

CITY OF AVONDALE



WASTEWATER TREATMENT PLANT

VOLUME I

PART A -- BIDDING AND CONTRACT
REQUIREMENTS

PART B -- TECHNICAL SPECIFICATIONS
(DIVISIONS 1 THROUGH 10)

Property of
 Flood Control District of MC Library
 Please Return to
 2801 W. Durango
 Phoenix, AZ 85009

MAY 1988



BROWN AND CALDWELL
Consulting Engineers

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| FLOOD CONTROL DISTRICT RECEIVED | | |
| JUN 20 '88 | | |
| CH ENG | | P & PM |
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| REMARKS | | |

PART A

BIDDING AND CONTRACT REQUIREMENTS

ENGINEERING DIVISION
LIBRARY

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SECTION 00020

INVITATION TO BID

CITY OF AVONDALE, ARIZONA
WASTEWATER TREATMENT FACILITY

Sealed bids for the construction of the City of Avondale, Arizona, Wastewater Treatment Facility will be received by the Owner, the City of Avondale, by the City Clerk, 525 North Central Avenue, Avondale, Arizona, 85323, until 3 p.m. Mountain Standard time on September 15, 1988. As soon thereafter as possible, the bids will be transported to the City Council Chambers where they will be opened publicly and read aloud. Bids shall be addressed: City of Avondale City Clerk, 525 North Central Avenue, Avondale, Arizona, 85323, and shall be labeled "Bids for Wastewater Treatment Facility".

The work includes all labor, materials, and equipment required for construction of: (1) a wastewater interceptor, (2) a 3.5-million-gallon-per-day (mgd) (average dry weather flow) wastewater treatment plant, and (3) a 48-inch diameter outfall from the treatment plant to the Salt River Project canal for the City of Avondale.

Work on the wastewater interceptor includes the construction of a raw sewage lift station with 2 pumps, a motor control center, an emergency generator, and a ferrous chloride feed system; approximately 4,200 linear feet of 16-inch diameter force main; *see p. 02327-1* approximately 120 linear feet of 36-inch diameter reinforced concrete pipe jacked in place under a soil-cement levee; approximately 1,100 linear feet of 30-inch diameter gravity sewer; *Sheet C108=175* and approximately 2,600 linear feet of 48-inch diameter gravity sewer. The interceptor pumping station will be constructed at the existing treatment plant site, at Fourth Street and Lower Buckeye Road in Avondale, Arizona. The force main will run diagonally across the Agua Fria River from the interceptor pumping station to Dysart Road on the east side of the Agua Fria. The force main will discharge into a gravity sewer to be constructed along the east side of Dysart Road to the treatment plant site.

Work on the wastewater treatment plant includes the construction of a raw sewage pumping station with 2 pumps; headworks with 1 manual and 1 mechanical bar screen, agitation air blower, chemical mist-type odor removal system, and vortex-type grit removal system; oxidation channel with a jet aeration system

including 3 pumps and 3 blowers; mixed liquor transfer channel with 2 blowers; 2 secondary clarifiers; chlorination system; effluent pumping station; service water pumping station; solids handling system including a dissolved air flotation thickener, waste sludge holding tank, and 14 sludge drying beds; necessary appurtenances to make the plant fully operational; landscaping, paving and grading; outside piping; electrical and instrumentation work; equipment testing and commissioning; and all work necessary for a complete and operable installation as shown and specified. The wastewater treatment plant will be constructed on an 80-acre parcel just west of Dysart Road, which is described as the South 1/2 of the Northeast 1/4 of Section 27, Township 1 North, Range 1 West, Gila and Salt River Base and Meridian, Maricopa County, Arizona, except the East 33 feet.

Work on the effluent outfall includes the construction of approximately 1,100 linear feet of 48-inch diameter outfall pipe with discharge to the Salt River Project (SRP) canal which crosses Dysart Road approximately a quarter of a mile north of Southern Avenue. Jacking will be required to pass under the 114-inch diameter Arizona Nuclear Power Plant cooling water pipe line along the south side of the treatment plant site. A headwall will be constructed at the SRP canal. The outfall will run south from the treatment plant site along Dysart Road, to the SRP canal.

The project manual may be inspected at the following locations:

City of Avondale
City Hall
525 North Central Avenue
Avondale, Arizona 85323
(602) 932-2400

Brown and Caldwell
2025 North Third Street
Suite 145
Phoenix, Arizona 85004
(602) 253-2524

F. W. Dodge Plan
Suite 202
5225 North Central Avenue
Phoenix, AZ 85012
(602) 264-6516

F. W. Dodge Plan
4907 East Broadway
Tucson, AZ 85711
(602) 747-4988

Plan Service
2050 East University Drive
Phoenix, AZ 85034
(602) 258-1641

Copies of the project manual may be obtained at the office of Brown and Caldwell, 2025 North Third Street, Suite 145, Phoenix, Arizona, 85004, upon deposit of \$200.00 for each set. A \$100.00 refund will be given upon return of the manual, in good condition, within 15 calendar days after award of contract.

Full-size drawings may be obtained at the office of Brown and Caldwell, 2025 North Third Street, Suite 145, Phoenix, Arizona, 85004, at a cost of \$250.00 for each complete set. Individual full-size drawing sheets may also be obtained at a cost of \$2.00 for each sheet. No refunds for the cost of full-size drawings will be made. Full-size drawings will not be sent to full-size drawing holders when drawings are revised and issued as addenda unless reordered. Only revised half-size drawings will be issued as necessary with addenda. Full-size drawings will contain only the revisions made to the drawings at the time of issuance.

Each bid shall be accompanied by a bid guaranty bond, or a certified or cashier's check payable to the order of the Owner in an amount not less than ten percent (10%) of the amount of the bid as a guaranty that the bidder will execute the contract if it be awarded in conformity with the bid form. The successful bidder will be required to furnish performance and payment bonds, each in an amount not less than one hundred percent (100%) of the contract price.

The Owner reserves the right to reject any or all bids and to determine which bid is, in the Owner's judgment, the lowest responsive bid of a bidder or group of bidders. The Owner also reserves the right to waive any informalities in any bid and to delete certain items listed in the bid as set forth therein.

Bids received after the time established for receiving bids will not be considered. Except as provided in paragraph 00100-1.04 A.6, no bidder may withdraw his bid after the time established for receiving bids or before the award and execution of the contract, unless the award is delayed for a period exceeding ninety (90) calendar days.

Bidders on this work must comply with Presidential Executive Order 11246 as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR Part 60) and with all other applicable governmental requirements including, but not limited to, affirmative action programs and other equal employment opportunity actions.

Applications have been made to the United States Environmental Protection Agency (EPA) and the Construction Grants Division of the Arizona Department of Environmental Quality for financial assistance in the work proposed under this invitation to bid. EPA, in implementation of Executive Order 11246 (Equal Employment Opportunity), as amended, requires its constituent offices which provide financial assistance for construction, to conduct a prebid conference regarding Bid Conditions, Affirmative Action Requirements, and Equal Employment Opportunity.

A representative of EPA will be available to explain the affirmative action requirements for this project and to answer questions at a prebid conference at the office of Brown and Caldwell, 2025 North Third Street, Suite 145, Phoenix, Arizona, 85004, on September 1, 1988, at 1 p.m. Mountain Standard time.

Any contract or contracts awarded under this Invitation to Bid are expected to be funded in part by a grant from EPA. Neither the United States nor any of its departments, agencies, or employees is, or will be, a party to this Invitation to Bid or any resulting contract. This procurement will be subject to regulations contained in 40 CFR Part 33 (provided in Section 00585).

Bidders must qualify under "Bid Conditions, Affirmative Action Requirements, Equal Employment Opportunity," and must correctly prepare and submit the documents listed in Section 00300, Bid.

(Owner)

****END OF SECTION****

SECTION 00100

INSTRUCTIONS TO BIDDERS

1.01 INSPECTION OF SITE

Bidders are required to inspect the site of the work to satisfy themselves by personal examination or by such other means as they may prefer, of the location of the proposed work, and of the actual conditions of and at the site of work. No formal site tours will be given except at the prebid conference.

Entrance by bidders to the site of the work for purposes of making exploratory excavations shall be by special arrangement with the Owner and under conditions established by the Owner. If, during the course of his examination, a bidder finds facts or conditions which appear to him to be in conflict with the letter or spirit of the project manual, he may apply to the Owner, in writing, for additional information and explanation before submitting his bid.

Submission of a bid by the bidder shall constitute acknowledgement that, if awarded the contract, he has relied and is relying on his own examination of (1) the site of the work, (2) access to the site, and (3) all other data and matters requisite to the fulfillment of the work and on his own knowledge of existing facilities on and in the vicinity of the site of the work to be constructed under the contract.

The information provided by the Owner is not intended to be a substitute for, or a supplement to the independent verification by the bidder to the extent such independent investigation of site conditions is deemed necessary or desirable by the bidder. Bidder acknowledges that he has not relied upon Owner- or Construction Manager-furnished information regarding site conditions in preparing and submitting a bid hereunder.

1.02 EXAMINATION OF PROJECT MANUAL

Each bidder shall thoroughly examine and be familiar with those contract documents contained in the project manual. Submission of a bid shall constitute acknowledgment upon which the Owner may rely that the bidder has thoroughly examined and is familiar with the project manual. Failure or neglect of a bidder to examine any of the contract documents contained in the project manual shall in no way relieve him from any obligation with respect to his bid or to the contract. No claim for additional compensation will be allowed which is based upon a lack of knowledge of the work.

1.03 INTERPRETATION OF PROJECT MANUAL

Bidders, prospective subcontractors, manufacturers and suppliers may request interpretation of the project manual prior to bid opening. Requests shall be directed in writing to Brown and Caldwell, 2025 North Third Street, Suite 145, Phoenix, Arizona, 85004, telephone (602) 253-2524. Requests to clarify the source of materials, equipment, suppliers, or any other such matter which does not modify, change, increase, or decrease the scope of work requires no action by the Owner other than a response to the bidder requesting the clarification. Requests to clarify possible ambiguous, conflicting or incomplete statements or designs, or any other such clarification which modifies, changes, increases or decreases the scope of work, requires issuance of an addendum by the Owner for the interpretation to become effective.

1.04 BID DOCUMENTS

A. BID FORMS:

1. GENERAL: Bids shall be made on the blank bid forms prepared and provided by the Owner, without removal from the project manual. Bids shall give the prices proposed, both in writing and in figures, shall be signed by the bidder or his authorized representative, with his address.

2. BID PRICES: Bid prices shall include everything necessary for the completion of the work including but not limited to providing the materials, equipment, tools, plant and other facilities, and the management, superintendence, labor and services. Bid prices shall include allowance for federal, state and local taxes.

In the event of a difference between a price quoted in words and a price quoted in figures for the same quotation, the words shall be the amount bid. In the event that the product of a unit price and an estimated quantity does not equal, the extended amount quoted, the unit price shall govern, and the correct product of the unit price and the estimated quantity shall be deemed to be the amount bid. If the sum of two or more items in a bidding schedule does not equal the total amounts quoted, the individual item amounts shall govern and the correct total shall be deemed to be the amount bid.

3. BIDDER'S SIGNATURE AND AUTHORITY: If the bid is made by an individual, his name, signature, and post office address must be shown; if made by a firm of partnership, the name and post

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office address of the firm or partnership, a list of the partners, and the signature of at least one of the general partners must be shown; if made by a corporation, the bid shall show the name of the state under the laws of which the corporation is chartered, the name and post office address of the corporation, and the title of the person who signs on behalf of the corporation. If the bid is made by the corporation, a certified copy of the bylaws or resolution of the Board of Directors of the corporation shall be furnished showing the authority of the officer signing the bid to execute contracts on behalf of the corporation. If the bid is made by a joint venture, the bid shall be signed by a representative of one of the joint venture firms. Additionally, the bid shall include a copy of the resolution or agreement empowering the representative to execute the bid and bind the joint venture.

4. BID IRREGULARITIES: Each bid and the information requested, bound in the project manual, shall be enclosed in a sealed envelope and labeled as specified in the Invitation to Bid. Bidders are warned against making erasures or alterations of any kind, and bids which contain omissions, erasures, or irregularities of any kind may be rejected. No oral, telegraphic, or telephonic bids or modifications will be considered.

5. MODIFICATION OF BID: Modification of a bid already received will be considered only if the modification is received prior to the time established for receiving bids. Modifications shall be made in writing, executed, and submitted in the same form and manner as the original bid.

6. WITHDRAWAL OF BIDS: Within five days after the opening of bids, a bidder may withdraw his bid providing he can establish to the Owner's satisfaction that a mistake was made in preparing the bid. A bidder desiring to withdraw shall give written notice to the Owner, specifying, in detail, how the mistake occurred and how the mistake made the bid materially different than it was intended to be. Withdrawal will not be permitted for mistakes resulting from errors in judgment or carelessness in inspecting the site of the work or in reading the project manual.

7. MAJOR EQUIPMENT ITEMS: Certain items of major equipment to be provided under this contract are tabulated in Section 00450. The bidder shall write in the name of the manufacturer of the equipment to be provided for each major equipment item listed. Only one manufacturer shall be indicated for each item. By so indicating, the bidder warrants that equipment manufactured and/or supplied by the named manufacturer will be provided on the project unless review of submittal information or performance under tests reveals that the manufacturer is unresponsive to the contract.

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Failure to indicate a manufacturer for any single item of the equipment listed in the schedule may render the bid unresponsive to the invitation to bid and may be a basis for rejection of the bid.

The arrangements specified on the drawings are based on a particular manufacturer's equipment. Where the Contractor selects a manufacturer whose equipment arrangement is different than specified, the total amount listed in the bid shall provide for a complete operating installation for each equipment item listed, including any and all changes and additions in structure, piping, buildings, mechanical, electrical and control systems and accessories required to accommodate the listed manufacturer's equipment. The bid shall also include the preparation and submission of detailed drawings, calculations and manufacturer's data to allow evaluation of the proposed equipment and to show all modifications to the work as necessary to accommodate the proposed manufacturer's equipment.

In the event that the Owner, at its sole discretion, determines that the equipment of the manufacturer listed by the Contractor and submitted for review does not meet the requirements of the contract, the Contractor shall select and submit for review equipment of another manufacturer which does meet the contract, and no increase in the total amount of the contract shall be allowed.

B. ALTERNATIVE MATERIALS AND EQUIPMENT:

Manufacturers or suppliers of materials and equipment may offer an alternative product to the Contractor and request that alternatives to specified products be considered equal. Inclusion of such alternatives in the bid is the responsibility of the Contractor. Inclusion should only be considered if the Contractor believes the offered alternative is equal in quality to the specified product. After award of contract, such offers of alternative products will be reviewed and processed as a substitution provided under paragraph 00710-4.06.

C. BID GUARANTY:

The bid form shall be accompanied by a bid guaranty bond provided by a guaranty company authorized to carry on business in the State of Arizona for payment to the Owner in the sum of at least ten (10) percent of the total amount of the bid price, or, alternatively, by a certified or cashier's check, payable to the Owner in the sum of at least ten (10) percent of the total amount of the bid price. The bid guarantee bond shall be provided on the form included in Section 00410 of this project manual. The amount

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payable to the Owner under the bid guaranty bond, or the certified or cashier's check and the amount thereof, as the case may be, shall be forfeited to the Owner as liquidated damages in case of a failure or neglect of the bidder to furnish, execute, and deliver to the Owner the required performance and payment bonds provided respectively in Sections 00610 and 00620; evidences of insurance; and to enter into, execute, and deliver to the Owner the agreement on the form provided in Section 00510, within ten (10) calendar days after receiving written notice from the Owner that the award has been made and the agreement is ready for execution.

D. LIST OF SUBCONTRACTORS:

Each bidder shall have listed, on the form provided in Section 00430, the name, address, and description of the work, of each subcontractor to whom the bidder proposes to sublet portions of the work in excess of 0.5 percent of the total amount of his bid. For the purpose of this paragraph, a subcontractor is defined as one who contracts with the Contractor to provide materials and labor, labor only, or who specially fabricates and installs a portion of the work or improvement according to drawings contained in the project manual. Subsequent substitutions, if any, shall not be done without prior written consent of the Owner. Failure to list subcontractors may render a bid nonresponsive and may be grounds for rejection of the bid.

E. SMALL AND MINORITY BUSINESS ENTERPRISES:

The successful bidder shall comply with the requirements of Section 00587. In conformance with EPA procurement policy set forth in 40 CFR 33.240, the successful bidder shall take affirmative steps to assure that small, minority, and women's businesses are used when possible as sources of supplies, equipment, construction, and services. The affirmative steps shall include the following:

1. Including qualified small, minority, and women's businesses on solicitation lists.
2. Assuring that small, minority, and women's businesses are solicited whenever they are potential sources.
3. Dividing total requirements, when economically feasible, into small tasks or quantities to permit maximum participation of small, minority, and women's businesses.
4. Establishing delivery schedules, where the requirements of the work permit, which will encourage participation by small, minority, and women's businesses.

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5. Using the services and assistance of the Small Business Administration and the Office of Minority Business Enterprise of the U.S. Department of Commerce.

F. BIDDER'S MANPOWER ESTIMATE:

Within 10 days after the bids are opened, the apparent successful bidder shall complete and submit to the Owner a Bidder's Manpower Estimate setting forth the bidder's anticipated hours and trades to be used on the project. The estimate must include a projection of man-hours for minorities to be used in each trade on the project. A form for the Bidder's Manpower Estimate is included in Section 00422 of the project manual. The bidder may elect to complete the estimate and submit it with his bid.

1.05 BIDDER'S CERTIFICATIONS

A. QUALIFICATION OF BIDDER:

The General Contractor shall certify that he holds, at the time of bidding, and shall hold, throughout the period of the contract, an Arizona State contractor's license, and each bidder shall certify that he is licensed to do the type of work contemplated in the project manual if such is legally required. Bidder shall further certify that he is skilled and regularly engaged in the general class and type of work called for in the project manual.

The bidder also certifies that he is knowledgeable of the unusual and peculiar hazards associated with the general class and type of work required to construct the specified project within the terms given in the project manual. Bidder shall be competent and skilled in the protective measures necessary for the safe performance of the construction work with respect to such unusual and peculiar hazards.

B. ADDENDA:

Each bid form shall include specific acknowledgment, in the space provided, of receipt of all addenda issued and mailed by the Owner during the bidding period. Failure to so acknowledge may result in the bid being rejected as not responsive.

C. NONDISCRIMINATION IN EMPLOYMENT:

Bidder shall comply with Presidential Executive Order 11246 and submit with his bid the "Nondiscrimination in Employment" statement on the form provided in Section 00421 of the project manual.

1.06 POSTPONEMENT OF OPENING

The Owner reserves the right to postpone the date and time for receiving and/or opening of bids at any time prior to the date and time established in the Invitation to Bid. Postponement notices shall be mailed to bidders in the form of addenda.

1.07 REJECTION OF BIDS

A. IRREGULAR BIDS:

The Owner reserves the right to reject bids which are incomplete, obscure, or irregular; bids which omit a bid on any one or more items for which bids are required; bids which omit unit prices if unit prices are required; bids in which unit prices are unbalanced in the opinion of the Owner; bids accompanied by insufficient or irregular bid security; and bids from bidders who have previously failed to perform properly or to complete on time contracts of any nature.

B. COLLUSION:

If the Owner has reason to believe that collusion exists among bidders, the Owner will reject the bids of the known participants in such collusion and may, at its option, require that all bidders certify under penalty of perjury, that no collusion has occurred or exists. The Owner also, at its option, may reject all bids received.

1.08 RETURN OF BID GUARANTIES

Within 15 calendar days after the bids are opened, the Owner will return the bid guaranties accompanying the bids which are not to be considered in making the award. All other bid guaranties will be held until the contract has been fully executed; after which, they will be returned to the respective bidders whose bids they accompanied.

1.09 AWARD OF CONTRACT

A. GENERAL:

Within ninety (90) calendar days after the date of opening bids, the Owner will act either to accept a bid or to reject all bids. Acceptance of a bid will be evidenced by a notice of award of contract in writing, delivered in person, or by certified mail, to the bidder whose bid is accepted. No other act of the Owner shall constitute acceptance of a bid. The award of contract shall obligate the bidder, whose bid is accepted, to furnish performance and payment bonds and evidences of insurance, and to execute the agreement set forth in the project manual.

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The Owner will award a contract to the lowest responsive, responsible bidder on the basis of the sum of the totals of the items of the schedule as calculated from the given estimated quantities and the unit prices or lump sum amounts submitted.

B. PREAWARD ACTIONS:

1. EQUAL EMPLOYMENT OPPORTUNITY STATEMENTS: The apparent low bidder must, if requested, submit a list of the subcontractors who will perform work on the project and written signed statements from authorized agents of the labor pools with which he will or may deal for employees on the work, together with supporting information to the effect that said labor pools' practices and policies are in conformity with Executive Order 11246, as amended, and that said labor pools will affirmatively cooperate in or offer no hindrance to the recruitment, employment, and equal treatment of employees seeking employment and performing work under the contract or a certification as to what efforts have been made to secure such statements when such agents or labor pools have failed or refused to furnish same prior to the award of the contract.

2. CERTIFICATE OF NONSEGREGATED FACILITIES: A Certification of Nonsegregated Facilities, as required by the May 9, 1967, Order (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of this contract. A form for this is included in Section 00580 of the project manual.

3. EPA CONFERENCE: The Environmental Protection Agency, in implementation of Executive Order 11246 (Equal Employment Opportunity), as amended, requires its constituent agencies which provide financial assistance to conduct Equal Employment Opportunity Compliance Reviews prior to award of construction contracts.

The apparent low bidder, therefore, shall be prepared to attend a meeting that will be scheduled by the Environmental Protection Agency after opening of bids, but before award, where he will be requested to specify what affirmative action he has taken or proposed to take to assure equal employment opportunity on the project. Until a determination has been made by the Environmental Protection Agency that a satisfactory compliance position exists on the part of the prospective contractor, and the determination has been concurred in by the Department of Labor, Office for Equal Opportunity, award of the contract will not be authorized.

1.10 EXECUTION OF CONTRACT

A. GENERAL:

The contract agreement as provided in Section 00510 shall be executed in quadruplicate by the successful bidder and returned with the performance and payment bonds and evidences of insurance, within 10 calendar days after receiving written notice of the award of the contract. After execution by the Owner, one copy of the agreement shall be returned to the Contractor.

B. REQUIREMENTS PRIOR TO EXECUTION:

1. AFFIRMATIVE ACTION PROGRAM FOR SUBCONTRACTORS: A written affirmative action program shall be submitted to the Environmental Protection Agency, if required, in every subcontract of \$10,000 or more which obligates the subcontractor to a program of affirmative action.

2. CERTIFICATE OF NONSEGREGATED FACILITIES: Contractors will be required to provide for the forwarding of the following notice to prospective subcontractors for supply and construction contracts where the subcontracts exceed \$10,000 and are not exempt from the provisions of the Equal Opportunity Clause:

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT
FOR CERTIFICATION OF NONSEGREGATED FACILITIES

"A Certification of Nonsegregated Facilities, as required by the May 9, 1967, Order (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding \$10,000 which is not exempt from the provisions of the Equal Opportunity Clause."

Subcontractors receiving subcontract awards exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause will be required to provide for the forwarding of this notice to their prospective subcontractors for supply and construction contracts where the subcontracts exceed \$10,000 and are not exempt from the provisions of the Equal Opportunity Clause.

C. PRESIDENTIAL EXECUTIVE ORDER 11246:

The recruitment, training, or employment of minorities is a responsibility of the Contractor or subcontractor regardless of

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previous agreements with labor unions. The Contractor or subcontractor must satisfy the requirements of Executive Order 11246, as amended by Executive Order 11375 and as supplemented in Department of Labor regulations (41 CFR Part 60). In addition to the requirements stated in the notice below and in 41 CFR 60-4.3, included in Section 00584 of the project manual, if requested by the Environmental Protection Agency, the Contractor shall submit a Manpower Utilization Report to the Owner on a monthly basis.

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The offeror's or bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein. This notice and EEO specification must be included in the Invitation for Bids.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

Goals and timetables for female participation in each trade:

Goals and timetables for minority participation in each trade:

Maricopa County, Arizona

All trades ten percent

These goals are applicable to all the Contractor's construction work (whether or not it is federal or federally assisted) performed in the covered area.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ

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minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from the Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 of any tier for construction work under the contract resulting from this address and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.
4. As used in this notice and in the contract resulting from this solicitation, the "covered area" is Maricopa County, Arizona.

1.11 LABOR REQUIREMENTS

A. WAGE DETERMINATION:

Wages to be paid laborers and mechanics on this project shall be no less than the minimum either as determined by the Secretary of Labor or as determined by the Industrial Commission of Arizona. A copy of the Minimum Federal Wage Determination is included in Section 00582.

Copies of such prevailing rate of per diem wages are on file at the City of Avondale City Clerk's office, which copies shall be made available to any interested party on request. The successful bidder shall post a copy of such determination at each job site.

In order to comply with 29 CFR 1.6(c)(3)(i), all bid prices will be considered as having been prepared using the wage determinations published with these bid documents. Any changes in these rates as published prior to the day of the bid opening will be required and grant eligible. Associated changes in project costs will be addressed by change order after contract award. No change orders will be approved for wage rates published after the bid award except as noted below.

1.11 A.

In compliance with 29 CFR 1.6(c)(3)(iv), contracts awarded 90 or more days following bid opening are subject to any revised labor rates published between the bid opening and the date the contract is awarded. Associated cost changes will be addressed by change order after contract award.

B. COMPLIANCE WITH LABOR STANDARDS:

The Contractor shall comply with the Labor Standards set forth in the Federal Water Pollution Control Act relative to the payment of prevailing wages (Wage Determination) as determined by the Secretary of Labor and certain other labor standards and procedures as set forth herein. A copy of the Labor Standards is bound herein in Section 00583 of the project manual and is hereby made a part of this contract.

C. SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION:

The Contractor shall comply with all relevant provision of the Safety and Health Regulations for Construction, promulgated by the Secretary of Labor under Section 107 of the Contract Work Hours and Safety Standards Act as set forth in Title 29, CFR.

1.12 SOIL INFORMATION

Subsoil investigations have been conducted at the site of the work, and the corresponding reports may be examined at the office of Brown and Caldwell, 2025 North Third Street, Suite 145, Phoenix, Arizona, 85004. Soil investigations were conducted for design purposes, and the data shown in the reports are for subsurface conditions found at the time of the investigation.

The Owner disclaims responsibility for the interpretation by bidders of data, such as projecting or extrapolating from the test holes to other locations on the site of the work soil bearing values and profiles, soil stability and the presence, level and extent of underground water for subsurface conditions during construction operations.

1.13 SUPPLEMENTARY GENERAL CONDITIONS

As provided in federal regulation 40 CFR Part 33 (see Sections 00585 and 00800), this contract includes the provisions set forth under 40 CFR Part 33, Subpart F as supplementary general conditions.

1.14 INFORMATION REGARDING BUY AMERICAN PROVISION

The Buy American Provision of Public Law 95-217 (Section 215 of Public Law 92-500 as amended) as implemented by EPA regulations and guidance, generally requires that preference be given to the use of domestic construction material in the performance of this contract.

Bid or proposals offering use of nondomestic construction material may be acceptable for award if the Regional Administrator waives the Buy American Provision based upon those factors that are deemed relevant, including (1) such use is not in the public interest; (2) the cost is unreasonable; (3) the available resources of the agency are not sufficient to implement the provision; or (4) the articles, materials or supplies of the class or kind to be used or the articles, materials or supplies from which they are manufactured are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality for the particular project. The Regional Administrator may also waive the Buy American Provision if it is determined that application of this provision is contrary to multilateral government procurement agreements. Such evidence as the EPA Regional Administrator may seem relevant shall be furnished to justify use of nondomestic construction material.

1.15 PROJECT FINANCING

The construction of the City of Avondale Wastewater Treatment Facility is financed by governmental grants and Owner's funds. The U.S. Environmental Protection Agency has approved a request from the Owner and has authorized a grant No. _____ in an amount equal to (___ %) percent of the construction cost. Owner's share of the construction cost is funded from the sale of general obligation bonds.

END OF SECTION

SECTION 00300

BID

City of Avondale
525 North Central Avenue
Avondale, Arizona 85323

Date: _____

The undersigned, as bidder, declares that we have received and examined the project manual entitled City of Avondale Wastewater Treatment Facility and will contract with the Owner, on the form of agreement provided herewith, to do everything required for the fulfillment of the contract.

We agree that the contract documents include Parts A, B and C of this project manual as well as the referenced federal and state requirements for financial assistance.

We agree that the following shall form a part of this bid:

| <u>Section</u> | <u>Title</u> |
|----------------|---|
| 00300 | Bid |
| 00310 | Bidding Schedule |
| 00410 | Bid Guaranty Bond |
| 0042I | Nondiscrimination in Employment |
| 00422 | Bidders Manpower Estimate |
| 00423 | Certification of Bidder's Experience and Qualifications |
| 00430 | Proposed Subcontractors |
| 00440 | Affirmative Action Program |
| 00450 | Schedule of Manufacturers and Suppliers, Major Equipment and Material Items |

We acknowledge that addenda numbers _____ through _____ have been received and have been examined as part of the project manual.

Attached is a bid guaranty bond duly completed by a guaranty company authorized to carry on business in the State of in the amount of at least ten percent of the total amount of our bid, or alternatively, there is attached a certified or cashier's check payable to the Owner in the amount of at least ten percent of the total amount of our bid.

If our bid is accepted, we agree to sign the agreement without qualifications and to furnish the performance and payment bonds and the required evidences of insurance within 10 calendar days after receiving written notice of the award of the contract.

We further agree, if our bid is accepted and a contract for performance of the work is entered into with the Owner, to so plan work and to prosecute it with such diligence that the work shall be completed within the time stipulated.

Name of Bidder

Contractor's License No.

Signature of Bidder

Title of Signator

Witness

Address of Bidder

Title of Witness

State of Incorporation

END OF SECTION

SECTION 00310

BIDDING SCHEDULE

ITEM A: For construction of the City of Avondale Wastewater Treatment Facility, comprising all items shown and/or specified, the lump sum of:

_____ dollars (\$_____).

END OF SECTION

SECTION 00410

BID GUARANTY BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT _____, hereinafter called the Principal, and _____, hereinafter called the Surety, are jointly and severally held and firmly bound unto the City of Avondale, hereinafter called the Obligee, each in the penal sum of ___ percent of the total amount of the bid of the Principal for the work, this sum not to exceed _____ dollars (\$ _____) of lawful money of the United States for the payment whereof unto the Obligee, the Principal and Surety jointly and severally bind themselves forever firmly by these presents.

WHEREAS, the Principal is herewith submitting its offer for the fulfillment of Obligee's contract for construction of the City of Avondale Wastewater Treatment Facility.

NOW, THEREFORE, the condition of this obligation is such that if the Principal is awarded the contract, and if the Principal, within the time specified in the bid for such contract, enters into, executes, and delivers to the Obligee an agreement in the form provided herein complete with evidences of insurance, and if the Principal within the time specified in the bid gives to the Obligee the performance and payment bonds on the form provided herein, then this obligation shall be void; otherwise, the Principal and Surety will pay unto the Obligee the difference in money between the total amount of the bid of the Principal and the amount for which the Obligee legally contracts with another party to fulfill the contract if the latter amount be in excess of the former, but in no event shall the Surety's liability exceed the penal sum hereof.

AND IT IS HEREBY DECLARED AND AGREED that the Surety shall be liable under this obligation as Principal, and that nothing of any kind or nature whatsoever that will not discharge the Principal shall operate as a discharge or a release of liability of the Surety.

IT IS HEREBY FURTHER DECLARED AND AGREED that this obligation shall be binding upon and inure to the benefit of the Principal, the Surety, and the Oblige and their respective heirs, executors, administrators, successors and assigns.

SIGNED AND SEALED this _____ day of _____,
19____.

(SEAL)

Principal

Signature for Principal

Title of Signator

(SEAL)

Surety

Signature for Surety

Title of Signator

END OF SECTION

SECTION 00421

NONDISCRIMINATION IN EMPLOYMENT

In accordance with the requirements of Presidential Executive Order No. 11246, the bidder must complete the following statement:

The undersigned, as bidder, states that he has, has not, (cross out one) previously performed work subject to Presidential Executive Order No. 11246.

Name of Bidder

Signature of Bidder

Title of Signator

Address of Bidder

Witness

State of Incorporation

Title of Witness

END OF SECTION

SECTION 00422

BIDDER'S MANPOWER ESTIMATE

The undersigned bidder certifies that he is engaged in affirmative actions directed at promoting and ensuring equal employment opportunity in the personnel to be employed under this contract. The affirmative actions include specified, result-oriented efforts as set forth in 40 CFR, Part 8, Section 8.8

Bidder intends to use subcontractors for work as listed on the form, "Proposed Subcontractors," included herein. Bidder intends to use the construction trades listed below in performing the work called for in these contract documents and estimates the total manhours of work to be used in each trade to be as shown. The listing also includes the bidder's estimate of the majority man hours of work in each trade over the duration of the contract.

| <u>Trade</u> | <u>Estimated Total Man-hours</u> | <u>Estimated Minority Man-hours</u> |
|--------------|--------------------------------------|---|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

Name of Bidder

Signature of Bidder

Title of Signator

END OF SECTION

SECTION 00423

CERTIFICATION OF BIDDER'S
EXPERIENCE AND QUALIFICATIONS

The undersigned bidder certifies that he is, at the time of bidding, and shall be, throughout the period of the contract, licensed by the State of Arizona to do the type of work required under terms of the contract documents. Bidder further certifies that he is skilled and regularly engaged in the general class and type of work called for in the contract documents.

In accordance with the requirements of paragraph 00100-1.05 A, the bidder represents that he is competent, knowledgeable and has special skills on the nature, extent and inherent conditions of the work to be performed. Bidder further acknowledges that there are certain peculiar and inherent conditions existent in the construction of the particular facilities which may create, during the construction program, unusual or peculiar unsafe conditions hazardous to persons and property. Bidder expressly acknowledges that he is aware of such peculiar risks and that he has the skill and experience to foresee and to adopt protective measures to adequately and safely perform the construction work with respect to such hazards.

Signed this _____ day of _____, 19____.

Name of Bidder

Contractor's License No. and
State

Signature of Bidder

Title of Signator

END OF SECTION

SECTION 00430

PROPOSED SUBCONTRACTORS

The following information gives the name, business address, and portion of work (description of work to be done) for each subcontractor that will be used in the work if the bidder is awarded the contract. No subcontractor doing work in excess of 0.5 percent of the total amount of the bid and who is not listed shall be used without the written approval of the Owner. (Additional supporting data may be attached to this page. Each page shall be sequentially numbered, e.g., 00430-2, and headed "Proposed Subcontractors" and shall be signed.)

| <u>Name</u> | <u>Business Address</u> | <u>Description of Work</u> |
|-------------|-------------------------|----------------------------|
|-------------|-------------------------|----------------------------|

Signature of Bidder

END OF SECTION

00430-1

SECTION 00450

SCHEDULE OF
MANUFACTURERS AND SUPPLIERS
MAJOR EQUIPMENT AND MATERIAL ITEMS

In accordance with paragraph 00100-1.04 A.7, the bidder proposes that the named items of major equipment and materials will be supplied by the manufacturers or suppliers as written in by the bidder.

| <u>Item</u> | <u>Manufacturer or Supplier</u> |
|---|---------------------------------|
| 1. Sluice gates | _____ |
| 2. Slide gates | _____ |
| 3. Jet aeration systems | _____ |
| 4. Articulated rake cleaned bar screen | _____ |
| 5. Grit separator and dewatering equipment | _____ |
| 6. Grit removal unit | _____ |
| 7. Secondary clarifiers | _____ |
| 8. Fine bubble diffusers | _____ |
| 9. Vertical mixed flow pumps | _____ |
| 10. Axial flow propeller pumps | _____ |
| 11. Vertical turbine pumps | _____ |
| 12. Non-clog vertical column wastewater pumps | _____ |
| 13. Submersible pumps | _____ |
| 14. Submersible non-clog pumps | _____ |
| 15. Recessed impeller pump | _____ |
| 16. Hydraulic diaphragm meter pumps | _____ |

| <u>Item</u> | <u>Manufacturer or Supplier</u> |
|---|---------------------------------|
| 17. Rotary lobe pumps | _____ |
| 18. Instrument air compressors | _____ |
| 19. Service air compressors | _____ |
| 20. Rotary positive displacement blowers | _____ |
| 21. Multistage centrifugal blowers | _____ |
| 22. Regenerative blowers | _____ |
| 23. Waste sludge thickener | _____ |
| 24. Chlorinators | _____ |
| 25. Odor control system | _____ |
| 26. Screenings dewatering conveyor | _____ |
| 27. Reinforced concrete pipe | _____ |
| 28. Ductile iron pipe | _____ |

END OF SECTION

SECTION 00510

AGREEMENT

THIS AGREEMENT, made this _____, day of _____, 1988, by and between the City of Avondale, hereinafter called the "Owner", and _____, hereinafter called the "Contractor".

WITNESSETH:

WHEREAS, the Owner has caused a project manual to be prepared comprised of 2 volumes of bidding and contract requirements and technical specifications and 1 volume of drawings for the construction of the City of Avondale Wastewater Treatment Facility as described therein, and

WHEREAS, the Contractor has offered to perform the proposed work in accordance with the terms of the contract as defined in paragraph 00710-1.01 of Volume I of the specifications.

NOW, THEREFORE, in consideration of the mutual covenants and agreements of the parties contained in the contract and to be performed, the Contractor hereby agrees to complete the work at the price and on the terms and conditions therein contained, and the Owner agrees to pay the Contractor the contract price provided therein for the fulfillment of the work and the performance of the covenants set forth herein.

The further terms, conditions, and covenants of this agreement are set forth in the contract documents, each of which is attached hereto and by this reference made a part hereof:

Volumes I and II containing Part A, Bidding and Contract Requirements (including Addenda numbers _____ through _____); Part B, Technical Specifications; and Part C, a set of drawings consisting of 1 volume.

