departmental Human Resources Manager or his/her designee. Contractor expressly understands and agrees that all results from the test performed by the Contractor under the terms and conditions of this contract shall at all times remain strictly confidential.

B. Contractor shall provide a clinical and private environment in which such participant shall produce a specimen for drug and alcohol screening. Contractor shall provide participant with a clinical and private setting in which to remove any unnecessary outer garments such as a coat or jacket that might conceal items or substances that could be used to tamper with or adulterate the urine specimen. The Contractor shall ensure that all personal belongings such as a purse or briefcase remain with the outer garments. Contractor shall provide an observer of the same sex as employee to remain in the restroom, but outside the closed door of the restroom stall. The observer shall note any unusual behavior or appearance on the urine custody and control form.

C. Contractor shall instruct the observer to reject an unusually hot or cold sample provided by participant. In the event of such a rejection, Contractor shall request further instructions from the Departmental Human Resources Manager as to how to proceed before taking any further action.

D. After participant has urinated into the specimen collection container, and has provided such container to the observer, the observer shall transfer the urine into (2) two separate containers. One container holding 30 ml as the primary sample and the other container holding 15 ml as the secondary sample. (Spit sample procedures shall be followed as set by D.O.T. 49 CFR part 40). The transfer of the urine into the specimen bottles shall be in full view of the participant. While still in full view of the participant, the observer shall then place caps securely on the specimen bottles, seal the caps with tamper-evident tape, and complete the specimen labels, have the participant initial the specimen labels in the appropriate place and affix the labels to the specimen bottles in the presence of the participant.

E. The observer shall then complete the requisition/chain of custody form in the presence of the Participant and have the participant initial the chain of custody portion in the appropriate area.

a. The Contractor must keep a detailed and accurate chain of custody which shows the following:

1. Where the specimen has been
2. Who has had access to the specimen
3. What tests were performed on the specimen
4. When those test were performed
5. What individual performed those tests

b. In addition a collection log must be kept that indicates the path of the specimen and contains the signatures of the individuals who handled the specimen, including the individual who collects the specimen.

F. All sample containers must have a label which is keyed to the participant's name, a unique I.D. number, the date the sample was taken, the initials of the individual who observed and the initials of any individual who has handled the sample or tested the sample and the collection site. Contractor must ensure that these labels are firmly attached to each bottle and that such labels are standardized so that each item is clearly understood.

G. The observer while still in the presence of the participant shall then place both sample containers into one tamper-evident bag, remove the protective paper strips from the adhesive area of the bag and seal the bag. Finally, the observer shall require the participant to initial the seal in the appropriate area. When specimens have been collected exactly as specified, Contractor shall transport the sealed, tamper-evident bag to the laboratory for testing. The laboratory must then follow all requirements to ensure the chain of custody and proper test procedures are carried out.

8. CONFIDENTIALITY

At all times, Contractor shall be solely responsible for ensuring that all results of the drug and alcohol screening procedures are kept strictly confidential and secure.

Only parties, as expressly designated by the Fire Human Resources Manager, should have access to the identification numbers and names of the participants who test positive for the presence of a particular drug or alcohol in their urine specimen.

9. **QUALIFICATIONS AND REFERENCES**

i. Experience – Provide company name, address and contact person of at least three present entities for who similar services are being performed by the contractor.

ii. MRO References – Name and qualifications of MRO(s) being used must be submitted with the proposal. Medical Review Officer must be a licensed physician who is certified by the American Association of Medical review Officers.

iii. Licenses and Certifications – A complete list of the laboratory's licenses and certifications for the performance of drug and alcohol testing must be submitted with bid.

III. General Information

A. City shall not pay for any additional testing done without City's prior authorization.

B. At the termination of the contract, all medical records produced or obtained as a product of the contract shall be forwarded to the City or such other place as the City may designate. All records shall be forwarded within twenty-four (24) hours of contract termination.

C. **CONFIDENTIAL MATERIAL:** Any material that is to be considered as confidential in nature must be clearly marked as such and will be treated as confidential by the City of El Paso.

D. The City may, at its option, conduct a site visit of respondent's facility.

E. All proposals and related data shall become the property of the City of El Paso.

IV. Invoicing

A. The Contractor shall submit monthly invoices, in single copy, on each contract, within fifteen (15) days after the end of the billing cycle, to the El Paso Fire Department Human Resources Division; Attention: Monica J Puga. Invoices covering more than one contract will not be accepted.

B. Invoices shall be itemized and transportation charges, if any, shall be listed separately.

C. Invoices shall reflect the Contract Number and Purchase Order Number.

D. Contractor shall designate a contact person to address billing issues.

E. The Contact person will respond to billing issues within twenty-four (24) hours, and shall have the authority to respond by taking corrective action or making necessary adjustments, if needed.

F. Do not include Federal, State, or City sales tax. City shall furnish tax exemption certificate if requested.

G. Discounts will be taken from the date of receipt of services or date or invoice, whichever is later.

H. The City's obligation is payable only and solely from funds available for the purpose of this service. Lack of funds shall render this contract null and void to the extent funds are not available and any delivered but unpaid for goods will be returned to the Contractor by the City.

I. Contractor shall advise the City of any changes in its remittance addresses.

PART 4 - FORMAT

4.1 Proposal Format and Structure

All submissions must follow the submission guidelines below. The City reserves the right to reject proposals not in compliance with these requirements.

1. Use fonts no smaller than Times New Roman, 10 point. Maximum length including title page, the entire proposal, and appendices should not exceed 100 pages but may be required in some instances.

2. All pages must be numbered.

3. Address qualifications criteria in the order presented in PART 5 – PROPOSAL EVALUATION.

4. Major sections must have page breaks between them and the following sections.

5. The proposal must be signed and titled by a duly authorized representative of the Offeror.

In addition, the City requires that all proposals contain the following:

6. Title Page – Clearly label with the RFQ number, RFQ title, Offeror's name, mailing address, and fax number, and the name, telephone number, and email address of a contact person.

7. Table of Contents – Identify the page location of each major section.

8. Introduction – Provide brief narrative of background and general qualifications of the Offeror, including any experience with services/products similar in scope and/or size to those requested in this RFQ.

9. Offeror's Proposal – Include all pages from this Request for Qualifications in addition to any other materials submitted by the Offeror. State in succinct terms the Offeror's understanding of the services to be provided and how the Offeror anticipates being able to meet the scope of work as delineated within Part 3 Scope of Work.

10. Contract Clauses and Forms – Include all pages and completed forms. In addition to the above information, describe any prior or pending litigation, civil or criminal, involving a governmental agency or which may affect the performances of the services to be rendered. This includes any instances in which the Offeror or any of its employees, subcontractors, or sub-consultants is or has been involved within the last three years.

11. Client list – include points of contact and relevant information from three or more organizations that have used your company for similar products/services within the last three years.

12. Response must demonstrate your comprehension of the objectives and services from the RFQ. Do not merely duplicate the Scope of Work as presented within this RFQ.

13. Appendices – include any additional information that the Offeror deems important to the decision process but that is not specified elsewhere in the RFQ.

14. Identify by name and title the individual responsible for the administration of the project. (That is, the individual who has the responsibility to oversee the contract, not a firm's contract negotiator, etc.)

15. Identify the project organization and staffing. A project organizational chart is to be provided, along with resumes of the personnel assigned to the project. Level of staff for work to be performed under this Contract. Proposals must describe the work to be performed by the individuals you name to perform essential functions and detail their specific qualifications and substantive experience directly related to this RFQ. A response prepared specifically for this RFQ is required. Marketing resumes often include non-relevant information that may detract from the evaluation of a proposal. Lists of projects are not useful. Focus on individual's specific duties and responsibilities and how project experience is relevant to the requirements of this RFQ.

16. A list of references that can be contacted to discuss the performance on similar work. If available, provide a sample of comparable data your firm has generated for a similar project (see evaluation factor "D", pg.22).

    References that are not relevant to RFQ should not be included. Therefore, the References provided should be directly related to the requirements in the SOW. The City is particularly interested in government references. The City may obtain other information by sending out questionnaires and/or through other sources. References other than those identified by the Offeror may be contacted by the City with the information received used in the evaluation.

    The Offeror shall provide references from at least three contracts, within the last three years that are similar in size, scope and complexity to Part 1 – Physical Exams and Drug Screening services.

17. Additional Information. Offerors are asked not to include loose brochures (e.g. general marketing material). Brochure material will not be considered for review. Only pertinent information should be submitted.

4.2 Copies Required

Paper – One (1) complete, original copy (signed in blue ink where required) and **Five (5) copies**, both contained in a single sealed submission. All responses shall contain those pages on which prices, other information, or signatures are required.

Electronic – One (1) electronic copy on a flash drive. Format of the electronic copy must be either .doc (readable by Microsoft Word 2003 or 2931) or .pdf (readable by Adobe Reader 9). The content of the electronic file shall be an exact submission of the hard copies of the proposals (i.e., documents should bear signatures, where applicable and be filled out entirely). In event of discrepancy/conflict between the hard copy and electronic copy will govern.

4.3 Proposal Cost

A Fee Proposal will be requested from the highest ranked proposer.

PAYMENT TERMS & CONDITIONS

NOTE: All vendors must accept an ACH payment effective immediately. Vendors must fill-out the attached Accounts Payable Direct Deposit Sign-Up Form located in Part 6 of this document to facilitate the Automated Clearing House (ACH) payment process.

Prompt Payment:

Unless a prompt payment discount is offered and accepted by the City of El Paso, payments will be made to the Contractor within thirty (30) days following acceptance of goods or services, or receipt of a properly prepared

invoice by the City Department identified in the Invoice Instructions set forth on the Purchase Order, whichever is later. Any discount for prompt payment will be calculated from the day goods or services are accepted or when a properly prepared invoice is received. Payments will be considered to have been made on the date of mailing (postmark) of the payment check or, for an electronic funds transfer, the specified payment date. Invoices are to be submitted in single copy to the appropriate Department.

Payment Terms: Please mark appropriate block.

_____% - 10 Days ☐
_____% - 20 Days ☐
_____% - 30 Days ☐
Net - 30 Days ☐

Late Payment fees will incur at the State of Texas statutory rate.

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PART 5 - PROPOSAL EVALUATION

5.1 Evaluation Factors

The proposal evaluation process is designed to award the contract, not necessarily to the Respondent of least cost, but rather to the Respondent with the best combination of attributes (i.e., qualifications and experience, cost) based upon the evaluation factors specifically established for this RFQ.

Respondents must provide all information outlined in the Evaluation Factors to be considered responsive. Proposals will be evaluated based on the responsiveness of the Respondent's information to the Evaluation Factors which will demonstrate the Respondent's understanding of the Evaluation Factors and capacity to perform the required services of this Request for Proposals.
Proposals will be evaluated based on the following Evaluation Factors:

EVALUATION FACTORS	MAXIMUM POINTS
A. Qualification and Number of Physicians available to perform examinations	40 Points
B. Qualification and Certification of laboratory performing lab work	20 Points
C. Education Background and Certifications of Staff	15 Points
D. Response of References	10 Points
E. Location and availability of facilities	15 Points
TOTAL	**100 Points**

The establishment, application and interpretation of the above Evaluation Factors shall be solely within the discretion of The City of El Paso ("the City"). The City reserves the right to determine the suitability of proposals on the basis of all these factors.

5.2 Evaluation Factor Description

The maximum points that shall be awarded for each of the Evaluation Factors are detailed and described below.

EVALUATION FACTOR A

Qualifications and number of physicians available to perform the examinations …..……40 Points
The proposer must specify the names and qualifications of all physicians who will be performing the examinations and shall be familiar with fire service job requirements and fit-for-duty expectations.

EVALUATION FACTOR B

Qualification and Certification of laboratory performing lab work…….…….. 20 Points

The proposer shall specify names and qualifications of labs performing such work and the names of other Fire Departments or public safety entities for which such work has been performed.

EVALUATION FACTOR C

Educational background and certifications of staff……..……..…..15 Points

The proposer shall provide the educational achievements and certifications of each of their staff members along with related experience in the field of providing Baseline Physicals for Firefightersor public safety entities.

EVALUATION FACTOR D

Response of References…….……..…..10 Points

The proposer is responsible for ensuring the accuracy of the contact information for the references provided. The City shall not contact the bidder for replacement references and/or contact information if said e-mail addresses or telephones numbers are not valid or connected.

In addition to the above, the Proposer is encouraged to inform said references that they shall initially be contacted via e-mail at the e-mail address provided herein. If a response to the e-mail is not provided within the designated time frame, the City will attempt to contact the reference by telephone at the number provided below. If the reference does not respond after two attempts via telephone the proposer shall receive zero points for said reference.

The proposer shall provide three (3) references of projects comparable in size and complexity to the requirements delineated within this solicitation. The Proposer shall exclude City of El Paso's departments and/or employees from the reference list. If the Proposer does not have references for three comparable projects with local governmental entities the Proposer shall list comparable contracts with Federal, State, or private sector or commercial contracts, in that order.

Response and quality of references to offeror's ability to:

A. Provide services as defined, completes projects on-time. 5 Points
B. Communicates and interacts with all staff levels and produces high-quality results. 5 Points

CLIENT'S NAME	CONTACT NAME & TELEPHONE NUMBER	EMAIL ADDRESS

EVALUATION FACTOR E

Location and availability of facilities ……..……..15 Points

The proposer shall provide a list of facilities for conducting Physical Exams for Firefighters with points awarded based on the total number of options offered.

A. Provide 1 location ……..……..... 5 points
B. Provide 2 locations……..……..... 10 points
C. Provide 3 or more locations……..…….. 15 points

Please fill out the following:

Number of Collections Facilities. _____

MAXIMUM TOTAL POSSIBLE POINTS……..…100 Points

5.3 Evaluation and Award Process-General Information

A. All offers are subject to the terms and conditions of this solicitation. Material exceptions to the terms and conditions, or failure to meet the City's minimum specifications, shall render the offer non-responsive to the solicitation.

B. Any award made under this solicitation shall be made to the Offeror who provides goods or services, other than professional services as defined by Section 2254.002 of the Government Code, that are determined to be the most advantageous to the City. Factors to be considered in determining the proposal most advantageous to the City are included below.

C. After the highest ranked offeror is selected by the evaluation committee, prompt payment discounts will be considered when making a determination that the negotiated price is fair and reasonable, providing the City is allowed at least ten (10) days in which to take advantage of the discount.

D. As part of the requirement to establish the responsibility of the Offeror, the City of El Paso may perform a price analysis to determine the reasonableness of the price(s) of the highest ranked Offeror's professional services. Prices that that appear to be unreasonably low may be determined to be evidence that pricing is not fair and reasonable and cause the Offer to be rejected.

5.3.1 Evaluation and Award Process

A. An Evaluation Committee shall be established to evaluate responses based solely on the Evaluation Factors set forth below. Factors not specified in the RFQ will not be considered. The City reserves the right to waive any minor irregularities or technicalities in the offers received. Responses will be evaluated on an individual basis against the requirements stated in the RFQ.

B. Minor problems of completeness or compliance may be called to the attention of Offerors for clarification. Substantial deviations from specifications or other requirements of this RFQ will result in disqualification of an offeror's response.

C. Award of a contract for professional services will be made on the basis of demonstrated competence and qualifications to perform the services and for a fair and reasonable price. Detailed evaluation of the responses to this RFQ will involve a determination of the most favorable combination of various elements contained in this RFQ.

D. During the evaluation process, the City reserves the right, where it may serve in the City's best interest, to request additional information or clarifications from Offerors, or to allow corrections of errors or omissions.

E. All responses meeting the minimum specifications of the scope of work will be ranked based on the evaluation criteria listed. After initial evaluations, the Evaluation Committee will determine a ranking..

F. At the completion of the evaluation period, the City will enter into negotiations with the highest ranked offeror. If the City cannot come to an agreement with that offeror it will formally end negotiations with that respondent and begin negotiations with the next highest ranked respondent.

G. The City reserves the right to negotiate the final scope of services, price, schedule, and any and all aspects of this solicitation with the highest ranked respondent.

H. Responses to this RFQ that are considered non-responsive will not receive consideration. The City reserves the right at any time during the evaluation process to reconsider any proposal submitted. It also reserves the right to meet with any Respondent at any time to gather additional information. Furthermore, the City reserves the right to delete, add or modify any aspect of this procurement through competitive negotiations up until the final contract signing.

I. The successful Offeror's response to this RFQ will be incorporated into the final contract. Any false or misleading statements found in the proposal will be grounds for disqualification or contract termination. Submission of a proposal indicates acceptance by the Offeror of the conditions contained in this RFQ, unless clearly and specifically noted in the proposal and confirmed in the contract between the City and the Offeror selected.

J. The City reserves the right to award this contract to one Respondent or to make multiple awards. The city may reject any or all offers if such action is in the City's interest, award, waive informalities and minor irregularities in offers received, and award all or part of the requirements stated.

PART 6 - MANDATORY SUBMITTALS

6.1 Business Information Certification
6.2 Non-Collusion and Business Disclosure Affidavit
6.3 Indebtedness Affidavit
6.4 Direct Deposit Sign-up Form

Responsibility Determination

The responsibility determination includes consideration of a Respondent's integrity, compliance with public policy, past performance with the City (if any), financial capacity and eligibility to perform government work (e.g., debarments/suspension from any Federal, State, or local government). The City reserves the right to perform whatever research it deems appropriate in order to access the merits of any Respondent's proposal.

A. Financial Capacity Determination

FINANCIAL INFORMATION

Financial Statements. Please provide financial statements for your organization for at least the last two (2) fiscal years as follows:
If a **publicly** held organization:

(1) Consolidated financial statements as submitted to the Securities and Exchange Commission (SEC) on Form 10K.
(2) The most recent Forms *100* since the last Form 10K was submitted.
(3) Any Form 8K's in your last fiscal year.

If a **privately** held organization:

(1) Balance sheet for your last two fiscal years certified by an independent Certified Public Accountant.
(2) Statement of income of your last two fiscal years certified by an independent Certified Public Accountant.

Management discussion and analysis of your organization's financial condition for the last two years indicating any changes in your financial position since the certified statements were prepared.

If not considered proprietary, any recent Management Letters.

Evidence of Financial Responsibility.

Submit evidence of financial responsibility. This may be a credit rating from a qualified firm preparing credit rating or a bank reference.

The City reserves the right to confirm and request clarification of all financial information provided (including requesting audited financial statements certified by an independent Certified Public Accountant), or to request documentation of the Offeror's ability to comply with all of the requirements in the Proposal Documents.

Incomplete disclosures may result in a proposal being deemed non-responsive.

Note: Dun & Bradstreet has the capability to obtain information on past performance on specific contractors. Accordingly, the City may require Offerors to provide a copy of a recent past performance report prepared by Dun & Bradstreet. The Past Performance Evaluation Report provided to the Offeror by Dun & Bradstreet shall be submitted, not later than 14 calendar days after request by the City. The Offeror shall be responsible for the cost of Dun & Bradstreet's preparation of the report.

B. Technical Capacity Determination

The City may conduct a survey relating to the Respondent's record of performance on past and present projects that are similar to the scope of work identified in this RFQ, which may include services/projects not identified by the Respondent. The City reserves the right to perform whatever research it deems appropriate in order to assess the merits of any Respondent's proposal. Such research may include, but not necessarily be limited to, discussions with outside Respondents, interviews and site visits with the Respondent's existing clients and analysis of industry reports. The City will make a finding of the Respondent's Technical Resources/Ability to perform the RFQ scope of work based upon the results of the survey.

A Respondent will be determined responsible if the City determines that the results of the Technical Resources/Ability survey reflect that the Respondent is capable of undertaking and completing the RFQ scope of work in a satisfactory manner.

PART 6 FORMS

6.1 Business Information Certification

Mark all that apply.

- ☐ Manufacturer or Producer
- ☐ Wholesaler
- ☐ Retailer
- ☐ Franchised Distributor
- ☐ Factory Representative
- ☐ Other_____
- ☐ Large Business
- ☐ Small Business
- ☐ Disadvantaged Business Enterprise
- ☐ Asian - Pacific American
- ☐ Black American
- ☐ Hispanic American
- ☐ Native American
- ☐ Woman Owned Business
- ☐ Handicapped
- ☐ Local Business Enterprise
- ☐ HUB State Certified Historically Underutilized Business (please furnish copy of Certification)

SMALL BUSINESS CONCERN: Less than $1,000,000.00 in annual receipts or fewer than one hundred [100] full time employees.

DISADVANTAGED BUSINESS ENTERPRISE: At least fifty-one percent [51%] owned by one or more socially disadvantaged individuals, or a publicly held corporation with at least fifty-one percent [51%] of the stock owned by one or more such individuals.

WOMAN-OWNED BUSINESS: At least fifty-one percent [51%] owned by a woman, or women, who also control and operate the business. "Control" in this context means making policy decisions. "Operate" in this context means actively carrying on day to day management

HANDICAPPED: At least fifty-one percent [51%] owned by a person or persons with an orthopedic, otic [hearing], optic [visual], or mental impairment which substantially limits one or more of their major life activities.

LOCAL BUSINESS: A business with a Tier 1 or Tier 2 principal place of business within in incorporated city limits of El Paso, Texas.

HUB [HISTORICALLY UNDERUTILIZED BUSINESS]: A Business Enterprise, which has been granted a Certificate by the State of Texas, as a Historically Underutilized Business. The City of El Paso utilizes information on Historically Underutilized Businesses (HUB), from the State of Texas Comptroller of Public Accounts (CPA), HUB Program, 1711 San Jacinto Ave, P.O. Box 13186, Austin, Texas 78711. The City encourages you to contact the State if you feel you may qualify.

I certify that the foregoing information is a full, true and correct statement of the facts.

_____

Signature of Person Authorized to Sign Application

_____

Title Date

City of El Paso
Purchasing & Strategic Sourcing Department

6.2 Non-Collusion and Business Disclosure Affidavit

THIS IS AN OFFICIAL PURCHASING DOCUMENT – RETAIN WITH PURCHASE ORDER FILE

Before me, the undersigned official, on this day, personally appeared _____, a person known to me to be the person whose signature appears below; whom after being duly sworn upon his/her oath deposed and said:

1. I am over the age of 18, have never been convicted of a crime and am competent to make this affidavit.

2. I am a duly authorized representative of the following company or firm (the "Offeror") which is submitting a response to *2018-931R, Physical Exams and Drug Screening - Fire Department*:

   _____ (Name of Offeror).

3. **BY SUBMITTING THIS BID, I CERTIFY THAT OFFEROR AND ITS AGENTS, OFFICERS OR EMPLOYERS HAVE NOT DIRECTLY OR INDIRECTLY ENTERED INTO ANY AGREEMENTS, PARTICIPATED IN ANY COLLUSION, OR OTHERWISE TAKEN ANY ACTION IN RESTRAINT OF FREE COMPETITIVE BIDDING IN CONNECTION WITH THIS BID OR WITH ANY CITY OFFICIAL.**

4. I have listed in ***Paragraph 10*** below all the names the Offeror uses and has used in the past and certify that I have disclosed all such names, including any assumed (DBA) names.

5. **Certificate of Organization.** In completing this Affidavit, I have attached a copy of the organization certificate issued by the Secretary of State of the state in which the company was organized (i.e. Certificate of Formation, Certificate of Good Standing, Statement of Operation or Registration and/or a copy of Assumed Name Certificate if the Offeror/Offeror used a trade name in the Solicitation documents is other than the name under which company was organized).

6. **Material Change in Organization or Operation**. ***Except as described in Paragraph 10 below***, I certify that Offeror is not currently engaged nor does it anticipate that it will engage in any negotiation or activity that will result in the merger, transfer of organization, management reorganization or departure of key personnel within the next twelve (12) months that may affect the Offeror's ability to carry out the contract with the City of El Paso.

7. **Debarment/Suspension**. ***Except as described in Paragraph 10 below,*** I certify that Offeror and its subcontractors, officers or agents are not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from any covered transactions by any federal, state or local department or agency. If such an event has occurred, state in ***Paragraph 10*** below, the reason for or the circumstances surrounding the debarment or suspension, including but, not limited to, the name of the governmental entity, the period of time for such debarment or suspension and provide the name and current phone number of a governmental contact person familiar with the debarment or suspension.

   I understand the Offeror is obligated to immediately inform the City in the event that the Offeror is included in such a debarment/suspension list during the performance of this Contract with the City of El Paso.

8. **Default/Termination of Contracts**. ***Except as described in Paragraph 10 below***, I certify that, within the last 24 months, there are no Contract(s) between the Offeror and a governmental entity that have been terminated, with or without the Offeror's default. If such a contract has been terminated within the last 24 months, state in ***Paragraph 10*** below the reason for or circumstances surrounding the termination.
9. **Taxpayer Identification.** In completing this Affidavit, I have also attached a copy of a completed Form W-9 that shows the Offeror's taxpayer identification number (Employer Identification Number or Social Security Number). I understand that failure to provide this information may require the City to withhold 20% of payments due under the contract and pay that amount directly to the IRS.

10. Additional Information (state the number of paragraph above which corresponds to the information provided)

_____

_____

_____

_____

_____

_____

_____

_____

_____

(Attach additional pages if needed)

Attached are the following:

Certificate of Organization (required by ***Paragraph 5***)
Taxpayer Identification (required by ***Paragraph 9***)

I understand that by providing false information on this Affidavit, I could be found guilty of a Class A misdemeanor or state jail felony under the Texas Penal Code, Section 37l10. In addition, by providing false information on this Affidavit, the Offeror it could be considered not responsible on this and future solicitations, and such determination could result in the discontinuation of any/all business or contracts with the Offeror by the City of El Paso.

_____
Signature

SUBSCRIBED AND SWORN to before me on this _____ day of _____, 20_____.

_____
Notary Public

_____
Printed Name

_____
Commission Expires

(Rev. Sept. 2009)

City of El Paso
Purchasing & Strategic Sourcing Department

6.3 Indebtedness Affidavit

THIS IS AN OFFICIAL PURCHASING DOCUMENT – RETAIN WITH PURCHASE ORDER FILE

Before me, the undersigned authority, on this day personally appeared _____ [FULL NAME] (hereafter "***Affiant***"), a person known to me to be the person whose signature appears below, whom after being duly sworn upon his/her oath deposed stated as follows:

1. Affiant is authorized and competent to give this affidavit and has personal knowledge of the facts and matters herein stated.

2. Affiant is an authorized representative of the following company or firm: _____ [*Contracting Entity's Corporate or Legal Name*] (hereafter, "***Contracting Entity***").

3. Affiant is submitting this affidavit in response to the following bid: *Solicitation No. 2018-931R, Physical Exams and Drug Screening - Fire Department,* which is expected to be in an amount that exceeds $50,000.00.

4. Contracting Entity is organized as a business entity as noted below (check box as applicable):

For Profit Entity (select below):

- ☐ Sole Proprietorship
- ☐ Corporation
- ☐ Partnership
- ☐ Limited Partnership
- ☐ Joint Venture
- ☐ Limited Liability Company
- ☐ Other (Specify type in space provided below):

_____

For Non-Profit Entity or Other (select below):

- ☐ Non-Profit Corporation
- ☐ Unincorporated Association

5. The information shown below is true and correct for the Contracting Entity. If Contracting Entity is a sole proprietorship or partnership, list all owners of 5% or more of the Contracting Entity. Where the Contracting Entity is an unincorporated association, the required information has been shown for each officer. [Note: In all cases, use FULL name, business and residence addresses and telephone numbers.]

Contracting Entity:

Name	
Business Address [No./Street]	
City/State/Zip Code	
Telephone Number	
Resident Address (if applicable)	
City/State/Zip Code	
Telephone Number	
Federal Tax ID Number	
Texas Sales Tax Number	

5% Owner(s) or Officers of Unincorporated Association ** (If none, state "None"):

Name	
Business Address [No./Street]	
City/State/Zip Code	
Telephone Number	
Resident Address (if applicable)	
City/State/Zip Code	
Telephone Number	

**Attach additional pages if necessary to supply the required names and addresses.

6. Affiant understands that in accordance with Ordinance No. 016529 of the City of El Paso (the "***City***"), the City may refuse to award a contract to or enter into a transaction with Contracting Entity that is an apparent low Offeror or successful Offeror that is indebted to the City.

7. Affiant understands that the term "***Debt***" shall mean any sum of money, which is owed to the City by a Contracting Entity, Owner, or Vendor, that exceeds one hundred dollars ($100.00) and that has become Delinquent, as defined hereinafter. Such Debt shall include but not be limited to: (i) property taxes; (ii) hotel/motel occupancy taxes; and (iii) license and permit fees.

8. Affiant understands that the term "***Delinquent***" shall mean any unpaid Debt that is past due for sixty (60) days or more and, which is not currently subject to challenge, protest, or appeal.

9. Affiant represents that to the best of its knowledge, the Contracting Entity is not indebted to the City in any amounts as described in Item No. 7 above, as of the date of the submittal. If the Contracting Entity is indebted to the City, the following represents the type and estimated amount of indebtedness:

_____

_____

10. If the Contracting Entity is indebted to the City, describe any payment arrangements that have been entered into to settle the Debt.

_____

_____

11. In the event that the City refuses to do business with a Contracting Entity due to any indebtedness listed above or as determined by the City Financial Services Department, the Contracting Agency may appeal this determination in accordance with the appeal regulations in Ordinance 016529.

Affiant certifies that he is duly authorized to submit the above information on behalf of the Contracting Entity, that Affiant is associated with the Contracting Entity in the capacity noted above and has personal knowledge of the accuracy of the information provided herein; and that the information provided herein is true and correct to the best of Affiant's knowledge and belief. Affiant understands that providing false information on this form shall be grounds for debarment and discontinuation of any/all business with the City of El Paso.

_____
Signature

SUBSCRIBED AND SWORN to before me on this _____ day of _____, 20_____.

_____
Notary Public

_____
Printed Name

_____
Commission Expires

CITY OF EL PASO PURCHASING & STRATEGIC SOURCING DEPARTMENT
VENDOR INFORMATION FORM
This form must be accompanied by an IRS Form W-9 and Conflict of Interest Questionnaire

City Department: Telephone # Name:
Request:
( ) Add ( ) Update ( ) Inactivate
( ) Vendor ( ) Contractual Employee ( ) City of El Paso Employee
Vendor Mailing Address: If same as W-9 check box ☐
Company Name:
Street:_____
City:_____State_____Zip Code_____

Contact Name & Title:
(Authorized Company Contact)
Telephone # **(required)** (____) Fax # ( )
E-Mail Address:
Contact Name & Title: (Alternate
Authorized Company Contact)
Telephone # **(required)** (____) E-mail
Web Page:

VENDOR STATUS:
(Yes ( ) (No ( ) Small business concern (Less than 100 employees or less than $1,000,000.00 Annual Receipts) (Yes ( ) (No ( ) Disadvantage business concern (At least 51% owned by one or more socially disadvantaged individuals; or, a publicly-owned business at least 51% of the stock owned by one or more of such individuals.) If your company is certified please send us a photo copy. We must have an updated copy of the certificate on file. DBES include (Please mark one:)
( ) Black Americans ( ) Hispanic Americans
( ) Native Americans ( ) Asian-Pacific Americans
(Yes ( ) (No ( ) Woman-owned business (At least 51% owned by a woman or women who also control and operate it. "Control" in this context means exercising the power to make policy decisions. "Operate" in this context means being actively involved in the day-to-day management.)
(Yes ( ) No ( ) Handicapped (At least 51% owned by a person or persons with an orthopedic, hearing, mental or visual impairment which substantially limits one of more of his/hers/their major life activities.)
(Yes ( ) No ( ) Local business enterprise (At least 51% of which is owned by a resident or residents of El Paso County and the principal place of business is in El Paso County.)
(Yes ( ) No ( ) Hub (Historically underutilized business) If your company is certified please send us a photo copy. We need to have an updated copy of the certificate on file.

IRS-Withholding required information – Mark one of the following which applies to the type of payment that will be made to the vendor: (Incomplete forms will be returned)

☐ Goods (No Withholding / No Default Class)
☐ Settlement / Attorney Proceeds (Withholding / Default Class 14)
☐ Medical & Healthcare (Withholding / Default Class 6)
☐ Services (Withholding / Default Class 7)
☐ Rental Property (Withholding / Default Class 1)
☐ Stipend (No Withholding / Default Class 7)
☐ Corporation (No Withholding/ No Default Class)

Contractual Employees or Vendors
- Based on W-9, Individual/Sole Proprietor, Partnership, Limited Liability Company (all LLCs C=Corporation, D=Disregarded Entity, S=Corporation, P=Partnership) are marked as withholding. Corporation is not marked as withholding.
- Vendors for Rent, Medical Services, Attorney Fees are **always** marked as withholding, even if they are a Corporation

City of El Paso Employees (IRS-Withholding not required for the following items)
( ) Pension ( ) Refund ( ) Mileage ( ) Reimbursement ( ) Settlement ( ) Travel Request ( ) Tuition Reimbursement

PPS FORM 035, V2 OS, March 7, 2017 All previous versions are obsolete

Form **W-9**
(Rev. December 2014)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Give Form to the requester. Do not send to the IRS.

Print or type
See Specific Instructions on page 2.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification; check only **one** of the following seven boxes:

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____

Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.)

Requester's name and address (optional)

6 City, state, and ZIP code

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

		–							

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

Sign Here Signature of U.S. person ▶ Date ▶

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at *www.irs.gov/fw9*.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding?* on page 2.

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.

Cat. No. 10231X

PPS FORM 036, V2 OS, March 7, 2017 All previous versions are obsolete

City of El Paso

PURCHASING & STRATEGIC SOURCING

DIRECT DEPOSIT SIGN-UP FORM

This form is used to collect important information to enroll, update or change your Direct Deposit request. Please complete and return to the Purchasing & Strategic Sourcing Department; see contact information provided below. For assistance, please call 915-212-0043.

Part I – Vendor / Employee Information

Name of Payee (Print) _____

Federal Taxpayer ID Number or Employee KRONOS ID# _____

Address: _____

City, State, and Zip Code _____

Telephone _____

E-mail to Receive ACH Remittance Notifications _____

Part II – Direct Deposit Information

Action Requested: ☐ Start Direct Deposit ☐ Stop Direct Deposit ☐ Change Direct Deposit

Name of Financial Institution: _____

Routing Number (must be nine digits): _____

Bank Account Number: _____

Account Type: ☐ Checking ☐ Savings

For security purposes, you ***must attach a voided check or bank letter*** in order to process direct deposit request. Do not use a deposit slip as some banking institutions do not display the correct routing number on deposit slips.

Voided Check or Bank Letter Required

Part III – Terms and Conditions

I hereby authorize and request the City of El Paso to initiate credit entries and if necessary, a debit entry in accordance with National Automated Clearing House Association (NACHA) rules reversing a credit entry made in error, to my account at the financial institution named. The electronic payment is to remain in effect until withdrawn by written notification to the City of El Paso. Funds that are sent to a closed bank account are returned by the banking institutions within five (5) business days. Re-issued payments will be made when funds are returned to City of El Paso.

Print Name and Title:_____ Signature:_____ Date: _____

(Authorized Company Contact)

Purchasing & Strategic Sourcing Department
300 N. Campbell, 1st floor – EL PASO TX 79901

Business Entity: Disclosure of Interested Parties Texas
Government Code § 2252.908

Form 1295

This Form is required in the submission of your bid or proposal:

The Texas Legislature adopted House Bill 1295 in 2015. HB 1295 added Section 2252.908 to the Government Code. Under this new law, any business entity that enters into a contract with the City of El Paso that requires the approval of the City Council must submit a "Disclosure of Interested Parties" to the City prior to the execution of the contract. This form, the "Disclosure of Interested Parties" form was promulgated by the Texas Ethics Commission, and is the "Form 1295".

The Texas Ethics Commission was also charged with promulgating rules to implement Section 2252.908 of the Government Code. The rules adopted by the Texas Ethics Commission are located at Sections 46.1, 46.3, and 46.5 of Title 1 of the Texas Administrative Code.

The Texas Ethics Commission's website is: www.ethics.state.tx.us. The area of their website pertaining to Form 1295 is: www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm

All business entities are encouraged to visit the Texas Ethics Commission website, which contains Frequently Asked Questions, instructional videos, and much more information on HB1295/Section 2252.908 requirements and/or to consult with their own counsel.

Once the business entity has completed their electronic filing of Form 1295, then the business entity must print out the form and sign and notarize the form. The form must be submitted with your bid or proposal.

If your firm is selected for award, the Purchasing & Strategic Sourcing Department will go to the Texas Ethics Commission website to submit electronic confirmation of the City's receipt of the completed, signed, and notarized Form 1295.

CERTIFICATE OF INTERESTED PARTIES

FORM 1295

Complete Nos. 1 - 4 and 6 if there are interested parties.
Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

OFFICE USE ONLY

1 **Name of business entity filing form, and the city, state and country of the business entity's place of business.**

Please enter your business entity information

2 **Name of governmental entity or state agency that is a party to the contract for which the form is being filed.**

The City of El Paso

3 **Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the goods or services to be provided under the contract.**

Enter City of El Paso contract, solicitation, or reference number

4 Name of Interested Party	City, State, Country (place of business)	Nature of Interest (check applicable)	
		Controlling	Intermediary
For information see Section 2252.908 of the Texas Government Code, Sections 46.1, 46.3, and 46.5 of Title 1 of the Texas Administrative Code, and the Texas Ethics Commission website			

EXAMPLE

5 **Check only if there is NO Interested Party.**

6 **AFFIDAVIT**

I swear, or affirm, under penalty of perjury, that the above disclosure is true and correct.

Please sign and notarize form before submitting to the City of El Paso Purchasing & Strategic Sourcing Department

_____
Signature of authorized agent of contracting business entity

Sworn to and subscribed before me, by the said _____, this the _____ day of _____, 20_____, to certify which, witness my hand and seal of office.

_____ _____ _____
Signature of officer administering oath | Printed name of officer administering oath | Title of officer administering oath

ADD ADDITIONAL PAGES AS NECESSARY

Form provided by Texas Ethics Commission www.ethics.state.tx.us Adopted 10/5/2015

PART 7 - CONTRACT CLAUSES

1. TYPE AND TERM OF CONTRACT

This is a Best Value Contract under which the City shall order all of its supplies and/or services described in Part 1 from the successful bidder, hereinafter referred to as the Contractor, for the duration of the contract.

In the event the City has not obtained another service contractor by the expiration date of the term contract, the City, at its discretion, may extend the contract on a month-to-month basis not to exceed six (6) months until such time as a new contract is awarded.

The term of this agreement shall be for thirty-six (36) months commencing on the date the Contractor receives a written NOTICE OF AWARD. Delivery of the NOTICE OF AWARD shall be by Email or US Postal Service.

2. INVOICES & PAYMENTS

A. The Contractor will submit invoices, in single copy, on each contract after each delivery. Invoices covering more than one purchase order will not be accepted.

B. Invoices will be itemized, including serial number of unit; transportation charges, if any, will be listed separately.

C. Invoices will reflect the Contract Number and the Purchase Order Number.

D. Do not include Federal Tax, State Tax, or City Tax. The City will furnish a tax exemption certificate upon request.

E. Discounts will be taken from the date of receipt of goods or date of invoice, whichever is later.

F. A copy of the bill of lading and the freight waybill when applicable will be attached to the invoice.

G. Payment will not be due until the above instruments are submitted after delivery and acceptance.

H. Mail invoices to the City Department indicated in the Invoice Instructions set forth on the Purchase Order.

I. Contractor shall advise the Comptroller of any changes in its remittance addresses.

3. CONTRACTUAL RELATIONSHIP

Nothing herein will be construed as creating the relationship of employer and employee between the City and the Contractor or between the City and the Contractor's employees. The City will not be subject to any obligations or liabilities of the Contractor or his employees incurred in the performance of the contract unless otherwise herein authorized. The Contractor is an independent Contractor and nothing contained herein will constitute or designate the Contractor or any of his employees as employees of the City. Neither the Contractor nor his employees will be entitled to any of the benefits established for City employees, nor be covered by the City's Workers' Compensation Program.

4. INDEMNIFICATION [Rev. 04-15-99] [Rev. 01-04-04]

Contractor or its insurer will INDEMNIFY, DEFEND AND HOLD the City, its officers, agents and employees, HARMLESS FOR AND AGAINST ANY AND ALL CLAIMS, CAUSES OF ACTION, LIABILITY, DAMAGES OR EXPENSE, (INCLUDING BUT NOT LIMITED TO ATTORNEY FEES AND COSTS) FOR ANY DAMAGE TO OR LOSS OF ANY PROPERTY, OR ANY ILLNESS, INJURY, PHYSICAL OR MENTAL IMPAIRMENT, LOSS OF SERVICES, OR DEATH TO ANY PERSON ARISING OUT OF OR RELATED TO THIS AGREEMENT. Without modifying the conditions of preserving, asserting or enforcing any legal liability against the City as required by the City Charter or any law, the City will promptly forward to Contractor every demand, notice, summons or other process received by the City in any claim or legal proceeding contemplated herein. Contractor will 1) investigate or cause the investigation of accidents or occurrences involving such injuries or damages; 2) negotiate or cause to be negotiated the claim as the Contractor may deem expedient; and 3) defend or cause to be defended on behalf of the City all suits for damages even if groundless, false or fraudulent, brought because of such injuries or damages. Contractor will pay all judgments finally establishing liability of the City in actions defended by Contractor pursuant to this section along with all attorneys' fees and costs incurred by the City including interest accruing to the date of payment by Contractor, and premiums on any appeal bonds. The City, at its election, will have the right to participate in any such negotiations or legal proceedings to the extent of its interest. The City will not be responsible for any loss of or damage to the Contractor's property from any cause.

5. GRATUITIES

The City may, by written notice to the Contractor, cancel this contract without liability to Contractor if it is determined by the City that gratuities, in the form of entertainment, gifts, or otherwise, were offered or given by the Contractor, or any agent or representative of the Contractor, to any officer or employee of the City of El Paso with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending, or the making or any determinations with respect to the performing of such a contract. In the event this contract is canceled by the City pursuant to this provision, the City shall be entitled, in addition to any other rights and remedies, to recover or withhold the amount of the cost incurred by the Contractor in providing such gratuities.

6. WARRANTY-PRICE

A. The price to be paid by the City will be that contained in the Contractor's bid which the Contractor warrants to be no higher

than Seller's current prices on orders by others for products of the kind and specification covered by this contract for similar quantities under similar or like conditions and methods of purchase. In the event Contractor breaches this warranty the prices of the items will be reduced to the Contractor's current prices on orders by others, or in the alternative, the City may cancel this contract without liability to Contractor for breach or Contractor's actual expense.

B. The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for commission, percentage, brokerage, or contingent fee excepting bona fide employees of bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the City will have the right in addition to any other right or rights to cancel this contract without liability and to deduct from the contract price, or otherwise recover the full amount of such commission, percentage, brokerage or contingent fee.

7. RIGHT TO ASSURANCE

Whenever one party to this contract in good faith has reason to question the other party's intent to perform, he may demand that the other party give written assurance of his intent to perform. In the event that a demand is made and no assurance is given within five (5) calendar days, the demanding party may treat this failure as an anticipatory repudiation of the contract.

8. TERMINATION [Rev. 06/07/97]

A. Termination for Convenience

The City of El Paso may terminate this contract, in whole or in part, at any time by written notice to the Contractor. The Contractor will be paid its costs, including the contract close out costs, and profit on work performed up to the time of termination. The Contractor will promptly submit its termination claim to the City of El Paso to be paid the Contractor. If the Contractor has any property in its possession belonging to the City of El Paso, the Contractor will account for the same, and dispose of it in the manner the City of El Paso directs.

B. Termination for Default

If the Contractor fails to comply with any provision of the contract the City of El Paso may terminate this contract for default. Termination shall be effected by serving a notice of intent to terminate the contract setting forth the manner in which the Contractor is in default. The Contractor will be given an opportunity to correct the problem within a reasonable time before termination notice is rendered. The Contractor will only be paid the contract price for supplies delivered and accepted, or services performed in accordance with the manner of performance set forth in the contract. The City shall have the right to immediately terminate the Contract for default if the Contractor violates any local, state, or federal laws, rule or regulations that relate to the performance of this Agreement.

9. ADDITIONAL REMEDIES **[**New 12/96]

If the City terminates the contract because the Contractor fails to deliver goods as required by the contract, the City shall have all of the remedies available to a buyer pursuant to the *UNIFORM COMMERCIAL CODE* including the right to purchase the goods from another vendor in substitution for those due from the Contractor. The cost to cover shall be the cost of substitute goods determined by informal or formal procurement procedures as required by the Local Government Code. The City may recover the difference between the cost of cover and the contract cost by deducting the same from amounts owed to Contractor for goods delivered prior to termination or any other lawful means.

10. TERMINATION FOR DEFAULT BY CITY [Rev. 06/09/97]

If the City fails to perform any of its duties under this contract, Contractor may deliver a written notice to the Purchasing Manager describing the default, specifying the provisions of the contract under which the Contractor considers the City to be in default and setting forth a date of termination not sooner than 90 days following receipt of the Notice. The Contractor at its sole option may extend the proposed date of termination to a later date. If the City fails to cure such default prior to the proposed date of termination, Contractor may terminate its performance under this Contract as of such date.

11. FORCE MAJEURE [Rev. 06/07/97]

If, by reason of Force Majeure, either party hereto will be rendered unable wholly or in part to carry out its obligations under this Contract then such party will give notice and full particulars of such Force Majeure in writing to the other party within a reasonable time after occurrence of the event or cause relied upon, and the obligation of the party giving such notice, so far as it is affected by such Force Majeure, will be suspended for only thirty (30) days during the continuance of the inability then claimed, except as hereinafter provided, but for no longer period, and such party will try to remove or overcome such inability with all reasonable dispatch.

The term Force Majeure as employed herein, will mean acts of God, strikes, lockouts, or other industrial disturbances, acts of public enemies, orders of any kind of government of the United States or the State of Texas or any civil or military authority, insurrections, riots, epidemics, landslides, lightning, earthquake, polices, hurricanes, storms, floods, washouts, droughts, arrests, restraint of government and people, civil disturbances, explosions, breakage or accidents to machinery, pipelines, or canals. It is understood and agreed that the settlement of strikes and lockouts will be entirely within the discretion of the party having the difficulty, and that the above requirement that any Force Majeure will be remedied with all reasonable dispatch will not require the settlement of strikes and lockouts by acceding to the demands of the opposing party or parties when such settlement is unfavorable in the judgment of the party having the difficulty. If a party is unable to comply with the provisions of this contract by reason of Force Majeure for a period beyond thirty days after the event or cause relied upon, then upon written notice after the thirty (30) days, the affected party shall be excused from further performance under this contract.

12. ASSIGNMENT-DELEGATION

No right or interest in this contract will be assigned or delegation of any obligation made by the Contractor without the written permission of the City. Any attempted assignment or delegation by the Contractor will be wholly void and totally ineffective for all purposes unless made in conformity with this paragraph.

13. WAIVER

No claim or right arising out of a breach of this contract can be discharged in whole or in part by a waiver or renunciation of the claim or right unless the waiver or renunciation is supported by consideration and is in writing signed by the aggrieved party.

14. INTERPRETATION-PAROL EVIDENCE

This writing is intended by the parties as a final expression of their agreement and is intended also as a complete and exclusive

statement of the terms of their contract. No course of prior dealings between the parties and no usage of the trade will be relevant to supplement or explain any term used in this contract. Acceptance or acquiescence in a course of performance rendered under this contract will not be relevant to determine the meaning of this contract even though the accepting or acquiescing party has knowledge of the performance and opportunity for objection. Whenever a term defined by the Uniform Commercial Code is used in this contract, the definition contained in the Code is to control.

15. APPLICABLE LAW

The law of the State of Texas will control this contract along with any applicable provisions of Federal law or the City Charter or any ordinance of the City of El Paso.

16. ADVERTISING

Contractor will not advertise or publish, without the City's prior consent, the fact that the City has entered into this contract, except to the extent necessary to comply with proper requests for information from an authorized representative of the federal, state or local government.

17. AVAILABILITY OF FUNDS

The awarding of this contract is dependent upon the availability of funding. In the event that funds do not become available the contract may be terminated or the scope may be amended. A 30-day written notice will be given to the vendor and there will be no penalty nor removal charges incurred by the City.

18. VENUE

Both parties agree that venue for any litigation arising from this contract will lie in El Paso, El Paso County, Texas.

19. ADDITIONAL REMEDY FOR HEALTH OR SAFETY VIOLATION

If the Purchasing Director determines that Contractor's default constitutes an immediate threat to the health or safety of City employees or members of the public, he may give written notice to Contractor of such determination giving Contractor a reasonable opportunity to cure the default which shall be a period of time not less than 24 hours. If the Contractor has not cured the violation within the time stated in the notice, the City shall have the right to terminate the contract immediately and obtain like services as necessary to preserve or protect the public health or safety from another vendor in substitution for those due from the Contractor at a cost determined by reasonable informal procurement procedures. The City may recover the difference between the cost of substitute services and the contract price from Contractor as damages. The City may deduct the damages from Contractor's account for services rendered prior to the Notice of Violation or for services rendered by Contractor pursuant to a different contract or pursue any other lawful means of recovery. The failure of the City to obtain substitute services and charge the Contractor under this clause is not a bar to any other remedy available for default.

20. COMPREHENSIVE GENERAL LIABILITY INSURANCE

For the duration of this contract and any extension hereof, Contractor shall carry in a solvent company authorized to do business in Texas, comprehensive general liability insurance in the following amounts:

$1,000,000.00 – Per Occurrence
$1,000,000.00 – General Aggregate
$1,000,000.00 – Products/Completed Operations-Occurrence & Aggregate

With respect to the above-required insurance, the City of El Paso and its officers and employees shall be named as additional insured as their interests may appear. The City shall be provided with sixty (60) calendar days advance notice, in writing, of any cancellation or material change. The City shall be provided with certificates of insurance evidencing the above required insurance prior to the commencement of this contract and thereafter with certificates evidencing renewal or replacement of said policies of insurance at least fifteen (15) calendar days prior to the expiration or cancellation of any such policies.

Notices and Certificates required by this clause shall be provided to:

City of El Paso
Purchasing & Strategic Sourcing Department
300 N. Campbell, 1st Floor
El Paso, Texas 79901-1153
Attn: Paula Salas, Purchasing Agent

Please refer to proposal Number/Contract Number and Title in all correspondence.

Failure to submit insurance certification may result in contract cancellation.

21. WORKERS' COMPENSATION

For the duration of this contract and any extension hereof, Contractor shall carry Workers' Compensation and Employers' Liability Insurance in the amount required by Texas law: $500,000.00. Out-of-state Contractors that provide goods through US mail, UPS, etc. are exempt from this requirement.

22. CONTRACT ADMINISTRATION

The point of contact for the administration of this Contract, on behalf of the City of El Paso, is:

Deborah Olivas
Business & Financial Manager, El Paso Fire Department
Telephone: (915) 485-5606
Email: olivasd@elpasotexas.gov

Note any contact with the Contract Administrator prior to award of this contract is a violation of the Cone of Silence (2.3.1 Cone of Silence/Anti Lobbying Policy) and your submission may be subject to disqualification.

Mail correspondence should be addressed to:

City of El Paso
Purchasing & Strategic Sourcing Department
300 N. Campbell
El Paso, TX 79901
Attn: Paula Salas

Please refer to Bid Number/Contract Number and Title in all correspondence.

23. COMPLIANCE WITH NON-DISCRIMINATION LAWS

The Contractor agrees that it, its employees, officers, agents, and subcontractors, will comply with all applicable federal and state laws and regulations and local ordinances of the City of El Paso in the performance of this Contract, including, but not limited to, the American with Disabilities Act, the Occupational Safety and Health Act, or any environmental laws.

The Contractor further agrees that it, its employees, officers, agents, and subcontractors will not engage in any employment

practices that have the effect of discriminating against employees or prospective employees because of sex, race, religion, age, disability, ethnic background or national origin, or political belief or affiliation of such person, or refuse, deny, or withhold from any person, for any reason directly or indirectly, relating to the race, gender, gender identity, sexual orientation, color, religion, ethnic background or national origin of such person, any of the accommodations, advantages, facilities, or services offered to the general public by place of public accommodation.

24. RIGHT TO AUDIT

The Contractor agrees that the City shall, until the expiration of three (3) years after final payment under this Contract, have access to and the right to examine and copy any directly pertinent books, computer and digital files, documents, papers, and records of the Contractor involving transactions relating to this Contract. Contractor agrees that the City shall have access during normal working hours to all necessary Contractor facilities, and shall be provided adequate and appropriate workspace in order to conduct audits in compliance with the provisions of this section. The City shall give Contractor reasonable advance notice of intended audits. The City will pay Contractor for reasonable costs of any copying the City performs on the Contractor's equipment or requests the Contractor to provide. The Contractor agrees to refund to the City any overpayments disclosed by any such audit.

The Contractor agrees that it will include this requirement into any subcontract entered into in connection with this Contract.

25. COOPERATIVE PURCHASING

When stated specifically in the solicitation, the City of El Paso may participate in, sponsor, conduct or administer a cooperative procurement agreement with one or more other public bodies or agencies of the State of Texas for the purpose of combining requirements to increase the efficiency or reduce administrative expenses. The Contractor must deal directly with each participating governmental entity named in the solicitation concerning the placement of orders, issuance of the purchase order, insurance certificates, contractual disputes, invoicing and payment or any other terms or conditions the participating agency may require. The actual utilization of this contract award by the participating governmental entity is at the sole discretion of that participating entity.

The City of El Paso is acting on behalf of the participating governmental agency for the sole purpose of complying with Texas competitive bidding requirements and shall not be held liable for any costs, damages, etc. incurred by the Contractor with regard to any purchase by the participating agency. The City of El Paso shall be legally responsible only for payment for goods and services in the quantities detailed in the City's own purchase order or contract.

PART 8 - TITLE VI REQUIREMENT

8.1 Title VI Contract Provisions

Subrecipients of federal financial assistance must ensure that the clauses of Appendix A of the U.S. DOT Standard Title VI Assurances are inserted in every contract subject to the Act and the Regulations and that Form FHWA-1273 be physically attached to all federal-aid construction contracts of $10,000 or more.

NOTE TO CONTRACTORS:

FORM 1273 and **Appendix A** (attached) must be inserted in all subcontractor contracts.