IN WITNESS WHEREOF, this agreement has been executed on this

_____ day of _____, 19__.

Signature for Owner

Title of Signator

Attest: _____
Signature

Title of Signator

Name of Contractor

Signature for Contractor

Title of Signature

Attest: _____
Signature

Title of Signature

****END OF SECTION****

SECTION 00580

CERTIFICATION OF NONSEGREGATED FACILITIES

The federally assisted construction contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are, in fact, segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. The federally assisted construction contractor agrees that (except where he has obtained identical certifications from proposed contractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

Name of Contractor

Signature of Contractor

Date

Name and Title of Signature
(please type)

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

END OF SECTION

SECTION 00582

MINIMUM FEDERAL WAGE DETERMINATION

In the event that the wage determination decision of the Secretary of Labor, which is attached hereto and made a part hereof, has been modified or superseded by any subsequent wage determination decision(s) published before contract award, the modification(s) or subsequent decision(s) shall be effective with respect to this contract.

In order to comply with 29 CFR 1.6(c)(3)(i), all bid prices will be considered as having been prepared using the wage determinations published with these bid documents. Any changes in these rates as published prior to the day of the bid opening will be required and grant eligible. Associated changes in project costs will be addressed by change order after contract award. No change orders will be approved for wage rates published after the bid award except as noted below.

In compliance with 29 CFR 1.6(c)(3)(iv), contracts awarded 90 or more days following bid opening are subject to any revised labor rates published between the bid opening and the date the contract is awarded. Associated cost changes will be addressed by change order after contract award.



GENERAL WAGE DECISION NO. AZ87-2

Supersedes General Wage Decision No. AZ86-2

State: ARIZONA

County(ies): Statewide

Construction Type: Heavy & Highway

Construction Description: Heavy & Highway Construction Projects

Modification Record:

| No. | Publication Date | Page No.(s) |
|-----|------------------|-------------|
| 1 | Jan. 23, 1987 | 16-18 |
| 2 | Mar. 6, 1987 | 19 |
| 3 | Mar. 13, 1987 | 16 |
| 4 | June 19, 1987 | 19 |
| 5 | Aug. 14, 1987 | 19 |



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| | Basic Hourly Rates | Fringe Benefits |
|---|--------------------------|--------------------|
| BRICKLAYERS; Stonemasons: | | |
| Northern Area: | | |
| Zone A | 18.43 | 3.04 |
| Zone B | 19.90 | 3.04 |
| Zone C | 20.83 | 3.04 |
| Zone D | 21.75 | 3.04 |
| Zone E | 22.48 | 3.04 |
| Zone F | 23.96 | 3.04 |
| Southern Area: | | |
| Zone A: | | |
| Bricklayers; Stonemasons | 13.13 | 2.62 |
| Manhole Builders | 13.43 | 2.62 |
| Zone B: | | |
| Bricklayers; Stonemasons | 13.50 | 2.62 |
| Manhole Builders | 13.80 | 2.62 |
| Zone C: | | |
| Bricklayers; Stonemasons | 13.88 | 2.62 |
| Manhole Builders | 14.18 | 2.62 |
| Zone D: | | |
| Bricklayers; Stonemasons | 14.63 | 2.62 |
| Manhole Builders | 14.93 | 2.62 |
| *CARPENTERS: | | |
| Northern Area: | | |
| Carpenters: Saw Filer | 18.625 | 2.55 |
| Piledrivermen | 18.98 | 2.55 |
| Millwrights | 19.29 | 2.59 |
| Central & Southern Areas: | | |
| Carpenters: Saw Filer | 16.125 | 2.55 |
| Piledrivermen | 16.48 | 2.55 |
| Millwrights | 16.29 | 2.59 |
| CEMENT MASONS: | | |
| Zone 1: | | |
| Northern Area: | | |
| Cement Masons | 17.50 | 3.05 |
| Concrete Troweling Machine; Sawing and Scoring Machine; Curb and Gutter Machine | 17.72 | 3.05 |
| Central & Southern Areas: | | |
| Cement Masons | 15.00 | 3.05 |
| Concrete Troweling Machine; Sawing and Scoring Machine; Curb and Gutter Machine | 15.52 | 3.05 |
| Zone 2: | | |
| Cement Masons | 15.43 | 2.62 |
| Concrete Troweling Machine; Sawing and Scoring Machine; Curb and Gutter Machine; Clary and similar type of power Screed Operator | 15.65 | 2.62 |
| ELECTRICIANS: | | |
| Area 1: | | |
| Electricians | 16.81 | 1.30+ 3.75% |
| Cable Splicers | 18.16 | 1.30+ 3.75% |
| Area 2: | | |
| Electricians' Technicians; Cable Spli- cers: | | |



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| | | | |
|--|--------|-------|-------|
| Zone A | 17.10 | 1.89+ | 3.5% |
| Zone B | 20.22 | 1.89+ | 3.5% |
| Area 3: | 18.24 | .80+ | 12% |
| Area 4: | | | |
| Electricians on projects having an electrical contract value of less than \$20 million | 16.00 | 2.14+ | 3% |
| Electricians on projects having an electrical contract value of \$20 million or more | 17.85 | 2.14+ | 3% |
| Area 5: | | | |
| Electricians | 17.00 | 1.00+ | 11.5% |
| Cable Splicers | 17.25 | 1.00+ | 11.5% |
| IRONWORKERS: | | | |
| Northern Area | 19.25 | 5.60 | |
| Southern Area | 16.25 | 5.60 | |
| *LABORERS: | | | |
| Area 1: | | | |
| Group 1 | 12.69 | 2.77 | |
| Group 2 | 15.15 | 2.77 | |
| Group 3 | 15.71 | 2.77 | |
| Group 4 | 15.97 | 2.77 | |
| Group 5 | 17.48 | 2.77 | |
| Barricade Setter: | | | |
| Placement, removal, transport, and maintenance of the traffic control devices | 5.90 | 1.27 | |
| Area 2: | | | |
| Group 1 | 10.19 | 2.77 | |
| Group 2 | 12.65 | 2.77 | |
| Group 3 | 13.21 | 2.77 | |
| Group 4 | 13.47 | 2.77 | |
| Group 5 | 14.98 | 2.77 | |
| Barricade Setter: | | | |
| Placement, removal, transport, and maintenance of the traffic control devices | 5.90 | 1:27 | |
| (Tunnel and Shaft Work): | | | |
| Area 1: | | | |
| Group 1 | 15.015 | 2.77 | |
| Group 2 | 15.25 | 2.77 | |
| Group 3 | 15.43 | 2.77 | |
| Group 4 | 15.94 | 2.77 | |
| Group 5 | 16.235 | 2.77 | |
| Area: 2 | | | |
| Group 1 | 12.515 | 2.77 | |
| Group 2 | 12.75 | 2.77 | |
| Group 3 | 12.93 | 2.77 | |
| Group 4 | 13.44 | 2.77 | |
| Group 5 | 13.735 | 2.77 | |
| LINE CONSTRUCTION: | | | |
| Zone 1: | | | |
| Groundmen | 13.41 | 4.75+ | 3.5% |
| Equipment Operator; Powdermen & Mechanics | 15.83 | 4.75+ | 3.5% |
| Linemen, Crane Operator, Sagger, and Pilot | 18.15 | 4.75+ | 3.5% |
| Cable splicers | 18.66 | 4.75+ | 3.5% |
| Zone 1-A: | | | |



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| | | | |
|---|-------|-------|--------|
| Groundmen | 14.41 | 4.75+ | 3.5% |
| Equipment Operator; Powdermen & Mechanics | 16.74 | 4.75+ | 3.5% |
| Linemen, Crane Operator, Sagger, and Pilot | 18.15 | 4.75+ | 3-1/2% |
| Cable splicers | 19.73 | 4.75+ | 3-1/2% |
| Zone 2: | | | |
| Groundmen | 15.40 | 4.75+ | 3-1/2% |
| Equipment Operator; Powdermen & Mechanics | 17.74 | 4.75+ | 3-1/2% |
| Linemen, Crane Operator, Sagger, and Pilot | 20.12 | 4.75+ | 3-1/2% |
| Cable splicers | 20.67 | 4.74+ | 3-1/2% |
| PAINTERS: | | | |
| Area 1: | | | |
| Zone A: | | | |
| Brush | 11.60 | 1.90 | |
| Brush, Steel & Bridge | 12.10 | 1.90 | |
| Spray | 12.05 | 1.90 | |
| Spray, Steel & Bridge | 12.60 | 1.90 | |
| Zone B: (\$0.75 per hour above Zone A BHR) | | | |
| Zone C: (\$1.75 per hour above Zone A BHR) | | | |
| Zone D: (\$2.00 per hour above Zone A BHR) | | | |
| Area 2: | | | |
| Zone A: | | | |
| Brush and Roller; Sandblaster (Nozzleman); Sheetrock Taper; Floor Coverer; Sandblaster (pot tender) | 13.54 | 1.30 | |
| Spray; Paperhanger | 13.79 | 1.30 | |
| Creosote Applier | 13.87 | 1.30 | |
| Swing Stage: | | | |
| Brush; Sandblaster | 13.94 | 1.30 | |
| Spray | 14.19 | 1.30 | |
| Steeplejack | 14.40 | 1.30 | |
| Steel and Bridge, Brush; Nozzleman and Pot Tender; Steel (steam cleaner); Electric and Air Tool Operator; Steel Sandblaster | 14.67 | 1.30 | |
| Steel Sandblaster | 14.67 | 1.30 | |
| Zone B: (\$1.00 per hour above Zone A (BHR)) | | | |
| Zone C: (\$2.50 per hour above Zone A BHR) | | | |
| Area 3: | | | |
| Zone A: | | | |
| Brush | 12.47 | 1.77 | |
| Spray; Sandblaster | 13.07 | 1.77 | |
| Paperhanger | 12.60 | 1.77 | |
| Swing Stage, under 40 feet: | | | |
| Brush | 12.77 | 1.77 | |
| Spray | 13.37 | 1.77 | |
| Swing Stage, over 40 feet: | | | |
| Brush | 13.47 | 1.77 | |
| Spray | 14.07 | 1.77 | |
| Structural Steel & Tanks: | | | |
| Brush | 13.47 | 1.77 | |



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| | | |
|--|-------|------|
| Spray & Sandblasters | 14.07 | 1.77 |
| Creosote Base and Bituminous material | 12.87 | 1.77 |
| Zone B: (\$0.75 per hour above Zone A BHR) | | |
| Zone C: (\$1.50 per hour above Zone A BHR) | | |
| Zone D: (\$2.75 per hour above Zone A BHR) | | |
| *PLUMBERS AND PIPEFITTERS: | | |
| Zone 1 | 16.50 | 3.33 |
| Zone 2 | 18.50 | 3.33 |
| Zone 3: | | |
| *Commercial | 16.84 | 3.58 |
| *Industrial | 18.34 | 3.58 |
| POWER EQUIPMENT OPERATORS: | | |
| Area 1: | | |
| Group 1 | 13.75 | 3.08 |
| Group 2 | 16.25 | 3.08 |
| Group 3 | 16.83 | 3.08 |
| Group 4 | 17.50 | 3.08 |
| Group 5 | 18.32 | 3.08 |
| Group 6 | 19.13 | 3.08 |
| Group 7 | 19.60 | 3.08 |
| Group 8 | 20.11 | 3.08 |
| Group 9 | 21.04 | 3.08 |
| Area 2: | | |
| Group 1 | 11.25 | 3.08 |
| Group 2 | 13.75 | 3.08 |
| Group 3 | 14.33 | 3.08 |
| Group 4 | 15.00 | 3.08 |
| Group 5 | 15.82 | 3.08 |
| Group 6 | 16.63 | 3.08 |
| Group 7 | 17.10 | 3.08 |
| Group 8 | 17.61 | 3.08 |
| Group 9 | 18.54 | 3.08 |
| TRUCK DRIVERS: | | |
| Area 1: | | |
| Group 1 | 15.33 | 2.67 |
| Group 2 | 15.53 | 2.67 |
| Group 3 | 15.86 | 2.67 |
| Group 4 | 16.38 | 2.67 |
| Group 5 | 16.61 | 2.67 |
| Group 5A | 16.90 | 2.67 |
| Group 6 | 17.10 | 2.67 |
| Group 7 | 17.70 | 2.67 |
| Group 8 | 18.48 | 2.67 |
| Group 8A | 19.62 | 2.67 |
| Group 8B | 18.98 | 2.67 |
| Area 2: | | |
| Group 1 | 12.83 | 2.67 |
| Group 2 | 13.03 | 2.67 |
| Group 3 | 13.36 | 2.67 |
| Group 4 | 13.88 | 2.67 |
| Group 5 | 14.11 | 2.67 |
| Group 5A | 14.40 | 2.67 |
| Group 6 | 14.60 | 2.67 |



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| | | |
|----------|-------|------|
| Group 7 | 15.20 | 2.67 |
| Group 8 | 15.98 | 2.67 |
| Group 8A | 17.12 | 2.67 |
| Group 8B | 16.48 | 2.67 |

WELDERS -- Receive the rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR, 5.5 (a) (1) (11))

AREA DESCRIPTIONS

BRICKLAYERS; STONEMASONS:

Northern Area: Apache, Coconino and Gila Counties; Graham County (west and north of the San Francisco River to the Gila River); Greenlee County (west and north of the San Francisco River to the Gila River); Maricopa, Mohave, and Navajo Counties; Pinal County (north of a boundary line drawn west along the Gila River to the western City limits of Florence, a straight line from the extreme southwestern City limits of Florence to the extreme southern City limits of Coolidge, then a straight line to the extreme southern City limits of Casa Grande, with the line extending to the Maricopa/Pinal County Line); Yavapai, Yuma and La Paz Counties:

- Zone A: 0-40 road miles from the City Hall in Phoenix
- Zone B: 40-50 road miles from the City Hall in Phoenix
- Zone C: 50-75 road miles from the City Hall in Phoenix
- Zone D: 75-100 road miles from the City Hall in Phoenix
- Zone F: 200 road miles and over from the City Hall in Phoenix

Southern Area: Cochise County; Graham County (east and south of the San Francisco River to the Gila River); Greenlee County (east and south of the San Francisco River to the Gila River); Pima County; Pinal County (south of a boundary line drawn west along the Gila River to the western City limits of Florence, a straight line from the extreme southwestern City limits of Florence to the extreme southern City limits of Coolidge, then a straight line to the extreme southern City limits of Casa Grande, with the line extending to the Maricopa/Pinal County Line); Santa Cruz Counties:

- Zone A: 0-15 road miles from Tucson City limits
- Zone B: 15-30 road miles from Tucson City limits
- Zone C: 30-40 road miles from Tucson City limits
- Zone D: Over 40 road miles from Tucson City limits

CARPENTERS:

Northern Area: Area north of a straight line drawn between a point 35 miles due north of the City Hall in Flagstaff and a point 35 miles due north of the City Hall in Kingman, extending to the Arizona/Nevada State Line on the west; and connecting to a point 35 miles due north of the City Hall in Holbrook, thence due east to the intersection of the Arizona/New Mexico State Line
 Central and Southern Areas: All areas not included in the Northern Area



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CEMENT MASONS:

Zone 1: Apache, Coconino, and Gila Counties; Graham County (north of Sentinel-Casa Grande-Safford Line); Greenlee County (north of Sentinel-Casa Grande-Safford Line); Maricopa County (north of Sentinel-Casa Grande-Safford Line); Mohave, and Navajo Counties; Pinal County (north of Sentinel-Casa Grande-Safford Line); Yavapai, Yuma and La Paz Counties;

NORTHERN AREA: Area North of a straight line drawn between a point 35 miles due north of the City Hall in Flagstaff and a point 35 miles due north of the City Hall in Kingman, extending to the Arizona/Nevada State Line on the west and connecting to a point 35 miles due north of the City Hall in Holbrook, thence due east to the intersection of the Arizona/New Mexico State Line.

CENTRAL and SOUTHERN AREAS: All Areas not included in the NORTHERN AREA

Zone 2: Southern parts of Cochise, Graham, Greenlee, Maricopa, and Pinal Counties; Pima and Santa Cruz Counties

ELECTRICIANS:

Area 1: Apache County (north of Highway #66)

Area 2: Coconino County; Navajo County (north and west of a boundary line beginning at a point where Clear Creek crosses the Coconino/Navajo County Line and then extending in a northeasterly direction along Clear Creek and northeasterly to Cottonwood Wash, along Cottonwood Wash extending northeasterly to where it intersects the Navajo Indian Reservation, then easterly along the Navajo Indian Reservation boundary line to a point where it intersects the Navajo/Apache County Line):

Zone A: 5 miles north-south, east and west of the Post Offices of Williams, Sedona, and Winslow

Zone B: Remainder of Area 2 not covered by Zone A

Area 3: Apache County (south of Highway #66); Gila County; Navajo County (south and east of a boundary beginning at a point where Clear Creek crosses the Coconino/Navajo County Line, then extending in a northeasterly direction along Clear Creek and northeasterly to Cottonwood Wash, along Cottonwood Wash extending northeasterly to where it intersects the Navajo Indian Reservation, then easterly along the Navajo Indian Reservation boundary line to a point where it intersects the Navajo/Apache County Line); Pinal County (north of the line, "First Standard Parallel South" and east of the line "Second Guide Meridian East")

Area 4: Maricopa and Mohave Counties; Pinal County (north and west of the boundary line beginning at a point where the Papago Indian Reservation Road #15 crosses the Pima/Pinal County Line, then extending in a northeasterly direction on the Papago Indian Reservation Road #15 to the intersection with the Florence Canal, north and east on the Florence Canal to the intersection with the line, "Second Guide Meridian East", then north to the Pinal/Maricopa County Line); Yavapai County

Area 5: Cochise, Graham, Greenlee, and Pima Counties; Pinal County (south and east of the boundary line beginning at a point where the Papago Indian Reservation Road #15 crosses the Pima/Pinal County Line, then extending in a northeasterly direction on the Florence Canal, north and east on the Florence Canal to the intersection

with the line, "Second Guide Meridian East", then north to the line, "First Standard Parallel South", and along that line to the Graham/Pinal County Line); Santa Cruz, Yuma, and La Paz Counties

IRONWORKERS:

Northern Area: Area from a line 10 miles north and parallel to Highway #66, north to the Arizona-Utah border and from the Arizona-California border east to the Arizona New Mexico border
Southern Area: All Areas not included in the Northern Area

LINE CONSTRUCTION:

Zone 1: Phoenix and Tucson 30 miles radius from the center of Town; Area within 10 mile radius from the City Hall in Yuma
Zone 1-A: Flagstaff, Globe, and Kingman; and 10 mile radius from the center of Town
Zone 2: Other areas not covered by Zone 1 and Zone 1-A

PAINTERS:

Area 1: Apache, Coconino, Navajo, and Yavapai Counties (north of Woodruff/Camp Wood Line); Mohave County (north of a line following the Geodetic Hualapai Boundary Line to the Colorado River, a distance of 23 miles east of Pierce Ferry and then intersecting the Arizona/Nevada State Line):

Zone A: 0-20 road miles from Courthouse in Flagstaff
Zone B: 20-35 road miles from Courthouse in Flagstaff
Zone C: 35-80 road miles from Courthouse in Flagstaff
Zone D: 80 road miles and over from Courthouse in Flagstaff

Area 2: Apache, Coconino, Navajo, and Yavapai Counties (south of the Woodruff/Camp Wood Line); Gila, Graham, Greenlee, Maricopa, and Pinal Counties (north of 33rd Parallel); Mohave County (south of a line following the Geodetic Hualapai Boundary Line to the Colorado River, a distance of 23 miles east of Pierce Ferry and then intersecting the Arizona/Nevada State Line):

Zone A: 0-40 paved road miles from Courthouse in Phoenix; also, Luke and Williams Air Force Bases
Zone B: 41-60 paved road miles from Courthouse in Phoenix
Zone C: 61 paved road miles and over from Courthouse in Phoenix

Area 3: Cochise County; Graham, Greenlee, Maricopa and Pinal Counties (south of 33rd Parallel); Pima, Santa Cruz, Yuma, and La Paz Counties:

Zone A: 0-30 paved road miles from Stone and Congress in Tucson or from the County Courthouse in Yuma
Zone B: 31-40 paved road miles from Stone and Congress in Tucson or from the County Courthouse in Yuma
Zone C: 41-50 paved road miles from Stone and Congress in Tucson or from the County Courthouse in Yuma
Zone D: 51 paved road miles and over from Stone and Congress in Tucson or from the County Courthouse in Yuma

PLUMBERS & PIPEFITTERS

ZONE 1



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Base points shall be: Phoenix--the intersection of Central Avenue and Jefferson Street; Flagstaff, Yuma, Kingman, Prescott, Havasu City and Winslow -- the main Post Office building in each city. The "Free Zone" (Zone No. 1) from Phoenix shall be 40 miles from the stated base point. The Free Zone from Flagstaff, Yuma, Kingman, Prescott, Havasu City and Winslow shall be 20 road miles from the stated base point. In addition, all areas within the city limits of Phoenix, Chandler, Scottsdale, Tempe, Glendale, Mesa and Gilbert, as well as that area bordered or encompassed by Apache Trail on the north, Higley Road on the east, Elliott Road on the south and Arizona Avenue on the west, and Sun City West will be included as Free Zones. Any work contracted for outside of these Free Zones will be determined from the Phoenix base point.

ZONE 2

Pay Zone shall refer to all jobs outside of the Free Zones listed above.

ZONE 3

Seven Southern Counties of Arizona: Pima, Gila, Pinal, Graham, Greenlee, Santa Cruz, and Cochise

LABORERS; POWER EQUIPMENT OPERATORS; and TRUCK DRIVERS:

Area 1: Area north of a straight line drawn between a point 35 miles due north of the City Hall in Flagstaff and a point 35 miles due north of the City Hall in Kingman, extending to the Arizona/Nevada State Line on the west; and connecting to a point 35 miles due north of the City Hall in Holbrook, thence due east to the intersection of Arizona/New Mexico State Line

Area 2: All Areas not included in Area 1

GROUP DESCRIPTIONS**LABORERS**

Group 1: Laborer, General or Construction; Tool Dispatcher or Checker; Manually Controlled Signal Operator; Fence Builder; Guard Rail Builder - highway; Chat Box Man; Dumpman and/or Spotter; Rip Rap Stone Man; Rock Slinger; Head Rock Slinger (\$.25); Form Stripper; Packing Rod Steel and Form Stripper; Packing Rod Steel and Pans; Cesspool Diggers and Installers; Astro Turf Layer; Clean Up - Bull Gang Trackman; Railroad Chipper (clearing and grubbing); Kettleman - Tarman; Spikers; Wrenchers - Creosote Tleman; Floor Sanders - Concrete; Sandblaster (Pot Tender); Powderman Tender; Fine Grader; All Tenders not herein separately classified; Window Cleaner Flaggers

Group 2: Chuck Tender (except tunnel); Concrete Laborer (belt, pipe and/or Hoseman); Cement Mason Tender; Cutting Torch Operator; Power-type Concrete Buggy; Bander

Group 3: Guinea Chaser; Operator and Tender of Pneumatic and Electric Tools; Concrete Vibrating Machines, Chain Saw Machines (on clearing and grubbing); Hydraulic Jacks and similar mechanical tools not separately herein classified; Pipe Caulker and/or Backup



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Man - Pipeline; Rigger and Signal Man - Pipeline; Pipe Wrapper; Cribber; Shorer (except tunnel); Pneumatic Gopher; Pre-cast, Manhole Erector

Group 4: Asphalt Raker and Ironer; Air and Water Washout Nozzleman (low and high pressure); Scaler (Using Bos n's Chair or Safety Belt); Tamper (mechanical - all types); Sandblaster (Nozzleman); Concrete Saw (hand-guided); Concrete Cutting Torch; Guniting (Gunman, Mixerman, Rodman); Bio-filler; Pressman; Installer; Operator; Hand-guided Trencher and similarly operated equipment; Driller (Jackhammer and/or Pavement Breaker); Grade Setter (pipeline); Pipe Layer (included but not limited to non-metallic transite and plastic pipe, sewer pipe, drain pipe, underground tile pipe and conduit)

Group 5: Drill Doctor and/or Air Tool Repairman; Scaler (Driller); Form Setter and/or Builder; Welder and/or Pipe Layer installing process piping; Driller - Core Diamond, Wagon, Air Track, Joy, Mustang, PR-143, 220 Gardner, Denver, Hydrasonic; Powder Man; Water Blaster Operator

(TUNNEL and SHAFT WORK)

Group 1: Bull Gang, Muckers, Trackman; Dumpmen; Concrete Crew (includes Rodders and Spreaders); Grout Crew; Swamper (Brakeman and Switchmen on tunnel work)

Group 2: Nipper; Chucktender, Cabletender; Vibratorman, Jackhammer, Pneumatic Tools (except Driller)

Group 3: Grout Gunman

Group 4: Timberman, Retimberman - wood or steel blaster, Driller, Powderman; Cherry Picker; Powderman - Primer House; Steel Form Raiser and Setter; Kemper and other Pneumatic Concrete Placer Operator; Miner - Finisher; Miners - Tunnel (hand or machine)

Group 5: Diamond Drill

Group 5A: Shaft and Raise Miner Welder

POWER EQUIPMENT OPERATORS

Group 1: Air Compressor Operator; Pump Operator; Conveyor Operator; Generator Operator (all); Power Grizzly Operator; Fireman (all); Welding Machine Operator; Tripper Operator; Concrete Mixer Operator skip type; Highline Cableway Signaller

Group 2: Oiler; Forklift and Ross Carrier Operator; Skiploader, 1 1/2 cu. yd. and less; Pavement Breaker; Roller Operator (except as otherwise classified); Wheel-type Tractor Operator (Ford-Ferguson type); Slurry Seal Machine Operator (driver Moto-paver); Power Sweeper

Group 3: Self-propelled Chip Spreading Machine Conveyor Operator; Dinky Operator, under 20 ton; Elevator Hoist Operator, Husky and similar



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Group 4: Motor Crane Driver; Beltconcrete Operator; Curing Machine Operator; Boring Bridge and Texture; Cross Tineing and Pipe Float; Straw Blower; Hydrographic Seeder; Hydrographic Mulcher; Jumbo Finishing Machine; Joint Inserter

Group 5: A-frame Boom Truck or Winch Truck Operator; Grade Checker (excluding Civil Engineer); Multiple Power Concrete Saw Operator; Screed Operator; Stationary Pipe Wrapping and Cleaning Machine Operator; Tugger Operator

Group 6: Aggregate Plant Operator (including crushing, screening, and sand plants, etc.); Asphalt Laydown Machine Operator; Asphalt Plant Mixer Operator; Boring Machine Operator; Concrete Mechanical Tamping, Spreading or Finishing Machine Operator (including Clary, Johnson or similar types); Concrete Pump Operator; Concrete Batch Plant Operator, all types and sizes; Conductor, Brakeman, or Handler; Drilling Machine Operator, all types and sizes except as otherwise classified; Field Equipment Serviceman; Kolman Belt Loader Operator or similar type; with belt width 48" or over; Locomotive Engineer (including Dinky 20 tons weight and over); Moto-paver and similar type equipment Operator; Operating Engineer Rigger; Pneumatic-tired Scraper Operator, up to and including 12 cu. yds. (Turnapull, Euclid, Cat, D.W. Hancock, and similar equipment); Power Jumbo Form Setter Operator; Pressure Grout Machine Operator (as used in heavy engineering construction); Road Oil Mixing Machine Operator; Roller Operator, on all type asphalt pavement; Self-propelled Compactor, with blade; Skip Loader Operator, all types with a rated capacity over 1-1/2 but less than 4 cu. yds.; Slip Form Operator (power driven lifting device for concrete forms); Soil Cement Road Mixing Machine Operator, single pass type; Stationary Central Generating Plant Operator, rated 300 K.W. or more; Surface Heater and Planer Operator; Traveling Pipewrapping Machine Operator

Group 7: Pneumatic-tired Scraper Operator, all sizes and types over 12 cu. yds. MRC (Turnapull, Euclid, Cat, D.W. Hancock and similar equipment); Tractor Operator (Pusher, Bulldozer, Scraper); Trenching Machine Operator

Group 8: Asphalt or Concrete Planing, Rotomill, and Milling Machine Operator; Auto Grade Machine Operator (CMI and similar equipment); Boring Machine Operator (including Mole, Badger and similar type); Concrete Mixer Operator, paving type and Mobile Mixers; Concrete Pump Operator, with boom attached (truck mounted); Crane Operator, Crawler and Pneumatic type under 100 ton capacity MRC; Crawler-type Tractor Operator, with boom attachment or Slope Bar; Derrick Operator; Forklift Operator for hoisting personnel; Gradall Operator; H.D. Mechanic and/or Welder; Helicopter Hoist Operator; Highline Cableway Operator (less than 20 tons rated capacity); Mass Excavator Operator (150 Bucyrus Erie and similar types); Mechanical Hoist Operator (two or more drums); Motor Grader Operator, any type power blade; Motor Grader Operator, with Elevating Grader attachment; Mucking Machine Operator; Overhead Crane Operator; Piledriver Engineer (portable, stationary or skid rig); Pneumatic-tired Scraper Operator, all sizes and types (Turnapull, Euclid, Cat, D.W. Hancock and similar equipment over 45 cu. yds. MRC); Power driven Ditch Lining or Ditch Trimming Machine Operator; Skip Loader Operator, all

types rated capacity 4 cu. yds. but less than 8 cu. yds.; Slip Form Paving Machine Operator (including Gunnert, Zimmerman and similar types); Specialized Power Digger Operator, attached to wheel-type tractor; Tower Crane (or similar type) Operator; Tugger Operator (two or more); Universal Equipment Operator, Shovel, Backhoe, Dragline, Clamshell, etc., up to 8 cu. yds.

Group 9: Crane Operator, Pneumatic or Crawler, 100 ton hoisting capacity and over MRC rating; Helicopter Pilot, FAA qualified, when used in construction work other than executive travel and single casual rental; Highline Cableway Operator, over 20 ton rated capacity and using Traveling Head and Tail Tower; Remote-control Earth Moving Equipment Operator; Skip Loader Operator, all types with rated capacity of 8 cu. yds. or more; Universal Equipment Operator, Shovel, Backhoe, Dragline, Clamshell, etc., 8 cu. yds. and over

TRUCK DRIVERS

Group 1: Teamsters; Pick-ups; Station Wagon; Man Haul Driver

Group 2: Dump or Flatrack (2 or 3 axle); Water Truck (under 2500 gallons); Buggymobile (1 cu. yd. or less); Bus Driver; Self-propelled Street Sweeper; Shop Greaser

Group 3: Dump or Flatrack (4 axle); Dumptor or Dumpster (less than 7 cu. yds.); Water Truck (2500 gallons but less than 4000 gallons); Tireman

Group 4: Dumptor or Dumpster (7 cu. yds. but less than 16 cu. yds); Dump or Flatrack (5 axle); Water Truck (4000 gallons and over); Slurry type equipment Driver or Leverman; Vacuum Pump Truck Drivers; Flaherty Spreader or similar type equipment or Leverman; Transit Mix (8 cu. yds. or less mixer capacity); Ambulance Driver

Group 5: Dump or Flatrack (6 axle); Transit Mix (over 8 cu. yds. but less than 10.5 cu. yds.); Rock Truck (i. e. Dart, Euclid and other similar type end dumps, single unit) less than 16 cu. yds.

Group 5A: Oil Tanker or Spreader and/or Bootman, Retortman or Leverman

Group 6: Transit Mix (over 10.5 cu. yds. but less than 14 cu. yds. mixer capacity); Ross Carrier, Fork Lift or Lift Truck; Hydro Lift, Swedish Crane, Iowa 300 and similar types; Concrete Pump (when integral part of Transit Mix Truck); Dump or Flatrack (7 axle); Transport Driver (unless axle rating results in higher classification)

Group 7: Dump or Flatrack (8 axle)

Group 8: Off-highway equipment Driver including but not limited to: 2 or 4 wheel power unit, i. e. Cat, DW Series, Euclid, International and similar type equipment transporting material when top loaded or by external means including pulling Water Tanks, Fuel Tanks or other applications under Teamster Classifications; Rock truck (Dart, Euclid, or other similar end dump types) 16 cu. yds. and over; Ejectalls; Dumptor or Dumpster (16 cu. yds. and over); Dump or Flatrack



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(9 axle)

Group 8A: Heavy-duty Mechanic/Welder; Body and Fender Man

Group 8B: Field Equipment Servicemen or Fuel Truck Driver

SECTION 00583

LABOR STANDARDS PROVISIONS

FOR FEDERALLY ASSISTED CONSTRUCTION CONTRACTS

(EPA) Form 5720-A)

00583-1

Labor Standards Provisions for Federal and Federally Assisted Contracts

Section 5.5 Contract provisions and related matters.

(a) The Administrator of the U.S. Environmental Protection Agency (EPA) requires the contracting officer to insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of the U.S. Environmental Protection Agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant, or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in section 5.1, the following clauses (or any modifications thereof to meet the particular needs of the agency, Provided, That such modifications are first approved by the Department of Labor):

(1) Minimum wages. (i) 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 (a)(1)(iv) 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 section 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 ac-

curately 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 (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractor at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

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

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

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

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

(B) 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 (W&H, ESA), U.S. Department of Labor, Washington, DC 20210. The Administrator W&H, ESA, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(C) 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 Administrator W&H, ESA for determination. The Administrator W&H, ESA, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) 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.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB control number 1225-0140.)

(2) **Withholding.** The U.S. Environmental Protection Agency (EPA) 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 U.S. Environmental Protection Agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and Basic Records.

(i) 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 apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB control 1215-0140 and 1215-0017)

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the U.S. Environmental Protection Agency if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the U.S. Environmental Protection Agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under section 5.5(a)(3)(i) of Regulations, 29 CFR Part 5. This information may be submitted in any form desired. Optional Form 347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014 -1), U.S. Government Printing Office, Washington, DC 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB control number 1215-0149.)

(B) 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:

(1) That the payroll for the payroll period contains the information required to be maintained under section 5.5(a)(3)(i) of 29 CFR Part 5 and that such information is correct and complete;

(2) 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;

(3) 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.

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

(D) 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.

(iii) The contractor or subcontractor shall make the records required under paragraph (a) (3) (i) of this section available for inspection, copying, or transcription by authorized representatives of the U.S. Environmental Protection Agency 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 U.S. Environmental Protection Agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and Trainees

(i) Apprentices. 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, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been

certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to 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 W&H, ESA determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, 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.

(iii) 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.

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

(i) 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).

(ii) 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).

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

(b) Contract Work Hours and Safety Standards Act. The Administrator, EPA shall cause or require the contracting officer to insert the following clauses set forth in paragraphs (b)(1), (2), (3), and (4) of this section in full in any contract 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 section 5.5(a) or section 4.6 of Part 4 of this title. 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 (b)(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 (b)(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 (b) (1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The U.S. Environmental Protection 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 (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(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 (b)(1) through (4) of this section.

(c) In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in section 5.1, the Administrator of EPA shall cause or require the contracting officer to insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Administrator EPA shall cause or require the contracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the U.S. Environmental Protection Agency and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job. (Approved by the Office of Management and Budget under OMB control numbers 1215-0140 and 1215-0017.)

SECTION 00584

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY
CONSTRUCTION CONTRACT SPECIFICATIONS

(Executive order 11246, Tuesday, December 30, 1980, 6 pages)

41 CFR 60-4.2(d) NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION TO ENSURE
EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

| Timetables | Goals for minority participation for each trade | Goals for female participation in each trade |
|------------|---|--|
| | Insert goals for each year. | Insert goals for each year. |

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.2(a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is (insert description of the geographical area where the contract is to be performed giving the state, county and city, if any).

41 CFR 60-4.3(a) STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION
CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

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

trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Home-town Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or

other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 80-3.

l. Conduct, at least annually, an inventory and evaluation of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the

RULES AND REGULATIONS

Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.6.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

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

SECTION 00585

PROCUREMENT REGULATIONS FOR FEDERALLY ASSISTED
(EPA) CONSTRUCTION PROJECTS
(40 CFR Part 33, March 28, 1983)

40 CFR Subpart F - Subagreement Provisions

§ 33.1005 Applicability and scope of this subpart.

(a) This subpart applies to all EPA recipients and describes the minimum content of each subagreement (contract and subcontract).

(b) Nothing in this subpart prohibits a recipient from requiring more assurances, guarantees, or indemnity or other contractual requirements from any party to a subagreement.

§ 33.1010 Requirements for subagreement clauses.

Recipients shall include clauses that meet the requirements of §§ 33.1015 through 33.1021, and the appropriate clauses in § 33.1030, in each procurement subagreement.

§ 33.1015 Subagreement provisions clause.

Each subagreement must include provisions defining a sound and complete agreement, including the:

- (a) Nature, scope, and extent of work to be performed;
- (b) Timeframes for performance;
- (c) Total cost of the subagreement; and
- (d) Payment provisions.

§ 33.1016 Labor standards provisions.

Recipients shall include a copy of EPA Form 5720-4 "Labor Standards Provisions for Federally Assisted Construction Contracts" in each subagreement for construction (as defined by the Secretary of Labor). The form contains the Davis-Bacon Act requirements (40 U.S.C. 276a-276a-7); the Copeland Regulations (29 CFR Part 3); the Contract Work Hours and Safety Standards Act—Overtime Compensation (940 U.S.C. 327-333) and the nondiscrimination provisions in Executive Order 11246, as amended.

§ 33.1018 Patents data and copyrights clause.

Except for construction grant subagreements, all subagreements shall include notice of EPA requirements and regulations pertaining to reporting and patent rights under any subagreement involving research, developmental, experimental or demonstration work with respect to any discovery or invention which arises or is developed in the conduct of work under a subagreement. This notice shall also include EPA requirements and regulations pertaining to copyrights and rights in data contained in 40 CFR Part 30.

§ 33.1020 Violating facilities clause.

Subagreements in excess of \$100,000 shall contain a provision which requires contractor compliance with all applicable standards, orders or requirements issued under Section 306 of the Clean Air Act (42 U.S.C. 1857(b)), Section 308 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and EPA regulations (40 CFR Part 15) which prohibit the use under nonexempt Federal contracts, grants or loans of facilities included on the EPA List of Violating Facilities.

§ 33.1021 Energy efficiency clause.

Subagreements shall comply with mandatory standards and policies on energy efficiency contained in the State's energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. L. 94-163).

§ 33.1030 Model subagreement clauses.

Recipients must include, when appropriate, the following clauses or their equivalent in each subagreement. Recipients may substitute other terms for "recipient" and "contractor" in their subagreements.

1. Supercession

The recipient and the contractor agree that this and other appropriate clauses in 40 CFR 33.1030 apply to that work eligible for EPA assistance to be performed under this subagreement and that these clause supersedes any conflicting provisions of this subagreement.

2. Privity of Subagreement

This subagreement is expected to be funded in part with funds from the U.S. Environmental Protection Agency. Neither the United States nor any of its departments, agencies or employees is, or will be, a party to this subagreement or any lower tier subagreement. This subagreement is subject to regulations contained in 40 CFR Part 33 in effect on the date of the assistance award for this project.

3. Changes

(a) *The following clause applies only to subagreements for construction.* (1) The recipient may at any time, without notice to any surety, by written order designated or indicated to be a change order, make any change in the work within the general scope of the subagreement, including but not limited to changes:

(i) In the specifications (including drawings and designs);

(ii) In the time, method or manner of performance of the work;

(iii) In the recipient-furnished facilities, equipment, materials, services or site; or

(iv) Directing acceleration in the performance of the work.

(2) A change order shall also be any other written order (including direction, instruction, interpretation or determination) from the recipient which causes any change, provided the contractor gives the recipient written notice stating the date, circumstances and source of the order and that the contractor regards the order as a change order.

(3) Except as provided in this clause, no order, statement or conduct of the recipient shall be treated as a change under this clause or entitle the contractor to an equitable adjustment.

(4) If any change under this clause causes an increase or decrease in the contractor's cost or the time required to perform any part of the work under this contract, whether or not changed by any order, the recipient shall make an equitable adjustment and modify the subagreement in writing. Except for claims based on defective specifications, no claim for any change under paragraph (a)(2) above shall be allowed for any costs incurred more than 30 days before the contractor gives written notice as required in paragraph (a)(2). In the case of defective specifications for which the recipient is responsible, the equitable adjustment shall include any increased cost the contractor reasonably incurred in attempting to comply with those defective specifications.

(5) If the contractor intends to assert a claim for an equitable adjustment under this clause, he must, within 30 days after receipt of a written change order under paragraph (a)

(1) or the furnishing of a written notice under paragraph (a) (2), submit a written statement to the recipient setting forth the general nature and monetary extent of such claim. The recipient may extend the 30-day period. The contractor may include the statement of claim in the notice under paragraph (2) of this change clause.

(6) No claim by the contractor for an equitable adjustment shall be allowed if made after final payment under this subagreement.

(b) *The following clause applies only to subagreements for services.* (1) The recipient may at any time, by written order make changes within the general scope of this subagreement in the services or work to be performed. If such changes cause an increase or decrease in the contractor's cost or time, required to perform any services under this subagreement, whether or not changed by any order, the recipient shall make an equitable adjustment and modify this subagreement in writing. The contractor must assert any claim for adjustment under this clause in writing within 30 days from the date it receives the recipient's notification of change, unless the recipient grants additional time before the date of final payment.

(2) No services for which the contractor will charge an additional compensation shall be furnished without the written authorization of the recipient.

(c) *The following clause applies only to subagreements for supplies.* (1) The recipient may at any time, by written order and without notice to the sureties, change the general scope of this subagreement in any one or more of the following:

(i) Drawings, designs or specifications where the supplies to be furnished are specifically manufactured for the recipient;

(ii) Method of shipment or packing; and

(iii) Place of delivery.

(2) If any change causes an increase or decrease in the cost or the time required to perform any part of the work under this subagreement, whether or not changed by any such order, the recipient shall make an equitable adjustment in the subagreement agreement price or delivery schedule, or both, and modify the subagreement in writing. The contractor must assert any claim for adjustment under this clause within 30 days from the date the contractor receives the recipient's notification of change. If the recipient decides that the facts justify such action, the recipient may receive and act upon any such claim asserted at any time before final payment under this subagreement. Where the cost of property made obsolete or excess as a result of a change is included in the contractor's claim for adjustment, the recipient has the right to prescribe the manner of disposition of such property. Nothing in this clause shall excuse the contractor from proceeding with the subagreement as changed.

4. Differing Site Conditions

The following clause applies only to construction subagreements. (a) The

contractor shall promptly, and before such conditions are disturbed, notify the recipient in writing of:

(1) Subsurface or latent physical conditions at the site differing materially from those indicated in this subagreement; or

(2) Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in this subagreement.

(b) The recipient shall promptly investigate the conditions. If it finds that conditions materially differ and will cause an increase or decrease in the contractor's cost or the time required to perform any part of the work under this subagreement, whether or not changed as a result of such conditions, the recipient shall make an equitable adjustment and modify the subagreement in writing.

(c) No claim of the contractor under this clause shall be allowed unless the contractor has given the notice required in paragraph (a) of this clause. However, the recipient may extend the time prescribed in paragraph (a).

(d) No claim by the contractor for an equitable adjustment shall be allowed if asserted after final payment under this subagreement.

5. Suspension of Work

The following clause applies only to construction subagreements. (a) The recipient may order the contractor in writing to suspend, delay or interrupt all or any part of the work for such period of time as the recipient may determine to be appropriate for the convenience of the recipient.

(b) If the performance of all or any part of the work is suspended, delayed or interrupted for an unreasonable period of time by an act of the recipient in administration of this subagreement, or by the recipient's failure to act within the time specified in this subagreement (or if no time is specified, within a reasonable time), the recipient shall make an adjustment for any increase in the cost of performance of this subagreement (excluding profit) necessarily caused by such unreasonable suspension, delay or interruption and modify the contract writing. However, no adjustment shall be made under this clause for any suspension, delay or interruption to the extent (1) that performance would have been so suspended, delayed or interrupted by any other cause, including the fault or negligence of the contractor, or (2) for which an equitable adjustment is provided for or excluded under any other provision of this subagreement.

(c) No claim under this clause shall be allowed (1) for any costs incurred more than 30 days before the contractor notified the recipient in writing of the act or failure to act involved (this requirement does not apply to a claim resulting from a suspension order), and (2) unless the amount claimed is asserted in writing as soon as practicable after the termination of such suspension, delay or interruption, but not later than the date of final payment under the subagreement.

6. Termination

(a) This subagreement may be terminated in whole or in part in writing by either party in the event of substantial failure by the other party to fulfill its obligations under this subagreement through no fault of the terminating party, provided that no termination may be effected unless the other party is given (1) not less than ten (10) calendar days' written notice (delivered by certified mail, return receipt requested) of intent to terminate, and (2) an opportunity for consultation with the terminating party prior to termination.

(b) This subagreement may be terminated in whole or in part in writing by the recipient for its convenience, provided that the contractor is given (1) not less than ten (10) calendar days' written notice (delivered by certified mail, return receipt requested) of intent to terminate, and (2) an opportunity for consultation with the terminating party prior to termination.

(c) If termination for default is effected by the recipient, an equitable adjustment in the price provided for in this subagreement shall be made, but (1) no amount shall be allowed for anticipated profit on unperformed services or other work, and (2) any payment due to the contractor at the time of termination may be adjusted to cover any additional costs to the recipient because of the contractor's default. If termination for default is effected by the contractor, or if termination for convenience is effected by the recipient, the equitable adjustment shall include a reasonable profit for services or other work performed. The equitable adjustment for any termination shall provide for payment to the contractor for services rendered and expenses incurred prior to the termination. In addition to termination settlement costs reasonably incurred by the contractor relating to commitments which had become firm prior to the termination.

(d) Upon receipt of a termination action under paragraphs (a) or (b) above, the contractor shall (1) promptly discontinue all affected work (unless the notice directs otherwise), and (2) deliver or otherwise make available to the recipient all data, drawings, specifications, reports, estimates, summaries and such other information and materials as may have been accumulated by the contractor in performing this subagreement, whether completed or in process.

(e) Upon termination under paragraphs (a) or (b) above, the recipient may take over the work and may award another party a subagreement to complete the work under this subagreement.

(f) If, after termination for failure of the contractor to fulfill contractual obligations, it is determined that the contractor had not failed to fulfill contractual obligations, the termination shall be deemed to have been for the convenience of the recipient. In such event, adjustment of the subagreement price shall be made as provided in paragraph (c) of this clause.

7. Remedies

Unless otherwise provided in this subagreement, all claims, counter-claims, disputes and other matters in question between the recipient and the contractor

arising out of, or relating to, this subagreement or the breach of it will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the State in which the recipient is located.

8. Price Reduction for Defective Cost or Pricing Data

[Note.—The following clause applies to (1) any subagreement negotiated between the recipient and its contractor in excess of \$100,000; (2) negotiated subagreement amendments or change orders in excess of \$100,000 affecting the price of formally advertised, competitively awarded, fixed price subagreement, or (3) any lower tier subagreement or purchase order in excess of \$100,000 under a subagreement other than a formally advertised, competitively awarded, fixed price subagreement. This clause does not apply to subagreements awarded on the basis of effective price competition.]

(a) The contractor and subcontractor, where appropriate, assure that the cost and pricing data submitted for evaluation with respect to negotiation of prices for negotiated subagreements, lower tier subagreements and change orders is based on current, accurate and complete data supported by their books and records. If the recipient or EPA determines that any price (including profit) negotiated in connection with this subagreement, lower tier subagreement or amendment thereunder was increased by any significant sums because the data provided was incomplete, inaccurate or not current at the time of submission, then such price or cost or profit shall be reduced accordingly and the recipient shall modify the subagreement in writing to reflect such action.

(b) Failure to agree on a reduction shall be subject to the remedies clause of this subagreement.

[Note.—Since the subagreement is subject to reduction under this clause by reason of defective cost or pricing data submitted in connection with lower tier subagreements, the contractor may wish to include a clause in each lower tier subagreement requiring the lower tier subcontractor to appropriately indemnify the contractor. It is also expected that any lower tier subcontractor subject to such indemnification will generally require substantially similar indemnification for defective cost or pricing data submitted by lower tier contractors.]

9. Audit; Access to Records

(a) The contractor shall maintain books, records, documents and other evidence directly pertinent to performance on EPA funded work under this subagreement in accordance with generally accepted accounting principles and practices consistently applied, and 40 CFR Part 30 in effect on the date of execution of this subagreement. The contractor shall also maintain the financial information and data used in the preparation or support of the cost submission required under 40 CFR 33.290 for any negotiated subagreement or change order and a copy of the cost summary submitted to the recipient. The United States Environmental Protection Agency, the

Comptroller General of the United States, the United States Department of Labor, the recipient, and (the State) or any of their authorized representatives shall have access to all such books, records, documents and other evidence for the purpose of inspection, audit and copying during normal business hours. The contractor will provide proper facilities for such access and inspection.

(b) If this is a formally advertised, competitively awarded, fixed price subagreement, the contractor agrees to make paragraphs (a) through (g) of this clause applicable to all negotiated change orders and subagreement amendments affecting the subagreement price. In the case of all other types of prime subagreements, the contractor agrees to make paragraphs (a) through (g) applicable to all subagreements he awards in excess of \$10,000, at any tier, and to make paragraphs (a) through (g) of this clause applicable to all change orders directly related to project performance.

(c) Audits conducted under this provision shall be in accordance with generally accepted auditing standards and with established procedures and guidelines of the reviewing or audit agency(ies).

(d) The contractor agrees to disclose all information and reports resulting from access to records under paragraphs (a) and (b) of this clause to any of the agencies referred to in paragraph (a).

(e) Records under paragraphs (a) and (b) above shall be maintained by the contractor during performance on EPA assisted work under this subagreement and for the time periods specified in 40 CFR Part 30. In addition, those records which relate to any controversy arising under an EPA assistance agreement, litigation, the settlement of claims arising out of such performance or to costs or items to which an audit exception has been taken shall be maintained by the contractor for the time periods specified in 40 CFR Part 30.

(f) Access to records is not limited to the required retention periods. The authorized representatives designated in paragraph (a) of this clause shall have access to records at any reasonable time for as long as the records are maintained.

(g) This right of access clause applies to financial records pertaining to all subagreements (except formally advertised, competitively awarded, fixed price subagreements) and all subagreement change orders regardless of the type of subagreement, and all subagreement amendments regardless of the type of subagreement. In addition this right of access applies to all records pertaining to all subagreements, subagreement change orders and subagreement amendments:

(1) To the extent the records pertain directly to subagreement performance;

(2) If there is any indication that fraud, gross abuse or corrupt practices may be involved; or

(3) If the subagreement is terminated for default or for convenience.

10. Covenant Against Contingent Fees

The contractor assures that no person or selling agency has been employed or retained

to solicit or secure this subagreement upon an agreement or understanding for a commission, percentage, brokerage or contingent fee excepting bona fide employees or bona fide established commercial or selling agencies maintained by the contractor for the purpose of securing business. For breach or violation of this assurance, the recipient shall have the right to annul this agreement without liability or, at its discretion, to deduct from the contract price or consideration, or otherwise recover the full amount of such commission, percentage, brokerage or contingent fee.

11. Gratuities

(a) If the recipient finds after a notice and hearing that the contractor or any of the contractor's agents or representatives offered or gave gratuities (in the form of entertainment, gifts or otherwise) to any official, employee or agent of the recipient, the State or EPA in an attempt to secure a subagreement or favorable treatment in awarding, amending or making any determinations related to the performance of this subagreement, the recipient may, by written notice to the contractor, terminate this subagreement. The recipient may also pursue other rights and remedies that the law or this subagreement provides. However, the existence of the facts on which the recipient bases such findings shall be in issue and may be reviewed in proceedings under the Remedies clause of this subagreement.

(b) In the event this subagreement is terminated as provided in paragraph (a), the recipient may pursue the same remedies against the contractor as it could pursue in the event of a breach of the subagreement by the contractor, and as a penalty, in addition to any other damages to which it may be entitled by law, be entitled to exemplary damages in an amount (as determined by the recipient) which shall be not less than three nor more than ten times the costs the contractor incurs in providing any such gratuities to any such officer or employee.

12. Buy American

This clause applies only to construction subagreements award under 40 CFR Part 23 Subparts E and I. In accordance with section 225 of the Clean Water Act (33 U.S.C. 1251 et seq.) and implementing EPA regulations, the contractor agrees that preference will be given to domestic construction material by the contractor, subcontractors, materialmen and suppliers in the performance of this subagreement.

13. Responsibility of the Contractor

(a) *The following clause applies only to subagreements for services.* (1) The contractor is responsible for the professional quality, technical accuracy, timely completion and coordination of all designs, drawings, specifications, reports and other services furnished by the contractor under this subagreement. If the subagreement involves environmental measurements or data generation, the contractor shall comply with EPA quality assurance requirements in 40 CFR 30.503. The contractor shall, without additional compensation, correct or revise any errors, omissions or other deficiencies in

his designs, drawings, specifications, reports and other services.

(2) The contractor shall perform the professional services necessary to accomplish the work specified in this subagreement in accordance with this subagreement and applicable EPA requirements in effect on the date of execution of the assistance agreement for this project.

(3) The owner's or EPA's approval of drawings, designs, specifications, reports and incidental work or materials furnished hereunder shall not in any way relieve the contractor of responsibility for the technical adequacy of his work. Neither the owner's nor EPA's review, approval, acceptance or payment for any of the services shall be construed as a waiver of any rights under this agreement or of any cause for action arising out of the performance of this subagreement.

(4) The contractor shall be, and shall remain, liable in accordance with applicable law for all damages to the owner or EPA caused by the contractor's negligent performance of any of the services furnished under this subagreement, except for errors, omissions or other deficiencies to the extent attributable to the owner, owner-furnished data or any third party. The contractor shall not be responsible for any time delays in the project caused by circumstances beyond the contractor's control.

(5) The contractor's obligations under this clause are in addition to the contractor's other express or implied assurances under this subagreement or State law and in no way diminish any other rights that the owner may have against the contractor for faulty materials, equipment or work.

(b) *The following clause applies only to subagreements for construction.* (1) The contractor agrees to perform all work under this subagreement in accordance with this agreement's designs, drawings and specifications.

(2) The contractor guarantees for a period of at least one (1) year from the date of substantial completion of the work that the completed work is free from all defects due to faulty materials, equipment or workmanship and that he shall promptly make whatever adjustments or corrections which may be necessary to cure any defects, including repairs of any damage to other parts of the system resulting from such defects. The owner shall promptly give notice to the contractor of observed defects. In the event that the contractor fails to make adjustments, repairs, corrections or other work made necessary by such defects, the owner may do so and charge the contractor the cost incurred. The performance bond shall remain in full force and effect through the guarantee period.

(3) The contractor's obligations under this clause are in addition to the contractor's other express or implied assurances under this subagreement or State law and in no way diminish any other rights that the owner may have against the contractor for faulty materials, equipment or work.

14. Final Payment

Upon satisfactory completion of the work performed under this subagreement as a

condition before final payment under this subagreement or as a termination settlement under this subagreement the contractor shall execute and deliver to the owner a release of all claims against the owner arising under or by virtue of this subagreement, except claims which are specifically exempted by the contractor to be set forth therein. Unless otherwise provided in this subagreement, by State law or otherwise expressly agreed to by the parties to this subagreement, final payment under this subagreement or settlement upon termination of this subagreement shall not constitute a waiver of the owner's claims against the contractor or his sureties under this subagreement or applicable performance and payment bonds.

40 CFR Part 33 (FR March 28, 1983)

Subpart G Protests

§33.1105 Applicability and scope of this subpart.

This subpart sets forth EPA's administrative process for the rapid resolution of protest appeals filed with the award official.

§33.1110 Recipient protest procedures.

(a) Recipients must establish their own procedures for prompt consideration of initial protests concerning their solicitations or contract awards. A "protest" is a written complaint concerning the recipient's solicitation or award of a subagreement. It must be filed with the recipient by a party with a direct financial interest adversely affected by a recipient's procurement action (see §33.1130 "Review of protest appeal").

(b) The recipient should review each protest received to determine whether it is appropriate to defer the protested procurement action.

(c) If the recipient does not defer the procurement action, it assumes the risk that the award official may disallow the cost of the protested procurement action if the protest appeal is upheld.

§33.1115 Protest appeal.

(a) A party with a financial interest which is adversely affected by the recipient's decision on the initial protest may file a "protest appeal" with the award official.

(b) A "protest appeal" is a written complaint filed with the award official regarding the recipient's determination of a protest.

§33.1120 Limitations on protest appeals.

(a) The award official shall not accept a protest appeal until the protester has exhausted all administrative remedies at the recipient level.

(b) A protest appeal is limited to the following:

(1) Issues arising under the procurement provisions of this Part,

or

(2) Alleged violations of State or local law or ordinances where the award official determines that there is an overriding Federal requirement.

(c) A recipient of a lower tier subagreement (subcontract) may only file a protest appeal for issues which relate to the award of a subagreement by a contractor (see §33.295 "Subagreements awarded by a contractor").

§33.1125 Filing requirements.

(a) Protest appeals must be filed with the Assistant General Counsel for Grants for Headquarters'-awarded assistance agreements and with the Office of Regional Counsel for regionally awarded assistance agreements.

(b) A protest appeal must:

(1) Be written;

(2) Include a copy of the recipient's determination of the project;

(3) State the basis for the appeal; and

(4) Request a determination under this subpart.

(c) Upon filing a protest appeal with the Regional Counsel or Assistant General Counsel for Grants, as appropriate, the party filing the protest appeal must concurrently transmit a copy of all protest documents and any attachments to all other parties with a direct financial interest which may be adversely affected by the determination of the protest appeal.

(d) The award official will only consider written protest appeals received by the appropriate Counsel's office within seven calendar days after the adversely affected party receives the recipient's determination of protest. However, the adversely affected party can meet the seven-day notice requirement by telegraphing the Counsel within the seven-calendar-day period of its intent to file a protest appeal, provided the adversely affected party submits a complete protest appeal within seven calendar days of the date it sends the telegram. If the seventh day falls on a Saturday, Sunday or holiday, the next working day shall be the last day to submit a protest appeal.

(e) Any party which submits a document to the award official during the course of a protest appeal must simultaneously furnish all other affected parties with a copy of the document.

§33.1130 Review of protest appeal.

(a) If the recipient does not receive the initial protest before bid opening or the closing date for receipt of proposals, the award official may dismiss as untimely any protest appeal based upon alleged improprieties in the solicitation which were clearly apparent before bid opening or before the deadline for receipt of initial proposals. In negotiated procurements, protests of alleged improprieties which were incorporated in a new solicitation must have been received by the recipient by the closing date for receipt of proposals for the new solicitation.

(b) In cases not involving improprieties in the solicitation, the award official may dismiss as untimely a protest appeal if the adversely affected party did not file the initial protest with the recipient within seven calendar days of the date the basis for the protest was known or should have been known, whichever is earlier.

§33.1140 Deferral of procurement action.

When the award official receives a protest appeal and the recipient has not deferred the procurement action under §33.1110(b), the award official must promptly request that the recipient defer the protested procurement action until the award official notifies the recipient of the formal or informal resolution of the appeal. The request shall be limited to the award of the subagreement or subitem which is the basis of the protest appeal.

§33.1145 Award official's review.

(a) The award official may establish rules of procedures or deadlines for the submission of materials or the arrangement of protest appeal conferences.

(b) The award official may summarily dismiss an appeal without proceedings under this subpart if:

(1) The protest appeal is not reviewable, see §33.1130; or addresses issues other than those allowed under §33.1120(b);

(2) The protester substantially fails to comply with the procedural requirements of this subpart; or

(3) The protester does not agree to the recipient's request for a reasonable extension of the bid and bond period.

(c) The award official may summarily deny a protest appeal without proceedings under this subpart if, after considering the facts in a light most favorable to the protester, the award official believes that the protest lacks merit.

(d) The award official will give both the recipient and the protester, as well as any other party with a financial interest which may be adversely affected by the determination of protest, an opportunity to present arguments in support of their views in writing or at a conference.

(e) After the announced date for receipt of written arguments, the record shall be closed.

(f) The award official shall review the record considered by the recipient and any other documents or arguments presented by the parties to determine whether the recipient has complied with the procurement requirements of this part and has a rational basis for its determination of protest.

(g) The award official's determination shall constitute final EPA action from which there shall be no further administrative appeal. No party may appeal an award official's determination of appeal to the EPA Board of Assistance Appeals.

(h) Nothing in this subpart precludes the award official from reviewing the recipient's procurement action. (See §33.115.)

(i) Noncompliance with the award official's determination of protest shall be cause for an action against the recipient under 40 CFR Part 30 or 32.

(j) If an appeal involves legal issues not explicitly addressed by this part, the award official shall resolve the issue by referring to other protest determinations under this section and decisions of the Comptroller General of the United States or of the Federal courts addressing Federal requirements comparable to procurement requirements of this part.

SECTION 00586

CULTURAL RESOURCES SPECIFICATION

(August 10, 1977, 2 pages)

00586-1

SECTION 00586

CULTURAL RESOURCES SPECIFICATIONS

In accordance with the National Historic Preservation Act of 1966, (16 U.S.C. 470), the following procedures are implemented to insure historic preservation and fair compensation to the Contractor for delays attendant to cultural resources investigations.

In the event potential historical, architectural, archaeological, or cultural resources (herein after cultural resources) are discovered during subsurface excavations at the site of construction, the following procedures shall be instituted:

1. The Engineer shall issue a "Stop Work Order" directing the Contractor to cease all construction operations at the location of such potential cultural resources find.
2. Such "Stop Work Order" shall be effective until such time as a qualified archaeologist can be called to assess the value of these potential cultural resources and make recommendations to the State Historical Preservation Officer. Any "Stop Work Order" shall contain the following:
 - a. A clear description of the work to be suspended;
 - b. Any instructions regarding issuance of further orders by the Contractor for material service;
 - c. Guidance as to action to be taken on subcontracts;
 - d. Any suggestions to the Contractor as to minimization of his costs;
 - e. Estimated duration of the temporary suspension;

If the archaeologist determines that the potential find is a bonified cultural resource, at the direction of the State Historical Preservation Officer, the Engineer shall extend the duration of the "Stop Work Order" in writing, and the Contractor shall suspend work at the location of the find.

Equitable adjustment of the construction contract shall be made in the following manner:

1. Time Extension

If the work temporarily suspended is on the "critical path", the total number of days for which the suspension is in effect shall be added to the number of allowable contract days.

If a portion of work at the time of such suspension is not on the "critical path", but subsequently becomes work on the critical path, the allowable contract time will be computed from the date such work is classified as on the critical path.

2. Additional Compensation

If, as a result of a suspension of the work, the Contractor sustains a loss which could not have been avoided by his judicious handling of forces, equipment, and (plant) or redirection of forces or equipment to perform other work on the contract, there shall be paid to the Contractor an amount as determined by the Engineer to be fair and reasonable compensation for the Contractor's actual loss in accordance with the following:

a. Idle Time of Equipment

Compensation for equipment idle time will be determined on a force account (time and material) basis, and shall include the cost of extra moving of equipment and rental loss.

b. Idle Time of Labor

Compensation for idle time of workers will be determined by the Engineer as "Labor" less any actual productivity factor of this portion of the work force.

c. Increased Cost of Labor and Materials

Increased costs of labor and materials will be compensated only to the extent such increase was in fact caused-by the suspension, as determined by the Engineer.

Compensation for actual loss due to idle time of either equipment or labor shall not include markup for profit.

The hours for which compensation will be paid will be the actual normal working time during which such delay condition exists, but will in no case exceed eight hours in any one day.

The days for which compensation will be paid shall be full or partial calendar days, excluding Saturdays, Sundays, and legal holidays, during the existance of such delay.

The State Historical Preservation Officer is located at 1688 West Adams Street Phoenix, Arizona 85007. The State Historic Preservation Officer is Dr. Sherri Lerner.

SECTION 00587
LABOR STANDARDS PROVISIONS
(U.S. Department of Labor)

00587-1

Attachment 1

U.S. Department of Labor

Employment Standards Administration
Wage and Hour Division
Washington, D.C. 20210



MAY 20 1983

MEMORANDUM NO. 135

TO: ALL GOVERNMENT CONTRACTING AGENCIES OF
THE FEDERAL GOVERNMENT AND THE DISTRICT
OF COLUMBIA

FROM: WILLIAM M. OTTER *William M. Otter*
Administrator

SUBJECT: Revisions of the Davis-Bacon Regulations,
29 CFR Part 1 and Part 5, Subpart A

Copies of the above final Davis-Bacon regulations, which were published in the Federal Register on April 29, 1983, are attached.

BACKGROUND

On May 28, 1982, the Department of Labor (DOL) issued revised final regulations under the Davis-Bacon and Related Acts with a scheduled effective date of July 27, 1982. Memorandum No. 133 transmitted copies of the revised regulations and provided implementing instructions for contracting agencies.

However, a suit was filed against the Department in U.S. District Court for the District of Columbia seeking to prevent the implementation of the revised regulations. On July 22, 1982, the Court issued a preliminary injunction enjoining the Department from implementing certain provisions of the revised regulations pending a decision on the merits (Building and Construction Trades Department, AFL-CIO, et al., v. Raymond J. Donovan, et al., 543 F. Supp. 1282). As a result, Memorandum No. 134 was issued on July 23, 1982 which deferred the implementation of the regulations as published in the Federal Register on May 28, 1982 (29 CFR Part 1 (47 FR 23644), 29 CFR Part 5, Subpart A (47 FR 23658), and 29 CFR Section 3.3(b) (47 FR 23678)) until further notice. (See 47 FR 32070 (July 26, 1982).)

On December 23, 1982, the Court issued a permanent injunction with respect to a number of these regulatory revisions. The injunction covered all of the issues which were preliminarily enjoined except the redefinition of "prevailing wage" in 29 CFR 1.2(a) (i.e., elimination of the "30% rule"). The Government appealed this ruling and argument was heard by the U.S. Court of Appeals for the District of Columbia on May 6, 1983.

Immediately prior to the hearing in the Court of Appeals, as indicated above, the Department republished those portions of the May 28, 1982 regulations which had not been enjoined. These regulations became effective June 28, 1983.

The enjoined sections of the May 28, 1982 regulations continue to be deferred. If the injunction is subsequently lifted as a result of the appeal, the enjoined sections will be implemented at that time.

Highlighted below are the major changes which supplement the information contained in the regulatory text and preamble sections. We offer this information so that contracting agencies will be aware of their obligations and DOL operating policies under the Davis-Bacon and Related Acts. Agencies are reminded of the need to make appropriate changes in their procurement regulations and contract documents to conform to these revisions to the regulations. For your convenience, we note that the provisions of section 1.6 (Use and effectiveness of wage determinations) of Part 1 and sections 5.2 (Definitions) and 5.5 (Contract clauses) of Part 5 are applicable to contracts entered into pursuant to invitations for bids issued or negotiations concluded on or after June 28, 1983; the remaining provisions of Part 1 are applicable to wage surveys completed on or after June 28, 1983. The revisions to sections 5.1 and 5.6 through 5.17 are procedural or administrative in nature and are effective on June 28, 1983.

29 CFR PART 1

1. Section 1.2(a) - Definition of Prevailing Wage

This section has been revised to eliminate the "30 percent rule" contained in the previous regulations. Under the new regulations, if a single rate is paid to a majority of the employees in a given classification and locality, it is adopted as prevailing. If no single rate is paid to a majority, then the weighted average of all rates paid is adopted as the prevailing wage.

2. Section 1.6(a)(1) - Expiration Date of Project Wage Determinations

This section now provides that project wage determinations are effective for 180 days from their date of issuance, unless an extension of the expiration date has been requested by an agency and approved by the Administrator.

3. Section 1.6(b) - Use of Wage Determinations

Section 1.6(b) states that contracting agencies are responsible for insuring that only the appropriate wage determinations are incorporated in bid solicitations and contracts, and for designating the work to which each wage determination applies. This provision is intended to eliminate confusion regarding the use of "multiple schedules" in certain contracts. The section also provides that questions regarding the application of wage schedules should be referred to the Administrator of the Wage and Hour Division who shall give foremost consideration to local area practices in resolving such questions.

4. Section 1.6(c) - "10-day Rule"

The revised regulations require that contracting agencies accept modifications to wage determinations received less than 10 days before bid opening unless (in the case of competitive procurements) the agency finds that there is not sufficient time to notify bidders of the change, in which case such finding must be documented in the contract file, and submitted to the Wage-Hour Administrator upon request. This change emphasizes the responsibility of contracting agencies to use wage determination modifications made before award in all cases where it will not unduly disrupt the procurement process.

5. Section 1.6(c)(3)(iv) - "90-Day Rule"

Section 1.6(c)(3)(iv) now provides that if a contract to which a general wage determination has been applied is not awarded within 90 days after bid opening, any modification published prior to contract award shall be effective unless the agency obtains an extension of the 90-day period from the Administrator.

4

6. Section 1.6(e) - Correction of Wrong or Erroneous Wage Determinations

This section provides that if the Department of Labor finds that a bid solicitation contains the wrong wage determination or wrong schedule, or if a wage determination is withdrawn as a result of a decision by the Department's Wage Appeals Board, notification to the contracting agency of such findings shall be effective immediately, without regard to the provisions of section 1.6(c), provided such notification is made prior to contract award.

7. Section 1.6(f) - Incorporation of Wage Determinations After Award

Section 1.6(f) requires contracting agencies to utilize a wage determination after award if the Wage-Hour Administrator finds that the agency has failed to include any wage determination in a covered contract or has used a wage determination which clearly does not apply to the contract. This is to be accomplished through either termination and resolicitation of the procurement or incorporation through contract modification or change order. However, the regulation also provides that the method of incorporation should be in accordance with procurement law, and that if the wage determination is incorporated through contract modification or change order, the contractor must be compensated for any increases in wage costs which may result.

8. Section 1.6(g) - Approval of Federal Funding After Contract Award

Section 1.6(g) contains guidelines for the application of wage determinations in situations where Federal funding or assistance is not approved until after contract award (or after the start of construction where there is no contract award).

29 CFR PART 5

9. Section 5.2(1) - Definition of "Site of Work"

The regulations now basically incorporate the Department's longstanding interpretation of the "site of work" on which Davis-Bacon prevailing wages must be paid. The definition

is essentially similar to those contained in DAR 18-701(b)(2)-(4) and FPR 1-18.701-1(b)(2), but specifies that operations of a "commercial supplier" or "materialman" established in proximity to but not on the actual site of the work prior to the opening of bids are not covered by the Act even if dedicated exclusively to the Federal project for a time.

10. Section 5.5(a)(1)(ii) - Conformance Procedures

This section has been revised to clarify the criteria which must be met before a contracting officer may approve a conformed rate, and to require that conformed rates must be agreed to by the affected employees or their representatives. It also provides that all proposed conformance agreements must be forwarded to the Department of Labor for approval, and that the Department will act upon such cases, as well as those cases where the interested parties cannot agree, within 30 days, unless it advises the agency that additional time is needed.

11. Sections 5.5(a)(2) and 5.5(b)(3) - Cross-Withholding

These sections provide that where the funds remaining on a contract under which Davis-Bacon Act or Contract Work Hours and Safety Standards Act violations are alleged to have occurred are insufficient to cover the amount of back wages due, the contracting agency shall, upon its own initiative or at the request of the Department of Labor, withhold or cause to be withheld such additional funds as may be necessary from any other Federal contract or any other Federally assisted contract subject to Davis-Bacon prevailing wage (or CWSSA, as appropriate) requirements which is held by the same prime contractor.

12. Section 5.5(a)(3)(ii) - Submission of Wage Payment Information

This section continues the current requirement that contractors and subcontractors submit weekly a copy of all payrolls, together with a statement certifying compliance with the Davis-Bacon and Copeland Acts. While the required payroll information may be submitted in any form, Optional Form WH-347 is available for this purpose but is not a mandatory requirement.

13. Sections 5.5(a)(4)(i) and (ii) - Apprentices and Trainees

Sections 5.5(a)(4)(i) and (ii) now codify the Department's policy that if an apprenticeship or trainee program is silent with regard to payment of fringe benefits, such employees must be paid the full amount of fringe benefits for the corresponding journeyman classifications as listed on the wage determination, unless DOL determines that a different practice prevails. This section has also been revised to allow contractors to follow the ratios and wage rates (percentages) for approved apprentice and trainee programs in their "home" area rather than requiring contractors to observe the ratios and wage rates in the area where the construction project is performed.

14. Section 5.5(a)(7) - Contract Termination; Debarment

This revised section provides that a violation of the contract labor standards (29 CFR 5.5) may be grounds for termination of the contract, and for debarment in the capacity of a prime contractor as well as a subcontractor.

15. Section 5.5(a)(9) - Disputes Concerning Labor Standards

Section 5.5(a)(9) specifies that disputes arising out of the labor standards provisions of the contract are not subject to the general disputes clause of the contract, but rather to the procedures in 29 CFR Parts 5, 6, and 7.

16. Section 5.5(a)(10) - Certification of Eligibility

This section requires contractors to certify that they are not ineligible to be awarded a contract by virtue of debarment under section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1), and prohibits contractors from awarding subcontracts to debarred firms.

17. Sections 5.6(b) and 5.7(a)

Section 5.6(b) provides that the Department of Labor will submit reports of its investigations to the contracting agency where violations total \$1,000 or more, or where liquidated damages may be assessed under the Contract Work Hours and Safety Standards Act, or where debarment may be considered. In other violation cases, a letter summarizing the investigation findings will be submitted.

Section 5.7(a) requires contracting agencies to submit to DOL detailed reports of their investigations in all cases where wage underpayments total \$1,000 or more. Where the amount of violations is less than \$1,000, a factual summary will suffice if back wages have been paid and future compliance assured and if the criteria for consideration of debarment are not present. However, in the latter cases in which the investigation was initiated at the request of the Department of Labor, a full report is required to be submitted.

18. Section 5.8 - Liquidated Damages Under the Contract Work Hours and Safety Standards Act

Section 5.8 now provides that where the Agency Head finds that the criteria for a reduction or waiver of liquidated damages administratively determined to be due have been met, the concurrence of the Department of Labor in such reduction or waiver must be sought only if the amount of such damages exceeds \$500.

19. Section 5.11 - Disputes Concerning Payment of Wages

As revised, this section provides that in all cases involving a dispute concerning prevailing wage rates, overtime pay, or classification where there are relevant facts at issue, the contractor or subcontractor will be offered an opportunity for a hearing before an Administrative Law Judge in accordance with procedures set forth in proposed 29 CFR Part 6, which should be published in the Federal Register as a final rule in the near future. It also provides that debarment may be considered at such hearings where appropriate.

20. Sections 5.12 (a) and (b) - Debarment Proceedings

These sections contain revised rules for debarment proceedings. They specify that in all cases where debarment may occur, the contractor or subcontractor will be offered an opportunity for a hearing before an Administrative Law Judge in accordance with 29 CFR Part 6. As noted under section 5.11 above, such hearings will be held in conjunction with hearings on disputes concerning payment of wages, etc. where it is appropriate to do so. In addition, these sections provide that debarred persons and firms are ineligible to perform contract work as either a prime contractor or a subcontractor while on the debarred bidders list.

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21. Section 5.12(c) - Removal From Debarred List

Section 5.12(c) provides that any person or firm debarred under section 5.12(a) for violations of a Davis-Bacon Related Act (but not those debarred under the Davis-Bacon Act itself) may petition the Administrator for removal from the debarment list after a period of six months. The section also sets forth the criteria to be used in deciding whether requests for removal will be granted.

22. Section 5.12(d) - Debarment of Affiliated Firms

This section contains the procedures to be used in determining whether a person or firm debarred under the Davis-Bacon Act has "an interest" in another firm, corporation, partnership, or association, and whether a person or firm debarred under 29 CFR 5.12(a) has "a substantial interest" in another firm, corporation, etc. As provided in section 3(a) of the Davis-Bacon Act and in 29 CFR 5.12(a)(1), if a debarred person or firm is found to have "an interest" or "a substantial interest", respectively, in such other firm, corporation, etc., that other firm or corporation shall also be placed on the debarment list.