The successful bidder will be required to provide a copy of each of its subcontractors (all tiers) to verify that the above mentioned provisions are included

8.2 APPENDIX A

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

(1) Compliance with Regulations: The contractor shall comply with the Regulations relative to nondiscrimination in Federally-assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

(2) Nondiscrimination: The Contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

(3) Solicitations for Subcontractors, Including Procurements of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

(4) Information and Reports: The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts other sources of information, and its facilities as may be determined by the City of El Paso to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information the contractor shall so certify to the City of El Paso, as appropriate, and shall set forth what efforts it has made to obtain the information.

(5) Sanctions for Noncompliance: In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the City of El Paso shall impose such contract sanctions as it may determine to be appropriate, including but not limited to:

a. Withholding of payments to the contractor under the contract until the contractor complies, and / or

b. Cancellation, termination or suspension of the contract in whole or in part.

(6) Incorporation of Provisions: The contractor shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directive issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the City of El Paso may direct as a means of enforcing such provisions including sanctions for non- compliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with litigation with a subcontractor or supplier as a result of such direction, the contractor may request the City of El Paso to enter into such litigation to protect the interests of the City of El Paso, and in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States

8.3 Required Contract Provisions

FEDERAL-AID CONSTRUCTION CONTRACTS

I. General

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. Nondiscrimination

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations

pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.
8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. Nonsegregated Facilities

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.
The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. Davis-Bacon and Related Act Provisions

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account asset for the meeting of obligations under the plan or program.

2. Withholding

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

3. Payrolls and basic records

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

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency.

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5

(a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

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

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction

programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

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

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. Contract Work Hours and Safety Standards Act

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

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

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

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

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. Subletting or Assigning The Contract

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. Safety: Accident Prevention

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. False Statements Concerning Highway Projects

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. Implementation Of Clean Air Act And Federal Water Pollution Control Act

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. Certification Regarding Debarment, Suspension, Ineligibility And Voluntary Exclusion

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered

transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

XI. Certification Regarding Use of Contract Funds for Lobbying

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the

participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

ATTACHMENT A

NFPA® 1582

Standard on

Comprehensive Occupational Medical Program for Fire Departments

2013 Edition

This edition of NFPA 1582, *Standard on Comprehensive Occupational Medical Program for Fire Departments*, was prepared by the Technical Committee on Fire Service Occupational Safety and Health and acted on by NFPA at its June Association Technical Meeting held June 11–14, 2012, in Las Vegas, NV. It was issued by the Standards Council on August 9, 2012, with an effective date of August 29, 2012, and supersedes all previous editions.

This edition of NFPA 1582 was approved as an American National Standard on August 29, 2012.

Origin and Development of NFPA 1582

The initial mandatory medical requirements for candidates for fire fighter were in the 1974 edition of NFPA 1001, *Standard on Professional Qualifications for Fire Fighter*. When the first edition of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, was issued in 1987, it required all members engaged in emergency operation to be examined by a physician at least annually and suggested the medical examination be developed and administered by the fire department physician in recognition of the specific requirements of the members' activities.

In the late 1980s, members of the Technical Committee on Fire Fighter Professional Qualifications (responsible for NFPA 1001) and members of the Technical Committee on Fire Service Occupational Safety and Health (responsible for NFPA 1500) formed a working group to develop a new standard on medical requirements for fire fighters.

The first edition of NFPA 1582 was titled *Standard on Medical Requirements for Fire Fighters* and was issued in 1992 under the responsibility of the Fire Service Occupational Safety and Health Committee. A subsequent edition was issued in 1997. The 2000 edition was titled *Standard on Medical Requirements for Fire Fighters and Information for Fire Department Physicians*, in recognition of the increasing amount of guidance being provided in the document to persons serving as fire department physicians.

The title of the 2003 edition was changed to *Standard on Comprehensive Occupational Medical Program for Fire Departments*, to reflect a comprehensive occupational medical program. The document included references to the IAFC-IAFF Fire Service Joint Labor-Management Wellness-Fitness Initiative, and to NFPA 1583, *Standard on Health-Related Fitness Programs for Fire Fighters*. These two documents outline a health-related fitness program that is medically validated against NFPA 1582. The 2003 edition delineated between medical issues of a candidate seeking to become a fire fighter, and those of incumbents currently performing the tasks of fire fighting. The intent with incumbents with a medical condition is to rehabilitate them and only restrict them from performing those essential job tasks where their injury or illness would affect the safety of themselves or others on their crew.

In the 2007 edition, new requirements were added to both the chapter on medical evaluation for candidates and the chapter on specific evaluation of medical conditions in incumbents to allow persons with diabetes to enter the fire service or continue performing essential job tasks associated with fire fighting if they meet defined criteria. All the medical conditions that govern whether a person can become a fire fighter and the specific medical conditions of incumbents that affect their ability to perform certain essential job tasks were reviewed and updated, if appropriate, based on current medical research and knowledge.

For the 2013 edition, the committee, with the assistance of several task groups and subject matter experts in speciality areas with regard to medical conditions, has updated many of the medical requirements to reflect current practices. Some of the areas that were addressed were that of diabetes, metabolic syndrome, prosthetic adjuncts, hearing aids, and cochlear implants, as well as pregnancy and reproductive system concerns. Also developed for the 2013 edition is a new annex designed to assist the end user with the subject of pregnancy. The committee, with the assistance of the International Association of Fire Fighters, has provided an updated Annex C, which contains the protocols for the evaluation of fitness for members. The committee also updated some of the medical requirements relating to hypertension, anticoagulants, TB testing, and screening for cancer.

Technical Committee on Fire Service Occupational Safety and Health

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This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents on occupational safety and health in the working environment of the fire service. The Committee shall also have responsibility for documents related to medical requirements for fire fighters, and the professional qualifications for Fire Department Safety Officer.

Contents

NFPA 1582

Standard on

Comprehensive Occupational Medical Program for Fire Departments

2013 Edition

NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

Changes other than editorial are indicated by a vertical rule beside the paragraph, table, or figure in which the change occurred. These rules are included as an aid to the user in identifying changes from the previous edition. Where one or more complete paragraphs have been deleted, the deletion is indicated by a bullet (•) between the paragraphs that remain.

A reference in brackets [ ] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for extracts in mandatory sections of the document are given in Chapter 2 and those for extracts in informational sections are given in Annex F. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced publications can be found in Chapter 2 and Annex F.

Chapter 1 Administration

1.1 Scope. This standard contains descriptive requirements for a comprehensive occupational medical program for fire departments.

1.1.1* The medical requirements in this standard are applicable to fire department candidates and members whose job descriptions as defined by the authority having jurisdiction (AHJ) are outlined in NFPA 1001, *Standard for Fire Fighter Professional Qualifications*; NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*; NFPA 1003, *Standard for Airport Fire Fighter Professional Qualifications*; NFPA 1006, *Standard for Technical Rescuer Professional Qualifications*; NFPA 1021, *Standard for Fire Officer Professional Qualifications*; and NFPA 1051, *Standard for Wildland Fire Fighter Professional Qualifications.*

1.1.2 This standard provides information for physicians and other health care providers responsible for fire department occupational medical programs.

1.1.3 These requirements are applicable to public, governmental, military, private, and industrial fire department organizations providing rescue, fire suppression, emergency medical services, hazardous materials mitigation, special operations, and other emergency services.

1.1.4 This standard shall not apply to industrial fire brigades that also can be known as emergency brigades, emergency response teams, fire teams, plant emergency organizations, or mine emergency response teams.

1.2 Purpose. The purpose of this standard is to outline an occupational medical program that, when implemented in a fire department, will reduce the risk and burden of fire service occupational morbidity and mortality while improving the health, and thus the safety and effectiveness, of fire fighters operating to protect civilian life and property.

1.2.1 Accordingly, the standard specifies the following information:

(1) Minimal medical requirements for candidates as delineated in Chapter 6
(2) Occupational medical and fitness evaluations for members as delineated in Chapters 7 and 8
(3) Information regarding fire department activities and essential job tasks that assist the department physician in providing proper medical support for members
(4) Methods and types of data that must be collected to sustain comprehensive occupational medical programs for fire departments

1.2.2* The implementation of the medical requirements outlined in this standard ensures that candidates and current members are medically capable of performing their required duties and will reduce the risk of occupational injuries and illnesses.

1.2.3 Nothing herein is intended to restrict any jurisdiction from exceeding these minimum requirements.

1.3 Implementation.

1.3.1 For candidates, the medical requirements of this standard shall be implemented when this standard is adopted by an AHJ on an effective date specified by the AHJ.

1.3.2* When this standard is adopted by a jurisdiction, date(s) shall be set for members to achieve compliance by establishing a phase-in schedule for compliance with specific requirements, if needed.

1.3.3* The fire department risk management plan as described in NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, shall include implementation of a comprehensive occupational medical program that is compliant with this standard.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, 2013 edition.

NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, 2009 edition.

NFPA 1003, *Standard for Airport Fire Fighter Professional Qualifications,* 2010 edition.

NFPA 1006, *Standard for Technical Rescuer Professional Qualifications,* 2008 edition.

NFPA 1021, *Standard for Fire Officer Professional Qualifications,* 2009 edition.

NFPA 1051, *Standard for Wildland Fire Fighter Professional Qualifications,* 2012 edition.

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program,* 2013 edition.

NFPA 1561, *Standard on Emergency Services Incident Management System,* 2008 edition.

NFPA 1581, *Standard on Fire Department Infection Control Program,* 2010 edition.

NFPA 1583, *Standard on Health-Related Fitness Programs for Fire Department Members,* 2008 edition.

NFPA 1584, *Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises,* 2008 edition.

2.3 Other Publications.

2.3.1 ANSI Publications. American National Standards Institute, Inc., 25 West 43rd Street, 4th Floor, New York, NY 10036.

ANSI Z24.5, *Audiometric Device Testing,* 1951.

2.3.2 CDC Publications. Centers for Disease Control and Prevention, 1600 Clifton Road, Atlanta, GA 30333.

"Measles, Mumps, and Rubella — Vaccine Use and Strategies for Elimination of Measles, Rubella, and Congenital Rubella Syndrome and Control of Mumps: Recommendations of the Advisory Committee on Immunization Practices (ACIP)," *Morbidity and Mortality Weekly Report,* May 19, 1998, 47 (No. RR-8): 1-57.

"Poliomyelitis Prevention in the United States: Updated Recommendations of the Advisory Committee on Immunization Practices (ACIP)," *Morbidity and Mortality Weekly Report,* 49(No. RR-5):1-22, May 19, 2000.

2.3.3 U.S. Government Publications. U.S. Government Printing Office, Washington, DC 20402.

Title 29, Code of Federal Regulations, Part 1910.95, "Occupational noise exposure," 1996.

Title 29, Code of Federal Regulations, Part 1910.120, "Hazardous waste operations and emergency response," 2002.

Title 29, Code of Federal Regulations, Part 1910.134, "Respiratory protection," 1998.

Title 29, Code of Federal Regulations, Part 1910.1020, "Access to employee exposure and medical records." 1996.

Title 29, Code of Federal Regulations, Part 1910.1030, "Bloodborne pathogens," 2001.

U.S. Dept. of Health & Human Services, National Heart, Lung and Blood Institute, *Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure* (JNC 7), 2004

U.S. Dept. of Health & Human Services, National Heart Lung and Blood Institute, *Guidelines for the Diagnosis and Management of Asthma* (EPR-3), June 2007.

2.3.4 Other Publications. International Council of Ophthalmology, "International Clinical Diabetic Retinopathy Disease Severity Scale," San Francisco, CA, October 2002, http://www.icoph.org/standards/pdrdetail.html.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections.

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program,* 2013 edition.

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary,* 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Shall. Indicates a mandatory requirement.

3.2.4 Should. Indicates a recommendation or that which is advised but not required.

3.3 General Definitions.

3.3.1* Candidate. A person who has submitted an application to become a member of the fire department. [**1500,** 2013]

3.3.2 Category A Medical Condition. See 3.3.13.1.

3.3.3 Category B Medical Condition. See 3.3.13.2.

3.3.4 Emergency Medical Services. The provision of treatment, such as first aid, cardiopulmonary resuscitation, basic life support, advanced life support, and other pre-hospital procedures including ambulance transportation to patients. [**1500,** 2013]

3.3.5 Essential Job Task. Task or assigned duty that is critical to successful performance of the job. *(See Chapter 5 and Section 9.1.)*

3.3.6 Evaluation. See 3.3.14, Medical Evaluation.

3.3.7 Fire Department Physician. A licensed doctor of medicine or osteopathy who has been designated by the fire department to provide professional expertise in the areas of occupational safety and health as they relate to emergency services.

3.3.8 Functional Capacity Evaluation. An assessment of the correlation between that individual's capabilities and the essential job tasks.

3.3.9 Health and Fitness Coordinator. A person who, under the supervision of the fire department physician, has been designated by the department to coordinate and be responsible for the health and fitness programs of the department.

3.3.10 Health and Safety Committee. A representative group of individuals who serve along with the fire department physician and health and fitness coordinator, and is chaired by the fire department health and safety officer, who oversee the implementation of the fire department occupational safety and health program.

3.3.11 Health and Safety Officer. The member of the fire department assigned and authorized by the fire chief as the manager of the safety and health program. [**1500**, 2013]

3.3.12 Infection Control Program. The fire department's formal policy and implementation of procedures relating to the control of infectious and communicable disease hazards where employees, patients, or the general public could be exposed to blood, body fluids, or other potentially infectious materials in the fire department work environment. [**1500**, 2013]

3.3.13 Medical Condition Classifications.

3.3.13.1 *Category A Medical Condition.* A medical condition that would preclude a person from performing as a member in a training or emergency operational environment by presenting a significant risk to the safety and health of the person or others.

3.3.13.2 *Category B Medical Condition.* A medical condition that, based on its severity or degree, could preclude a person from performing as a member in a training or emergency operational environment by presenting a significant risk to the safety and health of the person or others.

3.3.14 Medical Evaluation. The analysis of information for the purpose of making a determination of medical certification. Medical evaluation includes a medical examination.

3.3.15 Medical Examination. An examination performed or directed by the fire department physician.

3.3.16 Medically Certified. A determination by the fire department physician that the candidate or current member meets the medical requirements of this standard.

3.3.17* Member. A person involved in performing the duties and responsibilities of a fire department, under the auspices of the organization. [**1500**, 2013]

3.3.18 Occupational Safety and Health Program. An occupation specific program, implemented to reduce the risks associated with the occupation, that outlines the components of a program and the roles and responsibilities of the fire department and its members.

Chapter 4 Roles and Responsibilities

4.1 Fire Department Responsibilities.

4.1.1 The fire department shall establish a comprehensive occupational medical program that includes medical evaluations for candidates and members. *(See Annex B.)*

4.1.2 The medical evaluations and any additional medical tests ordered by the fire department physician shall be provided at no cost to the members.

4.1.2.1* This obligation shall not extend to medical tests beyond the basic medical evaluation for candidates.

4.1.3 The fire department shall have an officially designated physician who shall be responsible for guiding, directing, and advising the members with regard to their health, fitness, and suitability for duty as required by NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program.*

4.1.4* The fire department shall ensure that the fire department physician is a licensed doctor of medicine or osteopathy who has completed residency training in an accredited medical training program and/or is American Boards of Medical Specialties (ABMS) or American Osteopathic Association (AOA) board certified or international equivalent.

4.1.5 The fire department shall provide the fire department physician with a fire service overview, current job descriptions, and the essential job tasks required for all fire department positions and ranks.

4.1.6 The fire department shall provide the fire department physician with the department's organizational statement that outlines types and levels of services provided by the department, in accordance with NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program.*

4.1.7* The types and levels of services provided by the fire department shall dictate for candidates and members the essential job tasks that pertain to its members and shall therefore be correlated to the medical requirements outlined in this standard.

4.1.8 For the purpose of conducting medical evaluations, the fire department shall assist the fire department physician to understand the physiological and psychological demands placed on members as well as the environmental conditions under which they must perform and the personal protective equipment (PPE) they must wear during various types of emergency operations.

4.1.9 The fire department shall ensure member access to evaluation by medical specialists, medical and/or surgical treatment, rehabilitation, and any other intervention prescribed by a medical provider, in consultation with the fire department physician, following an injury or illness resulting from a member's participation in fire department functions.

4.1.10 The fire department shall require that the fire department health and safety officer and the health and fitness coordinator maintain a liaison relationship with the fire department physician to ensure that all aspects of the comprehensive occupational medical program are actively engaged.

4.1.11 The fire department shall ensure employee privacy and confidentiality regarding medical conditions identified during the medical evaluation except as required by law.

4.1.12 Where possible, the fire department shall provide alternate duty position for members when the fire department physician recommends temporary work restrictions.

4.1.13 Medical Record Keeping.

4.1.13.1* The fire department comprehensive occupational medical program shall include collection and maintenance of a confidential medical and health information system for members.

4.1.13.2 All medical record keeping shall comply with the requirements of 29 CFR 1910.1020, "Access to employee exposure and medical records," and other applicable regulations and laws.

4.1.14 The provisions of 4.1.13 shall apply to all health and medical records regarding individual members and to all methods of communicating or transferring the information contained in these records, including written, oral, electronic, and any other means of communication.

4.2 Fire Department Physician Responsibilities.

4.2.1 The fire department physician shall fulfill the following responsibilities:

(1) Understand the physiological, psychological, and environmental demands placed on fire fighters
(2) Evaluate fire department candidates and members to identify medical conditions that could affect their ability to safely respond to and participate in emergency operations
(3) Utilize the essential job task descriptions supplied by the fire department to determine a candidate's or a member's medical certification
(4) Identify and report the presence of Category A or disqualifying Category B medical conditions if present in candidates
(5) Inform the fire chief or his/her designee whether or not the candidate or current member is medically certified to safely perform the essential job tasks
(6) Report the results of the medical evaluation to the candidate or current member, including any medical condition(s) identified during the medical evaluation, and the recommendation as to whether the candidate or current member is medically certified to safely perform the essential job tasks
(7) Forward copies of any abnormal results along with patient instructions regarding primary care follow-up to candidates or current members who were instructed to seek (as appropriate) medical follow-up to address any medical conditions, or lab abnormalities, identified during the medical evaluation
(8) Review results of the annual occupational fitness evaluation as described in Chapter 8
(9) Provide or arrange for a prescriptive rehabilitation and/or fitness program when indicated to aid a member's recovery from illness or injury and enhance his/her ability to safely perform essential job tasks

4.2.2 When medical evaluations are conducted by a physician or medical provider other than the fire department physician, the evaluation shall be reviewed and approved by the fire department physician.

4.2.3 The fire department physician shall review individual medical evaluations and aggregate data from member evaluations in order to detect evidence of occupational exposure(s) or clusters of occupational disease.

4.2.4 The fire department physician shall be a member of the Fire Department Occupational Safety and Health Committee chaired by the health and safety officer as required by NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program.*

4.2.5 The fire department physician shall provide medical supervision for the fire department fitness, return-to-duty rehabilitation, and physical conditioning programs as required by NFPA 1583, *Standard on Health-Related Fitness Programs for Fire Department Members.*

4.2.6* The fire department physician shall ensure adequate on-scene medical support at the incident scene rehabilitation sector for members during emergency operations as required by NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program;* NFPA 1561, *Standard on Emergency Services Incident Management System;* and NFPA 1584, *Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises.*

4.2.7 The fire department physician shall provide supervision for the fire department infection control program as required by NFPA 1581, *Standard on Fire Department Infection Control Program.*

4.3 Candidate and Member Responsibilities. Each candidate or member shall adhere to the following requirements:

(1) Cooperate, participate, and comply with the medical evaluation process
(2) Provide complete and accurate information to the fire department physician and other authorized medical care provider(s)
(3) Report any occupational exposure such as exposure to hazardous materials or toxic substances and exposure to infectious or contagious diseases
(4) Report to the fire department physician any medical condition that could interfere with the ability of the individual to safely perform essential job tasks, such as illness or injury, use of prescription or nonprescription drugs, and pregnancy

4.4 Confidentiality of Medical Information.

4.4.1* Specific information concerning medical diagnosis shall be released by the fire department physician only with written permission from the candidate or member.

4.4.2 No fire department personnel, other than the fire department physician or appropriate medical staff, shall have access to another member's medical records without the express written consent of that member.

Chapter 5 Essential Job Tasks

5.1 Essential Job Tasks and Descriptions.

5.1.1 The fire department shall evaluate the following 13 essential job tasks against the types and levels of emergency services provided to the local community by the fire department, the types of structures and occupancies in the community, and the configuration of the fire department to determine the essential job tasks of fire department members and candidates:

(1)*While wearing personal protective ensembles and self-contained breathing apparatus (SCBA), performing fire-fighting tasks (e.g., hoseline operations, extensive crawling, lifting and carrying heavy objects, ventilating roofs or walls using power or hand tools, forcible entry), rescue operations, and other emergency response actions under stressful conditions including working in extremely hot or cold environments for prolonged time periods
(2) Wearing an SCBA, which includes a demand valve–type positive-pressure facepiece or HEPA filter masks, which requires the ability to tolerate increased respiratory workloads
(3) Exposure to toxic fumes, irritants, particulates, biological (infectious) and nonbiological hazards, and/or heated gases, despite the use of personal protective ensembles and SCBA
(4) Depending on the local jurisdiction, climbing six or more flights of stairs while wearing a fire protective ensemble, including SCBA, weighing at least 50 lb (22.6 kg) or more and carrying equipment/tools weighing an additional 20 to 40 lb (9 to 18 kg)
(5) Wearing a fire protective ensemble, including SCBA, that is encapsulating and insulated, which will result in significant fluid loss that frequently progresses to clinical dehydration and can elevate core temperature to levels exceeding 102.2°F (39°C)

(6) While wearing personal protective ensembles and SCBA, searching, finding, and rescue-dragging or carrying victims ranging from newborns to adults weighing over 200 lb (90 kg) to safety despite hazardous conditions and low visibility
(7) While wearing personal protective ensembles and SCBA, advancing water-filled hoselines up to 2½ in. (65 mm) in diameter from fire apparatus to occupancy [approximately 150 ft (50 m)], which can involve negotiating multiple flights of stairs, ladders, and other obstacles
(8) While wearing personal protective ensembles and SCBA, climbing ladders, operating from heights, walking or crawling in the dark along narrow and uneven surfaces that might be wet or icy, and operating in proximity to electrical power lines or other hazards
(9) Unpredictable emergency requirements for prolonged periods of extreme physical exertion without benefit of warm-up, scheduled rest periods, meals, access to medication(s), or hydration
(10) Operating fire apparatus or other vehicles in an emergency mode with emergency lights and sirens
(11) Critical, time-sensitive, complex problem solving during physical exertion in stressful, hazardous environments, including hot, dark, tightly enclosed spaces, that is further aggravated by fatigue, flashing lights, sirens, and other distractions
(12) Ability to communicate (give and comprehend verbal orders) while wearing personal protective ensembles and SCBA under conditions of high background noise, poor visibility, and drenching from hoselines and/or fixed protection systems (sprinklers)
(13) Functioning as an integral component of a team, where sudden incapacitation of a member can result in mission failure or in risk of injury or death to civilians or other team members

5.1.2 The fire department physician shall consider the physical, physiological, intellectual, and psychological demands of the occupation when evaluating the candidate's or member's ability to perform the essential job tasks.

5.1.3 Medical requirements for candidates and members shall be correlated with the essential job tasks as determined by 5.1.1.

5.1.4 The fire department shall provide the fire department physician with the list of essential job tasks to be used in the medical evaluation of members and candidates.

5.2 Essential Job Tasks for Specialized Teams.

5.2.1 If the fire department operates specialized teams such as hazardous materials units, self-contained underwater breathing apparatus (SCUBA) teams, technical rescue teams, emergency medical services (EMS) teams, or units supporting tactical law enforcement operations, the fire department shall identify for each team it operates additional essential job tasks and specialized personal protective equipment (PPE) not specified in 5.1.1(1) through 5.1.1(13) that would apply to the members of that team.

5.2.2 The fire department shall provide the fire department physician with the list of essential job tasks and specialized PPE specific to each specialized team.

5.2.3 When performing the medical evaluation of members of a specialized team, the fire department physician shall consider the following:

(1) Additional medical and/or physical requirements that are related to the job tasks being performed by the team that are not enumerated in this standard
(2) The impact on members of having to wear or utilize specialized PPE that can increase weight, environmental isolation, sensory deprivation, and/or dehydration potential above levels experienced with standard fire suppression PPE

Chapter 6 Medical Evaluations of Candidates

6.1 Medical Evaluation. A medical evaluation of a candidate shall be conducted prior to the candidate being placed in training programs or fire department emergency response activities.

6.1.1* The medical evaluation of a candidate shall include a medical history, examination, and any laboratory tests required to detect physical or medical condition(s) that could adversely affect his/her ability to safely perform the essential job tasks outlined in 5.1.1.

6.1.2* This standard shall provide specific requirements for candidates based on medical conditions that can affect a candidate's ability to safely perform the essential job tasks of a fire fighter.

6.2 Medical Conditions Affecting Ability to Safely Perform Essential Job Tasks.

6.2.1 Medical conditions that can affect a candidate's ability to safely perform essential job tasks shall be designated either Category A or Category B.

6.2.2 Candidates with Category A medical conditions shall not be certified as meeting the medical requirements of this standard.

6.2.3 Candidates with Category B medical conditions shall be certified as meeting the medical requirements of this standard only if they can perform the essential job tasks without posing a significant safety and health risk to themselves, members, or civilians.

6.3 Head and Neck.

6.3.1 Head.

6.3.1.1 Category A medical conditions shall include the following:

(1) Defect of skull preventing helmet use or leaving underlying brain unprotected from trauma
(2) Any skull or facial deformity that would not allow for a successful fit test for respirators used by that department
(3) Any head condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.3.1.2 Category B medical conditions shall include the following:

(1)*Deformities of the skull such as depressions or exostoses
(2)*Deformities of the skull associated with evidence of disease of the brain, spinal cord, or peripheral nerves
(3)*Loss or congenital absence of the bony substance of the skull

6.3.2 Neck.

6.3.2.1 Category A medical conditions shall include any neck condition that results in the candidate not being able to safely perform one or more of the essential job tasks.

6.3.2.2 Category B medical conditions shall include the following:

(1)*Thoracic outlet syndrome
(2)*Congenital cysts, chronic draining fistulas, or similar lesions
(3)*Contraction of neck muscles

6.4 Eyes and Vision.

6.4.1 Category A medical conditions shall include the following:

(1)*Far visual acuity less than 20/40 binocular, corrected with contact lenses or spectacles, or far visual acuity less than 20/100 binocular for wearers of hard contacts or spectacles, uncorrected
(2)*Color perception — monochromatic vision resulting in inability to use imaging devices such as thermal imaging cameras
(3)*Monocular vision
(4) Any eye condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.4.2 Category B medical conditions shall include the following:

(1)*Diseases of the eye such as retinal detachment, progressive retinopathy, or optic neuritis
(2)*Ophthalmological procedures such as radial keratotomy, Lasik procedure, or repair of retinal detachment
(3) Peripheral vision in the horizontal meridian of less than 110 degrees in the better eye or any condition that significantly affects peripheral vision in *both* eyes

6.5* Ears and Hearing.

6.5.1 Category A medical conditions shall include the following:

(1) Chronic vertigo or impaired balance as demonstrated by the inability to tandem gait walk
(2) On audiometric testing, average hearing loss in the unaided better ear greater than 40 decibels (dB) at 500 Hz, 1000 Hz, 2000 Hz, and 3000 Hz when the audiometric device is calibrated to ANSI Z24.5, *Audiometric Device Testing*
(3) Any ear condition (or hearing impairment) that results in the candidate not being able to safely perform one or more of the essential job tasks
(4)*Hearing aid or cochlear implant

6.5.2 Category B medical conditions shall include the following:

(1)*Unequal hearing loss
(2) Average uncorrected hearing deficit at the test frequencies 500 Hz, 1000 Hz, 2000 Hz, and 3000 Hz greater than 40 dB in either ear
(3) Atresia, stenosis, or tumor of the auditory canal
(4)*External otitis, recurrent
(5)*Agenesis or traumatic deformity of the auricle
(6)*Mastoiditis or surgical deformity of the mastoid
(7)*Ménière's syndrome, labyrinthitis, or tinnitus
(8)*Otitis media, recurrent
(9) Surgical procedures to correct or improve hearing or other conditions of the ear

6.6 Dental.

6.6.1 Category A medical conditions shall include any dental condition that results in inability to safely perform one or more of the essential job tasks.

6.6.2 Category B medical conditions shall include the following:

(1)*Diseases of the jaws or associated tissues
(2)*Orthodontic appliances
(3)*Oral tissues, extensive loss
(4)*Relationship between the mandible and maxilla that interferes with satisfactory postorthodontic replacement or ability to use protective equipment

6.7 Nose, Oropharynx, Trachea, Esophagus, and Larynx.

6.7.1 Category A medical conditions shall include the following:

(1)*Tracheostomy
(2)*Aphonia
(3) Any nasal, oropharyngeal, tracheal, esophageal, or laryngeal condition that results in inability to safely perform one or more of the essential job tasks including fit testing for respirators such as N-95 for medical response, P-100 for particulates and certain vapors, and SCBA for fire and hazmat operations

6.7.2 Category B medical conditions shall include the following:

(1)*Congenital or acquired deformity
(2)*Allergic rhinitis
(3) Epistaxis, recurrent
(4)*Sinusitis, recurrent
(5)*Dysphonia
(6) Anosmia
(7) Tracheal stenosis
(8) Nasopharyngeal polyposis
(9)*Obstructive apneas (e.g., sleep apnea) if unresponsive to treatment

6.8 Lungs and Chest Wall.

6.8.1 Category A medical conditions shall include the following:

(1) Active hemoptysis
(2) Current empyema
(3) Pulmonary hypertension
(4) Active tuberculosis
(5)*A forced vital capacity (FVC) or forced expiratory volume in 1 second (FEV_1) less than 70 percent predicted even independent of disease
(6)*Obstructive lung diseases (e.g., emphysema, chronic bronchitis, asthma) with an absolute FEV_1/FVC less than 0.70 and with either the FEV_1 below normal or both the FEV_1 and the FVC below normal (less than 0.80) *(see references in F.2)*
(7)*Hypoxemia — oxygen saturation less than 90 percent at rest or exercise desaturation by 4 percent or to less than 90 percent (exercise testing indicated when resting oxygen is less than 94 percent but greater than 90 percent)
(8)*Asthma — reactive airways disease requiring bronchodilator or corticosteroid therapy for 2 or more consecutive months in the previous 2 years, unless the candidate can meet the requirement in 6.8.1.1
(9) Any pulmonary condition that results in the candidate not being able to safely perform one or more of the essential job tasks
(10) Lung transplant

6.8.1.1* A candidate who has in the past required bronchodilator, corticosteroid, or anti-inflammatory therapy (e.g., leukotriene receptor antagonists, such as Montelukast) for asthma but who does not believe he/she has asthma shall be evaluated by a pulmonologist or other expert in asthmatic

lung diseases, such as an allergist, to determine if the candidate meets all the following:

(1) Asthma has resolved without symptoms off medications for 2 years.
(2) Allergen avoidance or desensitization has been successful.
(3) Spirometry demonstrates adequate reserve (FVC and FEV_1 greater than or equal to 90 percent) and no bronchodilator response measured off all bronchodilators on the day of testing.
(4) Normal or negative response to provocative challenge testing [e.g., cold air, exercise (12 METs), methacholine, histamine, mannitol, or hypertonic saline] or negative response to exercise challenge.

6.8.1.1.1 Challenge testing shall be performed off all anti-inflammatory medications (e.g., inhaled or oral steroids, leukotriene receptor antagonists) for 4 weeks preceding the test, off all antihistamines (e.g., oral allergy medications) for 1 week, and off all bronchodilators on the day of testing.

6.8.2 Category B medical conditions shall include the following:

(1)*Pulmonary resectional surgery, chest wall surgery, and pneumothorax
(2) Pleural effusion
(3)*Fibrothorax, chest wall deformity, and diaphragm abnormalities
(4)*Interstitial lung diseases
(5)*Pulmonary vascular diseases or history of pulmonary embolism
(6)*Bronchiectasis, if abnormal pulmonary function or recurrent infections
(7) Infectious diseases of the lung or pleural space
(8) Cystic fibrosis
(9) Central or obstructive apnea (e.g., sleep apnea) if unresponsive to treatment

6.9 Aerobic Capacity.

6.9.1* Category A medical conditions shall include an aerobic capacity less than 12 metabolic equivalents (METs) (1 MET = 42 mL O_2/kg/min).

6.10 Heart and Vascular System.

6.10.1 Heart.

6.10.1.1 Category A medical conditions shall include the following:

(1)*Coronary artery disease, including history of myocardial infarction, angina pectoris, coronary artery bypass surgery, coronary angioplasty, and similar procedures
(2)*Cardiomyopathy or congestive heart failure, including signs or symptoms of compromised left or right ventricular function or rhythm, including dyspnea, S3 gallop, peripheral edema, enlarged ventricle, abnormal ejection fraction, and/or inability to increase cardiac output with exercise
(3)*Acute pericarditis, endocarditis, or myocarditis
(4)*Syncope, recurrent
(5)*A medical condition requiring an automatic implantable cardiac defibrillator or history of ventricular tachycardia or ventricular fibrillation due to ischemic or valvular heart disease, or cardiomyopathy
(6) Third-degree atrioventricular block
(7)*Cardiac pacemaker
(8) Hypertrophic cardiomyopathy, including idiopathic hypertrophic subaortic stenosis
(9) Any cardiac condition that results in the candidate not being able to safely perform one or more of the essential job tasks
(10) Heart transplant

6.10.1.2 Category B medical conditions shall include the following:

(1)*Valvular lesions of the heart, including prosthetic valves
(2)*Recurrent supraventricular or atrial tachycardia, flutter, or fibrillation
(3)*Left bundle branch block
(4) Second-degree atrioventricular block in the absence of structural heart disease
(5) Sinus pause more than 3 seconds
(6)*Ventricular arrhythmia (history or presence of multifocal PVCs or nonsustained ventricular tachycardia on resting EKG with or without symptoms; history or presence of sustained ventricular tachycardia with or without symptoms)
(7)*Cardiac hypertrophy or hypertrophic cardiomyopathy
(8)*History of a congenital abnormality
(9)*Chronic pericarditis, endocarditis, or myocarditis

6.10.2 Vascular System.

6.10.2.1 Category A medical conditions shall include the following:

(1) Hypertension
  (a)*Uncontrolled or poorly controlled hypertension
  (b)*Hypertension with evidence of end organ damage
(2)*Thoracic or abdominal aortic aneurysm
(3) Carotid artery stenosis or obstruction resulting in greater than or equal to 50 percent reduction in blood flow
(4)*Peripheral vascular disease resulting in symptomatic claudication
(5) Any other vascular condition that results in inability to safely perform one or more of the essential job tasks

6.10.2.2 Category B medical conditions shall include the following:

(1) Vasospastic phenomena such as Raynaud's phenomenon
(2)*Thrombophlebitis, thrombosis, or varicosities
(3)*Chronic lymphedema due to lymphadenopathy or venous valvular incompetency
(4)*Congenital or acquired lesions of the aorta or major vessels
(5)*Circulatory instability as indicated by orthostatic hypotension, persistent tachycardia, and peripheral vasomotor disturbances
(6) History of surgical repair of aneurysm of the heart or major vessel

6.11 Abdominal Organs and Gastrointestinal System.

6.11.1 Category A medical conditions shall include the following:

(1) Presence of uncorrected inguinal/femoral hernia regardless of symptoms
(2) Any gastrointestinal condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.11.2 Category B medical conditions shall include the following:

(1)*Cholecystitis
(2)*Gastritis
(3)*GI bleeding
(4)*Acute hepatitis
(5) Hernia including the following:
  (a) Uncorrected umbilical, ventral, or incisional hernia if significant risk exists for infection or strangulation
  (b) Significant symptomatic hiatal hernia if associated with asthma, recurrent pneumonia, chronic pain, or chronic ulcers
  (c)*Surgically corrected hernia more than 3 months after surgical correction
(6)*Inflammatory bowel disease or irritable bowel syndrome
(7)*Intestinal obstruction
(8)*Pancreatitis
(9) Diverticulitis
(10)*History of gastrointestinal surgery
(11)*Peptic or duodenal ulcer or Zollinger-Ellison syndrome
(12)*Asplenia
(13)*Cirrhosis, hepatic or biliary
(14)*Chronic active hepatitis

6.12 Metabolic Syndrome.

6.12.1* Category A medical conditions shall include metabolic syndrome with aerobic capacity less than 12 METs.

6.12.2 Category B medical conditions shall include metabolic syndrome with aerobic capacity 12 METs or greater.

6.13 Reproductive System. See B.1.2.1.

6.13.1 Category A medical conditions shall include any genital condition that results in inability to safely perform one or more of the essential job tasks.

6.13.2 Category B medical conditions shall include the following:

(1)*Pregnancy, for its duration
(2) Dysmenorrhea
(3) Endometriosis, ovarian cysts, or other gynecologic conditions
(4) Testicular or epididymal mass

6.14 Urinary System.

6.14.1 Category A medical conditions shall include the following:

(1) Renal failure or insufficiency requiring continuous ambulatory peritoneal dialysis (CAPD) or hemodialysis
(2) Any urinary condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.14.2 Category B medical conditions shall include the following:

(1) Diseases of the kidney
(2) Diseases of the ureter, bladder, or prostate

6.15 Spine and Axial Skeleton.

6.15.1 Category A medical conditions shall include the following:

(1) Scoliosis of thoracic or lumbar spine with angle greater than or equal to 40 degrees
(2) History of spinal surgery with rods that are still in place
(3) Any spinal or skeletal condition producing sensory or motor deficit(s) or pain due to radiculopathy or nerve root compression
(4) Any spinal or skeletal condition causing pain that frequently or recurrently requires narcotic analgesic medication
(5) Cervical vertebral fractures with multiple vertebral body compression greater than 25 percent; evidence of posterior element involvement, nerve root damage, disc involvement, dislocation (partial, moderate, severe), abnormal exam, ligament instability, symptomatic, and/or less than 6 months post injury or less than 1 year since surgery
(6) Thoracic vertebral fractures with vertebral body compression greater than 50 percent; evidence of posterior element involvement, nerve root damage, disc involvement, dislocation (severe — with or without surgery), abnormal exam, ligament instability, symptomatic, and/or less than 6 months post injury or less than 1 year since surgery
(7) Lumbosacral vertebral fractures with vertebral body compression greater than 50 percent; evidence of posterior element involvement, nerve root damage, disc involvement, dislocation (partial, moderate, severe), fragmentation, abnormal exam, ligament instability, symptomatic, and/or less than 6 months post injury or less than 1 year since surgery
(8) Any spinal or skeletal condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.15.2 Category B medical conditions shall include the following:

(1) Congenital or developmental malformations of the back, particularly those that can cause instability, neurological deficits, pain, or limit flexibility
(2) Scoliosis with angle less than 40 degrees
(3) Arthritis of the cervical, thoracic, or lumbosacral spine
(4) Facet atrophism, high lumbosacral angle, hyperlordosis, Schmorl's nodes, Scheuermann's disease, spina bifida occulta, spondylolisthesis, spondylolysis, or transitional vertebrae
(5) History of infections or infarcts in the spinal cord, epidural space, vertebrae, or axial skeletal joints
(6) History of diskectomy or laminectomy or vertebral fractures
(7) History of spine fusion that results in instability; reduced mobility, strength, or range of motion; or persistent pain.

6.16 Extremities.

6.16.1 Category A medical conditions shall include the following:

(1) Joint replacement, unless all the following conditions are met:
  (a) Normal range of motion without history of dislocations post-replacement
  (b) Repetitive and prolonged pulling, bending, rotations, kneeling, crawling, and climbing without pain or impairment
  (c) No limiting pain
  (d) Evaluation by an orthopedic specialist who concurs that the candidate can complete all essential job tasks listed in Chapter 5
(2) Amputation or congenital absence of upper-extremity limb (hand or higher)

(3) Amputation of either thumb proximal to the mid-proximal phalanx
(4) Amputation or congenital absence of lower-extremity limb (foot or above) unless the candidate meets all of the following conditions:
  (a) Stable, unilateral below-the-knee (BKA) amputation with at least the proximal third of the tibia present for a strong and stable attachment point with the prosthesis
  (b) Fitted with a prosthesis that will tolerate the conditions present in structural firefighting when worn in conjunction with standard fire fighting PPE
  (c) At least 6 months of prosthetic use in a variety of activities with no functional difficulties
  (d) Amputee limb healed with no significant inflammation, persistent pain, necrosis, or indications of instability at the amputee limb attachment point
  (e) No significant psychosocial issues pertaining to the loss of limb or use of prosthesis
  (f) Evaluated by a prosthetist or orthopedic specialist with expertise in the fitting and function of prosthetic limbs who concurs that the candidate can complete all essential job tasks listed in Chapter 5, including wearing personal protective ensembles and SCBA while climbing ladders, operating from heights, and walking or crawling in the dark along narrow and uneven surfaces that may be wet or icy
  (g) Has passed the department's applicant physical ability test as a condition of appointment without accommodations or modification of the protocol
(5) Chronic nonhealing or recent bone grafts
(6) History of more than one dislocation of shoulder without surgical repair or with history of recurrent shoulder disorders within the last 5 years with pain or loss of motion, and with or without radiographic deviations from normal
(7) Any extremity condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.16.2 Category B medical conditions shall include the following:

(1)*History of shoulder dislocation with surgical repair
(2) Significant limitation of function of shoulder, elbow, wrist, hand, or finger due to weakness, reduced range of motion, atrophy, unequal length, absence, or partial amputation
(3) Significant lack of full function of hip, knee, ankle, foot, or toes due to weakness, reduced range of motion, atrophy, unequal length, absence, or partial amputation
(4)*History of meniscectomy or ligamentous repair of knee
(5)*History of intra-articular, malunited, or nonunion of upper or lower extremity fracture
(6)*History of osteomyelitis, septic, or rheumatoid arthritis
(7) Bone hardware such as metal plates or rods supporting bone during healing

6.17 Neurological Disorders.

6.17.1 Category A medical conditions shall include the following:

(1) Ataxias of heredo-degenerative type
(2) Cerebral arteriosclerosis as evidenced by a history of transient ischemic attack, reversible ischemic neurological deficit, or ischemic stroke
(3) Hemiparalysis or paralysis of a limb
(4)*Multiple sclerosis with activity or evidence of progression within previous 3 years
(5)*Myasthenia gravis with activity or evidence of progression within previous 3 years
(6) Progressive muscular dystrophy or atrophy
(7) Uncorrected cerebral aneurysm
(8) All single unprovoked seizures and epileptic conditions, including simple partial, complex partial, generalized, and psychomotor seizure disorders other than as allowed in 6.17.1.1
(9) Dementia (Alzheimer's and other neurodegenerative diseases) with symptomatic loss of function or cognitive impairment (e.g., less than or equal to 28 on Mini-Mental Status Exam)
(10) Parkinson's disease and other movement disorders resulting in uncontrolled movements, bradykinesia, or cognitive impairment (e.g., less than or equal to 28 on Mini-Mental Status Exam)
(11) Any neurological condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.17.1.1 To be medically qualified a candidate shall meet all of the following:

(1) No seizures for 1 year off all anti-epileptic medication or 5 years seizure free on a stable medical regimen
(2) Neurologic examination is normal
(3) Imaging (CAT or MRI scan) studies are normal
(4) Awake and asleep EEG studies with photic stimulation and hyperventilation are normal
(5) A definitive statement from a qualified neurological specialist that the candidate meets the criteria specified in 6.17.1.1(1) through 6.17.1.1(4) and that the candidate is neurologically cleared for fire-fighting training and the performance of a fire fighter's essential job tasks

6.17.2 Category B medical conditions shall include the following:

(1) Congenital malformations
(2)*Migraine
(3) Clinical disorders with paresis, dyscoordination, deformity, abnormal motor activity, abnormality of sensation, or complaint of pain
(4) History of subarachnoid or intraparenchymal hemorrhage
(5) Abnormalities from recent head injury such as severe cerebral contusion or concussion

6.18 Skin.

6.18.1 Category A medical conditions shall include the following:

(1) Metastatic or locally extensive basal or squamous cell carcinoma or melanoma
(2) Any dermatologic condition that would not allow for a successful fit test for any respirator required by the fire department
(3) Any dermatologic condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.18.2 Category B medical conditions shall include the following:

(1)*Skin conditions of a chronic or recurrent nature (eczema, cystic acne, psoriasis) that cause skin openings or inflammation or irritation of the skin surface

(2)*Surgery or skin grafting
(3)*Mycosis fungoides
(4)*Cutaneous lupus erythematosus
(5)*Raynaud's phenomenon
(6)*Scleroderma (skin)
(7)*Vasculitic skin lesions
(8)*Atopic dermatitis/eczema
(9)*Contact or seborrheic dermatitis
(10)*Stasis dermatitis
(11)*Albinism, Darier's disease, ichthyosis, Marfan syndrome, neurofibromatosis, and other genetic conditions
(12)*Folliculitis, pseudo-folliculitis, miliaria, keloid folliculitis
(13)*Hidradenitis suppurativa, furuncles, carbuncles, or Grade IV acne (cystic)
(14)*Mechano-bullous disorders (epidermolysis bullosa, Hailey pemphigus, porphyria, pemphigoid)
(15)*Urticaria or angioedema

6.19 Blood and Blood-Forming Organs.

6.19.1 Category A medical conditions shall include the following:

(1) Hemorrhagic states requiring replacement therapy
(2) Sickle cell disease (homozygous)
(3) Clotting disorders
(4) Any hematological condition that results in inability to safely perform one or more of the essential job tasks

6.19.2 Category B medical conditions shall include the following:

(1) Anemia
(2) Leukopenia
(3) Polycythemia vera
(4) Splenomegaly
(5) History of thromboembolic disease
(6) Any other hematological condition that results in inability to safely perform essential job tasks

6.20 Endocrine and Metabolic Disorders.

6.20.1 Category A medical conditions shall include the following:

(1)*Type 1 diabetes mellitus, unless a candidate meets all of the following criteria:
(a) Is maintained by a physician knowledgeable in current management of diabetes mellitus on a basal/bolus (can include subcutaneous insulin infusion pump) regimen using insulin analogs.
(b) Has demonstrated over a period of at least 6 months the motivation and understanding required to closely monitor and control capillary blood glucose levels through nutritional therapy and insulin administration. Assessment of this shall take into consideration the erratic meal schedules, sleep disruption, and high aerobic and anaerobic workloads intrinsic to fire fighting.
(c) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than microaneurysms, as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale.
(d) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min and absence of proteinuria. (Creatinine clearance can be calculated by use of the Cockroft-Gault or similar formula. Proteinuria is defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample.)
(e) Has no autonomic or peripheral neuropathy. (Peripheral neuropathy is determined by diminished ability to feel the vibration of a 128 cps tuning fork or the light touch of a 10-gram monofilament on the dorsum of the great toe proximal to the nail. Autonomic neuropathy might be determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability.)
(f) Has normal cardiac function without evidence of myocardial ischemia on cardiac stress testing (to at least 12 MET) by ECG and cardiac imaging.
(g) Has a signed statement and medical records from an endocrinologist or a physician with demonstrated knowledge in the current management of diabetes mellitus as well as knowledge of the essential job tasks and hazards of fire fighting as described in 5.1.1, allowing the fire department physician to determine whether the candidate meets the following criteria:
i. Is being successfully maintained on a regimen consistent with 6.20.1(1)(a) and 6.20.1(1)(b).
ii. Has had hemoglobin A1C measured at least four times a year (intervals of 2 to 3 months) over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year. A hemoglobin A1C reading of 8 percent or greater shall trigger a medical evaluation to determine if a condition exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels. This shall include evidence of a set schedule for blood glucose monitoring and a thorough review of data from such monitoring.
iii. Does not have an increased risk of hypoglycemia due to alcohol use or other predisposing factors.
iv.*Has had no episodes of severe hypoglycemia (defined as requiring assistance of another) in the preceding 1 year, with no more than two episodes of severe hypoglycemia in the preceding 3 years.
v. Is certified not to have a medical contraindication to fire-fighting training and operations.

(2) Insulin-requiring Type 2 diabetes mellitus, unless a candidate meets all of the following criteria:
(a) Is maintained by a physician knowledgeable in current management of diabetes mellitus.
(b) Has demonstrated over a period of at least 3 months the motivation and understanding required to closely monitor and control capillary blood glucose levels through nutritional therapy and insulin administration. Assessment of this shall take into consideration the erratic meal schedules, sleep disruption, and high aerobic and anaerobic workloads intrinsic to fire fighting.
(c) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than microaneurysms, as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale.
(d) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min and absence of proteinuria. (Creatinine clearance can be calculated by

use of the Cockroft-Gault or similar formula. Proteinuria is defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample.)

(e) Has no autonomic or peripheral neuropathy. (Peripheral neuropathy is determined by diminished ability to feel the vibration of a 128 cps tuning fork or the light touch of a 10-gram monofilament on the dorsum of the great toe proximal to the nail. Autonomic neuropathy can be determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability.)

(f) Has normal cardiac function without evidence of myocardial ischemia on cardiac stress testing (to at least 12 METS) by ECG and cardiac imaging.

(g) Has a signed statement and medical records from an endocrinologist or a physician with demonstrated knowledge in the current management of diabetes mellitus as well as knowledge of the essential job tasks and hazards of fire fighting as described in 5.1.1, allowing the fire department physician to determine whether the candidate meets the following criteria:

i. Is maintained on a stable insulin regimen and has demonstrated over a period of at least 3 months the motivation and understanding required to closely monitor and control capillary blood glucose levels despite varied activity schedules through nutritional therapy and insulin administration.

ii. Has had hemoglobin A1C measured at least four times a year (intervals of 2 to 3 months) over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year. A hemoglobin A1C reading of 8 percent or greater shall trigger a medical evaluation to determine if a condition exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels. This shall include evidence of a set schedule for blood glucose monitoring and a thorough review of data from such monitoring.

iii. Does not have an increased risk of hypoglycemia due to alcohol use or other predisposing factors.

iv.*Has had no episodes of severe hypoglycemia (defined as requiring assistance of another) in the preceding 1 year, with no more than two episodes of severe hypoglycemia in the preceding 3 years

v. Is certified not to have a medical contraindication to fire-fighting training and operations.

(3) Any endocrine or metabolic condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.20.2 Category B medical conditions shall include the following:

(1)*Diseases of the adrenal gland, pituitary gland, parathyroid gland, or thyroid gland of clinical significance

(2) Nutritional deficiency diseases or other metabolic disorder

(3) Diabetes mellitus, not on insulin therapy, but controlled by diet, exercise, and/or oral hypoglycemic agents unless all of the following are met:

(a) Has had hemoglobin A1C measured at least four times a year (intervals of 2 to 3 months) over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year. A hemoglobin A1C reading of 8 percent or greater shall trigger a medical evaluation to determine if a condition exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels. This shall include evidence of a set schedule for blood glucose monitoring and a thorough review of data from such monitoring.

(b) If on oral hypoglycemic agents, has had no episodes of severe hypoglycemia (defined as requiring assistance of another) in the preceding year.

(c) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than microaneurysms, as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale.

(d) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min and absence of proteinuria. (Creatinine clearance can be calculated by use of the Cockroft-Gault or similar formula. Proteinuria is defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample.)

(e) Has no autonomic or peripheral neuropathy. (Peripheral neuropathy is determined by diminished ability to feel the vibration of a 128 cps tuning fork or the light touch of a 10-gram monofilament on the dorsum of the great toe proximal to the nail. Autonomic neuropathy can be determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability.)

(f) Normal cardiac function without evidence of myocardial ischemia on cardiac stress testing (to at least 12 METs) by ECG and cardiac imaging.

6.21 Systemic Diseases and Miscellaneous Conditions.

6.21.1 Category A medical conditions shall include any systemic condition that results in the candidate not being able to safely perform one or more of the essential job tasks.

6.21.2 Category B medical conditions shall include the following:

(1) Connective tissue disease, such as dermatomyositis, systemic lupus erythematosus, scleroderma, and rheumatoid arthritis

(2)*History of thermal, chemical, or electrical burn injury with residual functional deficit

(3) Documented evidence of a predisposition to recurrent heat stress rhabdomyolysis, metabolic acidosis, or exertion-related incapacitation

6.22 Tumors and Malignant Diseases.

6.22.1 Category A medical conditions shall include the following:

(1) Malignant disease that is newly diagnosed, untreated, or currently being treated, or under active surveillance due to the increased risk for reoccurrence

(2) Any tumor or similar condition that results in the candidate not being able to safely perform one or more of the essential job tasks

6.22.2 Category B medical conditions shall be evaluated on the basis of an individual's current physical condition and on the staging and prognosis of the malignancy (i.e., likelihood that the disease will recur or progress), and include the following:

(1)*Benign tumors
(2)*History of CNS tumor or malignancy
(3)*History of head and neck malignancy
(4)*History of lung cancer
(5)*History of GI or GU malignancy
(6)*History of bone or soft tissue tumors or malignancies
(7)*History of hematological malignancy

6.23 Psychiatric Conditions.

6.23.1 Category A medical conditions shall include any psychiatric condition that results in the candidate not being able to safely perform one or more of the essential job tasks.

6.23.2 Category B medical conditions shall include the following:

(1) A history of psychiatric condition or substance abuse problem
(2) Requirement for medications that increase an individual's risk of heat stress, or other interference with the ability to safely perform essential job tasks

6.24 Chemicals, Drugs, and Medications.

6.24.1 Category A medical conditions shall include those that require chronic or frequent treatment with any of the following medications or classes of medications:

(1) Narcotics, including methadone
(2) Sedative-hypnotics
(3) Full-dose or low-dose anticoagulation medications or any drugs that prolong prothrombin time (PT), partial thromboplastin time (PTT), or international normalized ratio (INR)
(4) Beta-adrenergic blocking agents at doses that prevent a normal cardiac rate response to exercise, high-dose diuretics, or central acting antihypertensive agents (e.g., clonidine)
(5)*Respiratory medications: inhaled bronchodilators, inhaled corticosteroids, systemic corticosteroids, theophylline, and leukotriene receptor antagonists (e.g., Montelukast)
(6) High-dose corticosteroids for chronic disease
(7) Anabolic steroids
(8) Any chemical, drug, or medication that results in the candidate not being able to safely perform one or more of the essential job tasks

6.24.1.1 Tobacco use shall be a Category A medical condition (where allowed by law).

6.24.1.2 Evidence of illegal drug use detected through testing, conducted in accordance with Substance Abuse and Mental Health Service Administration (SAMHSA), shall be a Category A medical condition.