Attachments

federal register

**Friday
April 29, 1983**

Part II

Department of Labor

**Employment Standards Administration,
Wage and Hour Division
Office of the Secretary**

**Procedures for Predetermination of Wage
Rates**

DEPARTMENT OF LABOR

Employment Standards
Administration, Wage and Hour
Division

Office of the Secretary

29 CFR Part 1

**Procedures for Predetermination of
Wage Rates**

[NOTE: This reprint incorporates editorial corrections that are published in the Federal Register of Friday, May 6, 1983.]

AGENCY: Employment Standards
Administration, Wage and Hour
Division, Labor.

ACTION: Implementation of final rule.

SUMMARY: This document provides for implementation of regulations, 29 CFR Part 1, which sets forth the procedures for the predetermination of prevailing wage rates under the Davis-Bacon and Related Acts. This is the final regulation previously published in the Federal Register (47 FR 23644) on May 28, 1982, to the extent that its implementation is permitted by the terms of a permanent injunction issued by the U.S. District Court for the District of Columbia on December 23, 1982. The enjoined provisions in the May 1982 final rule continue to be deferred.

DATE: Effective date: June 28, 1983. See **SUPPLEMENTARY INFORMATION** for dates of applicability.

FOR FURTHER INFORMATION CONTACT: William M. Otter, Administrator, Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Room S-3502, 200 Constitution Avenue, NW., Washington, D.C. 20210. Telephone: 202-523-8305.

SUPPLEMENTARY INFORMATION: On August 14, 1981, a proposal was published in the Federal Register (46 FR 41444) to make revisions to 29 CFR Part 1, Procedures for Predetermination of Wage Rates under the Davis-Bacon and Related Acts, allowing 60 days for public comment.

On May 28, 1982, these regulations were published in the Federal Register (47 FR 23644) as a final rule with a scheduled effective date of July 27, 1982. However, on July 22, 1982, the U.S. District Court for the District of Columbia issued a preliminary injunction enjoining implementation of certain provisions of these regulations as a result of a suit filed against the Department (*Building and Construction Trades Department, AFL-CIO, et al. v. Raymond J. Donovan, et al.*, 543 F. Supp.

1292). On July 28, 1982, the Department published a notice in the Federal Register (47 FR 32070) deferring the effective date of these regulations in their entirety until further notice in order to comply with the preliminary injunction issued by the Court. On December 23, 1982, the Court issued a permanent injunction which, as modified by its order of January 17, 1983, enjoined §§ 1.3(d) (exclusion of Davis-Bacon construction in wage determinations), 1.7(b) (exclusion of metropolitan data in wage determinations) and 1.7(d) (helpers) of these regulations. This injunction has been appealed.

The document published today implements those provisions of the final rule published in the Federal Register on May 28, 1982 (47 FR 23644), which have not been enjoined by the court, including the revised definition of the term "prevailing," on which the preliminary injunction has been lifted. The effective date of the enjoined provisions is deferred, by separate notice in today's Federal Register, pending final determination of the validity of those provisions. If the Department prevails on appeal, the deferred provisions (§§ 1.3(d), 1.7(b) and (d)) will then be implemented.

As described more fully below, the court order necessitated corresponding deletions of sections or portions of sections in the text of the regulations now being implemented. To avoid confusion, the text of the entire rule as implemented at this time is set forth herein.

The following is a description of the changes made in the text of regulations which were published on May 28, 1982 (47 FR 23644) in order to comport with the Court's decision and order, pending final disposition of the appeal.

Section 1.3(d)—Consideration of Davis-Bacon Rates in Wage Surveys.

This enjoined subsection would have provided that wages paid on projects subject to the Davis-Bacon Act would not be considered in developing wage determinations for "building" and "residential" construction projects unless the Department finds that there is not sufficient data from privately financed projects of a character similar to determine prevailing wages. This subsection is deleted from the text.

Section 1.7(b)—Scope of Consideration.

This enjoined subsection would have prohibited the use of wage data from projects in metropolitan areas in making wage determinations in rural areas, and

vice versa. That prohibition is deleted from the text.

Section 1.7(d)—Helpers.

Under the terms of this enjoined subsection, the Department would have issued wage determinations containing rates for semi-skilled classifications of helpers when such classifications are "identifiable" in the area. This subsection is deleted from the text.

In addition to the above, necessary typographical and minor editorial corrections have been made in §§ 1.7(a), 1.8, 1.7(b) and Appendix A paragraph 10.

The document being published today is not a major rule since it is simply a republication and implementation of provisions previously published. A full Final Regulatory Impact and Regulatory Flexibility Analysis was prepared in connection with the May 28, 1982 publication of these regulations and a summary was published therein. See 47 FR 23646. Because of the Court injunction, the alternatives selected cannot be fully implemented at this time. The savings effectuated by the regulations being implemented today are estimated to be \$120 million per year.

As discussed above, this document is only a republication and implementation of regulations previously published for notice and comment to the extent implementation is permitted by the court's injunction. Accordingly, additional notice and comment is impracticable, unnecessary and contrary to the public interest.

Dates of Applicability

The provisions of this part shall be applicable only as to wage surveys completed on or after June 28, 1983, except for § 1.8, which shall be applicable only to contracts entered into pursuant to invitations for bids issued or negotiations concluded on or after June 28, 1983. None of the revisions herein shall be applicable to any contract entered into prior to June 28, 1983.

This document was prepared under the direction and control of William M. Otter, Administrator, Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor.

List of Subjects in 29 CFR Part 1

Administrative practice and procedures, Government contracts, Labor, Minimum wages, Wages.

Accordingly, 29 CFR Part 1 as issued on May 28, 1982 with the necessary textual changes discussed above is herein implemented as set forth below.

Signed at Washington, D.C., on this 22d day of April 1983.

Raymond J. Donovan,

Secretary of Labor.

Robert E. Collyer,

Deputy Under Secretary for Employment Standards.

William M. Otter,

Administrator, Wage and Hour Division.

PART 1—PROCEDURES FOR PREDETERMINATION OF WAGE RATES

Sec. 5

- 1.1 Purpose and scope.
- 1.2 Definitions.
- 1.3 Obtaining and compiling wage rate information.
- 1.4 Outline of agency construction programs.
- 1.5 Procedure for requesting wage determinations.
- 1.6 Use and effectiveness of wage determinations.
- 1.7 Scope of consideration.
- 1.8 Reconsideration by the Administrator.
- 1.9 Review by Wage Appeals Board.

Appendix A.

Appendix B.

Authority: 5 U.S.C. 301; R.S. 161, 64 Stat. 1287; Reorganization Plan No. 14 of 1950, 5 U.S.C. Appendix; 29 U.S.C. 258; 40 U.S.C. 278a-278a-7; 40 U.S.C. 278c; and the laws listed in Appendix A of this Part.

§ 1.1 Purpose and scope.

(a) The procedural rules in this part apply under the Davis-Bacon Act (946 Stat. 1494, as amended; 40 U.S.C. 278a-278a-7) and other statutes listed in Appendix A to this part which provide for the payment of minimum wages, including fringe benefits, to laborers and mechanics engaged in construction activity under contracts entered into or financed by or with the assistance of agencies of the United States or the District of Columbia, based on determinations by the Secretary of Labor of the wage rates and fringe benefits prevailing for the corresponding classes of laborers and mechanics employed on projects similar to the contract work in the local areas where such work is to be performed. Functions of the Secretary of Labor under these statutes and under Reorganization Plan No. 14 of 1950 (64 Stat. 1287, 5 U.S.C. Appendix), except those assigned to the Wage Appeals Board (see 29 CFR Part 7), have been delegated to the Deputy Under Secretary of Labor for Employment Standards who in turn has delegated the functions to the Administrator of the Wage and Hour Division, and authorized representatives.

(b) The regulations in this part set forth the procedures for making and applying such determinations of

prevailing wage rates and fringe benefits pursuant to the Davis-Bacon Act, each of the other statutes listed in Appendix A, and any other Federal statute providing for determinations of such wages by the Secretary of Labor in accordance with the provisions of the Davis-Bacon Act.

(c) Procedures set forth in this part are applicable, unless otherwise indicated, both to general wage determinations published in the Federal Register for contracts in specified localities, and to project wage determinations for use on contract work to be performed on a specific project.

§ 1.2 Definitions.

(a)(1) The "prevailing wage" shall be the wage paid to the majority (more than 50 percent) of the laborers or mechanics in the classification on similar projects in the area during the period in question. If the same wage is not paid to a majority of those employed in the classification, the "prevailing wage" shall be the average of the wages paid, weighted by the total employed in the classification.

(2) In determining the "prevailing wages" at the time of issuance of a wage determination, the Administrator will be guided by paragraph (a)(1) of this section and will consider the types of information listed in § 1.3 of this part.

(b) The term "area" in determining wage rates under the Davis-Bacon Act and the prevailing-wage provisions of the other statutes listed in Appendix A shall mean the city, town, village, county or other civil subdivision of the State in which the work is to be performed.

(c) The term "Administrator" shall mean the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, or authorized representative. In the absence of the Wage-Hour Administrator, the Deputy Administrator of the Wage and Hour Division is designated to act for the Administrator under this part. Except as otherwise provided in this part, the Assistant Administrator for Government Contract Wage Standards is the authorized representative of the Administrator for the performance of functions relating to the making of wage determinations.

(d) The term "agency" shall mean the Federal agency, State highway department under 23 U.S.C. 113, or recipient State or local government under Title 1 of the State and Local Fiscal Assistance Act of 1972.

¹ These definitions are not intended to restrict the meaning of the terms as used in the applicable statutes.

§ 1.3 Obtaining and compiling wage rate information.

For the purpose of making wage determinations, the Administrator will conduct a continuing program for the obtaining and compiling of wage rate information.

(a) The Administrator will encourage the voluntary submission of wage rate data by contractors, contractors' associations, labor organizations, public officials and other interested parties, reflecting wage rates paid to laborers and mechanics on various types of construction in the area. The Administrator may also obtain data from agencies on wage rates paid on construction projects under their jurisdiction. The information submitted should reflect not only the wage rates paid a particular classification in an area, but also the type or types of construction on which such rate or rates are paid, and whether or not such rates were paid on Federal or federally assisted projects subject to Davis-Bacon prevailing wage requirements.

(b) The following types of information may be considered in making wage rate determinations:

(1) Statements showing wage rates paid on projects. Such statements should include the names and addresses of contractors, including subcontractors, the locations, approximate costs, dates of construction and types of projects, whether or not the projects are Federal or federally assisted projects subject to Davis-Bacon prevailing wage requirements, the number of workers employed in each classification on each project, and the respective wage rates paid such workers.

(2) Signed collective bargaining agreements. The Administrator may request the parties to an agreement to submit statements certifying to its scope and application.

(3) Wage rates determined for public construction by State and local officials pursuant to State and local prevailing wage legislation.

(4) In making wage rate determinations pursuant to 23 U.S.C. 113, the highway department of the State in which a project in the Federal-Aid highway system is to be performed shall be consulted. Before making a determination of wage rates for such a project the Administrator shall give due regard to the information thus obtained.

(5) Wage rate data submitted to the Department of Labor by contracting agencies pursuant to 29 CFR 5.3(a)(1)(ii).

(6) Any other information pertinent to the determination of prevailing wage rates.

(c) The Administrator may initially obtain or supplement such information obtained on a voluntary basis by such means, including the holding of hearings, and from any sources determined to be necessary. All information of the types described in § 1.3(b) of this part, pertinent to the determination of the wages prevailing at the time of issuance of the wage determination, will be evaluated in the light of § 1.2(a) of this Part.

§ 1.4 Outline of agency construction programs.

To the extent practicable, at the beginning of each fiscal year each agency using wage determinations under any of the various statutes listed in Appendix A will furnish the Administrator with a general outline of its proposed construction programs for the coming year indicating the estimated number of projects for which wage determinations will be required, the anticipated types of construction, and the locations of construction. During the fiscal year, each agency will notify the Administrator of any significant changes in its proposed construction programs, as outlined at the beginning of the fiscal year. This report has been cleared in accordance with FPMR 101-11.11 and assigned interagency report control number 1671-DOL-AN.

§ 1.5 Procedure for requesting wage determinations.

(a)(1) Except as provided in paragraph (b) of this section, the Federal agency shall initially request a wage determination under the Davis-Bacon Act or any of its related prevailing wage statutes by submitting Standard Form 306 to the Department of Labor at this address:

U.S. Department of Labor, Employment Standards Administration, Wage and Hour Division, Branch of Construction Wage Determinations, Washington, D.C. 20310.

The agency shall check only those classifications on the applicable form which will be needed in the performance of the work. Inserting a note such as "entire schedule" or "all applicable classifications" is not sufficient. Additional classifications needed which are not on the form may be typed in the blank spaces or on a separate list and attached to the form.

(2) In completing SF-306, the agency shall furnish:

(i) A sufficiently detailed description of the work to indicate the type of construction involved. Additional description or separate attachment, if necessary for identification of type of project, shall be furnished.

(ii) The county (or other civil subdivision) and State in which the proposed project is located.

(3) Such request for a wage determination shall be accompanied by any pertinent wage payment information which may be available. When the requesting agency is a State highway department under the Federal-Aid Highway Act as codified in 23 U.S.C. 113, such agency shall also include its recommendations as to the wages which are prevailing for each classification of laborers and mechanics on similar construction in the area.

(b) Whenever the wage patterns in a particular area for a particular type of construction are well settled and whenever it may be reasonably anticipated that there will be a large volume of procurement in that area for such a type of construction, the Administrator, upon the request of a Federal agency or in his/her discretion, may publish a general wage determination in the Federal Register when, after consideration of the facts and circumstances involved, the Administrator finds that the applicable statutory standards and those of this part will be met. If there is a general wage determination applicable to the project, the agency may use it without notifying the Department of Labor, provided, that questions concerning its use shall be referred to the Department of Labor in accordance with § 1.6(b).

(c) The time required for processing requests for wage determinations varies according to the facts and circumstances in each case. An agency should anticipate that such processing in the Department of Labor will take at least 30 days.

§ 1.6 Use and effectiveness of wage determinations.

(a)(1) Project wage determinations initially issued shall be effective for 180 calendar days from the date of such determinations. If such a wage determination is not used in the period of its effectiveness it is void. Accordingly, if it appears that a wage determination may expire between bid opening and contract award (or between initial endorsement under the National Housing Act or the execution of an agreement to enter into a housing assistance payments contract under section 8 of the U.S. Housing Act of 1937, and the start of construction) the agency shall request a new wage determination sufficiently in advance of the bid opening to assure receipt prior thereto. However, when due to unavoidable circumstances a determination expires before award but after bid opening (or before the start of

construction, but after initial endorsement under the National Housing Act, or before the start of construction but after the execution of an agreement to enter into a housing assistance payments contract under Section 8 of the U.S. Housing Act of 1937), the head of the agency or his or her designee may request the Administrator to extend the expiration date of the wage determination in the bid specifications instead of issuing a new wage determination. Such request shall be supported by a written finding, which shall include a brief statement of the factual support, that the extension of the expiration date of the determination is necessary and proper in the public interest to prevent injustice or undue hardship or to avoid serious impairment in the conduct of Government business. The Administrator will either grant or deny the request for an extension after consideration of all of the circumstances, including an examination to determine if the previously issued rates remain prevailing. If the request for extension is denied, the Administrator will proceed to issue a new wage determination for the project.

(2) General wage determinations issued pursuant to § 1.5(b) and which are published in the Federal Register, shall contain no expiration date.

(b) Contracting agencies are responsible for insuring that only the appropriate wage determination(s) are incorporated in bid solicitations and contract specifications and for designating specifically the work to which such wage determinations will apply. Any question regarding application of wage rate schedules shall be referred to the Administrator, who shall give foremost consideration to area practice in resolving the question.

(c)(1) Project and general wage determinations may be modified from time to time to keep them current. A modification may specify only the items being changed, or may be in the form of a supersedeas wage determination, which replaces the entire wage determination. Such actions are distinguished from a determination by the Administrator under paragraphs (d), (e) and (f) of this section that an erroneous wage determination has been issued or that the wrong wage determination or wage rate schedule has been utilized by the agency.

(2)(i) All actions modifying a project wage determination received by the agency before contract award (or the start of construction where there is no contract award) shall be effective except as follows:

(A) In the case of contracts entered into pursuant to competitive bidding procedures, modifications received by the agency less than 10 days before the opening of bids shall be effective unless the agency finds that there is not a reasonable time still available before bid opening, to notify bidders of the modification and a report of the finding is inserted in the contract file. A copy of such report shall be made available to the Administrator upon request. No such report shall be required if the modification is received after bid opening.

(B) In the case of projects assisted under the National Housing Act, modifications shall be effective if received prior to the beginning of construction or the date the mortgage is initially endorsed, whichever occurs first.

(C) In the case of projects to receive housing assistance payments under section 8 of the U.S. Housing Act of 1937, modifications shall be effective if received prior to the beginning of construction or the date the agreement to enter into a housing assistance payments contract is executed, whichever occurs first.

(i) Modifications to project wage determinations and supersedeas wage determinations shall not be effective after contract award (or after the beginning of construction where there is no contract award).

(ii) Actual written notice of a modification shall constitute receipt.

(3) All actions modifying a general wage determination shall be effective with respect to any project to which the determination applies, if published before contract award (or the start of construction where there is no contract award), except as follows:

(i) In the case of contracts entered into pursuant to competitive bidding procedures, modifications published less than 10 days before the opening of bids shall be effective unless the agency finds that there is not a reasonable time still available before bid opening to notify bidders of the modification and a report of the finding is inserted in the contract file. A copy of such report shall be made available to the Administrator upon request. No such report shall be required if the modification is published after bid opening.

(ii) In the case of projects assisted under the National Housing Act, modifications shall be effective if published prior to the beginning of construction or the date the mortgage is initially endorsed, whichever occurs first.

(iii) In the case of projects to receive housing assistance payments under

section 8 of the U.S. Housing Act of 1937, modifications shall be effective if published prior to the beginning of construction or the date the agreement to enter into a housing assistance payments contract is signed, whichever occurs first.

(iv) If under paragraph (c)(3)(i) of this section the contract has not been awarded within 90 days after bid opening, or if under paragraph (c)(3) (ii) or (iii) of this section construction has not begun within 90 days after initial endorsement or the signing of the agreement to enter into a housing assistance payments contract, any modifications published in the Federal Register prior to award of the contract or the beginning of construction, as appropriate, shall be effective with respect to that contract unless the head of the agency or his or her designee requests and obtains an extension of the 90-day period from the Administrator. Such request shall be supported by a written finding, which shall include a brief statement of the factual support, that the extension is necessary and proper in the public interest to prevent injustice or undue hardship or to avoid serious impairment in the conduct of Government business. The Administrator will either grant or deny the request for an extension after consideration of all the circumstances.

(v) A modification to a general wage determination is "published" within the meaning of this section on the date of publication in the Federal Register, or on the date the agency receives actual written notice of the modification from the Department of Labor, whichever occurs first.

(vi) Modifications or supersedeas wage determinations to an applicable general wage determination published after contract award (or after the beginning of construction where there is no contract award) shall not be effective.

(d) Upon his/her own initiative or at the request of an agency, the Administrator may correct any wage determination, without regard to paragraph (c) of this section, whenever the Administrator finds such a wage determination contains clerical errors. Such corrections shall be included in any bid specifications containing the wage determination, or in any on-going contract containing the wage determination in question, retroactively to the start of construction.

(e) Written notification by the Department of Labor prior to the award of a contract (or the start of construction under the National Housing Act, under section 8 of the U.S. Housing Act of 1937, or where there is no contract

award) that (1) there is included in the bidding documents or solicitation the wrong wage determination or the wrong schedule or that (2) a wage determination is withdrawn by the Department of Labor as a result of a decision by the Wage Appeals Board, shall be effective immediately without regard to paragraph (c) of this section.

(f) The Administrator may issue a wage determination after contract award or after the beginning of construction if the agency has failed to incorporate a wage determination in a contract required to contain prevailing wage rates determined in accordance with the Davis-Bacon Act, or has used a wage determination which by its terms or the provisions of this part clearly does not apply to the contract. Further, the Administrator may issue a wage determination which shall be applicable to a contract after contract award or after the beginning of construction when it is found that the wrong wage determination has been incorporated in the contract because of an inaccurate description of the project or its location in the agency's request for the wage determination. Under any of the above circumstances, the agency shall either terminate and resolicit the contract with the valid wage determination, or incorporate the valid wage determination retroactive to the beginning of construction through supplemental agreement or through change order, provided that the contractor is compensated for any increases in wages resulting from such change. The method of incorporation of the valid wage determination, and adjustment in contract price, where appropriate, should be in accordance with applicable procurement law.

(g) If Federal funding or assistance under a statute requiring payment of wages determined in accordance with the Davis-Bacon Act is not approved prior to contract award (or the beginning of construction where there is no contract award), the agency shall request a wage determination prior to approval of such funds. Such a wage determination shall be issued based upon the wages and fringe benefits found to be prevailing on the date of award or the beginning of construction (under the National Housing Act, under section 8 of the U.S. Housing Act of 1937 or where there is no contract award), as appropriate, and shall be incorporated in the contract specifications retroactively to that date, provided that upon the request of the head of the agency in individual cases the Administrator may issue such a wage determination to be effective on the date

of approval of Federal funds or assistance whenever the Administrator finds that it is necessary and proper in the public interest to prevent injustice or undue hardship, provided further that the Administrator finds no evidence of intent to apply for Federal funding or assistance prior to contract award or the start of construction, as appropriate.

§ 1.7 Scope of consideration.

(a) In making a wage determination, the "area" will normally be the county unless sufficient current wage data (data on wages paid on current projects or, where necessary, projects under construction no more than one year prior to the beginning of the survey or the request for a wage determination, as appropriate) is unavailable to make a wage determination.

(b) If there has not been sufficient similar construction within the area in the past year to make a wage determination, wages paid on similar construction in surrounding counties may be considered.

(c) If there has not been sufficient similar construction in surrounding counties or in the State in the past year, wages paid on projects completed more than one year prior to the beginning of the survey or the request for a wage determination, as appropriate, may be considered.

§ 1.8 Reconsideration by the Administrator.

Any interested person may seek reconsideration of a wage determination issued under this part or of a decision of the Administrator regarding application of a wage determination. Such a request for reconsideration shall be in writing accompanied by a full statement of the interested person's views and any supporting wage data or other pertinent information. The Administrator will respond within 30 days of receipt thereof, or will notify the requestor within the 30 day period that additional time is necessary.

§ 1.9 Review by Wage Appeals Board.

Any interested person may appeal to the Wage Appeals Board for a review of a wage determination or its application made under this part, after reconsideration by the Administrator has been sought pursuant to § 1.8 and denied. Any such appeal may, in the discretion of the Wage Appeals Board, be received, accepted, and decided in accordance with the provisions of 29 CFR Part 7 and such other procedures as the Board may establish.

Appendix A

Statutes Related to the Davis-Bacon Act Requiring Payment of Wages at Rates Predetermined by the Secretary of Labor

1. The Davis-Bacon Act (secs. 1-7, 46 Stat. 1494, as amended; Pub. L. 74-403, 40 U.S.C. 276a-276a-7).
2. National Housing Act (sec. 212 added to c. 647, 48 Stat. 1246, by sec. 14, 53 Stat. 807; 12 U.S.C. 1715c and repeatedly amended).
3. Housing Act of 1950 (college housing) (amended by Housing Act of 1950 to add labor provisions, 73 Stat. 687; 12 U.S.C. 1746a(f)).
4. Housing Act of 1950 (sec. 401(f) of the Housing Act of 1950 as amended by Pub. L. 86-372, 73 Stat. 681; 12 U.S.C. 1701q(c)(3)).
5. Commercial Fisheries Research and Development Act of 1964 (sec. 7, 78 Stat. 193; 16 U.S.C. 779a(b)).
6. Library Services and Construction Act (sec. 7(a), 78 Stat. 13; 20 U.S.C. 388a(4), as amended).
7. National Technical Institute for the Deaf Act (sec. 5(b)(8), 79 Stat. 126; 20 U.S.C. 684(b)(8)).
8. National Foundation on the Arts and Humanities Act of 1965 (sec. 3(h), 79 Stat. 846 as amended; 20 U.S.C. 964(i)).
9. Elementary and Secondary Education Act of 1965 as amended by Elementary and Secondary and other Education Amendments of 1966 (sec. 423 as added by Pub. L. 91-230, title IV, sec. 401(a)(10), 84 Stat. 168, and renumbered sec. 433, by Pub. L. 92-318; title III, sec. 301(a)(1), 86 Stat. 338; 20 U.S.C. 1232(b)). Under the amendment coverage is extended to all programs administered by the Commissioner of Education.
10. The Federal-Aid Highway Acts (72 Stat. 695, as amended by 82 Stat. 821; 23 U.S.C. 113, as amended by the Surface Transportation Assistance Act of 1962, Pub. L. 87-424).
11. Indian Self-Determination and Education Assistance Act (sec. 7, 85 Stat. 220; 25 U.S.C. 450e).
12. Indian Health Care Improvement Act (sec. 303(b), 90 Stat. 1407; 25 U.S.C. 1633(b)).
13. Rehabilitation Act of 1973 (sec. 306(b)(5), 87 Stat. 364, 29 U.S.C. 776(b)(5)).
14. Comprehensive Employment and Training Act of 1973 (sec. 604, 87 Stat. 880, renumbered sec. 706 by 83 Stat. 1848; 29 U.S.C. 806; also sec. 604, 88 Stat. 1848; 29 U.S.C. 804(b)(3)).
15. State and Local Fiscal Assistance Act of 1972 (sec. 123(a)(6), 86 Stat. 933; 31 U.S.C. 1246(a)(6)).
16. Federal Water Pollution Control Act (sec. 313 of sec. 2, 88 Stat. 884; 33 U.S.C. 1373).
17. Veterans Nursing Home Care Act of 1964 (78 Stat. 302, as amended; 38 U.S.C. 5035(a)(8)).
18. Postal Reorganization Act (sec. 410(b)(4)(C), 84 Stat. 726 as amended; 39 U.S.C. 410(b)(4)(C)).
19. National Visitors Center Facilities Act of 1968 (sec. 110, 32 Stat. 48; 40 U.S.C. 808).
20. Appalachian Regional Development Act of 1965 (sec. 402, 79 Stat. 21; 40 U.S.C. App. 402).
21. Health Services Research, Health Statistics, and Medical Libraries Act of 1974 (sec. 107, see sec. 308(h)(2) thereof, 83 Stat.
22. Hospital Survey and Construction Act, as amended by the Hospital and Medical Facilities Amendments of 1964 (sec. 812(a)(5), 79 Stat. 453; 42 U.S.C. 2914(a)(5)).
23. Health Professions Education Assistance Act (sec. 307(b), 90 Stat. 2254; 42 U.S.C. 2914(g)(1)(C); also sec. 307a, 90 Stat. 2256; 42 U.S.C. 2914(c)(7)).
24. Nurse Training Act of 1964 (sec. 941(e)(1)(C), 89 Stat. 364; 42 U.S.C. 2941a(b)(5)).
25. Heart Disease, Cancer, and Stroke Amendments of 1968 (sec. 904, as added by sec. 2, 79 Stat. 828; 42 U.S.C. 2960(b)(4)).
26. Safe Drinking Water Act (sec. 2(a), see sec. 1450e thereof, 88 Stat. 1681; 42 U.S.C. 300f-4(e)).
27. National Health Planning and Resources Act (sec. 4, see sec. 1004(b)(1)(H), 86 Stat. 2391; 42 U.S.C. 300a-3(b)(1)(H)).
28. U.S. Housing Act of 1937, as amended and recodified (86 Stat. 867; 42 U.S.C. 1437).
29. Demonstration Cities and Metropolitan Development Act of 1966 (secs. 110, 311, 303, 1003, 86 Stat. 1288, 1270, 1277, 1284; 42 U.S.C. 3310; 12 U.S.C. 1715c; 42 U.S.C. 1437).
30. Slum clearance program: Housing Act of 1949 (sec. 108, 63 Stat. 418, as amended; 42 U.S.C. 1458).
31. Farm housing: Housing Act of 1949 (adds sec. 516(f) to Housing Act of 1949 by sec. 503, 78 Stat. 797; 42 U.S.C. 7406(f)).
32. Housing Act of 1961 (sec. 707, added by sec. 907, 79 Stat. 498, as amended; 42 U.S.C. 1500e-3).
33. Defense Housing and Community Facilities and Services Act of 1951 (sec. 310, 65 Stat. 307; 42 U.S.C. 1502b).
34. Special Health Revenue Sharing Act of 1975 (sec. 303, see sec. 222(a)(5) thereof, 89 Stat. 324; 42 U.S.C. 2680(a)(5)).
35. Economic Opportunity Act of 1964 (sec. 607, 78 Stat. 532; 42 U.S.C. 2947).
36. Headstart, Economic Opportunity, and Community Partnership Act of 1974 (sec. 11, see sec. 811 thereof, 88 Stat. 2337; 42 U.S.C. 2982a).
37. Housing and Urban Development Act of 1965 (sec. 707, 79 Stat. 482 as amended; 42 U.S.C. 3107).
38. Older Americans Act of 1965 (sec. 302, Pub. L. 89-73, as amended by sec. 501, Pub. L. 93-29; 87 Stat. 50; 42 U.S.C. 3041a(a)(4)).
39. Public Works and Economic Development Act of 1965 (sec. 712, 79 Stat. 575 as amended; 42 U.S.C. 3222).
40. Juvenile Delinquency Prevention Act (sec. 1, 86 Stat. 538; 42 U.S.C. 3884).
41. New Communities Act of 1968 (sec. 410.82 Stat. 316; 42 U.S.C. 3909).
42. Urban Growth and New Community Development Act of 1970 (sec. 727(f), 84 Stat. 1803; 42 U.S.C. 4529).
43. Domestic Volunteer Service Act of 1973 (sec. 406, 87 Stat. 410; 42 U.S.C. 3046).
44. Housing and Community Development Act of 1974 (secs. 110, 602(g), 83 Stat. 649, 724; 42 U.S.C. 3310, 1440(g)).
45. Developmentally Disabled Assistance and Bill of Rights Act (sec. 129(4), 89 Stat. 488; 42 U.S.C. 60421(4); title I, sec. 111, 89 Stat. 481; 42 U.S.C. 6063(b)(19)).
46. National Energy Conservation Policy Act (sec. 312, 92 Stat. 3254; 42 U.S.C. 6371(i)).

47. Public Works Employment Act of 1976 (sec. 106, 90 Stat. 1001; 42 U.S.C. 6706; also sec. 206, 90 Stat. 1006; 42 U.S.C. 6726).

48. Energy Conservation and Production Act (sec. 45(b), 90 Stat. 1166; 42 U.S.C. 6861(h)).

49. Solid Waste Disposal Act (sec. 2, 90 Stat. 2828; 42 U.S.C. 6979).

50. Rail Passenger Service Act of 1970 (sec. 405d, 84 Stat. 1337; 45 U.S.C. 365(d)).

51. Urban Mass Transportation Act of 1964 (sec. 10, 78 Stat. 307; renumbered sec. 13 by 88 Stat. 713; 49 U.S.C. 1608).

52. Highway speed ground transportation study (sec. 6(b), 79 Stat. 863; 49 U.S.C. 1636(b)).

53. Airport and Airway Development Act of 1970 (sec. 22(b), 84 Stat. 231; 49 U.S.C. 1722(b)).

54. Federal Civil Defense Act of 1950 (50 U.S.C. App. 2281(i)).

55. National Capital Transportation Act of 1966 (sec. 3(b)(4), 79 Stat. 40 U.S.C. 682(b)(4)).

Note.—Repealed Dec. 8, 1969 and labor standards incorporated in sec. 1-1431 of the District of Columbia Code.

56. Model Secondary School for the Deaf Act (sec. 4, 80 Stat. 1027, Pub. L. 86-664, but not in the United States Code).

57. Delaware River Basin Compact (sec. 13.1, 73 Stat. 714, Pub. L. 87-328) (considered a statute for purposes of this part but not in the United States Code).

58. Energy Security Act (Sec. 175(c), Pub. L. 96-294, 94 Stat. 611; 42 U.S.C. 8701 note).

Appendix B

Boston Region

For the States of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont:

Assistant Regional Administrator for Wage-Hour, Employment Standards Administration, U.S. Department of Labor, JFK Federal Building, Government Center, Room 1612C, Boston, Massachusetts 02203 (telephone: 617-223-3363).

New York Region

For the States of New Jersey and New York

and for the Canal Zone, Puerto Rico, and the Virgin Islands:

Assistant Regional Administrator for Wage-Hour, Employment Standards Administration, U.S. Department of Labor, 1315 Broadway, Room 3300, New York, New York 10036 (telephone: 212-399-5443).

Philadelphia Region

For the States of Delaware, Maryland, Pennsylvania, Virginia, and West Virginia, and the District of Columbia:

Assistant Regional Administrator for Wage-Hour, Employment Standards Administration, U.S. Department of Labor, Gateway Building, Room 18220, 3535 Market Street, Philadelphia, Pennsylvania 19104 (telephone: 215-586-1193).

Atlanta Region

For the States of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee:

Assistant Regional Administrator for Wage-Hour, Employment Standards Administration, U.S. Department of Labor, 1371 Peachtree Street, N.E., Room 305, Atlanta, Georgia 30308 (telephone: 404-581-4801).

Chicago Region

For the States of Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin:

Assistant Regional Administrator for Wage-Hour, Employment Standards Administration, U.S. Department of Labor, 230 South Dearborn Street, 8th Floor, Chicago, Illinois 60604 (telephone: 312-353-7249).

Dallas Region

For the States of Arkansas, Louisiana, New Mexico, Oklahoma, and Texas:

Assistant Regional Administrator for Wage-Hour, Employment Standards Administration, U.S. Department of Labor, 555 Griffin Square Building, Young and Griffin Streets, Dallas, Texas 75202 (telephone: 214-767-6891).

Kansas City Region

For the States of Iowa, Kansas, Missouri, and Nebraska:

Assistant Regional Administrator for Wage-Hour, Employment Standards Administration, U.S. Department of Labor, Federal Office Building, Room 2000, 911 Walnut Street, Kansas City, Missouri 64106 (telephone: 816-374-5386).

Denver Region

For the States of Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming:

Assistant Regional Administrator for Wage-Hour, Employment Standards Administration, U.S. Department of Labor, Federal Office Building, Room 1440, 1961 Stout Street, Denver, Colorado 80294 (telephone: 304-637-4613).

San Francisco Region

For the States of Arizona, California, Hawaii, and Nevada:

Assistant Regional Administrator for Wage-Hour, Employment Standards Administration, U.S. Department of Labor, 440 Golden Gate Avenue, Room 10353, San Francisco, California 94102 (telephone: 415-556-3583).

Seattle Region

For the States of Alaska, Idaho, Oregon, and Washington:

Assistant Regional Administrator for Wage-Hour, Employment Standards Administration, U.S. Department of Labor, Federal Office Building, Room 4141, 909 First Avenue, Seattle, Washington 98174 (telephone: 206-442-1916).

[NOTE: This reprint incorporates editorial corrections that are published in the Federal Register of Friday, May 6, 1983]

[FR Doc. 83-11198 Filed 4-29-83; 9:45 am]
BILLING CODE 4510-27-01

DEPARTMENT OF LABOR

Employment Standards
Administration, Wage and Hour
Division

Office of the Secretary

29 CFR Part 5

Labor Standards Provisions Applicable
to Contracts Covering Federally
Financed and Assisted Construction
(Also Labor Standards Provisions
Applicable to Nonconstruction
Contracts Subject to the Contract
Work Hours and Safety Standards Act)

(NOTE: This reprint incorporates
editorial corrections that are published
in the Federal Register of Friday,
May 6, 1983)

AGENCY: Wage and Hour Division,
Employment Standards Administration,
Labor.

ACTION: Implementation of final rule.

SUMMARY: This document provides for
implementation of regulations, 29 CFR
Part 5, Subpart A, previously published
in the Federal Register on May 28, 1982
(47 FR 23658), on labor standards
applicable to contracts for federally
financed and assisted construction
subject to the Davis-Bacon and Related
Acts and contracts subject to the
Contract Work Hours and Safety
Standards Act (CWHSSA), to the extent
that its implementation is permitted by
the permanent injunction issued by the
U.S. District Court for the District of
Columbia on December 23, 1982. The
enjoined provisions of the May 1982
final rule continue to be deferred.

DATES: Effective date: June 28, 1983. See
SUPPLEMENTARY INFORMATION below for
dates of applicability.

FOR FURTHER INFORMATION CONTACT:
William M. Otter, Administrator, Wage
and Hour Division, Employment
Standards Administration, U.S.
Department of Labor, Room S-3502, 200
Constitution Avenue, NW, Washington,
D.C. 20210. Telephone: 202-523-4308.

SUPPLEMENTARY INFORMATION: On
August 14, 1981, a proposal was
published in the Federal Register (46 FR
41458) to make revisions to Subpart A of
Regulations, 29 CFR Part 5, Labor
Standards Provisions Applicable to
Contracts Covering Federally Financed
and Assisted Construction (Also Labor
Standards Provisions Applicable to
Nonconstruction Contracts Subject to
the Contract Work Hours and Safety
Standards Act), allowing 60 days for
public comment.

On May 28, 1982, the regulation was
published in the Federal Register (47 FR
23658) as a final rule with a scheduled
effective date of July 27, 1982. However,

on June 11, 1982, a suit was filed against
the Department of Labor in U.S. District
Court for the District of Columbia
seeking to prevent the implementation
of the revised regulations. On July 22,
1982, the Court issued a preliminary
injunction enjoining the Department
from implementing certain provisions of
the revised regulations pending final
disposition of the suit (*Building and
Construction Trades Department, AFL-
CIO, et al. v. Raymond J. Donovan, et
al.*, 543 F. Supp. 1282). The Department
published a notice in the Federal
Register on July 28, 1982 (47 FR 32070),
deferring the implementation of this
regulation in its entirety until further
notice.

On December 23, 1982, the Court
issued a permanent injunction which, as
modified by its order of January 17, 1983,
enjoined §§ 5.2(n)(4) (helpers),
5.5(a)(1)(ii)(A) (helpers), 5.5(a)(4)(iv)
(helpers), 5.5(a)(3)(ii) (Copeland Act
requirements), and 5.8(a) (2) and (3)
(Copeland Act requirements) of this
regulation. The Department has
appealed this ruling.