6.24.1.3 Evidence of clinical intoxication or a measured blood alcohol level that exceeds the legal definition of intoxication according to the AHJ at the time of medical evaluation shall be a Category A medical condition.

6.24.2* Category B medical conditions shall include the use of the following:

(1) Cardiovascular agents
(2) Stimulants
(3) Psychiatric medications
(4) Other than high-dose systemic corticosteroids
(5) Antihistamines
(6) Muscle relaxants
(7) Leukotriene receptor antagonists (e.g., Montelukast) used for allergies that do not affect the lower respiratory system

Chapter 7 Occupational Medical Evaluation of Members

7.1 General.

7.1.1 The fire department shall establish and maintain a confidential occupational medical evaluation program for members.

7.1.2 Occupational medical evaluations shall be conducted as a baseline for surveillance and annually thereafter.

7.1.3* An occupational medical evaluation shall be performed following a member's occupational exposure, illness, injury, or protracted absence from the job.

7.1.3.1 The scope of that evaluation shall be determined by the fire department physician after reviewing the type and severity of the condition.

7.1.4 The components of the medical evaluations shall conform to all applicable U.S. OSHA standards, including 29 CFR 1910.120, "Hazardous waste operations and emergency response"; 29 CFR 1910.134, "Respiratory protection"; 29 CFR 1910.95, "Occupational noise exposure"; and 29 CFR 1910.1030, "Bloodborne pathogens."

7.2 Member Education Regarding Occupational Medical Evaluation Program.

7.2.1 The fire department, the fire department physician, and member organizations where they exist shall be responsible to convey the purposes and importance of the annual occupational medical evaluation to members and to the AHJ.

7.2.2 The purpose of the annual occupational medical evaluation of members shall include but cannot be limited to the following:

(1) Identifying conditions that interfere with a member's physical or mental ability to safely perform essential job tasks without undue risk of harm to self or others
(2) Monitoring the effects of exposure to specific biological, physical, or chemical agents on individual members
(3) Detecting changes in a member's health that can be related to harmful working conditions
(4) Detecting patterns of disease or injury occurrence in the workforce that could indicate underlying work-related problems
(5)*Providing members with information about their current health, promoting wellness, and referring them for appropriate further evaluation and treatment
(6) Providing members with information and education about occupational hazards
(7) Providing a cost-effective investment in work-related disease prevention, early detection, and health promotion for members
(8) Complying with federal, state, provincial, local, and/or other jurisdictional requirements

7.3 Timing of the Annual Occupational Medical Evaluation of Members.

7.3.1 All members shall receive a baseline medical evaluation after hiring and prior to performing fire fighter emergency functions and at least annually thereafter.

7.3.2 The baseline medical evaluation shall include the components of the annual occupational medical evaluation not performed as part of the candidate medical evaluation, provided the candidate medical evaluation was performed within the past 12 months.

7.3.3 The annual evaluation shall be completed every 12 months (±3 months).

7.3.4 Annual medical evaluations shall be compared to baseline and subsequent evaluations to identify clinically relevant changes.

7.3.5 The interval requirements for performance of the annual occupational medical evaluation shall not preclude more frequent medical evaluations of members for new or recurring conditions when requested by the member, fire department physician, or AHJ.

7.4 Components of the Annual Occupational Medical Evaluation of Members.

7.4.1 All components listed in Section 7.5 through Section 7.7 shall be included in the baseline and annual occupational medical evaluations of members.

7.4.2 It shall be acceptable for certain components of the annual occupational medical evaluation to be performed by a member's private physician, provided full results are forwarded in the required time frame to the fire department physician.

7.4.3 Each medical evaluation shall include a medical history (including exposure history), physical examination, blood tests, urinalysis, vision tests, audiograms, spirometry, chest x-ray (as indicated), ECG, cancer screening (as indicated), and immunizations and infectious disease screening (as indicated).

7.4.4 Tests for illegal drugs shall not be performed as part of the annual medical evaluation.

7.5 Medical History.

7.5.1 A medical history questionnaire shall be completed by each member to provide baseline information with which to compare future medical concerns.

7.5.2 An annual medical history questionnaire, which includes changes in health status and known occupational exposures since the previous annual evaluation, shall be completed by each member to provide follow-up information.

7.5.3 Information on the questionnaire and interval concerns shall be reviewed with each member by the fire department physician or designated medical evaluator.

7.6 Physical Examination. The annual physical examination shall include each of the following components:

(1) Vital signs [temperature, pulse, and respiratory rate, and blood pressure (BP)]
   (a) BP shall be measured according to the recommendations of the *Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure* (JNC 7)
(2) Head, eyes, ears, nose, and throat (HEENT)
(3) Neck
(4) Cardiovascular
(5) Pulmonary
(6) Breast
(7) Gastrointestinal with digital rectal exam as clinically indicated
(8) Genitourinary (includes pap smear, testicular exam, rectal exam for prostate mass)
(9) Hernia
(10) Lymph nodes
(11) Neurological
(12) Musculoskeletal
(13) Skin (includes screening for cancers)
(14) Vision

7.7 Ancillary Tests.

7.7.1* Blood Tests. Blood tests shall be performed annually and shall include the following:

(1) CBC with differential, RBC indices and morphology, and platelet count
(2) Electrolytes (Na, K, Cl, HCO_3, or CO_2)
(3) Renal function (BUN, creatinine)
(4) Glucose
(5) Liver function tests (ALT, AST, direct and indirect bilirubin, alkaline phosphatase)
(6) Total cholesterol, HDL, LDL, clinically useful lipid ratios (e.g., percent LDL), and triglycerides

7.7.2 Urine Laboratory Tests. The urine laboratory tests required shall include the following:

(1) Dipstick analysis for glucose, ketones, leukocyte esterase, protein, blood, and bilirubin
(2) Microscopic analysis for RBC, WBC, casts, and crystals if indicated by results of dipstick analysis
(3) Analysis for occupational chemical exposure if indicated

7.7.3 Audiology. Hearing thresholds shall be assessed annually in each ear at each of the following frequencies:

(1) 500 Hz
(2) 1000 Hz
(3) 2000 Hz
(4) 3000 Hz
(5) 4000 Hz
(6) 6000 Hz
(7) 8000 Hz

7.7.3.1 The fire department physician or other qualified medical evaluator shall compare audiogram results obtained during yearly evaluations with baseline and subsequent test results.

7.7.3.2 Standard threshold shifts shall be corrected for age as permitted by OSHA.

7.7.4 Spirometry.

7.7.4.1* Pulmonary function testing (spirometry) shall be conducted annually to measure the member's forced vital capacity (FVC), forced expiratory volume in 1 second (FEV_1), and the absolute FEV_1/FVC ratio.

7.7.4.2 The fire department physician or other qualified medical evaluator shall compare spirometry results obtained during yearly evaluations with baseline and subsequent test results.

7.7.4.3* FEV_1 and FVC results shall be expressed as the absolute value (liters or milliters) and as percent predicted adjusted for gender, age, height, and ethnicity using NHANES III normative equations.

7.7.5 Chest Radiographs.

7.7.5.1 Chest x-rays shall include an initial baseline and shall be repeated every 5 years or as medically indicated.

7.7.5.2 The fire department physician or other qualified medical evaluator shall compare any chest radiographs with baseline and subsequent radiographs.

7.7.6 Electrocardiograms (ECGs).

7.7.6.1 A resting ECG shall be performed as part of the baseline medical evaluation and shall be performed annually thereafter.

7.7.6.2 The fire department physician or other qualified medical evaluator shall compare baseline and subsequent ECGs.

7.7.6.3* Stress tests with ECGs and with or without imaging (echocardiography or radionuclide scanning) shall be performed when clinically indicated by history or symptoms.

7.7.6.4 These tests shall be based on coronary artery disease risk factor stratification or symptoms or for screening of cardiovascular disease and the risk of sudden cardiovascular death.

7.7.6.5 The fire department physician or other qualified medical evaluator shall compare baseline and subsequent stress tests, when available, to identify clinically relevant changes.

7.7.7 Mammography.

7.7.7.1 Mammography shall be performed annually on each female member over the age of 40.

7.7.7.2 A qualified radiologist shall compare mammograms to prior mammograms.

7.7.7.3 The fire department physician shall compare mammography reports to prior reports.

7.7.8 Immunizations and Infectious Disease Screening. The following infectious disease immunizations or infectious disease screenings shall be provided, as indicated:

(1)*Tuberculosis (TB) screening by either tuberculin skin testing using the tuberculin purified protein derivative (PPD) or the tuberculin blood test (interferon gamma release assay) shall be performed at baseline. Subsequent tuberculosis screening shall be performed annually or at a frequency according to CDC guidelines unless the member has a history of positive tuberculin screening test, in which case CDC guidelines for management and subsequent chest radiographic surveillance shall be followed

(2) Hepatitis C virus screen — baseline and following occupational exposure

(3) Hepatitis B virus vaccinations and titers — as specified in CDC guidelines

(4) Tetanus/diphtheria vaccine — booster every 10 years

(5) Measles, mumps, rubella vaccine (MMR) — one dose of MMR vaccine to members born after 1957 without prior immunization and/or evidence of immunity as outlined in the *Morbidity and Mortality Weekly Report* article "Measles, Mumps, and Rubella — Vaccine Use and Strategies for Elimination of Measles, Rubella, and Congenital Rubella Syndrome and Control of Mumps: Recommendations of the Advisory Committee on Immunization Practices (ACIP)."

(6) Polio vaccine — A single booster of IPV for members traveling to endemic areas in the line of duty, or as outlined in the *Morbidity and Mortality Weekly Report* article "Poliomyelitis Prevention in the United States: Updated Recommendations of the Advisory Committee on Immunization Practices (ACIP)."

(7) Hepatitis A vaccine

(8) Varicella vaccine — offered to all non-immune personnel

(9) Influenza vaccine (seasonal and novel) — offered to all personnel annually

(10) HIV screening — available to all personnel

7.7.8.1 Pre-screening and immunization against biological threat agents shall be made available to members following CDC guidelines or recommendations.

7.7.8.2* All members shall be immunized against infectious diseases as required by the AHJ and by 29 CFR 1910.1030, "Bloodborne pathogens."

7.7.8.3 The fire department physician shall ensure that all members are offered currently recommended immunizations.

7.7.9 Post-Exposure Bloodborne Pathogen Testing.

7.7.9.1 Physicians who care for members shall follow current CDC recommendations for post-exposure prophylaxis (PEP) for bloodborne pathogen (BBP) exposures.

7.7.9.2* There shall be a written protocol for members who present with BBP exposures.

7.7.10 HIV Testing. HIV testing shall be offered on a confidential basis as part of post-exposure protocols and as requested by the fire department physician or member.

7.7.10.1 All results from HIV tests shall be provided directly to the member and shall be maintained by the physician as confidential documents.

7.7.10.2 Results from HIV tests shall not be forwarded to any local, state, provincial, national, or international authorities or databases unless mandated by public health statutes.

7.7.11 Heavy Metal Evaluation.

7.7.11.1 Baseline testing for heavy metals shall be required when indicated by known exposure or substantial risk.

7.7.11.2 Evaluations shall be performed following known exposures, for recurrent exposures, or where required under federal, state, or provincial regulations.

7.7.12 Colon Cancer Screening.

7.7.12.1 Fecal occult blood testing shall be provided annually to all members above the age of 40 or earlier if clinically indicated.

7.7.12.2 Colonoscopy services shall be recommended to all members above the age of 40 or earlier if clinically indicated and repeated at regular intervals.

7.7.13* Prostate Cancer. Due to increased cancer risk, the fire department shall provide all male fire fighters with prostate-specific antigen (PSA) testing beginning at age 50 and annually thereafter. Those with a family history or African-American heritage, who are at a higher risk for prostate cancer, shall be provided with testing beginning at age 40 and annually thereafter.

Chapter 8 Annual Occupational Fitness Evaluation of Members

8.1 Weight and Body Composition.

8.1.1* Body weight shall be measured and recorded annually.

8.1.2 A body composition evaluation including the following shall be conducted on personnel solely for the purpose of departmental health surveillance:

(1)*Circumferential measurements
(2) Hydrostatic weighing or Bod-Pod
(3)*Skinfold measurements
(4) Bio impedance analysis

8.2 Annual Fitness Evaluation.

8.2.1 A mandatory fitness evaluation that is not punitive or competitive shall be conducted annually as part of an individualized program.

8.2.1.1 All component results of the mandatory fitness evaluation shall be used to establish an individual's baseline or measured against the individual's previous assessments and not against any standard or norm.

8.2.2 The mandatory fitness evaluation shall include a mandatory pre-evaluation procedure and the components in 8.2.2.1 through 8.2.2.4. *(For additional information, see Annex C.)*

8.2.2.1* An evaluation of aerobic capacity shall be performed after appropriate medical evaluation.

8.2.2.1.1 Testing shall be conducted using an appropriate maximal or submaximal protocol (*see C.2.1 and C.2.1.1*). Bicycle ergometry is not appropriate because it underestimates true aerobic capacity and is not work-task specific.

8.2.2.1.2* At levels below 12 METs , a firefighter shall be counseled to improve his/her fitness.

8.2.2.1.3 At levels at or below 8 METs, a prescribed aerobic fitness program shall be required, and the AHJ shall be advised to consider restriction from essential job tasks 1, 2, 4, 5, 6, 7, 8, 9, and 13.

8.2.2.2 An evaluation of muscular strength shall be conducted using each of the following protocols:

(1) Grip strength evaluation *(See C.2.1.5 for the protocol.)*
(2) Leg strength evaluation *(See C.2.1.6 for the protocol.)*
(3) Arm strength evaluation *(See C.2.1.7 for the protocol.)*

8.2.2.3 An evaluation of muscular endurance shall be conducted using each of the following protocols:

(1) Push-up evaluation *(See C.2.1.9 for the protocol.)*
(2) Curl-up evaluation *(See C.2.1.11 for the protocol.)*

8.2.2.4 An evaluation of flexibility shall be conducted using the sit-and-reach protocol. *(See C.2.1.12 for the protocol.)*

Chapter 9 Essential Job Tasks — Specific Evaluation of Medical Conditions in Members

9.1 Essential Job Tasks.

9.1.1 The essential job tasks listed by number in this chapter are the same as those listed in Chapter 5 and shall be validated by the fire department as required by Chapter 5.

9.1.2 The fire department physician shall use the validated list of essential job tasks in evaluating the ability of a member with specific medical conditions to perform specific job tasks.

9.1.3 Essential job tasks referenced throughout this chapter by number only shall correspond to the following model list:

(1)*Wearing personal protective ensemble and SCBA, performing fire-fighting tasks (hoseline operations, extensive crawling, lifting and carrying heavy objects, ventilating roofs or walls using power or hand tools, forcible entry, etc.), rescue operations, and other emergency response actions under stressful conditions, including working in extremely hot or cold environments for prolonged time periods
(2) Wearing an SCBA, which includes a demand valve–type positive-pressure facepiece or HEPA filter masks, which requires the ability to tolerate increased respiratory workloads
(3) Exposure to toxic fumes, irritants, particulates, biological (infectious) and nonbiological hazards, and/or heated gases, despite the use of personal protective ensembles and SCBA
(4) Depending on the local jurisdiction, climbing six or more flights of stairs while wearing fire protective ensemble weighing at least 50 lb (22.6 kg) or more and carrying equipment/tools weighing an additional 20 to 40 lb (9 to 18 kg)
(5) Wearing fire protective ensemble that is encapsulating and insulated, which will result in significant fluid loss that frequently progresses to clinical dehydration and can elevate core temperature to levels exceeding 102.2°F (39°C)
(6) Wearing personal protective ensemble and SCBA, searching, finding, and rescue-dragging or carrying victims ranging from newborns to adults weighing over 200 lb (90 kg) to safety despite hazardous conditions and low visibility
(7) Wearing personal protective ensemble and SCBA, advancing water-filled hoselines up to 2½ in. (65 mm) in diameter from fire apparatus to occupancy [approximately 150 ft (50 m)], which can involve negotiating multiple flights of stairs, ladders, and other obstacles
(8) Wearing personal protective ensemble and SCBA, climbing ladders, operating from heights, walking or crawling in the dark along narrow and uneven surfaces, and operating in proximity to electrical power lines and/or other hazards
(9) Unpredictable emergency requirements for prolonged periods of extreme physical exertion without benefit of warm-up, scheduled rest periods, meals, access to medication(s), or hydration
(10) Operating fire apparatus or other vehicles in an emergency mode with emergency lights and sirens
(11) Critical, time-sensitive, complex problem solving during physical exertion in stressful, hazardous environments, including hot, dark, tightly enclosed spaces, that is further aggravated by fatigue, flashing lights, sirens, and other distractions
(12) Ability to communicate (give and comprehend verbal orders) while wearing personal protective ensembles and SCBA under conditions of high background noise, poor visibility, and drenching from hoselines and/or fixed protection systems (sprinklers)
(13) Functioning as an integral component of a team, where sudden incapacitation of a member can result in mission failure or in risk of injury or death to civilians or other team members

9.2 Special Teams.

9.2.1 In addition to essential job tasks specified in 9.1.3(1) through 9.1.3(13), members of specialized teams such as hazardous materials units, SCUBA teams, technical rescue teams, EMS teams, or units supporting tactical law enforcement operations shall be evaluated for their ability to perform essential job tasks and wear specialized PPE related to the duties of those specialized teams.

9.2.2 The fire department shall define those essential job tasks and shall provide the fire department physician with a description of the risks associated with those tasks and specialized PPE as well as any additional medical and/or physical requirements that are not enumerated in this standard.

9.2.3 In defining those tasks, the fire department shall consider the impact on the members required to wear or utilize specialized PPE that can increase weight, environmental isolation, sensory deprivation, and/or dehydration potential above levels experienced with standard fire suppression PPE.

9.3 Fire Department Physician Roles. After individually evaluating the member and the member's medical records (including job-related medical rehabilitation records), the fire department physician shall recommend restricting members from performing only those specific job tasks that cannot be safely performed by the member given his/her medical condition.

9.3.1 If an illness, injury, or other debilitating condition has altered a member's ability to safely perform an essential job task, the fire department physician shall notify the fire department that the member is restricted from performing that task while on duty.

9.3.2* The fire department shall determine possible accommodations for members restricted from certain job tasks.

9.3.3* For incumbent fire department members, conditions listed in Chapter 9 shall not indicate a blanket prohibition for such incumbent members from continuing to perform the essential job tasks, nor shall they require automatic retirement or separation from the fire department.

9.3.4 After an individual medical assessment, the physician shall state whether the member, due to a specific condition, can or cannot safely perform his or her essential job tasks.

9.3.5 The AHJ shall determine if the individual can remain in his/her current position or be moved to another position that the individual can perform.

9.4* Cardiovascular Disorders.

9.4.1 Cardiovascular disorders shall include any disorder of the cardiovascular system including but not limited to supraventricular or ventricular arrhythmias (abnormal heart beats), coronary artery disease, and cardiac muscle disease or valve disease.

9.4.2 If the member has any cardiovascular disorders, the member shall be individually evaluated in accordance with 9.4.3 through 9.4.23 to determine if the disorders compromise the member's ability to safely perform the essential job tasks.

9.4.3 Coronary Artery Disease.

9.4.3.1 Physician Evaluation. The following clinical conditions referable to coronary artery disease including history of myocardial infarction, coronary artery bypass surgery, coronary angioplasty with stent placement, or similar procedures compromise the member's ability to safely perform essential job tasks 1, 2, 4, 5, 6, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department if any one of the following are present:

(1) Current angina pectoris even if relieved by medication
(2) Persistent significant stenosis in any coronary artery (greater than 70 percent lumen diameter narrowing) following treatment
(3) Lower than normal left ventricular ejection fraction as measured by radionuclide scan, contrast ventriculography, or echocardiography
(4) Maximal exercise tolerance of less than 12 METs
(5) Exercise-induced ischemia or ventricular arrhythmias observed by radionuclide stress test during an evaluation reaching a workload of at least 12 METs
(6) History of myocardial infarction, angina, or coronary artery disease with persistence of modifiable risk factor(s) for acute coronary plaque rupture (e.g., tobacco use, hypertension despite treatment or hypercholesterolemia with cholesterol greater than or equal to 180 or low density lipoproteins greater than or equal to 100 despite treatment, or glycosylated hemoglobin greater than 7 despite exercise and/or weight reduction)

9.4.3.2 Physician Guidance. The physician shall consider the following when evaluating a member:

(1) Evaluation of coronary artery disease requires a stress test with imaging and/or coronary angiogram and some assessment of left ventricular function. Following a myocardial infarction or a coronary revascularization procedure, a radionuclide stress test shall be performed to evaluate exercise tolerance and the presence of exercise-induced myocardial ischemia or ventricular arrhythmias.
(2) Reports of left ventricular ejection fraction for evaluation of 9.4.3.1(3) should include "normal" values for the lab performing the test and formal interpretation by a cardiologist.
(3) Workload demands of fire fighting have been shown to exceed the levels shown in 9.4.3.1(4).

9.4.4 Congestive Heart Failure.

9.4.4.1 Physician Evaluation. Congestive heart failure due to any etiology including any disease leading to a lower than normal left or right ventricular ejection fraction, even if corrected by medication, compromises the member's ability to safely perform essential job tasks 1, 2, 4, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department.

9.4.4.2 Physician Guidance. The physician shall consider that if the heart failure is due to a reversible process that ultimately results in no abnormality in cardiac performance off all cardiac medications (e.g., hyperthyroidism, anemia), then a history of congestive heart failure does not permanently prevent a member from safely performing the essential job tasks.

9.4.5 Restrictive Cardiomyopathy and Constrictive Pericarditis.

9.4.5.1 Physician Evaluation. Restrictive cardiomyopathy and constrictive pericarditis when resulting in heart failure compromise the member's ability to safely perform essential job tasks 1, 2, 4, 7, and 9, and the physician shall report the applicable job limitations to the fire department.

9.4.6 Acute Pericarditis, Acute Endocarditis, and Acute Myocarditis.

9.4.6.1 Physician Evaluation. Acute pericarditis, acute endocarditis, and acute myocarditis compromise the member's ability to safely perform essential job tasks 1, 4, 5, 6, 7, 9, and

13, and the physician shall report the applicable job limitations to the fire department.

9.4.7 Pericarditis, Endocarditis, or Myocarditis.

9.4.7.1 Physician Evaluation. Chronic pericarditis, endocarditis, or myocarditis when resulting in heart failure or significant valvular incompetence or arrhythmias compromises the member's ability to safely perform essential job tasks 1, 4, 5, 6, 7, and 13, and the physician shall report the applicable job limitations to the fire department.

9.4.7.2 Physician Guidance. Members with pericarditis, endocarditis, or myocarditis shall be carefully assessed for cardiac function, rhythm, and valvular competence at least annually by cardiac echo or other noninvasive or invasive monitoring in consultation with a cardiologist.

9.4.8 Hypertrophic Obstructive Cardiomyopathy.

9.4.8.1 Physician Evaluation. Hypertrophic obstructive cardiomyopathy (HCM) (idiopathic hypertrophic subaortic stenosis) compromises the member's ability to safely perform essential job tasks 1 and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.4.8.2 Physician Guidance. HCM is associated with life-threatening arrhythmias and sudden cardiac death without previous symptoms of heart failure. In specific populations of patients with cardiomyopathies under normal environmental conditions, the following risk factors for sudden cardiac death shall be considered by the physician:

(1) Family history of a premature HCM-related sudden death (in a first-degree relative)
(2) Unexplained syncope
(3) History of cardiac arrest
(4) Sustained ventricular tachycardia (VT)
(5) Nonsustained VT (3 beats or more of at least 120 beats/minute documented on a Holter monitor)
(6) Left ventricle thickness of 30 mm on echocardiogram
(7)*Abnormal blood pressures during the exercise stress test (EST) (peak systolic BP less than 110 mm Hg or a rise less than 30 mm Hg from baseline)

9.4.9 Recurrent Syncope.

9.4.9.1* Physician Evaluation. Recurrent syncope compromises the member's ability to safely perform essential job task 13, and the physician shall report the applicable job limitations to the fire department.

9.4.10 Pacemaker or Automatic Implantable Defibrillator.

9.4.10.1* Physician Evaluation. A medical condition requiring a pacemaker or automatic implantable defibrillator compromises the member's ability to safely perform essential job task 13, and the physician shall report the applicable job limitations to the fire department.

9.4.11 Mitral Valve Stenosis.

9.4.11.1 Physician Evaluation. Moderate to severe mitral valve stenosis defined as valve area less than or equal to 1.5 cm^2 or pulmonary artery systolic pressure greater than 35 mm Hg compromises the member's ability to safely perform essential job tasks 1, 4, 5, 7, and 9, and the physician shall report the applicable job limitations to the fire department.

9.4.12 Mitral Valve Insufficiency.

9.4.12.1 Physician Evaluation. Moderate to severe mitral valve insufficiency, defined as the presence of left ventricular dysfunction, compromises the member's ability to safely perform essential job tasks 1, 4, 5, 7, and 9, and the physician shall report the applicable job limitations to the fire department.

9.4.12.2 Physician Guidance. Mitral valve prolapse only interferes with safe performance of critical job tasks if associated with arrhythmias or if moderate to severe mitral regurgitation is present.

9.4.13 Aortic Valve Stenosis.

9.4.13.1 Physician Evaluation. Moderate to severe aortic valve stenosis defined as mean aortic valvular gradient greater than or equal to 20 mm Hg and/or valve area less than or equal to 1.0 cm^2 compromises the member's ability to safely perform essential job tasks 1, 4, 5, 6, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department.

9.4.14 Aortic Valve Insufficiency.

9.4.14.1 Physician Evaluation. Moderate to severe aortic valve insufficiency when the cause of left ventricular dysfunction compromises the member's ability to safely perform essential job tasks 1, 4, 7, and 9, and the physician shall report the applicable job limitations to the fire department.

9.4.15 Prosthetic Cardiac Valves.

9.4.15.1 Physician Evaluation. Prosthetic cardiac valves compromise the member's ability to safely perform essential job task 8 if anticoagulation is required and essential job tasks 1, 4, 6, 7, and 9 if left ventricular dysfunction is present, and the physician shall report the applicable job limitations to the fire department.

9.4.16 Wolff-Parkinson-White (WPW) Syndrome.

9.4.16.1* Physician Evaluation. Wolff-Parkinson-White (WPW) syndrome with a history of supraventricular tachycardia (SVT) compromises the member's ability to safely perform essential job task 13, and the physician shall report the applicable job limitations to the fire department.

9.4.17 Other Supraventricular Arrhythmias, Atrial Fibrillation, or Atrial Flutter.

9.4.17.1* Physician Evaluation. Other supraventricular arrhythmias, atrial fibrillation, or atrial flutter when persistent (even if rate controlled) or if anticoagulation is required compromise the member's ability to safely perform essential job task 13 and essential job task 8 if anticoagulation is required, and the physician shall report the applicable job limitations to the fire department.

9.4.17.2 Physician Guidance. The physician shall consider that if the atrial fibrillation is recurrent but self-limited off cardiac medications, there is no evidence of ischemia, and the echocardiogram reveals both a normal mitral valve and a normal-sized left atrium, then the member might be able to safely perform full duties. Paroxysmal atrial tachycardia can sometimes be resolved with modification of diet or treatment of other underlying noncardiac conditions.

9.4.18 Ventricular Arrhythmias and Ectopy.

9.4.18.1 Physician Evaluation.

9.4.18.1.1 The physician shall evaluate the member to determine if a history of ventricular arrhythmias (e.g., ventricular

tachycardia and ventricular fibrillation) compromises the member's ability to safely perform essential job task 13, and the physician shall report the applicable job limitations to the fire department.

9.4.18.1.2 A history of ventricular ectopy might compromise the member's ability to safely perform essential job task 13, and after evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.4.18.2 **Physician Guidance.** The physician shall consider the following:

(1) A history of ventricular arrhythmias, including ventricular tachycardia or ventricular fibrillation, poses significant risk for life-threatening sudden incapacitation in the presence of structural abnormalities, functional abnormalities, or ectopy that occurs during exercise.
(2) A history of ventricular ectopy might pose a significant risk for life-threatening sudden incapacitation if structural or ischemic heart disease is present or if ventricular ectopy increases during exercise.
(3) Holter monitoring (24-hour ECG recording) might show ventricular ectopy but should show no evidence of ventricular arrhythmias.
(4) Echocardiograph must show normal function and no evidence of structural abnormalities.
(5) Stress testing off cardiac medications must show no evidence for ischemia, ventricular tachycardia, or ventricular fibrillation.
(6) Premature ventricular contractions (PVCs) should resolve with increasing levels of exercise up to 12 METs.

9.4.19 Atrioventricular Block.

9.4.19.1 Physician Evaluation.

9.4.19.1.1 Third-degree or complete atrioventricular block compromises the member's ability to safely perform essential job task 13, and the physician shall report the applicable job limitations to the fire department.

9.4.19.1.2 Other types of atrioventricular block with sinus pause greater than 3 seconds, left bundle branch block, right bundle branch block, or second-degree Type I atrioventricular block might compromise the member's ability to safely perform job task 13 if cardiac structural (i.e., coronary arteries, valves, myocardium) abnormalities are present, if left ventricular function is abnormal, or if heart rate does not increase with exercise in the absence of a mechanical pacemaker, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.4.20 Hypertension.

9.4.20.1* **Physician Evaluation.** Members with stage I hypertension shall be referred to their primary care physician to ensure that their blood pressure is controlled and to consider periodic screening for asymptomatic end organ damage based on the severity and duration of their hypertension.

9.4.20.2 Members with Stage 2 hypertension (systolic greater than or equal to 160 mm Hg or diastolic greater than or equal to 100 mm Hg) or any member with end organ damage (retinopathy, nephropathy, or vascular or cardiac complications) compromises the member's ability to safely perform essential job tasks 1, 5, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department.

9.4.21 Metabolic Syndrome.

9.4.21.1* Members with metabolic syndrome are at increased risk for cardiovascular ischemic disease, diabetes, and accelerated hypertension and shall undergo a stress test with imaging; if the results are abnormal or the member is unable to achieve an aerobic capacity of 12 METs, the member's ability to safely perform essential job tasks 1, 2, 4, 5, 6, 7, 8, 9, 10, and 13 will be compromised.

9.4.22 Cardiac Congenital Abnormality.

9.4.22.1 **Physician Evaluation.** A history of a cardiac congenital abnormality that has been treated by surgery but with residual complications or that has not been treated by surgery, leaving residuals or complications, might compromise the member's ability to safely perform essential job tasks 1, 4, 5, 6, 7, 9, and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.4.23 Cardiac Hypertrophy.

9.4.23.1 **Physician Evaluation.** Cardiac hypertrophy when not a normal response to exercise of the heart might compromise the member's ability to safely perform essential job task 13 and other job functions due to limitations of endurance, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.4.23.2 **Physician Guidance.** The physician shall consider that this condition can result in the potential for sudden incapacitation.

9.4.24 Heart Transplant.

9.4.24.1 **Physician Evaluation.** Cardiac transplantation prevents a normal rise in heart rate and increases risk of syncope and sudden cardiac death and therefore shall be considered as compromising the member's ability to safely perform essential job tasks 1, 2, 4, 5, 6, 7, 8, 9, 10, and 13.

9.4.24.2 **Physician Guidance.** The physician shall consider that this condition can result in the potential for sudden incapacitation and that the many immunosuppressive drugs required to prevent rejection increase the likelihood for infection.

9.5 Vascular Disorders.

9.5.1 Vascular disorders shall refer to any disorder of the vascular (arterial or venous) system including but not limited to aneurysm, peripheral vascular insufficiency, and thromboembolic disease.

9.5.2 If the member has any vascular disorders, the member shall be individually evaluated in accordance with 9.5.3 through 9.5.11 to determine if the disorders compromise the member's ability to safely perform the essential job tasks, recognizing that heart rate, blood pressure, and shear forces on vessel walls are increased when performing many of the essential job tasks, increasing the risk of acute dissection, rupture, and/or embolic phenomena that even in a normal environment can result in life-threatening sudden incapacitation.

9.5.3 Aortic Aneurysm.

9.5.3.1 **Physician Evaluation.** Aortic aneurysm (thoracic aortic aneurysm of any size or abdominal aortic aneurysm greater than or equal to 4 cm) compromises the member's ability to safely perform essential job tasks 1, 4, 6, 7, and 13, and the

physician shall report the applicable job limitations to the fire department.

9.5.3.2 Physician Guidance. When evaluating a member with an abdominal aortic aneurysm less than 4 cm, the physician shall recognize that treatment requires careful control of blood pressure and regular follow-up with cardiac imaging.

9.5.3.2.1 A minimum of 6 months post-surgical repair of any aortic aneurysm shall be required before the member can be evaluated for return-to-duty status.

9.5.4 Carotid Artery Disease.

9.5.4.1 Physician Evaluation. Carotid artery disease when symptomatic and/or reduction in blood flow of greater than 70 percent is present compromises the member's ability to safely perform job task 13, and the physician shall report the applicable job limitations to the fire department.

9.5.5 Thoracic Outlet Syndrome.

9.5.5.1 Physician Evaluation. Thoracic outlet syndrome (symptomatic) compromises the member's ability to safely perform essential job tasks 1 and 13, and the physician shall report the applicable job limitations to the fire department.

9.5.6 Peripheral Vascular Disease.

9.5.6.1 Physician Evaluation. Peripheral vascular disease (arterial or venous) when symptomatic (claudication) or severe peripheral edema is present compromises the member's ability to safely perform essential job tasks 1, 4, 5, 7, and 9, and the physician shall report the applicable job limitations to the fire department.

9.5.7 Thrombophlebitis.

9.5.7.1 Physician Evaluation.

9.5.7.1.1 Thrombophlebitis or deep venous thrombosis that is recurrent or persistent or requires anticoagulation compromises the member's ability to safely perform essential job tasks 1, 4, 5, 7, and 9, and the physician shall report the applicable job limitations to the fire department.

9.5.7.1.2 Full-dose or low-dose anticoagulation compromises the member's ability to safely perform essential job task 8, and the physician shall report the applicable job limitations to the fire department.

9.5.8 Circulatory Instability.

9.5.8.1 Physician Evaluation. Circulatory instability as indicated by orthostatic hypotension or persistent tachycardia compromises the member's ability to safely perform essential job tasks 1, 5, 9, and 13, and the physician shall report the applicable job limitations to the fire department.

9.5.9 Peripheral Vascular Disease.

9.5.9.1 Physician Evaluation. Peripheral vascular disease, such as severe Raynaud's phenomenon, might compromise the member's ability to safely perform essential job tasks (e.g., under certain conditions, including cold weather), and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.5.10 Lymphedema.

9.5.10.1 Physician Evaluation. Chronic, severe lymphedema or massive edema of any type (e.g., due to lymphadenopathy, severe venous valvular incompetency, endocrine abnormalities, or low flow states) compromises the member's ability to safely perform essential job tasks 1, 4, 5, and 8, and the physician shall report the applicable job limitations to the fire department.

9.5.11 Lesions of Aorta or Major Vessels.

9.5.11.1 Physician Evaluation.

9.5.11.1.1 Congenital or acquired lesions of the aorta or major blood vessels might interfere with circulation and prevent the safe performance of essential job tasks 1, 4, and 7 due to limitations of endurance, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.5.11.1.2 Congenital or acquired lesions of the aorta or major blood vessels could increase the potential for life-threatening sudden incapacitation, which might compromise the member's ability to safely perform essential job task 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.6* Endocrine and Metabolic Disorders.

9.6.1 Endocrine and metabolic disorders shall include disorders of the hypothalamic-pituitary-thyroid-adrenal axis.

9.6.2 If the member has any endocrine and metabolic disorders, the member shall be individually evaluated in accordance with 9.6.3 through 9.6.7 to determine if the disorders compromise the member's ability to safely perform the essential job tasks.

9.6.3 Type 1 Diabetes Mellitus That Requires Treatment with Insulin.

9.6.3.1* Physician Evaluation. Type 1 diabetes mellitus that requires treatment with insulin compromises the member's ability to safely perform essential job tasks 5, 9, and 13, and the physician shall report the applicable job limitations to the fire department, unless the member meets all of the following criteria:

(1) Is maintained by a physician knowledgeable in current management of diabetes mellitus on a basal/bolus (can include subcutaneous insulin infusion pump) regimen using insulin analogs.
(2) Has demonstrated over a period of at least 6 months the motivation and understanding required to closely monitor and control capillary blood glucose levels through nutritional therapy and insulin administration. Assessment of this shall take into consideration the member's experience and history dealing with erratic meal schedules, sleep disruption, and high aerobic and anaerobic workloads intrinsic to fire fighting.
(3) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than microaneurysms, as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale.
(4) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min and absence of proteinuria. (Creatinine clearance can be calculated by use of the Cockroft-Gault or similar formula. Proteinuria is defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample.)
(5) Has no autonomic or peripheral neuropathy. (Peripheral neuropathy is determined by diminished ability to feel

the vibration of a 128 cps tuning fork or the light touch of a 10-gram monofilament on the dorsum of the great toe proximal to the nail. Autonomic neuropathy can be determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability.)

(6) Has normal cardiac function without evidence of myocardial ischemia on cardiac stress testing (to at least 12 METs) by ECG and cardiac imaging.

(7) Has a signed statement and medical records from an endocrinologist or a physician with demonstrated knowledge in the current management of diabetes mellitus as well as knowledge of the essential job tasks and hazards of fire fighting as described in 9.1, allowing the fire department physician to determine whether the member meets the following criteria:

(a) Is maintained on a stable basal/bolus regimen using insulin analogs and has demonstrated over a period of at least 6 months the motivation and understanding required to closely monitor and control capillary blood glucose levels through nutritional therapy and insulin administration despite varied activity schedules.

(b) Has had hemoglobin A1C measured at least four times a year (intervals of two to three months) over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year. Hemoglobin A1C reading of 8 percent or greater shall trigger a medical evaluation to determine if a condition exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels, including evidence of a set schedule for blood glucose monitoring and a thorough review of data from such monitoring.

(c) Does not have an increased risk of hypoglycemia due to alcohol use or other predisposing factors.

(d) Has had no episodes of severe hypoglycemia (defined as requiring assistance of another) in the preceding 1 year, with no more than two episodes of severe hypoglycemia in the preceding 3 years.

(e) Is certified not to have a medical contraindication to fire-fighting training and operations.

9.6.3.2 Physician Guidance. When evaluating a member with Type 1 diabetes mellitus, the physician shall recognize that episodes of severe hypoglycemia are associated with an increased risk of subsequent episodes and that hypoglycemia can interfere with cognitive function and judgment. Presence of microvascular and neurological complications of diabetes might increase the risk of hypoglycemic events.

9.6.4 Type 2 Diabetes Mellitus That Requires Treatment with Insulin.

9.6.4.1* Physician Evaluation. Type 2 diabetes mellitus that requires treatment with insulin compromises the member's ability to safely perform essential job tasks 5, 9, and 13, and the physician shall report the applicable job limitations to the fire department, unless the member meets all of the following criteria:

(1) Is maintained by a physician knowledgeable in current management of diabetes mellitus.

(2) Has demonstrated over a period of at least 3 months the motivation and understanding required to closely monitor and control capillary blood glucose levels through nutritional therapy and insulin administration. Assessment of this shall take into consideration the member's experience and prior history dealing with the erratic meal schedules, sleep disruption, and high aerobic and anaerobic workloads intrinsic to fire fighting.

(3) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than microaneurysms, as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale.

(4) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min and absence of proteinuria. (Creatinine clearance can be calculated by use of the Cockroft-Gault or similar formula. Proteinuria is defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample.)

(5) Has no autonomic or peripheral neuropathy. (Peripheral neuropathy is determined by diminished ability to feel the vibration of a 128 cps tuning fork or the light touch of a 10-gram monofilament on the dorsum of the great toe proximal to the nail. Autonomic neuropathy can be determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability.)

(6) Has normal cardiac function without evidence of myocardial ischemia on cardiac stress testing (to at least 12 METs) by ECG and cardiac imaging.

(7) Has a signed statement and medical records from an endocrinologist or a physician with demonstrated knowledge in the current management of diabetes mellitus as well as knowledge of the essential job tasks and hazards of fire fighting as described in Section 9.1, allowing the fire department physician to determine whether the member meets the following criteria:

(a) Is maintained on a stable insulin regimen and has demonstrated over a period of at least 3 months the motivation and understanding required to closely monitor and control capillary blood glucose levels despite varied activity schedules through nutritional therapy and insulin administration.

(b) Has had hemoglobin A1C measured at least four times a year (intervals of 2 to 3 months) over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year. Hemoglobin A1C reading of 8 percent or greater shall trigger a medical evaluation to determine if a condition exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels, including evidence of a set schedule for blood glucose monitoring and a thorough review of data from such monitoring.

(c) Does not have an increased risk of hypoglycemia due to alcohol use or other predisposing factors.

(d) Has had no episodes of severe hypoglycemia (defined as requiring assistance of another) in the preceding 1 year, with no more than one episode of severe hypoglycemia in the preceding 5 years.

(e) Is certified not to have a medical contraindication to fire-fighting training and operations.

9.6.4.2 Physician Guidance. When evaluating a member with Type 2 diabetes mellitus, the physician shall recognize that episodes of severe hypoglycemia are considered the best predictors of an increased risk of subsequent episodes and hypoglycemia interferes with cognitive function and judgment.

9.6.5 Diabetes Mellitus That Does Not Require Insulin Therapy.

9.6.5.1 Physician Evaluation. Diabetes mellitus that does not require insulin therapy and that is controlled by diet, exercise, and/or oral hypoglycemic agents compromises the member's ability to safely perform essential job tasks 5, 9, and 13, and the physician shall report the applicable job limitations to the fire department, unless the member meets all of the following criteria:

(1) Has had hemoglobin A1C measured at least four times a year (intervals of 2 to 3 months) over the last 12 months prior to evaluation if the diagnosis of diabetes has been present over 1 year. Hemoglobin A1C reading of 8 percent or greater shall trigger a medical evaluation to determine if a condition exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels, shall including evidence of a set schedule for blood glucose monitoring and a thorough review of data from such monitoring.
(2) If on oral hypoglycemic agents, has had no episodes of severe hypoglycemia (defined as requiring assistance of another in the preceding year).
(3) Has a dilated retinal exam by a qualified ophthalmologist or optometrist that shows no higher grade of diabetic retinopathy than microaneurysms, as indicated on the International Clinical Diabetic Retinopathy Disease Severity Scale.
(4) Has normal renal function based on a calculated creatinine clearance greater than 60 mL/min and absence of proteinuria. (Creatinine clearance can be calculated by use of the Cockroft-Gault or similar formula. Proteinuria is defined as 24-hour urine excretion of greater than or equal to 300 mg protein or greater than or equal to 300 mg of albumin per gram of creatinine in a random sample.)
(5) Has no autonomic or peripheral neuropathy. (Peripheral neuropathy is determined by diminished ability to feel the vibration of a 128 cps tuning fork or the light touch of a 10-gram monofilament on the dorsum of the great toe proximal to the nail. Autonomic neuropathy can be determined by evidence of gastroparesis, postural hypotension, or abnormal tests of heart rate variability.)
(6) Has normal cardiac function without evidence of myocardial ischemia on cardiac stress testing (to at least 12 METs) by ECG and cardiac imaging.

9.6.6 Nutritional Deficiencies.

9.6.6.1 Physician Evaluation. Nutritional deficiencies, including those caused by congenital or acquired disorders of metabolism, might compromise the member's ability to safely perform essential job tasks 1, 5, and 9, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.6.6.2 Physician Guidance. When evaluating a member with nutritional deficiencies, the physician shall perform an assessment of severity and functional impact and should include percent of ideal body weight, body mass index (BMI), muscle strength, endurance, energy levels, and abilities to feed, hydrate, and absorb essential nutrients pre- and post-fire activities.

9.6.7 Diseases of the Adrenal Gland, Pituitary Gland, Parathyroid Gland, or Thyroid Gland.

9.6.7.1 Physician Evaluation. Untreated or inadequately controlled diseases of the adrenal gland, pituitary gland, parathyroid gland, or thyroid gland of clinical significance compromise the member's ability to safely perform essential job tasks 1, 5, and 9, and the physician shall report the applicable job limitations to the fire department.

9.6.7.2 Physician Guidance. When evaluating a member, the physician shall recognize that clinically controlled diseases of the adrenal gland, pituitary gland, parathyroid gland, or thyroid gland with normal exam and serum levels do not compromise the member's ability to safely perform essential job tasks.

9.7* Lung, Chest Wall, and Respiratory Disorders.

9.7.1 Lung, chest wall, and respiratory disorders shall include disorders of breathing and the exchange of respiratory gases (oxygen and carbon dioxide), central neurologic control of respiratory drive, nose, sinuses, throat, pharynx, larynx, trachea, airways, lungs, pleura, and chest wall.

9.7.2 When evaluating a member for lung, chest wall, and respiratory disorders, the physician shall consider the following:

(1) Efficient breathing and respiratory gas exchange is required for essential job tasks 1, 2, 3, 4, 5, 7, 9, and 13.
(2) Wearing protective clothing increases the oxygen consumption required to safely perform these tasks and, therefore, increases the respiratory workload.
(3) SCBA is a positive-pressure demand valve respirator that provides a barrier against the inhalation of noxious/toxic gases and particulate matter but at increased metabolic cost due to its weight and increased respiratory workload (resistance and dead space).
(4) If respiratory function or gas exchange is already compromised (increased work of breathing from structural or functional abnormalities, hypoxia, and/or hypercapnia) prior to the performance of essential job tasks, then the increased oxygen demand of strenuous physical exertion, while wearing a personal protective ensemble and/or SCBA, leads to early onset of fatigue or respiratory insufficiency.
(5) Lung, chest wall, and respiratory disorders can compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, 9, and 13.

9.7.3 If the member has any lung, chest wall, or respiratory disorders, the member shall be individually evaluated in accordance with 9.7.4 through 9.7.24 to determine if the disorders compromise the member's ability to safely perform the essential job tasks.

9.7.4 Tracheostomy.

9.7.4.1 Physician Evaluation. Tracheostomy compromises the member's ability to safely wear SCBA (essential job task 2), communicate effectively due to oropharyngeal dysfunction (essential job task 12), and effectively clear secretions or inhaled particulate matter (essential job task 3), and the physician shall report the applicable job limitations to the fire department.

9.7.4.2 Physician Guidance. The physician shall consider that a member with a history of tracheostomy that is now sealed and without persistent respiratory disease or dysfunction does not prevent safe performance of essential job tasks.

9.7.5 Chronic Cough.

9.7.5.1 Physician Evaluation. Chronic cough with or without hemoptysis might compromise the member's ability to safely wear SCBA (essential job task 2) and to safely perform in an irritant environment (essential job task 3), and after further evaluation and a final medical determination of the member's

condition, the physician shall report any applicable job limitations to the fire department.

9.7.5.2 Physician Guidance. The physician shall consider the severity of the cough, the impact of irritants and SCBA use on cough severity, and the impact of cough severity on the ability to safely wear SCBA and perform strenuous exertion. The cause of chronic cough and/or hemoptysis needs to be evaluated, as the underlying conditions can also produce increased work of breathing, gas exchange abnormalities, or airway hyperreactivity.

9.7.6* Asthma.

9.7.6.1 Physician Evaluation. Asthma compromises the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department, unless the following provisions are met:

(1) The member denies bronchospasm during exertion, temperature/humidity extremes, irritant exposures, fire activities, or hazmat activities.
(2) The member denies the use of bronchodilator rescue medications during exertion, temperature/humidity extremes, irritant exposures, fire activities, or hazmat activities.
(3) A review of the member's fire department records (training, operations, rehabilitation, and medical) verifies that no asthmatic episodes have occurred during fire suppression or hazardous materials operations or training.
(4) As defined by the National Heart Lung and Blood Institute's *Guidelines for the Diagnosis and Management of Asthma*," the member has mild asthma classified as either "Step One" (no control medications and requires inhaled bronchodilator rescue medications for attacks no more than two times per week) or "Step Two" (daily control medications consisting of low-dose inhaled corticosteroids or cromolyn or oral leukotriene receptor antagonists (e.g., Montelukast) and requires inhaled bronchodilator rescue medications for attacks no more than two times per week).
(5) The member's asthma has not required systemic corticosteroids, emergency room treatment, or hospital admission in the last 2 years.
(6) The member shows adequate reserve in pulmonary function (FVC and FEV_1 greater than or equal to 90 percent) and no bronchodilator response measured off all bronchodilators on the day of testing.
(7)*The member has a normal or negative response (less than 20 percent decline in FEV_1) from baseline to provocative challenge testing using cold air, methacholine (PC_{20} greater than 8 is considered normal, as response at dose greater than 8 mg might not be clinically significant), histamine, mannitol, or exercise. For exercise challenge testing, a normal response is a decline in FEV_1 less than 13 percent from baseline.
(8) The fire department provides and the member agrees to wear SCBA during all phases of fire suppression (i.e., ingress, suppression, overhaul, and egress).
(9) The member has a signed statement from a pulmonary or asthma specialist, knowledgeable in the essential job tasks and hazards of fire fighting, that he/she meets the criteria specified in 9.7.6.1(1) through 9.7.6.1(6) and that the member can safely perform essential job tasks 1, 2, 3, 4, 5, 7, 9, and 13 without the use of bronchodilator "rescue" medications.

9.7.6.2 Physician Guidance. The physician shall consider the following when evaluating the member's asthmatic condition:

(1) Exposures to exertion, temperature extremes, combustion by-products, irritants, and particulate matter are all potent provokers of asthma attacks.
(2) Bronchodilator medications are not adequate maintenance therapy to control symptoms in the irritant environment of the fire ground or hazardous materials incident scene because their use has not been approved by the FDA for use on the fire ground or hazardous materials incident scene and because several studies have implicated the frequent use of beta-agonists (short- and long-acting bronchodilators) as an independent predictor or risk for sudden death and myocardial infarction in the United States, Canada, Britain, New Zealand, and Australia.
(3) There is a high probability that acute hyperreactivity in this environment can induce immediate or progressive clinical asthma (bronchospasm and wheeze) that can lead to sudden incapacitation from status asthmaticus and/or cardiac ischemia. There are no studies that support or deny that asthma in this environment can be prevented or adequately controlled by anti-inflammatory medications (inhaled corticosteroids, cromolyn, leukotriene modifiers). It is not acceptable to use or rely on bronchodilator medications for this purpose because in a hazardous environment, SCBA cannot be removed to use a rescue inhaler, and there are no studies that support or deny that their use is preventive or effective in a fire/smoke environment.
(4) The member's work history, as well as clinical findings on annual evaluation, should be used as an assessment of the member's practical ability to safely perform the essential job tasks.

9.7.7* Allergic Lower Respiratory Disorders.

9.7.7.1 Physician Evaluation. Allergic lower respiratory disorders might compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, 9, and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.7.7.2 Physician Guidance. The physician shall consider that allergic lower respiratory disorder, a term used to define asthma (clinical reversible bronchospasm), is triggered by a known allergic insult and once triggered these patients have demonstrable airway hyperreactivity for weeks to months; it can be recurrent and/or become permanent.

9.7.8* Chronic Obstructive Airways Diseases.

9.7.8.1 Physician Evaluation. Chronic obstructive airways diseases (chronic bronchitis, emphysema), if moderate to severe (absolute FEV_1/FVC ratio less than or equal to 0.70 and an FEV_1 less than 70 percent predicted), compromises the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department.

9.7.9 Hypoxemic Disorders.

9.7.9.1 Physician Evaluation. Hypoxemic disorders when moderate to severe (oxygen saturation less than or equal to 90 percent or a Po_2 less than or equal to 65 mm Hg, measured at rest and corrected to sea level) or the presence of significant exercise desaturation (a fall in oxygen saturation by 4 percent from baseline or to 90 percent or less) compromises the member's ability to safely perform essential job tasks 1, 2, 3, 4, 7, and 13, and the physician shall report the applicable job limitations to the fire department.

9.7.9.2 Physician Guidance. The physician shall recognize the following situations when evaluating the member:

(1) A resting oxygen saturation of 91 to 93 percent corrected to sea level requires measurement at exercise to determine if desaturation (decrease in oxygen saturation by greater than or equal to 4 percent from baseline or to less than or equal to 90 percent) occurs.
(2) Hypoxia can be the result of central regulatory disturbances, obstructive sleep apnea, asthma, chronic obstructive airways diseases, interstitial lung disease, pulmonary hypertension, chronic pulmonary embolism, and so forth.
(3) In this environment, gas exchange abnormalities and respiratory insufficiency no matter the cause have the potential for life-threatening sudden incapacitation from cardiopulmonary insufficiency.

9.7.10 Hypercapnic Disorders.

9.7.10.1 Physician Evaluation. Hypercapnic disorders (elevated carbon dioxide with serum P_{CO2} greater than or equal to 45 mm Hg) found during evaluation of respiratory complaints or disease compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, and 13, and the physician shall report the applicable job limitations to the fire department.

9.7.10.2 Physician Guidance. The physician shall consider that hypercapnia can be the result of central regulatory disturbance, medications, obstructive sleep apnea, severe asthma, end-stage chronic obstructive airways diseases, or end-stage interstitial lung disease. In this environment, gas exchange abnormalities and respiratory insufficiency no matter the cause have the potential for life-threatening sudden incapacitation from cardiopulmonary insufficiency.

9.7.11 Pulmonary Hypertension.

9.7.11.1 Physician Evaluation. Pulmonary hypertension compromises the member's ability to safely perform essential job tasks 1, 3, 4, 7, and 13, and the physician shall report the applicable job limitations to the fire department. *[For further details see sections on hypoxia (9.7.9), pulmonary embolism (9.7.20), and cardiac valve dysfunction (9.4.11).]*

9.7.12 Tracheal Stenosis.

9.7.12.1 Physician Evaluation. Tracheal stenosis might compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, and 12 if pulmonary dysfunction is reduced (FVC less than 60 percent of predicted or abnormal inspiratory flow volume loop) or if the underlying cause of the stenosis prevents the successful and safe performance of the essential job tasks, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.7.13 Pulmonary Resection Surgery, Chest Wall Surgery, or Traumatic Pneumothorax.

9.7.13.1 Physician Evaluation.

9.7.13.1.1 If the member has had pulmonary resection surgery, chest wall surgery, and/or traumatic pneumothorax, the physician shall evaluate the member for full recovery from the surgery with full pulmonary function testing (PFT), including spirometry, lung volumes, diffusion, and hemoglobin oxygen saturation.