The document published today
implements those provisions of the final
rule published in the Federal Register on
May 28, 1982 (47 FR 23658) which have
not been enjoined by the court. The
effective date of the enjoined provisions
is deferred, by separate notice in today's
Federal Register, pending final
determination of the validity of those
provisions. If the Department prevails
on appeal, the deferred provisions
(§§ 5.2(n)(4), 5.5(a)(1)(ii)(A), 5.5(a)(3) (ii)
and (iii), 5.5(a)(4)(iv), and 5.8(a) (2) and
(3)) will then be implemented.

As described more fully below, the
court order necessitated corresponding
deletions of sections or portions of
sections in the text of the regulations
now being implemented; in addition,
since the court enjoined the new rule's
elimination of the requirement for
weekly submission of certified payrolls,
that requirement from § 5.5(a)(3)(ii) of
the previous regulations is incorporated
in the text. To avoid confusion, the text
of the entire rule as implemented at this
time is set forth herein.

The following is a description of the
changes made to the May 28, 1982
regulations in order to comport with the
Court's decision and order, pending final
disposition of the appeal.

**Sections 5.2(n)(4) and 5.5(a)(4)(iv)—
Helpers.**

The enjoined definition of "helper" in
§ 5.2(n)(4), as well as the conditions
governing the use of helpers contained
in enjoined § 5.5(a)(4)(iv), are deleted
from the text.

**Section 5.5(a)(1)(ii)(A)—Conformance
Procedures.**

This section as enjoined provided that
helper rates could be conformed without
regard to the requirement applicable to
all other conformance actions that the
work to be performed by the conformed
class is not work performed by a class
already listed in the wage
determination. The separate treatment
of helpers in the conformance of wage
rates has been deleted from the text.

**Sections 5.5(a)(3) (ii) and (iii) and 5.8(a)
(2) and (3)—Submission of Wage
Payment Information.**

These sections would have eliminated
the requirement that contractors submit
weekly a copy of payrolls and instead
would have required only a weekly
submission certifying compliance with
the Davis-Bacon and Copeland Acts.
The regulations would have required
contractors to submit payrolls upon
request of contracting agencies or the
Department of Labor, but such requests
would be made only in conjunction with
specific compliance checks or
enforcement actions. Because of the
injunction, the weekly payroll
submission requirement in the previous
regulation has been added to the text,
with language clarifying that copies of
regular payrolls containing all of the
required information (in any form
desired by the contractor) are sufficient
to satisfy the requirements. Furthermore,
Optional Form WH-347 is available for
the purpose of reporting payroll
information if the contractor so chooses,
but it is not mandatory that this form be
used.

In addition to the textual changes
described above, the following
necessary changes have been made.

The definition of "construction" in
§ 5.2(j) is amended to delete the
reference to "initial construction"
contained in section 113 of Title 23,
U.S.C., in order to comport with a
legislative amendment effective on
January 6, 1983, as part of the Surface
Transportation Assistance Act of 1982,
Pub. L. 97-424. (See also § 3.1(a) 12.)

An editorial change is made in the
text of the conformance procedures
contained in § 5.5(a)(1)(ii) (B) and (C) to
clarify that the contracting officer must
concur with a proposed classification
and wage rate conformance action
before submitting the matter to DOL for
review or else it will be considered a
dispute to be resolved by DOL, and to
provide further that the contracting
officer will be notified of the Wage and
Hour Administrator's decision on all
proposed conformance actions.

Section 5.15 is amended to include in paragraph (d)(4) the variation from the overtime requirements of the Contract Work Hours and Safety Standards Act for pilots and copilots of fixed-wing and rotary-wing aircraft employed on contracts for fire fighting or suppression and related services, which was published as a final rule in the Federal Register of July 2, 1982 (47 FR 28916).

Minor editorial changes and necessary typographical corrections have also been made in the following sections: Table of Contents at § 5.11; §§ 5.1(a); 5.2(h); 5.2(i); 5.2(n); 5.5(a)(4); 5.7(d); 5.8(b); 5.11; and 5.12(d)(4).

The document being published today is not a major rule since it is simply a republication and implementation of provisions previously published. A full Final Regulatory Impact and Regulatory Flexibility Analysis was prepared in connection with the May 28, 1982 publication of the regulations and a summary was published therein. See 47 FR 23661. Because of the Court injunction, the alternatives selected cannot be fully implemented at this time.

As discussed above, this document is only a republication and implementation of regulations previously published for notice and comment to the extent implementation is permitted by the court's injunction. Other changes are only editorial in nature. Accordingly, additional notice and comment is impracticable, unnecessary and contrary to the public interest.

In accordance with the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*), the reporting and recordkeeping provisions included in this rule were submitted for approval to the Office of Management and Budget (OMB). Subsequent to the May 28 publication of this rule, the information collection requirements contained in this regulation (see §§ 5.5(a)(1)(ii), 5.5(a)(1)(iv), 5.5(a)(3)(i), 5.5(a)(3)(ii), 5.5(c), 5.15(d)(1), 5.15(d)(3), and 5.15(d)(4)) were approved by OMB under the provisions of 44 U.S.C. 3507 and have been assigned OMB Control Numbers 1215-0140, 1215-0148 and 1215-0017.

Dates of Applicability

The provisions of §§ 5.2 and 5.3 of this part shall be applicable only as to contracts entered into pursuant to invitations for bids issued or negotiations concluded on or after June 28, 1983.

This document was prepared under the direction and control of William M. Otter, Administrator, Wage and Hour Division, Employment Standards

Administration, U.S. Department of Labor.

List of Subjects in 29 CFR Part 5

Administrative practice and procedures, Government contracts, Investigations, Labor, Minimum wages, Penalties, Recordkeeping requirements, Reporting requirements, Wages.

Accordingly, 29 CFR Part 5, Subpart A, as issued on May 28, 1982 with the necessary textual changes discussed above is herein implemented, as fully set forth below.

Signed at Washington, D.C., on this 22d day of April 1983.

Raymond J. Donovan,

Secretary of Labor.

Robert S. Collyer,

Deputy Under Secretary for Employment Standards.

William M. Otter,

Administrator, Wage and Hour Division.

PART 5—LABOR STANDARDS PROVISIONS APPLICABLE TO CONTRACTS COVERING FEDERALLY FINANCED AND ASSISTED CONSTRUCTION (ALSO LABOR STANDARDS PROVISIONS APPLICABLE TO NONCONSTRUCTION CONTRACTS SUBJECT TO THE CONTRACT WORK HOURS AND SAFETY STANDARDS ACT)

Subpart A—Davis-Bacon and Related Acts Provisions and Procedures

Sec.

- 5.1 Purpose and scope.
- 5.2 Definitions.
- 5.3 [Reserved]
- 5.4 [Reserved]
- 5.5 Contract provisions and related matters.
- 5.6 Enforcement.
- 5.7 Reports to the Secretary of Labor.
- 5.8 Liquidated damages under the Contract Work Hours and Safety Standards Act.
- 5.9 Suspension of funds.
- 5.10 Restitution, criminal action.
- 5.11 Disputes concerning payment of wages.
- 5.12 Debarment proceedings.
- 5.13 Rulings and interpretations.
- 5.14 Variations, tolerances, and exemptions from Parts 1 and 3 of this subtitle and this part.
- 5.15 Limitations, variations, tolerances, and exemptions under the Contract Work Hours and Safety Standards Act.
- 5.16 Training plans approved or recognized by the Department of Labor prior to August 20, 1975.
- 5.17 Withdrawal of approval of a training program.

Authority: 40 U.S.C. 276a-276a-7; 40 U.S.C. 276c; 40 U.S.C. 327-332; Reorganization Plan No. 14 of 1950, 5 U.S.C. Appendix; 5 U.S.C. 301; and the statutes listed in section 5.1(a) of this part.

§ 5.1 Purpose and scope.

(a) The regulations contained in this part are promulgated under the authority conferred upon the Secretary of Labor by Reorganization Plan No. 14 of 1950 and the Copeland Act in order to coordinate the administration and enforcement of the labor standards provisions of each of the following acts by the Federal agencies responsible for their administration and of such additional statutes as may from time to time confer upon the Secretary of Labor additional duties and responsibilities similar to those conferred upon the Secretary of Labor under Reorganization Plan No. 14 of 1950:

1. The Davis-Bacon Act (sec. 1-7, 40 Stat. 1948, as amended; Pub. L. 74-403, 40 U.S.C. 276a-276a-7).
2. Copeland Act (40 U.S.C. 276c).
3. The Contract Work Hours and Safety Standards Act (40 U.S.C. 327-332).
4. National Housing Act (sec. 212 added to c. 847, 48 Stat. 1248, by sec. 14, 53 Stat. 807; 12 U.S.C. 1718c and repeatedly amended).
5. Housing Act of 1950 (college housing) (amended by Housing Act of 1959 to add labor provisions, 73 Stat. 691; 12 U.S.C. 1749a(f)).
6. Housing Act of 1959 (sec. 401(f) of the Housing Act of 1959 as amended by Pub. L. 86-372, 73 Stat. 691; 12 U.S.C. 1701(c)(3)).
7. Commercial Fisheries Research and Development Act of 1964 (sec. 7, 78 Stat. 198; 16 U.S.C. 779e(b)).
8. Library Services and Construction Act (sec. 7(a), 78 Stat. 13; 20 U.S.C. 355c(a)(4), as amended).
9. National Technical Institute for the Deaf Act (sec. 5(b)(3), 79 Stat. 128; 20 U.S.C. 684(b)(5)).
10. National Foundation on the Arts and Humanities Act of 1965 (sec. 5(k), 79 Stat. 848 as amended; 20 U.S.C. 954(i)).
11. Elementary and Secondary Education Act of 1965 as amended by Elementary and Secondary and other Education Amendments of 1969 (sec. 423 as added by Pub. L. 91-230, title IV, sec. 401(a)(10), 84 Stat. 169, and renumbered sec. 433, by Pub. L. 92-318; title III, sec. 301(a)(1), 86 Stat. 328; 20 U.S.C. 1232(b)). Under the amendment coverage is extended to all programs administered by the Commissioner of Education.
12. The Federal-Aid Highway Acts (72 Stat. 895, as amended by 82 Stat. 821; 23 U.S.C. 113, as amended by the Surface Transportation Assistance Act of 1982, Pub. L. 97-424).
13. Indian Self-Determination and Education Assistance Act (sec. 7, 88 Stat. 2205; 25 U.S.C. 450e).
14. Indian Health Care Improvement Act (sec. 303(b), 90 Stat. 1407; 25 U.S.C. 1633(b)).
15. Rehabilitation Act of 1973 (sec. 306(b)(5) 87 Stat. 384, 29 U.S.C. 776(b)(5)).
16. Comprehensive Employment and Training Act of 1973 (sec. 606, 87 Stat. 880, renumbered sec. 706 by 88 Stat. 1845; 29 U.S.C. 986; also sec. 604, 88 Stat. 1848; 29 U.S.C. 964(b)(3)).

17. State and Local Fiscal Assistance Act of 1972 (sec. 123(a)(8), 86 Stat. 933; 31 U.S.C. 1244(a)(8)).
18. Federal Water Pollution Control Act (sec. 513 of sec. 2, 86 Stat. 894; 33 U.S.C. 1372).
19. Veterans Nursing Home Care Act of 1964 (78 Stat. 502, as amended; 38 U.S.C. 5033(a)(8)).
20. Postal Reorganization Act (sec. 410(b)(4)(C); 84 Stat. 729 as amended; 39 U.S.C. 410(b)(4)(C)).
21. National Visitors Center Facilities Act of 1966 (sec. 110, 32 Stat. 43; 40 U.S.C. 806).
22. Appalachian Regional Development Act of 1965 (sec. 402, 79 Stat. 21; 40 U.S.C. App. 402).
23. Health Services Research, Health Statistics, and Medical Libraries Act of 1974 (sec. 107, see sec. 308(h)(2) thereof, 88 Stat. 370, as amended by 90 Stat. 378; 42 U.S.C. 242m(h)(2)).
24. Hospital Survey and Construction Act, as amended by the Hospital and Medical Facilities Amendments of 1964 (sec. 608(a)(5), 78 Stat. 453; 42 U.S.C. 291e(a)(5)).
25. Health Professions Educational Assistance Act (sec. 303(b), 90 Stat. 2234; 42 U.S.C. 293a(g)(1)(C); also sec. 306a, 90 Stat. 2238, 42 U.S.C. 293a(c)(7)).
26. Nurse Training Act of 1964 (sec. 941(a)(1)(C), 88 Stat. 384; 42 U.S.C. 290a(b)(5)).
27. Heart Disease, Cancer, and Stroke Amendments of 1965 (sec. 904, as added by sec. 2, 79 Stat. 982; 42 U.S.C. 290d(b)(4)).
28. Safe Drinking Water Act (sec. 2(a) see sec. 1450e thereof, 88 Stat. 1891; 42 U.S.C. 300j-9(e)).
29. National Health Planning and Resources Act (sec. 4, see sec. 1804(b)(1)(H), 88 Stat. 2281, 42 U.S.C. 300a-3(b)(1)(H)).
30. U.S. Housing Act of 1937, as amended and recodified (88 Stat. 687; 42 U.S.C. 1437f).
31. Demonstration Cities and Metropolitan Development Act of 1966 (secs. 110, 311, 303, 1003, 80 Stat. 1258, 1270, 1277, 1284; 42 U.S.C. 3310; 12 U.S.C. 1713c; 42 U.S.C. 1437f).
32. Slum clearance program: Housing Act of 1949 (sec. 108, 63 Stat. 418, as amended; 42 U.S.C. 1459).
33. Farm housing: Housing Act of 1964 (adds sec. 516(f) to Housing Act of 1949 by sec. 303, 78 Stat. 787; 42 U.S.C. 1480(f)).
34. Housing Act of 1961 (sec. 707, added by sec. 907, 78 Stat. 498, as amended; 42 U.S.C. 1500c-3).
35. Defense Housing and Community Facilities and Services Act of 1961 (sec. 310, 68 Stat. 307; 42 U.S.C. 1592i).
36. Special Health Revenue Sharing Act of 1973 (sec. 303, see sec. 222(a)(3) thereof, 88 Stat. 324; 42 U.S.C. 2800(a)(5)).
37. Economic Opportunity Act of 1964 (sec. 607, 78 Stat. 332; 42 U.S.C. 2947).
38. Headstart, Economic Opportunity, and Community Partnership Act of 1974 (sec. 11, see sec. 812 thereof, 88 Stat. 2327; 42 U.S.C. 2992a).
39. Housing and Urban Development Act of 1965 (sec. 707, 79 Stat. 492 as amended; 42 U.S.C. 3107).
40. Older Americans Act of 1966 (sec. 502, Pub. L. 89-73, as amended by sec. 301, Pub. L. 93-29; 87 Stat. 50; 42 U.S.C. 3041a(a)(4)).
41. Public Works and Economic Development Act of 1965 (sec. 712, 79 Stat. 573 as amended; 42 U.S.C. 3222).
42. Juvenile Delinquency Prevention Act (sec. 1, 86 Stat. 538; 42 U.S.C. 3884).
43. New Communities Act of 1965 (sec. 410, 82 Stat. 318; 42 U.S.C. 3908).
44. Urban Growth and New Community Development Act of 1970 (sec. 727(f), 84 Stat. 1803; 42 U.S.C. 4829).
45. Domestic Volunteer Service Act of 1973 (sec. 406, 87 Stat. 410; 42 U.S.C. 5048).
46. Housing and Community Development Act of 1974 (secs. 110, 802(g), 88 Stat. 848, 724; 42 U.S.C. 5310, 1440(g)).
47. Developmentally Disabled Assistance and Bill of Rights Act (sec. 120(4), 88 Stat. 488; 42 U.S.C. 6062(4); title I, sec. 111, 88 Stat. 491; 42 U.S.C. 6063(b)(19)).
48. National Energy Conservation Policy Act (sec. 312, 92 Stat. 3254; 42 U.S.C. 6371).
49. Public Works Employment Act of 1976 (sec. 108, 90 Stat. 1001; 42 U.S.C. 6708; also sec. 208, 90 Stat. 1008; 42 U.S.C. 6728).
50. Energy Conservation and Production Act (sec. 431(h), 90 Stat. 1288; 42 U.S.C. 6901(h)).
51. Solid Waste Disposal Act (sec. 2, 90 Stat. 2823; 42 U.S.C. 6979).
52. Rail Passenger Service Act of 1970 (sec. 405d, 84 Stat. 1337; 48 U.S.C. 368(d)).
53. Urban Mass Transportation Act of 1964 (sec. 10, 78 Stat. 307; renumbered sec. 13 by 88 Stat. 718; 48 U.S.C. 1808).
54. Highway Speed Ground Transportation Study (sec. 6(b), 78 Stat. 883; 48 U.S.C. 1638(b)).
55. Airport and Airway Development Act of 1970 (sec. 22(b), 84 Stat. 231; 48 U.S.C. 1722(b)).
56. Federal Civil Defense Act of 1950 (50 U.S.C. App. 2281i).
57. National Capital Transportation Act of 1965 (sec. 3(b)(4), 79 Stat. 644; 48 U.S.C. 682(b)(4). Note.—Repealed December 8, 1980, and labor standards incorporated in sec. 1-1431 of the District of Columbia Code).
58. Model Secondary School for the Deaf Act (sec. 4, 80 Stat. 1027, Pub. L. 86-684, but not in the United States Code).
59. Delaware River Basin Compact (sec. 15.1, 75 Stat. 714, Pub. L. 87-322) (considered a statute for purposes of the plan but not in the United States Code).
60. Energy Security Act (sec. 173(c), Pub. L. 96-294, 94 Stat. 611; 42 U.S.C. 6701 note).

(b) Part 1 of this subtitle contains the Department's procedural rules governing requests for wage determinations and the issuance and use of such wage determinations under the Davis-Bacon Act and its related statutes as listed in that part.

§ 5.2 Definitions.

(a) The term "Secretary" includes the Secretary of Labor, the Deputy Under Secretary for Employment Standards, and their authorized representatives.

(b) The term "Administrator" means the Administrator of the Wage and Hour Division or the authorized representative as set forth in this part. In the absence of the Wage-Hour Administrator, the Deputy Administrator of the Wage and Hour Division, is designated to act for the

Administrator under this Part. Except as otherwise provided in this Part, the Assistant Administrator for Government Contract Wage Standards is the authorized representative of the Administrator in the administration of the statutes listed in § 5.1.

(c) The term "Federal agency" means the agency or instrumentality of the United States which enters into the contract or provides assistance through loan, grant, loan guarantee or insurance, or otherwise, to the project subject to a statute listed in § 5.1.

(d) The term "Agency Head" means the principal official of the Federal agency and includes those persons duly authorized to act in the behalf of the Agency Head.

(e) The term "Contracting Officer" means the individual, a duly appointed successor, or authorized representative who is designated and authorized to enter into contracts on behalf of the Federal agency.

(f) The term "labor standards" as used in this part means the requirements of the Davis-Bacon Act, the Contract Work Hours and Safety Standards Act (other than those relating to safety and health), the Copeland Act, and the prevailing wage provisions of the other statutes listed in § 5.1, and the regulations in Parts 1 and 3 of this subtitle and this part.

(g) The term "United States or the District of Columbia" means the United States, the District of Columbia, and all executive departments, independent establishments, administrative agencies, and instrumentalities of the United States and of the District of Columbia, including corporations, all or substantially all of the stock of which is beneficially owned by the United States, by the foregoing departments, establishments, agencies, instrumentalities, and including nonappropriated fund instrumentalities.

(h) The term "contract" means any prime contract which is subject wholly or in part to the labor standards provisions of any of the acts listed in § 5.1 and any subcontract of any tier thereunder, let under the prime contract. A State or local Government is not regarded as a contractor under statutes providing loans, grants, or other Federal assistance in situations where construction is performed by its own employees. However, under statutes requiring payment of prevailing wages to all laborers and mechanics employed on the assisted project, such as the U.S. Housing Act of 1937, State and local recipients of Federal-aid must pay these employees according to Davis-Bacon labor standards.

(j) The terms "building" or "work" generally include construction activity as distinguished from manufacturing, furnishing of materials, or servicing and maintenance work. The terms include without limitation, buildings, structures, and improvements of all types, such as bridges, dams, plants, highways, parkways, streets, subways, tunnels, sewers, mains, power lines, pumping stations, heavy generators, railways, airports, terminals, docks, piers, wharves, ways, lighthouses, buoys, jetties, breakwaters, levees, canals, dredging, shoring, rehabilitation and reactivation of plants, scaffolding, drilling, blasting, excavating, clearing, and landscaping. The manufacture or furnishing of materials, articles, supplies or equipment (whether or not a Federal or State agency acquires title to such materials, articles, supplies, or equipment during the course of the manufacture or furnishing, or owns the materials from which they are manufactured or furnished) is not a "building" or "work" within the meaning of the regulations in this part unless conducted in connection with and at the site of such a building or work as is described in the foregoing sentence, or under the United States Housing Act of 1937 and the Housing Act of 1949 in the construction or development of the project.

(i) The terms "construction", "prosecution", "completion", or "repair" mean all types of work done on a particular building or work at the site hereof (or, under the United States Housing Act of 1937 and the Housing Act of 1949), all work done in the construction or development of the project, including without limitation, altering, remodeling, installation (where appropriate) on the site of the work of items fabricated off-site, painting and decorating, the transporting of materials and supplies to or from the building or work by the employees of the construction contractor or construction subcontractor, and the manufacturing or furnishing of materials, articles, supplies or equipment on the site of the building or work (or, under the United States Housing Act of 1937 and the Housing Act of 1949, in the construction or development of the project), by persons employed by the contractor or subcontractor.

(k) The term "public building" or "public work" includes building or work, the construction, prosecution, completion, or repair of which, as defined above, is carried on directly by authority of or with funds of a Federal agency to serve the interest of the

general public regardless of whether title thereof is in a Federal agency.

(l) The term "site of the work" is defined as follows:

(1) The "site of the work" is limited to the physical place or places where the construction called for in the contract will remain when work on it has been completed and, as discussed in paragraph (l)(2) of this section, other adjacent or nearby property used by the contractor or subcontractor in such construction which can reasonably be said to be included in the "site".

(2) Except as provided in paragraph (l)(3) of this section, fabrication plants, mobile factories, batch plants, borrow pits, job headquarters, tool yards, etc., are part of the "site of the work" provided they are dedicated exclusively, or nearly so, to performance of the contract or project, and are so located in proximity to the actual construction location that it would be reasonable to include them.

(3) Not included in the "site of the work" are permanent home offices, branch plant establishments, fabrication plants, and tool yards of a contractor or subcontractor whose locations and continuance in operation are determined wholly without regard to a particular Federal or federally assisted contract or project. In addition, fabrication plants, batch plants, borrow pits, job headquarters, tool yards, etc., of a commercial supplier or materialman which are established by a supplier of materials for the project before opening of bids and not on the project site, are not included in the "site of the work". Such permanent, previously established facilities are not a part of the "site of the work", even where the operations for a period of time may be dedicated exclusively, or nearly so, to the performance of a contract.

(m) The term "laborer" or "mechanic" includes at least those workers whose duties are manual or physical in nature (including those workers who use tools or who are performing the work of a trade), as distinguished from mental or managerial. The term "laborer" or "mechanic" includes apprentices, trainees, helpers, and, in the case of contracts subject to the Contract Work Hours and Safety Standards Act, watchmen or guards. The term does not apply to workers whose duties are primarily administrative, executive, or clerical, rather than manual. Persons employed in a bona fide executive, administrative, or professional capacity as defined in Part 341 of this title are not deemed to be laborers or mechanics. Working foremen who devote more than 20 percent of their time during a

workweek to mechanic or laborer duties, and who do not meet the criteria of Part 341, are laborers and mechanics for the time so spent.

(n) The terms apprentice and trainee are defined as follows:

(1) "Apprentice" means (i) a person employed and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or (ii) a person in the first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice;

(2) "Trainee" means a person registered and receiving on-the-job training in a construction occupation under a program which has been approved in advance by the U.S. Department of Labor, Employment and Training Administration, as meeting its standards for on-the-job training programs and which has been so certified by that Administration.

(3) These provisions do not apply to "apprentices" and "trainees" employed on projects subject to 23 U.S.C. 113 who are enrolled in programs which have been certified by the Secretary of Transportation in accordance with 23 U.S.C. 113(c).

(o) Every person performing the duties of a laborer or mechanic in the construction, prosecution, completion, or repair of a public building or public work, or building or work financed in whole or in part by loans, grants, or guarantees from the United States is "employed" regardless of any contractual relationship alleged to exist between the contractor and such person.

(p) The term "wages" means the basic hourly rate of pay; any contribution irrevocably made by a contractor or subcontractor to a trustee or to a third person pursuant to a bona fide fringe benefit fund, plan, or program; and the rate of costs to the contractor or subcontractor which may be reasonably anticipated in providing bona fide fringe benefits to laborers and mechanics pursuant to an enforceable commitment to carry out a financially responsible plan of program, which was communicated in writing to the laborers and mechanics affected. The fringe benefits enumerated in the Davis-Bacon

Act include medical or hospital care, pensions on retirement or death, compensation for injuries or illness resulting from occupational activity, or insurance to provide any of the foregoing; unemployment benefits; life insurance, disability insurance, sickness insurance, or accident insurance; vacation or holiday pay; defraying costs of apprenticeship or other similar programs; or other bona fide fringe benefits. Fringe benefits do not include benefits required by other Federal, State, or local law.

(q) The term "wage determination" includes the original decision and any subsequent decisions modifying, superseding, correcting, or otherwise changing the provisions of the original decision. The application of the wage determination shall be in accordance with the provisions of § 1.6 of this title.

§ 5.3-6.4 (Reserved)

§ 5.5 Contract provisions and related matters.

(a) The Agency head shall cause or require the contracting officer to insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1, the following clauses (or any modifications thereof to meet the particular needs of the agency. *Provided*, That such modifications are first approved by the Department of Labor):

(1) *Minimum wages.* (i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), 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 (a)(1)(iv) 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 § 5.3(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 (a)(1)(ii) 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.

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

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

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

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

(B) 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, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(C) 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 Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) 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.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program. *Provided*, That the Secretary of

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

(2) *Withholding.* The (write in name of Federal Agency or the loan or grant recipient) 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 (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) *Payrolls and basic records.* (i) 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 (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). 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. (Approved by the Office of Management and Budget under OMB control numbers 1215-0140 and 1215-0017.)

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the (write in name of appropriate Federal agency) if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency). The payrolls submitted shall set out accurately and completely all of the information required to be maintained under § 5.5(a)(3)(i) of Regulations, 29 CFR Part 5. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(B) 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:

(1) That the payroll for the payroll period contains the information required to be maintained under § 5.5(a)(3)(i) of Regulations, 29 CFR Part 5 and that such information is correct and complete;

(2) 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;

(3) 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.

(C) 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 (a)(3)(ii)(B) of this section.

(D) 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.

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

(4) *Apprentices and Trainees—(i) Apprentices.* 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, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship

program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice 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 Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) *Trainees.* Except as provided in 29 CFR 3.16, 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.

(iii) *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.

(3) *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 in any subcontracts the clauses contained in 29 CFR 3.3(a) (1) through (10) and such other clauses as the (write in the name of the Federal agency) may by appropriate instructions require, and

also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 3.5.

(7) *Contract termination; debarment.* A breach of the contract clauses in 29 CFR 3.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 3.12.

(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.* (i) 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 3.12(a)(1).

(ii) 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 3.12(a)(1).

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

(b) *Contract Work Hours and Safety Standards Act.* The Agency Head shall cause or require the contracting officer to insert the following clauses set forth in paragraphs (b)(1), (2), (3), and (4) of this section in full in any contract 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 § 3.3(a) or § 4.6 of Part 4 of this title. 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 eight hours in any calendar day or 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 eight hours in any calendar day or in excess of forty hours in such workweek, whichever is greater.

(2) *Violation; liability for unpaid wages; liquidated damages.* In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, 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 subparagraph (1) of this paragraph, in the sum of \$10 for each calendar day or which such individual was required or permitted to work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

(3) *Withholding for unpaid wages and liquidated damages.* The (write in the name of the Federal agency or the loan or grant recipient) 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 subparagraph (2) of this paragraph.

(4) *Subcontracts.* The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph 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 subparagraphs (1) through (4) of this paragraph.

(c) In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in § 3.1, the Agency Head shall cause or require the contracting officer to insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Agency Head shall cause or require the contracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job. (Approved by the Office of Management and Budget under OMB control numbers 1215-0140 and 1215-0017.)

§ 5.5 - Enforcement.

(a)(1) It shall be the responsibility of the Federal agency to ascertain whether the clauses required by § 3.3 have been inserted in the contracts subject to the labor standards provisions of the Acts contained in § 3.1. Agencies which do not directly enter into such contracts shall promulgate the necessary regulations or procedures to require the recipient of the Federal assistance to insert in its contracts the provisions of § 3.3. No payment, advance, grant, loan, or guarantee of funds shall be approved by the Federal agency unless the agency insures that the clauses required by § 3.3 and the appropriate wage determination of the Secretary of Labor are contained in such contracts. Furthermore, no payment, advance, grant, loan, or guarantee of funds shall be approved by the Federal agency after the beginning of construction unless there is on file with the agency a certification by the

contractor that the contractor and its subcontractors have complied with the provisions of § 3.3 or unless there is on file with the agency a certification by the contractor that there is a substantial dispute with respect to the required provisions.

(2) Payrolls and Statements of Compliance submitted pursuant to § 3.3(a)(3)(ii) shall be preserved by the Federal agency for a period of 3 years from the date of completion of the contract and shall be produced at the request of the Department of Labor at any time during the 3-year period.

(3) The Federal agency shall cause such investigations to be made as may be necessary to assure compliance with the labor standards clauses required by § 3.3 and the applicable statutes listed in § 3.1. Investigations shall be made of all contracts with such frequency as may be necessary to assure compliance. Such investigations shall include interviews with employees, which shall be taken in confidence, and examinations of payroll data and evidence of registration and certification with respect to apprenticeship and training plans. In making such examinations, particular care shall be taken to determine the correctness of classifications and to determine whether there is a disproportionate employment of laborers and of apprentices or trainees registered in approved programs. Such investigations shall also include evidence of fringe benefit plans and payments thereunder. Complaints of alleged violation shall be given priority.

(4) In accordance with normal operating procedures, the contracting agency may be furnished various investigatory material from the investigation files of the Department of Labor. None of the material, other than computations of back wages and liquidated damages and the summary of back wages due, may be disclosed in any manner to anyone other than Federal officials charged with administering the contract or program providing Federal assistance to the contract, without requesting the permission and views of the Department of Labor.

(5) It is the policy of the Department of Labor to protect the identity of its confidential sources and to prevent an unwarranted invasion of personal privacy. Accordingly, the identity of an employee who makes a written or oral statement as a complaint or in the course of an investigation, as well as portions of the statement which would reveal the employee's identity, shall not be disclosed in any manner to anyone

other than Federal officials without the prior consent of the employee. Disclosure of employee statements shall be governed by the provisions of the "Freedom of Information Act" (5 U.S.C. 552, see 29 CFR Part 70) and the "Privacy Act of 1974" (5 U.S.C. 552a).

(b) The Administrator shall cause to be made such investigations as deemed necessary, in order to obtain compliance with the labor standards provisions of the applicable statutes listed in § 5.1, or to affirm or reject the recommendations by the Agency Head with respect to labor standards matters arising under the statutes listed in § 5.1. Federal agencies, contractors, subcontractors, sponsors, applicants, or owners shall cooperate with any authorized representative of the Department of Labor in the inspection of records, in interviews with workers, and in all other aspects of the investigations. The findings of such an investigation, including amounts found due, may not be altered or reduced without the approval of the Department of Labor. Where the underpayments disclosed by such an investigation total \$1,000 or more, where there is reason to believe that the violations are aggravated or willful (or, in the case of the Davis-Bacon Act, that the contractor has disregarded its obligations to employees and subcontractors), or where liquidated damages may be assessed under the Contract Work Hours and Safety Standards Act, the Department of Labor will furnish the Federal agency an enforcement report detailing the labor standards violations disclosed by the investigation and any action taken by the contractor to correct the violative practices, including any payment of back wages. In other circumstances, the Federal agency will be furnished a letter of notification summarizing the findings of the investigation.

§ 5.7 Reports to the Secretary of Labor.

(a) *Enforcement reports.* (1) Where underpayments by a contractor or subcontractor total less than \$1,000, and where there is no reason to believe that the violations are aggravated or willful (or, in the case of the Davis-Bacon Act that the contractor has disregarded its obligations to employees and subcontractors), and where restitution has been effected and future compliance assured, the Federal agency need not submit its investigative findings and recommendations to the Administrator, unless the investigation was made at the request of the Department of Labor. In the latter case, the Federal agency shall submit a factual summary report detailing any violations including any data on the amount of restitution paid.

the number of workers who received restitution, liquidated damages assessed under the Contract Work Hours and Safety Standards Act, corrective measures taken (such as "letters of notice"), and any information that may be necessary to review any recommendations for an appropriate adjustment in liquidated damages under § 5.8.

(2) Where underpayments by a contractor or subcontractor total \$1,000 or more, or where there is reason to believe that the violations are aggravated or willful (or, in the case of the Davis-Bacon Act, that the contractor has disregarded its obligations to employees and subcontractors), the Federal agency shall furnish within 60 days after completion of its investigation, a detailed enforcement report to the Administrator.

(b) *Semi-annual enforcement reports.* To assist the Secretary in fulfilling the responsibilities under Reorganization Plan No. 14 of 1950, Federal agencies shall furnish to the Administrator by April 30 and October 31 of each calendar year semi-annual reports on compliance with and enforcement of the labor standards provisions of the Davis-Bacon Act and its related acts covering the periods of October 1 through March 31 and April 1 through September 30, respectively. Such reports shall be prepared in the manner prescribed in memoranda issued to Federal agencies by the Administrator. This report has been cleared in accordance with FPMR 101-11.11 and assigned interagency report control number 1482-DOL-SA.

(c) *Additional information.* Upon request, the Agency Head shall transmit to the Administrator such information available to the Agency with respect to contractors and subcontractors, their contracts, and the nature of the contract work as the Administrator may find necessary for the performance of his or her duties with respect to the labor standards provisions referred to in this part.

(d) *Contract termination.* Where a contract is terminated by reason of violations of the labor standards provisions of the statutes listed in § 5.1, a report shall be submitted promptly to the Administrator and to the Comptroller General (if the contract is subject to the Davis-Bacon Act), giving the name and address of the contractor or subcontractor whose right to proceed has been terminated, and the name and address of the contractor or subcontractor, if any, who is to complete the work, the amount and number of the contract, and the description of the work to be performed.

§ 5.8 Liquidated damages under the Contract Work Hours and Safety Standards Act.

(a) The Contract Work Hours and Safety Standards Act requires that laborers or mechanics shall be paid wages at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of eight hours in any calendar day or forty hours in any workweek. In the event of violation of this provision, the contractor and any subcontractor shall be liable for the unpaid wages and in addition for liquidated damages, computed with respect to each laborer or mechanic employed in violation of the Act in the amount of \$10 for each calendar day or workweek in which such individual was required or permitted to work without payment of required overtime wages. Any contractor or subcontractor aggrieved by the withholding of liquidated damages shall have the right to appeal to the head of the agency of the United States (or the territory or District of Columbia, as appropriate) for which the contract work was performed or for which financial assistance was provided.

(b) *Findings and recommendations of the Agency Head.* The Agency Head has the authority to review the administrative determination of liquidated damages and to issue a final order affirming the determination. It is not necessary to seek the concurrence of the Administrator but the Administrator shall be advised of the action taken. Whenever the Agency Head finds that a sum of liquidated damages administratively determined to be due is incorrect or that the contractor or subcontractor violated inadvertently the provisions of the Act notwithstanding the exercise of due care upon the part of the contractor or subcontractor involved, and the amount of the liquidated damages computed for the contract is in excess of \$500, the Agency Head may make recommendations to the Secretary that an appropriate adjustment in liquidated damages be made or that the contractor or subcontractor be relieved of liability for such liquidated damages. Such findings with respect to liquidated damages shall include findings with respect to any wage underpayments for which the liquidated damages are determined.

(c) The recommendations of the Agency Head for adjustment or relief from liquidated damages under paragraph (a) of this section shall be reviewed by the Administrator or an authorized representative who shall issue an order concurring in the

recommendations, partially concurring in the recommendations, or rejecting the recommendations, and the reasons therefor. The order shall be the final decision of the Department of Labor, unless a petition for review is filed pursuant to Part 7 of this title, and the Wage Appeals Board in its discretion reviews such decision and order; or, with respect to contracts subject to the Service Contract Act, unless petition for review is filed pursuant to Part 8 of this title, and the Board of Service Contract Appeals in its discretion reviews such decision and order.

(d) Whenever the Agency Head finds that a sum of liquidated damages administratively determined to be due under section 104(a) of the Contract Work Hours and Safety Standards Act for a contract is \$500 or less and the Agency Head finds that the sum of liquidated damages is incorrect or that the contractor or subcontractor violated inadvertently the provisions of the Contract Work Hours and Safety Standards Act notwithstanding the exercise of due care upon the part of the contractor or subcontractor involved, an appropriate adjustment may be made in such liquidated damages or the contractor or subcontractor may be relieved of liability for such liquidated damages without submitting recommendations to this effect or a report to the Department of Labor. This delegation of authority is made under section 105 of the Contract Work Hours and Safety Standards Act and has been found to be necessary and proper in the public interest to prevent undue hardship and to avoid serious impairment of the conduct of Government business.

§ 5.9 Suspension of funds.

In the event of failure or refusal of the contractor or any subcontractor to comply with the labor standards clauses contained in § 5.5 and the applicable statutes listed in § 5.1, the Federal agency, upon its own action or upon written request of an authorized representative of the Department of Labor, shall take such action as may be necessary to cause the suspension of the payment, advance or guarantee of funds until such time as the violations are discontinued or until sufficient funds are withheld to compensate employees for the wages to which they are entitled and to cover any liquidated damages which may be due.

§ 5.10 Restitution, criminal action.

(a) In cases other than those forwarded to the Attorney General of the United States under paragraph (b), of this section, where violations of the

labor standards clauses contained in § 5.5 and the applicable statutes listed in § 5.1 result in underpayment of wages to employees, the Federal agency or an authorized representative of the Department of Labor shall request that restitution be made to such employees or on their behalf to plans, funds, or programs for any type of bona fide fringe benefits within the meaning of section 1(b)(2) of the Davis-Bacon Act.

(b) In cases where the Agency Head or the Administrator finds substantial evidence that such violations are willful and in violation of a criminal statute, the matter shall be forwarded to the Attorney General of the United States for prosecution if the facts warrant. In all such cases the Administrator shall be informed simultaneously of the action taken.

§ 5.11 Disputes concerning payment of wages.

(a) This section sets forth the procedure for resolution of disputes of fact or law concerning payment of prevailing wage rates, overtime pay, or proper classification. The procedures in this section may be initiated upon the Administrator's own motion, upon referral of the dispute by a Federal agency pursuant to § 5.5(a)(9), or upon request of the contractor or subcontractor(s).

(b)(1) In the event of a dispute described in paragraph (a) of this section in which it appears that relevant facts are at issue, the Administrator will notify the affected contractor and subcontractor(s) (if any), by registered or certified mail to the last known address, of the investigation findings. If the Administrator determines that there is reasonable cause to believe that the contractor and/or subcontractor(s) should also be subject to debarment under the Davis-Bacon Act or § 5.12(a)(1), the letter will so indicate.

(2) A contractor and/or subcontractor desiring a hearing concerning the Administrator's investigative findings shall request such a hearing by letter postmarked within 30 days of the date of the Administrator's letter. The request shall set forth those findings which are in dispute and the reasons therefor, including any affirmative defenses, with respect to the violations and/or debarment, as appropriate.

(3) Upon receipt of a timely request for a hearing, the Administrator shall refer the case to the Chief Administrative Law Judge by Order of Reference, to which shall be attached a copy of the letter from the Administrator and response thereto, for designation of an Administrative Law Judge to conduct such hearings as may be necessary to

resolve the disputed matters. The hearing shall be conducted in accordance with the procedures set forth in 29 CFR Part 6.

(c)(1) In the event of a dispute described in paragraph (a) of this section in which it appears that there are no relevant facts at issue, and where there is not at that time reasonable cause to institute debarment proceedings under § 5.12, the Administrator shall notify the contractor and subcontractor(s) (if any), by registered or certified mail to the last known address, of the investigation findings, and shall issue a ruling on any issues of law known to be in dispute.

(2)(i) If the contractor and/or subcontractor(s) disagree with the factual findings of the Administrator or believe that there are relevant facts in dispute, the contractor or subcontractor(s) shall so advise the Administrator by letter postmarked within 30 days of the date of the Administrator's letter. In the response, the contractor and/or subcontractor(s) shall explain in detail the facts alleged to be in dispute and attach any supporting documentation.

(ii) Upon receipt of a response under paragraph (c)(2)(i) of this section alleging the existence of a factual dispute, the Administrator shall examine the information submitted. If the Administrator determines that there is a relevant issue of fact, the Administrator shall refer the case to the Chief Administrative Law Judge in accordance with paragraph (b)(3) of this section. If the Administrator determines that there is no relevant issue of fact, the Administrator shall so rule and advise the contractor and subcontractor(s) (if any) accordingly.

(3) If the contractor and/or subcontractor(s) desire review of the ruling issued by the Administrator under paragraph (c)(1) or (2) of this section, the contractor and/or subcontractor(s) shall file a petition for review thereof with the Wage Appeals Board within 30 days of the date of the ruling, with a copy thereof of the Administrator. The petition for review shall be filed in accordance with Part 7 of this title.

(d) If a timely response to the Administrator's findings or ruling is not made or a timely petition for review is not filed, the Administrator's findings and/or ruling shall be final, except that with respect to debarment under the Davis-Bacon Act, the Administrator shall advise the Comptroller General of the Administrator's recommendation in accordance with § 5.12(a)(1). If a timely response or petition for review is filed, the findings and/or ruling of the

Administrator shall be inoperative unless and until the decision is upheld by the Administrative Law Judge or the Wage Appeals Board.

§ 5.12 Debarment proceedings.

(a)(1) Whenever any contractor or subcontractor is found by the Secretary of Labor to be in aggravated or willful violation of the labor standards provisions of any of the applicable statutes listed in § 5.1 other than the Davis-Bacon Act, such contractor or subcontractor or any firm, corporation, partnership, or association in which such contractor or subcontractor has a substantial interest shall be ineligible for a period not to exceed 3 years (from the date of publication by the Comptroller General of the name or names of said contractor or subcontractor on the ineligible list as provided below) to receive any contracts or subcontracts subject to any of the statutes listed in § 5.1.

(2) In cases arising under contracts covered by the Davis-Bacon Act, the Administrator shall transmit to the Comptroller General the names of the contractors or subcontractors and their responsible officers, if any (and any firms in which the contractors or subcontractors are known to have an interest), who have been found to have disregarded their obligations to employees, and the recommendation of the Secretary of Labor or authorized representative regarding debarment. The Comptroller General will distribute a list to all Federal agencies giving the names of such ineligible person or firms, who shall be ineligible to be awarded any contract or subcontract of the United States or the District of Columbia and any contract or subcontract subject to the labor standards provisions of the statutes listed in § 5.1.

(b)(1) In addition to cases under which debarment action is initiated pursuant to § 5.11, whenever as a result of an investigation conducted by the Federal agency or the Department of Labor, and where the Administrator finds reasonable cause to believe that a contractor or subcontractor has committed willful or aggravated violations of the labor standards provisions of any of the statutes listed in § 5.1 (other than the Davis-Bacon Act), or has committed violations of the Davis-Bacon Act which constitute a disregard of its obligations to employees or subcontractors under section 3(a) thereof, the Administrator shall notify by registered or certified mail to the last known address, the contractor or subcontractor and its responsible officers, if any (and any firms in which the contractor or subcontractor are

known to have a substantial interest), of the finding. The Administrator shall afford such contractor or subcontractor and any other parties notified an opportunity for a hearing as to whether debarment action should be taken under paragraph (a)(1) of this section or section 3(a) of the Davis-Bacon Act. The Administrator shall furnish to those notified a summary of the investigative findings. If the contractor or subcontractor or any other parties notified wish to request a hearing as to whether debarment action should be taken, such a request shall be made by letter postmarked within 30 days of the date of the letter from the Administrator, and shall set forth any findings which are in dispute and the reasons therefor, including any affirmative defenses to be raised. Upon receipt of such request for a hearing, the Administrator shall refer the case to the Chief Administrative Law Judge by Order of Reference, to which shall be attached a copy of the letter from the Administrator and the response thereto, for designation of an Administrative Law Judge to conduct such hearings as may be necessary to determine the matters in dispute. In considering debarment under any of the statutes listed in § 5.1 other than the Davis-Bacon Act, the Administrative Law Judge shall issue an order concerning whether the contractor or subcontractor is to be debarred in accordance with paragraph (a)(1) of this section. In considering debarment under the Davis-Bacon Act, the Administrative Law Judge shall issue a recommendation as to whether the contractor or subcontractor should be debarred under section 3(a) of the Act.

(2) Hearings under this section shall be conducted in accordance with 29 CFR Part 6. If no hearing is requested within 30 days of receipt of the letter from the Administrator, the Administrator's findings shall be final, except with respect to recommendations regarding debarment under the Davis-Bacon Act, as set forth in paragraph (a)(2) of this section.

(c) Any person or firm debarred under § 5.12(a)(1) may in writing request removal from the debarment list after six months from the date of publication by the Comptroller General of such person or firm's name on the ineligible list. Such a request should be directed to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210, and shall contain a full explanation of the reasons why such person or firm should be removed from the ineligible list. In cases where the contractor or

subcontractor failed to make full restitution to all underpaid employees, a request for removal will not be considered until such underpayments are made. In all other cases, the Administrator will examine the facts and circumstances surrounding the violative practices which caused the debarment, and issue a decision as to whether or not such person or firm has demonstrated a current responsibility to comply with the labor standards provisions of the statutes listed in § 5.1, and therefore should be removed from the ineligible list. Among the factors to be considered in reaching such a decision are the severity of the violations, the contractor or subcontractor's attitude towards compliance, and the past compliance history of the firm. In no case will such removal be effected unless the Administrator determines after an investigation that such person or firm is in compliance with the labor standards provisions applicable to Federal contracts and Federally assisted construction work subject to any of the applicable statutes listed in § 5.1 and other labor statutes providing wage protection, such as the Service Contract Act, the Walsh-Healey Public Contracts Act, and the Fair Labor Standards Act. If the request for removal is denied, the person or firm may petition for review by the Wage Appeals Board pursuant to 29 CFR Part 7.

(d)(1) Section 3(a) of the Davis-Bacon Act provides that for a period of three years from date of publication on the ineligible list, no contract shall be awarded to any persons or firms placed on the list as a result of a finding by the Comptroller General that such persons or firms have disregarded obligations to employees and subcontractors under that Act, and further, that no contract shall be awarded to "any firm, corporation, partnership, or association in which such persons or firms have an interest." Paragraph (a)(1) of this section similarly provides that for a period not to exceed three years from date of publication on the ineligible list, no contract subject to any of the statutes listed in § 5.1 shall be awarded to any contractor or subcontractor on the ineligible list pursuant to that paragraph, or to "any firm, corporation, partnership, or association" in which such contractor or subcontractor has a "substantial interest." A finding as to whether persons or firms whose names appear on the ineligible list have an interest (or a substantial interest, as appropriate) in any other firm, corporation, partnership, or association, may be made through investigation, hearing, or otherwise.

(2)(i) The Administrator, on his/her own motion or after receipt of a request for a determination pursuant to paragraph (d)(3) of this section may make a finding on the issue of interest (or substantial interest, as appropriate).

(ii) If the Administrator determines that there may be an interest (or substantial interest, as appropriate), but finds that there is insufficient evidence to render a final ruling thereon, the Administrator may refer the issue to the Chief Administrative Law Judge in accordance with paragraph (d)(4) of this section.

(iii) If the Administrator finds that no interest (or substantial interest, as appropriate) exists, or that there is not sufficient information to warrant the initiation of an investigation, the requesting party, if any, will be so notified and no further action taken.

(iv)(A) If the Administrator finds that an interest (or substantial interest, as appropriate) exists, the person or firm affected will be notified of the Administrator's finding (by certified mail to the last known address), which shall include the reasons therefor, and such person or firm shall be afforded an opportunity to request that a hearing be held to render a decision on the issue.

(B) Such person or firm shall have 20 days from the date of the Administrator's ruling to request a hearing. A detailed statement of the reasons why the Administrator's ruling is in error, including facts alleged to be in dispute, if any, shall be submitted with the request for a hearing.

(C) If no hearing is requested within the time mentioned in paragraph (d)(2)(iv)(B) of this section, the Administrator's finding shall be final and the Administrator shall so notify the Comptroller General. If a hearing is requested, the ruling of the Administrator shall be inoperative unless and until the administrative law judge or the Wage Appeals Board issues an order that there is an interest (or substantial interest, as appropriate).

(3)(i) A request for a determination of interest (or substantial interest, as appropriate), may be made by any interested party, including contractors or prospective contractors and associations of contractor's representatives of employees, and interested Government agencies. Such a request shall be submitted in writing to the Administrator, Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210, to the attention of the Office of Government Contract Wage Standards.

(ii) The request shall include a statement setting forth in detail why the

petitioner believes that a person or firm whose name appears on the debarred bidders list has an interest (or a substantial interest, as appropriate) in any firm, corporation, partnership, or association which is seeking or has been awarded a contract of the United States or the District of Columbia, or which is subject to any of the statutes listed in § 5.1. No particular form is prescribed for the submission of a request under this section.

(4) *Referral to the Chief Administrative Law Judge.* The Administrator, on his/her own motion under paragraph (d)(2)(ii) of this section or upon a request for hearing where the Administrator determines that relevant facts are in dispute, will by order refer the issue to the Chief Administrative Law Judge, for designation of an Administrative Law Judge who shall conduct such hearings as may be necessary to render a decision solely on the issue of interest (or substantial interest, as appropriate). Such proceedings shall be conducted in accordance with the procedures set forth at 29 CFR Part 6.

(5) *Referral to the Wage Appeals Board.* If the person or firm affected requests a hearing and the Administrator determines that relevant facts are not in dispute, the Administrator will refer the issue and the record compiled thereon to the Wage Appeals Board to render a decision solely on the issue of interest (or substantial interest, as appropriate). Such proceeding shall be conducted in accordance with the procedures set forth at 29 CFR Part 7.

§ 5.13 Rulings and Interpretations.

All questions relating to the application and interpretation of wage determinations (including the classifications therein) issued pursuant to Part 1 of this subtitle, of the rules contained in this part and in Parts 1 and 3, and of the labor standards provisions of any of the statutes listed in § 5.1 shall be referred to the Administrator for appropriate ruling or interpretation. The rulings and interpretations shall be authoritative and those under the Davis-Bacon Act may be relied upon as provided for in section 10 of the Portal-to-Portal Act of 1947 (29 U.S.C. 259). Requests for such rulings and interpretations should be addressed to the Administrator, Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210.

§ 5.14 Variations, tolerances, and exemptions from Parts 1 and 3 of this subtitle and this part.

The Secretary of Labor may make variations, tolerances, and exemptions from the regulatory requirements of this part and those of Parts 1 and 3 of this subtitle whenever the Secretary finds that such action is necessary and proper in the public interest or to prevent injustice and undue hardship. Variations, tolerances, and exemptions may not be made from the statutory requirements of any of the statutes listed in § 5.1 unless the statute specifically provides such authority.

§ 5.15 Limitations, variations, tolerances, and exemptions under the Contract Work Hours and Safety Standards Act.

(a) *General.* Upon his or her own initiative or upon the request of any Federal agency, the Secretary of Labor may provide under section 105 of the Contract Work Hours and Safety Standards Act reasonable limitations and allow variations, tolerances, and exemptions to and from any or all provisions of that Act whenever the Secretary finds such action to be necessary and proper in the public interest to prevent injustice, or undue hardship, or to avoid serious impairment of the conduct of Government business. Any request for such action by the Secretary shall be submitted in writing, and shall set forth the reasons for which the request is made.

(b) *Exemptions.* Pursuant to section 105 of the Contract Work Hours and Safety Standards Act, the following classes of contracts are found exempt from all provisions of that Act in order to prevent injustice, undue hardship, or serious impairment of Government business:

(1) Contracts of \$2,000.00 or less.
 (2) Purchases and contracts other than construction contracts in the aggregate amount of \$2,500.00 or less. In arriving at the aggregate amount involved, there must be included all property and services which would properly be grouped together in a single transaction and which would be included in a single advertisement for bids if the procurement were being effected by formal advertising.

(3) Contract work performed in a workplace within a foreign country or within territory under the jurisdiction of the United States other than the following: A State of the United States; the District of Columbia; Puerto Rico; the Virgin Islands; Outer Continental Shelf lands defined in the Outer Continental Shelf Lands Act (ch. 345, 87 Stat. 462); American Samoa; Guam;

Wake Island; Eniwetok Atoll; Kwajalein Atoll; and Johnston Island.

(4) Agreements entered into by or on behalf of the Commodity Credit Corporation providing for the storing in or handling by commercial warehouses of wheat, corn, oats, barley, rye, grain sorghums, soybeans, flaxseed, rice, naval stores, tobacco, peanuts, dry beans, seeds, cotton, and wool.

(5) Sales of surplus power by the Tennessee Valley Authority to States, counties, municipalities, cooperative organization of citizens or farmers, corporations and other individuals pursuant to section 10 of the Tennessee Valley Authority Act of 1933 (16 U.S.C. 8311).

(c) *Tolerances.* (1) The "basic rate of pay" under section 102 of the Contract Work Hours and Safety Standards Act may be computed as an hourly equivalent to the rate on which time-and-one-half overtime compensation may be computed and paid under section 7 of the Fair Labor Standards Act of 1938, as amended (29 U.S.C. 207), as interpreted in Part 778 of this title. *This tolerance is found to be necessary and proper in the public interest in order to prevent undue hardship.*

(2) Concerning the tolerance provided in paragraph (c)(1) of this section, the provisions of section 7(d)(2) of the Fair Labor Standards Act and § 778.7 of this title should be noted. Under these provisions, payments for occasional periods when no work is performed, due to vacations, and similar causes are excludable from the "regular rate" under the Fair Labor Standards Act. Such payments, therefore, are also excludable from the "basic rate" under the Contract Work Hours and Safety Standards Act.

(3) See § 5.8(c) providing a tolerance subdelegating authority to the heads of agencies to make appropriate adjustments in the assessment of liquidated damages totaling \$500 or less under specified circumstances.

(4)(i) Time spent in an organized program of related, supplemental instruction by laborers or mechanics employed under bona fide apprenticeship or training programs may be excluded from working time if the criteria prescribed in paragraphs (c)(4)(ii) and (iii) of this section are met.

(ii) The apprentice or trainee comes within the definition contained in § 5.2(n).

(iii) The time in question does not involve productive work or performance of the apprentice's or trainee's regular duties.

(d) *Variations.* (1) In order to prevent undue hardship, a workday consisting of a fixed and recurring 24-hour period commencing at the same time on each

calendar day may be used in lieu of the calendar day in applying the daily overtime provisions of the Act to the employment of firefighters or fireguards, under the following conditions: (i) Where such employment is under a platoon system requiring such employees to remain at or within the confines of their post of duty in excess of 8 hours per day in a standby or on-call status; and (ii) if the use of such alternate 24-hour day has been agreed upon between the employer and such employees or their authorized representatives before performance of the work; and (iii) provided that, in determining the daily and the weekly overtime requirements of the Act in any particular workweek of any such employee whose established workweek begins at an hour of the calendar day different from the hour when such agreed 24-hour day commences, the hours worked in excess of 8 hours in any such 24-hour day shall be counted in the established workweek (of 168 hours commencing at the same time each week) in which such hours are actually worked. (Approved by the Office of Management and Budget under OMB control numbers 1215-0140 and 1215-0017.)

(2) In the event of failure or refusal of the contractor or any subcontractor to comply with overtime pay requirements of the Contract Work Hours and Safety Standards Act, if the funds withheld by Federal agencies for the violations are not sufficient to pay fully both the unpaid wages due laborers and mechanics and the liquidated damages due the United States, the available funds shall be used first to compensate the laborers and mechanics for the wages to which they are entitled (or an equitable portion thereof when the funds are not adequate for this purpose); and the balance, if any, shall be used for the payment of liquidated damages.

(3) In the performance of any contract entered into pursuant to the provisions of 38 U.S.C. 620 to provide nursing home care of veterans, no contractor or subcontractor under such contract shall be deemed in violation of Section 102 of the Contract Work Hours and Safety Standards Act by virtue of failure to pay the overtime wages required by such section for work in excess of 8 hours in any calendar day or 40 hours in the workweek to any individual employed by an establishment which is an institution primarily engaged in the care of the sick, the aged, or the mentally ill or defective who reside on the premises if, pursuant to an agreement or understanding arrived at between the employer and the employee before performance of the work, a work period

of 14 consecutive days is accepted in lieu of the workweek of 7 consecutive days for the purpose of overtime compensation and if such individual receives compensation for employment in excess of 8 hours in any workday and in excess of 80 hours in such 14-day period at a rate not less than 1½ times the regular rate at which the individual is employed, computed in accordance with the requirements of the Fair Labor Standards Act of 1938, as amended. (Approved by the Office of Management and Budget under OMB control numbers 1215-0140 and 1215-0017.)

(4) Any contractor or subcontractor performing on a government contract the principal purpose of which is the furnishing of fire fighting or suppression and related services, shall not be deemed to be in violation of Section 102 of the Contract Work Hours and Safety Standards Act for failing to pay the overtime compensation required by Section 102 of the Act in accordance with the basic rate of pay as defined in subsection (c)(1) of this section, to any pilot or copilot of a fixed-wing or rotary-wing aircraft employed on such contract if:

(i) Pursuant to a written employment agreement between the contractor and the employee which is arrived at before performance of the work.

(A) The employee receives gross wages of not less than \$300 per week regardless of the total number of hours worked in any workweek, and

(B) Within any workweek the total wages which an employee receives are not less than the wages to which the employee would have been entitled in that workweek if the employee were paid the minimum hourly wage required under the contract pursuant to the provisions of the Service Contract Act of 1965 and any applicable wage determination issued thereunder for all hours worked, plus an additional premium payment of one-half times such minimum hourly wage for all hours worked in excess of 8 hours in any calendar day or 40 hours in the workweek;

(ii) The contractor maintains accurate records of the total daily and weekly hours of work performed by such employee on the government contract. In the event these conditions for the exemption are not met, the requirements of section 102 of the Contract Work Hours and Safety Standards Act shall be applicable to the contract from the date the contractor or subcontractor fails to satisfy the conditions until completion of the contract. (Approved by the Office of Management and

Budget under OMB control number 1215-0017.)

§ 5.16 Training plans approved or recognized by the Department of Labor prior to August 20, 1975.

(a) Notwithstanding the provisions of § 5.5(a)(4)(ii) relating to the utilization of trainees on Federal and federally assisted construction, no contractor shall be required to obtain approval of a training program which, prior to August 20, 1975, was approved by the Department of Labor for purposes of the Davis-Bacon and Related Acts, was established by agreement of organized labor and management and therefore recognized by the Department, and/or was recognized by the Department under Executive Order 11246, as amended. A copy of the program and evidence of its prior approval, if applicable shall be submitted to the Employment and Training Administration, which shall certify such prior approval or recognition of the program. In every other respect, the provisions of § 5.5(a)(4)(ii)—including those relating to registration of trainees,

permissible ratios, and wage rates to be paid—shall apply to these programs.

(b) Every trainee employed on a contract executed on and after August 20, 1975, in one of the above training programs must be individually registered in the program in accordance with Employment and Training Administration procedures, and must be paid at the rate specified in the program for the level of progress. Any such employee listed on the payroll at a trainee rate who is not registered and participating in a program certified by ETA pursuant to this section, or approved and certified by ETA pursuant to § 5.5(a)(4)(ii), must be paid the wage rate determined by the Secretary of Labor for the classification of work actually performed. The ratio of trainees to journeymen shall not be greater than permitted by the terms of the program.

(c) In the event a program which was recognized or approved prior to August 20, 1975, is modified, revised, extended, or renewed, the changes in the program or its renewal must be approved by the Employment and Training

Administration before they may be placed into effect.

§ 5.17 Withdrawal of approval of a training program.

If at any time the Employment and Training Administration determines, after opportunity for a hearing, that the standards of any program, whether it is one recognized or approved prior to August 20, 1975, or a program subsequently approved, have not been complied with, or that such a program fails to provide adequate training for participants, a contractor will no longer be permitted to utilize trainees at less than the predetermined rate for the classification of work actually performed until an acceptable program is approved.

[NOTE: This reprint incorporates editorial corrections that are published in the Federal Register of Friday, May 5, 1983]

[FR Doc. 82-11189 Filed 4-28-83; 8:45 am]
BILLING CODE 4810-27-01

SECTION 00588
GUIDANCE FOR UTILIZATION
OF MBE, WBE AND SBE

00588-1

U.S. ENVIRONMENTAL PROTECTION AGENCY

Recipient's (Grantee's) Guidance Pertaining To Procurements Under EPA Assistance Agreements For Utilization Of

Minority Business Enterprise (MBE)

Women's Business Enterprise (WBE)

Small Business Enterprise (SBE)



THE OFFICE OF SMALL AND DISADVANTAGED BUSINESS UTILIZATION

Office of the Administrator
Washington, D.C. 20460

March, 1984

This guidance is provided to assist grant recipients (grantees) to achieve reasonable minority business enterprise (MBE)/women's business enterprise (WBE)/small business enterprise (SBE) participation in subagreements.

40 CFR 33.005 defines "subagreement" as "a written agreement between an EPA recipient and another party (other than another public agency) and any lower tier agreement for services, supplies, or construction necessary to complete the project. Subagreements include contracts and subcontracts for personal and professional services, agreements with consultants, and purchase orders."

As part of the fair share concept, recipients (grantees) must comply with the MBE/WBE/SBE related requirements set forth in EPA's procurement regulations, 40 CFR Part 33. Specifically, in contracting for construction, supplies or services on an EPA funded project, State and local government recipients (grantees) must follow the six affirmative steps contained in 40 CFR Section 33.240. Contractors for these supplies, services and construction are also required to carry out the affirmative steps in the award of subcontracts.

EPA offers the following suggestions to assist State and local government recipients (grantees) in carrying out the affirmative steps of 40 CFR 33.240:

1. Including qualified MBEs/WBEs/SBEs on solicitation lists.
 - . Do you, the recipient (grantee), maintain and update a listing of qualified MBEs/WBEs/SBEs that can be solicited for supplies, construction and/or services?
 - . Is this listing appropriately provided to all interested parties who have requested to be placed on your bidder's mailing lists or requested copies of the bidding or proposing documents?
 - . Do you contact the appropriate sources within your general area and State to identify qualified MBEs/WBEs/SBEs for placement on your MBE/WBE/SBE listings?
 - . Are any other MBE/WBE/SBE listings utilized such as the State's minority business office, the Small Business Administration, Minority Business Development Agency, USEPA Office of Small and Disadvantaged Business Utilization (OSDBU), or the Department of Transportation?
 - . Is this listing appropriately reviewed by State environmental agency personnel?
2. Assuring that MBEs/WBEs/SBEs are solicited.
 - . Do you conduct meetings, conferences, and follow-ups with MBEs/WBEs/SBEs, minority business associations, minority media, etc., to inform these groups of supplies, services, and building opportunities?
 - . Do you conduct pre-bid, pre-solicitation, and post-award conferences to ensure that consultants, suppliers, and builders solicit MBEs/WBEs/SBEs?

- . Do you provide bidders and offerors with listings of qualified MBEs/WBEs/SBEs and establish that a fair share of contracts should be awarded?
 - . Do you advertise in general circulation, trade publications, State agency publications of identified sources, minority focused media, etc., concerning contracting opportunities on your projects?
 - . Do you provide interested MBEs/WBEs/SBEs with adequate information about plans, specifications, timing and other requirements of the proposed project?
 - . Do you provide MBE/WBE/SBE trade organizations with succinct summaries of solicitations?
 - . Do you maintain a list of minority focused publications that may be utilized to solicit MBEs/WBEs/SBEs?
3. Dividing total requirements, when economically feasible, into small tasks or quantities to permit maximum participation of MBEs/WBEs/SBEs.
- . Is an analysis performed to identify portions of work that can be contracted and performed by qualified MBEs/WBEs/SBEs?
 - . Are the elements of the total project scrutinized to develop economically feasible units of work that are within the bonding range of MBEs/WBEs/SBEs?
 - . Are bid packages analyzed to afford MBEs/WBEs/SBEs maximum participation?
4. Establishing delivery schedules, where requirements of the work permit, which will encourage participation by MBEs/WBEs/SBEs.
- . Do you consider lead times and scheduling requirements often needed by MBEs/WBEs/SBEs?
 - . Do you develop realistic delivery schedules which may provide for greater MBE/WBE/SBE participation?
 - . Do you consider notifying MBEs/WBEs/SBEs of future procurement opportunities so that they may establish bidding, solicitation and procurement plans?
5. Using the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce, as appropriate.
- . Do you use the services of outreach programs sponsored by the Minority Business Development Agency and/or the Small Business Administration to recruit bonafide firms for placement on MBE/WBE/SBE bidders lists to assist in the development of bid packaging?

- . Do you use these services to provide management, technical and financial assistance to MBEs/WBEs/SBEs?
6. If the contractor awards subagreements, requiring the contractor to take the affirmative steps.
- . Do you monitor work in progress to assess actual MBE/WBE/SBE participation and determine if the MBE/WBE/SBE fair share will be met?
 - . Do you monitor and record contractor and consultants activities to ensure "affirmative steps" are being utilized?
7. Other actions may include:
- . Do you require the successful contractor to timely submit a subcontracting plan which includes the contractor's strategy for involving MBEs/WBEs/SBEs, the name of the contractor's MBE/WBE/SBE coordinator, a projected dollar amount of MBE/WBE/SBE utilization, etc.?
 - . Do you appoint knowledgeable MBE/WBE/SBE liaison officers who are familiar with contracting requirements and are able to assist contractors as well as MBEs/WBEs/SBEs?
 - . Does your MBE/WBE/SBE liaison officer assist contractors in determining whether subcontracting plans are feasible and their goals are attainable?
 - . Does your internal management system ensure effective contract administration of the MBE/WBE/SBE affirmative steps?
 - . Do you ensure proper reporting of MBE/WBE/SBE participation?

The recipient (grantee) is ultimately responsible for ensuring that the contractor awarding subagreements carries out the affirmative steps as required by the regulations. If a fair share objective has been established for a particular project, but is not achieved the mere fact of non-achievement does not preclude an award, provided that the recipient can demonstrate that the six affirmative steps were followed.

The Agency is confident that a fair share of procurement dollars will accrue to minority entrepreneurs if sincere, responsive efforts are made by recipients (grantees) of funds made available under EPA grants.

For Assistance in locating MBEs/WBEs/SBEs, Contact:

(MBDC = Minority Business Development Center)

1. Lawrence P. Cooper, Project Director
American Indian Consultants/MBDC
2070 East Southern Avenue
Tempe, AZ 85282
(945-2635)
2. Anthony Perry, Director
Operations Department
Office of Business and Economic Development
St. Michael's, Route 264
P. O. Box 308
Window Rock, AZ 86515
(871-6486)
3. Evelina M. Bierner, Project Director
Tucson MBDC
181 West Broadway
Tucson, AZ 85701
(629-9744)
4. Donna Mathein, Administrator
City of Phoenix, MBDC
Affirmative Action Div., Equal Opportunity Dept.
251 West Washington
Phoenix, AZ 85003
(262-6790)
5. Rico Sotomayor, Director, Human Relations
City of Tucson
P. O. Box 27210
Tucson, AZ 85726
(791-4593)
6. Roland Pancho
Minority Business Enterprise Representative
Arizona Department of Transportation
Affirmative Action Office
206 South 17th Avenue, Room 154A
Phoenix, AZ 85007
(255-7761)
7. Gordon Wigman, U.S. Small Business Administration
Procurement Assistance Division
2005 N. Central Avenue, 5th Floor
Phoenix, AZ 85004
(261-3732 Ext. 30)



ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

EVAN MECHAM, GOVERNOR
Gerald H. Teletzke, Ph.D., Director

MEMORANDUM

TO: Grantees and Other Interested Parties DATE: August 15, 1986

FROM: Wm. H. Shafer, Jr., P.E., Manager *WHS*
Construction Grants Section
Office of Waste and Water Quality Management

RE: Wastewater Construction Projects in Arizona
Minority Business Enterprise (MBE),
Women's Business Enterprise (WBE) and
Small Business Enterprise (SBE) Fair Share Policy

Fair share levels of MBE, WBE and SBE participation in EPA funded projects in Arizona have been established. These fair share levels apply to businesses which are MBE or WBE owned, controlled, and operated or are Small Business as defined by the U.S. Small Business Administration. They do not apply to the work force of an A/E firm or a construction contractor.

The fair share level percentages of participation listed below are based upon the prime contract (subagreement) ELIGIBLE amount awarded to an A/E firm or a construction contractor:

| | | |
|---------|----------|---------|
| MBE 10% | WBE 1.5% | SBE 10% |
|---------|----------|---------|

1. EFFECTIVE DATE

These fair share levels are effective as of the date of this memorandum and apply to ALL A/E contracts and ATA requests submitted to this office for approval regardless of their respective grant award dates.

2. SIX AFFIRMATIVE STEPS DOCUMENTATION

If total subcontractor participation is less than the fair share levels, the six affirmative steps (positive efforts) outlined in the attached guidance information MUST be fully documented. EPA defines "positive efforts" as discrete and meaningful actions that are both quantifiable and documentable when used to determine progress toward meeting the fair share levels.

Written justification for not achieving the fair share levels should include documentation to substantiate the actions taken under each of the six affirmative steps and reasons for not meeting the fair share levels.

(7/1/87)

The Department of Environmental Quality is An Equal Opportunity Affirmative Action Employer

3. PUBLIC NOTICE AND "BOILER PLATE"

Fair share levels of participation should be included in future public notices pertaining to the procurement of services by A/E firms or construction contractors and have been incorporated in the construction bid documents "boiler plate".

4. TYPES OF SERVICES AND SUPPLIES

Awards may be made to a variety of MBE's, WBE's and SBE's for such services and supplies as masonry, plumbing, excavation, clearing and grubbing, electrical, roofing, mechanical, sheet metal, curb and gutter, cement, hauling, fencing, tile, painting, sodding and seeding, landscaping, steel erection, pipe installation, line-work, heating, ventilating and air conditioning, building supplies, architect and engineering services, surveying, materials testing, computer software, equipment, training and support, and consultant services.

5. ASSISTANCE

To assist recipients (grantees) in carrying out the fair share concept, EPA has entered into an agreement with the Minority Business Development Agency (MBDA) of the U.S. Department of Commerce to provide outreach services to recipients of EPA financial assistance.

Through a Memorandum of Understanding between the two Agencies, MBDA has made available to recipients of EPA funds, its network of Minority Business Development Centers (MBDC) and Agencies. (See the attachment to the guidance document included in this mailing for a MBDC list for Arizona.) These Centers and Agencies are equipped to assist recipients (grantees) in locating qualified MBE, WBE and SBE businesses to bid on services and/or supplies. Many of the MBDA Centers and Agencies can also provide business counseling services to MBE, WBE and SBE businesses as well as assistance in preparing bids and obtaining bonding, if necessary.

6. CALCULATING PERCENTAGES

Fair share percentages can be cumulative. For example, if there are four MBE businesses at 2.5% participation each, the fair share level of 10% will have been met.

However, a subcontractor cannot be listed fully under all three categories. That is, if a WBE business is also an MBE and SBE that business's participation cannot be applied fully to the MBE, WBE and SBE percentages. Either allocate the total percentage between the three or apply that business's percentage fully to one of the categories of your choosing. The same rule applies to businesses qualifying as two of the three categories (i.e. MBE + WBE or MBE + SBE or WBE + SBE).

If a portion of the prime contract (A/E and/or construction contractor) is ineligible for EPA funding participation and some of all of that ineligible work is performed by an MBE, SBE and/or a WBE, such work can be included in the percentage of participation. For example, \$2,400 ineligible project related work performed by an MBE under a prime contract ELIGIBLE amount of \$80,000 results in 3% participation.

7. A/E CONTRACTS AND AMENDMENTS

If an initial A/E contract meets the fair share levels of participation, subsequent amendments to that contract do not have to meet these same levels of participation. However, for substantial amendments, there should be an effort to procure some additional MBE, WBE and SBE participation where practical. Keep in mind, that as the eligible contract amount increases substantially, the corresponding MBE, WBE and SBE participation levels decrease proportionately. The fair share levels should be maintained at the highest levels possible.

If an initial A/E contract has not met the fair share levels of participation, subsequent substantial amendments must attempt to procure additional MBE, WBE and SBE services to reach these levels of participation. The initial contract would have needed the six affirmative steps documentation explained in Item 2 above.

8. ATA PHASES AND MULTIPLE BIDS

If there is a construction project with one bid divided into phased segments (with each phase being performed by the same contractor), the initial phase does not have to meet the fair share levels of participation. The subsequent phases must attempt to procure additional MBE, WBE and SBE services to reach these levels, keeping in mind that the total participation will be based on the total ELIGIBLE bid. If at the time of the last phase the fair share levels have not been met, the six affirmative steps documentation explained in Item 2 above will be needed.

If there is a construction project with multiple bids over a period of time, and potentially a different construction contractor for each bid, each ATA must meet the fair share levels of participation or document the six affirmative steps explained in Item 2 above.

9. PRIME CONTRACT

If the A/E firm or construction contractor awarded the prime contract is certified as an MBE, WBE or meets the definition of an SBE, subcontractor participation still has to meet the fair share levels of participation.

10. UTILIZATION REPORT (EPA FORM 6005-1)

Pursuant to 40 CFR 35.2104(d), step 2+3 grant applications must contain a completed report indicating the level of MBE, WBE, and SBE participation during the planning phase; step 3 grant applications must contain a completed report indicating the level of MBE and WBE participation during the planning and design phases. Additionally, this report has to be submitted at the time of A/E review and ATA request. If actual information is not known at the time of the A/E review and ATA request, anticipated subcontractors with estimated amounts and estimated award dates should be listed on the report. When the actual amounts and award dates are known or when there are any other revisions, additions, deletions, etc., notify the ADHS Construction Grants Procurement Specialist. He will update the report submitted at the time of A/E review and ATA request. If estimated information is submitted at the time of A/E review and ATA request, approval will be contingent upon notification of the actual information and NO REIMBURSEMENT above the 20% payment level will be approved by this office until such contingencies are satisfied.

This report requires recipients (grantees) to submit EPA Form 6005-1 each Federal fiscal year quarter in which an award is made to an A/E firm or a construction contractor. (The Federal fiscal year quarters are October-December, January-March, April-June, and July-September.) For the purpose of meeting this requirement, a phone call or letter to the Procurement Specialist concerning any revisions to the form submitted at the time of A/E review and ATA request will suffice.

If you have any questions, please call 257-2227.