9.7.13.1.2 Abnormal PFTs or decreased gas exchange might compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 7, and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.7.13.2 Physician Guidance. The physician shall consider the following when evaluating the member:

(1) Pulmonary function tests should be performed after adequate healing and pain resolution; generally, this is 4 weeks after thorascopic surgery and 6 to 8 weeks after open-chest surgery.
(2) Pulmonary function tests should be either normal or show only a minimal restrictive disorder without evidence for interstitial disease or gas exchange abnormalities.
(3) Moderate to severe restriction (FVC less than 60 percent of predicted with an absolute FEV_1/FVC ratio greater than or equal to 0.90) or hypoxia compromises the member's ability to safely perform essential job tasks unless a more complete evaluation of gas exchange and exercise capacity shows the ability to exercise at a workload of 12 METs without evidence of exercise hemoglobin oxygen desaturation.

9.7.14* Spontaneous Pneumothorax.

9.7.14.1 Physician Evaluation. Spontaneous pneumothorax, when present, might compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 7, and 13 due to pain and dyspnea, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.7.14.2 Physician Guidance. The physician shall consider that members with a history of spontaneous pneumothorax and cystic/bullous disease (e.g., as demonstrated on chest CAT scan) whose essential job task 4 includes SCUBA diving cannot safely perform this task since pressure changes during diving can induce recurrence.

9.7.15 Fibrothorax, Chest Wall Deformity, and/or Diaphragm Abnormalities.

9.7.15.1 Physician Evaluation. Fibrothorax, chest wall deformity, and/or diaphragm abnormalities might compromise the member's ability to safely perform essential job tasks 2, 4, and 7, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.7.15.2 Physician Guidance. The physician shall consider that moderate to severe restriction (FVC less than 60 percent of predicted with an absolute FEV_1/FVC ratio greater than or equal to 0.90) compromises the member's ability to safely perform essential job tasks unless a more complete evaluation of gas exchange and exercise capacity shows the ability to exercise at a workload of 12 METs without evidence of hypoxia or exercise hemoglobin oxygen desaturation.

9.7.16* Pleural Effusions.

9.7.16.1 Physician Evaluation. Pleural effusions might compromise the member's ability to safely perform essential job tasks 2, 4, and 7, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.7.17 Bronchiectasis and/or Bronchiolitis Obliterans.

9.7.17.1 Physician Evaluation. Bronchiectasis and/or bronchiolitis obliterans might compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, and 7, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.7.17.2 Physician Guidance. The physician shall consider that the ability to safely perform essential job tasks is based on symptom (frequent productive cough, wheezing, and/or dyspnea) and disease severity (chest CAT scan demonstrating multi-lobar disease and pulmonary function tests demonstrating moderate to severe obstructive or restrictive dysfunction or gas exchange abnormalities).

9.7.18 Interstitial Lung Diseases.

9.7.18.1 Physician Evaluation. Interstitial lung diseases including pneumoconiosis (anthracosis, silicosis, asbestosis), hypersensitivity pneumonitis, eosinophilic pneumonitis, idiopathic pulmonary fibrosis, inhalation pneumonitis, and extensive pulmonary infections might compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, and 7, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.7.18.2 Physician Guidance. The physician shall consider that moderate to severe restriction (FVC less than 60 percent of predicted with an absolute FEV_1/FVC ratio greater than or equal to 0.90) compromises the member's ability to safely perform essential job tasks unless a more complete evaluation of gas exchange and exercise capacity shows the ability to exercise at a workload of 12 METs without evidence of hypoxia or exercise hemoglobin oxygen desaturation.

9.7.19 Sarcoidosis.

9.7.19.1 Physician Evaluation. Sarcoidosis resulting in moderate or severe pulmonary dysfunction, significant visual impairment, cardiac dysfunction (cardiomyopathy or arrhythmia) at rest or exercise, other moderate to severe end-organ dysfunction, or the need for current treatment with systemic corticosteroids compromises the member's ability to safely perform essential job tasks 1, 2, 3, 4, 7, 8, and 13, and the physician shall report the applicable job limitations to the fire department.

9.7.19.2 Physician Guidance. The physician shall consider the following when evaluating a member with sarcoidosis:

(1) Most patients with sarcoidosis are asymptomatic with abnormal chest imaging studies but normal function.
(2) If functional assessment by individual examination, pulmonary function tests, ECG, and echocardiogram are normal, the member is capable of safely performing essential job tasks.
(3) Moderate to severe restriction (FVC less than 60 percent of predicted with an absolute FEV_1/FVC ratio greater than or equal to 0.90) compromises the member's ability to safely perform essential job tasks unless a more complete evaluation of gas exchange and exercise capacity shows the ability to exercise at a workload of 12 METs without evidence of exercise hemoglobin oxygen desaturation.
(4) Cardiac function should be formally assessed with echocardiography and ECG.

9.7.20 Pulmonary Embolism.

9.7.20.1 Physician Evaluation.

9.7.20.1.1 Acute, recent, recurrent, or chronic pulmonary embolism requiring anticoagulation compromises the member's ability to safely perform essential job task 8, and the physician shall report the applicable job limitations to the fire department.

9.7.20.1.2 Moderate to severe pulmonary dysfunction (restriction or gas exchange abnormalities) or pulmonary hypertension is rare but if present compromises the member's ability to safely perform essential job tasks 1, 2, 4, and 7, and the physician shall report the applicable job limitations to the fire department.

9.7.21 Disorders of Respiratory Regulation.

9.7.21.1 Physician Evaluation. Disorders of respiratory regulation can result in gas exchange abnormalities that might compromise the member's ability to safely perform essential job tasks 1, 2, 4, 7, and 9, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.7.21.2 Physician Guidance. The physician shall consider that conditions including but not limited to obstructive sleep apnea, central apnea, and disordered central breathing regulation require evaluation of medical history, physical exam, pulmonary function tests, gas exchange, exercise tests, sleep tests, and other tests as deemed necessary.

9.7.22 Cystic Lung Diseases.

9.7.22.1 Physician Evaluation.

9.7.22.1.1 Cystic lung diseases (e.g., congenital bullous disease, pneumatocele, blebs, cystic fibrosis) with significant abnormalities on chest film or moderate to severe pulmonary dysfunction (FVC less than 60 percent predicted or gas exchange abnormalities) compromise the member's ability to safely perform essential job tasks 1, 2, and 4, and the physician shall report the applicable job limitations to the fire department.

9.7.22.1.2 Members shall be restricted from SCUBA diving if disease is moderate to severe on chest CAT imaging, even if pulmonary function tests are normal.

9.7.23 Tuberculosis. See Section 9.8.

9.7.24 Lung Cancer. See Section 9.17.

9.7.25 Lung Transplant.

9.7.25.1 Physician Evaluation. Lung function post–lung transplantation shall be considered as compromising a member's ability to safely perform essential job tasks (1, 2, 4, 5, 6, 7, 8, 9, 10, 13).

9.8 Infectious Diseases.

9.8.1 Infectious diseases shall include systemic, local, acute, and chronic infections as well as post-infectious processes.

9.8.2 When evaluating a member for infectious diseases, the physician shall consider the following:

(1) Many infections interfere with control of body temperature, hydration, and nutritional status.

(2) Many infections also produce severe pain, muscle weakness, compromise mobility, and/or ability to safely perform heavy physical exertion.
(3) Members must be able to safely interact with other fire fighters and civilians without posing a significant public health risk due to contagious disease.
(4) Acute and/or self-limited infectious processes can require temporary work restriction. Examples include influenza or upper respiratory tract infection, which can interfere with safe performance of essential job tasks 2 and 3, or acute dermatitis, which would interfere with safe performance of essential job task 3.
(5) Following resolution of these acute processes, members can return to full duty.

9.8.3 If the member has any infectious diseases, the member shall be individually evaluated in accordance with 9.8.4 through 9.8.12 to determine if the diseases compromise the member's ability to safely perform the essential job tasks.

9.8.4 Skin Infections and Draining Ulcers or Cysts.

9.8.4.1 Physician Evaluation. Skin infections and draining ulcers or cysts might compromise the member's ability to wear PPE (essential job tasks 2 and 5) or present too high a risk for exposure to infectious agents and toxins (essential job task 3), and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.8.5 Upper or Lower Respiratory Infections.

9.8.5.1 Physician Evaluation. Upper or lower respiratory infections that result in excessive cough, inability to use SCBA, or pulmonary dysfunction might compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, and 7, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.8.6 Ear Infections.

9.8.6.1 Physician Evaluation. Ear infections that interfere with balance and/or hearing might compromise the member's ability to safely perform essential job tasks 8 and 12, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.8.7 Gastrointestinal Infections.

9.8.7.1 Physician Evaluation. Gastrointestinal infections including parasites that result in dehydration or frequent use of toilet facilities at least temporarily might compromise the member's ability to safely perform essential job tasks 1, 5, 8, and 9, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.8.8 Kidney or Urinary Infections.

9.8.8.1 Physician Evaluation. Kidney or urinary infections that result in dehydration or the frequent use of toilet facilities might compromise the member's ability to safely perform essential job tasks 1, 5, and 9, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.8.9* Infection That Results in Dizziness, Weakness, Significant Weight Loss, or Pain.

9.8.9.1 Physician Evaluation. Any infection that results in dizziness, significant weakness, significant weight loss, or significant pain limiting functional capacity compromises the member's ability to safely perform essential job tasks 1, 5, 8, and 9, and the physician shall report the applicable job limitations to the fire department.

9.8.10* Active Pulmonary Tuberculosis.

9.8.10.1 Physician Evaluation. Active pulmonary tuberculosis, by posing a public health risk to the community and other members, compromises the member's ability to safely perform essential job tasks 2, 4, 5, and 12, and the physician shall report the applicable job limitations to the fire department.

9.8.11* Hepatitis.

9.8.11.1 Physician Evaluation. Hepatitis, specifically infectious diseases of the liver caused by viruses including but not limited to A, B, C, D, and E, and the treatment of hepatitis might compromise the member's ability to safely perform essential job tasks 1, 2, 4, 5, 7, 9, and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.8.11.2 Physician Guidance. Medical management of members following occupational exposure or development of any viral hepatitis shall conform to the current CDC guidelines, which includes recommendations for restriction from various types of duty. *[See 7.7.8(2).]*

9.8.12* Human Immunodeficiency Virus (HIV) Infection.

9.8.12.1 Physician Evaluation. If the member has been diagnosed with human immunodeficiency virus (HIV) infection, the physician shall evaluate the member to determine if the member can perform the essential job tasks.

9.8.12.1.1 AIDS and significant organ damage or dysfunction resulting from HIV infection compromise the member's ability to safely perform essential job tasks 1, 2, 4, 5, 7, 8, and 9 due to debilitation, and the physician shall report the applicable job limitations to the fire department.

9.8.12.1.2 Anemia, cardiopulmonary dysfunction, or neurologic dysfunction compromises the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, 9, and 13, and the physician shall report the applicable job limitations to the fire department.

9.8.12.1.3 Peripheral neuropathy compromises the member's ability to safely perform essential job tasks 1, 3, and 5, and the physician shall report the applicable job limitations to the fire department.

9.8.12.1.4 Dementia compromises the member's ability to safely perform essential job tasks 1, 11, and 12, and the physician shall report the applicable job limitations to the fire department.

9.9* Spine Disorders.

9.9.1 Spine disorders shall include conditions of the cervical, thoracic, and lumbosacral spine such as strains, fractures, and discogenic disease as well as cord, cauda equina, and paraspinous syndromes.

9.9.2 When evaluating a member for spine disorders, the physician shall consider the following:

(1) Fire fighters with active, ongoing, or recurrent spinal disorders can have difficulty due to reduced motor strength, sensation, and flexibility as well as problems with fatigue, coordination, gait, and equilibrium.
(2) The personal protective ensemble and SCBA can place the fire fighter's spine at a biomechanical disadvantage due to added weight and altered center of gravity.

9.9.3 If the member has any spine disorders, the member shall be individually evaluated in accordance with 9.9.4 through 9.9.9 to determine if the disorders compromise the member's ability to safely perform the essential job tasks.

9.9.4 Spinal Fusion.

9.9.4.1 Physician Evaluation. Spinal fusion that results in instability or reduced mobility, strength, range of motion, or persistent pain compromises the member's ability to safely perform essential job tasks 1, 2, 4, 5, 6, 7, 8, and 13, and the physician shall report the applicable job limitations to the fire department.

9.9.5 Ankylosing Spondylitis.

9.9.5.1 Physician Evaluation. Ankylosing spondylitis might compromise the member's ability to safely perform essential job tasks 1, 2, 4, 5, 6, 7, and 8, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.9.6 Spinal Condition with Significant Radiculopathy.

9.9.6.1 Physician Evaluation. Spinal condition with significant radiculopathy resulting in peripheral motor weakness, loss of strength, loss of sensation, and loss of reflexes affecting endurance, strength, flexibility, pain, and/or gait disturbances compromises the member's ability to safely perform essential job tasks 1, 2, 4, 5, 6, 7, 8, and 13, and the physician shall report the applicable job limitations to the fire department.

9.9.7 Use of Narcotics or Muscle Relaxants.

9.9.7.1 Physician Evaluation. The use of narcotics or muscle relaxants to treat any spinal condition compromises the member's ability to safely perform essential job tasks 1, 2, 4, 5, 6, 7, 8, and 13, and the physician shall report the applicable job limitations to the fire department.

9.9.7.2 Physician Guidance. The physician shall consider that medication-induced somnolence, discoordination, and/or disequilibrium compromise a member's ability to safely operate in hazardous environments.

9.9.8 Spine Structural Abnormality, Fracture, or Dislocation.

9.9.8.1 Physician Evaluation. Spine structural abnormality, fracture, or dislocation that causes progressive or recurrent impairment might compromise the member's ability to safely perform essential job tasks 1, 2, 4, 5, 6, 7, 8, and 13 due to limitations of endurance, strength, flexibility, or pain, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.9.8.2 Physician Guidance. The physician shall consider that spinal structural abnormality, a fracture, or a dislocation can also result in ligament instability, increasing the risk for future dislocation and neurologic compromise.

9.9.9 Herniation of Nucleus Pulposus.

9.9.9.1 Physician Evaluation. Herniation of nucleus pulposus or a history of laminectomy, discectomy, or single-level fusion might compromise the member's ability to safely perform essential job tasks 1, 2, 4, 5, 6, 7, 8, and 13 due to pain or limitations of endurance, strength, or flexibility, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.10* Orthopedic Disorders.

9.10.1 Orthopedic disorders shall include injuries and illnesses involving upper extremities, pelvis, and lower extremities including nerves, muscles, tendons, joints, and bones.

9.10.2 When evaluating a member for orthopedic disorders, the physician shall consider the following:

(1) Fire fighters with active, ongoing, or recurrent orthopedic disorders can have difficulty due to reduced motor strength, sensation, and flexibility as well as problems with fatigue, coordination, gait, and equilibrium.
(2) The personal protective ensemble and SCBA can place the fire fighter's involved extremity (upper or lower) at a biomechanical disadvantage due to added weight and altered center of gravity.
(3) Certain medications (narcotics and muscle relaxants) used to treat orthopedic conditions can produce or worsen somnolence, discoordination, and disequilibrium.

9.10.3 If the member has any orthopedic disorders, the member shall be individually evaluated in accordance with 9.10.4 through 9.10.20 to determine if the disorders compromise the member's ability to safely perform the essential job tasks.

9.10.4 Amputation of Arm, Hand, or Thumb.

9.10.4.1 Physician Evaluation. Amputation of an arm, hand, or thumb compromises the member's ability to safely perform essential job tasks 1, 2, 6, 7, and 8, and the physician shall report the applicable job limitations to the fire department.

9.10.4.2 Physician Guidance. When evaluating a member with an amputation of the arm, hand, or thumb, the physician shall consider the following:

(1) The amputation of these limbs or joints impairs grip and other physical abilities required to safely perform essential job tasks.
(2) Prosthetic limbs do not provide adequate function to safely perform these essential job tasks rapidly in a life-threatening, unforgiving environment.

9.10.5 Amputation of Leg.

9.10.5.1 Physician Evaluation. Amputation of a leg above the knee compromises the member's ability to safely perform essential job tasks 1, 4, 6, 7, and 8, and the physician shall report the applicable job limitations to the fire department.

9.10.5.2 Physician Guidance. When evaluating a member with an amputation of a leg (above or below the knee) or entire foot, the physician shall consider the following:

(1) The amputation of these limbs or joints significantly impacts ambulation and other weight-bearing activities required to safely perform essential job tasks.

(2) Prosthetic limbs might not provide adequate function to safely perform these essential job tasks in an immediately dangerous to life and health (IDLH) environment.
(3) To safely perform the essential job tasks in Chapter 5, an incumbent with a below-the-knee (BKA) amputation and a state-of-the-art prosthesis shall meet all of the following requirements:
   (a) A stable, unilateral BKA with at least the proximal third of the tibia present for a strong and stable attachment point with the prosthesis
   (b) Fitted with a prosthesis that will tolerate the conditions present in structural firefighting, when worn in conjunction with standard fire fighting PPE
   (c) At least 6 months of prosthetic use in a variety of physically demanding activities with no functional difficulties
   (d) The amputee limb is healed with no significant inflammation, persistent pain, necrosis, or indications of instability at the amputee limb attachment point
   (e) Demonstrates no disabling psychosocial issues pertaining to the loss of limb and/or use of prosthesis
   (f) Evaluated by a prosthetist or orthopedic specialist with expertise in the fitting and function of prosthetic limbs who concurs that the candidate can complete all essential job tasks listed in Chapter 9, including wearing personal protective ensembles and SCBA while climbing ladders, operating from heights, and walking or crawling in the dark along narrow and uneven surfaces that might be wet or icy

9.10.6 Amputation of Finger(s) Other than Thumb.

9.10.6.1 Physician Evaluation. Amputation of finger(s) other than a thumb might compromise the member's ability to safely perform essential job tasks 1, 2, 6, 7, and 8, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.10.6.2 Physician Guidance. The physician shall consider that the amputation of these limbs or joints might interfere with grip and other physical abilities required to safely perform essential job tasks.

9.10.7 Amputation of Partial Foot or Toe(s).

9.10.7.1 Physician Evaluation. Amputation of a partial foot or toe(s) might compromise the member's ability to safely perform essential job tasks 1, 4, 6, 7, and 8, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.10.7.2 Physician Guidance. The physician shall consider that the amputation of these limbs or joints might prevent ambulation and other physical abilities required to safely perform essential job tasks.

9.10.8 Dislocation of a Joint.

9.10.8.1 Physician Evaluation. Single episode of joint dislocation or dislocation with residual limitation of motion (depending upon degree) might compromise the member's ability to safely perform essential job tasks 1, 2, 4, 6, 7, and 8, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.10.8.2 Physician Guidance. The physician shall consider that successful surgery for shoulder dislocation, if range of motion and strength were intact, would not interfere with the safe performance of essential job tasks.

9.10.9 Recurrent Joint Dislocation of a Major Joint.

9.10.9.1 Physician Evaluation. Recurrent joint dislocation of a major joint (e.g., shoulder) compromises the member's ability to safely perform essential job tasks 1, 2, 4, 6, 7, and 8, and the physician shall report the applicable job limitations to the fire department.

9.10.9.2 Physician Guidance. When evaluating a member for recurrent joint dislocation, the physician shall consider the following:

(1) Unrepaired, repeated joint dislocations indicate an unstable shoulder or hip, which can easily dislocate leading to sudden incapacitation, placing the member or the person depending on the member at life-threatening risk.
(2) Post-surgical repair, the member can safely perform essential job tasks if joint exam shows full functional motion, strength, and stability.

9.10.10 Ligament and/or Meniscus Knee Disease.

9.10.10.1 Physician Evaluation. Ligament and/or meniscus knee disease with symptoms of locking, buckling, or giving-way compromises the member's ability to safely perform essential job tasks 1, 4, 6, 7, and 8, and the physician shall report the applicable job limitations to the fire department.

9.10.10.2 Physician Guidance. When evaluating a member for ligament and/or meniscus knee disease, the physician shall consider the following:

(1) Ligament and/or meniscus knee disease can lead to sudden incapacitation, placing the member or the person depending on the member at life-threatening risk.
(2) Post-surgical repair, the member can safely perform essential job tasks if joint exam shows full functional motion, strength, and stability.

9.10.11 Joint Replacements or Artificial Joints.

9.10.11.1 Physician Evaluation. Joint replacements or artificial joints compromise the member's ability to safely perform essential job tasks 1, 4, 6, 7, and 8, and the physician shall report the applicable job limitations to the fire department.

9.10.11.2 Physician Guidance. When evaluating a member with joint replacements or artificial joints, the physician shall verify that all of the following conditions are met:

(1) Normal range of motion without history of dislocations post-replacement
(2) Repetitive and prolonged pulling, bending, rotations, kneeling, crawling and climbing without pain or impairment
(3) No limiting pain
(4) An evaluation by an orthopedic specialist concurring that the incumbent can complete all essential job tasks listed in Chapter 9

9.10.12 Limitation of Joint Motion.

9.10.12.1 Physician Evaluation. Limitation of joint motion (depending upon degree) might compromise the member's ability to safely perform essential job tasks 1, 2, 4, 6, 7, and 8 due to reduced flexibility, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.10.13 Joint Reconstruction.

9.10.13.1 Physician Evaluation. Joint reconstruction in cases where there is significant residual limitation of motion or strength compromises the member's ability to safely perform essential job tasks 1, 4, 6, 7, and 8, and the physician shall report the applicable job limitations to the fire department.

9.10.13.2 Physician Guidance. The physician shall consider that surgery for a torn anterior cruciate ligament or meniscus can interfere with safe performance of essential job tasks 1, 4, 6, 7, and 8 if quadriceps strength is reduced or if the knee is unstable or develops pain or swelling when stressed.

9.10.14 Fractures.

9.10.14.1 Physician Evaluation. Fracture(s) might compromise the member's ability to safely perform essential job tasks 1, 4, 6, 7, and 8, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.10.14.2 Physician Guidance. When evaluating a member with a fracture, the physician shall consider the following:

(1) Fractures, including hip fractures requiring internal fixation, should not interfere with safe performance of essential job tasks as long as the radiograph demonstrates healing and exam is normal.
(2) Non-union fractures are not healed, and members cannot safely perform essential job tasks 1, 4, 6, 7, and 8 until union is achieved.

9.10.15 Appliances.

9.10.15.1 Physician Evaluation. Appliances (screws, pins, and/or metal plates) might compromise the member's ability to safely perform essential job tasks 1, 4, 6, 7, and 8, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.10.15.2 Physician Guidance. When evaluating a member with appliances, the physician shall consider the following:

(1) If the appliances are superficial, they could lead to perforation of the skin under the normal abrasive conditions of fire fighting.
(2) If the underlying condition responsible for the surgical implantation has healed, surgical consultation is advised to determine the risk–benefit analysis for removing the appliance.
(3) After removing the appliance, radiographic evidence of bone healing at approximately 6 months post-removal should be obtained before the member is allowed to safely perform the essential tasks.

9.10.16 Bone Grafts.

9.10.16.1 Physician Evaluation. Bone grafts might compromise the member's ability to safely perform essential job tasks 1, 4, 6, 7, and 8, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.10.16.2 Physician Guidance. The physician shall consider that bone grafts, if well healed, do not interfere with the safe performance of job tasks as long as the radiograph demonstrates healing and the exam is normal.

9.10.17 Chronic Osteoarthritis or Traumatic Arthritis.

9.10.17.1 Physician Evaluation. Chronic osteoarthritis or traumatic arthritis resulting in frequent episodes of pain and/or reduced range of motion, strength, or endurance compromises the member's ability to safely perform essential job tasks 1, 4, 6, 7, and 8, and the physician shall report the applicable job limitations to the fire department.

9.10.18 Inflammatory Arthritis.

9.10.18.1 Physician Evaluation. Inflammatory arthritis (in cases where it is severe, recurrent, or a progressive illness or associated with deformity or limitation of range of motion), which can result in frequent episodes of pain, reduced strength, and reduced flexibility, compromises the member's ability to safely perform essential job tasks 1, 4, 6, 7, and 8, and the physician shall report the applicable job limitations to the fire department.

9.10.19 Reflex Sympathetic Dystrophy.

9.10.19.1 Physician Evaluation. Reflex sympathetic dystrophy where pain is severe, narcotics or muscle relaxants are required, or strength/flexibility is limited compromises the member's ability to safely perform essential job tasks 1, 4, 6, 7, and 8, and the physician shall report the applicable job limitations to the fire department.

9.10.20 Osteomyelitis or Septic Arthritis.

9.10.20.1 Physician Evaluation. Osteomyelitis or septic arthritis, if active and causing pain, local drainage, systemic infection, and/or increased risk for pathologic or traumatic fractures, compromises the member's ability to safely perform essential tasks 1, 4, 6, 7, and 8, and the physician shall report the applicable job limitations to the fire department.

9.11 Disorders Involving the Gastrointestinal Tract and Abdominal Viscera.

9.11.1 Disorders involving the gastrointestinal (GI) tract and abdominal viscera shall include conditions of the abdominal wall and peritoneum, as well as esophagus, stomach, small bowel, colon, mesenteric structures, and intra-abdominal organs.

9.11.2 If the member has any disorders involving the gastrointestinal tract and abdominal viscera, the member shall be individually evaluated for the likelihood of inadequate nutrition, a propensity for symptomatic dehydration, anemia, or incapacitating pain syndromes.

9.11.3 Where the following GI disorders result in the complications defined in 9.11.2, the physician shall evaluate the member's ability to safely perform essential job tasks 1, 4, 6, 7, 9, and 13, and after the evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department:

(1) Cholecystitis
(2) Gastritis
(3) GI bleeding
(4) Inflammatory bowel disease or irritable bowel syndrome
(5) Intestinal obstruction
(6) Pancreatitis
(7) Diverticulitis
(8) History of gastrointestinal surgery
(9) Gastric or other GI ulcers, including Zollinger-Ellison syndrome
(10) Cirrhosis

(11) Splenectomy, if healed, does not compromise the member's ability to safely perform essential job tasks. To prevent infections, Pneumovax is recommended at regular intervals.
(12) Hernias, such as the following:
  (a) Hernias of the abdominal wall, especially inguinal and femoral hernias, might compromise the member's ability to safely perform essential job tasks 1, 4, 6, 7, and 13 due to the risk of incarceration and bowel strangulation during heavy exertion and lifting.
  (b) Large ventral hernias have a low risk of incarceration but can weaken the abdominal wall musculature and might compromise the member's ability to safely perform essential job tasks 1, 4, 6, and 7.
  (c) Umbilical hernias that are small and asymptomatic will not generally interfere with fire-fighting duties.
  (d) Abdominal wall hernias at any site that have been surgically corrected do not prevent otherwise qualified members from safely performing essential fire-fighting tasks, provided the incision site is well healed and the surgeon has cleared the member for full lifting.

9.12 Medical Conditions Involving Head, Eyes, Ears, Nose, Neck, or Throat.

9.12.1* Physician Evaluation.

9.12.1.1 If the member has any medical conditions involving the head, eyes, ears, nose, neck, or throat, the member shall be individually evaluated for conditions that interfere with the member's ability to comfortably wear and be protected by the fire fighter's protective ensemble and that might compromise the member's ability to safely perform essential job tasks 2, 4, 5, and 13.

9.12.1.2 After the evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.12.2 Physician Guidance. When evaluating a member with medical conditions involving the head, eyes, ears, nose, neck, or throat, the physician shall consider the following:

(1) Deformities of the skull associated with evidence of disease of the brain, spinal cord, or peripheral nerves can result in the potential for sudden incapacitation and the inability to properly wear protective equipment.
(2) Contraction of head and neck muscles can interfere with wearing of protective equipment, impair speech, or otherwise compromise a member's ability to safely perform essential job tasks.

9.12.3 Disorders of the Eyes or Vision.

9.12.3.1* Physician Evaluation. Disorders of the eyes or vision including the following might compromise the member's ability to safely perform essential job tasks 6, 8, 10, and 11, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department:

(1)*Far visual acuity worse than 20/40 binocular corrected with contact lens or spectacles, and far visual acuity uncorrected worse than 20/100 binocular for wearers of hard contacts or spectacles, compromises a member's ability to safely perform essential job tasks 6, 8, 10, and 11. Successful soft contact lens wearers shall not be subject to the uncorrected standard.
(2)*Monocular vision, stereopsis without fusional capacity, inadequate depth perception, or loss of peripheral vision (greater than 110 degrees on confrontation) compromises the member's ability to safely perform essential job task 10.
(3) Peripheral vision in the horizontal meridian of less than 110 degrees in the better eye or any condition that significantly affects peripheral vision in both eyes.

9.12.3.2 Physician Guidance. The physician shall consider that new monocular vision requires a minimum of 6 months for depth perception accommodation in order to safely perform other essential job tasks.

9.12.4 Abnormal Hearing.

9.12.4.1* Physician Evaluation. Abnormal hearing requiring a hearing aid, cochlear implant, or impairing a member's ability to hear and understand the spoken voice under conditions of high background noise, or hear, recognize, and directionally locate cries or audible alarms, compromises the member's ability to safely perform essential job tasks 2, 6, 8, 10, 12, and 13, and the physician shall report the applicable job limitations to the fire department.

9.12.5 Vertigo, Ataxia, or Disturbance of Gait and Balance.

9.12.5.1* Physician Evaluation. Any condition causing chronic or recurring vertigo, ataxia, or other disturbance of gait and balance compromises the member's ability to safely perform essential job tasks 1, 8, 10, and 13, and the physician shall report the applicable job limitations to the fire department.

9.12.6 Nose, Nasopharynx, Oropharynx, or Dental Structures.

9.12.6.1* Physician Evaluation. Any deformity or disease of the nose, nasopharynx, oropharynx, or dental structures, including anosmia and sinusitis, might compromise the member's ability to safely perform essential job tasks 2, 3, 5, 8, 12, and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.12.6.2* Physician Guidance. Obstructive sleep apnea, if not properly treated, might compromise the member's ability to safely perform essential job tasks 2, 3, 5, 8, 12, and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.13* Neurologic Disorders.

9.13.1 Neurologic disorders shall refer to ongoing, chronic, or recurrent disorders that impair an individual's neurological functions, including central regulation, cognitive abilities, strength, perception, reflexes, coordination, gait, and equilibrium.

9.13.2 If the member has any neurologic disorder that significantly impairs the member's neurologic functions, including central regulation, cognitive abilities, strength, perception, reflexes, coordination, gait, and equilibrium, the member shall be individually evaluated in accordance with 9.13.3 through 9.13.11 to determine if the disorders compromise the member's ability to safely perform the essential job tasks.

9.13.3 Ataxias.

9.13.3.1 Physician Evaluation. Ataxias of the hereditary or degenerative type compromise a member's ability to safely per-

form essential job tasks 1, 4, 6, 7, and 8, and the physician shall report the applicable job limitations to the fire department.

9.13.4 Cerebral Arteriosclerosis.

9.13.4.1* Physician Evaluation. Cerebral arteriosclerosis as evidenced by documented episodes of focal, reversible, or neurological impairment might interfere with the member's ability to safely perform essential job tasks 1 through 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.13.4.1.1 Cerebral arteriosclerosis as evidenced by documented episodes of focal, reversible, or neurological impairment, if irreversible, compromises the member's ability to safely perform essential job tasks 1 through 13, and the physician shall report the applicable job limitations to the fire department.

9.13.4.1.2 Cerebral arteriosclerosis as evidenced by documented episodes of focal, reversible, or neurological impairment, if requiring anticoagulation treatment, compromises the member's ability to safely perform essential job task 8, and the physician shall report the applicable job limitations to the fire department.

9.13.5 Neuromuscular, Demyelinating, and Other Progressive Neurologic Diseases.

9.13.5.1* Physician Evaluation. Neuromuscular, demyelinating, and other progressive neurologic diseases compromise the member's ability to safely perform essential job tasks 1, 4, 6, 7, 8, 12, and 13, and the physician shall report the applicable job limitations to the fire department, unless the member is free of clinical disease for 3 years and annual evaluation by a specialist concludes that cognitive function and neurologic exam are normal and the member is on no drugs that can impair job function.

9.13.5.2 Physician Guidance. The physician shall consider that this category refers to but is not limited to multiple sclerosis, myasthenia gravis, muscular dystrophies, Huntington's chorea, amyotrophic lateral sclerosis, and bulbar palsy.

9.13.6 Single Unprovoked Seizure and Epileptic Conditions.

9.13.6.1* Physician Evaluation. Single unprovoked seizure and epileptic conditions, including simple, partial complex, generalized, and psychomotor seizure disorders, compromise the member's ability to safely perform essential job tasks 8, 9, 10, 11, and 13, and the physician shall report the applicable job limitations to the fire department unless the member meets all of the following provisions:

(1) The member has had no seizures for 1 year off all antiepileptic medication or has been 5 years seizure free on a stable medical regimen.
(2) Neurologic examination is normal.
(3) Imaging (CAT or MRI scan) studies are normal.
(4) Awake and asleep EEG studies with photic stimulation and hyperventilation are normal.
(5) A definitive statement from a qualified neurological specialist verifies that the member meets the criteria specified in 9.13.6.1(1) through 9.13.6.1(4) and that the member can safely perform the essential job tasks of fire fighting.

9.13.7 Cerebral Vascular Bleeding.

9.13.7.1* Physician Evaluation. Cerebral vascular bleeding compromises the member's ability to safely perform essential job tasks 1, 4, 6, 7, 8, 9, 10, 11, 12, and 13, and the physician shall report the applicable job limitations to the fire department unless the cause of bleeding is surgically corrected, exam (including blood pressure) is normal, and studies (imaging and EEG) are normal off anticonvulsants.

9.13.8 Head Trauma.

9.13.8.1* Physician Evaluation. Head trauma including concussion, brain contusion, subarachnoid hemorrhage, subdural, and/or epidural hematoma might compromise the member's ability to safely perform essential job tasks 1 through 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.13.8.2 Physician Guidance. The physician shall consider having the member evaluated and cleared to return to duty by a qualified neurosurgeon or neurologist following significant head trauma.

9.13.9 CNS Tumors.

9.13.9.1 Physician Evaluation. CNS tumors, depending on their location and the size of the mass, might compromise the member's ability to safely perform essential job tasks 1 through 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.13.9.2 Physician Guidance. The physician shall consider that after successful resection of a CNS tumor a member can safely return to duty with a neurosurgeon's certification if exam and imaging studies are normal (except for surgical site) and EEG shows no epileptic activity off all anti-convulsant medications.

9.13.9.2.1 Where applicable, metastatic workup shall be negative.

9.13.10 Parkinson's and Other Diseases with Tremor.

9.13.10.1 Physician Evaluation. Parkinson's and other diseases with functionally significant tremor or abnormal gait or balance compromise the member's ability to safely perform essential job tasks 1, 2, 4, 5, 6, 7, 8, and 9, and the physician shall report the applicable job limitations to the fire department.

9.13.10.2 Physician Guidance.

9.13.10.2.1 The physician shall evaluate gait, balance, movement, and medications required to maintain function.

9.13.10.2.2 The impact of the operational environment including heat, hazards, stress, and exertion shall be considered and specifically addressed.

9.13.11 Progressive Dementia.

9.13.11.1 Physician Evaluation. Progressive dementia (e.g., Alzheimer's) compromises the member's ability to safely perform essential job tasks 1 through 13, and the physician shall report the applicable job limitations to the fire department.

9.14* Psychiatric and Psychologic Disorders.

9.14.1 Psychiatric and psychologic disorders shall include acute, ongoing, chronic, or recurrent disorders that impair psychological or emotional function.

9.14.2 Psychiatric and psychologic disorders might compromise the member's ability to safely perform essential job tasks

1, 3, 4, 5, 7, 8, 11, 12, and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.15* Substance Abuse.

9.15.1 Substance abuse shall refer to the frequent and/or persistent use of alcohol or other substances causing the following:

(1) Failure to fulfill major obligations either at work or at home
(2) Verifiable physical or emotional harm to the member
(3) Recurrent legal problems
(4) Exacerbation of social and/or other interpersonal problems

9.15.2 If the member has any substance abuse problem, the member shall be referred for counseling/treatment and individually evaluated in accordance with 9.15.3 through 9.15.4 to determine if the problem compromises the member's ability to safely perform the essential job tasks.

9.15.3 DSM IV Criteria.

9.15.3.1 Physician Evaluation. DSM IV criteria for substance abuse of alcohol and controlled substances compromise the member's ability to safely perform essential job tasks 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13, and the physician shall report the applicable job limitations to the fire department.

9.15.3.2 Physician Guidance.

9.15.3.2.1 The physician shall use medical evaluations, supervisory evaluations, and/or performance evaluations coupled with urine screen and blood toxicology to form a basis for determining and documenting substance abuse.

9.15.3.2.2 Although there is a high recidivism rate with treatment, members shall be offered counseling/treatment, because in most cases substance abuse is a medical illness.

9.15.4 Methadone Maintenance.

9.15.4.1 Physician Evaluation. Methadone maintenance interferes with cognitive functions, energy, coordination, and equilibrium of the member, and therefore compromises the member's ability to safely perform essential job tasks 1, 4, 5, 7, 8, 10, and 11, and the physician shall report the applicable job limitations to the fire department.

9.16 Medications.

9.16.1 Medications shall include prescribed and over-the-counter medications.

9.16.2 When evaluating a member, the physician shall recognize that the medications in Section 9.16 are listed because of noteworthy side effects that might interfere with the performance of essential job tasks.

9.16.3 If the member is taking medications, the member shall be individually evaluated in accordance with 9.16.4 through 9.16.12 to determine if the medications compromise the member's ability to safely perform the essential job tasks.

9.16.4 Anticoagulation.

9.16.4.1 Physician Evaluation. Full-dose or low-dose anticoagulation or any drugs that prolong prothrombin time, partial thromboplastin time, or international normalized ratio (INR) compromise the member's ability to perform essential job task 8 due to the risk of internal bleeding from trauma with potential for rapid incapacitation from shock or central nervous system hemorrhage, and the physician shall report the applicable job limitations to the fire department.

9.16.5 Narcotics.

9.16.5.1 Physician Evaluation. Narcotics compromise the member's ability to safely perform essential job tasks 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13 due to alterations in mental status including vigilance, judgment, and other neurologic functions, and the physician shall report the applicable job limitations to the fire department.

9.16.6 Muscle Relaxants.

9.16.6.1 Physician Evaluation. Muscle relaxants compromise the member's ability to safely perform essential job tasks 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13 due to alterations in mental status and other neurologic functions, and the physician shall report the applicable job limitations to the fire department.

9.16.7 Sedatives and Hypnotics.

9.16.7.1 Physician Evaluation. Sedatives and hypnotics compromise the member's ability to safely perform essential job tasks 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13 due to alterations in mental status, vigilance, judgment, and other neurologic functions, and the physician shall report the applicable job limitations to the fire department.

9.16.8 Psychiatric Medications.

9.16.8.1 Physician Evaluation. Psychiatric medications might compromise the member's ability to safely perform essential job tasks 5, 8, 11, and 13 due to increased risk of heat stress, movement disorders, and somnolence, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.16.9 Anti-Hypertensive Agents.

9.16.9.1 Physician Evaluation. Certain classes of anti-hypertensive agents (e.g., beta-blockers, high-dose diuretics, and central agents such as clonidine) compromise the member's ability to safely perform essential job tasks 5 and 8 due to risk for dehydration, electrolyte disorders, lethargy, and disequilibrium, and the physician shall report the applicable job limitations to the fire department.

9.16.9.2 Physician Guidance. If the member is on beta-blockers, high-dose diuretics, or central agents such as clonidine, the physician shall refer the member back to his/her physician for consideration of a change in anti-hypertensive medications.

9.16.9.2.1 Once stable off these medications, the member shall be medically re-evaluated for duty.

9.16.9.2.2 Calcium channel blockers shall be acceptable as anti-hypertensive medications, but if used for other cardiac reasons, refer to Section 9.4.

9.16.10 High-Dose Corticosteroids.

9.16.10.1 Physician Evaluation. High-dose corticosteroids for chronic disease compromise the member's ability to safely perform essential job tasks 5 and 8 due to the underlying disease or the risk for dehydration, electrolyte disorders, myopathy, altered sensorium, and/or lethargy, and the physician shall report the applicable job limitations to the fire department.

9.16.10.2 Physician Guidance. If the member is on systemic corticosteroids, other than high-dose corticosteroids, the physician shall refer the member back to his/her physician for consid-

eration of the underlying disease that might compromise the member's ability to safely perform the essential job tasks.

9.16.11 Anabolic Steroids.

9.16.11.1 Physician Evaluation. Anabolic steroids compromise the member's ability to safely perform essential job tasks 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13 due to alterations in mental status including vigilance, judgment, and other neurologic functions, and the physician shall report the applicable job limitations to the fire department.

9.16.12 Other Medications.

9.16.12.1 Physician Evaluation. The physician shall evaluate the member to determine if other medications might compromise the member's ability to safely perform essential job tasks 5, 8, 11, and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.16.12.2 Physician Guidance. The physician shall consider that the member might require careful evaluation for increased risk of heat stress and other side effects of certain medications (e.g., MAOIs, phenothiazines, anti-cholinergics, tricyclic antidepressants), and shall ensure specialized annual follow-up of members taking these medications.

9.17 Tumors — Malignant or Benign.

9.17.1 Malignant conditions of any organ system can produce specific organ dysfunction or generalized debilitation.

9.17.2 When evaluating a member, the physician shall recognize that malignancy or its treatment can result in anemia, malnutrition, pain, and generalized weakness, temporarily or permanently compromising the member's ability to safely perform essential job tasks 1 through 13.

9.17.3 If the member has tumor, whether malignant or benign, the member shall be individually evaluated in accordance with 9.17.4 through 9.17.12 to determine if the tumors compromise the member's ability to safely perform the essential job tasks.

9.17.4 Benign Tumors.

9.17.4.1 Physician Evaluation. A benign tumor, depending on its location, might compromise the member's ability to safely perform essential job tasks 1 through 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.17.4.2 Physician Guidance. The physician shall consider that benign tumors will compromise the member's ability to safely perform essential job tasks 1 through 13 only if the space-occupying lesion and/or its treatment affects energy levels or the involved organ system's function.

9.17.5 Acute Illness Related to Malignancy or Its Treatment.

9.17.5.1 Physician Evaluation. Acute illness related to malignancy or its treatment might compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 6, 7, 8, 9, and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.17.5.2 Physician Guidance. The physician shall consider that acute illness related to malignancy or its treatment compromises the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 6, 7, 8, 9, and 13 if low energy levels, anemia, weight loss, or specific aspects of that organ's dysfunction lead to debilitation.

9.17.6 Central Nervous System Tumors.

9.17.6.1 Physician Evaluation. Central nervous system tumors might compromise the member's ability to safely perform essential job tasks 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.17.6.2 Physician Guidance.

9.17.6.2.1 When evaluating the member for central nervous system tumors, the physician shall consider that central nervous system tumors compromise the member's ability to safely perform essential job tasks 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13 if low energy levels, anemia, undernutrition, weight loss, and specific organ dysfunction (seizures, loss of balance, inability to communicate, inability to process complicated commands in an emergency situation, weakness) are present or lead to a debilitated state affecting anaerobic and aerobic job tasks and the ability to wear personal protective ensembles and SCBA.

9.17.6.2.2 If treated successfully, the member shall undergo evaluation by a specialist who must certify that the exam is normal, imaging studies are normal (except for surgical site), and seizures have not occurred in the absence of anticonvulsant medications, and there is no further evidence of malignancy.

9.17.7 Head and Neck Malignancies.

9.17.7.1 Physician Evaluation. Head and neck malignancies might compromise the member's ability to safely perform essential job tasks 1 through 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.17.7.2 Physician Guidance.

9.17.7.2.1 When evaluating the member for head and neck malignancies, the physician shall consider that head and neck malignancies compromise the member's ability to safely perform essential job tasks 1 through 13 if low energy levels, anemia, undernutrition, weight loss, inability to clear oral secretions, or other specific organ dysfunction interfere with respiration, communication, hydration, and/or eating.

9.17.7.2.2 If treated successfully, a member shall undergo evaluation by a specialist, who must certify that exam shows normal function, imaging studies show no tumor, and overall medical evaluation reveals no condition that might compromise safe performance of essential job tasks.

9.17.8 Lung Cancer.

9.17.8.1 Physician Evaluation. Lung cancer might compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, 8, 9, and 13, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.17.8.2 Physician Guidance.

9.17.8.2.1 When evaluating the member for lung cancer, the physician shall consider that lung cancer compromises the member's ability to safely perform job tasks if low energy levels, anemia, undernutrition, weight loss, weakness, paraneoplastic syndromes, or specific organ dysfunction (abnormal secretions,

dyspnea, or pulmonary dysfunction interfering with or prohibiting use of SCBA or strenuous physical activities) are present.

9.17.8.2.2 If treated successfully, the member shall undergo evaluation by a specialist who must certify that the member has normal function, imaging studies show no tumor, and overall medical evaluation reveals no condition that might compromise safe performance of essential job tasks.

9.17.9 Gastrointestinal Malignancies.

9.17.9.1 Gastrointestinal malignancies might compromise the member's ability to safely perform essential job tasks 1, 3, 4, 5, 7, 8, and 9, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.17.9.2 Physician Guidance.

9.17.9.2.1 When evaluating the member for gastrointestinal malignancies, the physician shall consider that gastrointestinal malignancies compromise the member's ability to safely perform job tasks if low energy levels, anemia, undernutrition, weight loss, weakness, paraneoplastic syndromes, or specific organ dysfunction (abnormal secretions or bowel function interfering with or prohibiting prolonged use of personal protective clothing or prohibiting strenuous physical activities) are present.

9.17.9.2.2 If treated successfully, the member shall undergo evaluation by a specialist who must certify that exam and gastrointestinal functioning appear to be normal (including nutrition intake and excretion), imaging studies show no tumor, and overall medical evaluation reveals no condition that could compromise safe performance of essential job tasks.

9.17.10 Genitourinary Malignancies.

9.17.10.1 Physician Evaluation. Genitourinary malignancies might compromise the member's ability to safely perform essential job tasks 1, 3, 4, 5, 7, 8, and 9, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.17.10.2 Physician Guidance.

9.17.10.2.1 When evaluating the member with a history of genitourinary malignancy, the physician shall consider that genitourinary malignancies compromise the member's ability to safely perform job tasks if altered urinary function prevents prolonged activity without use of toilet facilities or if the underlying tumor has produced low energy levels, anemia, undernutrition, weight loss, or specific organ dysfunction.

9.17.10.2.2 If treated successfully, the member shall undergo evaluation by a specialist who must certify that exam is normal (including nutrition intake and excretion), imaging studies show no tumor, and overall medical evaluation reveals no condition that might compromise safe performance of essential job tasks.

9.17.11 Hematologic or Lymphatic Malignancies.

9.17.11.1 Physician Evaluation. Hematologic or lymphatic malignancies might compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, 8, and 9, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.17.11.2 Physician Guidance.

9.17.11.2.1 When evaluating the member for hematologic or lymphatic malignancies, the physician shall consider that hematologic or lymphatic malignancies (e.g., leukemias, lymphomas) compromise the member's ability to safely perform essential job tasks 1, 2, 3, 4, 5, 7, 8, and 9 if anemia, lymphopenia, or thrombocytopenia is present or if adverse effects of treatment are present.

9.17.11.2.2 If treated successfully, the member shall undergo evaluation by a specialist who must certify that exam is normal, imaging and laboratory studies show no cancer, and overall medical evaluation reveals no condition that could compromise safe performance of essential job tasks.

9.17.12 Skin Cancer.

9.17.12.1 Physician Evaluation. Skin cancer might compromise the member's ability to safely perform essential job tasks 1, 3, 4, 5, 7, 8, and 9, and after further evaluation and a final medical determination of the member's condition, the physician shall report any applicable job limitations to the fire department.

9.17.12.2 Physician Guidance.

9.17.12.2.1 When evaluating the member for skin cancer, the physician shall consider that skin cancer that requires significant resection, chemotherapy or other systemic anti-neoplastic therapy, or that results in the loss of skin integrity, compromises the member's ability to safely perform job tasks because of low energy levels, anemia, undernutrition, and weight loss, as well as increased risk of burns, infection, dehydration, and heat rash while fire fighting and wearing PPE.

9.17.12.2.2 If treated successfully, the member shall undergo evaluation by a specialist who must certify that exam is normal, imaging and laboratory studies show no cancer, and overall medical evaluation reveals no condition that could compromise safe performance of essential job tasks.

9.18 Pregnancy and Reproductive Health.

9.18.1 Fire Departments shall make available to all male and female fire fighters educational materials outlining the risks from fire fighting on reproductive health.

9.18.2* It is recommended that members who become pregnant report the pregnancy immediately to the fire department physician. Once informed of the pregnancy the fire department physician shall inform the pregnant member of the numerous hazards to the pregnancy and the fetus encountered during routine fire fighting tasks.

9.18.2.1 If the member requests an alternative duty assignment in an environment deemed safe for the pregnancy and the fetus, the physician shall provide appropriate restrictions for essential job tasks 1, 3, 5, 6, 7, and 8 that are unsafe for her or her fetus.

9.18.3 During later stages of pregnancy the member will eventually be unable to safely perform essential job tasks 1, 2, 3, 4, 5, 6, 7, 8, and 9 due to issues with diminished aerobic capacity, balance, speed, and agility. As with any other member, when performance due to medical issues is of concern, the AHJ shall inform the fire department physician and a medical evaluation will be performed to determine the need for restricting the member from those activities that they are not able to safely perform.

Annex A Explanatory Material

Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.1.1 Some of the medical requirements in this standard are not applicable to candidates and members whose essential job tasks within the fire department are not described in NFPA 1001, NFPA 1002, NFPA 1003, NFPA 1006, NFPA 1021, and NFPA 1051. However, particular attention must be paid to the essential job tasks of individual candidates or members when applying this standard (for example, administrative staff personnel, some EMS personnel, fire/police, and others who do not have responsibility for structural fire fighting and are not required to wear personal protective ensembles and use SCBA). Medical requirements should reflect essential job tasks, and all might not be specifically addressed in this standard. *(See also Chapter 5 and Chapter 9.)*

A.1.2.2 A direct relationship exists between the medical requirements and the job description of members. The job description should include all essential job functions of members, both emergency and nonemergency. Members perform a variety of emergency operations including fire fighting, emergency medical care, hazardous materials mitigation, driving/operating fire apparatus, and special operations. Nonemergency duties can include, but are not limited to, training, station and vehicle maintenance, and physical fitness. Each fire department needs to identify and develop a written job description for members.

A.1.3.2 The specific determination of the authority having jurisdiction depends on the mechanism under which this standard is adopted and enforced. Where this standard is adopted voluntarily by a particular fire department for its own use, the authority having jurisdiction should be the fire chief or the political entity that is responsible for the operation of the fire department. Where this standard is legally adopted and enforced by a body having regulatory authority over a fire department, such as federal, state, or local government or political subdivision, this body is responsible for making those determinations as the authority having jurisdiction. The compliance program should take into account the services the fire department is required to provide, the financial resources available to the fire department, the availability of personnel, the availability of trainers, and such other factors as will affect the fire department's ability to achieve compliance.

A.1.3.3 The most vital resource of any fire department is its members. This standard is to be implemented in a process aimed at improving member health and wellness. Due to the hazardous nature of the occupation, methods to reduce the risk of occupational injury, illness, and exposures to communicable diseases are warranted. Annual reports repeatedly indicate over 100 line-of-duty deaths and 100,000 occupational injuries and illnesses among career and volunteer fire fighters. Another concern is the fire fighters who experience disabling injuries or develop occupational diseases and conditions, which often have debilitating or fatal results, forcing them to leave their fire service activities. There is an increased risk of respiratory and heart disease in fire fighters and strong evidence of a link to some cancers and other conditions related to occupational exposures to carcinogens, toxic products of combustion, and hazardous materials.

Safety and health are two of the many components of the risk management process. The intent of this standard is to reduce the risk and burden of fire service occupational morbidity and mortality while improving the welfare of fire fighters. By implementing the medical requirements of this standard, a fire department commits to a process that evaluates and enhances the health and fitness for duty of members.

A.3.2.1 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A.3.2.2 Authority Having Jurisdiction (AHJ). The phrase "authority having jurisdiction," or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A.3.3.1 Candidate. Volunteer members are considered employees in some states or jurisdictions. Volunteer fire departments should seek legal counsel as to their legal responsibilities in these matters.

A.3.3.17 Member. A fire department member can be a full-time or part-time employee or a paid or unpaid volunteer, can occupy any position or rank within the fire department, and can engage in emergency operations. [**1500**, 2013]

A.4.1.2.1 Fire departments can require candidates to provide some form of medical clearance for candidate participation in pre-employment physical strength and agility tests. When there is such a requirement, the medical clearance forms should enumerate the tasks that the candidate will be asked to safely perform during the test.

A.4.1.4 This physician should also have experience with running an occupational medicine program for public safety workers, preferably fire fighters.

A.4.1.7 The fire department should provide the fire department physician with a representative list of essential job tasks for members of fire departments who wear personal protective ensembles and SCBA to conduct interior structural fire-fighting operations. The tasks on this list should be verified by the fire department to be essential to the job under consideration for each individual candidate or member. A sample list based on NFPA 1001, NFPA 1002, NFPA 1003, NFPA 1006,

NFPA 1021, and NFPA 1051 is provided in 5.1.1 and Section 9.1. An effective way to transmit this information to the physician is to use the list with checkboxes in front of each essential job task. This list is taken by a candidate or member to the medical provider at the time of medical evaluation. A check in the box indicates that there is no medical reason why an individual cannot safely perform that particular essential job task.

A.4.1.13.1 Suggested fields (data points) include but are not necessarily limited to the following:

(1) Medical history including the following:
   (a) Date of exam
   (b) Medical history
   (c) Smoking history
   (d) Tobacco (smokeless) use
   (e) Smoking in the past year
   (f) Tobacco cessation program participation
   (g) Alcohol use
   (h) Family history of heart disease or cancer
   (i) Personal history of past disease, disorders, or cancer
   (j) Exercise history
(2) Current medical and fitness results including the following:
   (a) Blood pressure and heart rate
   (b) ICD9 codes for physician assessment
   (c) Height and weight
   (d) Body composition (local recording only)
   (e) Blood analysis results
   (f) Urinalysis results
   (g) Vision
   (h) Hearing
   (i) Spirometry
   (j) Chest x-ray
   (k) Resting electrocardiogram
   (l) Cancer screening results
   (m) Immunizations
   (n) Aerobic capacity results
   (o) Muscle strength results
   (p) Muscle endurance results
   (q) Flexibility results

A.4.2.6 Incident scene rehabilitation is an important component of incident scene management that protects the health and safety of fire department members. NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program* and NFPA 1561, *Standard on Emergency Services Incident Management System*, require the establishment of "rehab" during incident scene operations. A significant component of member rehabilitation is ongoing medical evaluation. The standard does not require the fire department physician to be at every incident but does require that the physician coordinate with the EMS medical director to provide protocols for medical evaluation and management of members in emergency incident rehab. This medical planning process ensures optimal medical support for members at the scene and should include criteria for transportation to a medical facility for additional evaluation and treatment. Fire departments can develop specific standard operating procedures establishing conditions under which fire department physician(s) are dispatched to emergency incidents. (*See* NFPA 1584, *Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises.*)

A.4.4.1 Confidentiality of all medical data is critical to the success of the program. Members need to feel assured that the information provided to the physician will not be inappropriately shared.

A.5.1.1(1) A member, while wearing full protective clothing (turnout coat and pants, helmet, boots, and gloves) and SCBA, is required to safely perform a variety of fire-fighting tasks that require upper body strength and aerobic capacity. For those not familiar with fire suppression, the following specific details inherent to the activities in essential job task 1 are offered:

(1) Lifting and carrying tools and equipment (e.g., axe, halligan tool, pike pole, chain saw, circular saw, rabbet tool, high-rise pack, and hose) that weigh between 7 lb and 20 lb (3.2 kg and 9 kg) and are used in a chopping motion over the head, extended in front of the body, or in a push/pull motion.
(2) Advancing a 1¾ in. (45 mm) or a 2½ in. (65 mm) diameter hose line, which requires lifting, carrying, and pulling the hose at grade, below or above grade, or up ladders. In addition to the weight of the hose itself, a 50 ft (15 m) section of charged 1¾ in. (45 mm) hose contains approximately 90 lb (41 kg) of water, and a 50 ft (15 m) section of 2½ in. (65 mm) hose holds approximately 130 lb (59 kg) of water.
(3) Performing forcible entry while utilizing tools and equipment (e.g., axe, halligan tool, chain saw, circular saw, or rabbet tool) that requires chopping, pulling, or operating these items to open doors, windows, or other barriers to gain access to victims or possible victims or to initiate fire-fighting operations.
(4) Performing ventilation (horizontal or vertical) utilizing tools and equipment (e.g., axe, circular saw, chain saw, pike pole) while operating on a flat or pitched roof or operating off a ground or aerial ladder. This task requires the fire fighter to chop or push tools through roofs, walls, or windows.

Other tasks that could be performed can include search and rescue operations and other emergency response actions under stressful conditions, including working in extremely hot and cold environments for prolonged time periods.

A.6.1.1 The medical history should include the candidate's known health problems, such as major illnesses, surgeries, medication use, and allergies. Symptom review is also important for detecting early signs of illness. A medical history should also include a personal health history, a family health history, a health habit history, an immunization history, and a reproductive history.

An occupational history should also be obtained to collect information about the person's past occupational and environmental exposures.

A.6.1.2 Physical examination should include the following:

(1) Vital signs (temperature, pulse, respiratory rate, and blood pressure (BP)
   (a) BP should be measured according to the seven recommendations of the *Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure* (JNC 7). BP should be measured with a properly calibrated and validated instrument. Patients should be seated quietly for at least 5 minutes in a chair with their feet on the floor and the arm supported at heart level. An appropriate-sized cuff (cuff bladder encircling at least 80 percent of the arm) should be used to ensure accuracy. At least two measurements should be made. Systolic BP is the point at which the first of two or more sounds is heard (phase 1), and diastolic BP is the point before the disappearance of sounds (phase 5). [Chobanian et al. 2003]
(2) Head, eyes, ears, nose, and throat

(3) Neck
(4) Cardiovascular
(5) Pulmonary
(6) Breast
(7) Gastrointestinal (includes rectal exam for mass, occult blood)
(8) Genitourinary (includes pap smear, testicular exam, rectal exam for prostate mass)
(9) Hernia
(10) Lymph nodes
(11) Neurological
(12) Musculoskeletal
(13) Skin (includes screening for cancers)
(14) Vision testing

Laboratory tests on candidates should include the following:

(1) Blood tests, including the following:
  (a) CBC with differential, RBC indices and morphology, and platelet count
  (b) Electrolytes (Na, K, Cl, HCO_3, or CO_2)
  (c) Renal function (BUN, creatinine)
  (d) Glucose
  (e) Liver function tests (ALT, AST, direct and indirect bilirubin, alkaline phosphatase)
  (f) Total cholesterol, HDL, LDL, clinically useful lipid ratios (e.g., percent LDL), and triglycerides
(2) Urinalysis. Dipstick test for glucose, ketones, leukocyte esterase, protein, blood, and bilirubin.
(3) Audiology. Hearing assessed in each ear at each of the following frequencies: 500 Hz, 1000 Hz, 2000 Hz, 3000 Hz, 4000 Hz, 6000 Hz, and 8000 Hz. Results should be corrected for age as permitted by OSHA. Baseline audiometry is performed in accordance with 29 CFR 1910.95, "Occupational noise exposure." The basics of this standard include the following:
  (a) The first audiogram (for members, this will probably be done during their pre-placement exam) is the baseline audiogram.
  (b) If subsequent audiograms are better than the baseline, then the best one becomes the baseline. All audiograms should be done with no exposure to industrial noise for the preceding 14 hours.
(4) Spirometry. Pulmonary function testing (spirometry) is conducted to measure the member's forced vital capacity (FVC), forced expiratory volume in 1 second (FEV_1), and the absolute FEV_1/FVC ratio. FEV_1 and FVC results shall be expressed as the absolute value (liters or milliliters) and as percent predicted adjusted for gender, age, height, and ethnicity using NHANES III normative equations, with the acceptable threshold being 80 percent predicted. FEV_1/FVC ratio results are expressed as the absolute FEV_1 value divided by the absolute FVC value, with the acceptable threshold value being 0.71. However, because these norms are population based, it is possible for individuals to be normal just below these thresholds or to have minimal but potentially significant abnormalities just above these thresholds. When percent predicted FEV_1 or FVC values are minimally below threshold (typically 74 percent to 79 percent of predicted), the lower limits of normal (LLN) for the appropriate population can, at the discretion of the physician, be used instead of the 80 percent predicted threshold value. For example, the LLN might be more appropriate for taller and older individuals. *(See F.2.5.)*
(5) Chest radiography. Chest x-ray posterior-anterior and lateral views.
(6) Electrocardiograms (ECG). A resting 12-lead ECG.
(7) Immunizations and infectious disease screening. The following infectious disease immunizations or infectious disease screenings are to be provided, as indicated:
  (a) Tuberculosis screen, purified protein derivative (PPD) tuberculin skin test, or blood test.
  (b) Hepatitis C virus screen (baseline)
  (c) Hepatitis B virus vaccinations
  (d) Tetanus, diphtheria, pertussis (TDAP) vaccine (booster every 10 years)
  (e) Measles, mumps, rubella (MMR) vaccine
  (f) Polio vaccine given to uniformed personnel if vaccination or disease is not documented
  (g) Hepatitis A vaccine due to contaminated water exposures during normal firefighting activities, not just hazmat/rescue activities
  (h) Varicella vaccine, offered to all nonimmune personnel
  (i) Influenza vaccine, seasonal and novel, offered to all personnel

A.6.3.1.2(1) Deformities of the skull can result in the member's inability to properly wear protective equipment.

A.6.3.1.2(2) These deformities can result in the potential for sudden incapacitation, the inability to properly wear protective equipment, and the inability to communicate effectively due to oropharyngeal dysfunction.

A.6.3.1.2(3) Loss of or congenital absence of the bony substance of the skull can result in the inability to properly wear protective equipment and the inability to communicate effectively due to oropharyngeal dysfunction.

A.6.3.2.2(1) Thoracic outlet syndrome can result in frequent episodes of pain or inability to safely perform work.

A.6.3.2.2(2) Congenital cysts, chronic draining fistulas, or similar lesions can result in the inability to properly wear protective equipment and the inability to communicate effectively due to oropharyngeal dysfunction.

A.6.3.2.2(3) The contraction of neck muscles can result in the inability to properly wear protective equipment and the inability to safely perform functions as a member due to limitation of flexibility.

A.6.4.1(1) Far visual acuity is at least 20/30 binocular, corrected with contact lenses or spectacles. Far visual acuity uncorrected is at least 20/40 binocular for wearers of hard contacts or spectacles. Successful long-term soft contact lens wearers (i.e., 6 months without a problem) are not subject to the uncorrected standard. Inadequate far visual acuity can result in the failure to be able to read placards and street signs or to see and respond to imminently hazardous situations.

A.6.4.1(2) This does not refer to abnormal color perception such as red/green color blindness.

Persons with severe color vision loss will likely fail the acuity requirement. Formerly, color vision deficiency was listed as a Category B medical condition. However, it is felt that within most cases this condition will not affect the ability of a member to safely perform the essential functions of his or her job. The fire service physician should consider the color vision deficiency of the individual and consider the color vision requirements of the member's job and reach an individual determination.

A.6.4.1(3) A DOT/CDL exemption can be applied for after passing a special test. But this exemption is not applicable to fire fighters because this exemption specifically excludes the driving of vehicles with passengers (e.g., fire trucks) and does not apply to emergency response driving.

A.6.4.2(1) These diseases of the eye can result in the failure to read placards and street signs or to see and respond to imminently hazardous situations.

A.6.4.2(2) Sufficient time (approximately 2 weeks for radial keratotomy and Lasik-type surgeries, and 3 months for retinal detachment) must have passed to allow stabilization of visual acuity and to ensure that there are no post-surgical complications. These ophthalmological procedures can result in the failure to be able to read placards and street signs or to see and respond to imminently hazardous situations.

A.6.5 Currently, no hearing tests will allow the fire department physician to accurately predict whether the fire fighter will adequately be able to safely perform essential job duties. Job-specific hearing tests should be individualized for each department and its specific job functions. The following list of hearing-specific tasks can assist to direct development of hearing protocols:

(1) Understanding spoken commands, both over the radio and while wearing SCBA
(2) Hearing alarm signals, including building evacuation, low air alarm on the SCBA, and PASS alarms
(3) Hearing and locating the source of calls for assistance from victims or other fire fighters

All of these tasks will need to be performed with reasonably simulated incident scene background noise and SCBA noise. The inability to hear sounds of low intensity or to distinguish voice from background noise can lead to failure to respond to imminently hazardous situations. *(See 5.1.1.)*

A.6.5.1(4) See A.9.12.4.1(4).

A.6.5.2(1) Unequal hearing can result in the inability to localize sounds, leading to failure in the ability to safely perform search and rescue and other localization tasks.

A.6.5.2(4) Severe external otitis — that is, recurrent loss of hearing — can result in the inability to hear sounds of low intensity or to distinguish voice from background noise, leading to failure to respond to imminently hazardous situations.

A.6.5.2(5) Severe agenesis or traumatic deformity of the auricle can result in the inability to properly wear protective equipment and the inability to hear sounds of low intensity or to distinguish voice from background noise, leading to failure to respond to imminently hazardous situations.

A.6.5.2(6) Severe mastoiditis or surgical deformity of the mastoid can result in the inability to properly wear protective equipment and the inability to hear sounds of low intensity or to distinguish voice from background noise, leading to failure to respond to imminently hazardous situations.

A.6.5.2(7) Ménière's syndrome or severe labyrinthitis can result in the potential for sudden incapacitation and the inability to safely perform job functions due to limitations of balance.

A.6.5.2(8) Otitis media (chronic) can result in frequent episodes of pain and the inability to hear sounds of low intensity or to distinguish voice from background noise, leading to failure to respond to imminently hazardous situations.

A.6.6.2(1) Diseases of the jaws or associated tissues can result in the inability to communicate effectively and/or to properly wear protective equipment.

A.6.6.2(2) The wearing of orthodontic appliances can result in the inability to communicate effectively and/or to properly wear protective equipment.

A.6.6.2(3) Extensive loss of oral tissues can result in the inability to properly wear protective equipment and the inability to communicate effectively due to oropharyngeal dysfunction.

A.6.6.2(4) This condition can result in the inability to properly wear protective equipment and the inability to communicate effectively due to oropharyngeal dysfunction.

A.6.7.1(1) A tracheostomy results in the inability to properly wear protective equipment, the inability to safely perform job functions due to limitations of endurance, and the inability to communicate effectively due to oropharyngeal dysfunction.

A.6.7.1(2) Aphonia can result in the inability to communicate effectively due to oropharyngeal dysfunction.

A.6.7.2(1) A congenital or acquired deformity can result in the inability to properly wear protective equipment.

A.6.7.2(2) Allergic rhinitis can result in frequent episodes of pain, the inability to safely perform work, and the inability to safely perform essential job tasks due to limitations of endurance.

A.6.7.2(4) Recurrent sinusitis can result in frequent episodes of pain and the inability to safely perform essential job tasks due to limitations of endurance and the inability to safely wear SCBA from facial pain, sinus congestion and/or coughing.

A.6.7.2(5) Severe dysphonia can result in the inability to communicate effectively due to oropharyngeal dysfunction.

A.6.7.2(9) Untreated obstructive sleep apnea is associated with fatigue, cognitive defects, pulmonary hypertension, hypertrophic heart disease, arrhythmias, and early onset dementia. These issues can reduce the ability to perform all essential job tasks. Risk factors for developing obstructive sleep apnea include male gender, increased body mass index (BMI), short/wide neck, and/or narrow throat. Screening questionnaires, such as the Berlin Questionnaire (assessing snoring, fatigue, obesity, and hypertension) can be used to determine those who require formal sleep testing. In those with obstructive sleep apnea, additional testing is required to determine the level of positive pressure (CPAP or BIPAP) required to overcome the obstruction. Compliance with treatment can be assessed using home monitoring devices attached to the CPAP or BIPAP machine. Target organ damage can be screened for by cardiac echo for evidence of pulmonary hypertension or right ventricular hypertrophy.

A.6.8.1(5) An FVC or FEV_1 of less than 70 percent prevents the safe use of SCBA due to increased minute ventilation requirements leading to the earlier than expected depletion of air in the SCBA cylinder.

A.6.8.1(6) Chronic obstructive airways disease can result in the inability to safely perform essential job tasks due to limitations of endurance and the inability to safely wear SCBA. Obstruction is suspected when the absolute FEV_1/FVC ratio (using absolute values rather than percent predicted values) is equal to or less than 0.70. However, obstruction can also occur with normal FEV_1/FVC ratios due to airtrapping or mucous plugging. For most individuals, the definition of an abnormal FEV_1 or FVC is less than 80 percent predicted adjusted for gender, age, height, and ethnicity, using NHANES III. When

percent predicted FEV_1 or FVC values are just below threshold (typically 74 percent to 79 percent of predicted), the LLN for the appropriate population can, at the discretion of the physician, be used. For example, the LLN might be more appropriate for taller and older individuals. In asymptomatic individuals with minimal reductions in spirometry measures (FEV_1, FVC, or the absolute FEV_1/FVC ratio), further evaluation (complete pulmonary function tests, exercise testing, or challenge testing) might be necessary to determine if essential tasks can be performed safely (*see references in Annex F*).

A.6.8.1(7) Hypoxemic disorders can result in the inability to safely perform essential job tasks due to limitations of endurance.

A.6.8.1(8) The term *asthma*, or *reactive airways dysfunction syndrome*, is not meant to include acute, nonrecurring bronchitis treated with bronchodilators for a period of only days to weeks. Recurrent or persistent allergic, irritant, exertional, or other forms of asthma are included. Bronchial asthma or reactive airways disease can result in frequent unpredictable episodes of shortness of breath and the potential for sudden incapacitation, leading to the inability to safely perform essential job tasks due to limitations of endurance. Acute hyperreactivity in the fire or hazardous materials environment can induce immediate or progressive clinical asthma (bronchospasm and wheeze), which can lead to sudden incapacitation from status asthmaticus and/or resulting cardiac ischemia. True asthma is a chronic condition with a clinical history of recurrent reversible bronchospasm or long-standing, persistent reversible bronchospasm. Based on the pathophysiology of this disease, it is reasonable that exposure to smoke irritants or exertion (especially while breathing cold dry SCBA air) on the fire ground or hazardous materials environment not only can lead to acute exacerbations but can also worsen the progression of the underlying obstructive inflammatory disease. If this occurs in an environment that is immediately dangerous to life and health (IDLH) (e.g., interior fire suppression or certain hazardous material operations), it can have potentially devastating consequences for the member, the team, or the mission. There are no studies that support or deny that asthma in this environment can be prevented or adequately controlled by anti-inflammatory medications (inhaled corticosteroids, cromolyn, leukotriene modifiers). It is not acceptable to use or rely on bronchodilator medications for this purpose for three reasons:

(1) Their use is for rescue after attack and not for prevention of bronchospasm in an irritant environment.
(2) There are no studies that support or deny that their use is effective in a fire/smoke environment.
(3) Several studies have implicated the use of beta-agonists (short- and long-acting bronchodilators) as an independent risk for sudden death and myocardial infarction in the United States, Canada, Britain, New Zealand, and Australia. The presumed mechanism is catecholamine related, and catecholamines are already elevated while fighting fires.

A.6.8.1.1 Because the clinical definition of asthma is reversible bronchospasm, spirometry, or pulmonary function, testing performed in the absence of a clinical attack is expected to be normal and might not even show a bronchodilator response. Only if performed during an attack will spirometry or other pulmonary function tests show obstructive airway flow limitations. Therefore, in candidates who report that their bronchospasm was temporary and has resolved, spirometry should show adequate reserve (FVC and FEV_1 greater than or equal to 90 percent predicted) without significant bronchodilator response (less than 12 percent change and less than 200 mL increase) when performed off bronchodilators on the day of testing. For population studies, pulmonary function is considered normal when greater than or equal to 80 percent predicted, but for an individual with a history of asthmatic bronchospasm who is being considered for job tasks performed in a potentially irritant environment, it is reasonable diligence to require pulmonary function with a greater specificity for demonstrating adequate reserve (greater than or equal to 90 percent predicted). Challenge testing should also be performed to show no evidence for clinically significant airway hyperreactivity [i.e., to be normal or negative, there should be less than 20 percent decline in FEV_1 from baseline with cold air, methacholine (PC_{20} greater than 8 is considered normal since response at dose greater than 8 mg might not be clinically significant), histamine, or mannitol. When challenge testing includes exercise alone, normal or negative should be less than 13 percent decline in FEV_1 from baseline]. Challenge testing should be performed off all anti-inflammatory medications (steroids and leukotriene antagonists) for 4 weeks preceding the test, off antihistamines for 1 week preceding the test, and off all bronchodilators the day of testing. Challenge testing should be performed only by an experienced specialist. It should not be performed in candidates without a history suggestive of asthma, since there is no indication for testing. It also should never be performed in candidates with abnormal pulmonary function, because these candidates have already demonstrated that they cannot safely perform essential job tasks, and further testing might induce life-threatening bronchospasm. Normal spirometry with adequate reserve, a negative challenge test [as described by the American Thoracic Society (ATS)], and no recent episode of bronchospasm off medications should be considered evidence that the candidate does not have clinically significant airway hyperactivity or asthma.

A.6.8.2(1) These conditions can result in the inability to safely perform essential job tasks due to limitations of strength or endurance and can result in the potential for sudden incapacitation.

A.6.8.2(3) Fibrothorax, chest wall deformity, and diaphragm abnormalities can result in the inability to safely perform essential job tasks due to limitations of endurance.

A.6.8.2(4) Interstitial lung diseases can result in the inability to safely perform essential job tasks due to limitations of endurance.

A.6.8.2(5) Pulmonary vascular diseases and pulmonary embolism can result in frequent episodes of pain and the inability to safely perform essential job tasks due to limitations of endurance and the potential for sudden incapacitation.

A.6.8.2(6) Bronchiectasis can result in the inability to safely perform essential job tasks due to limitations of endurance and frequent respiratory infections.

A.6.9.1 An evaluation of aerobic capacity should be performed after appropriate medical evaluation. Testing should be conducted using an appropriate maximal or submaximal protocol (e.g., see C.2.1 and C.2.1.1). Bicycle ergometry is not appropriate because it underestimates true aerobic capacity. A low aerobic capacity can be an indicator of, and is a risk factor for, ischemic heart disease. For fire fighting, 12 METs or greater is necessary based on several studies.

A.6.10.1.1(1) Angina pectoris can result in frequent episodes of pain or the inability to safely perform essential job tasks,

progressive illness leading to functional impairment, and the potential for sudden incapacitation.

A.6.10.1.1(2) Heart failure can result in frequent episodes of pain or the inability to safely perform work, progressive illness leading to functional impairment, and the potential for sudden incapacitation.

A.6.10.1.1(3) These conditions can result in frequent episodes of pain or the inability to safely perform essential job tasks.

A.6.10.1.1(4) Recurrent syncope can result in the potential for sudden incapacitation.

A.6.10.1.1(5) A medical condition requiring an automatic implantable cardiac defibrillator can result in the potential for sudden incapacitation.

A.6.10.1.1(7) If the person is pacemaker-dependent, then the risk for sudden failure due to trauma is not acceptable. Those with cardiac pacemakers can have the potential for sudden incapacitation.

A.6.10.1.2(1) Specific recommendations include the following:

(1) *Mitral stenosis.* Mitral stenosis is acceptable if in sinus rhythm and stenosis is mild — that is, valve area is greater than 1.5 cm^2 or pulmonary artery systolic pressure is less than 35 mm Hg.
(2) *Mitral insufficiency.* Mitral insufficiency is acceptable if in sinus rhythm with normal left ventricular size and function.
(3) *Aortic stenosis.* Aortic stenosis is acceptable if stenosis is mild — that is, mean aortic valvular pressure gradient is less than 20 mm Hg.
(4) *Aortic regurgitation.* Aortic regurgitation is acceptable if left ventricular size is normal or slightly increased and systolic function is normal.
(5) *Prosthetic valves.* Prosthetic valves are acceptable unless anticoagulation is in effect.

A.6.10.1.2(2) Recurrent paroxysmal tachycardia can result in the potential for sudden incapacitation and the inability to safely perform essential job tasks due to limitations of strength or endurance.

A.6.10.1.2(3) These blocks will result in disqualification unless exercise can be performed with an adequate heart rate response. They can result in the inability to safely perform essential job tasks, and have the potential for sudden incapacitation.

A.6.10.1.2(6) Ventricular ectopy or nonsustained ventricular tachycardia can result in sudden incapacitation and the inability to safely perform job functions due to limitations of strength or endurance. Medical clearance requires the following:

(1) An echocardiograph that shows normal function and no evidence of structural abnormalities
(2) Stress testing with imaging to a workload of at least 12 METs off cardiac medications that shows no evidence of ischemia, ventricular tachycardia, or ventricular fibrillation. Premature ventricular contractions (PVCs) should resolve with increasing levels of exercise.

A.6.10.1.2(7) Hypertrophy of the heart can result in the potential for sudden incapacitation and the inability to safely perform essential job tasks due to limitations of endurance.

A.6.10.1.2(8) A history of a congenital abnormality that has been treated by surgery but with residual complications or that has not been treated by surgery, leaving residuals or complications, can result in frequent episodes of pain or the inability to safely perform essential job tasks and the potential for sudden incapacitation.

A.6.10.1.2(9) These conditions can result in the inability to safely perform job functions due to limitations of endurance.

A.6.10.2.1(1)(a) Uncontrolled or poorly controlled hypertension increases the risk of a sudden cardiac or cerebrovascular event. A sudden cardiac or cerebrovascular event would cause sudden incapacitation, which would interfere with the safe performance of essential job tasks. Uncontrolled or poorly controlled hypertension can be defined as the presence of end organ damage *[see A.6.10.2.1(1)(b)]* or stage 2 hypertension (BP systolic >160 mm Hg or BP diastolic >100 mm Hg). Individuals with stage 1 or stage 2 hypertension should be referred to their primary care physician for evaluation, lifestyle modification, and/or treatment. Patients with prehypertension should be counseled about appropriate lifestyle modification(s). After appropriate and successful management of stage 1 or stage 2 hypertension, a candidate can be re-evaluated after at least 1 month's time.

A.6.10.2.1(1)(b) Chronic hypertension can damage the eye (retinopathy), the kidneys (nephropathy), the vascular system (stroke, transient ischemic attack, peripheral artery disease), and the heart (left ventricular hypertrophy, heart failure). These hypertension complications are known as end organ damage. The cardiac and vascular complications are associated with an increased risk of sudden incapacitation and sudden cardiac death (Koren et al. 1991). Unfortunately, cardiac complications are frequently asymptomatic, and valid screening tests are not fast or inexpensive. Therefore, determining which candidates to screen for cardiac complications [such as ECG for left ventricular hypertrophy (LVH) or a measurement of left ventricular ejection fraction for heart failure] should be based on the severity and the duration of hypertension.

A.6.10.2.1(2) An aneurysm of the heart or major vessel, congenital or acquired, can result in the inability to safely perform essential job tasks and the potential for sudden incapacitation.

A.6.10.2.1(4) Peripheral vascular disease can impair sensation, can increase the likelihood of injury, and can result in frequent episodes of pain or the inability to safely perform essential job tasks due to limitations of endurance.

A.6.10.2.2(2) Recurrent thrombophlebitis can result in frequent episodes of pain or the inability to safely perform essential job tasks and the inability to safely perform functions as a member due to limitations of endurance.

A.6.10.2.2(3) Chronic lymphedema can result in the inability to safely perform essential job tasks due to limitations of endurance.

A.6.10.2.2(4) Congenital or acquired lesions of the aorta or major vessels — for example, syphilitic aortitis, demonstrable atherosclerosis that interferes with circulation, and congenital acquired dilatation of the aorta — can result in the potential for sudden incapacitation and the inability to safely perform essential job tasks due to limitations of endurance.

A.6.10.2.2(5) Marked circulatory instability can result in the inability to safely perform job functions due to limitations of

endurance and the inability to safely perform essential job tasks due to limitations of balance.

A.6.11.2(1) Cholecystitis (that which causes frequent pain due to stones or infection) can result in frequent episodes of pain and the inability to safely perform essential job tasks.

A.6.11.2(2) Gastritis (that which causes recurrent pain and impairment) can result in frequent episodes of pain and the inability to safely perform essential job tasks.

A.6.11.2(3) GI bleeding can cause fatigue and/or hemodynamic instability resulting in the inability to safely perform essential job tasks.

A.6.11.2(4) Acute hepatitis (until resolution of acute hepatitis as determined by clinical examination and appropriate laboratory testing) can result in frequent episodes of pain and the inability to safely perform essential job tasks.

A.6.11.2(5)(c) The member should be evaluated for persistent abnormality causing increased risk of infection and/or strangulation.

A.6.11.2(6) Inflammatory bowel disease (that which causes disabling pain or diarrhea) can result in frequent episodes of pain and the inability to safely perform essential job tasks. It is a progressive illness leading to functional impairment.

A.6.11.2(7) Intestinal obstruction (that is, recent obstruction with impairment) can result in frequent episodes of pain, the inability to safely perform essential job tasks, and the potential for sudden incapacitation.

A.6.11.2(8) Pancreatitis (chronic or recurrent) can result in frequent episodes of pain and the inability to safely perform essential job tasks.

A.6.11.2(10) A bowel resection (if frequent diarrhea precludes performance of duty) can result in frequent episodes of pain and the inability to safely perform essential job tasks.

A.6.11.2(11) A gastrointestinal ulcer (where symptoms are uncontrolled by drugs or surgery) can result in frequent episodes of pain and the inability to safely perform essential job tasks.

A.6.11.2(12) The member should be evaluated for underlying disease, history of trauma, or associated infections.

A.6.11.2(13) Cirrhosis, hepatic or biliary (that which is symptomatic or in danger of bleeding), can result in frequent episodes of pain and the inability to safely perform essential job tasks.

A.6.11.2(14) Chronic active hepatitis can result in weakness, general malaise, and the inability to safely perform essential job tasks.

A.6.12.1 Metabolic syndrome includes three or more of the following components:

(1) Abdominal obesity, defined as a waist circumference >40 in. (>102 cm) in men, >35 in. (>88 cm) in women
(2) Triglycerides > 150 mg/dl
(3) HDL cholesterol < 40 mg/dl for men, < 50 mg/dl for women
(4) Blood pressure > 135/85 mmHg
(5) Fasting blood glucose > 110 mg/dl.

Metabolic syndrome is associated with reduced aerobic capacity that interferes with the ability to safely train to be a fire fighter and to safely perform essential job tasks 2, 4, 5, 6, 7, 8, 9, 10, and 13. Metabolic syndrome is also an increased risk for cardiovascular disease, hypertension, and insulin resistant hyperglycemia.

A.6.13.2(1) Heavy physical exertion has been associated with spontaneous abortions. Lifting heavy objects should be avoided during pregnancy. Excessive heat, toxic chemicals and catecholamine surges have the potential for fetal harm.

A.6.16.2(1) The member should be evaluated for residual instability (subluxation) or significant limitation of motion.

A.6.16.2(4) The member should be evaluated for residual instability or laxity of ligament or intra-articular arthritis, which could cause instability in limb, inadequate range of motion, or increased pain or would limit crawling, kneeling, jumping, safe ladder use, or safe stretcher carrying.

A.6.16.2(5) The member should be evaluated for residual signs or symptoms (e.g., pain, swelling, atrophy, range of motion, gait).

A.6.16.2(6) The member should be evaluated for resulting functional impairment, disease activity, and chronicity.

A.6.17.1(4) The candidate should be free of clinical disease for 3 years, a neurologic exam should be normal, and the candidate should not require drugs that can impair ability to safely perform essential job tasks. In considering performance of essential job tasks, the impact of the operational environment (e.g., heat, stress, activity, variable night shifts) on exacerbations should be considered and specifically addressed by a neurological specialist so that an informed determination can be made by the fire department's medical officer.

A.6.17.1(5) The candidate should be free of clinical disease for 3 years and off all drug and other treatment. Cognitive function, neurologic exam, and respiratory status should all be normal, and the candidate should be free of disease exacerbations for 3 years and off all drug treatment.

A.6.17.2(2) Exam and imaging studies should be normal, and medications needed to control chronic pain should not affect neurologic or cardiac function (energy, cognitive ability, equilibrium, etc.). Examples include the following:

(1) Neuropathy (cranial, peripheral, plexus, etc.). Motor and sensory neurologic exams and diagnostic/imaging studies (as needed) should be normal, and medications needed to control pain should not affect nervous system function (energy, cognitive ability, equilibrium, etc.).
(2) Myopathy and/or myositis. Motor strength is normal, pain is controlled without narcotics, renal function is normal, and neither heart nor diaphragm is involved.
(3) History of infectious myoneuropathies (e.g., Guillain-Barré, post-botulism, post-polio syndrome). Cognitive function, neurologic exam, and diagnostic imaging studies (as needed) should be normal.

A.6.18.2(1) The candidate should be evaluated for severity, chronicity, pain, likelihood of serious occupational infectious exposure, requirement for continuous medication, and impairment of ability to safely perform essential job tasks.

A.6.18.2(2) The candidate should be evaluated for thinned, stretched skin that is at risk for easy breakdown, burn damage, abnormal sensations, or infection.

A.6.18.2(3) The candidate should be evaluated for systemic involvement, skin involvement that interferes with essential job tasks, or presence of localized complications such as fissures, weeping, or ulcerations, due to risk of burn injury and/or infection.

A.6.18.2(4) The candidate should be evaluated for associated systemic lupus, skin integrity, and Raynaud's phenomenon.

A.6.18.2(5) The candidate should be evaluated for functional limitation of hand and/or foot when exposed to cold or systemic involvement of skin, muscles, heart, lungs, or neurologic system that would compromise the safe performance of essential job tasks.

A.6.18.2(6) The candidate should be evaluated for sclerodactyly with significant loss of function or systemic involvement.

A.6.18.2(7) The candidate should be evaluated for associated leg swelling, loss of function, or systemic involvement.

A.6.18.2(8) The candidate should be evaluated for percent body involvement with redness and scaling, requirement for regular application of lubrication/medication, and/or potential effect on safe performance of essential job tasks.

A.6.18.2(9) The candidate should be evaluated for extent, severity, chronicity, and known precipitants with attention to potential risk of serious, occupational infectious exposures or other interference with safe performance of essential job tasks.

A.6.18.2(10) The candidate should be evaluated for swelling, redness, scaling, itching, weeping, and/or cracking, pain, loss of function (e.g., cannot stand for long periods of time), or ulceration.

A.6.18.2(11) The candidate should be evaluated for functional limitations, ability to wear helmet, SCBA other respirators required by the AHJ with proper fit-testing, and protective clothing, and requirements for continuous treatment.

A.6.18.2(12) The candidate should be evaluated for extent, chronicity, and interference with safe performance of essential job tasks.

A.6.18.2(13) The candidate should be evaluated for extent, chronicity, pain, ability to wear protective ensemble, and risk of occupational infectious exposure.

A.6.18.2(14) The candidate should be evaluated for extent and acuity of blistering, loss of function, aggravating agent(s) if known, ability to wear protective ensemble, ability to tolerate moderate, incidental, job-related trauma to skin, risk of occupational infectious exposure, or inability to safely perform essential job tasks.

A.6.18.2(15) The candidate should be evaluated for severity, chronicity, association with underlying medical condition, and requirement for medications (antihistamines) that interfere with the ability to safely perform essential job tasks.

A.6.20.1(1) Type 1 diabetes was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin, which regulates blood glucose. This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. Type 1 diabetes accounts for 5 percent to 10 percent of all diagnosed cases of diabetes. In order to survive, people with Type 1 diabetes must have insulin delivered by a pump or injections.

Type 2 diabetes was previously called non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. Type 2 diabetes accounts for about 90 percent to 95 percent of all diagnosed cases of diabetes. It usually begins as insulin resistance, a disorder in which the cells do not use insulin properly. As the need for insulin rises, the pancreas gradually loses its ability to produce insulin. Type 2 diabetes is associated with older age, obesity, family history of diabetes, prior history of gestational diabetes, impaired glucose tolerance, physical inactivity, and race/ethnicity. Type 2 diabetes is increasingly being diagnosed in children and adolescents. Many people with Type 2 diabetes control their blood glucose by following a careful diet and exercise program, losing excess weight, and taking oral medication. Among adults with diagnosed diabetes, about 12 percent take both insulin and oral medications, 19 percent take insulin only, 53 percent take oral medications only, and 15 percent do not take either insulin or oral medications.

Risk of hypoglycemia (low blood sugar) remains the major concern in regard to those with diabetes being or becoming fire fighters. This risk is greatest in those with Type 1 diabetes.

In general, patients treated with oral diabetes medications are at little risk of significant hypoglycemia. Patients treated with metformin, alpha-glucosidase inhibitors, or thiazolidinediones alone or in combination with each other are at no risk of hypoglycemia, as these classes of drug do not increase insulin levels. Patients treated with sufonylureas and related drugs have a risk of severe hypoglycemia less than 1 percent of the risk associated with insulin treatment. Patients treated with diet and exercise alone (no oral diabetes medications or insulin) are at no risk of hypoglycemia.

Fire fighting entails a unique set of conditions that need to be considered in regard to those with diabetes and the risks of hypoglycemia. Unpredictable meal schedules, periods of physical exertion, adrenergic stimulation, and sleep deprivation all present challenges to fire fighters with diabetes. There are occasions when there is no safe access to food or other forms of oral glucose while wearing respiratory protection in a hazardous environment, and the typical symptoms of hypoglycemia might not be recognized as easily in the midst of fighting a fire. As well, it is not always possible to exit a hazard zone rapidly enough to treat hypoglycemic symptoms when detected. Members engaged in fire suppression are at greater risk than those engaged in other emergency activities (EMS, law enforcement) for this reason.

A review of current published data suggests that with careful individualized assessment it is possible to identify those with diabetes who can function fully as fire fighters and who do not present a significant risk to themselves, their fellow fire fighters, or to those they serve.

The individualized assessment process and criteria included in this standard were set up to assure that only those who are managing their diabetes conscientiously using the most up-to-date approaches would be eligible to be a fire fighter. In addition, certain patients have a greater tendency for significant hypoglycemia despite the quality of their diabetes management. Such individuals are not good candidates to be fire fighters and, accordingly, are excluded from service under the criteria in this standard.

This individualized assessment is possible in large part because a great deal of change has occurred in the treatment of diabetes in recent years. Previously patients used insulins that were somewhat unpredictable in the time course of their action and generally took two injections per day. Today, there are insulins that are far more predictable and are either very long acting and essentially treat only endogenous glucose production (and therefore do not depend on a patient eating on a regular schedule) or are very rapid and therefore can be administered directly before, during, or even shortly after one eats, significantly de-

creasing the chance of insulin being taken and then the meal being interrupted due to fire-fighting duties.

Regimens now referred to as "basal bolus" are composed of a very long-acting basal (or background) insulin, which controls glucose levels overnight and in the absence of glucose intake, and rapid-acting (bolus) insulins that are dosed just prior to, during, or even after meals based on blood glucose levels at that time, the amount of carbohydrate that the person expects to consume, and any anticipated change in physical activity patterns over the next number of hours.

These regimens have resulted in improved overall blood glucose control with significantly less risk of hypoglycemia for many patients.

Additional major advances in the size, speed, and sophistication of blood glucose meters provide for easy, accurate, and rapid assessment of blood glucose levels. Such monitoring techniques, as well as the generally increased self-awareness that accompanies consistent self-monitoring, enable the motivated fire fighter with diabetes to assess blood glucose levels and ingest a safety net of carbohydrates before entering a hazardous environment. Similarly, major advances in insulin delivery systems have greatly increased the ability of the motivated individual with diabetes to achieve a level of diabetes self-management consistent with the duties of fire fighting.

In order to get maximum effect from medical advances and to minimize the risk of hypoglycemia, patients with diabetes must check their blood glucose level frequently (as recommended based on factors such as type of therapy and glycemic history), review those results on a regular basis, and see their diabetes care provider regularly for discussion in regard to any necessary changes in treatment. Patient evaluation needs to look for any of the known risk factors for serious hypoglycemia or evidence of any of the known microvascular (eye disease, kidney disease, or nerve disease) or macrovascular (cardiovascular disease, peripheral arterial disease) complications of diabetes. A 12 MET stress test is required because myocardial infarction remains the major cause of line-of-duty fatalities, and diabetes is a risk factor for myocardial ischemia, especially asymptomatic silent myocardial ischemia.

The individualized assessment described previously demands a very close and good working relationship between the patient and the diabetes care provider. The experience of those who care for current fire fighters with diabetes is that many are highly motivated and will do whatever it takes to perform their jobs at a high level and in a safe manner.

Recognizing that there is variability in the relationship between the hemoglobin A1C and the 3-month average blood glucose, we recommend that hemoglobin A1C levels greater than the 8 percent threshold in Sections 6 and 9 be confirmed by a second determination before action is taken.

The physician evaluating an individual with a hemoglobin A1C > 8 percent should consider a discordance between the A1C and the 3-month average glucose if any of the following conditions exists:

(1) A repeated value is below the threshold.
(2) A single A1C determination is discordant with prior or subsequent determinations with no other evidence of deterioration in glycemic control.
(3) The patient's reported capillary blood glucose determinations and/or venous glucose determinations in the physician's office are significantly lower than those reflected by the estimated average glucose (eAG) (eAG calculator available at http//professional.diabetes.org/glucosecalculator.aspx).
(4) The patient has a personal or family history or other evidence of a hemoglobinopathy.
(5) The patient is a member of an ethnic group with increased risk of hemoglobinopathy.

If the evaluating physician suspects that the A1C overestimates average blood glucose, further evaluation can include the following:

(1) A repeat HbA1C
(2) Prior HbA1C values
(3) Serum fructosamine determination
(4) Downloaded reports from a memory glucometer
(5) Downloaded reports from a 72-hour continuous glucose monitor
(6) Downloaded reports from a personal continuous glucose monitoring device

Possible explanations for discordance between the eAG based on A1C and the patient's true average glucose include the following:

(1) *Assay Precision.* The American College of Pathology accepts variation within 7 percent in A1C assays. Thus, a person with an A1C of 8 percent might have a value between 7.5 percent and 8.5 percent on repeat testing of the same sample. [Cohen 2010]
(2) *Hemoglobinopathies.* According to the National Diabetes Information Clearinghouse (NDIC): "With some assay methods, A1C tests in patients with hemoglobinopathies result in falsely high outcomes, overestimating actual average blood glucose levels for the previous 2 to 3 months. Physicians may then prescribe more aggressive treatments, resulting in increased episodes of hypoglycemia. Some assay methods used with some hemoglobinopathies may result in falsely low outcomes, leading to undertreatment of diabetes." Also according to the NDIC: "About one in 12 African Americans has sickle cell trait. About 14.7 percent of African Americans aged 20 years or older have diabetes. Therefore, many African Americans have both diabetes and sickle cell trait.... People of Southeast Asian descent are at risk for having hemoglobin E (HbE), another hemoglobin variant."
(3) *Interindividual Variation.*
(4) *Clinical Studies.* A comparison of HbA1C with average glucose derived from 2 days of continuous monitoring and 3 months of 7 point glucose profiles at least three times a week. The confidence interval for average glucose with an A1C of 8 percent was 147–217 mg/dl. [Nathan 2008]
(5) *RBC Lifespan:* Hemoglobin A1C levels are a "snapshot" of what is truly a rolling average. Subclinical variation in RBC lifespan can have a significant effect on the relationship between mean glucose and A1C, with increases in average RBC lifespan increasing net glycosylation and decreases (as in some hemoglobinopathies or in recovery from hemorrhage or anemia) decreasing net glycosylation. [Herman and Cohen 2010, Cohen 2008]
(6) *RBC Glucose Transport.* Variations in transport across the RBC membrane result in different intracellular and extracellular glucose levels, thus affecting intracellular hemoglobin exposure to glucose and resultant glycosylation. [Khera 2008]
(7) *Variations in Glycosylation Rates.* Patients vary in activity of the glycosylation reaction; genetically determined "high" and "low" rates of glycosylation have been described in a number of studies, explaining about one-third of interindividual variation in A1C levels. [Hudson 1999, Snieder 2001, Hempe 2002, Cohen 2006, Soranzo 2010]

(8) *Interethnic Variation.* Numerous studies have identified the effect of ethnicity on the relationship between average glucose and A1C. In general, Caucasians have significantly lower A1C levels at comparable glucose. [Herman 2007, Cohen 2007, Viberti 2006, Herman 2009, Ziemer 2010, Kirk 2006]. This variability is independent of the effect of hemoglobinopathies noted in (2).

A.6.20.1(1)(g)iv. Episodes of severe hypoglycemia are associated with an increased risk of subsequent episodes. Hypoglycemia can interfere with cognitive function and judgment. Presence of microvascular and neurological complications of diabetes can increase the risk of hypoglycemic events.

A.6.20.1(2)(g)iv. Episodes of severe hypoglycemia might predict an increased risk of subsequent episodes. Hypoglycemia can interfere with cognitive function and judgment. Presence of microvascular and neurological complications of diabetes can increase the risk of hypoglycemic events.

A.6.20.2(1) The candidate should be evaluated for absence of orthostatic hypotension, electrolyte disorders, ability to maintain hydration during exercise under extreme environmental conditions, and normal thyroxine levels with supplementation.

A.6.21.2(2) Previous burn injury per se does not interfere with the essential job tasks of fire fighting. Extensive burn injury with or without the need for skin grafting can result in skin surfaces that are easily damaged, sensitive to chemical or solvent exposure, or lacking in sweat or sebaceous glands. The candidate should be evaluated for heat or cold intolerance, range of motion and motor strength, and ability to wear personal protective clothing and equipment.

A.6.22.2(1) The candidate should be evaluated for space-occupying lesion, treatment, or sequelae affecting ability to perform essential job tasks.

A.6.22.2(2) The candidate should be evaluated for history or risk of seizure; residual effects on balance, coordination, strength, speech, judgment; and medication requirements.

A.6.22.2(3) The candidate should be evaluated for ability to wear SCBA and maintain nutrition and oral hydration.

A.6.22.2(4) The candidate should be evaluated for residual pulmonary function and medication requirements.

A.6.22.2(5) The candidate should be evaluated for abnormal bowel or urinary function that would interfere with emergency operations where toilet facilities are unavailable, the ability to maintain nutrition and hydration, and medication requirements.

A.6.22.2(6) The candidate should be evaluated for muscle strength, deformity interfering with function, or the ability to wear protective ensemble.

A.6.22.2(7) The candidate should be evaluated for anemia, leukopenia, or thrombocytopenia, or residual cardiac, pulmonary, GI, dermatological, or neurological effects of surgery, radiation, or chemotherapy.

A.6.24.1(5) Leukotriene receptor antagonists are not Category A condition if used to treat conditions not affecting the lower respiratory system.

A.6.24.2 The candidate should be evaluated for an underlying condition requiring the medication and effects of medication that could affect ability to safely perform essential job tasks.

A.7.1.3 A department should set protocols regarding length of time absent from duty and/or medical conditions that require the department physician to evaluate a member. Physical therapy, strength training, work hardening, functional capacity evaluations, and alternate duty are all activities that can be helpful.

A.7.2.2(5) Universal agreement exists that wellness, fitness, and risk reduction for cardiovascular disease, pulmonary disease, and cancer can be reduced by tobacco abstinence, regular exercise, and control of weight, hypertension, cholesterol, and blood sugar. The annual medical evaluation should serve as one of many opportunities in the fire department to modify these risk factors. Clearly, risk reduction is easier if there is early intervention and if the department promotes wellness and fitness. Tobacco cessation programs should be available to the member, and all fire department facilities should be tobacco-free zones. Control of weight, hypertension, cholesterol, and blood sugar are all improved with dietary education and regular exercise.

A.7.7.1 If performing these tests as part of an automated panel that includes additional tests is more cost-effective, it is acceptable to do so.

A.7.7.4.1 Pulmonary spirometry is an essential part of the annual medical evaluation of fire fighters wearing personal protective clothing and SCBA. Spirometric measures include the forced vital capacity (FVC), the forced expiratory volume in the first second of expiration (FEV_1), and the absolute FEV_1/FVC ratio calculated by dividing the FEV_1 by the FVC in liters. Other spirometric measures of small airway flow limitations [e.g., forced expiratory flow (FEF) 25 percent to 75 percent] should not be used for screening evaluations. For spirometric measurements to be properly interpreted, they need to be performed according to American Thoracic Society recommendations. Modern spirometry uses computer-assisted quality control of both calibration and testing procedures. FEV_1 and FVC results are expressed not only as absolute values (liters) but also as percent predicted adjusted for gender, age, height, and ethnicity. Currently, the preferred method uses NHANES III normative equations with the acceptable threshold being 80 percent predicted. When percent predicted FEV_1 or FVC values are minimally below threshold (typically 74 percent to 79 percent of predicted), the LLN for the appropriate population can, at the discretion of the physician, be used instead of the 80 percent predicted threshold value. For example, the LLN may be more appropriate for taller and older individuals. *(See references in F.2.5.)* However, because these norms are population-based, it is possible for individuals to be normal just below these thresholds or to have minimal but potentially significant abnormalities just above these thresholds. In asymptomatic individuals with minimal reductions in spirometry measures (FEV_1, FVC, or the absolute FEV_1/FVC ratio), further evaluation (complete pulmonary function tests, exercise testing, or challenge testing) can be necessary to determine if essential tasks can be performed safely. Such tests are not screening tests and therefore should be performed in a laboratory setting by an experienced specialist.

A.7.7.4.3 When the FVC or FEV_1 is reduced below 70 percent of predicted, substantial dysfunction is present. Moderate chronic obstructive pulmonary disease is considered to be present when the absolute FEV_1/FVC ratio is equal to or less

than 0.70 and the FEV_1 is less than 70 percent predicted. Severe chronic obstructive pulmonary disease is considered to be present when the absolute FEV_1/FVC ratio is less than 0.70 and the FEV_1 is less than 30 percent predicted. Moderate to severe restriction is considered when the FVC is less than 60 percent predicted with an absolute FEV_1/FVC ratio greater than 0.90. Again, in certain cases, additional pulmonary function testing can be required, such as pre- and post-spirometry, lung volumes, diffusing capacity, exercise testing, and/or challenge testing. Because these tests are for diagnostic purposes, they should be performed in a laboratory setting by an experienced specialist. [Hankinson 1999]. For most individuals, the definition of an abnormal FEV_1 or FVC is less than 80 percent predicted adjusted for gender, age, height, and ethnicity using NHANES III. However, because these norms are population-based, it is possible for individuals to be normal just below these thresholds or to have minimal but potentially significant abnormalities just above these thresholds. When percent predicted FEV_1 or FVC values are just below threshold (typically 74 percent to 79 percent of predicted), the LLN for the appropriate population can, at the discretion of the physician, be used. For example, the LLN might be more appropriate for taller and older individuals. In asymptomatic individuals with minimal reductions in FEV_1 or FVC values (70 to 79 percent predicted) and a normal FEV_1/FVC ratio (0.71 to 0.90), further evaluation (complete pulmonary function tests, exercise testing, or challenge testing) might be necessary to determine if essential tasks can be performed safely *(see F.2.5)*.

A.7.7.6.3 In asymptomatic individuals, no firm guidelines have been developed for stress testing (exercise test with ECG) for the screening of cardiac disease or the risk of sudden death. Risk stratification is useful in determining who should receive such testing.

Submaximal stress testing can be used for screening but not for diagnosis. Cardiology evaluation with symptom-limiting stress testing and imaging techniques (e.g., echocardiography, technetium Tc99m sestamibi study) should be used for assessing cardiovascular disease in the following individuals:

(1) Fire fighters with positive or questionably positive changes on screening submaximal stress tests
(2) Fire fighters with new-onset chest pain, symptoms suggestive of coronary artery disease (CAD), or known coronary artery disease
(3) Fire fighters over the age of 45 (for men) and 55 (for women) with one or more of the following risk factors for CAD:
    (a) Hypercholesterolemia (total cholesterol greater than 240 mg/dL)
    (b) Hypertension (systolic > 140 mmHg or diastolic > 90 mmHg)
    (c) Diabetes
    (d) Smoking
    (e) Family history of premature CAD (heart attack or sudden cardiac death in a first-degree relative less than 60 years of age)
(4) Fire fighters with a Framingham Risk Score > 10% (risk calculator available at http://hp2010.nhlbihin.net/atpiii/calculator.asp)

Negative stress tests should be repeated as clinically indicated or at least every 2 to 5 years.

Interpreting stress tests as "positive" or "negative" is beyond the scope of this document. However, factors that should be taken into consideration should include the individual's exercise capacity, symptoms, blood pressure response, heart rate response, ECG changes, and the presence of arrhythmias (Gibbon et al. 2002).

Among the other noninvasive tests to screen for CAD is coronary artery calcium (CAC) scoring by computed tomography. In 2007, an expert committee published an update to their original guidance document. The committee's consensus was that "it may be reasonable to consider use of CAC measurement in such patients with intermediate risk (between 10 percent and 20 percent 10-year risk of estimated coronary event)." The committee did not recommend CAC measurement in low-risk patients (less than 10 percent 10-year risk of estimated coronary event) or in high risk patients [greater than 20 percent 10-year risk of estimate coronary event] [Greenland et al. 2007]. High-risk individuals should be referred directly to stress imaging without the need for CAC scoring.

A.7.7.8(1) An annual TB program should include the following:

(1) Documentation of a two-step purified protein derivative (PPD) tuberculin skin test prior to this PPD, a 0 mm PPD within the past year, or a negative TB blood test for interferon gamma release assay within the past year. [*Morbidity and Mortality Weekly Review*, December 16, 2005, and NFPA 1581, *Standard on Fire Department Infection Control Program*]
(2) If the TB skin test (PPD) is used, the following is required:
    (a) Placement of the PPD and subsequent reading by a trained, designated reader within 48 hours to 72 hours of placement. Members with a history of positive PPD should instead fill out a questionnaire and might be required to have a chest radiograph.
    (b) PPD results should be documented in millimeters (mm). A test with no skin reaction should be recorded as 0 mm. PPD measurement should not include erythema and should include only induration in the axis perpendicular to the forearm.
    (c) A PPD skin test will be considered positive if the following conditions are present:
        i. 5 mm or greater in a member who is immunosuppressed, who has a household contact with active tuberculosis, or who has an abnormal chest radiograph consistent with prior tuberculosis
        ii. 10 mm or greater in a member with a normal immune system who has an increased probability of recent infection or has other clinical conditions that increase the risk for progression to active TB. This includes all members, because fire fighters are considered health care workers if they perform EMS or rescue activities.
        iii. 5 mm increase from previous reading occurring within last 2 years.
(3) TB blood tests are now readily available. Their cost effectiveness must be judged by considering the fact that false positives from atypical mycobacterium or BCG vaccination do not occur and that this test requires only one visit for blood drawing, thus eliminating a return visit for PPD skin test reading. False positives and false negatives can occur if the blood specimens are not properly obtained, handled, and processed prior to and after arrival in the laboratory.

(4) If the PPD or the tuberculin skin test is positive (conversion), the following steps should be taken:
   (a) Member fills out questionnaire.
   (b) Member obtains chest x-ray.
   (c) Member is evaluated for active disease.
   (d) Member is evaluated for preventative therapy.
(5) If active disease is suspected, the member should be removed from any duty until he/she has been determined to be noninfectious. This will occur when the diagnosis of tuberculosis is ruled out or, if confirmed, when adequate therapy has been instituted, the cough has resolved, and three consecutive sputum smears for acid-fast bacillus (AFB) on different days are negative.

In the event of an exposure to TB, the following steps should be taken:

(1) Member without a recent PPD (in the last 6 months) should receive a PPD, tuberculin skin test, or TB blood test within 14 days of exposure. Members with a history of positive PPD, tuberculin skin test, or TB blood test, should fill out a TB questionnaire.
(2) Another PPD, tuberculin skin test, or TB blood test and the questionnaire should be repeated 6 weeks to 12 weeks after the first PPD.
(3) If the PPD skin test or TB blood test turns positive (conversion) or the questionnaire is positive, proceed as described in A.7.7.8(1)(5) and A.7.7.8(1)(6).

A.7.7.8.2 For further guidelines and requirements, refer to local and state departments of health and the Centers for Disease Control (CDC); also see the references in F.2.6.