WHS:DW:jlb

Attachments:

- (1) MBE/WBE/SBE Guidance Document
- (2) MBE/WBE/SBE Utilization Report (EPA Form 6005-1)

**UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY**

**MINORITY
AND
WOMEN'S
BUSINESS
UTILIZATION
REPORT**





RECIPIENT'S REPORT

NOTE: Please Read Instructions Before Completing Form.

| | | | |
|---|----------------|--|---------------------------|
| 1. RECIPIENT NAME AND ADDRESS | | 2. AUTHORIZED REPRESENTATIVE | |
| 3. TYPE OF ASSISTANCE AGREEMENT a. Check one: <input checked="" type="checkbox"/> Grant <input type="checkbox"/> Cooperative Agreement b. Grant Activity Wastewater Construction Project | | 4. ASSISTANCE AGREEMENT ID NUMBER C04 | |
| 5. PROJECT TITLE | | | |
| 6. ASSISTANCE AMOUNT \$ | 7. REGION 9 | 8. DATE OF ASSISTANCE AWARD | |
| 9. RECIPIENT'S GOAL, STATE GOAL, OR OTHER STANDARDS (if any) | | | |
| | Dollar Amount | Percentage of Assistance Amount | |
| MBE | \$ | 10.0 % | |
| WBE | \$ | 1.5 % | |
| 10(a). A/E SUBAGREEMENT AWARDS MADE DURING THE ALLOWANCE PHASE (Planning and Design) OF A WASTEWATER TREATMENT CONSTRUCTION GRANT PROJECT | | | |
| Name, Address, and Telephone Number (1) | MBE | WBE | Type of Services Procured |
| | | | Subagreement Number |
| | | | Subagreement Amount \$ |
| Name, Address, and Telephone Number (2) | MBE | WBE | Type of Services Procured |
| | | | Subagreement Number |
| | | | Subagreement Amount \$ |
| Name, Address, and Telephone Number (3) | MBE | WBE | Type of Services Procured |
| | | | Subagreement Number |
| | | | Subagreement Amount \$ |
| 10(b). OTHER SUBAGREEMENT AWARDS MADE DURING THE ALLOWANCE PHASE (Planning and Design) OF A WASTEWATER TREATMENT CONSTRUCTION GRANT PROJECT | | | |
| Name, Address, and Telephone Number (1) | MBE | WBE | Type of Services Procured |
| | | | Subagreement Number |
| | | | Subagreement Amount \$ |
| Name, Address, and Telephone Number (2) | MBE | WBE | Type of Services Procured |
| | | | Subagreement Number |
| | | | Subagreement Amount \$ |
| Name, Address, and Telephone Number (3) | MBE | WBE | Type of Services Procured |
| | | | Subagreement Number |
| | | | Subagreement Amount \$ |

REPORTING REQUIREMENTS ON MINORITY AND WOMEN'S BUSINESS ENTERPRISE UTILIZATION

These instructions apply to reporting on the utilization of minority and women's business enterprises (MBEs/WBEs) under assistance agreements awarded by the Environmental Protection Agency (EPA). They are intended to provide guidance to EPA financial assistance recipients in filling out the MBE/WBE utilization form. Reporting on MBEs and WBEs is based on Executive Orders 11625, 12138, and 12432, and a Memorandum of Understanding between EPA and the Department of Commerce. The reporting requirement applies to all EPA assistance agreements awarded after April 1, 1984.

Each assistance agreement recipient must submit quarterly an EPA Form 6005-1 on MBE/WBE utilization for each grant or cooperative agreement for which the recipient or its contractor(s) awards a subagreement. Recipients must submit the forms to the EPA award official within 15 days following the close of each fiscal year quarter (i.e., January 15, April 15, July 15, and October 15) during which the recipient or its contractor(s) awards a subagreement(s). Additionally, applicants for a Step 2+3 wastewater treatment construction grant which includes an allowance for facilities planning must submit an EPA Form 6005-1 to the award official prior to grant award, indicating the level of MBE/WBE participation during facilities planning. Applicants for a Step 3 wastewater treatment construction grant that includes an allowance for facilities planning and/or design must submit an EPA Form 6005-1 to the award official prior to grant award, indicating the level of MBE/WBE participation during the allowance period.

Recipients are advised to contact the regional office if there are any questions concerning these instructions.

INSTRUCTIONS FOR FILLING OUT BUSINESS UTILIZATION REPORT

1. The name and address of recipient organization to which EPA made the award (sewer or water authority, state or state agency, etc.).
2. Name of the official representing the recipient.

EPA Form 6005-1 (4-84)

3. (a) Self-explanatory, and (b) grant activity (e.g., air, public water supply, wastewater construction, etc.).
4. Assistance agreement identification number assigned by EPA. Complete balance of number.
5. Self-explanatory.
6. Total amount of EPA award.
7. Indicate EPA region in which work is being performed.
8. Date that the assistance agreement was made.
9. Indicate MBE and WBE goals or standards, including, where applicable, a fair share estimate.

Wastewater Construction Grant Awards. The Regional Administrator will negotiate an overall fair share with delegated States. The delegated State and not EPA may determine whether and to what extent a fair share should be established for each project. A fair share for each project is not required.

All Other Applicable Assistance Agreements. When the assistance agreement includes procurement, the Assistant Administrator or Regional Administrator, or other designated EPA official, as appropriate, will conduct fair share negotiations directly with assistance recipients.

10. Recipients of wastewater construction grant awards who received an allowance for planning and design activities (Steps 1 and 2) must indicate the level of MBE and WBE participation during the allowance period by (a) A/E award(s), and (b) other award(s).
- * 11. Recipients of assistance awards, including Step 2+3 and Step 3 wastewater construction grant recipients awarding subagreements for building, must indicate the levels of MBE and WBE participation in all subagreements by (a) A/E award(s), and (b) other award(s).
12. Person signing must be the authorized representative of the recipient organization.
13. Additional comments or explanations. Refer to the specific item number on the form, if applicable.

- * 11(a) A/E Agreements
- 11(b) ATA Requests (Construction)

11(a). A/E SUBAGREEMENT AWARDS MADE UNDER GRANTS/COOPERATIVE AGREEMENTS

| | | | |
|--|---------------------------------|---------------------------|---------------|
| Name, Address, and Telephone Number (1) | MBE/WBE/SBE See Attachment A | Type of Services Procured | |
| | | Subagreement Number | |
| | | Subagreement Amount \$ | Date of Award |
| | | Type of Services Procured | |
| Name, Address, and Telephone Number (2) | | Subagreement Number | |
| | | Subagreement Amount \$ | Date of Award |
| | | Type of Services Procured | |
| | | Subagreement Number | |
| Name, Address, and Telephone Number (3) | | Subagreement Amount \$ | Date of Award |
| | | Type of Services Procured | |
| | | Subagreement Number | |
| | | Subagreement Amount \$ | |

11(b). OTHER SUBAGREEMENT AWARDS MADE UNDER GRANTS/COOPERATIVE AGREEMENTS - CONSTRUCTION CONTRACTS

| | | | |
|--|---------------------------------|---------------------------|---------------|
| Name, Address, and Telephone Number (1) | MBE/WBE/SBE See Attachment A | Type of Services Procured | |
| | | Subagreement Number | |
| | | Subagreement Amount \$ | Date of Award |
| | | Type of Services Procured | |
| Name, Address, and Telephone Number (2) | | Subagreement Number | |
| | | Subagreement Amount \$ | Date of Award |
| | | Type of Services Procured | |
| | | Subagreement Number | |
| Name, Address, and Telephone Number (3) | | Subagreement Amount \$ | Date of Award |
| | | Type of Services Procured | |
| | | Subagreement Number | |
| | | Subagreement Amount \$ | |

| | | |
|--|---------------|----------|
| 12(a). NAME & TITLE OF AUTHORIZED REPRESENTATIVE | (b) SIGNATURE | (c) DATE |
|--|---------------|----------|

13. SPACE PROVIDED FOR ADDITIONAL COMMENTS, EXPLANATIONS, OR ADDITIONAL SUBAGREEMENT AWARDS

COPY AND USE AS MANY SHEETS AS NEEDED

THE UTILIZATION OF ONE BUSINESS ENTITY TO THE EXCLUSION OF THE OTHERS DOES NOT FULFILL THE FAIR SHARE POLICY. EACH BUSINESS ENTITY (MBE/WBE/SBE) MUST BE AFFORDED THE SAME OPPORTUNITIES.

| | |
|--|---|
| 11(a) or (b) (continued) MBE/WBE/SBE INFORMATION | |
| Name, Address, and Telephone Number (SUBCONTRACTOR) | |
| Check (✓) One MBE _____ WBE _____ SBE _____ OTHER _____ | Type of Services Procured |
| Subcontract Amount Estimate \$ _____ Actual \$ _____ | Date of Award Estimate _____ Actual _____ |
| Name, Address, and Telephone Number (SUBCONTRACTOR) | |
| Check (✓) One MBE _____ WBE _____ SBE _____ OTHER _____ | Type of Services Procured |
| Subcontract Amount Estimate \$ _____ Actual \$ _____ | Date of Award Estimate _____ Actual _____ |
| Name, Address, and Telephone Number (SUBCONTRACTOR) | |
| Check (✓) One MBE _____ WBE _____ SBE _____ OTHER _____ | Type of Services Procured |
| Subcontract Amount Estimate \$ _____ Actual \$ _____ | Date of Award Estimate _____ Actual _____ |

SECTION 00610

FAITHFUL PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, THAT, WHEREAS, the City of Avondale, hereinafter designated the "Owner", has, on _____

_____, 19 __, awarded to _____

hereinafter designated as the "Principal", a contract for the construction of the City of Avondale Wastewater Treatment Facility, and

WHEREAS, said Principal is required under the terms of said contract to furnish a bond for the faithful performance of said contracts:

NOW THEREFORE, WE, the Principal, and _____

_____, as Surety, are held and firmly bound unto the Owner the penal sum of _____ dollars (\$ _____)

lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the above bounden Principal, his or its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and faithfully perform the covenants, conditions, and agreements in the said contract and any alterations made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless, the Owner, its officers and agents as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force and virtue and Principal and Surety, in the event suit is brought on this bond, will pay to the Owner such reasonable attorney's fees as shall be fixed by the court.

As a condition precedent to the satisfactory completion of the said contract, the above obligation in the said amount shall hold good for a period of one (1) year after the completion and acceptance of the said work, during which time if the above bounden Principal, his or its heirs, executors, administrators, successors or assigns

shall fail to make full, complete, and satisfactory repair and replacements or totally protect the said Owner from loss or damage made evident during said period of one year from the date of acceptance of said work, and resulting from or caused by defective materials and/or faulty workmanship in the prosecution of the work done, the above obligation in the said amount shall remain in full force and effect. However, anything in this paragraph to the contrary notwithstanding, the obligation of the Surety hereunder shall continue so long as any obligation of the Principal remains.

And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall, in any way, affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the contract or to the work or to the specifications. Said Surety hereby waives the provisions of Section 2819 and 2845 of the Civil Code of the State of California.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their seals this _____ day of _____, 19___, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

(Seal)

Principal

Signature for Principal

Title of Signator

(Seal)

Surety

Signature for Surety

Title of Signator

END OF SECTION

SECTION 00620

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, THAT, WHEREAS, the City of Avondale, hereinafter designated the "Owner", has, on _____

_____, 19 __, awarded to _____

hereinafter designated as the "Principal", a contract for the construction of the City of Avondale Wastewater Treatment Facility, and

WHEREAS, said Principal is required to furnish a bond in connection and with said contract, providing that if said Principal, or any of his or its subcontractors, shall fail to pay for any materials, provisions, or other supplies used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor done thereon of any kind, the Surety of this bond will pay the same to the extent hereinafter set forth:

NOW THEREFORE, WE, the Principal, and _____

_____, as Surety, are held and firmly bound unto the Owner the penal sum of _____ dollars (\$ _____) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if said Principal, his or its heirs, executors, administrators, successors, or assigns, shall fail to pay for any materials, provisions, or other supplies used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind or for amount due under the Unemployment Insurance Act with respect to such work or labor, or for any amounts due, or to be withheld pursuant to Sections 18806 of the Revenue and Taxation Code of the State of California with respect to such work or labor, as required by the provisions of Chapter III, Division V, Title I, of the Government Code of the State of California, and provided that the persons, companies, or corporations so furnishing said materials, provisions, or other supplies, appliances, or power use, in, upon, for, or about the performance of the work contracted to be executed or performed, or any person who performs work or labor upon same, or any person who supplies both work and materials, thereto, shall have complied with

the provisions of said Government Code, then said surety will pay the same in or to an amount not exceeding the amount hereinabove set forth, and also will pay in case suit is brought upon this bond, such reasonable attorney's fees to the Owner as shall be fixed by the court.

This bond shall inure to the benefit of any and all persons, companies, and corporations entitled to file claims under said Government Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall, in any way, affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the contract or to the work or to the specifications. Said Surety hereby waives the provisions of Section 2819 and 2845 of the Civil Code of the State of California.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their seals this _____ day of _____, 19___, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

(Seal)

Principal

Signature for Principal Title

Surety

Signature for Surety Title

****END OF SECTION****

SECTION 00710

GENERAL CONDITIONS

PART 1--GENERAL INFORMATION

1.01 DEFINITIONS OF WORDS AND TERMS

Where used in the project manual, the following words and terms shall have the meanings indicated. The meanings shall be applicable to the singular, plural, masculine and feminine of the words and terms.

Acceptance. Formal action of the Owner in determining that the Contractor's work has been completed in accordance with the contract and in notifying the Contractor in writing of the acceptability of the work.

Act of God. A cataclysmic phenomenon of nature, such as an earthquake, flood or cyclone. Rain, wind, high water, or other natural phenomenon which might reasonably have been anticipated from historical records of the general locality of the work shall not be construed as acts of God.

Addenda. Supplemental written specifications or drawings issued prior to execution of the contract which modify or interpret the project manual by addition, deletion, clarification, or corrections.

Bid. Offer of a bidder submitted on the prescribed form setting forth the price or prices of the work to be performed.

Bidder. Individual, partnership, corporation, or a combination thereof, including joint venturers offering a bid to perform the work.

Construction Manager. The person designated, in writing, by the Owner to act as its representative at the construction site and to perform construction inspection services and administrative functions relating to this contract. Initial contact by the Contractor with the Owner shall be through the Construction Manager.

Contract. The writings and drawings embodying the legally binding obligations between the Owner and the Contractor for completion of the work. The contract comprises the following documents:

Project Manual
Advertisement for Bids
Information for Bidders
Bid Proposal
General Conditions
Supplementary Conditions
Specifications
Contract Drawings
Addenda

Bonds
Agreement
Notice of Award
Notice to Proceed
Change Orders
Directives

Contract Drawings. The drawings included in the project manual plus those prepared by the Owner and the Contractor pursuant to the terms of the contract. They include:

1. Drawings in Part C of the project manual.
2. Modifying drawings issued by addenda.
3. Drawings submitted by the Contractor during the progress of the work and accepted by the Owner either as attachments to change orders or as non-modifying supplements to drawings in Part C and drawings issued by addenda.
4. Drawings submitted by the Owner to the Contractor during the progress of the work either as attachments to the change orders or as explanatory supplements to drawings in Part C and drawings issued by addenda.

Contract Price. Amount payable to the Contractor under the terms and conditions of the contract. Based on the price given on the bidding schedule, with adjustments made in accordance with the contract. The base amount given in the bidding schedule shall be either a lump sum bid or the summation of the unit price bids multiplied by the estimated quantities set forth in the bid form.

Contract Time. Number of calendar days stated in the contract for the completion of the work or portions thereof.

Contractor. The individual, partnership, corporation, or combination thereof, including joint venturers who enter into the contract with the Owner for the performance of the work. The term covers subcontractors, equipment and material suppliers, and their employees.

Contractor's Plant and Equipment. Equipment, material, supplies, and all other items, except labor, brought onto the site by the Contractor to carry out the work, but not to be incorporated in the work.

Day. Calendar day.

Direct. Section of the Owner or Construction Manager by which the Contractor is ordered to perform or refrain from performing work under the contract.

Directive. Written documentation of the actions of the Owner or Construction Manager in directing the Contractor.

Equipment. Mechanical, electrical, instrumentation, or other device with one or more moving parts, or devices requiring an electrical, pneumatic, electronic, or hydraulic connection.

Furnish. To deliver to the job site or other specified location any item, equipment or material.

Herein. Refers to information presented in the project manual.

Holidays. Legal holidays designated by the state or specifically identified in the supplementary conditions.

Install. Placing, erecting, or constructing complete in place any item, equipment, or material.

May. Refers to permissive actions.

Owner. A public or quasi-public agency or authority, corporation, association, partnership, or individual for whom the work is to be performed. Under this contract, the Owner is identified by name in the agreement.

Owner's Representative. The person designated in writing by the Owner to act as its agent on specified matters relating to this contract.

Paragraph. For reference or citation purposes, paragraph shall refer to the paragraph, or paragraphs, called out by section number and alphanumeric designator. For example, this definition is found in paragraph 00710-1.01; state wage determinations are discussed in paragraph 00710-1.05 B.

Person. The term, person, includes firms, companies, corporations, partnerships, and joint ventures.

Project. The undertaking to be performed under the provisions of the contract.

Project Manual. Those contract documents prepared for bidding and as amended by addenda.

Provide. Furnish and install, complete in place.

Punch List. List of incomplete items of work and of items of work which are not in conformance with the contract. The list will be prepared by the Construction Manager when the Contractor (1) notifies the Construction Manager in writing that the work has been completed in accordance with the contract and (2) requests in writing that the Owner accept the work.

Shall. Refers to actions by either the Contractor or the Owner and means the Contractor or Owner has entered into a covenant with the other party to do or perform the action.

Shown. Refers to information presented on the drawings, with or without reference to the drawings.

Specifications. That part of the contract documents consisting of written descriptions of the technical features of materials, equipment, construction systems, standards, and workmanship.

Specify. Refers to information described, shown, noted or presented in any manner in any part of the contract.

Submittals. The information which is specified for submission to the Construction Manager in accordance with Division 1 of the project manual.

Substantial Completion. Sufficient completion of the project or the portion thereof to permit utilization of the project, or portion thereof for its intended purpose. Substantial completion requires not only that the work be sufficiently completed to permit utilization, but that the Owner can effectively utilize the substantially completed work. Determination of substantial completion is solely at the discretion of the Owner. Substantial completion does not mean complete in accordance with the contract nor shall substantial completion of all or any part of the project entitle the Contractor to acceptance under the contract.

Substantial Completion Date. Date when the Owner puts into service the project, or that portion of the project that has been determined to be substantially complete.

Will. Refers to actions entered into by the Contractor or the Owner as a covenant with the other party to do or to perform the action.

Work. The labor, materials, equipment, supplies, services, and other items necessary for the execution, completion and fulfillment of the contract.

1.02 JOINT VENTURE CONTRACTOR

In the event the Contractor is a joint venture of two or more contractors, the grants, covenants, provisos and claims, rights, power, privileges and liabilities of the contract shall be construed and held to be several as well as joint. Any notice, order, direct request or any communication required to be or that may be given by the Owner or the Construction Manager to the Contractor under this contract, shall be well and sufficiently given to all persons being the Contractor if given to any one or more of such persons. Any notice, request or other communication given by any one of such persons to the Owner or the Construction Manager under this contract shall be deemed to have been given by and shall bind all persons being the Contractor.

1.03 CONTRACT REQUIREMENTS

A. SUCCESSORS' OBLIGATIONS:

The grants, covenants, provisos and claims, rights, powers, privileges and liabilities obtained in the contract documents shall be read and held as made by and with, and granted to and imposed upon, the Contractor and the Owner and their respective heirs, executors, administrators, successors and assigns.

B. ASSIGNMENT OF CONTRACT:

The contract shall not be assigned in whole or in part without the written consent of the Owner. Involuntary assignment of the contract as caused by the Contractor being adjudged bankrupt, assignment of the contract for the benefit of Contractor's creditors or appointment of a receiver on account of Contractor's insolvency shall be considered as failure to comply with the provisions of the contract and subject to the termination provisions contained herein.

C. WAIVER OF RIGHTS:

Except as herein provided, no action or want of action on the part of the Contractor, Owner, Owner's Representative, or Construction Manager at any time with respect to the exercise of any right or remedies conferred upon them under this contract shall be deemed to be a waiver on the part of the Contractor and Owner of

1.02 D.

any of their rights or remedies. No waiver shall be effective except in writing by the party to be charged. No waiver of one right or remedy shall act as a waiver of any other right or remedy or as a subsequent waiver of the same right or remedy.

D. OFFER OF ASSIGNMENT OF ANTITRUST ACTIONS:

As provided by Sections 4550 and 4551 of the Government Code, in entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the Contractor or subcontractor offers and agrees to assign to the awarding body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 [commencing with Section 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgment by the parties.

E. AMENDMENT OF GENERAL CONDITIONS:

The general conditions may be amended only by mutual consent of the Owner and the Contractor in writing, if said amendment does not conflict with 40 CFR Part 33, Subpart F.

1.04 EPA REQUIREMENTS

This project is financed in part by grants administered by the United States Environmental Protection Agency pursuant to EPA requirements in 40 CFR Part 33, Subpart F, contained in Section 00585. Owner and Contractor agree that provisions of 40 CFR Part 33, Subpart F, as modified in Section 00800, supersede any conflicting provisions of this contract.

1.05 LABOR STANDARDS

A. GENERAL:

Contractor agrees that construction work shall be subject to the provisions of 40 CFR 33.1016. Furthermore, Contractor agrees to pay all costs of rectification or correction of any violation of the Davis-Bacon Act, whether said cost be incurred by the Owner or any other person.

1.05 A.

Any person employed by the Contractor or any subcontractor who, in the opinion of the Construction Manager, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the Construction Manager, be removed from the work by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without the approval of the Construction Manager. Should the Contractor or subcontractor fail to remove such person as required above, or fail to furnish suitable and sufficient personnel for the proper prosecution of the work, the Construction Manager may suspend the work by written notice until such orders by the Construction Manager are followed by the Contractor. The Contractor or subcontractor shall hold the Owner harmless from damages or claims for compensation that may occur in the enforcement of this section.

The Contractor and subcontractors shall comply with the Copeland "Anti-Kickback" Act (18 U.S.C. 874) as supplemented in 29 CFR Part 3 and the Davis-Bacon Act (40 U.S.C. 276a to a-7) as supplemented in 29 CFR Part 5. The Owner will report all suspected and reported violations to EPA and the appropriate state agency.

The Contractor shall comply with the labor standards provisions of 29 CFR 5.5(a) and the Department of Labor Work Hours and overtime Compensation Regulations (29 CFR Part 5) promulgated under Section 103 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330). Portions of 29 CFR Part 5 related to labor standards and overtime compensation are contained in Section 00583.

The Contractor shall comply with the Department of Labor Safety and Health Regulations for Construction (29 CFR Part 1926) promulgated under Section 107 of the Contract Work Hours and Safety Standards Act (49 U.S.C. 327 et seq.). The Contractor shall not require any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety, as determined under construction safety and health standards promulgated by regulations of the Secretary of Labor.

B. WAGES:

1. GENERAL: The Contractor and each subcontractor engaged in the work shall pay each employee an amount not less than the rate established for each trade or occupation listed by the United States Secretary of Labor in the Minimum Federal Wage

1.05 B.

Determination or the Arizona State Industrial Commission, whichever is greater. (These wage rates are included in Section 00582 of the project manual). An employee whose type of work is not covered by any of the classified wage rates shall be paid not less than the rate of wage listed for the classification which most nearly corresponds to the type of work to be performed. The Contractor shall pay and require his subcontractors to pay any and all accounts for labor including Workers Compensation premiums, State Unemployment and Federal Social Security payments and other wage and salary deductions required by law.

The Owner has ascertained from the Industrial Commission of Arizona and the U.S. Department of Labor the general prevailing rate of wages in the vicinity of the work to be performed under this contract. These wage rates are maintained on file by the Owner.

C. HOURS AND CONDITIONS OF LABOR:

Pursuant to the Arizona Revised Statutes, eight (8) hours of labor shall constitute a legal day's work. The Contractor or any subcontractor shall not require any more than eight (8) hours of labor in a day from any person employed in the performance of the work under this contract. Failure of the Contractor to perform the work in accordance with this policy of the State of Arizona shall be deemed a material failure on his part to comply with the provisions of this contract. The Contractor also agrees to comply with 40 CFR 30.603 as if it were fully set forth herein. Contractor and Owner agree that such failure is a condition of default and makes the Contractor subject to the dismissal provision set forth in 40 CFR 33.1030.

D. OVERTIME WORK:

Overtime and shift work may be established as a regular procedure by the Contractor with reasonable notice and written permission of the Owner. No work other than overtime and shift work established as a regular procedure shall be performed between the hours of 6:00 p.m. and 7:00 a.m. nor on Saturdays, Sundays or holidays except such work as is necessary for the proper care and protection of the work already performed or in case of an emergency.

Contractor agrees to pay the costs of overtime inspection (at the rate of \$60 per hour) except those occurring as a result of overtime and shift work established as a regular procedure.

1.05 D.

Overtime inspection shall include inspection required during holidays, Saturdays, Sundays and weekdays between the hours of 6:00 p.m. and 7:00 a.m. Costs of overtime inspection will cover engineering, inspection, general supervision and overhead expenses which are directly chargeable to the overtime work. Contractor agrees that Owner shall deduct such charges from payments due the Contractor.

F. APPRENTICES:

The Contractor and subcontractors under him shall comply with the requirements of the Apprenticeship Council in the employment of apprentices.

Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the:

Bureau of Apprenticeship Services
Arizona Department of Economic Security
P. O. Box 6123
Phoenix, Arizona 85005

1.06 LAWS, REGULATIONS AND PERMITS

A. GENERAL:

The Contractor shall give the notices required by law and comply with all laws, ordinances, rules and regulations pertaining to the conduct of the work. The Contractor shall be liable for violations of the law in connection with work provided by the Contractor. If the Contractor observes that the drawings, specifications or other portions of the project manual are at variance with any laws, ordinances, rules or regulations, he shall promptly notify the Construction Manager in writing of such variance. The Owner shall promptly review the matter and, if necessary, shall issue a change order or take any other action necessary to bring about compliance with the law, ordinance, rule or regulation in question. Contractor agrees not to perform work known to be contrary to any laws, ordinances, rules or regulations.

B. PERMITS AND LICENSES:

Unless otherwise specified herein, permits and licenses from governmental agencies which are necessary only for and during the prosecution of the work and the subsequent guarantee period shall be secured and paid for by the Contractor. Permits and licenses of regulatory agencies which are necessary to be maintained after completion of the guarantee period shall be secured and paid for by the Owner.

1.06 C.

C. PATENTS AND ROYALTIES:

The costs involved in fees, royalties or claims for any patented invention, article, process or method that may be used upon or in a manner connected with the work under this contract or with the use of completed work by the Owner, shall be paid by the Contractor. The Contractor and his sureties shall protect and hold the Owner, the design engineer, and the Construction Manager, together with their officers, agents and employees, harmless from any and all loss, defense cost, and expenses and against any and all demands made for such fees or claims brought or made by the holder of any invention or patent. Before final payment is made on the account of this contract, the Contractor shall, if requested by the Owner, furnish acceptable proof of a proper release from all such fees or claims.

Should the Contractor, his agent, employee or any of them be enjoined from furnishing or using any invention, article, material or plans supplied or required to be supplied or used under this contract, the Contractor shall promptly pay such royalties and secure the requisite licenses; or, subject to acceptance by the Owner, substitute other articles, materials or appliances in lieu thereof which are of equal efficiency, quality, finish, suitability and market value to those planned or required under the contract. Descriptive information of these substitutions shall be submitted to the Construction Manager for determination of general conformance to the design concept and the construction contract. Should the Owner elect to refuse the substitution, the Contractor agrees to pay such royalties and secure such valid licenses as may be requisite for the Owner, his officers, agents and employees or any of them, to use such invention, article, material or appliance without being disturbed or in any way interfered with by any proceeding in law or equity on account thereof.

The Contractor shall observe the EPA requirements for patents, data and copyrights as set forth in 40 CFR Part 30, Subpart D. These provisions require the Owner to report to the EPA Project Officer any notice or claim of patent or copyright infringement and to furnish to EPA all evidence and information pertaining to such claim.

1.07 HEADINGS

Headings to parts, divisions, sections, paragraphs, subparagraphs and forms are inserted for convenience of reference only and shall not affect the interpretation of the contract documents.

1.08 SUBCONTRACTS

The Contractor shall perform with his own organization not less than one-half of the work and shall not sublet to one subcontractor more than one-third of the work without the previous written consent of the Owner. All subcontracts for work related to this project shall contain provisions requiring subcontractors to comply with 40 CFR 33.295 presented in Section 00585.

PART 2--OWNER-CONTRACTOR RELATIONS**2.01 AUTHORITY OF OWNER****A. GENERAL:**

The Owner, acting through the Owner's Representative and the Construction Manager, shall have the authority to act as the sole judge of the work and materials with respect to both quantity and quality as set forth in the contract. It is expressly stipulated that the drawings, specifications and other contract documents set forth the requirements as to the nature of the completed work and do not purport to control the method of performing work except in those instances where the nature of the completed work is dependent on the method of performance.

B. AUTHORITY OF OWNER'S REPRESENTATIVE:

1. **GENERAL:** The Owner's Representative has the authority to act on behalf of the Owner on change orders, progress payments, contract decisions, acceptability of the Contractor's work, and early possession.

2. **CHANGE ORDERS:** The Owner's Representative has the authority to accept or reject change orders proposed by either the Construction Manager or the Contractor. The authority of the Owner's Representative with respect to change orders shall conform to 40 CFR 33.1030, Clause 3.

3. **PROGRESS PAYMENTS:** The Owner's Representative has the authority to accept or reject requests for progress payments which have been submitted by the Contractor and recommended by the Construction Manager.

4. **CONTRACT DECISIONS:** Should the Contractor disagree with the Construction Manager's decision with respect to the contract, the Contractor may request that the Owner's Representative

2.01 B.4.

review the Construction Manager's decision and make a determination on behalf of the Owner in the manner provided under paragraph 00710-2.05 E.3.

5. ACCEPTABILITY OF WORK: The Owner's Representative has the authority to make the final determination of the acceptability of the work as provided under paragraph 00710-7.05. The Owner's Representative also has the authority to accept or reject the Construction Manager's recommendations regarding retention of defective work as provided in paragraph 00710-4.10 B.

6. EARLY POSSESSION: The Owner's Representative has the authority to take early possession in accordance with paragraph 00710-7.06.

C. AUTHORITY OF CONSTRUCTION MANAGER:

1. GENERAL: The Construction Manager is a representative of the Owner employed to act as advisor and consultant to the Owner in construction matters related to the contract. The Owner has delegated his authority to the Construction Manager to make initial decisions regarding questions which may arise as to the quality or acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of the work under the contract. The Construction Manager interprets the intent and meaning of the contract and makes initial decisions with respect to the Contractor's fulfillment of the contract and the Contractor's entitlement to compensation. The Contractor shall look initially to the Construction Manager in matters relating to the contract. The Construction Manager's decisions are subject to review by the Owner's Representative in accordance with paragraph 00710-2.05 E.3.

2. INSPECTION OF CONSTRUCTION: The Construction Manager shall have access to the work and to the site of the work and to the places where work is being prepared or where materials, equipment, and machinery are being obtained for the work. If requested by the Construction Manager, the Contractor shall provide the assistance necessary for obtaining such access, and shall provide information related to the inspection of construction.

3. CHANGE ORDERS: The Construction Manager has the authority to initiate or recommend change orders in accordance with 40 CFR 33.1030, Clause 3. Such change orders are subject to review and approval by the Owner.

2.01 D.

D. USE OF CONTRACTOR'S PLANT AND EQUIPMENT:

Contractor agrees to make available to the Owner his plant and equipment for the performance of work at the project site. The Owner agrees that the use of such plant and equipment shall be considered as extra work and paid for accordingly.

2.02 RESPONSIBILITIES OF OWNER

A. ATTENTION TO WORK:

The Owner shall notify the Contractor in writing of the name of the Owner's Representative and of the Construction Manager. The Construction Manager normally will be at the site of the work. During his absences, the Contractor may contact a previously designated representative of the Construction Manager.

B. OWNER'S EMPLOYEES:

The Owner shall be responsible for the adequacy, efficiency, and sufficiency of his employees and of any consultant, supplier or subcontractor employed by the Owner.

2.03 AUTHORITY OF CONTRACTOR

A. CONTRACTOR'S REPRESENTATIVE:

The Contractor shall notify the Owner in writing of the name of the person who will act as the Contractor's representative and shall have the authority to act in matters relating to this contract. This person shall have authority to carry out the provisions of the contract and to supply materials, equipment, tools and labor without delay for the performance of the work.

B. CONSTRUCTION PROCEDURES:

The Contractor will supervise and direct the work. He has the authority to determine the means, methods, techniques, sequences and procedures of construction, except in those instances where the Owner, to define the quality of an item of work, specifies in the contract, a means, method, technique, sequence or procedure for construction of that item of work.

C. SUBCONTRACTORS:

Subcontractors will not be recognized as having a direct relationship with the Owner. The persons engaged in the work, including employees of subcontractors and suppliers, will be con-

2.03 C.

sidered employees of the Contractor and their work shall be subject to the provisions of the contract. References in the project manual to actions required of subcontractors, manufacturers, suppliers, or any person other than the Contractor, the Owner or the Construction Manager shall be interpreted as requiring that the Contractor shall require such subcontractor, manufacturer, supplier or person to perform the specified action.

2.04 RESPONSIBILITIES OF CONTRACTOR

A. SUBCONTRACTORS, MANUFACTURERS AND SUPPLIERS:

The Contractor shall be responsible for the adequacy, efficiency and sufficiency of subcontractors, manufacturers, suppliers and their employees.

B. CONTRACTOR'S EMPLOYEES:

The Contractor shall be responsible for the adequacy, efficiency and sufficiency of his employees. Workers shall have sufficient knowledge, skill and experience to perform properly the work assigned to them.

C. PAYMENT FOR LABOR AND MATERIALS:

The Contractor shall pay and require his subcontractors to pay any and all accounts for labor including Workers Compensation premiums, State Unemployment and Federal Social Security payments and other wage and salary deductions required by law. The Contractor also shall pay and cause his subcontractors to pay any and all accounts for services, equipment, and materials used by him and his subcontractors during the performance of work under this contract. Such accounts shall be paid as they become due and payable. If requested by the Owner, the Contractor shall furnish proof of payment of such accounts to the Owner.

D. ATTENTION TO WORK:

The Contractor, acting through his representative, shall give personal attention to and shall manage the work so that it shall be prosecuted faithfully. When his representative is not personally present at the project site, his designated alternate shall be available and shall have the authority to act on the contract.

2.04 E.

E. EMPLOYEE SAFETY:

The Contractor alone shall be responsible for the safety of his and his subcontractor's employees. The Contractor shall maintain the project site and perform the work in a manner which meets the Owner's responsibility under statutory and common law for the provision of a safe place to work.

F. PUBLIC SAFETY AND CONVENIENCE:

The Contractor shall conduct his work so as to insure the least possible obstruction to traffic and inconvenience to the general public and the residents in the vicinity of the work and to insure the protection of persons and property. No road or street shall be closed to the public except with the permission of the Construction Manager and the proper governmental authority. Fire hydrants on or adjacent to the work shall be accessible to fire fighting equipment. Temporary provisions shall be made by the Contractor to insure the use of sidewalks, private and public driveways and proper functioning of gutters, sewer inlets, drainage ditches and culverts, irrigation ditches and natural water courses.

G. COOPERATION WITH CONSTRUCTION MANAGER:

The Contractor, when requested, shall assist the Construction Manager in obtaining access to work which is to be inspected. The Contractor shall provide the Construction Manager with information requested in connection with the inspection of the work.

2.05 OWNER-CONTRACTOR COORDINATION

A. SERVICE OF NOTICE:

Notice, order, direction, request or other communication given by the Construction Manager or Owner to the Contractor shall be deemed to be well and sufficiently given to the Contractor if left at any office used by the Contractor or delivered to any of his officers, clerks or employees or posted at the site of the work or mailed to any post office addressed to the Contractor at the address given in the contract document or mailed to the Contractor's last known place of business. If mailed by first-class mail, any form of communication shall be deemed to have been given to and received by the Contractor a day after the day of mailing.

B. SUGGESTIONS TO CONTRACTOR:

Plan or method of work suggested by the Owner or the Construction Manager to the Contractor but not specified or required, if adopted or followed by the Contractor in whole or in part, shall be used at the risk and responsibility of the Contractor. The Owner and the Construction Manager assume no responsibility therefor and in no way will be held liable for any defects in the work which may result from or be caused by use of such plan or method of work.

C. COOPERATION:

The Contractor agrees to permit entry to the site of the work by the Owner or other contractors performing work on behalf of the Owner. The Contractor shall afford to the Owner, other subcontractors and their employees, reasonable facilities and cooperation and shall arrange his work and dispose of his materials in such a manner as to not interfere with the activities of the Owner or of others upon the site of the work. The Contractor shall promptly make good any injury or damage that may be sustained by other contractors or employees of the Owner at his hands. The Contractor shall join his work to that of others and perform his work in proper sequence in relation to that of others.

If requested by the Contractor, the Owner shall arrange meetings with other contractors performing work on behalf of the Owner to plan coordination of construction activities. The Owner shall keep the Contractor informed of the planned activities of other contractors.

Differences or conflicts arising between the Contractor and other contractors employed by the Owner or between the Contractor and the workers of the Owner with regard to their work, shall be submitted to the Construction Manager for his decision in the matter. If the work of the Contractor is affected or delayed because of any act or omission of other contractors or of the Owner, the Contractor may submit for the Owner's consideration, a documented request for a change order.

D. DEVIATION FROM CONTRACT:

Neither the Contractor nor the Owner shall make an alteration or variation in, addition to, or deviation or omission from the terms of this contract without the written consent of the other party.

E. CLAIMS:

1. GENERAL: Claims asserted by the Contractor shall be administered in accordance with 40 CFR 33.1030, Clauses 3, 4, 7, and 8.

2. DETERMINATION BY CONSTRUCTION MANAGER: Questions regarding meaning and intent of the contract documents shall be referred by the Contractor in writing to the Construction Manager for his decision. The Construction Manager shall respond to the Contractor in writing with his decision. If the Contractor disagrees with the Construction Manager's decision or considers that the decision requires extra work, he shall, within five calendar days, notify the Construction Manager in writing of the disagreement or of the claimed extra work involved and of the estimated cost of said work.

3. APPEALS TO THE OWNER'S REPRESENTATIVE: In the event the Contractor disagrees with any determination or decision of the Construction Manager, the Contractor may, within 15 calendar days of the date of such determination or decision, appeal the determination or decision to the Owner's Representative. The Owner's Representative shall review the appeal and transmit his decision in writing to the Contractor within 30 calendar days from the date of receipt of the appeal. Failure of the Contractor to appeal the decision or determination of the Construction Manager within said 15-day period shall constitute a waiver of the Contractor's right to thereafter assert claim resulting from such determination or decision.