A.7.7.9.2 The BBP protocol should include the following elements:

(1) Fact sheet that explains in lay language the risks of infection, the various prophylactic and therapeutic options, the testing and follow-up that will be needed, and recommendations for personal behavior (safe sex, blood donation, etc.) following an exposure
(2) Classification table to determine the exposure type and recommendation for prophylaxis
(3) Current recommendations of the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, and Public Health Services
(4) List of tests to be done on exposed member, including the following:
   (a) HIV
   (b) Hepatitis B surface antibody (HBsAb), if not previously known to be positive
   (c) Hepatitis B surface antigen (HBsAg), if not previously known to be positive HBsAb
   (d) Hepatitis C antibody (HCAb)
   (e) If HIV prophylaxis is to be given, the following tests:
      i. CBC
      ii. Glucose, renal, and hepatic chemical function
      iii. Pregnancy test for females
(5) List of tests to be done on source patient, including the following:
   (a) HIV
   (b) HBsAg
   (c) HCAb
(6) If source is available, interview for HIV, hepatitis B, and hepatitis C risk/status
(7) Determination of risk and need for post-exposure prophylaxis (PEP)
(8) Member counseling regarding PEP medication(s) and side effects of treatment; a printed fact sheet for the member to review
(9) PEP, if appropriate, given as soon as possible after the incident, preferably within 2 hours
(10) Follow-up of members on prophylaxis for the duration of their treatment
(11) Assessment of tetanus status and administration of dT booster, if appropriate
(12) Assessment of hepatitis B status as follows:
   (a) If previously immunized with a positive post-immunization titer, no further treatment is needed.
   (b) If previously immunized, titer was negative, and source is HBsAg positive or high risk, give hepatitis B immune globulin (HBIG) as soon as possible, preferably within 24 hours, and give a dose of hepatitis B vaccine.
   (c) If previously immunized and titer is unknown, draw titer and proceed as follows:
      i. If titer is positive, no further treatment is needed.
      ii. If titer is negative and source is HBsAg positive or high risk, then give HBIG as soon as possible, preferably within 24 hours, and give a dose of hepatitis B vaccine.
      iii. If previously immunized with negative titer and revaccinated with a negative titer, give HBIG immediately and a second dose 1 month later.
      iv. If never immunized, give HBIG and begin hepatitis B vaccine series.
(13) Follow-up instructions should include the following information:
   (a) Adverse events and side effects of PEP
   (b) Signs and symptoms of retroviral illness (fever, adenopathy, rash)
   (c) Appointments for follow-up blood work, including the following:
      i. HIV at 6 weeks, 3 months, 6 months, and 9 months
      ii. HBsAb and/or HCAb at 6 weeks, 3 months, and 6 months, if source is hepatitis B and/or hepatitis C positive
      iii. Every other week CBC, renal, and liver function, if receiving PEP

A.7.7.13 Screening for prostate cancer in asymptomatic men using the PSA test is controversial; however, studies suggest that fire fighters have increased rates of prostate cancer. Therefore, prostate screening using the PSA is indicated. There is consensus regarding the serial measurements of PSA, known as the PSA velocity, for comparison over time. An increase over time indicates an increased risk for prostate cancer. A PSA test might detect small cancers that would never become life-threatening. It is unclear whether the benefits of PSA screening outweigh the risks of follow-up cancer tests and cancer treatments. Several noncancerous conditions might result in an elevated PSA level, including benign prostatic hypertrophy (BPH) and other conditions related to acute or chronic inflammation. When testing reveals an elevated PSA level, it is important that the benefits and risks of prostate diagnostic procedures and treatment be discussed with the member.

A.8.1.1 Besides the methods of determination of body fat mentioned in 8.1.2, other, cruder methods have been used. Insurance companies have used height–weight tables to estimate risk of mortality. These tables of "ideal" weight for a given height simply reflect the norm for the U.S. population without consideration of relationship of the norm to health or fitness. Another means of determining obesity that has more scientific basis is the measurement of body mass index (BMI) or the Quetelet index. This is defined as body weight in kilograms divided by height in meters squared. Studies have shown that the Quetelet index correlates rather well ($r = 0.70$) with actual measurement of body fat from hydrostatic weighing — better than do height–weight tables. BMI also correlates with risks associated with obesity. Some experts feel that the major limitation of the BMI is that it is difficult to interpret to patients and to use in counseling about weight loss. It does have the advantage of being more precise than weight tables and of permitting comparison of populations. However, skinfold measurements correlate more highly with data from hydrostatic weighing, measuring percent body fat, and are thus more accurate for fat-related classification than the Quetelet index. Researchers from the Panel on Energy, Obesity, and Body Weight Standards have recommended that Table A.8.1.1 be used when using the Quetelet index for obesity classification.

Table A.8.1.1 Quetelet Index for Obesity

BMI (kg/m^2)	Classifications
20–24.9	Desirable range for men and women
25–29.9	Grade 1 obesity
30–40	Grade 2 obesity
Greater than 40	Grade 3 obesity (morbid obesity)

The health risks associated with obesity begin in the range of 25 kg/m^2 to 30 kg/m^2. For example, someone with a large fat-free mass (e.g., a bodybuilder) would be classified by the Quetelet index as obese, though not to the same extent as he/she would be with relative weight or the height–weight tables. Another example of exception to this standard would be members of the Phoenix Fire Department, whose average BMI is 28. This would place the members in the mildly obese range, yet on their fitness evaluations they score in the excellent range.

A.8.1.2(1) A number of researchers have found that the ratio of waist-to-hip circumference (WHR) and the following circumference measurements are an accurate and convenient method of determining the type of obesity present:

(1) Abdomen I (males) over the umbilicus
(2) Abdomen II (females) just below the umbilicus, at the narrowest portion of the waistline below the ribs and above hips with the abdomen relaxed

The guide for measurement is as follows:

(1) Hips at the widest part below the waist; landmark is the greater trochanter, feet together
(2) Neck just below the larynx perpendicular to the long axis of the neck

Equations for body fat prediction from circumferences and height measured in inches are as follows:

Males (N = 592; R = 90; S.E. meas = 3.52 percent fat) percent fat = + [85.20969 × log (abdomen I circumference – neck circumference)] – [69.73016 × log (height)] + 37.26673

Females = + [161.27327 × log (abdomen II circumference + hip-neck circumference)] – [100.81032 × log (height)] – 69.55016

A.8.1.2(3) The most widely used method for determining obesity is based on the thickness of skinfolds. The measures, when performed correctly, have a high correlation ($r = 0.80+$) with body density from underwater weighing.

Many researchers in the United States (including those performing the large national surveys of the U.S. population that form the basis for normative data worldwide) take skinfold measurements on the right side of the body. U.K. and European investigators, on the other hand, tend to take measurements on the left side of the body. Most research, however, reveals that it matters little on which side measurements are taken.

A suggested way to conduct measurements is as follows:

(1) As a general rule, those with little experience in skinfold measurement should mark the site to be measured with a black felt pen. A flexible steel tape can be used with sites when it is necessary to locate a bodily midpoint. With experience, however, the sites can be located without marking.
(2) The measurer should feel the site prior to measurement, to familiarize himself and the person being measured with the area where the skinfold will be taken.
(3) The skinfold should be firmly grasped by the thumb and index finger of the left hand and pulled away from the body. While this is usually easy with thin people, it is much harder with the obese and can be somewhat uncomfortable for the person being tested. The amount of tissue pinched up must be enough to form a fold with approximately parallel sides. The thicker the fat layer under the skin, the wider the necessary fold (and the more separation needed between thumb and index finger).
(4) The caliper is held in the right hand, perpendicular to the skinfold and with the skinfold dial facing up and easily readable. The caliper heads should be placed ¼ in. to ½ in. away from the fingers holding the skinfold, so that the pressure of the caliper will not be affected.
(5) The skinfold caliper should not be placed too deep into the skinfold or too far away on the tip of the skinfold. Try to visualize where a true double fold of skin thickness is and place the caliper heads there. It is good practice to position the caliper arms one at a time, first the fixed arm on one side and then the lever arm on the other.
(6) The dial is read approximately 4 seconds after the pressure from your hand has been released on the lever arm of the caliper jaw.
(7) A minimum of two measurements should be taken at each site. Measurements should be at least 15 seconds apart to allow the skinfold site to return to normal. If consecutive measurements vary by more than 1 mm, more should be taken until there is consistency.
(8) Maintain the pressure with the thumb and forefinger throughout each measurement.
(9) When measuring the obese, it can be impossible to elevate a skinfold with parallel sides, particularly over the abdomen. In this situation, try using both hands to pull the skinfold away while a partner attempts to measure the width. If the skinfold is too wide for the calipers, underwater weighing or another technique will have to be used.
(10) Measurements should not be taken when the skin is moist because there is a tendency to grasp extra skin, obtaining

inaccurately large values. Also measurements should not be taken immediately after exercise or when the person being measured is overheated, because the shift of body fluid to the skin will inflate normal skinfold size.

(11) It takes practice to be able to grasp the same amount of skinfold consistently at the same location every time. Accuracy can be tested by having several technicians take the same measurements and comparing results. It can take up to 20 to 50 practice sessions to become proficient. Calipers should be accurately calibrated and have constant pressure of 10 g/mm^2 throughout the full measurement range. The accuracy of skinfold measurements can be reduced by many factors, including measurement at the wrong sites, inconsistencies among different calipers and testers, and the use of inconsistent equations. However, when testers practice together and take care to standardize their testing procedures, inconsistencies among testers can usually be held under 1 percent.

A.8.2.2.1 An appropriate target level should be to a predicted level of 12 METs or greater, which is necessary for firefighting activities.

A.8.2.2.1.2 A prescribed aerobic program might be a consideration.

A.9.1.3(1) A member, while wearing full protective clothing (turnout coat and pants, helmet, boots, and gloves) and SCBA, is required to safely perform a variety of fire-fighting tasks that require upper body strength and aerobic capacity. For those not familiar with fire suppression, the following specific details inherent to the activities in essential job task 1 are offered:

(1) Lifting and carrying tools and equipment (e.g., axe, halligan tool, pike pole, chain saw, circular saw, rabbet tool, high-rise pack, and hose) that weigh between 7 lb and 20 lb (3.2 kg and 9 kg) and are used in a chopping motion over the head, extended in front of the body, or in a push/pull motion.
(2) Advancing a 1¾ in. (45 mm) or a 2½ in. (65 mm) diameter hose line, which requires lifting, carrying, and pulling the hose at grade, below or above grade, or up ladders. In addition to the weight of the hose itself, a 50 ft (15 m) section of charged 1¾ in. (45 mm) hose contains approximately 90 lb (41 kg) of water, and a 50 ft (15 m) section of 2½ in. (65 mm) hose holds approximately 130 lb (59 kg) of water.
(3) Performing forcible entry while utilizing tools and equipment (e.g., axe, halligan tool, chain saw, circular saw, or rabbet tool) that requires chopping, pulling, or operating these items to open doors, windows, or other barriers to gain access to victims, possible victims, or to initiate fire-fighting operations.
(4) Performing ventilation (horizontal or vertical) utilizing tools and equipment (e.g., axe, circular saw, chain saw, pike pole) while operating on a flat or pitched roof or operating off a ground or aerial ladder. This task requires the fire fighter to chop or push tools through roofs, walls, or windows.

Other tasks that could be performed can include search and rescue operations and other emergency response actions under stressful conditions, including working in extremely hot and cold environments for prolonged time periods.

A.9.3.2 Possible accommodations include but are not limited to changes in assignment, provision of special devices to assist the member in accommodating the medical disability, revision of standard operating procedures, and/or techniques.

A.9.3.3 What this chapter does is provide guidance to fire department physicians for determining a member's ability to medically and physically function using the individual medical assessment for the conditions listed in the chapter.

A.9.4 Fire-fighting activities have a high static component (i.e., inducing predominantly an increase in blood pressure) and a moderate to high dynamic component (i.e., inducing predominantly an increase in heart rate). Sports with a similar set of demands include wrestling, body building, and boxing. Recommendations made by the task force with respect to athletic activities that have these physical demands (high static, moderate dynamic) have been followed in this document.

Performance of the aerobic and anaerobic critical job tasks in a stressful, noxious fire or rescue environment with low oxygen, high carbon monoxide, and numerous toxic gases has significant risk for acutely aggravating pre-existing arrhythmias and cardiac ischemia (oxygen delivery) and decreasing cardiac valve or muscle function (oxygen supply). To protect from this environment requires that the fire fighter wear personal protective equipment (PPE) and SCBA. The PPE provides a thermal barrier at the cost of added weight, encapsulation, dehydration, and increased metabolic cost for a given workload. The SCBA is a positive pressure demand valve respirator that provides a barrier against the inhalation of noxious/toxic gases and particulate matter but at increased metabolic cost due to its weight and increased respiratory workload. Fire-fighting activities have a high static component (i.e., inducing predominantly an increase in blood pressure) and a moderate to high dynamic component (i.e., inducing predominantly an increase in heart rate). These factors increase physiologic stress and cardiac demand and can precipitate acute cardiac collapse, heart attack, syncope (blackout), or sudden death. In the absence of sudden death, the fact that the fire fighter was operating in an isolated, dangerous environment when a cardiac event occurred would make the subsequent risk for such an event leading to death unacceptably high for that fire fighter, for the civilian who depends upon that fire fighter, or for other fire fighters who not only depend upon that fire fighter but can also be called upon to rescue that fire fighter.

A.9.4.8.2(7) Those without any of the above risk factors have a less than 1 percent risk of sudden death.

A.9.4.9.1 A first episode of syncope must be fully evaluated to determine that the underlying cause does not compromise a member's ability to safely perform job tasks. Underlying neurologic, cardiovascular, circulatory, and/or endocrine disturbance must be ruled out. If after evaluation there is no evidence for underlying disease, exam is normal, and there has been no reoccurrence, then the member need not be restricted from performing job tasks. If underlying disease is present and not reversible, then the member's ability to safely perform essential job tasks 1, 4, 5, 7, 8, 9, and 13 is compromised due to risk for life-threatening sudden incapacitation. *(For additional recommendations, see section relevant to the underlying disease.)* If recurrent and no underlying disease, then the member's ability to safely perform essential job tasks 1, 4, 5, 7, 8, 9, and 13 might be compromised.

A.9.4.10.1 This technology has not been FDA approved for operating effectively under conditions commonly found on the fire ground (electromagnetic interference). In addition, the requirement for pacemaker or implantable defibrillator defines the underlying cardiac condition as life-threatening. Many pacemakers do not have the ability to automatically in-

crease heart rate upon demand during the critical job tasks performed on the fire ground.

A.9.4.16.1 Evaluation with ECG, Holter monitor, and/or stress test should be further supplemented with electrophysiologic study (EPS). If rapid supraventricular tachycardia is inducible and surgical ablation is successful, there is no medical reason to restrict the member from performing essential job task 13.

A.9.4.17.1 Even if rate controlled (with or without medication), the added catecholamine stress and dehydration produced when performing critical job tasks on the fire ground makes the potential for life-threatening sudden incapacitation associated with this rhythm disturbance too great a risk. If persistent or recurrent, these arrhythmias, even if rate controlled, can result in embolic events, which prevent the successful and safe performance of critical job tasks on the fire ground or during emergency responses.

A.9.4.20.1 Members with prehypertension (systolic 120–139 mmHg or diastolic 80–89 mmHg), Stage 1 hypertension (systolic 140–159 mmHg or diastolic 90–99 mmHg), or stage 2 hypertension (systolic 160 mmHg or greater or diastolic 100 mmHg or greater) should be referred to their primary care physician for evaluation, lifestyle modification, and/or treatment.

(1) Members with stage I hypertension whose BP returns to either prehypertension or normal with lifestyle modification can return to an annual medical evaluation. For members with long-standing stage I hypertension whose BP has not been reduced, additional evaluation for possible end organ damage should be considered, including any or all of the following:
   (a) Complete patient history for symptoms of heart failure (e.g., shortness of breath upon exertion) or transient ischemic attacks (TIAs)
   (b) Dilated eye examination for retinopathy
   (c) Blood creatinine measurement for nephropathy
   (d) Tests for left ventricular hypertrophy (Use of the resting ECG to detect left ventricular hypertrophy is insensitive, e.g., 5 percent sensitivity, so echocardiogram is the currently accepted test for diagnosing left ventricular hypertrophy.)
(2) Chronic hypertension can damage the eye (retinopathy), the kidneys (nephropathy), the vascular system (stroke, TIA, or PAD), or the heart (left ventricular hypertrophy and heart failure). These hypertension complications are known as end organ damage. The cardiac and vascular complications are associated with an increased risk of sudden incapacitation and sudden cardiac death (Koren et al. 1991). With proper evaluation, lifestyle modification, and/or treatment, these complications can be avoided. Lifestyle modification includes weight reduction, dietary plan, reduction in dietary sodium, an increase in aerobic physical activity, and moderation in alcohol consumption [Chobanian 2003].
(3) Because of the high risk of a sudden cardiovascular events (e.g., due to undiagnosed cardiac disease), members with stage 2 hypertension should be restricted until their blood pressure can be brought under control. Once their blood pressure is brought under control, end stage organ complications should be regularly evaluated as described in A.9.4.20.1(2). The frequency of such evaluation is based on the severity and duration of their elevated blood pressure.

A.9.4.21.1 Metabolic syndrome includes three or more of the following components:

(1) Abdominal obesity, defined as a waist circumference > 102 cm (> 40 in.) in men or > 88 cm (> 35 in.) in women
(2) Triglycerides > 150 mg/dl
(3) HDL cholesterol < 40 mg/dl for men, < 50 mg/dl for women
(4) Blood pressure > 135/85 mmHg
(5) Fasting blood glucose >110 mg/dl

Members with metabolic syndrome should receive a cardiac stress. Members should be counseled as to lifestyle adjustments, receive an exercise prescription, and be referred to their personal physician for treatment of their elevated cholesterol, triglycerides, insulin resistant hyperglycemia, and/or hypertension.

A.9.6 All disorders of the hypothalamic-pituitary-adrenal axis can potentially affect fire fighters because these hormonal systems play an essential role in maintaining homeostasis when exposed to physiologic and emotional stress while performing critical tasks on the fire ground or during emergency operations. Homeostatic regulation is further impaired under conditions of extreme temperature and dehydration, both of which are common when performing the critical tasks of fire fighting while wearing personal protective clothing on the fire ground.

Without treatment, the risk of life-threatening dehydration, extreme alterations in body temperature, electrolyte disturbances, and muscle weakness while operating at a fire scene is unacceptably high. Mineralocorticoid deficiency also increases the risk of life-threatening hypotension and/or arrhythmias associated with exertion and dehydration. For this reason, untreated or uncorrected hypothalamic, hypopituitarism, hypothyroidism, hyperthyroidism, thyroid storm, hypoadrenalism, hyperadrenalism, parathyroidism, and other disorders of thyroid and adrenal function threaten a member's ability to safely perform essential job tasks.

A.9.6.3.1 Type 1 diabetes was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin, which regulates blood glucose. This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. Type 1 diabetes can account for 5 percent to 10 percent of all diagnosed cases of diabetes. In order to survive, people with Type 1 diabetes must have insulin delivered by a pump or injections.

Type 2 diabetes was previously called non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. Type 2 diabetes can account for about 90 percent to 95 percent of all diagnosed cases of diabetes. It usually begins as insulin resistance, a disorder in which the cells do not use insulin properly. As the need for insulin rises, the pancreas gradually loses its ability to produce insulin. Type 2 diabetes is associated with older age, obesity, family history of diabetes, prior history of gestational diabetes, impaired glucose tolerance, physical inactivity, and race/ethnicity. Type 2 diabetes is increasingly being diagnosed in children and adolescents. Many people with Type 2 diabetes can control their blood glucose by following a careful diet and exercise program, losing excess weight, and taking oral medication. Among adults with diagnosed diabetes, about 12 percent take both insulin and oral medications, 19 percent take insulin only, 53 percent take oral medications only, and 15 percent do not take either insulin or oral medications.

Diabetic members should be carefully monitored for control of blood sugar because lack of glycemic control increases the risk for dehydration, hypotension, and target organ damage (e.g., myocardial infarction), which that can result in life-threatening sudden incapacitation during performance of critical job tasks. Such members should be monitored at regular intervals to ascertain that blood glucose and blood hemoglobin A1C levels remain under control. According to the American Diabetes Association 2010 guidelines, lowering hemoglobin A1C to below or around 7 percent has been shown to reduce microvascular and neuropathic complications of type I and type II diabetes. The recommendation for microvascular disease prevention in nonpregnant adults in general is for a hemoglobin A1C level of less than 7 percent. Exceptions to this 7 percent level would be any condition that exists in addition to diabetes that is responsible for the hemoglobin A1C not accurately reflecting average glucose levels (e.g., hemoglobinopathies such as sickle cell disease). Additional exceptions to this 7 level would occur in individuals already not meeting NFPA 1582 requirements (e.g., history of severe hypoglycemia or end organ complications). See reference in F.2.3.

With medical control of diabetes, the risk of hypoglycemia (low blood sugar) becomes a major concern in regard to those with diabetes being or becoming fire fighters. This risk is greatest in those with Type 1 diabetes.

In general, members treated with oral diabetes medications are at little risk of significant hypoglycemia. Members treated with metformin, alpha-glucosidase inhibitors, or thiazolidinediones alone or in combination with each other are at no risk of hypoglycemia, as these classes of drugs do not increase insulin levels. Members treated with sufonylureas and related drugs have a risk of severe hypoglycemia less than 1 percent of the risk associated with insulin treatment. Members treated with diet and exercise alone (no oral diabetes medications or insulin) are at no risk of hypoglycemia.

Fire fighting entails a unique set of conditions that need to be considered in regard to those with diabetes and the risks of hypoglycemia. Unpredictable meal schedules, periods of physical exertion, adrenergic stimulation, and sleep deprivation all present challenges to fire fighters with diabetes. There are occasions when there is no safe access to food or other forms of oral glucose while wearing respiratory protection in a hazardous environment, and the typical symptoms of hypoglycemia might not be recognized as easily in the midst of fighting a fire. As well, it is not always possible to exit a hazard zone rapidly enough to treat hypoglycemic symptoms when detected. Members engaged in fire suppression are at greater risk than those engaged in other emergency activities (EMS, law enforcement) for this reason.

A review of current published data suggests that with careful individualized assessment it is possible to identify those with diabetes who can function fully as fire fighters and who do not present a significant risk to themselves, their fellow fire fighters, or to those they serve.

The individualized assessment process and criteria included in this standard were set up to assure that only those who are managing their diabetes conscientiously using the most up-to-date approaches would be eligible to be a fire fighter. In addition, certain patients have a greater tendency for significant hypoglycemia despite the quality of their diabetes management. Such individuals would not be good candidates to be fire fighters and, accordingly, are excluded from service under the criteria in this standard.

This individualized assessment is possible in large part because a great deal of change has occurred in the treatment of diabetes in recent years. Previously, patients used insulins that were somewhat unpredictable in the time course of their action and generally took two injections per day. Today, there are insulins that are far more predictable and are either very long acting and essentially treat only endogenous glucose production (and therefore do not depend on a patient eating on a regular schedule) or are very rapid and therefore can be administered directly before, during, or even shortly after one eats, significantly decreasing the chance of insulin being taken and then the meal being interrupted due to fire fighting duties.

Regimens now referred to as "basal bolus" are composed of a very long-acting basal (or background) insulin, which controls glucose levels overnight and in the absence of glucose intake and rapid-acting (bolus) insulins that are dosed just prior to, during, or even after meals based on blood glucose levels at that time, the amount of carbohydrate that the person expects to consume, and any anticipated change in physical activity patterns over the next number of hours.

These regimens have resulted in improved overall blood glucose control with significantly less risk of hypoglycemia for many patients.

Additional major advances in the size, speed, and sophistication of blood glucose meters provide for easy, accurate, and rapid assessment of blood glucose levels. Such monitoring techniques, as well as the generally increased self-awareness that accompanies consistent self-monitoring, enable the motivated fire fighter with diabetes to assess blood glucose levels and ingest a safety net of carbohydrates before entering a hazardous environment. Similarly, major advances in insulin delivery systems have greatly increased the ability of the motivated individual with diabetes to achieve a level of diabetes self-management consistent with the duties of fire fighting.

In order to get maximum effect from these medical advances, and to minimize the risk of hypoglycemia, members with diabetes must check their blood glucose level frequently (as recommended based on factors such as type of therapy and glycemic history), review these results on a regular basis, and see their diabetes care provider regularly for discussion in regard to any necessary changes in treatment. Member evaluation needs to look for any of the known risk factors for serious hypoglycemia or evidence of any of the known microvascular (eye disease, kidney disease, or nerve disease) or macrovascular (cardiovascular disease, peripheral arterial disease) complications of diabetes. A 12 MET stress test is required because myocardial infarction remains the major cause of line-of-duty fatalities, and diabetes (Type 1 and Type 2) is not only a risk factor for myocardial ischemia but also for silent myocardial ischemia.

The individualized assessment just described demands a very close and good working relationship between the member and the diabetes care provider. The experience of those who care for current fire fighters with diabetes is that this works for a highly motivated member who will do whatever it takes to perform his/her job at a high level and in a safe manner.

A.9.6.4.1 See A.9.6.3.1.

A.9.7 Theoretically, respiratory protection from this environment is afforded by SCBA use. Experience shows that SCBA are frequently taken off to improve visibility and that SCBA air supply is often insufficient to last for the entire fire operation (ingress, suppression, overhaul, and egress). Thus, performance of essential job tasks is regularly done for short time periods in a noxious fire or hazardous materials environment with high carbon monoxide, noxious/toxic gases, and irritants. Working in this environment has added potential for

increasing carbon monoxide levels, decreasing oxygen levels, and reducing oxygen delivery, and the extent of this reduction and resulting risk is directly related to the degree of dysfunctional gas exchange already present prior to the performance of these essential job tasks. It also has potential for acutely aggravating pre-existing airway hyperreactivity commonly found in patients with asthma and other obstructive pulmonary conditions (bronchitis, etc.). Acute hyperreactivity in this environment is likely to induce immediate clinical asthma (bronchospasm and wheeze) with a significant increased work of breathing and gas exchange abnormalities. Respiratory insufficiency, no matter the cause, has the potential for arrhythmias, cardiac ischemia (oxygen delivery), decreased respiratory and cardiac function (oxygen delivery to tissues), acidosis, and life-threatening sudden incapacitation.

A.9.7.6 Asthma, defined as reversible bronchospasm, can be temporary or chronic. "Temporary asthma," more accurately referred to as acute bronchitis with wheezing, is a brief episode lasting days to months, usually following allergic or infectious exposure. When this occurs without prior history, it most likely will resolve over the next few weeks or months. Such temporary incidents, once resolved, do not compromise the member's ability to safely perform essential job tasks. In contrast, true asthma is a chronic condition with a clinical history of recurrent reversible bronchospasm or longstanding, persistent reversible bronchospasm. For asthmatics, exposure to smoke or other irritants on the fire ground or a hazardous materials environment has a high probability of causing acute asthma attacks and can also worsen the progression of the underlying obstructive inflammatory disease. If this occurs in an environment that is immediately dangerous to life and health (e.g., interior fire suppression or certain hazardous materials operations), it can have potentially devastating consequences for the member, the team, or the mission. There are no studies that support or deny that asthma in this environment can be prevented or adequately controlled by anti-inflammatory medications (inhaled corticosteroids, cromolyn, leukotriene modifiers). It is not acceptable to use or rely on bronchodilator medications for this purpose because in a hazardous environment, SCBA cannot be removed to use a rescue inhaler. There are no studies that support or deny that the use of such medications is preventive or effective in a fire/smoke environment, and several studies have implicated the use of beta-agonists (short- and long-acting bronchodilators) as an independent risk for sudden death and myocardial infarction in the United States, Canada, Britain, New Zealand, and Australia.

Identifying asthmatics who are not only stable in a normal environment but also do not have asthmatic attacks in a fire or irritant environment is difficult. Because the clinical definition of asthma is reversible bronchospasm, spirometry or pulmonary function testing performed in the absence of a clinical attack is expected to be normal and might not even show a bronchodilator response. Only if performed during an attack will spirometry or other pulmonary function tests show obstructive airway flow limitations with a positive bronchodilator response (greater than 12 percent and 200 mL increase in FEV_1). Therefore, in these fire fighters who report good control without asthma exacerbations on the fire ground, spirometry should show adequate reserve (FVC and FEV_1 greater than or equal to 90 percent predicted), without significant bronchodilator response when performed off bronchodilators on the day of testing. For population studies, pulmonary function is considered normal when greater than or equal to 80 percent predicted, but for an individual with a history of asthmatic bronchospasm who is being considered for job tasks performed in a potentially irritant environment, it is reasonable diligence to require pulmonary function with a greater specificity for demonstrating adequate reserve (greater than or equal to 90 percent predicted). The first time this member is being evaluated for asthma control, challenge testing should be performed to demonstrate no evidence for clinically significant airway hyperreactivity [i.e., to be normal or negative there should be less than 20 percent decline in FEV_1 with provocative challenge testing to cold air, exercise (12 METs), or a methacholine (PC_{20} greater than 8 is considered normal, as response at dose greater than 8 mg might not be clinically significant)]. Challenge testing should be performed off bronchodilators the day of testing. If the member reports good control only when taking prescribed control medications (inhaled corticosteroids, cromolyn, or leukotriene modifiers), then consideration should be given to continuing these medications during the testing. The member should not use bronchodilators (short- or long-acting bronchodilators) the day of testing because these medications could undermine the purpose of this test — that is, demonstrating normal pulmonary function without clinically significant bronchodilator response or airway hyperreactivity. Challenge testing should be performed only by an experienced specialist. Testing should not be performed in members without a history suggestive of asthma, since there is no indication for testing. It should never be performed in members with moderate to severe pulmonary dysfunction, as these members have already demonstrated that they cannot safely perform essential job tasks, and further testing might induce life-threatening bronchospasm. Challenge testing should not be performed annually and should be repeated only if clinically indicated.

A.9.7.6.1(7) If the member reports good control only when taking prescribed control anti-inflammatory medications (e.g., inhaled corticosteroids or cromolyn or oral leukotriene modifiers), then consideration should be given to continuing these medications during the testing. The member should not use bronchodilators (short- or long-acting bronchodilators) the day of testing because these medications can undermine the purpose of the test, that is, to demonstrate normal pulmonary function without clinically significant bronchodilator response or airway hyperreactivity. Provocative challenge testing should be performed the first time the member is evaluated for asthma and only if all the provisions in 9.7.6.1(1) through 9.7.6.1(7) indicate that the member's asthma is under acceptable control. Provocative challenge testing is not required annually and should be repeated only if clinically indicated.

A.9.7.7 A member with current or recent history of allergic-induced, reversible bronchospasm is no different from a non-allergic asthmatic in his/her ability to safely perform the essential job tasks associated with non-allergic irritant exposures, as the majority will remain hyperreactive for 4 to 8 weeks after allergic-induced bronchospasm. Two caveats exist. First, some members could have a distant history of allergic asthma, are unlikely to be exposed to this allergen again, or have successfully been desensitized by an allergist. These members, if asymptomatic off asthma medications for 2 months, can perform all essential job tasks with reasonable safety. If asthma is still suspected then the member should be evaluated as in 9.7.6. Provocative challenge testing should only be to general irritants (e.g., cold air, exercise, or methacholine). Specific allergen challenge testing should not be performed, as the risk for life-threatening asthma outweighs the benefit. Second, members can have allergic rhinitis, sinus or skin

conditions without a history, or suspicion of clinical asthma. These members do not need specialized pulmonary testing.

A.9.7.8 Moderate to severe chronic obstructive pulmonary disease is characterized by an FEV_1/FVC ratio of 0.45 to 0.59 (absolute ratio rather than percent of predicted) and severe chronic obstructive pulmonary disease by an absolute FEV_1/FVC ratio equal to or less than 0.07 and an FEV_1 less than 0.70 percent predicted. Additional tests that can be of value are lung volumes, gas exchange parameters (diffusing capacity, oxygen saturation, arterial blood gases), chest radiograph, and chest CAT scan. With moderate to severe chronic obstructive pulmonary disease, elevated respiratory workload and lack of respiratory reserve will not provide adequate gas exchange for the safe performance of essential job tasks. Working in this environment has the potential for increasing carbon monoxide levels, decreasing oxygen levels, and reducing oxygen delivery, and the extent of this reduction and resulting risk is directly related to the degree of dysfunctional gas exchange already present prior to the performance of essential job tasks. It also has the likely potential for acutely aggravating preexisting airway hyperreactivity commonly found in patients with moderate to severe chronic obstructive pulmonary diseases (bronchitis, etc.). Acute hyperreactivity in this environment can induce immediate or progressive clinical asthma (bronchospasm and wheeze) that can lead to sudden incapacitation from status asthmaticus and/or cardiac ischemia. In contrast, asymptomatic members with mild chronic obstructive pulmonary disease (an absolute FEV_1/FVC equal to or less than 0.70 and an FEV_1 above 70 percent predicted) and without airway hyperreactivity might be able to safely perform essential job tasks. However, if members with mild chronic obstructive pulmonary disease are symptomatic, especially during exercise or on the fire ground, then appropriate additional testing can be useful, including pre- and post-spirometry, lung volumes, gas exchange parameters (diffusing capacity, oxygen saturation, arterial blood gases), exercise testing, and/or provocative challenge testing.

A.9.7.14 Members who are otherwise qualified can safely resume fire-fighting duties as long as they have recovered from their pneumothorax (with or without surgery) and their pulmonary function has returned to acceptable limits. Most patients with spontaneous pneumothorax have cysts or bullous disease from congenital or infectious etiology. Some have bullous disease due to chronic pulmonary disease. Usually, those with congenital or infectious cause will have pulmonary function tests that are compatible with the safe use of SCBA while those with chronic pulmonary disease can have pulmonary function tests that are not compatible with the safe performance of essential job tasks 1, 2, 3, 4, 5, and 7. Regardless of cause, many (10 percent to 20 percent) will have a recurrence on the same side unless surgically corrected. After the pneumothorax has resolved, surgical correction of underlying cystic/bullous disease is not a prerequisite for returning to fire-fighting duty as long as pulmonary function allows for the safe use of SCBA.

A.9.7.16 Significant pleural effusions should be referred for diagnostic tests, as new or increasing effusions can be a sign of cardiac, liver, or renal disease, pneumonia, empyema, tuberculosis, or cancer. When these illnesses are severe enough to cause pleural effusions, they compromise the ability to safely perform essential job tasks due to limitations of endurance or inability to safely wear SCBA. If not the illnesses causing pleural effusions, then pulmonary function tests should be assessed. Moderate to severe restriction (FVC less than 60 percent of predicted with an absolute FEV_1/FVC ratio greater than or equal to 0.90) compromises the member's ability to safely perform essential job tasks unless a more complete evaluation of gas exchange and exercise capacity shows the ability to exercise at a workload of 12 METs without evidence of hypoxia or exercise desaturation.

A.9.8.9 After acute infection has resolved, the fire fighter can return to work if weight, muscle strength, cardiac function, and function of other involved organs have returned to levels required for safe performance of essential job tasks. Concepts used within this document for each of these organ systems should be applied here.

A.9.8.10 After active infection has resolved (e.g., sputum AFB or sputum culture negative for 3 successive days) and the fire fighter is no longer contagious (usually within 2 weeks of successful treatment), the fire fighter can return to work but perform only essential job tasks 1, 2, 3, 4, 5, 7, and 9 if weight, muscle strength, pulmonary function, and function of other involved organs have returned to acceptable levels for safe performance. Concepts used within this document for each of these organ systems should be applied here. A positive tuberculin (PPD) skin test or a positive tuberculin blood test without symptoms and with a normal chest radiograph indicates exposure, and latent infection without evidence for active infection does not prevent a fire fighter from performing essential job tasks. Alternatively, a positive TB skin test (PPD) can be a false-positive from exposure to atypical mycobacterium or from prior BCG vaccination. The TB blood test does not produce these false positives, but experience with false negatives is limited [*Mortality and Morbidity Weekly Review,* December 16, 2005]. If conversion from negative to positive tuberculin test (PPD or blood test) occurred within the last 2 years, there is increased risk for the development of active contagious tuberculosis, which requires either treatment or frequent monitoring for symptoms and chest radiograph changes (annually for at least 2 years or during evaluation of current symptoms). Members on prophylactic treatment can perform all essential job tasks without restrictions. Treatment is a personal decision, but in its absence, monitoring with chest radiographs at prescribed intervals is mandatory because development of active disease is a public health hazard to other members and the public.

A.9.8.11 Hepatitis, when not acute or when chronic but without symptoms and without significant liver dysfunction or other organ system dysfunction, does not prevent the successful and safe performance of essential job tasks during fire fighting or EMS work. Hepatitis A, when not acute, is no longer a public health risk. Hepatitis B, C, and so forth, are bloodborne pathogens and are not a public health risk, as universal precautions to prevent the spread of bloodborne infections are a mandatory part of all emergency operations. Treatment to prevent Hepatitis C from progressing to liver insufficiency or failure (cirrhosis) is now available and FDA approved. Members receiving this treatment need to be regularly evaluated to determine their ability to safely perform their essential job tasks. This combination drug therapy protocol can produce dehydration, fatigue, depression, anemia, thrombocytopenia (bleeding disorder), and so forth.

A.9.8.12 HIV without AIDS does not prevent the successful and safe performance of essential job tasks during fire fighting or EMS work. HIV is a bloodborne pathogen and is not a public health risk, as universal precautions to prevent the spread

of bloodborne infections are a mandatory part of all emergency operations. The fire fighter with AIDS but without significant organ dysfunction is able to safely perform essential job tasks after careful evaluation. Treatment to prevent AIDS from occurring when HIV infection occurs or to control the progression of AIDS is available and FDA approved. Members receiving this treatment need to be regularly evaluated to determine their ability to safely perform the essential job tasks on the fire ground, during emergency operations, and when wearing protective clothing. This combination drug therapy protocol can produce dehydration, fatigue, depression, anemia, thrombocytopenia (bleeding disorder), and so forth.

A.9.9 The personal protective ensemble and SCBA can place the fire fighter's spine at a biomechanical disadvantage due to added weight and altered center of gravity. Certain medications (narcotics and muscle relaxants) used to treat spinal conditions can frequently produce or worsen somnolence, discoordination, and disequilibrium. Neurologic dysfunction, regardless of cause, can produce sudden incapacitation, which when working in dangerous environments can result in life-threatening injuries.

A.9.10 Fire fighters with active, ongoing, or recurrent orthopedic disorders can have difficulty due to reduced motor strength, sensation, and flexibility as well as problems with fatigue, coordination, gait, and equilibrium. These physical abilities are required to safely perform essential job tasks 1, 2, 4, 5, 6, 7, 8, and 13. The protective uniform and SCBA can place the fire fighter's involved extremity (upper or lower) at a biomechanical disadvantage due to added weight and altered center of gravity. Certain medications (narcotics and muscle relaxants) used to treat orthopedic conditions can produce or worsen somnolence, discoordination, and disequilibrium.

A.9.12.1 The fire fighter works in hazardous environments, both on the fire ground and during other emergency operations. Heavy debris can fall on the fire fighter. The helmet offers some protection when it fits well and is worn properly. The fire fighter with a defect in the skull is more vulnerable to head trauma and life-threatening sudden incapacitation. The fire fighter is also exposed to biological aerosols, particulates, smoke, and hazardous materials. Defects in the structure of the face, nose, mouth, or throat can prevent acceptable fit testing of a respirator (N-95, P-100, or SCBA).

A.9.12.3.1 Diseases of the eye such as retinal detachment, progressive retinopathy, optic neuritis (severe or progressive), macular degeneration, cataracts, and glaucoma can result in the failure to read placards and street signs or to see and respond to imminently hazardous situations. Evaluation of visual acuity and visual fields with consultation by an ophthalmologist is suggested.

Ophthalmological procedures such as radial keratotomy and repair of retinal detachment require sufficient time (approximately 2 weeks for radial keratotomy and Lasik-type surgery and 3 months for retinal detachment) to allow stabilization of visual acuity and to ensure that there are no post-surgical complications. Members should be cleared for duty by the ophthalmologic surgeon who understands the essential job tasks associated with fire fighting. These ophthalmological procedures can result in the failure to be able to read placards and street signs or to see and respond to imminently hazardous situations.

The fire service physician should also consider any color vision deficiency of the member in view of the color vision requirements of the member's specific job in a given fire department.

A.9.12.3.1(1) Far visual acuity is at least 20/40 binocular, corrected with contact lens or spectacles. Far visual acuity uncorrected is at least 20/100 binocular for wearers of hard contacts or spectacles. Successful long-term soft contact lens wearers (i.e., 6 months without a problem) are not subject to the uncorrected standard. Inadequate far visual acuity can result in the failure to be able to read placards and street signs or to see and respond to imminently hazardous situations.

A.9.12.3.1(2) Most persons with monocular vision, after a 6-month accommodation period, are able to function well. There is some loss of depth perception and peripheral vision. The loss of depth perception has not been shown to be of a type that will affect a member's ability to safely perform essential fire-fighting tasks. Some very specialized tasks can be difficult to safely perform, and the fire service physician should consider the depth of field deficiency of the individual and consider the depth of field requirements of the member's job in order to reach an individual determination. It should be noted that the FAA will award all classes of pilot's licenses to monocular pilots. The loss of peripheral vision is compensated for by increased scanning and head movements. There are studies that show some detriment of driving function in the driving lab. As of the writing of this section the DOT does not allow monocular persons to hold a commercial driver's license. In view of this and the increased dependence on visual cues when driving emergency vehicles, monocular fire fighters should be restricted from driving fire apparatus and other emergency vehicles.

A.9.12.4.1 Baseline and annual audiometry is performed on each fire fighter. This should be done in accordance with 29 CFR 1910.95, "Occupational noise exposure." The basics of this standard include the following:

(1) The first audiogram done (for members this will probably be done during their pre-placement exam) becomes the baseline audiogram.
(2) If subsequent audiograms are better than the baseline, then the best one becomes the baseline. All audiograms should be done with no exposure to industrial noise for 14 hours.
(3) Each subsequent audiogram is compared to the baseline audiogram (not to the previous year's) to determine if there is a threshold shift, which is an average loss of 10 dB or more at 2000 Hz, 3000 Hz, and 4000 Hz in either ear. This number should be corrected for presbycusis by age tables *[see Table A.9.12.4.1(a) and Table A.9.12.4.1(b)]*. Thus, for each of the three frequencies the baseline reading is subtracted from the current reading, and the presbycusis correction is subtracted from this result. The results from the three frequencies are averaged, and if this number is 10 or greater, then there is a threshold shift.

Audiometric pure tone threshold testing includes frequencies 500 Hz, 1000 Hz, 2000 Hz, 3000 Hz, 4000 Hz, and 6000 Hz. Tests are performed using audiometric instrumentation calibrated to ANSI S3.6, *Specification for Audiometers.*

Fire fighters should have adequate hearing in order to hear a victim cry for help, to hear a PASS alarm, to hear noises associated with imminent collapse, or to hear noise associated with changes in the fire pattern. Hearing and the ability to localize sounds is crucial in a fire-fighting environment where smoke often minimizes visual cues and there is a high degree of background noise and stress-related distractions. Fire fighters should be able to hear fire department portable and vehicle radio communications. They should be able to hear, discriminate, and localize safety-related acoustic cues such as air horns, sirens, screams, collapsing walls, beams, timbers, or gas

Table A.9.12.4.1(a) Age Correction Values in Decibels for Males

	Audiometric Test Frequency (Hz)				
Years	1000	2000	3000	4000	6000
≤20	5	3	4	5	8
21	5	3	4	5	8
22	5	3	4	5	8
23	5	3	4	6	9
24	5	3	5	6	9
25	5	3	5	7	10
26	5	4	5	7	10
27	5	4	6	7	11
28	6	4	6	8	11
29	6	4	6	8	11
30	6	4	6	9	12
31	6	4	7	9	13
32	6	5	7	10	14
33	6	5	7	10	14
34	6	5	8	11	15
35	7	5	8	11	15
36	7	5	9	12	16
37	7	6	9	12	17
38	7	6	9	13	17
39	7	6	10	14	18
40	7	6	10	14	19
41	7	6	10	14	20
42	8	7	11	16	20
43	8	7	12	16	21
44	8	7	12	17	22
45	8	7	13	18	23
46	8	8	13	19	24
47	8	8	14	19	24
48	9	8	14	20	25
49	9	9	15	21	26
50	9	9	16	22	27
51	9	9	16	23	28
52	9	10	17	24	29
53	9	10	18	25	30
54	10	10	18	26	31
55	10	11	19	27	32
56	10	11	20	28	34
57	10	11	21	29	35
58	10	12	22	31	36
59	11	12	22	32	37
≥60	11	13	23	33	38

Source: [29 CFR 1910.95].

Table A.9.12.4.1(b) Age Correction Values in Decibels for Females

	Audiometric Test Frequency (Hz)				
Years	1000	2000	3000	4000	6000
≤20	7	4	3	3	6
21	7	4	4	3	6
22	7	4	4	4	6
23	7	5	4	4	7
24	7	5	4	4	7
25	8	5	4	4	7
26	8	5	5	4	8
27	8	5	5	5	8
28	8	5	5	5	8
29	8	5	5	5	9
30	8	6	5	5	9
31	8	6	6	5	9
32	9	6	6	6	10
33	9	6	6	6	10
34	9	6	6	6	10
35	9	6	7	7	11
36	9	7	7	7	11
37	9	7	7	7	12
38	10	7	7	7	12
39	10	7	8	8	12
40	10	7	8	8	13
41	10	8	8	8	13
42	11	8	9	9	13
43	11	8	9	9	14
44	11	8	9	9	14
45	11	8	10	10	15
46	11	9	10	10	15
47	11	9	10	11	16
48	12	9	11	11	16
49	12	9	11	11	16
50	12	10	11	12	17
51	12	10	12	12	17
52	12	10	12	13	18
53	13	10	13	13	18
54	13	11	13	14	19
55	13	11	14	14	19
56	13	11	14	15	20
57	13	11	15	15	20
58	14	12	15	16	21
59	14	12	16	16	21
≥60	14	12	16	17	22

Source: [29 CFR 1910.95].

leaks to safely perform their critical job tasks during fire suppression and fire rescue.

These critical job tasks need to be safely performed under conditions of extreme background noise and SCBA noise as typically found at the incident scene. The inability to hear sounds of low intensity or to distinguish voice from background noise can lead to failure to respond to imminently hazardous situations and thus lead to life-threatening sudden incapacitation to the member or others depending on the member.

Hearing aid use or cochlear implants are not considered a reasonable accommodation for the following reasons:

(1) U.S. FDA regulations (21 CFR 801.420) require that all hearing aids be labeled with a statement that hearing aids or cochlear implants do *not* restore normal hearing.

(2) Hearing aids are adjusted to restore one-third to one-fourth the measured loss in pure tone frequency range of 250 to 6000 Hz [National Acoustic Labs]. This allows for improved hearing of speech but will not restore ability to hear or discriminate acoustic cues (such as collapsing wall/timber, gas leaks, traffic sounds) or radio broadcasts that are essential safety requirements at a fire or rescue scene.
(3) Hearing aids seriously compromise the ability to localize acoustic cues so that the source of impending danger is confused and safety is imperiled.
(4) Hearing aids are not calibrated to function in areas of high background noise (fire scene, rescue scene, traffic) or during radio transmissions.
(5) Hearing aids are not reliable after submersion or heavy exposure to water.
(6) If there is a threshold shift the AHJ must be notified. AHJs are responsible for initiating evaluation of personal protective equipment (PPE) and engineering controls.
(7) If there is a threshold shift, the member should be advised in writing and referral to an audiologist and/or an otolaryngologist should be made.
(8) If the threshold shift is determined to be permanent, then this audiogram becomes the "revised baseline."

A.9.12.5.1 Intact gait and balance are required to safely perform critical tasks such as climbing stairs, carrying heavy items (tools, equipment, victims, stretchers), climbing ladders, and walking on narrow/elevated/inclined areas (roofs). A fire fighter's balance can be further stressed by the need to safely perform these critical job tasks wearing personal protective clothing and SCBA.

Any symptomatic balance disturbance, vertigo, change of gait and coordination, or history of these that has not resolved completely should be fully investigated. Examples include but are not limited to Ménière's syndrome, severe labyrinthitis, and cerebellar syndromes. Current use of medications needs careful evaluation to be certain that the condition is completely controlled and that the side effects of the medication do not impose additional unacceptable risks for the successful and safe performance of critical job tasks.

A.9.12.6.1 The face, nasal, oropharyngeal, and dental structures should be of sufficient structure and function to allow the proper use and fitting of required respiratory protection (N-95, P-100, SCBA) and other protective clothing and gear. These structures should allow sufficient function for proper nutrition, balance, communication, and respiration. Aphonia, severe dysphonia, or a speech pattern that prevents oral communication during fire or emergency operations should resolve or be corrected.

Anosmia (loss of smell) can interfere with the ability to safely perform critical tasks on the fire ground. Evaluation of anosmia is difficult, as objective testing is not available in most medical settings.

Recurrent sinusitis (severe, requiring repeated hospitalizations or repeat surgery) can interfere with the successful and safe performance of critical tasks due to inability to effectively wear SCBA and inability to safely perform other critical tasks during emergency operations due to limitations of pain, endurance, or respiration.

Severe and recurrent epistaxis can prevent successful and safe performance of critical tasks due to inability to wear SCBA on the fire ground.

Orthodontic and certain other maxillofacial appliances or prostheses can preclude safe and effective use of protective equipment and compromise nutritional or hydration status or ability to communicate.

Pharyngeal or laryngeal stenosis, mass, or accessory tissues can interfere with speech, communication, or respiration, which will not permit the successful and safe performance of critical tasks on the fire ground and during emergency operations, especially when wearing SCBA and personal protective clothing.

A.9.12.6.2 Untreated obstructive sleep apnea is associated with fatigue, cognitive defects, pulmonary hypertension, hypertrophic heart disease, arrhythmias, and early onset dementia. These issues can reduce the ability to perform all essential job tasks. Risk factors for developing obstructive sleep apnea include male gender, increased body mass index (BMI), short/wide neck, and/or narrow throat. Screening questionnaires, such as the Berlin Questionnaire (assessing snoring, fatigue, obesity and hypertension) can be used to determine those who require formal sleep testing. In those with obstructive sleep apnea, additional testing is required to determine the level of positive pressure (CPAP or BIPAP) required to overcome the obstruction. Compliance with treatment can be assessed using home monitoring devices attached to the CPAP or BIPAP machine. Target organ damage can be screened for by cardiac echo for evidence of pulmonary hypertension or right ventricular hypertrophy.

A.9.13 Fire fighters with active, ongoing, or recurrent neurologic disorders can have difficulty following orders, communicating information, and working in a coordinated manner with workers, victims, and involved civilians (essential job tasks 11, 12, and 13). Fire fighters with neurologic disturbances can also have difficulty with fatigue, somnolence, cognitive function, motor strength, sensation, coordination, gait, and equilibrium, all required to safely perform essential job tasks. The fire fighter often is exposed to considerable stress (temperature, physical exertion, and psychological) during emergency operations. Stress conditions can exacerbate or highlight neurologic deficiencies when the fire fighter is performing essential job tasks rapidly during an emergency operation where there is little room for error and where such errors can have life-threatening consequences for the fire fighter, colleagues, or victims. Removing oneself from the scene, even temporarily, can significantly impact on the success of the operation. Medications used to treat neurologic conditions can frequently produce or worsen somnolence, discoordination, and/or disequilibrium.

A.9.13.4.1 Cerebral vascular insufficiency includes the spectrum of syndromes from transient ischemic attack (TIA) to stroke, and its cause should be investigated. If due to arteriovenous malformation, cerebral aneurysm, or bleeding, then see specific recommendations. If due to hypertension, then this is evidence of end organ disease. Stroke does not permit safe performance of essential job tasks (1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13) since the physiological stress associated with strenuous physical exertion can increase the likelihood for new strokes leading to life-threatening sudden incapacitation. Cerebral vascular insufficiency can affect control of respiration, cognitive abilities, communication, motor strength, sensation, coordination, and equilibrium. If stroke is due to embolic disease, then risk factors (hypercoaguable state, collagen vascular disease, carotid vascular disease, patent foramen ovale, cardiac disease) need to be evaluated. Ability to safely perform essential job tasks is based on an evaluation of current neurologic status, treatment, and any contributory underlying

conditions. (For example, Warfarin and other anticoagulant treatment regimens do not allow the safe performance of essential job task 8.)

A.9.13.5.1 Myasthenia gravis could compromise a member's ability to safely perform essential job tasks 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13. In considering performance of essential job tasks, the impact of the operational environment (heat, stress, activity, duration, variable night shifts, etc.) on exacerbations should be considered and specifically addressed by a knowledgeable neurological specialist and the fire department physician. The neurologist must indicate that the member's cognitive function and neurological exam are normal and the member is off all drug treatment. The member cannot safely perform essential job tasks if there is evidence of respiratory muscle weakness or prior episode of respiratory muscle weakness in the last 3 years. The member cannot safely perform essential job tasks if on drug treatment for myasthenia including corticosteroids, cytotoxic drugs (e.g., Imuran), and/or plasmapheresis; these treatments indicate that disease is still active and likelihood for exacerbation and life-threatening sudden incapacitation exists during emergency operations.

A.9.13.6.1 Epilepsy is defined as the presence of "unprovoked, recurrent seizures — paroxysmal disorders of the central nervous system characterized by an abnormal cerebral neuronal discharge with or without loss of consciousness." Generalized, complex, partial, simple epilepsy, or recurrent seizures, even those that do not impair consciousness, prevent safe performance of essential job tasks 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13 because of the uncertainty regarding how much of the brain could be involved and the risk of propagation to other regions of the brain, particularly in the highly epileptogenic environment of the fire ground.

Treatment of patients with epilepsy is only variably successful, with roughly 40 percent of patients attaining remission on anticonvulsant therapy. Remission is defined as 5 years without recurrence of seizure activity. Further complicating the fitness-for-duty issue is the fact that only 50 percent of patients who achieve remission do so without toxic side effects of the anticonvulsant drug.

As much as 10 percent of the population will experience at least one seizure in a lifetime, whereas less than 1 percent of the population qualifies for a diagnosis of epilepsy.

Many conditions producing seizures in the pediatric age group are known to remit prior to adulthood, and many adults sustain a reactive seizure that can be attributed to a reversible, underlying precipitant. These circumstances do not necessarily represent an ongoing risk of sudden, unpredictable incapacitation of a member. After a provoked seizure, with the precipitant identified and alleviated, the member can be cleared for duty if anticonvulsants are not prescribed and the conditions described in 9.13.6.1(2) through 9.13.6.1(5) are met.

A.9.13.7.1 The cause of cerebral bleed needs to be determined. If due to hypertensive bleed, then this is evidence for target organ disease. Hypertension with target organ disease does not permit safe performance of essential job tasks 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13, as the hypertension and stress associated with strenuous physical exertion can increase the likelihood for new bleeds and strokes leading to life-threatening sudden incapacitation due to central nervous system instability affecting control of respiration, cognitive abilities, communication, motor skills, sensory abilities, coordination, and equilibrium.

Arteriovenous malformation or cerebral aneurysm does not allow for the safe performance of essential job tasks 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13 since hypertension and stress associated with strenuous physical exertion can increase the likelihood for acute rupture and stroke leading to life-threatening sudden incapacitation. Members can safely return to duty after evaluation by a neurosurgeon if resection was successful, exam and imaging studies are normal (except for surgical site), and EEG shows no epileptic activity off all anticonvulsant medications.

A.9.13.8.1 Essential job tasks 1, 4, 6, 7, 8, 9, 10, 11, 12, and 13 might not be performed safely unless after evaluation by a specialist it is concluded that exam is normal and imaging studies are normal. If trauma produced seizures, then see recommendations for seizures in A.9.13.6.1.

A.9.14 Fire fighters perform individually and as a team. Fire fighters with active, ongoing or recurrent, psychiatric and/or psychological conditions can have difficulty following orders, communicating information, and working in a coordinated manner with workers, victims, and involved civilians. The fire fighter with a personality disorder might not respond appropriately to command structure or adequately control his/her interpersonal behavior. Behavior that undermines command structure, group function, and/or group cohesion is not safe to the member or others performing essential job tasks. Fire fighters are exposed to gruesome tragedy during emergency operations, further exacerbating the stress of the job. Removing oneself from the scene, even temporarily, can significantly impact on the success of an emergency operation. Medications used to treat psychiatric or psychological conditions can produce or worsen somnolence, impair coordination, and predispose to heat stress.

A.9.15 Substance abuse interferes with cognitive functions, energy, command structure, communication, strength, sensation, gait, coordination, and equilibrium, and therefore compromises the member's ability to safely perform essential job tasks 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13. There is increased risk for auto accidents when driving departmental vehicles. Dehydration, arrhythmia, and disequilibrium can be life threatening in a toxic/traumatic/stress environment. Fire fighting requires members to perform independently and in coordination with others. Behavior that undermines command structure, group function, and/or group cohesion during emergency operations is not safe to the member or others at the scene.

A.9.18.2 Medical Information Regarding Issues Related to Pregnancy in Fire Fighters. The following information is intended to help female fire fighters make informed decisions regarding their job activities if they are pregnant or considering pregnancy. The majority of pregnant fire fighters will be able to continue to work throughout pregnancy, with some accommodations. They should discuss with their treating physician any individual conditions that may require limitation of activities during pregnancy.

The following occupational hazards can have adverse effects at any time during pregnancy:

(1) Products of combustion, especially carbon monoxide
(2) Excessive heat
(3) Other toxic chemicals, including prolonged exposure to vehicular exhaust
(4) Trauma (even simple falls)

First trimester. In addition to the above, there are no other activities with an adverse effect. The risk to the fetus created by heat is highest during the first two months of pregnancy.

Second trimester. In addition to the above, the following activities may have adverse effects:

(1) Alternating shift work, prolonged standing, and heavy lifting
(2) Noise exposure

Third trimester. In addition to the above, there are no other activities with an adverse effect. Activities that involve or require aerobic fitness, speed, agility, and balance can be adversely affected by body changes during pregnancy.

Personal protective equipment. PPE is not designed to protect the fetus. The PPE fitted pre-pregnancy might not offer the same level of protection during pregnancy and might need to be refitted.

Post-delivery. Return-to-work decisions should be based on an individualized evaluation of the member's current status, the requirements of her work assignment, and the type of delivery and its complications.

Lactation. Exposure to toxic substances might result in the substances being present in breast milk.

Annex B Guide for Fire Department Administrators

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

B.1 Legal Considerations in Applying the Standard. The consideration of an application or continued employment of a member based on medical or physical performance evaluations involves a determination that is not without legal implications. To this end, prior to making an adverse employment decision based on the current standard, the authority with jurisdiction might wish to consult with legal counsel.

B.1.1 Legal Protections for Individuals with Handicaps or Disabilities. The Rehabilitation Act of 1973, as amended, 29 U.S.C. § 791 et seq., and implementing regulations prohibit discrimination against those with handicaps or disabilities under any program receiving financial assistance from the federal government. The Americans with Disabilities Act (ADA) of 1990, 42 U.S.C. § 12101 et seq., also prohibits employment discrimination by certain private employers against individuals with disabilities. In addition, many states have enacted legislation prohibiting discrimination against those with handicaps or disabilities. Generally speaking, these laws prevent the exclusion, denial of benefits, refusal to hire or promote, or other discriminatory conduct against an individual based on a handicap or disability, where the individual involved can, with or without reasonable accommodation, perform the essential functions of the job without creating undue hardship on the employer or program involved.

Beginning in 1999, the United States Supreme Court has issued a series of decisions limiting the scope of the ADA. As a result, persons with certain kinds of impairments that are mitigated by corrective measures such as medication for high blood pressure or eyeglasses for myopia are not "disabled" under the ADA. See *Sutton v. United Airlines, Inc.*, 527 U.S. 471 (1999); *Murphy v. United Parcel Service, Inc.*, 118 S. Ct. 2133 (1999); and *Albertsons, Inc. v. Kirkingburg*, 527 U.S. 555 (1999). More recently the Supreme Court held that an impairment is not a disability covered by the ADA unless it severely restricts a person from doing activities that are of central importance to most people's daily lives. See *Toyota Motor Mfgr., Kentucky, Inc. v. Williams*, 534 U.S. 184 (2002). These cases significantly limit the persons who can claim the protections of the federal ADA, but do not, by any means, eliminate the ADA as an important consideration in fire service–related employment decisions. Moreover, it should be borne in mind that separate disability protections exist under laws of many states, and some of these laws have been interpreted to afford greater protections than that afforded by the ADA. See, for example, *Dahill v. Boston Department of Police*, 434 Mass. 233 (2001), where the Supreme Judicial Court of Massachusetts ruled that a corrective device to alleviate a disability is not relevant in determining whether someone is disabled under the state's disability law.

The disability discrimination laws, therefore, continue to be an important part of the legal framework that governs employment-related decisions. Although this standard has been developed with this in mind, these laws can, depending on the jurisdiction and the circumstances, affect the degree to which the authority having jurisdiction can implement the standard in an individual case. Users of this standard should be aware that, while courts, in assessing disability discrimination claims, are likely to give considerable weight to the provisions of a nationally recognized standard such as NFPA 1582 [see, for example, *Miller v. Sioux Gateway Fire Department*, 497 N.W.2d 838 (1993)], reliance on the standard alone might not be sufficient to withstand a challenge to an adverse employment decision.

B.1.2 Legal Protections for Individuals Who Are Members of Protected Classes (Race, Sex, Color, Religion, or National Origin). Title VII of the Civil Rights Act of 1964, as amended, 42 U.S.C. § 2000e, and implementing regulations by the Equal Employment Opportunity Commission (EEOC) prohibit discrimination in employment on the basis of race, sex, color, religion, or national origin (i.e., protected classes). Under Title VII, an "employer" is defined, generally, to mean a person with "15 or more employees for each working day in each of 20 or more calendar weeks in the current or preceding calendar year" (42 U.S.C. § 2000e). Several federal jurisdictions have held that unpaid volunteers are not considered to be "employees" under Title VII.

Additionally, many states, cities, and localities have adopted similar legislation. Generally, physical performance or other requirements that result in "adverse impact" on members of a protected class (e.g., on the basis of gender) are required to be validated through a study in accordance with EEOC guidelines, if such requirements are to be relied on in making employment decisions. Under EEOC guidelines, a study validating employment standards in one jurisdiction can be transportable to another jurisdiction (and therefore used in lieu of conducting a separate study). However, specific preconditions must be met in this regard, and the authority having jurisdiction should seek the advice of counsel before relying on a transported validation study.

B.1.2.1 Pregnancy and Reproduction. Federal regulations, as well as many court decisions, including the U.S. Supreme Court's decision in *International Union, et al. v. Johnson Controls, Inc.* [499 U.S. 187, 111 S. Ct. 1196 (1991)], have interpreted the requirements of Title VII with respect to pregnancy and reproduction. The AHJ should seek the advice of counsel in resolving specific questions concerning these requirements as well as other requirements that can be imposed by state or local laws.

B.2 Determining Essential Job Tasks. The medical requirements in this edition of the standard were revised based on the essential job tasks contained in Chapter 5 and Chapter 9. It is recognized that some fire-fighting functions and tasks can vary from location to location due to differences in department size, functional and organizational differences, geography, level of urbanization, equipment utilized, and other factors. Therefore, it is the responsibility of each individual fire department to document, through job analysis, the essential job functions that are performed in the local jurisdiction.

There are a wide variety of job analytic techniques available to document the essential functions of the job of a member. However, at a minimum, any method utilized should be current, in writing, and meet the provisions of the Department of Labor regulations [29 CFR 1630.2(n)(3)]. Job descriptions should focus on critical and important work behaviors and specific tasks and functions. The frequency and/or duration of task performance and the consequences of failure to safely perform the task should be specified. The working conditions and environmental hazards in which the work is performed should be described.

The job description should be made available to the fire department physician for use during the pre-placement medical examination for the individual determination of the medical suitability of applicants for membership.

B.3 Choosing a Fire Department Physician. Several factors should be considered in choosing a fire department physician. There are relatively few physicians with formal residency training and certification in occupational medicine. The fire department physician should be qualified to provide professional expertise in the areas of occupational safety and health as these areas relate to emergency services. For the purpose of conducting medical evaluations, the fire department physician should understand the physiological and psychological demands placed on members as well as the environmental conditions under which members have to perform.

Knowledge of occupational medicine and experience with occupational health programs are essential for physicians not formally trained in occupational medicine.

The physician must be committed to meeting the requirements of the program, including appropriate record keeping. The physician's willingness to work with the department to continually improve the program is also important. Finally, the physician's concern and interest in the program and in the individuals in the program are vital.

The following are some of the many options for obtaining physician services:

(1) Physicians can be paid on a service basis or through a contractual arrangement.
(2) For volunteer departments, local physicians might be willing to volunteer their services for the program, with other arrangements for payment of laboratory testing, x-rays, and so forth.
(3) Some departments might utilize a local health care facility for medical care. However, in that case, the department should have one individual physician responsible for the program, record keeping, and so forth.
(4) A military reserve or a National Guard unit can be used.

B.4 Coordinating the Medical Evaluation Program. An individual from within the department should be assigned the responsibility for managing the health and fitness program, including the coordination and scheduling of evaluations and examinations. This person should also act as liaison between the department and the physician to make sure that each has the information necessary for decisions about placement, scheduling appointments, and so forth.

B.5 Confidentiality. Confidentiality of all medical data is critical to the success of the program. Members need to feel assured that the information provided to the physician will not be inappropriately shared. No fire department supervisor or manager should have access to medical records without the express written consent of the member. There are occasions, however, when specific medical information is needed to make a decision about placement, return to work, and so forth, and a fire department manager should have more medical information for decision making. In that situation, written medical consent should be obtained from the member to release the specific information necessary for that decision.

Budgetary constraints can affect the medical program. Therefore, it is important that components of the program be prioritized such that essential elements are not lost. With additional funding, other programs or testing can be added to enhance the program.

Annex C Protocols for Evaluation of Fitness of Members

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

C.1 Annual Fitness Evaluation. The copyrighted material in C.1.1 is extracted from Chapter 4 of NFPA 1583, *Standard on Health-Related Fitness Programs for Fire Department Members*, 2008 edition.

C.1.1 General.

C.1.1.1 All members shall participate in a periodic fitness assessment under supervision of the department health and fitness coordinator (HFC) and shall provide the HFC with data on which to base individual exercise prescription.

C.1.1.2 The fitness assessment shall be conducted at least annually.

C.1.2 Fitness Assessment.

C.1.2.1 All members shall be cleared for participation in the fitness assessment by the fire department physician.

C.1.2.2 If a member has an acute medical problem or a newly acquired chronic medical condition, the fitness assessment shall be postponed until that person has recovered from this condition and presents to the fire department for review.

C.1.3 Pre-Assessment Questionnaire. The HFC shall administer to all members a pre-assessment questionnaire that seeks to identify contraindications for participation in the fitness assessment and department exercise training program.

C.1.4 Fitness Assessment Components. The annual fitness assessments shall consist of the following components:

(1) Aerobic capacity
(2) Body composition
(3) Muscular strength
(4) Muscular endurance
(5) Flexibility

C.1.4.1 Sample Assessment Protocols for the Health-Related Components of Fitness. The following examples of assessment protocols for health-related components of fitness vary in terms of ease of administration, safety, cost, and predictive value:

(1) Aerobic capacity
  (a) 1-mile walk
  (b) 1.5-mile run/walk
  (c) 12-minute run
  (d) Step test (various)
  (e) Stairclimbing machine
  (f) Cycle ergometer (various)
  (g) Treadmill (various)

(2) Percentage of body fat
  (a) Skinfold (various)
  (b) Circumference (various)
  (c) Bioimpedance (BIA)
  (d) Hydrostatic weighing
  (e) Body mass index (optional)
  (f) Waist-to-hip ratio (optional)

(3) Muscular strength
  (a) Handgrip dynometer
  (b) Static bicep curl with dynometer
  (c) Static leg press with dynometer
  (d) Bench press (1 rep maximum or percent of body weight)
  (e) Leg press (1 rep maximum or percent of body weight)

(4) Muscular endurance
  (a) Push-ups
  (b) Modified push-ups
  (c) Pull-ups
  (d) Bent knee sit-ups
  (e) Crunches given time
  (f) Crunches to cadence

(5) Flexibility
  (a) Sit and reach
  (b) Modified sit and reach
  (c) Trunk extension
  (d) Shoulder elevation

C.2 Annual Fitness Evaluation. The copyrighted material in this section is reprinted with permission from the International Association of Fire Fighters (IAFF) *Fire Service Joint Labor-Management Wellness-Fitness Initiative.*

C.2.1 Fitness Evaluation Protocols for Members. The following mandatory fitness protocols shall be used to determine the member's baseline level of fitness and to evaluate progress from year to year. Fitness evaluations shall be under the auspices of the fire department physician. The actual evaluations are permitted to be conducted by the fire department's fitness personnel. All data collected by the evaluator is to be held confidential and maintained in the member's confidential medical file. The evaluator can provide exercise programs to encourage the members to maintain or improve their level of fitness.

There are many protocols currently available to measure the submaximal VO_2 levels of apparently healthy individuals. These protocols differ in evaluation equipment (i.e., treadmill, stepmill, step, and stationary bike), rate of increasing work output, degree of increasing work output, and final result. To increase the consistency of VO_2 measurements, as well as the accuracy of the data collected between members within and between participating fire departments, one of the two following submaximal protocols is to be used to predict maximum aerobic capacity. These are the WFI Treadmill Protocol and the WFI Stepmill Protocol. Both protocols were specifically developed and validated to evaluate the sub-maximal aerobic capacity of members.

After continued evaluation and research by the IAFF/IAFC Wellness-Fitness Initiative's technical experts, it was determined that significant errors were occurring when past protocols were applied to a population that has different characteristics from those for which the evaluation was developed. For this reason, the Bruce and Balke Treadmill Protocols were removed as evaluation protocols and as a means to collect data. Both Bruce and Balke were specifically tailored for less-fit populations to determine cardiovascular pathology and thus proved to be less accurate protocols for the general members population. The YMCA Stationary Bike Test Protocol was also removed since it consistently and grossly underestimated VO_2 for above average body size (i.e., most members). The Canadian Step Test was also removed since it relies on a single-stage exercise that was found to underestimate measurement of member's VO_2. The Gerkin and FDNY protocols were removed because both of these protocols were found to provide values that were somewhat variable and inconsistent with other proven measures of cardiovascular fitness..

A maximal cardiopulmonary evaluation with an electrocardiogram (ECG) shall be permitted to be used to obtain VO_2 measurements. This medical evaluation shall only be conducted in a medical facility with proper monitoring by a physician and available resuscitation equipment.

The muscular endurance evaluations were also modified. In order to improve the accuracy of the evaluation and the data collection, the sit-and-hold evaluation was eliminated. The sit-up and curl-up protocols were changed to the static plank evaluation in order to ensure the safety of the participant and to improve the specificity of the evaluation. The push-up evaluation was modified to now include the option of the alternate grip push-up evaluation, to ensure participant safety and uniformity in data collection. The alternate grip push-up was added for individuals with a history of hand, wrist or shoulder injuries.

The flexibility evaluation was modified to address the difference in limb length and/or differences in proportion between an individual's arm and legs.

The IAFF/IAFC Wellness-Fitness Initiative's technical experts have evaluated all equipment utilized in these fitness protocols. The technical experts found either accuracy, maintenance, or availability problems with some evaluation equipment. Manufacturer's information and product names are included in each protocol. Unless indicated, this equipment must not be substituted with other equipment. All equipment must be maintained and properly calibrated in accordance with the manufacturer's instructions.

Members must be fully recovered from the previous evaluation before proceeding to the next evaluation. The evaluation events can be sequenced to minimize the effects of previous evaluations on subsequent evaluation performance. If evaluations for body composition, aerobic capacity, muscular strength, muscle endurance, and flexibility are to be evaluated in one evaluation battery, the following sequence should be used after completing mandatory pre-evaluation procedures:

(1) Body composition
(2) Aerobic capacity
(3) Muscular strength/power
(4) Muscle endurance
(5) Flexibility

The following is a mandatory pre-evaluation procedure. It shall be conducted for all members prior to conducting the fitness evaluations:

(1) Review and confirm individual's current medical status. It is required that all members are medically cleared through this standard's medical evaluation within 12 (±3) months prior to any fitness evaluation.
(2) Notify members in advance of the scheduled time and place of physical fitness evaluations. The individual should understand the protocol and what is expected before, during, and after the evaluation, including start and stop procedures. Individual will be required to wear comfortable clothes and either sneakers or athletic shoes. All members must refrain from eating, drinking, smoking, and any physical activity prior to the evaluation to ensure accurate heart rate and blood pressure measurements.
(3) Obtain a resting heart rate and blood pressure prior to aerobic capacity evaluation. If resting heart rate exceeds 110 beats per minute and/or resting blood pressure exceeds 160/100 mm Hg, ask the individual to relax in a quiet place for 5 minutes and re-test. If the heart rate and/or blood pressure remain at these levels, cancel the fitness evaluation and refer the individual to the fire department physician. If the retest indicates a reduction in heart rate and blood pressure, the evaluation can be given. The aerobic capacity protocols also require that age and weight in kilograms be obtained prior to the evaluation.
(4) Review health status with the individual being evaluated. Contraindications for evaluations shall be reviewed, addressing any changes in the individual's health status since their last medical evaluation that would warrant deferring the evaluation, including:
  (a) Chest pain during or absence of physical activity
  (b) Loss of consciousness
  (c) Loss of balance due to dizziness (ataxia)
  (d) Recent injury resulting in bone, joint, or muscle problem
  (e) Current prescribed drug that inhibits physical activity
  (f) Chronic infectious disease (e.g., hepatitis)
  (g) Pregnancy
  (h) Any recent disorders that can be exacerbated by exercise
  (i) Any other reason why the individual believes that he or she should not be physically evaluated

C.2.1.1 Aerobic Capacity. Treadmill. Submaximal treadmill evaluations shall use the WFI Treadmill Protocol. The treadmill should be a commercial treadmill capable of obtaining a 15-percent grade and 10 mph. A Heart Rate Monitor or equivalent shall be used for heart rate measurements and a stopwatch used for timing..

Stepmill. Submaximal stepmill evaluations shall use the WFI Stepmill Protocol. The stepmill shall be a Stairmaster Stepmill SM-916 or 7000 PT. A Heart Rate Monitor shall be used for heart rate measurements and a stopwatch used for timing.

Treadmill. Maximal treadmill evaluations shall use a continuous, multigrade medical cardiovascular protocol utilizing an electrocardiogram (ECG) for cardiac measurements. This evaluation must be under the direct supervision of a physician. The treadmill shall be a commercial treadmill capable of obtaining a 25-percent grade.

All aerobic capacity evaluation results must be recorded in milliliters (ml) of oxygen per kilogram (kg) of body weight per minute (VO_2max).

(1) Choose the aerobic capacity protocol and worksheet.
(2) Inform the fire fighter of all evaluation components.
(3) Ensure that the individual is in proper clothing and footwear, is comfortable, and understands all facets of the evaluation.
(4) Review all indicators for stopping the evaluation with the individual
(5) Place and secure heart rate monitor transmitter around individual's chest, in accordance with the manufacturer's instructions; evaluator shall hold or wear the heart rate monitor wrist receiver
(6) Measure the fire fighter's resting heart rate and resting blood pressure and record on the protocol worksheet
(7) Obtain and record weight and age for both protocols

Determine the participants Body Mass Index (BMI). Refer to Table C.2.1.1(a).

$$BMI = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$$

US:

$$BMI = 703 \times \frac{\text{Weight (lb)}}{\text{Height (in.)}^2}$$

(8) Determine 85 percent of the fire fighter's estimated maximum heart rate, which will be the target exercise heart rate *[see Table C.2.1.1(b)]*, using the following equation:

Target exercise heart rate = [208 – (0.7 × age)] × 0.85

Example: The target exercise heart rate of a 40-year-old individual is:

Target exercise heart rate = [208 – (0.7 × 40)] × 0.85 = 153

If instead, maximum heart rate (MHR) had been previously measured on this individual, then 85% predicted MHR on future occasions would be more accurately calculated as:

Target exercise heart rate = .85 (MHR – [age when MHR determined – current age])

(9) Record the target exercise heart rate on the protocol worksheet

C.2.1.2 Body Composition

Conduct pre-evaluation procedures. Obtain the participant's age. Note the gender-specific skinfold sites. Men are measured at the triceps, subscapular and pectoral sites; women are measured at the triceps, abdominal and suprailiac sites. All measurements should be made on the right side of the body, with the subject standing upright. Use the tape measure to mark the site to be measured with a water-soluble marker. Place calipers directly on the skin surface, 1 cm away from the thumb and finger; perpendicular to the skinfold; and halfway between the crest and base of the fold. Maintain pinch while reading the caliper. Wait 1–2 seconds (not longer) before reading caliper. Rotate through all three sites or allow time for skin to regain normal texture and thickness. Take two measurements at each site. If the values are less than 1 mm of each other then calculate the average of the two measurements. If the difference between the two measurements is greater than or equal to 1 mm, then a third measurement must be taken. If the differences between the three skinfold measurements are equal, then calculate the average of all three measurements [e.g., (1) 6 mm, (2) 9 mm, (3) 12 mm the average of all three measurements is 9 mm]. If the three measurements are not equal distance apart then calculate the average of the two closest measurements [e.g., (1) 7 mm, (2) 4 mm, (3) 5 mm the average is calculated for measurement #2

Table C.2.1.1(a) Body Mass Index (BMI)

BMI	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Height	Body Weight (pounds)																														
58″ (4′10″)	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239
59″ (4′11″)	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247
60″ (5′)	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255
61″ (5′1″)	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264
62″ (5′2″)	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273
63″ (5′3″)	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282
64″ (5′4″)	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291
65″ (5′5″)	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300
66″ (5′6″)	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309
67″ (5′7″)	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319
68″ (5′8″)	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328
69″ (5′9″)	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338
70″ (5′10″)	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348
71″ (5′11″)	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358
72″ (6′)	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368
73″ (6′1″)	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378
74″ (6′2″)	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	326	334	342	350	358	365	373	381	389
75″ (6′3″)	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399
76″ (6′4″)	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410
BMI	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

Table C.2.1.1(b) Target Heart Rate (THR) for Respective Age

Age (yrs)	THR (BPM)	Age (yrs)	THR (BPM)	Age (yrs)	THR (BPM)	Age (yrs)	THR (BPM)
18	166	29	160	40	153	51	146
19	165	30	159	42	152	52	146
20	165	31	158	42	152	53	145
21	164	32	158	43	151	54	145
22	164	33	157	44	151	55	144
23	163	34	157	45	150	56	143
24	163	35	156	46	149	57	143
25	162	36	155	47	149	58	142
26	161	37	155	48	148	59	142
27	161	38	154	49	148	60	141
28	160	39	154	50	147	61	140

THR Formula: $[208 - (0.7 \times 40)] \times 85$

Note: THR is used as endpoint in submaximal aerobic capacity protocols.

and #3 only. The average of the two measurements is 4.5 mm]. Once the skinfolds are collected for all three sites, calculate the sum of the average skinfold measurement for each site. (Note: Sites are specific to gender.) To determine body fat percentage, cross-reference the sum of skin folds with the subject's age on the appropriate chart provided in this section [males, Table C.2.1.2(a); females, Table C.2.1.2(b)].

C.2.1.2.1 Male Skinfold Sites.

Triceps — located at the midpoint between the acromioclavicular (AC) joint and the olecranon process (center of the elbow) on the posterior aspect of the upper arm. *[See Figure C.2.1.2.1(a) and Figure C.2.1.2.1(b).]*

Subscapular — located on the same diagonal line as the inferior border of the scapula, 2 cm beyond the inferior angle. *[See Figure C.2.1.2.1(c) and Figure C.2.1.2.1(d).]*

Pectoral — Located on a diagonal line, midway between the axillary fold and the right nipple. *[See Figure C.2.1.2.1(e) and Figure C.2.1.2.1(f).]*

C.2.1.2.2 Female Skinfold Sites.

Triceps — located at the midpoint between the acromioclavicular (AC) joint and the olecranon process (center of the elbow) on the posterior aspect of the upper arm. *[See Figure C.2.1.2.2(a) and Figure C.2.1.2.2(b).]*

Abdominal — located at the right of the umbilicus, on a vertical fold, 2 cm from the right lateral border. *[See Figure C.2.1.2.2(c) and Figure C.2.1.2.2(d).]*

Suprailiac — located on a diagonal line, 1–2 cm anterior to the crest of the pelvis (ASIS). Grasp a diagonal skinfold just above and slightly forward of the crest of the ilium. *[See Figure C.2.1.2.2(e) and Figure C.2.1.2.2(f).]*

C.2.1.3 Submaximal Graded Treadmill Evaluation (WFI Treadmill Protocol).

(1) Conduct pre-evaluation procedures.
(2) The individual being evaluated is instructed to straddle the treadmill belt until it begins to move. At approximately 1 mph, the individual is instructed to step onto the belt and

Table C.2.1.2(a) Percentage of Body Fat Estimate for Men Based on the Sum of Triceps, Subscapular, and Pectoral Skinfolds

Skinfolds	Age up to Last Complete Year								
Sum (mm)	Under 22	23–27	28–32	33–37	38–42	43–47	48–52	53–57	Over 57
8–10	1.5	2	2.5	3.1	3.6	4.1	4.6	5.1	5.6
11–13	3	3.5	4	4.5	5.1	5.6	6.1	6.6	7.1
14–16	4.5	5	5.5	6	6.5	7	7.6	8.1	8.6
17–19	5.9	6.4	6.9	7.4	8	8.5	9	9.5	10
20–22	7.3	7.8	8.3	8.8	9.4	9.9	10.4	10.9	11.4
23–25	8.6	9.2	9.7	10.2	10.7	11.2	11.8	12.3	12.8
26–28	10	10.5	11	11.5	12.1	12.6	13.1	13.6	14.2
29–31	11.2	11.8	12.3	12.8	13.4	13.9	14.4	14.9	15.5
32–34	12.5	13	13.5	14.1	14.6	15.1	15.7	16.2	16.7
35–37	13.7	14.2	14.8	15.3	15.8	16.4	16.9	17.4	18
38–40	14.9	15.4	15.9	16.5	17	17.6	18.1	18.6	19.2
41–43	16	16.6	17.1	17.6	18.2	18.7	19.3	19.8	20.3
44–46	17.1	17.7	18.2	18.7	19.3	19.8	20.4	20.9	21.5
47–49	18.2	18.7	19.3	19.8	20.4	20.9	21.4	22	22.5
50–52	19.2	19.7	20.3	20.8	21.4	21.9	22.5	23	23.6
53–55	20.2	20.7	21.3	21.8	22.4	22.9	23.5	24	24.6
56–58	21.1	21.7	22.2	22.8	23.3	23.9	24.4	25	25.5
59–61	22	22.6	23.1	23.7	24.2	24.8	25.3	25.9	26.5
62–64	22.9	23.4	24	24.5	25.1	25.7	26.2	26.8	27.3
64–67	23.7	24.3	24.8	25.4	25.9	26.5	27.1	27.6	28.2
68–70	24.5	25	25.6	26.2	26.7	27.3	27.8	28.4	29
71–73	25.2	25.8	26.3	26.9	27.5	28	28.6	29.1	29.7
74–76	25.9	26.5	27	27.6	28.2	28.7	29.3	29.9	30.4
77–79	26.6	27.1	27.7	28.2	28.8	29.4	29.9	30.5	31.1
80–82	27.2	27.7	28.3	28.9	29.4	30	30.6	31.1	31.7
83–85	27.7	28.3	28.8	29.4	30	30.5	31.1	31.7	32.3
86–88	28.2	28.8	29.4	29.9	30.5	31.1	31.6	32.2	32.8
89–91	28.7	29.3	29.8	30.4	31	31.5	32.1	32.7	33.3
92–94	29.1	29.7	30.3	30.8	31.4	32	32.6	33.1	33.4
95–97	29.5	30.1	30.6	31.2	31.8	32.4	32.9	33.5	34.1
98–100	29.8	30.4	31	31.6	32.1	32.7	33.3	33.9	34.4
101–103	30.1	30.7	31.3	31.8	32.4	33	33.6	34.1	34.7
104–106	30.4	30.9	31.5	32.1	32.7	33.2	33.8	34.4	35
107–109	30.6	31.1	31.7	32.3	32.9	33.4	34	34.6	35.2
110–112	30.7	31.3	31.9	32.4	33	33.6	34.2	34.7	35.3
113–115	30.8	31.4	32	32.5	33.1	33.7	34.3	34.9	35.4
116–118	30.9	31.5	32	32.6	33.2	33.8	34.3	34.9	35.5

the belt speed is increased to 3 mph at 0 percent grade. The individual warms up at 3 mph at 0 percent grade for 3 minutes. During the warm up, the individual is informed that the evaluation is submaximal and will terminate once their monitored heart rate exceeds the target exercise heart rate for 15 seconds. The individual is informed that the target exercise heart rate is 85 percent of their predicted maximal heart rate. The individual is advised that the evaluation is a series of 1-minute exercise stages, alternating between percent grade and speed (i.e., first minute percent grade is increased, second minute speed is increased, etc.). Inform the individual that if at any time during the evaluation they experience chest pain, light-headedness, ataxia, confusion, nausea, or clamminess, they should ask the evaluator to terminate the evaluation.

Start the stopwatch when the treadmill reaches 3 mph at 0% grade. Continue with this speed and grade for 3 minutes (steady state). After completing the 3-minute steady state interval, inform the participant that the speed will increase to 4.5 mph. Advise the participant that the assessment is a series of 1- minute intervals, alternating between speed and percent grade. All subsequent speed increases occur at 0.5mph. At 4:01 minutes, increase the grade from 0% to 2%. At this time, inform the participant that all subsequent grade increases occur at 2% intervals. The assessment will continue until the participant's heart rate exceeds the THR rate for 15 seconds, or the subject exhibits the medical criteria for early termination. Once the heart rate exceeds the Target Heart Rate (THR), note the time and continue the assessment for an additional 15 seconds. Do not make any changes to the assessment speed or grade during this time. If the participant's heart rate remains above the THR for the full 15 seconds, then stop the assessment and proceed to the cool-down phase. Record the total time, including the 3-minute warm-up, at which point the participant exceeds the THR. If the participant's heart rate exceeds the target, but then drops back to the THR or below within 15 seconds, then the assessment should continue. The assessment is not complete until the participant's heart rate exceeds the THR for 15 seconds. If this does not occur within 18 minutes, then terminate the assessment and record the time. Once the assessment is completed, the time is recorded. The participant should perform a cool-down for a minimum of 3 minutes at 3 mph, 0% grade. Continue to monitor the

Table C.2.1.2(b) Percentage of Body Fat Estimates for Women Based on the Sum of Triceps, Abdominal, and Suprailiac Skinfolds

Skinfolds	Age up to Last Complete Year								
Sum (mm)	18–22	23–27	28–32	33–37	38–42	43–47	48–52	53–57	Over 57
8–12	8.8	9	9.2	9.4	9.5	9.7	9.9	10.1	10.3
13–37	10.8	10.9	11	11.3	11.5	11.7	11.8	12	12.2
18–22	12.6	12.8	13	13.2	13.4	13.5	13.7	13.9	14.1
23–27	14.5	14.6	14.8	15	15.2	15.4	15.6	15.7	15.9
28–32	16.2	16.4	16.6	16.8	17	17.1	17.3	17.5	17.7
33–37	17.9	18.1	18.3	18.5	18.7	18.9	19	19.2	19.4
38–42	19.6	19.8	20	20.2	20.3	20.5	20.7	20.9	21.1
43–47	21.2	21.4	21.6	21.8	21.9	22.1	22.3	22.5	22.7
48–52	22.8	22.9	23.1	23.3	23.5	23.7	23.8	24	24.2
53–57	24.2	24.4	24.6	24.8	25	25.2	25.3	25.5	25.7
58–62	25.7	25.9	26	26.2	26.4	26.6	26.8	27	27.1
63–67	27.1	27.2	27.4	27.6	27.8	28	28.2	28.3	28.5
68–72	28.4	28.6	28.7	28.9	29.1	29.3	29.5	29.7	29.8
73–77	29.6	29.8	30	30.2	30.4	30.6	30.7	30.9	31.1
78–82	30.9	31	31.2	31.4	31.6	31.8	31.9	32.1	32.3
83–87	32	32.2	32.4	32.6	32.7	32.9	33.1	33.3	33.5
88–92	33.1	33.3	33.5	33.7	33.8	34	34.2	34.4	34.6
93–97	34.1	34.3	34.5	34.7	34.9	35.1	35.2	35.4	35.6
98–102	35.1	35.3	35.5	35.7	35.9	36	36.2	36.4	36.6
103–107	36.1	36.2	36.4	36.6	36.8	37	37.2	37.3	37.5
108–112	36.9	37.1	37.3	37.5	37.7	37.9	38	38.2	38.4
113–117	37.8	37.9	38.1	38.3	39.2	39.4	39.6	39.8	39.2
118–122	38.5	38.7	38.9	39.1	39.4	39.6	39.8	40	40
123–127	39.2	39.4	39.6	39.8	40	40.1	40.3	40.5	40.7
128–132	39.9	40.1	40.2	40.4	40.6	40.8	41	41.2	41.3
133–137	40.5	40.7	40.8	41	41.2	41.4	41.6	41.7	41.9
138–142	41	41.2	41.4	41.6	41.7	41.9	42.1	42.3	42.5
143–147	41.5	41.7	41.9	42	42.2	42.4	42.6	42.8	43
148–152	41.9	42.1	42.3	42.8	42.6	42.8	43	43.2	43.4
153–157	43.3	42.5	42.6	42.8	43	43.2	43.4	43.6	43.7
158–162	42.6	42.8	43	43.1	43.3	43.5	43.7	43.9	44.1
163–167	42.9	43	43.2	43.4	43.6	43.8	44	44.1	44.3
168–172	43.1	43.2	43.4	43.6	43.8	44	44.2	44.3	44.5
173–177	43.2	43.4	43.6	43.8	43.9	44.1	44.3	44.5	44.7
178–182	43.3	43.5	43.7	43.8	44	44.2	44.4	44.6	44.8

heart rate during the cool-down. Record the recovery heart rate at 1minute of cool-down.

Record the reason for terminating the assessment and the initial time the THR was exceeded (if applicable). Record time in minutes and convert second(s) into decimal.

See Treadmill Formula and Table C.2.1.3 below. Use the test time (TT) the participant completed the assessment (i.e. exceeded the THR) along with the treadmill conversion formula [VO_2 max = 56.981 + (1.242 × TT) − (0.805 × BMI] to estimate VO_2 max. Record the VO_2 max.

C.2.1.4 Submaximal Stepmill Evaluation (WFI Stepmill Protocol).

(1) Conduct pre-evaluation procedures. Obtain and record individual's age in years and weight in kilograms.

(2) The individual being evaluated is instructed to assume a starting position about two-thirds of the way up the stairs. The individual is instructed to temporarily grasp the handrails to reduce the possibility of losing balance when the stairs begin to move. The individual is also informed that holding or leaning on the handrails is not allowed once the evaluation begins since this will cause false overestimations of aerobic capacity.

(3) The assessment starts at level 4 for 2 minutes, then level 5 for 1 minute (warm-up period). Start the stopwatch once the Stepmill begins. Inform the participant that the evaluation is a series of 1-minute intervals with increasing work loads on each subsequent minute. Once the assessment commences, do not allow the participant to hold or lean on the handrails; this will result in overestimation of aerobic capacity. At the completion of the 3 minute-warm-up, proceed to level 7 for 1 minute. *Note: This is marked by increasing the workload from level 5 to level 7. Once the heart rate exceeds the Target Heart Rate (THR), note the time and continue the assessment for an additional 15 seconds. Do not make any changes to the assessment intensity level during this time. If the participant's heart rate remains above the THR for the full 15 seconds, then the participant has completed the assessment. Stop the assessment and record the time at which the participant exceeded the THR. The total Test Time (TT) begins from the time the participant starts on the Stepmill, to the point at which the participant exceeds their THR. It does not include the final 15 second monitoring period that the heart rate was above the THR. The assessment is complete once the participant's heart rate exceeds the target

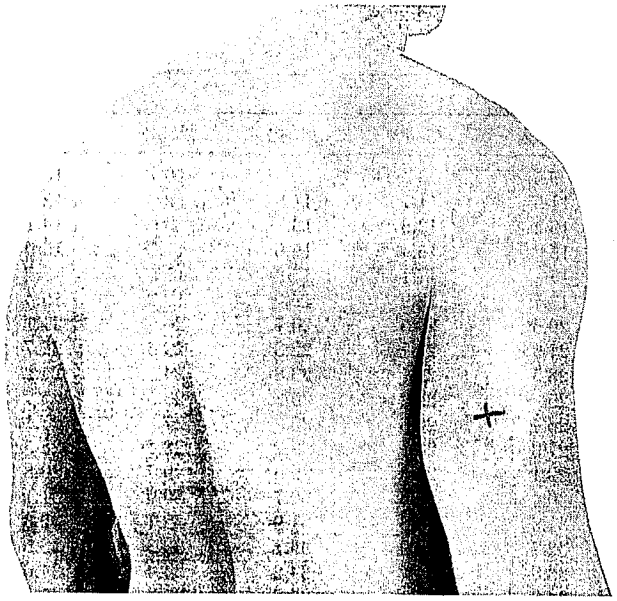

FIGURE C.2.1.2.1(a) [Site of Male Skinfold Measurement — Triceps.]

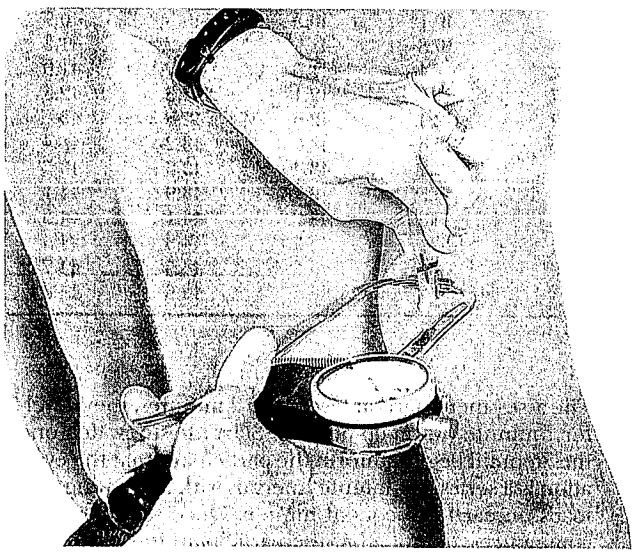

FIGURE C.2.1.2.1(b) [Triceps Measurement — Male.]

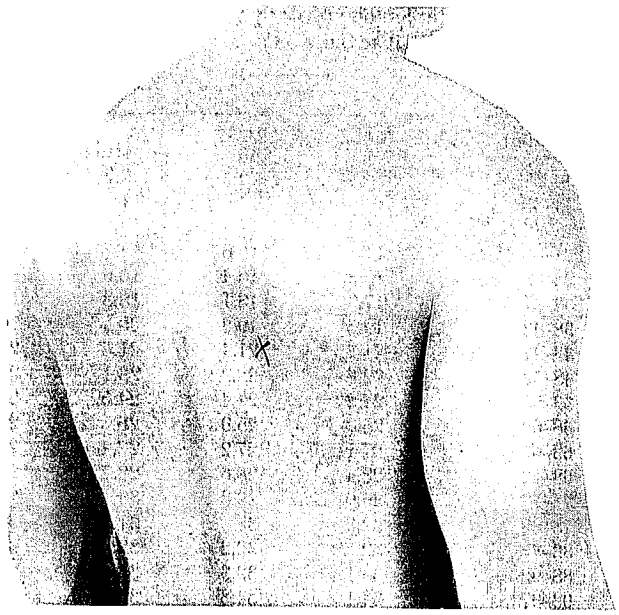

FIGURE C.2.1.2.1(c) [Site of Male Skinfold Measurement — Subscapular.]

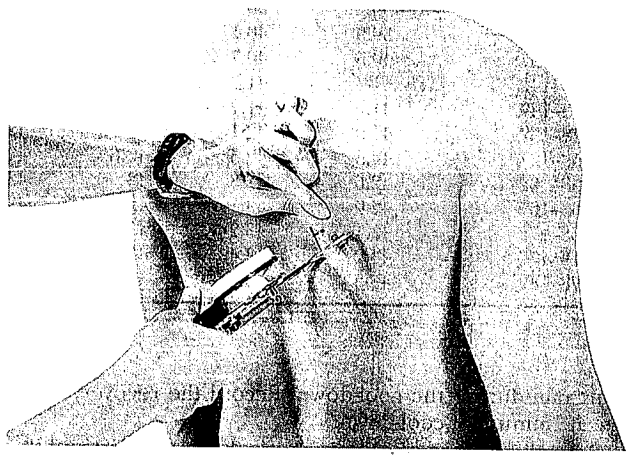

FIGURE C.2.1.2.1(d) [Subscapular Measurement — Male.]

for 15 seconds. If the participant's heart rate exceeds the target, but then drops down to the THR or below within 15 seconds, then the assessment should continue. Once the assessment is completed, the participant will cool down for a minimum of 2 minutes at level 3. Continue to monitor the heart rate during the cool-down. Record the recovery heart rate at one minute of cool-down. The participant may grasp the handrails during the cool-down phase. Upon completion of the cool-down, instruct the participant to grasp the handrails. Stop the stepmill and assist the participant off the apparatus.

TERMINATE THE ASSESSMENT IF ANY OF THE FOLLOWING OCCURS:

(1) The participant's heart rate exceeds THR for 15 seconds.
(2) The THR has not been met after 16 minutes.
(3) The participant asks to terminate the exercise.
(4) The equipment malfunctions.

Medical conditions arise that prohibit completing the assessment. Record the reason for terminating the assessment and the initial time the heart rate had been exceeded (if applicable). Record time in minutes and convert second(s) into decimal *(see Table C.2.1.4)*. Insert the test time (TT) at which the participant completed the assessment, along with the stepmill conversion formula to estimate VO_2 max. Record the VO_2 max.

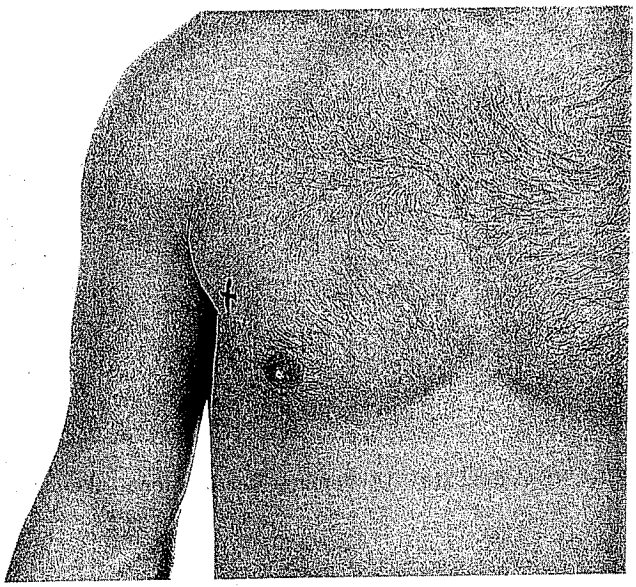

FIGURE C.2.1.2.1(e) [Site of Male Skinfold Measurement — Pectoral.]

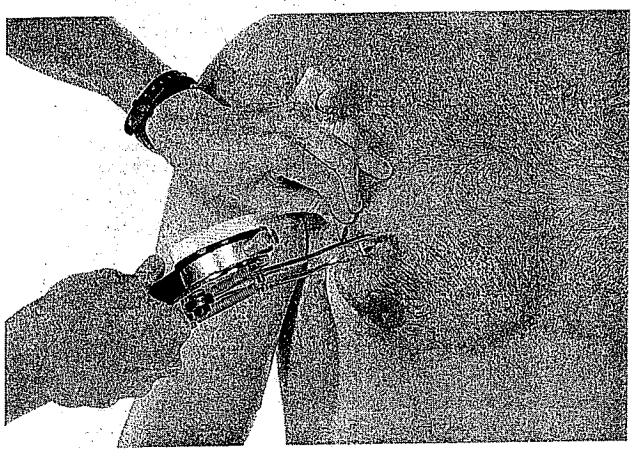

FIGURE C.2.1.2.1(f) [Pectoral Measurement — Male.]

Note: TT is the time in minutes that the participant's THR was exceeded and the test terminated Stepmill Submaximal VO_2 Prediction Formula

[VO_2 max = 57.774 + (1.757 × TT) – (0.904 × BMI)]

C.2.1.5 Muscular Strength/Power. Hand grip strength evaluations shall use the following protocol. The hand grip dynamometer shall be a Jamar Hydraulic Hand dynamometer. *[See Figure C.2.1.5.]*

(1) Conduct pre-evaluation procedures.

(2) The individual being evaluated is instructed to towel hands to ensure they are dry. The individual is instructed to place dynamometer in the hand to be evaluated; the evaluator adjusts, ensuring that the bottom of the handle clip is adjusted to fit snug in the first proximal interphalangeal joint. The red peak-hold needle is rotated counterclockwise to the zero position. The individual is advised that the evaluation is a series of six measurements — three for each hand. The individual is informed that the isometric contraction (squeezing) required during this evaluation must be eased into and then released slowly, without swinging arm, pumping arm, or jerking hand. Inform the individual that if at any time during the evaluation they experience chest pain, light-headedness, ataxia, confusion, nausea, or clamminess, they should terminate the evaluation.

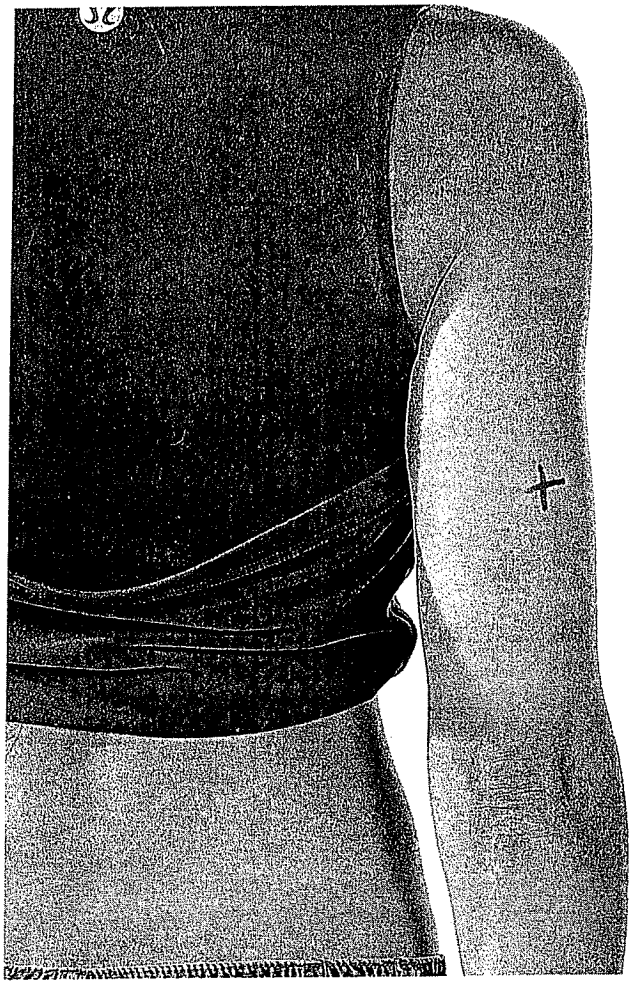

FIGURE C.2.1.2.2(a) [Site of Female Skinfold Measurement — Triceps.]

(3) The individual is instructed to assume a slightly bent forward position, with elbow bent at a 90-degree angle, shoulder adducted and neutrally rotated, forearm and wrist in neutral position.

(4) The individual is instructed to squeeze with maximum strength 2 to 3 seconds while exhaling and then slowly release grip. The peak-hold needle will automatically record the highest force exerted.

(5) Measure both hands alternatively allowing three evaluations per hand. Reset the peak-hold needle to zero before obtaining new readings. List the scores for each hand to the nearest kilogram.

(6) Record the highest score.

C.2.1.6 Leg strength evaluations shall use the Wellness-Fitness Initiative Protocol for Leg Strength. The leg dynamometer shall be the Jackson Strength Evaluation System or a commercial dynamometer system that is digital, incorporates dead load cells, and includes an adjustable chain, handlebar, and test platform.

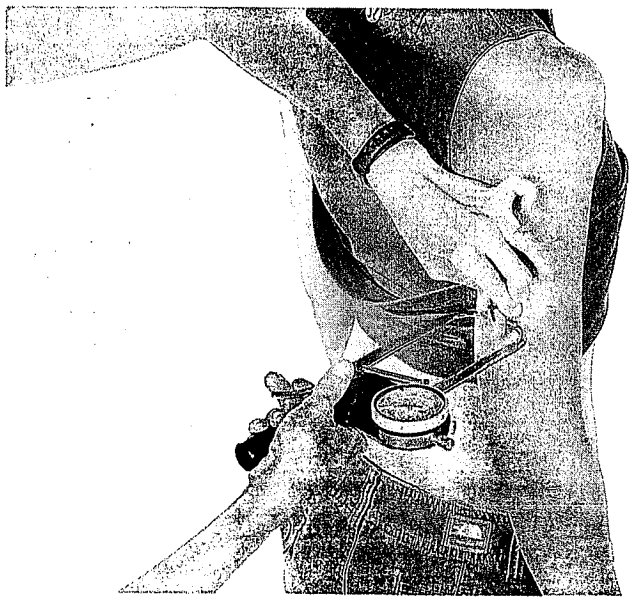

FIGURE C.2.1.2.2(b) [Triceps Measurement — Female.]

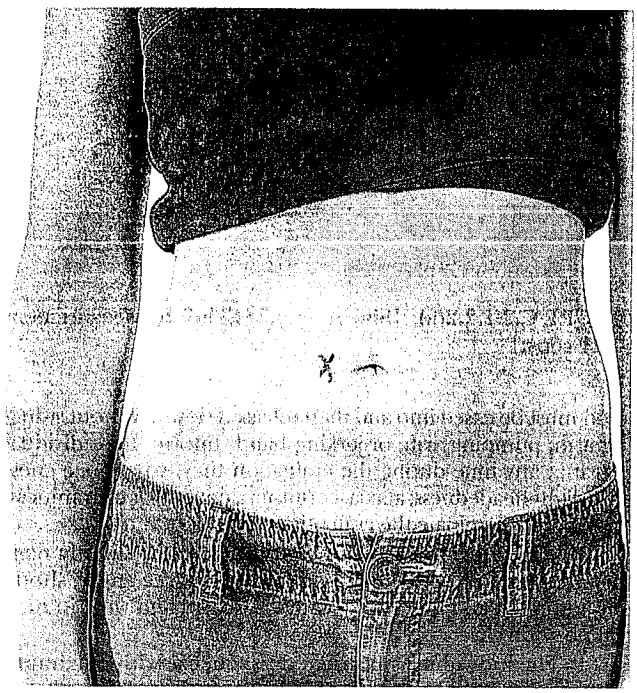

FIGURE C.2.1.2.2(c) [Site of Female Skinfold Measurement — Abdominals.]

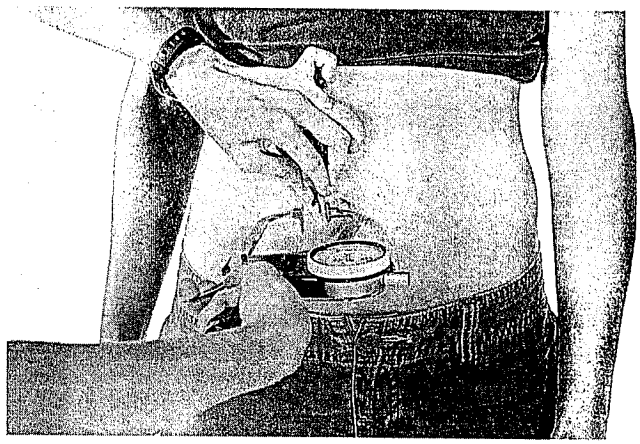

FIGURE C.2.1.2.2(d) [Abdominal Measurement — Female.]

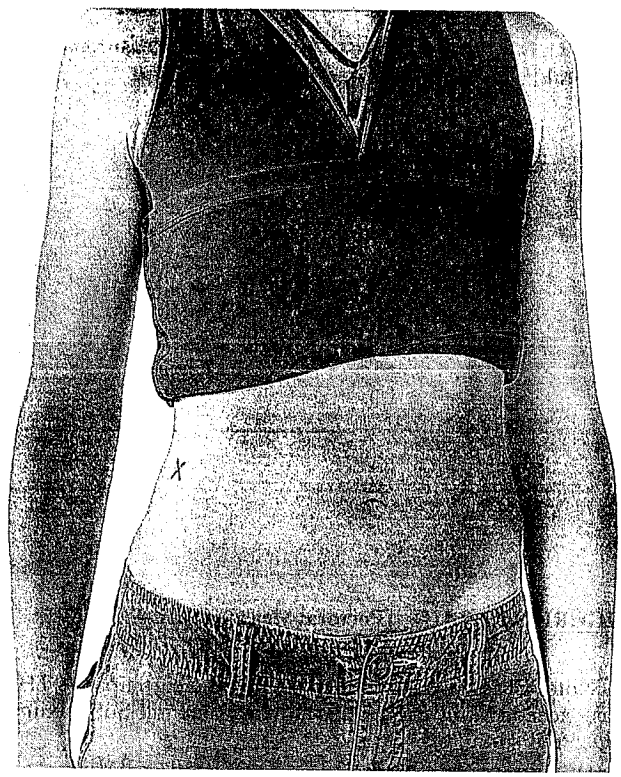

FIGURE C.2.1.2.2(e) [Site of Female Skinfold Measurement — Suprailiac.]

The fire department must verify that the dynamometer is equivalent to the Jackson Strength Evaluation System. A V-grip handlebar (chinning triangle) is required. *[See Figure C.2.1.6.]*

(1) Conduct pre-evaluation procedures.

(2) The individual being evaluated is instructed to towel hands to ensure they are dry. The individual is advised that the evaluation is a series of three measurements. The individual is informed that the isometric arm contraction required during this evaluation must be eased into and then released slowly, without swinging arm, pumping arm, or jerking hands. Inform the individual that if at any time during the evaluation they experience back pain, chest pain, light-headedness, ataxia, confusion, nausea, or clamminess, they should terminate the evaluation.

(3) The individual is instructed to stand upon the dynamometer base plate, which has been placed on a level and secure surface, with feet spread shoulder width apart. The individual is instructed to hold the bar with a wide grip and bend

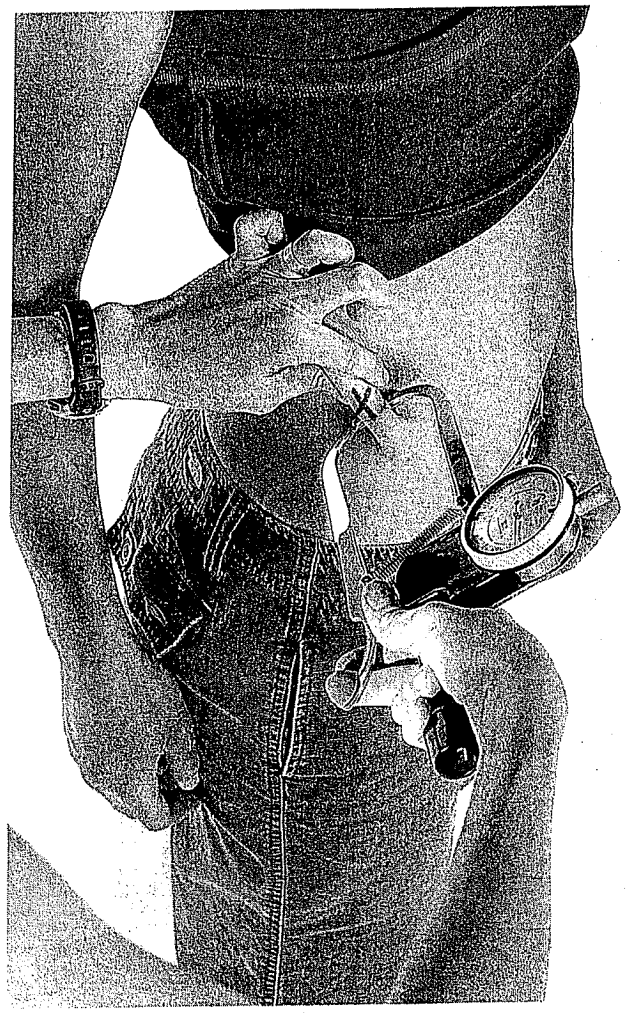

FIGURE C.2.1.2.2(f) [Suprailiac Measurement — Female.]

their elbows (keeping their elbows to their sides) 90 degrees. Individual must stand erect without arching back.

(4) The instructor verifies that the arm/elbow joint angle is 90 degrees and adjusts the chain so that it is taut in this position.

(5) The individual shall be instructed not to shrug shoulders, bend back, or perform any other motion other than to contract arms and attempt to move the handlebar in a vertical direction.

(6) Instruct the individual to flex arms for a total of 3 seconds.

(7) After 3 seconds, instruct the individual to slowly relax arms and to remain at standing rest for 30 seconds.

(8) Once the individual has completed the 30-second recovery period begin the second evaluation. Repeat evaluation for the third time using the same procedure.

(9) List all scores. Note: Digital readout will display the actual force, the highest peak force, and the average force achieved during the three evaluations.

(10) Record the highest of the three trials to the nearest kilogram.

C.2.1.7 Arm strength evaluations shall use the following protocol. The arm dynamometer shall be the Jackson Strength Evaluation System or a commercial dynamometer system that is digital, incorporates dead load cells, and includes an adjustable chain, handlebar, and test platform. The fire department must verify that the dynamometer is equivalent to the Jackson Strength Evaluation System. A straight-grip handlebar is required. *(See Figure C.2.1.7.)*

(1) Conduct pre-evaluation procedures.

Table C.2.1.3 [Treadmill Assessment]

Time	Speed mph	% grade
0:00 – 1:00	3	0
1:01 – 2:00	3	0
2:01 – 3:00	3	0
3:01 – 4:00	4.5	0
4:01 – 5:00	4.5	2
5:01 – 6:00	5	2
6:01 – 7:00	5	4
7:01 – 8:00	5.5	4
8:01 – 9:00	5.5	6
9:01 – 10:00	6	6
10:01 – 11:00	6	8
11:01 – 12:00	6.5	8
12:01 – 13:00	6.5	10
13:01 – 14:00	7	10
14:01 – 15:00	7	12
15:01 – 16:00	7.5	12
16:01 – 17:00	7.5	14
17:01 – 18:00	8	14
Recovery Phase		
0:00 – 1:00	3	0
1:01 – 2:00	3	0
2:01 – 3:00	3	0

Table C.2.1.4 [Decimal Equivalents for Seconds]

Time (seconds)	Decimal Equivalent	Time (seconds)	Decimal Equivalent	Time (seconds)	Decimal Equivalent
1	0.02	21	0.35	41	0.68
2	0.03	22	0.37	42	0.7
3	0.05	23	0.38	43	0.72
4	0.07	24	0.4	44	0.73
5	0.08	25	0.42	45	0.75
6	0.1	26	0.43	46	0.77
7	0.12	27	0.45	47	0.78
8	0.13	28	0.47	48	0.8
9	0.15	29	0.48	49	0.82
10	0.17	30	0.5	50	0.83
11	0.18	31	0.52	51	0.85
12	0.2	32	0.53	52	0.87
13	0.22	33	0.55	53	0.88
14	0.23	34	0.57	54	0.9
15	0.25	35	0.58	55	0.92
16	0.27	36	0.6	56	0.93
17	0.28	37	0.62	57	0.95
18	0.3	38	0.63	58	0.97
19	0.32	39	0.65	59	0.98
20	0.33	40	0.67	60	1

FIGURE C.2.1.5 [Hand Grip Dynamometer.]

(2) The individual being evaluated is instructed to towel hands to ensure they are dry. The individual is advised that the evaluation is a series of three measurements. The individual is informed that the isometric leg extension required during this evaluation must be eased into and then released slowly, without bending back, swinging arm, pumping or bending arm, or jerking hand. Inform the individual that if at anytime during the evaluation they experience back pain, chest pain, light-headedness, ataxia, confusion, nausea, or clamminess, they should terminate the evaluation.

(3) The individual is instructed to stand upon the dynamometer base plate, which has been placed on a level and secure surface, with feet spread shoulder width apart. The individual is instructed to stand erect. The chain is then adjusted so the upper (inside) edge of the bottom cross member of the V-grip handlebar is at the top of the individual's kneecap. The evaluator verifies this position, ensuring the chain is taut.

(4) The individual is then instructed to hold the bar, look straight with head in the neutral position, fully extend arms, and maintain a straight back. The evaluator shall verify this position and ensure that the individual's hips are directly over their feet, with trunk and knees slightly bent.

(5) Instruct the individual to lift using their legs for a total of 3 seconds.

(6) After 3 seconds, instruct the individual to slowly relax arms and legs and to remain at standing rest for 30 seconds.

(7) Once the individual has completed the 30-second recovery period begin the second evaluation. Repeat the evaluation for the third time using the same procedure.

(8) List all scores. Note: Digital readout will display the actual force, the highest peak force, and the average force achieved during the three evaluations.

(9) Record the highest of the three trials to the nearest kilogram.

C.2.1.8 WFI Vertical Jump — Optional Assessment. LEG POWER ASSESSMENT

Equipment:

(1) Pressure Mat — "Just Jump" Probotics

FIGURE C.2.1.6 [Leg Dynamometer.]

(2) Safety Tape — or any object that can be suspended above the mat to act as a target

(3) Calculator

Assessment:

The purpose of this assessment is to estimate peak power produced in the lower body. Collect the participant's body weight and record in kilograms (# lbs ÷ 2.2 = kg). Conduct pre-evaluation procedures. Place the jumping mat on a level surface. Connect the cord attached to the jumping mat to the handheld computer port. With the participant off the mat, turn the computer on. Choose "One Jump" on the computer menu. The display should read "Step on Mat." Have the participant squat to a position where the knees are at a 90° angle and the hands by the sides (momentary pause @ 90°) *[see Figure C.2.1.8(a)]*. Instruct the participant to jump straight up as high as he/she can, reaching toward the ceiling or a target object, without tucking the legs, and land with both feet on the mat *[see Figure C.2.1.8(b)]*. When the participant has completed the jump, the display will read the hang time and vertical jump in inches. The vertical jump mode resets automatically. Have the participant perform a series of 3 jumps and record the highest distance in inches.

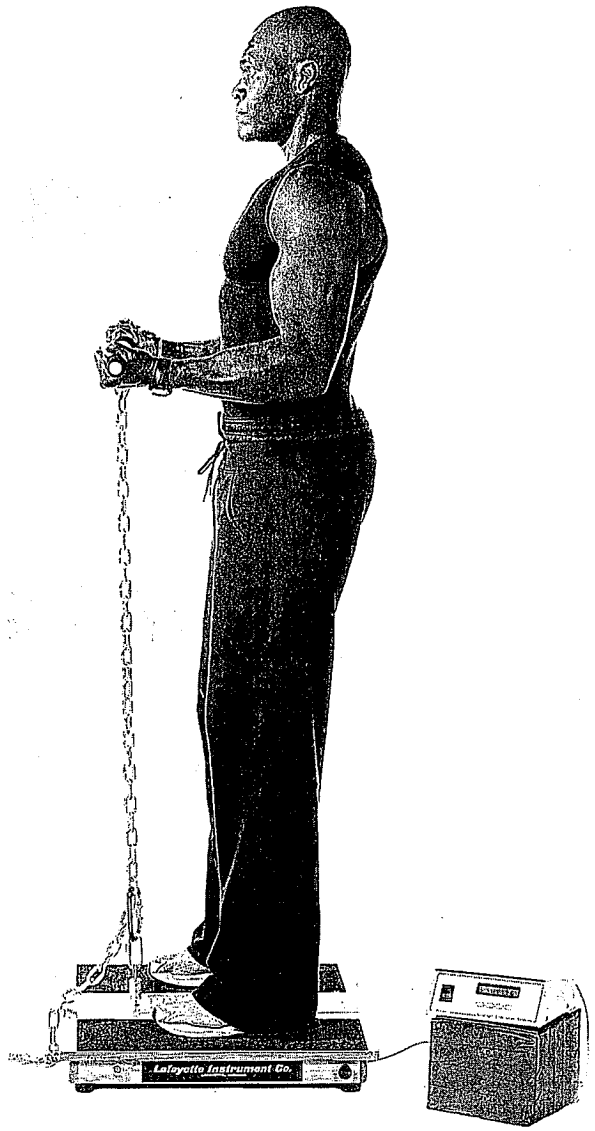

FIGURE C.2.1.7 [Arm Dynamometer.]

Convert the highest jump achieved in inches to centimeters (# inches × 2.54 = cm). Use the power formula provided below with the jump height (cm) and body weight (kg) to estimate leg power.

Any deviations from the above techniques cannot be counted, and the participant must repeat the trial. The following are examples of situations that require a reevaluation: The participant fails to land with both feet on the mat. The participant tucks the legs instead of extending them while jumping. Note: Administrators can minimize the tendency of participants to tuck the legs by suspending a target object above the mat for the participant to attempt to touch.

Power formula:

Leg Power (watts) = [(60.7 × jump height (cm)) + (45.3 × body weight (kg))] – 2055

Use the following conversions:

Height in inches to centimeters (# inches × 2.54 = cm)

Body weight in pounds to kilograms (# lbs ÷ 2.2 = kg)

FIGURE C.2.1.8(a) [Preparation for Leg Power Assessment.]

C.2.1.9 Push-up muscle endurance evaluations shall use the Wellness-Fitness Initiative Protocol for Push-ups. Equipment used for this evaluation includes a 5 in. prop (i.e., cup, sponge), a metronome, and a stopwatch.

(1) Conduct pre-evaluation procedures.

(2) The individual is advised that the evaluation is a series of push-ups performed in a 2-minute time period. The individual is advised that the evaluation is initiated from the "up" position (hands are shoulder width apart, back is straight, and head is in neutral position). The individual is informed that they are not allowed to have their feet against a wall or other stationary item. Additionally, the individual is informed that the back must be straight at all times and they must push up to a straight arm position. The individual is instructed to continue performing push-ups in time with the cadence of the metronome, one beat up and one beat down. Inform the individual that if at any time during the evaluation they experience chest pain, light-headedness, ataxia, confusion, nausea, or clamminess, they should terminate the evaluation.

FIGURE C.2.1.8(b) [Vertical Jump.]

(3) The evaluator places the 5-in. prop on the ground beneath the individual's chin and the individual must lower their body to the floor until the chin touches this object. *[See Figure C.2.1.9(a) and Figure C.2.1.9(b).]*

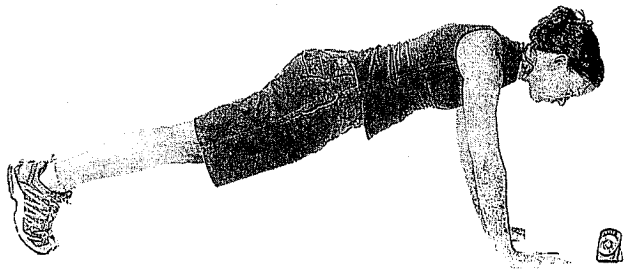

FIGURE C.2.1.9(a) ["Up" Position for Push-Up.]

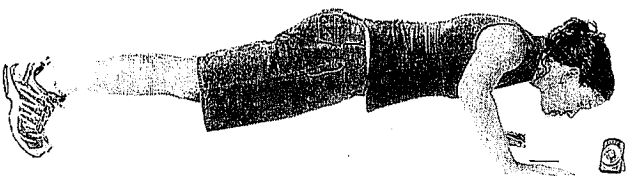

FIGURE C.2.1.9(b) ["Down" Position for Push-Up.]

(4) The metronome should be set at a speed of 80, allowing for 40 push-ups per minute.

(5) The individual has a 2-minute time limit to complete a maximum of 80 push-ups

(6) The administrator shall stop the evaluation when the individual:

(a) Reaches 80 push-ups

(b) Performs three consecutive incorrect push-ups

(c) Does not maintain continuous motion with the metronome cadence

(7) Record the highest number of successfully completed push-ups.

C.2.1.10 Optional Assessment: WFI Alternate Grip Push-Up Test.

Equipment:

Push-up handles

Metronome

Stopwatch

Prop – 5", plus the height of the handles

Assessment:

The purpose of this assessment is to evaluate muscular endurance of the upper body. The alternate grip push-up (with stands) is an optional assessment for participants who experience muscular/skeletal discomfort in the performance of the standard WFI push-up. Conduct the pre-evaluation procedures. Advise the participant that the evaluation is a series of push-ups performed in a 2-minute time period to complete a maximum of 80 push-ups. The evaluation is initiated from the "up" position (hands are shoulder width apart, back is straight, and head is in neutral position). *[See Figure C.2.1.10(a).]* Advise the participant of the following: It is not

permitted to prop feet against a wall or other stationary object. Back must be straight at all times (neutral position). Arms must be fully extended during the up-phase. Cadence with the metronome must be maintained, (one beat up and one beat down). Instruct the participant to grasp the push up stands, and assume the "up" position. (Caution: hex dumbbells may roll)

FIGURE C.2.1.10(a) ["Up" Position for Alternate Grip Push-Up.]

Place the modified prop so that the chin of the participant will contact the prop during the lowering phase. (Prop height = 5" plus the height of stands). *[See Figure C.2.1.10(b).]* Set the metronome at a speed of 80 bpm, allowing for 40 push-ups per minute for 2 minutes. The assessor shall terminate the evaluation when the participant: Reaches 80 push-ups; Performs three consecutive incorrect push-ups; or Fails to maintain continuous motion with the metronome cadence. Once the assessment is complete, record the highest number of successfully completed push-ups.

FIGURE C.2.1.10(b) ["Down" Position for Alternate Grip Push-Up.]

C.2.1.11 WFI Prone Static Plank — Core Stabilization Assessment.

Equipment:
Stopwatch
Exercise Mat
Assessment:

The purpose of this assessment is to evaluate the muscular endurance of the core stabilizer muscles of the trunk. Conduct the pre-evaluation procedures. Instruct the participant to lay prone, keeping upper body elevated and supported by the elbows. Raise hips and legs off the floor, supporting the body on forearms and toes. Position elbows directly under the shoulders. Maintain straight body alignment from shoulder through hip, knee and ankle. The ankles should maintain a 90° angle, the scapulae should remain stabilized with elbows at 90°. The spine should remain in a neutral position throughout the assessment. Once the feet are in position, the participant then extends the knees, lifting off the floor. *(See Figure C.2.1.11.)* Start the stopwatch at this time. Instruct the participant to contract the abdominals so that the back will remain flat in the neutral position for the duration of the assessment. Any deviations from the above posture will warrant 2 verbal warnings. If a 3rd infraction occurs stop the watch and terminate the assessment. The assessor shall terminate the evaluation when the participant: Reaches 4 minutes; or Is unable to maintain proper form after the 2nd warning, Once the assessment termination criteria are met, stop the watch and record the time.

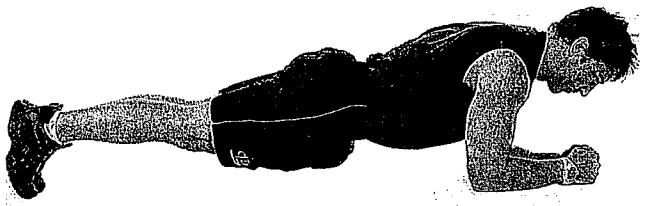

FIGURE C.2.1.11 [Core Stabilization Assessment.]

C.2.1.12 Sit-and-reach flexibility evaluations shall use the Wellness-Fitness Initiative Sit and Reach Protocol. Equipment used for this evaluation shall be a Novel Acuflex I or equivalent trunk flexibility tester that compensates for variable arm and leg lengths.

(1) Conduct pre-evaluation procedures.

(2) The individual is advised that the evaluation is a series of three measurements that will evaluate the flexibility of the lower back, hamstring muscles, and shoulders. The individual is informed that the flexion required during this evaluation must be smooth and slow, as the individual advances the slide on the box to the most distal position possible. Inform the individual that if at anytime during the evaluation they experience back pain, chest pain, light-headedness, ataxia, confusion, nausea, or clamminess, they should terminate the evaluation.

(3) The individual is instructed to sit on the floor ensuring the head, upper back, and lower back are in contact with the wall. The individual is instructed to place legs together, fully extended. The sit and reach box with the sliding measurement guide is placed with the box flat against the feet. *[See Figure C.2.1.12(a).]*

(4) While maintaining head and upper/lower back contact with the wall, the individual is instructed to extend arms fully in front of their body with the right hand overlaying the left hand, with middle finger of each hand directly over each other. The rule is set to 0.0 in. at the tips of the middle fingers. The individual is then instructed to exhale slowly while stretching slowly forward, bending at the waist, and pushing the measuring device with the middle fingers. During the stretch, legs are to remain together and fully extended and hands are to remain overlaid. *[See Figure C.2.1.12(b).]* The stretch is held momentarily and the distance obtained. If the individual bounces, flexes knee, or uses momentum to increase distance, the evaluation is not counted.

(5) Instruct the individual to relax for 30 seconds. Once the individual has completed the 30-second recovery period

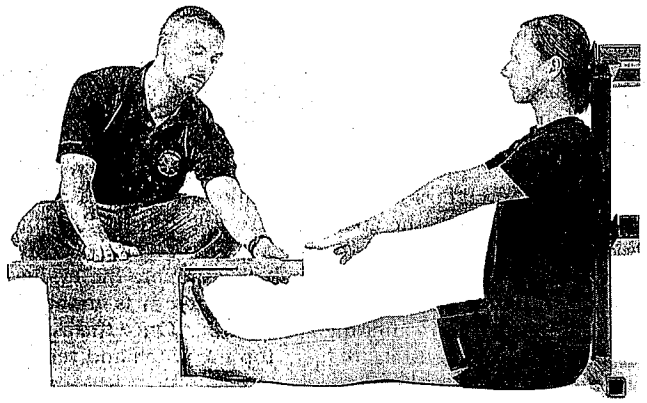

FIGURE C.2.1.12(a) [Sit and Reach Flexibility Evaluation — Initial Position.]

FIGURE C.2.1.12(b) [Sit-and-Reach Flexibility Evaluation — Forward Position.]

begin the second evaluation. Repeat evaluation for the third time using the same procedure.

(6) Record the furthest distance from the three trials (rounded to the nearest ¼ in.) as the final score.

C.2.1.13 Jackson Strength Evaluation System Lafayette Instrument Company Phone: 800-428-7545 or 765-423-1505 Website: www.licmef.com

JAMAR Hydraulic Hand Dynamometer Lafayette Instrument Company Phone: 800-428-7545 or 765-423-1505 Website: www.licmef.com

Novel Acuflex II Trunk Flexibility Tester Novel Products, Inc. Phone: 800-323-5143 E-mail: www.novelprod@aol.com

StairMaster StepMill StairMaster Phone: 888-678-2476 Website: www.stairmaster.com

Probotics "Just Jump" Mat Probotics, Inc. Phone: 256-489-9153 Website: www.probotics.org 19

(1) LifeFitness 9100HR Treadmill: for information and local distributor contact, LifeFitness, 10601 West Belmont Avenue, Franklin Park, IL 60131, Phone (847) 288-3300, fax (847) 288-3791, Website www.lifefitness.com.
(2) Jackson Strength Evaluation System with V-Grip Handlebar (chinning triangle): for information and local distributor contact, Lafayette Instrument, 3700 Sagamore Parkway North, P.O. Box 5729, Lafayette, IN 47903, Phone (765) 423-1505 or (800) 428-7545, fax (765) 423-4111, Website www.licmef.com (Note: The Jackson Strength Evaluation System includes a Jamar Hydraulic Hand Dynamometer).
(3) Jamar Hydraulic Hand Dynamometer: for information and local distributor contact, Jamar, Sammons Preston, 4 Sammons Court, Bolingbrook, IL 60440, Phone (800) 323-5547 (Note: The Jackson Strength Evaluation System includes a Jamar Hydraulic Hand Dynamometer).
(4) Novel Acuflex II Trunk Flexibility Tester: for information and local distributor contact, Novel Products Incorporated, Post Office Box 408, Rockton, IL 61072-0408, Phone (800) 323-5143, fax (815)624-4866, E-mail novelprod@aol.com.
(5) Polar Heart Rate Monitor: for information and local distributor contact, Polar Electro Inc., 370 Crossways Park Drive, Woodbury, NY 11797, Phone (800) 227-1314; Canada (888) 918-5043, fax (516) 364-5454, Website www.polarus.com.
(6) StairMaster StepMill SM-916 or 7000 PT: for information and local distributor contact, StairMaster Sports/Medical Products, L.P., 12421 Willows Road, NE, Suite 100, Kirkland, WA 98034, Phone (425) 823-1825, ext. 7605, fax (425) 821-3794, Website www.stairmaster.com.

Annex D Pregnancy Issues

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

D.1 Introduction.

D.1.1 Due to the legal issues associated with pregnancy and employment (see Section D.2), this annex is intended to serve as guidance for the fire department physician in advising the pregnant fire fighter of the risks associated with performing essential job functions and enabling her in decision-making. This has been summarized in an informational handout developed by the Task Group for the pregnant fire fighter *(see A.9.18.2)*.

D.1.2 The majority of pregnant fire fighters will be able to continue to work throughout pregnancy, with some accommodations. A point will likely come during the pregnancy when the physical changes to the body of the pregnant fire fighter will impair her ability to perform some of the essential job tasks, and appropriate restrictions will need to be offered.

D.2 Legal Framework.

D.2.1 This document does not constitute legal advice. Before developing a pregnancy policy or before restricting or suspending a pregnant fire fighter against her will, fire physicians and the AHJ should seek competent legal advice.

D.2.2 The Pregnancy Discrimination Act of 1978 states that discrimination on the basis of pregnancy or childbirth constitutes unlawful sex discrimination under Title VII of the Civil Rights Act of 1964 [1]. Women who are pregnant or have related conditions must be treated in the same manner as other applicants or employees with similar abilities or limitations. An employer may not force a pregnant employee to take disability leave if she is able to work and cannot remove her from her duty assignment if she is able and willing to perform it. The

Pregnancy Discrimination Act applies to most employers that have 15 or more employees.

D.2.3 The U.S. Supreme Court ruled in 1991 that an employer may not exclude pregnant women from hazardous jobs [2]. Therefore, assuming the pregnant fire fighter is willing and able to perform her essential job tasks, fire agencies should give options to pregnant fire fighters, but ultimately it is up to the individual fire fighters to decide, after consultation with their personal physicians, whether to accept a light duty assignment or other reasonable changes in their job assignments.

D.3 The pregnant fire fighter can be exposed to the following hazards associated with adverse outcomes to the pregnancy or damage to the fetus:

(1) Physical hazards, including heat, trauma, radiation, and noise.
(2) Chemical hazards, including exposure to carbon monoxide, other products of combustion (e.g., hydrogen cyanide, acrolein, formaldehyde, benzene, acetaldehyde, formic acid), heavy metals, and organic solvents.
(3) Biological hazards. As first responders, fire fighters are at a higher risk of exposure to infectious agents. Pregnancy by itself does not increase that risk. However, with some agents (e.g., novel H1N1 influenza), the risk of complications is higher during pregnancy. Pregnant fire fighters should be aware of these risks and follow good hygiene principles.

D.4 Physical Hazards.

D.4.1 Trauma.

D.4.1.1 The uterus extends out of the protection of the pelvis after 13 weeks and is therefore more susceptible to direct trauma (to the uterus or the fetus) after that gestational point [3].

D.4.1.2 Fetal mortality due to nonuterine trauma is increased during the first 23 weeks, possibly due to higher susceptibility to maternal hypotension during the first and second trimesters [4,5].

D.4.1.3 With blunt trauma, the leading causes of fetal death are maternal shock, abruption, and uterine rupture [3]. Direct fetal injury from blunt trauma is rare [5].

D.4.1.4 Fetal mortality rates due to maternal trauma [3]:

(1) Overall with major trauma: 40 percent to 65 percent [4,5,6]
(2) Overall with minor trauma: 1 percent to 5 percent [3,5]
(3) In case of maternal pelvic fracture: 25 percent to 35 percent [5,7]
(4) Gunshot wound to abdomen: 30 percent to 50 percent [5]

D.4.1.5 Long-term outcomes after trauma, besides fetal loss, include higher risk of preterm labor and placental bleeding [5]. The risks of preterm labor and low birth weight were found to be nearly double in a series of patients discharged from a trauma center [8].

D.4.1.6 Pregnant fire fighters should be encouraged to wear seat belts. Proper seat belt positioning during pregnancy should be taught (lap belt under the abdomen and shoulder harness between the breasts); improper placement can result in uterine rupture [3,5]. Seat belt use significantly reduced fetal mortality (fivefold reduction) in a series of cases of pregnant patients injured in motor vehicle accidents [9].

D.4.1.7 Standard personal protective equipment is not designed to protect the fetus. The personal protective equipment fitted pre-pregnancy might not offer the same level of protection during pregnancy.

D.4.2 Noise. Noise exposure during pregnancy has been associated, in human studies, with several adverse outcomes, including miscarriage [10,11], intrauterine growth retardation [11,12,13], preterm delivery [11,14], hearing loss in babies and children [15,16], and hypertension in pregnancy [11]. In a review of 10 studies on pregnancy and noise, most studies did not achieve statistical significance in showing negative effect of noise [17]. The safe threshold of noise exposure during pregnancy is unknown [18]. *(See D.11.1.)*

D.4.3 Shift Work. Alternating shift work and night work have been associated with preterm birth [24,25], miscarriage [26] and lower birth weight [25,27]. Existing research is controversial. *(See D.11.2.)*

D.4.4 Heat. In animal studies, increase in maternal core temperature over 1.5°C has been shown to be teratogenic [30]. Core temperature has been shown to be up to 39°C in training [31,32]. Hyperthermia creates the highest risk during the first two months of pregnancy [33,34]. Sports Medicine Australia recommends a pregnant woman "to avoid exercise in hot conditions" [33]. Exercising in a warm environment should be limited, and adequate hydration should be maintained with physical activity.

D.4.5 Physical Activity. Prolonged working hours, heavy lifting, prolonged standing, and heavy physical workload have been associated with preterm birth, lower birth weight, and pre-eclampsia [14,28]. *(See D.11.3.)*

D.4.6 Radiation. Fire fighters assigned to patient transport via aircraft or other high-altitude aviation may encounter radiation exposure of significance to a fetus [35,36]. *(See D.11.4.)*

D.5 Chemical Hazards.

D.5.1 Carbon Monoxide. Carbon monoxide exposure during pregnancy is associated with miscarriage, malformations, mental retardation, and low birth weight [32,38,39].

D.5.2 Products of Combustion. Other chemicals toxic to the fetus that are found in products of combustion include benzene, acrolein, formaldehyde, hydrogen cyanide, acetaldehyde, chloroform, and formic acid [32,38,39]. Both fire suppression and overhaul phasescan expose firefighters to toxic chemicals [40].

D.5.3 Exposure to Lead and Other Metals. Lead exposure during pregnancy is associated with serious materno-fetal complications, including miscarriage, premature rupture of membranes, pre-eclampsia, hypertension, and neurobehavioral effects in infants and children [41,42,43]. Even at low levels, lead exposure has been associated with preterm delivery; congenital abnormalities [44]; and decreased birth weight, length, and head circumference [45]. Current research suggests that there is no safe lead exposure threshold to children, infants, and fetuses [43,46,47]. *(See D.11.5.)*

D.5.4 Exposure to Organic Solvents. Some organic solvents, like xylene, might be harmful to the fetus [18].

D.5.5 Other Chemicals. Clandestine drug laboratories and hazardous-material scenes should be avoided. Clandestine drug laboratories can expose fire fighters to a variety of toxic chemicals, some of which are potentially injurious to the fetus

[49]. Extensive exposure to exhaust fumes might be dangerous because of exposure to carbon monoxide, benzene, and other organic solvents from motor vehicles. In the United States, gas used for regular road traffic does not contain benzene. In developing countries that use leaded gasoline, lead exposure can be significant problem for fire fighters exposed to exhaust fumes [52].

D.6 Medical Issues. The American College of Obstetricians and Gynecologists has published a list of medical contraindications to exercise during pregnancy[53] [Exercise during pregnancy and the postpartum period. ACOG Committee. Opinion No. 267. http://mail.ny.acog.org/website/SMIPodcast/Exercise.pdf]. That list could be used to recommend work accommodation to pregnant fire fighters who are suffering from specific complications.

D.7 Risks by Timesters. Table D.7 lists risks by trimester and during lactation.

D.8 Recommended Activity Modifications During Pregnancy.

D.8.1 The following activities are not recommended during the entire pregnancy:

(1) Exposure to excessive heat
(2) Hazmat assignment, exposure to products of combustion or toxic chemicals
(3) Use of encapsulating protective gear
(4) Exposure to ionizing radiation [18,35]
(5) Exposure to prolonged vehicular exhaust or high-volume vehicular traffic *(see D.8.1.1)*
(6) Aviation (including helicopter) unit assignment [18,35,36,37]

D.8.1.1 Recommendations by Trimester.

(1) First trimester:
  (a) Modified, nonhazardous duty only if requested by the fire fighter in consultation with her personal (treating) physician.
  (b) The fire physician should ensure that the fire fighter and her treating physician are aware of risks created by the job assignment.
  (c) All recommendations stated in D.8.1
(2) Second trimester:
  (a) An accommodation for maternity uniform may be needed.
  (b) The following are not recommended:
    i. Assignments with alternating shift work
    ii. Heavy lifting and prolonged standing
  (c) All recommendations stated in D.8.1
(3) Third trimester:
  (a) The fire fighter may have to be taken off hazardous duties if she is unable to perform the required job functions due to issues with balance, speed, or agility. She should be given a modified duty assignment.
  (b) An accommodation for maternity uniform may be needed.
  (c) The following are not recommended:
    i. Assignments with alternating shift work
    ii. Heavy lifting and prolonged standing
  (d) All recommendations stated in D.8.1

D.9 Post-Delivery: Return to Work.

D.9.1 Because of different types of deliveries and associated complications, return-to-work decisions should be based upon an individualized evaluation of the fire fighter's current status and the requirements of her work assignment. *(See D.11.6.)*

D.9.2 Once the fire fighter requests to return to full duty with the consent of her treating health care provider, all restrictions for patrol duty and training should be lifted, unless other medical issues are present.

D.9.3 The physician should consider various issues such as the following [55]:

(1) Delivery trauma and mode of delivery
(2) C-section healing *(See D.11.7.)*
(3) Physical deconditioning, fatigue, and lack of sleep
(4) Musculoskeletal conditions (e.g., back pain, carpal tunnel syndrome, tendonitis)
(5) Pregnancy-related issues
  (a) Hypertension
  (b) Eclampsia
  (c) Gestational diabetes
  (d) Post-partum depression
  (e) Post-partum thyroiditis
  (f) Deep venous thrombosis
  (g) Anemia
  (h) Other complications

Table D.7 Risks by Trimester and During Lactation

	First Trimester	Second Trimester	Third Trimester	Lactation
Trauma	The risk of direct fetal trauma is mitigated due to the location of uterus, which is a pelvic organ in the first trimester.	The risk of direct fetal trauma is increased due to the intra-abdominal position after 13 weeks.	The risk of direct fetal trauma is increased due to the intra-abdominal position after 13 weeks.	No additional risk.
Chemicals	Avoid exposure to heavy metals, hydrocarbons, carbon monoxide.	Avoid exposure to heavy metals, hydrocarbons, carbon monoxide.	Avoid exposure to heavy metals, hydrocarbons, carbon monoxide.	Avoid exposure to heavy metals, hydrocarbons, carbon monoxide.
Other risks	Heat, noise, radiation, shift work, infections.	Heat, noise, radiation, shift work, infections.	Heat, noise, radiation, shift work, infections.	No additional risk.

D.10 Post-Delivery: Lactation.

D.10.1 Fire fighters who are breastfeeding should avoid unprotected exposure to toxic levels of heavy metals and other chemicals.

D.11 Notes.

D.11.1 Intrauterine measurements showed that the fetus was not significantly protected against loud noises [19]. One study in human volunteers found a maximal intrauterine noise attenuation of 10 dB at 4000 Hz [20]. In a study of ewes, the noise attenuation was 20 dB at 4000 Hz, but low-frequency sounds less than 250 Hz were 2 to 5 greater inside the uterus [21]. The sound of a siren can reach up to 110 dB inside the cab of an emergency vehicle [22,23]. The Navy and Marine Corps Public Health Center makes the following recommendations:

"1. The ACGIH [American Conference of Governmental Industrial Hygienists] 115 dBC TWA [time weighted average] and peak 155 dBC noise notations should be observed as exclusion criteria starting at 20 weeks gestation. Excluding pregnant women from discharging firearms after 20 weeks gestation would be consistent with those criteria.

2. Pregnant workers should be vigilant in wearing hearing protectors whenever environmental noise exceeds 84 dBA, to minimize potentially unhealthy maternal cardiovascular and endocrine effects on the growing fetus.

3. Extended exposures (more than 12 minutes) above 104 dBA should be avoided after 20 weeks gestation, even with the use of maternal hearing protection.

4. Impact/impulse noise exposure sufficient to require personal hearing protection should be avoided" [18].

D.11.2 In a review of studies on pregnancy and shift work, 8 out of 12 studies showed a significant (but usually small) adverse effect of alternating shift work on pregnancy [17]. In a meta-analysis of 17 studies of shift work during pregnancy, the authors found a significant but small (relative risk 1.2) effect of shift work on preterm delivery, but no association between shift work and birth weight [28]. In a meta-analysis of 4 studies of pregnancy among nurses, shift work was significantly associated with a slightly increased risk of miscarriage [29].

D.11.3 In a meta-analysis of 53 studies of occupational exposures (prolonged working hours, shift work, lifting, standing and heavy physical workload) during pregnancy, the authors found a significant but small effect of long working hours (beyond 40 hours a week) on preterm birth; and a significant but small effect of prolonged standing (more than 3 hours day) on preterm birth. The influence of these occupational exposures on pre-eclampsia is less clear [28].

D.11.4 Aviation-related (including helicopters) potential hazards for the fetus include vibration, noise, jet fuel and altitude [18,37].

D.11.5 Inorganic lead is absorbed by inhalation and ingestion. Blood absorption of inhaled lead is 30-40%, and blood absorption of ingested lead is 5-15%. Lead is then mostly stored in bones. The half-life of lead is 1 to 3 months in blood and soft tissues and 10 to 25 years in bones. Lead crosses the placenta and is transmitted from the mother to the fetus. Lead is excreted mainly through the kidneys and gastrointestinal tract. Lead is also excreted in breast milk [42,43,48].

D.11.6 Sports Medicine Australia recommends waiting for up to 6 weeks after delivery before performing intense physical exercises [54].

D.11.7 In a series of 100 patients with complications after a C-section, the most common complications were endomyometritis (63 patients), wound infection (32 patients), wound hematoma (22 patients) and postpartum hemorrhage (12 patients). Wound dehiscence was seen in 4 patients. All complications were seen within 10 days of the surgery [56]. Sports Medicine Australia recommends waiting for 6 weeks after C-section to resume exercising [54].

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Annex E Sample Physician Evaluation Form for Fire Fighters with Diabetes

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

E.1 Figure E.1 is a form that will assist physicians in the evaluation of individuals with diabetes mellitus against their ability to safely perform the essential job functions of a fire fighter.

PHYSICIAN EVALUATION FORM FOR FIRE FIGHTERS WITH DIABETES MELLITUS

You are being asked to evaluate an individual for a position as a fire fighter (FF). It is essential that the FF undergo an individualized assessment of his or her diabetes to determine whether the individual's condition permits safe and effective job performance. This evaluation is based on the guidance established by the NFPA Technical Committee on Occupational Safety and Health in consultation with representatives of the American Diabetes Association. The relevant sections of these guidelines are listed below in bold, followed by the information needed to assess whether the individual meets these guidelines.

I. Introduction

The educated and motivated FF or FF applicant with well-managed diabetes mellitus can be capable of safe and effective job performance. An individualized assessment of the FF's or FF applicant's diabetes should be performed, including an assessment of the following:

- History of blood glucose control
- Current stability of blood glucose
- Risk for significant hypoglycemia or hyperglycemia
- Presence of diabetic complications
- Knowledge of diabetes and its management

Risk of hypoglycemia remains the major concern in regard to those with diabetes being or becoming a FF. This risk occurs primarily in those taking insulin, particularly those with type 1 diabetes, although it may also occur in those with type 2 diabetes who take insulin and/or sulfonylureas and other secretagogues.

Fire fighting entails a unique set of conditions that need to be considered in regard to those with diabetes and the risks of either hypo or hyperglycemia. These may include (depending upon the duties of the particular FF position):

- unpredictable periods of maximal physical exertion (e.g., climbing stairs with over 50 pounds of PPE and 20 to 40 pounds of equipment);
- use of encapsulating and insulated personal protective equipment (PPE) that can result in significant fluid loss and dehydration;
- exposure to extreme environmental temperatures;
- during emergency responses with limited access to food, water, and medications for prolonged periods of time;
- emergency response driving with the responsibility for others in the vehicle;
- critical, time-sensitive complex problem solving in hazardous environments;
- unpredictable meal schedules;
- control of one's emotions under stress;
- functioning as a team where sudden incapacitation can result in mission failure or risk of injury or death to civilians or other team members.

FIGURE E.1 Physician Evaluation Form.

II. Assessment

1. FF has been under the care of an endocrinologist or other physician knowledgeable about diabetes management. Outpatient and in-patient medical record(s) of the last three years or since date of diagnosis (whichever is shorter) should be reviewed by the treating physician and provided to the fire department physician.

   My credentials as a physician knowledgeable about diabetes management are as follows (or attach CV):

   _____

   _____

   _____

   This person has ❑ *type 1 diabetes* ❑ *type 2 diabetes*

   Date of diagnosis: _____ / _____ / _____

   Attach records for prior 3 years or since onset of diabetes whichever is shorter for

   ❑ *out-patient treatment* ❑ *in-patient treatment*

2. If type 1 diabetes, has been on a basal/bolus regimen or an insulin pump using analogue insulins for the six (6) months prior to evaluation[1,2]

   Current insulin regimen:

   Insulin pump brand and model: _____

   Pump settings:

Start Time					
Basal Rate					

Start Time					
Basal Rate					

   Usual Bolus doses:

   Breakfast _____

   Lunch _____

   Supper _____

   Other _____

   Correction factor:

   Multiple dose insulin (specify regimen)

   Basal: _____

   Bolus: _____

   _____

   Starting date on current regimen: _____ / _____ / _____

FIGURE E.1 *Continued*

3. If type 2 diabetes on insulin, has been on a stable medication regimen for the three (3) months prior to evaluation.[3] If on oral agents alone, should be on a stable medication regimen for one month prior to evaluation.[4]

   Current medication regimen:

oral agents	insulin
_____	_____
_____	_____
_____	_____
_____	_____

   Starting date on current regimen: _____ /_____ /_____

4. Has documentation of ongoing self-monitoring of blood glucose. This must be done with a glucose meter that stores every reading, records date and time of reading and from which data can be downloaded. Monitoring records must be available covering the time periods (1, 3, or 6 months), as described in Sections 2 and 3, following a schedule acceptable to the fire department physician.[5]

   The individual has been asked to test glucose _____ times a day, and

   - ❑ *IS adhering to my recommended schedule for testing.*
   - ❑ *is NOT adhering to my recommended schedule for testing.*

   Glucose logs

   - ❑ *are attached for review*
   - ❑ *are not attached for review (please explain)*

5. Has been educated in diabetes and its management and thoroughly informed of and understands the procedures that must be followed to monitor and manage his/her diabetes and what procedures should be followed if complications arise.[6]

   The individual has completed the following diabetes education (include year of completion):

   _____

   _____

6. If an insulin pump user, documents
   - proper understanding and education in the use of the insulin pump
   - start date for the use of the pump
   - history of insulin site infections
   - history of pump cessation and pump malfunction
   - backup plan for pump malfunction, including use of injectable insulin
   - frequency of infusion set changes

   The individual as completed the following education in the use of a continuous insulin infusion pump (indicate year of completion):

   _____

   _____

FIGURE E.1 *Continued*

The individual routinely carries appropriate supplies to compensate for pump malfunction, including syringes and insulin vials or insulin pens.

❑ *Yes* ❑ *No — please explain*

The individual has had more than one pump site infection that caused him/her to miss work or usual daily activities in the preceding six months.

❑ *Yes — please explain* ❑ *No*

7. Has had hemoglobin A1C measured at least four times (intervals of two to three months) over the 12 months prior to evaluation if diagnosis has been present over a year.[7,8]

Date	*HbA1C*
_____	_____
_____	_____
_____	_____
_____	_____

8. If the individual's A1C was found to be 8% or above on one or more occasions, has the validity of that level been confirmed by a second determination?

❑ *Yes* ❑ *No (please explain)*

_____

_____

_____

9. If the second determination specified above was done, is there reason to suspect that the original A1C level(s) overestimates average blood glucose?

❑ *Yes* ❑ *No*

10. Incapacitating events — Has not had any within the past one (1) year and no more that two (2) episodes in the past three (3) years, or since diagnosis of diabetes (whichever is shorter) of

a. severe hypoglycemia (loss of consciousness, seizures or coma, requiring the assistance of others or needing urgent treatment [glucose injection or IV glucose]) or

b. a blood sugar < 60 mg/dl with unawareness[9] demonstrated in current glucose logs.

Has this individual had an episode of hypoglycemia as described above?

❑ *Yes* ❑ *No*

If the individual has had such episode(s), please describe episodes and provide dates or episodes

_____

_____

11. Has had a complete eye exam by a qualified ophthalmologist or optometrist, including a dilated retinal exam, demonstrating no more than mild background diabetic retinopathy.[10]

Copy of ophthalmology or optometry report is attached

❑ *Yes* ❑ *No (please explain)*

FIGURE E.1 *Continued*

12. Has normal vibratory testing with 128 Hz tuning fork, has normal testing with 10 gram Semmes-Weinstein monofilament[11] and normal orthostatic blood pressure and pulse testing.[12]

*Vibration sensation:*_____

*Monofilament:*_____

*BP supine:*_____ *Pulse supine:*_____

*BP standing:*_____ *Pulse standing:*_____

13. Has normal cardiac physical exam and normal cardiac stress testing to at least 12 METS. Annual cardiac stress testing[13] should begin when any of the following criteria are met:

- age greater that 35 years
- Type 1 DM greater than 15 years duration
- Type 2 DM greater than 10 years duration
- signs of target organ damage (eyes, kidney, autonomic, cardiac)
- any other coronary artery disease risk factors

Copy of stress test report performed within the last 12 months is attached:

❑ *Yes* ❑ *No (please explain)*

14. Has normal renal function based on albumin/creatinine ratio ≤ 30:1, and measured or calculated creatinine clearance > 60 ml/min.[14]

*Serum Creatinine:*_____

*Calculated creatinine clearance (Specify method):*_____

❑ *Cockcroft Gault or*

❑ *MDRD*

*Urine microalbumin/creatinine ratio:*_____

III. Treating Physician Statement

The above-named individual meets all of the criteria provided on this form:

❑ *Yes* — It is my opinion that the above-named individual is well-educated and well-motivated in diabetes self-management and has achieved a level of diabetes management to be capable of safe and effective job performance as a fire fighter.
I have reached this opinion after careful review of the above criteria.

❑ *No — not recommended for position*

❑ *No, but IS recommended for position (letter of explanation attached)*

_____ _____

Signature of Physician Date

_____ _____

Printer or Typed Name of Physician Phone Number

FIGURE E.1 *Continued*

References

[1] Times cited for durations of stable treatment regimen or stability of management are in reference to the date of current evaluation for a fire fighter position.

[2] Date sought is when patient first began current insulin regimen (pump or injection) using current types of insulin (long acting, intermediate acting, short or rapid acting). A stable insulin regimen is defined as maintaining the same types of insulin (long acting, intermediate acting, short or rapid acting). Changes in insulin amount are part of the appropriate self-management of diabetes and do not disqualify an applicant or incumbent under this section.

[3] Date sought is when patient first began current insulin or oral agent regimen defined as when patient began using current types of insulin or classes of oral medication. A stable insulin regimen is defined as maintaining the same types of insulin (long acting, intermediate acting, short or rapid acting). Changes in insulin amount are part of the appropriate self-management of diabetes and do not disqualify an applicant or incumbent under this section.

[4] Changes in dose within the evaluation period will be allowed but addition of a new class of medications or insulin should result in a new period of observation:

- one month for addition of a sulfonylurea or metformin
- two months for addition of a thiazolidinedione to insulin or a sulfonylurea
- three months for the addition of insulin.

[5] Testing schedules are individual. What follows is a common pattern. Individual patterns may differ.

Therapeutic Regimen	Glucose Testing Schedule
Diet alone	Once or twice a week
Metformin, Thiazolidinediones, or Alpha Glucosidase inhibitors alone or in combination	Once or twice a week
Sulfonylureas, meglitanides, nateglinide — alone or in combination with the above group	Twice a day — AM and at supper; with any suspected hypoglycemic episodes
Insulin — one shot in combination with orals	Twice a day AM and at supper, with any suspected hypoglycemic episodes. 2–3 AM once a week
Insulin — two or more shots, Insulin pump	3 to 4 times a day — at meals and bedtime. 2–3 AM once a week; with any suspected hypoglycemic episodes

[6] See http://care.diabetesjournals.org/cgi/content/full/28/suppl_1/s72

[7] See http://care.diabetesjournals.org/cgi/content/full/27/suppl_1/s91

[8] If Hemoglobin A1C > 8% this may signal a problem with diabetes management that warrants further assessment.

[9] See http://care.diabetesjournals.org/cgi/content/full/28/suppl_1/s61

[10] No more than one dot, blot, or flame-shaped hemorrhages or microaneurysm in all four fundus quadrants. http://www.jceh.co.uk/journal/46_04.asp

[11] See www.med.umich.edu/mdrtc/textonly/educmats/MNSI_howto.doc

[12] Orthostatic hypotension is a physical finding defined by the American Autonomic Society and the American Academy of Neurology as a systolic blood pressure decrease of at least 20 mm Hg or a diastolic blood pressure decrease of at least 10 mm Hg within three minutes of standing. http://www.aafb.org/afp/20031215/2393.html

[13] See Gibbons, et al. [2002]. ACC/AHA 2002 guideline update for exercise testing: a report of the American College of Cardiology/American Heart Association Task Force or Practice Guidelines. Circulation *106*(14):1883–1892.

[14] See http://care.diabetesjournals.org/cgi/content/full/27/suppl_1/s79. GFR calculator: www.nephron.com/mdrd/default.html.

FIGURE E.1 *Continued*

Annex F Informational References

F.1 Referenced Publications. The documents or portions thereof listed in this annex are referenced within the informational sections of this standard and are not part of the requirements of this document unless also listed in Chapter 2 for other reasons.

F.1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, 2013 edition.

NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, 2009 edition.

NFPA 1003, *Standard for Airport Fire Fighter Professional Qualifications*, 2010 edition.

NFPA 1006, *Standard for Technical Rescuer Professional Qualifications*, 2008 edition.

NFPA 1021, *Standard for Fire Officer Professional Qualifications*, 2009 edition.

NFPA 1051, *Standard for Wildland Fire Fighter Professional Qualifications*, 2012 edition.

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 2013 edition.

NFPA 1561, *Standard on Emergency Services Incident Management System*, 2008 edition.

NFPA 1583, *Standard on Health-Related Fitness Programs for Fire Department Members*, 2008 edition.

NFPA 1584, *Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises*, 2008 edition.

F.1.2 Other Publications.

F.1.2.1 ANSI Publication. American National Standards Institute, Inc., 25 West 43rd Street, 4th Floor, New York, NY 10036.

ANSI S3.6, *Specification for Audiometers*, 1996.

F.1.2.2 IAFF Publications. International Association of Fire Fighters, 4025 Fare Ridge Drive, Fairfax, VA 22033.

The Fire Service Joint Labor Management Wellness–Fitness Initiative, 3rd edition. Available at http://www.iafc.org/Operations/content.cfm?ItemNumber-1173.

F.1.2.3 U.S. Government Publications. U.S. Government Printing Office, Washington, DC 20402.

National Diabetes Information Clearinghouse, National Institute of Diabetes and Digestive and Kidney Diseases, National Institute of Health (NIH), Sickle Cell Trait and Other Hemoglobinopathies and Diabetes. Important Information for Physicians, http//diabetes.niddk.nih.gov/dm/pubs/hemovari-A1C/.

Title 21, Code of Federal Regulations, Part 801.420, "Hearing aid devices; professional and patient labeling," 1999.

Title 29, Code of Federal Regulations, Part 1630.2(n)(3), "Regulations to Implement the equal employment provisions of the Americans with Disabilities Act," 2003.

Title 29, Code of Federal Regulations, Part 1910.95, "Occupational noise exposure," 1996.

F.1.2.4 Additional Publications. *American Thoracic Society Guidelines-Journal-of-Occupational-and-Environmental-Medicine*, 2000.

Fire Service Joint Labor-Management Wellness-Fitness Initiative, International Association of Fire Fighters, 1750 New York Avenue, NW, Washington, DC 20006/International Association of Fire Chiefs, 4025 Fair Ridge Drive, Suite 300, Fairfax, VA 22033, 1999.

Journal of the American College of Cardiology, October 1994.

F.2 Informational References. The following documents or portions thereof are listed here as informational resources only. They are not a part of the requirements of this document.

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U.S. Preventive Services Task Force. 1996. *Guide to Clinical Prevention Services*, 2nd edition. Baltimore, MD: Williams & Wilkins, 3–14.

F.2.2 Spinal Fusion and Its Impact on Adjacent Vertebral Level. Eck, J. C., S. C. Humphreys, and S. D. Hodges. 1999. "Adjacent-segment degeneration after lumbar fusion: a review of clinical biomechanical and radiologic studies." *Am J Orthopedics* 1999; 28(6):336–340.

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F.2.3 Cardiology. Alfred, E. N., E. R. Bleecker, B. R. Chaitman, T. E. Dahms, S. O. Gottlieb, J. D. Hackney, M. Pagano, R. H. Selvester, W. M. Walden, and J. Warren. 1989. "Short-term effects of carbon monoxide exposure on the exercise performance of subjects with coronary artery disease." *N Engl J Med* 321(21):1426–1432.

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F.2.5 Pulmonary Function Testing: Challenge Testing and Exercise Testing.

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F.2.7 Cancer Screening.

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F.3 References for Extracts in Informational Sections.

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NFPA 1583, *Standard on Health-Related Fitness Programs for Fire Department Members,* 2008 edition.

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