4. ARBITRATION: In accordance with EPA policy as expressed in Appendix C-2, Subpart E of 40 CFR, Part 35, all claims, counterclaims, disputes and other matters in question between the Owner and the Contractor that are not resolved between the Owner's Representative and the Contractor will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the state in which the Owner is located.

PART 3--SPECIFICATIONS AND DRAWINGS

3.01 INTERPRETATION OF SPECIFICATIONS AND DRAWINGS

A. GENERAL:

The specifications and drawings are intended to be explanatory of each other. Work specified on the drawings and not in the specifications, or vice versa, shall be executed as if specified in both.

3.01 B.

B. REQUEST FOR CLARIFICATION:

In the event the work to be done or matters relative thereto are not sufficiently detailed or explained in the contract documents, the Contractor shall apply to the Construction Manager for further explanations as may be necessary and shall conform thereto so far as may be consistent with the terms of the contract. In the event of doubt or question arising respecting the true meaning of the specifications or drawings, reference shall be made to the Construction Manager for his decision. Should the Contractor disagree with the Construction Manager's decision, he may appeal to the Owner's Representative in accordance with paragraph 00710-2.05 E.3.

3.02 DIVISION OF SPECIFICATIONS AND DRAWINGS

Specifications and drawings are divided into groups for the convenience of the Owner and Construction Manager. These divisions are not for the purpose of apportioning work or responsibility for work among subcontractors, suppliers and manufacturers.

3.03 DISCREPANCIES IN SPECIFICATIONS AND DRAWINGS

A. ERRORS AND OMISSIONS:

If the Contractor, in the course of the work, becomes aware of any claimed errors or omissions in the contract documents or in the Owner's fieldwork, he shall immediately inform the Construction Manager in writing. The Construction Manager shall promptly review the matter and if he finds an error or omission has been made, he shall determine the corrective actions and advise the Contractor accordingly. If the corrective work associated with an error or omission increases or decreases the amount of work called for in the contract, the Owner shall issue an appropriate change order. After discovery of an error or omission by the Contractor, related work performed by the Contractor shall be done at his risk unless authorized by the Construction Manager. In the event the Contractor disagrees with the determination of the Construction Manager under this provision, he may appeal to the Owner's Representative in accordance with paragraph 00710-2.05 E.3.

B. CONFLICTING PROVISIONS:

In cases of conflict between the specifications and drawings, the specifications shall govern. Figure dimensions on drawings shall govern over scale dimensions and detail drawings shall govern over general drawings. In the event an item of work is described differently in two or more locations on the drawings and in the specifications, the Contractor shall request a clarification from the Construction Manager.

C. UTILITIES:

The Owner has endeavored to determine the existence of Utilities at the site of the work from the records of the owners of known utilities in the vicinity of the work. The positions of these utilities as derived from such records are shown on the drawings. No excavations were made to verify the locations shown for underground utilities. The service connections to these utilities are not shown on the drawings. It shall be the responsibility of the Contractor to determine the exact location of utilities and service connections thereto. The Contractor shall make his own investigations, including exploratory excavations, to determine the locations and type of existing utilities, including service connections, prior to commencing work which could result in damage to such utilities. The Contractor shall immediately notify the Construction Manager as to any utility discovered by him in a different position than shown on the drawings or which is not shown on the drawings.

Work on utilities shall be performed and paid for as follows:

1. Known utilities. The Contractor shall provide all labor, equipment, materials and services necessary to remove, relocate, or maintain utilities specified on the drawings. The work on each utility shall be performed in a manner satisfactory to the utility owner. The utility owner has the option of doing such work with his own forces at the Contractor's expense, or permitting the work to be performed by the Contractor.
2. Service connections. Locations of service connections are not specified on the drawings. The Contractor shall provide all labor, equipment and material to remove, relocate or maintain service connections. The work on service connections shall be performed in a manner satisfactory to service connection owner. The service connection owner has the option of doing such work with his own force at the Contractor's expense, or permitting the work to be performed by the Contractor.
3. Unknown utilities. When a utility is not specified on the drawings or it is located in a position different from that specified on the drawings, and interferes with the work, a change order based on changed site conditions will be issued in accordance with paragraph 00710-7.02. Interference with the work is defined as a utility that crosses or projects into the plane of the work at an elevation between the top and bottom of the work. If it is

3.03 C.3.

necessary to remove, relocate, or temporarily maintain the utility, that work shall be included in the change order. The utility owner has the option of doing such work at the Contractor's expense, or permitting the work to be performed by the Contractor. In either case, the cost of the work will be included in the change order.

No representations are made that the obligations to move or temporarily maintain the utility and to pay the cost thereof is or is not required to be borne by the owner of such utility, and it shall be the responsibility of the Contractor to investigate to find out whether or not said cost is required to be borne by the owner of the utility.

The right is reserved to governmental agencies and to owners of utilities to enter upon streets, alleys, rights-of-way, or easements for the purpose of making changes in their property made necessary by the work and for the purpose of maintaining and making repairs to their property.

3.04 SUBMITTALS

Where required by the specifications, the Contractor shall submit specified information which will enable the Construction Manager to advise the Owner whether the Contractor's proposed materials, equipment or methods of work are in general conformance to the design concept and in compliance with the drawings and specifications. The requirements for submittals are specified in Part B.

3.05 CONTRACTOR'S COPIES OF PROJECT MANUALS

The Owner will furnish the Contractor within 10 days after notice to proceed the following: 10 sets of project manuals including half-size drawings, a set of full-size drawings, and one set of sepia reproducibles of full-size drawings. The Contractor is advised that revisions incorporating changes by addenda will not be incorporated into the reduced or full-size drawings furnished under the provisions of this paragraph. Additional copies of the project manual, if required by the Contractor, will be furnished by the Owner at cost. The Contractor shall keep at the construction site at least one set of the project manual and one set of full-size drawings.

Part 4

PART 4--MATERIAL, EQUIPMENT AND WORKMANSHIP

4.01 GENERAL

Unless otherwise specifically stated in the contract documents, the Contractor shall provide and pay for materials, labor, tools, equipment, water, light, power, transportation, supervision, and temporary construction of any nature, and other services and facilities of any nature, whatsoever necessary, to execute, complete and deliver the work within the specified time. Material and equipment shall be new and of a quality equal to that specified. Equipment offered shall be current modifications which have been in successful regular operation under comparable conditions. This requirement does not apply to minor details, nor to thoroughly demonstrated improvements in design or in materials of construction. Construction work shall be executed in conformity with the standard practice of the trade.

4.02 PRODUCT DATA

Data required by the Owner for inspecting, testing, operating or maintaining parts of the work shall be provided by the Contractor when specified. Unless otherwise specified, such information shall consist of three copies and shall be provided at the time the referenced material or equipment is delivered to the job site. The data shall be as specified and include such items as shop drawings, erection drawings, reinforcing steel schedules, testing and adjusting instructions, operation manuals, maintenance procedures, parts lists, and record drawings. When applicable, information and data to be provided shall be identified by the specified equipment number. Extraneous material on the pages or drawings provided shall be crossed out, and the equipment or material to be supplied shall be clearly marked. Such information is to be provided as part of the work under this contract and its acceptability determined under normal inspection procedures.

4.03 PREFERENCE FOR DOMESTIC MATERIAL

In accordance with the Buy American provision in Public Law 95-217 (Section 215 of Public Law 92-500 as amended) and implementing EPA regulations and guidelines, the Contractor agrees that preference will be given to domestic construction material by the Contractor, subcontractors, materialmen, and suppliers in the performance of this contract.

4.04 QUALITY

Where the contract requires that materials or equipment be provided or that construction work be performed, and detailed specifications of such materials, equipment or construction work are not set forth, the Contractor shall perform the work using materials and equipment of the best grade in quality and workmanship obtainable in the market, from firms of established good reputations, and shall follow standard practices in the performance of construction work. The work performed shall be in conformity and harmony with the intent to secure the standard of construction and equipment of work as a whole and in part.

4.05 MATERIAL AND EQUIPMENT SPECIFIED BY NAME

A. GENERAL:

When material or equipment is specified by reference to two or more patents, brand names, or catalog numbers, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements, and that other materials or equipment, of equal capacities, quality and function shall be considered by the Owner upon the Contractor's request for substitution. Requests for substitution shall be made in accordance with paragraph 00710-4.06.

B. SINGLE SOURCE PRODUCTS:

If material or equipment is specified by only one patent or proprietary name, or by the name of only one manufacturer, it is for the purpose of standardization, or because the Owner knows of no equal. If standardization is the reason for using one name to specify any material or equipment, the specifications will so state, and substitutions will not be considered. In other cases, the Contractor may offer substitutions of products considered to be equal to that specified. Such substitutions shall be requested in accordance with paragraph 00710-4.06.

4.06 REQUESTS FOR SUBSTITUTION

The Contractor may offer material or equipment of equal or better quality and performance in substitution for those specified. The Owner will consider offers for substitution only from the Contractor and will not acknowledge or consider such offers from suppliers, distributors, manufacturers, or subcontractors. The Contractor's offers of substitution shall be made in writing to the Construction Manager and shall include sufficient data to

enable the Construction Manager to assess the acceptability of the material or equipment for the particular application and requirements.

If the offered substitution necessitates changes to or coordination with other portions of the work, the data submitted shall include drawings and details showing such changes. Contractor agrees to perform these changes as part of the substitution of material or equipment at no additional cost to the Owner. Within 30 calendar days after receipt of the offer of substitution, the Construction Manager will review the material submitted by the Contractor and advise the Contractor of objections, if any, to the proposed substitution or if further information is required. Upon notification by the Construction Manager, the Contractor shall either provide material or equipment which complies with project specifications or furnish requested additional information. While the Construction Manager might not take any objections to the proposed substitution, such action shall not relieve the Contractor from responsibility for the efficiency, sufficiency, quality and performance of the substitute material or equipment, in the same manner and degree as the material and equipment specified by name. Any cost differential associated with a substitution shall be reflected in the offer and the contract documents shall be modified by a change order.

4.07 DEMONSTRATION OF COMPLIANCE WITH CONTRACT REQUIREMENTS

A. INSPECTION:

To demonstrate his compliance with the contract requirements, the Contractor shall assist the Construction Manager in his performance of inspection work. The Contractor shall grant the Construction Manager access to the work and to the site of the work, and to the places where work is being prepared, or whence materials, equipment or machinery are being obtained for the work. The Contractor shall provide information requested by the Construction Manager in connection with inspection work.

If the contract documents, laws, ordinances, or any public regulatory authority require parts of the work to be specially inspected, tested or approved, the Contractor shall give the Construction Manager adequate prior written notice of the availability of the subject work for examination.

If parts of the work are covered in contravention of the Construction Manager's directive, the cost of exposing the work for inspection and closing shall be borne by the Contractor regardless of whether or not the work is found to be in compliance with the contract.

4.07 A.

If any work is covered in the absence of the Construction Manager's directive to the contrary, the Contractor shall, if directed by the Construction Manager, uncover, expose or otherwise make available for inspection, portions of covered work. If it is found that such work is defective, the Contractor shall bear the expense of uncovering and reconstructing. If the work is found to be in compliance with the contract, the Contractor will be allowed an increase in the contract price, or an extension in the contract time, or both. A change order shall be issued.

B. SAMPLES OF MATERIALS:

In cases where compliance with contract requirements for materials to be incorporated in the work requires laboratory examination or special testing, the Contractor shall provide samples or specimens as requested by the Construction Manager. Such samples or specimens shall be provided in ample time to permit making proper test analysis and examinations before the time at which it is desired to incorporate the material into the work. Tests of material will be conducted in accordance with standard practice.

C. CERTIFICATION:

In cases where compliance of materials or equipment to contract requirements is not readily determinable through inspection and tests, the Construction Manager shall request that the Contractor provide properly authenticated documents, certificates or other satisfactory proof of compliance. These documents, certifications and proofs shall include performance characteristics, materials of construction and the physical or chemical characteristics of materials.

D. INSPECTION AT POINT OF MANUFACTURING:

If inspection and testing of materials or equipment in the vicinity of the work by the Owner is not practicable, the specifications may require that such inspection and testing or witnessing of tests take place at the point of manufacture. In this case and in the event the remote inspection and testing is not specified and is requested by the Owner, the required travel, subsistence, and labor expenses shall be paid by the Owner. If the Contractor requests the Owner to inspect and test material or equipment at the point of manufacture, then the additional cost to the Owner for travel, subsistence, and labor expenses shall be paid by the Contractor.

4.07 E.

E. RETENTION OF DEFECTIVE WORK:

Prior to acceptance of the project, the Owner may, at his option, retain work which is not in compliance with the contract if the Owner determines that such defective work is not of sufficient magnitude or importance to make the work dangerous or undesirable. The Owner also may retain defective work, if, in the opinion of the Construction Manager, and with concurrence of the Owner's Representative, removal of such work is impractical or will create conditions which are dangerous or undesirable. Just and reasonable value for such defective work shall be judged by the Owner and appropriate deductions shall be made in the payments due, or to become due to the Contractor. Final acceptance shall not act as a waiver of the Owner's right to recover from the Contractor an amount representing the deduction for retention of defective work.

4.08 MATERIALS AND EQUIPMENT FURNISHED BY OWNER

Materials and equipment specified to be furnished by the Owner shall be installed by the Contractor. Furnishing of material and equipment, by the Owner, will be considered conclusive evidence of their acceptability for the purpose intended. If the Contractor discovers defects in material or equipment furnished by the Owner, he shall notify the Construction Manager. After such discovery, the Contractor shall not proceed with work involving Owner-furnished materials and equipment unless authorized by the Construction Manager. Unless otherwise noted or specifically stated, materials and equipment furnished by the Owner, which are not of local occurrence, are considered to be FOB railroad station or truck terminal nearest to the site of the work. The Contractor shall unload, transport, store and protect such material and equipment from damage. After receipt by the Contractor, at the point of delivery, Owner-furnished material and equipment shall form part of the work, for purposes of the contract, including risk of loss, as if it had been supplied and stored by the Contractor himself.

4.09 GUARANTEE

The guarantee period shall be for 365 days. Except for work accepted as substantially complete, the guarantee period shall commence on the date of acceptance of the work. For work described as substantially complete, the guarantee period shall commence on the date of substantial completion. During the guarantee period, the Contractor shall, upon the receipt of notice in writing from the Owner, promptly make all repairs arising out of defective materials, workmanship or equipment. The Owner is

hereby authorized to make such repairs, if ten days after giving of such notice to the Contractor, the Contractor has failed to make or undertake the repairs with due diligence. In case of an emergency, where, in the opinion of the Owner, delay could cause serious loss or damage, repairs may be made without notice being sent to the Contractor and the expenses in connection therewith shall be charged to the Contractor.

For the purpose of this paragraph, "acceptance of the work" shall mean the acceptance of the project or a portion of the project by the Owner, in accordance with paragraph 00710-3.07. "Acceptance of the work" shall not extinguish any covenant or agreement on the part of the Contractor to be performed or fulfilled under this contract which has not, in fact, been performed or fulfilled at the time of such acceptance. All covenants and agreements shall continue to be binding on the Contractor until they have been fulfilled.

The Owner and the Contractor agree that guarantee on the equipment possessed and used by the Owner in accordance with paragraph 00710-7.06 shall commence on the date that the Owner takes possession of the equipment and so notifies the Contractor in writing. Owner and Contractor further agree that such taking possession and use shall not be deemed as substantial completion or acceptance of any part of the work. Takeover of equipment shall be at the Owner's option and will not be made until the equipment can be put into routine service on a permanent basis.

PART 5--LIABILITY AND INSURANCE

5.01 LIABILITY OF CONTRACTOR

The Contractor shall be liable for any and all losses or damages from whatever cause which, prior to final acceptance, may occur on or to any part of the work. The Contractor shall not be liable for losses or damages caused solely by the act of the Owner.

The Contractor shall be liable for damages and injury which shall be caused to persons owning property, on or in the vicinity of the work, or which shall occur to a person, or persons, or property whatsoever, arising out of the Contractor's performance of this contract. The Contractor's liability shall not be dependent upon whether or not such damage or injury be caused by the negligence of the Contractor, and whether or not such damage or injury be caused by the inherent nature of the work as specified.

The Contractor shall indemnify and hold the Owner, the Construction Manager, the design engineer, and their officers, principals, agents, subcontractors, and employees, harmless from any and all loss, defense cost, expense, claims, demand or liability whatsoever, arising from allegations of injuries to persons or damage to property related to the performance of this contract, regardless of concurrent negligence on the part of such indemnities. The indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workers compensation acts, disability benefit acts, or other employee benefit act.

In case suit or legal proceeding shall be brought against the Owner, the Construction Manager, the design engineer, or their officers, principals, agents, subcontractors, or employees, on account of loss or damage sustained by person, or persons, or property, as a result of the performance of the work covered by this contract, the Contractor agrees to assume the defense thereof, and to pay the expenses connected therewith, and the judgments that may be obtained against the Owner, the Construction Manager, the design engineer, or their officers, principals, agents, subcontractors, or employees, in such suits. In the event that a lien is placed against the property of the Owner, the Construction Manager, the design engineer, or their officers, principals, agents, subcontractors, or employees, as a result of such suits, the Contractor agrees to at once cause the same to be dissolved and discharged by giving bond or otherwise. The Contractor's agreement to defend and to pay the related expenses shall exist whether or not such injuries or damage be due to the negligence of the Contractor, and whether or not such injuries or damage be caused by the inherent nature of the work, as specified.

The mention of specific duties or liabilities imposed on the Contractor shall not be construed as a limitation or restriction of general duties or liabilities imposed upon the Contractor by the contract. Reference to specific duties or liabilities is made herein, merely for the purpose of explanation.

5.02 BONDS

The Contractor shall provide two bonds, each in the amount of 100 percent of the contract price. One shall serve as security for the faithful performance of the work and the other as security for the faithful payment and satisfaction of the persons furnishing materials and performing labor on the work. The bonds shall be issued by a corporation duly and legally licensed to transact surety business in the State of California. Such bonds shall remain in force throughout the period required to complete the work, and thereafter for a period of 365 calendar days after final acceptance of the work. The bonds must be executed by a duly

licensed surety company, which is listed in the latest Circular 570 of the United States Treasury Department, as being acceptable as surety on federal bonds. No surety's liability on the bonds shall exceed the underwriting limitations for the respective surety specified in Circular 570. The scope of the bonds or the forms thereof prescribed in these contract documents in Sections 00610 and 00620 shall in no way affect or alter the liabilities of the Contractor to the Owner as set forth herein.

5.03 INSURANCE

A. GENERAL:

1. EVIDENCE OF INSURANCE: Prior to execution of the contract, the Contractor shall file, with the Owner, evidences of insurance from the insurer, certifying to the coverage of the insurance required herein. The evidences of insurance shall be certified by a properly authorized officer, agent, general agent or qualified representative of the insurer, and shall certify the names of the insured, the type and amount of insurance, the location and operations to which the insurance applies, and the expiration date. The evidences shall include the agreement of the insurer to give, by registered mail, notice to the Owner at least 30 calendar days prior to the effective date of cancellation, lapse, or material change in the policy.

This Certificate of Insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term, or condition of the contract with respect to which this certificate is issued, the insurance afforded by the policies described herein is subject to the terms, exclusions and conditions of such policies.

2. CANCELLATION OF INSURANCE: The Contractor shall deliver to the Owner policies of insurance and the receipts for payment of premiums thereon. Should the Contractor neglect to obtain and maintain in force such insurance, and deliver such policy or policies and receipts to the Owner, then it shall be lawful for the Owner to obtain and maintain such insurance. The Contractor hereby appoints the Owner his true and lawful attorney, to do the things necessary for this purpose. Money expended by the Owner under the provisions of this paragraph for insurance premiums shall be charged to the Contractor. Failure of the Owner to obtain such insurance shall in no way relieve the Contractor of his responsibilities under this contract.

B. PUBLIC LIABILITY:

The Contractor shall provide public liability insurance covering bodily injury, in an amount of not less than a combined single limit of one million dollars (\$ 1,000,000) for one or more persons injured in each occurrence. This insurance shall cover bodily injuries or death suffered, or alleged to have been suffered by any person or persons by reason of or in the course of operations, under this contract, whether occurring by reason of acts or omissions of the Contractor, or any subcontractor, or both. Such insurance shall be maintained until final acceptance of the work and shall include completed operations and products liability insurance, with aggregate limit in the amount specified above, which shall continue for a period of 365 calendar days after final acceptance of the work.

The Contractor shall provide property damage insurance in an amount of not less than a combined single limit of one million dollars (\$1,000,000) for property damaged in each occurrence. The insurance shall cover damages to property suffered or alleged to have been suffered, by person, or persons, by reason of, or in the course of, the operations under the contract, whether occurring by reason of acts or omissions of the Contractor, or any subcontractor, or both. Such insurance shall be maintained until final acceptance of the work, and shall include completed operations and products liability insurance, which shall continue for a period of 365 calendar days after the final acceptance of the work.

Liability insurance shall indemnify the Contractor and his subcontractors against loss from liability, imposed by law, upon or assumed under contract by the Contractor or his subcontractors, for damages on account of such bodily injury and property damage. The insurance shall also indemnify the Contractor and his subcontractors against losses related to completed operations and products. The insurance shall be provided by a comprehensive, broad form occurrence property damage liability policy written by licensed underwriters. The policies shall cover operations, owned and non-owned vehicles and equipment, contractors protective coverage blanket, contractual liability, and completed operations liability. The liability insurance shall not exclude explosion, collapse, underground excavation, or removal of lateral support and shall include cross liability. The Owner, the Construction Manager, the design engineer, and their officers, principals, agents, subcontractors, and employees shall be named as insured on the liability policies.

5.03 C.

C. WORKERS COMPENSATION INSURANCE:

The Contractor and the subcontractors shall cover or insure under applicable laws relating to workers compensation or employers liability insurance, their employees, working on or about the construction site, regardless of whether such coverage or insurance is mandatory or merely elective under the law. The Contractor shall defend, protect, save harmless the Owner from any against claims, suits and actions arising from failure of the Contractor or the subcontractors to maintain such insurance.

D. BUILDERS RISK:

Contractor shall secure all-risk type of builders risk insurance covering work performed under the contract and materials, equipment or other items to be incorporated therein, while the same are located at the construction site, stored off site, or at the place of manufacture. The policy shall cover not less than losses due to fire, flood, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft, and smoke until the date of final acceptance of the work. The policy may exclude loss or damage caused by or resulting from errors in design or from the use of substandard materials or supplies used knowingly by or at the direction of the insured, but not excluding results, physical loss, or damage to other property covered hereunder. Neither exclusion shall apply in the event of fire, explosion, or acts of God. The maximum deductible allowable under this policy shall be \$100,000. The policies providing this insurance shall name the Owner, the Construction Manager, the design engineer, and their subconsultants as additional insureds as their respective interests shall appear. The making of progress payments to the Contractor shall not be construed as creating an insurable interest by or for the Owner or being construed as relieving the Contractor or his subcontractors of responsibility for loss or direct physical loss, damage or destruction occurring prior to final acceptance.

PART 6--PROGRESS AND COMPLETION

6.01 NOTICE TO PROCEED

After execution of the contract by the Owner, written notice to proceed will be given by the Owner to Contractor. Notwithstanding other provisions of the contract, the Contractor shall not be obligated to perform work, and the Owner shall not be obligated to accept or pay for work performed by the Contractor, prior to date of the notice to proceed. The Owner's knowledge of work being performed prior to date of the notice to proceed shall not obligate the Owner to accept or pay for such work.

6.02 CONTRACT TIME

A. GENERAL:

Time shall be of the essence of the contract. The Contractor shall promptly start the work after the date of the notice to proceed and shall prosecute the work so that portions of the project shall be complete within the times specified in Section 01011. During periods when weather or other conditions are unfavorable for construction, the Contractor shall pursue only such portions of the work as shall not be damaged thereby. No portions of the work where acceptable quality or efficiency will be affected by unfavorable conditions shall be constructed while those conditions exist. It is expressly understood and agreed by and between the Contractor and the Owner that the contract time for completion of the work described herein is a reasonable time taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the work.

B. CONSTRUCTION SCHEDULE:

The Contractor shall provide a construction schedule and reports as specified in Section 01310 for scheduling and coordinating the work within the contract time. Contract time extensions shall be incorporated into updated schedules, reflecting their effect at the time of occurrence. Failure of the Contractor to comply with these requirements for submittal of the construction schedule and reports shall be cause for delay in review of progress payments by the Construction Manager.

C. CONSTRUCTION PROGRESS:

The Contractor shall furnish such manpower, materials, facilities and equipment as may be necessary to insure the prosecution and completion of the work in accordance with the accepted schedule. If work falls 14 days or more behind the accepted construction schedule, the Contractor agrees that he will take some or all of the following actions to return the project to the accepted schedule. These actions may include the following:

1. Increase manpower in quantities and crafts.
2. Increase the number of working hours per shift, shifts per working day, working days per week, or the amount of equipment, or any combination of the foregoing.
3. Reschedule activities.

6.02 C.

If requested by the Construction Manager, the Contractor shall prepare a proposed schedule revision demonstrating a plan to make up the lag in progress and insure completion of the work within the contract time. The proposed revision shall be submitted to the Construction Manager in accordance with Section 01300. Upon receipt of an acceptable proposed schedule, the revision to the construction schedule shall be made in accordance with paragraph 01310-4. All actions to return the project to the accepted schedule are at the Contractor's expense.

The Contractor shall pay all costs incurred by the Owner which result from the Contractor's action to return the project to its accepted schedule. Contractor agrees that Owner shall deduct such charges from payments due the Contractor. It is further understood and agreed that none of the services performed by the Construction Manager in monitoring, reviewing and reporting project status and progress shall relieve the Contractor of responsibility for planning and managing construction work in conformance with the construction schedule.

D. DELAYS:

1. NOTICE OF DELAYS: When the Contractor foresees a delay in the prosecution of the work and, in any event, immediately upon the occurrence of a delay which the Contractor regards as unavoidable, he shall notify the Construction Manager in writing of the probability of the occurrence of such delay, the extent of the delay, and its possible cause. The Contractor shall take immediate steps to prevent, if possible, the occurrence or continuance of the delay. If this cannot be done, the Construction Manager shall determine how long the delay shall continue and to what extent the prosecution and completion of the work are being delayed thereby. He shall also determine whether the delay is to be considered avoidable or unavoidable and shall notify the Contractor of his determination. The Contractor agrees that no claim shall be made for delays which are not called to the attention of the Construction Manager at the time of their occurrence.

2. AVOIDABLE DELAYS: Avoidable delays in the prosecution of the work shall include delays which could have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor or his subcontractors. Avoidable delays include:

- a. Delays which may in themselves be unavoidable but which affect only a portion of the work and do not necessarily prevent or delay the prosecution of other parts of the work nor the completion of the whole work within the contract time.

6.02 D.2.b.

- b. Time associated with the reasonable interference of other contractors employed by the Owner which do not necessarily prevent the completion of the whole work within the contract time.

3. UNAVOIDABLE DELAYS: Unavoidable delays in the prosecution or completion of the work shall include delays which result from causes beyond the control of the Contractor and which could not have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor or his subcontractors. Delays in completion of the work of other contractors employed by the Owner will be considered unavoidable delays insofar as they interfere with the Contractor's completion of the work. Delays due to normal weather conditions shall not be regarded as unavoidable as the Contractor agrees to plan his work with prudent allowances for interference by normal weather conditions as defined in Section 00800, Supplementary Conditions. Delays caused by acts of God, fire, unusual storms, floods, tidal waves, earthquakes, strikes, labor disputes, freight embargoes and shortages of materials shall be considered as unavoidable delays insofar as they prevent the Contractor from proceeding with at least seventy-five percent (75%) of the normal labor and equipment force for at least five hours per day toward completion of the current controlling item on the accepted critical path schedule.

Should abnormal conditions prevent the work from beginning at the usual starting time, or prevent the Contractor from proceeding with seventy-five percent (75%) of the normal labor and equipment force for a period of at least five hours per day, and the crew is dismissed as a result thereof, he will not be charged for a working day whether or not conditions charge so that the major portion of the day could be considered to be suitable for work on the controlling item.

E. EXTENSION OF TIME:

1. AVOIDABLE DELAYS: In case the work is not completed in the time specified, including extension of time as may have been granted for unavoidable delays, the Contractor will be assessed damages for those costs incurred by the Owner which are attributable to the fact that the work was not completed on schedule.

The Owner may grant an extension of time for avoidable delay if he deems it in his best interest. If the Owner grants an extension of time for avoidable delay, the Contractor agrees to pay actual costs, including charges for engineering, inspection and administration, as specified in paragraph 00710-7.04, incurred during the extension.

6.02 E.2.

2. UNAVOIDABLE DELAYS: For delays which the Contractor considers to be unavoidable, he shall submit to the Construction Manager complete information demonstrating the effect of the delay on the controlling operation in his construction schedule. The submission shall be made within 30 calendar days of the occurrence which is claimed to be responsible for the unavoidable delay. The Construction Manager shall review the Contractor's submission and determine the number of days of unavoidable delay and the effect of such unavoidable delay on controlling operations of the work. The Owner agrees to grant an extension of time to the extent that unavoidable delays affect controlling operations in the construction schedule. During such extension of time, neither extra compensation or engineering inspection and administration nor damages for delay will be charged to the Contractor. It is understood and agreed by the Contractor and Owner that time extensions due to unavoidable delays will be granted only if such unavoidable delay involve controlling operations which would prevent completion of the whole work within the specified contract time.

3. DAMAGES FOR DELAYS: For the period of time that any portion of the work remains unfinished after the time fixed for completion in the contract documents, as modified by extensions of time granted by the Owner, it is understood and agreed by the Contractor and the Owner that the Contractor shall pay the Owner the amount of actual damages representing actual costs which the Owner suffers by failure of the Contractor to complete the work within the stipulated time.

6.03 SUSPENSION PROCEDURES

Suspension procedures shall conform to 40 CFR 33.1030, Clause 5. A suspension in excess of 90 calendar days shall be considered an unreasonable period of time for work to be delayed or interrupted by an act of the Owner and in such an event the Owner shall make an adjustment in the cost in accordance with the provisions of 40 CFR 33.1030, Clause 5.

6.04 TERMINATION PROCEDURES

A. TERMINATION BY OWNER:

The Owner may at any time terminate the contract by notice in writing to the Contractor. Upon receipt of such notice, the Contractor shall immediately discontinue the work but shall do such work as is ordered therein to safeguard the work then completed and the materials and equipment then delivered to the site of the work, and do such work as may be ordered by the Construction Manager for the purpose of leaving the work in a safe and useful condition. Contractor and Owner shall follow the procedures given 40 CFR 33.1030, Clause 6.

6.04 A.

In the event the Owner finds that the Contractor is failing to comply with the provisions of this contract, the Owner may terminate the contract for default as provided in 40 CFR 33.1030, Clause 6. Contractor and Owner will follow the procedures given in 40 CFR 33.1030, Clause 6, when the contract has been terminated for default.

B. TERMINATION BY CONTRACTOR:

If the work is stopped by order of a court, public authority or the Owner for a period of 90 calendar days or more through no act or fault of the Contractor, anyone employed by him or his subcontractors, then the Contractor may terminate the contract 10 calendar days after written notice to the Owner. Upon receipt of the written notice, the Owner shall implement the procedures set forth in 40 CFR 33.1030, Clause 6, for determination of the work performed and the payment due the Contractor.

PART 7--MEASUREMENT AND PAYMENT

7.01 PAYMENTS TO CONTRACTOR

A. BREAKDOWN OF CONTRACT PRICES:

Except in cases where unit prices form the basis for payment under the contract, the Contractor shall, within 20 days of receipt of the notice to proceed, submit a breakdown of the contract price showing the value assigned to each part of the work including an allowance for profit and overhead. In submitting the breakdown, the Contractor certifies that it is not unbalanced and that the value assigned to each part of the work represents his estimate of the actual cost, including profit and overhead, of performing that part of the work. The breakdown shall be sufficiently detailed to permit its use by the Construction Manager as one of the bases for evaluating requests for payment.

B. PROJECT STATUS REVIEW:

Contractor and Construction Manager shall meet each month prior to the Contractor submitting the progress payment request for the previous month. The purpose of the meeting is to review project status in relation to the construction schedule; review value of work completed during the previous month; and, if applicable, review Contractor's plans to return project status to that required by the schedule. Within 5 days following this meeting, the Contractor shall submit a written progress report comprising:

7.01 B.1.

1. A copy of the current construction schedule marked up to indicate percent complete, actual completion or start dates since the previous review, and the estimated remaining duration for each activity in progress.
2. Reasons any activities are behind schedule and of the corrective steps being taken.

C. PROGRESS PAYMENTS

1. PAYMENT REQUEST PROCEDURES: By the tenth day of each month, the Contractor shall submit to the Construction Manager a partial payment estimate filled out and signed by the Contractor covering acceptable work performed during the previous month, or since the last partial payment estimate was submitted. If requested by the Construction Manager, the Contractor shall provide such additional data as may be reasonably required to support the payment estimate. Such data may include satisfactory evidence of payment for equipment, materials and labor including payments to subcontractors and suppliers. Request for payment for delivered equipment and material shall be accompanied by certified invoices by the suppliers. Such equipment and material shall be suitably and safely stored at the site of the work.

Payment provisions related to operating and maintenance information is specified in paragraph 01730-3.0. Payment requests shall summarize accepted operating and maintenance material with request for equipment payment.

2. REVIEW PROCEDURES: Within 10 days after receipt of the partial payment estimate, the Construction Manager will review the estimate and either indicate in writing to the Owner's Representative his concurrence with the estimate and his recommendation that payment be made, or indicate in writing to the Contractor his reasons for not concurring with the estimate. If the Construction Manager recommends payment and the Owner's Representative concurs, the Owner will, within days after receipt of the Construction Manager's recommendation, pay the Contractor a progress payment on the basis of the approved partial payment estimate. The payments will take into account the retention provisions provided for herein.

In the event the Construction Manager does not concur with the estimate, the Contractor may make the changes necessary to obtain the Construction Manager's concurrence and resubmit the partial payment estimate, or submit the original progress payment estimate directly to the Owner's Representative, indicating in writing his reasons for refusing to make the changes necessary to obtain concurrence.

7.01 C.3.

3. RETENTION: The Owner shall retain a percentage of each payment except as specified below. The retained amount is available for the protection and payment of the person, or persons, mechanics, subcontractors, or material men who shall perform labor upon the contract or work thereunder, and persons who shall supply such person, or persons, or subcontractors with components and supplies for carrying on such work.

The Owner shall retain 10 percent of each progress payment except and at the sole discretion of the Owner:

- a. When the work is 25 percent complete, if the Contractor is on or ahead of schedule and the work is proceeding satisfactorily, the retention may be reduced to 5 percent of each payment until the work is 50 percent complete.
- b. At 50 percent completion, if the Contractor is on or ahead of schedule and the work is proceeding satisfactorily, no further amounts may be retained from future progress payments.

In no case will retainage be less than required by applicable laws and regulations. At any time during the project the Contractor fails to maintain the progress of the work on or ahead of schedule, the Owner may resume retainage of 10 percent of the amount of total progress payments to date until the Contractor is on or ahead of schedule or until final completion.

4. WITHHOLDING: The Construction Manager may refuse to recommend the whole or any part of any payment if in the Construction Manager's opinion it would be incorrect to make such recommendation to the Owner. The Construction Manager may also refuse to recommend any such payment, or because of subsequently discovered evidence or the result of tests, may nullify any such payment previously recommended to such extent as may be necessary in the Construction Manager's opinion to protect the Owner from loss as a result of:

- a. Defective or damaged work.
- b. A deductive change order.
- c. Persistent failure of the Contractor to perform the work in accordance with the contract documents, including failure to maintain the progress of the work in accordance with the construction schedule. Persistent failure to maintain the progress of the work shall mean that for a period

7.01 C.4.c.

of two consecutive months following a written notice from the Construction Manager, the Contractor fails to correct a behind-schedule condition at a rate that would reasonably indicate that he will finish the project on schedule.

- d. Disregard of authority of the Construction Manager or the laws of any public body having jurisdiction.

The Owner may refuse to make payment of the full amount recommended by the Construction Manager because of claims made against the Owner on account of Contractor's performance or furnishing the work or because liens have been filed in connection with the work or there are other items entitling Owner to reduce the amount recommended. In such case, the Owner shall give Contractor prompt written notice with copy to the Construction Manager stating the reasons for each action.

D. FINAL PAYMENT:

The Owner will make final payment to the Contractor in the manner provided by law following the expiration of 35 calendar days after acceptance of the work and filing of the notice of completion by the Owner providing no liens or claims are outstanding. Final payment shall include the entire sum found to be due hereunder after deducting therefrom previous payments and such other lawful amounts as the terms of this contract describe. Prior estimates and payments, including those relating to extra work or work omitted, shall be subject to correction by the final payment.

Acceptance by the Contractor of final payments shall be and shall operate as a release to the Owner of all claims and all liability to the Contractor other than claims in stated amounts that may be specifically excepted by the Contractor for things done or furnished in connection with this work and for every act and neglect of the Owner and others relating to or arising out of this work. Payment by the Owner shall not release the Contractor or his surety from any obligation under the contract or under the performance bond and payment bonds.

7.02 CHANGE ORDERS

A. GENERAL:

The Owner may at any time, without notice to the sureties, either increase or decrease the amount of work to be done under

7.02 A.

the contract as provided for in 40 CFR 33.1030, Clause 3. If the amount of work is increased, the change shall be known as an "extra work order." If the amount of work is decreased, the change shall be known as an "omitted work order." Owner and Contractor agree that change orders shall be administered and negotiated in accordance with 40 CFR 33.290 and 40 CFR 33.1030, Clauses 3, 8, and 9. The final cost of each change order which includes an extension of time shall include the costs associated with such extension. For each change order with a cost over \$10,000, the Contractor shall execute and submit to the Construction Manager, three copies of the EPA Form 5700-41. A copy of this form is contained in Section 00802. All changes in the work shall be executed under the terms and conditions of the contract, except as specifically modified at the time of ordering a change.

B. EXTRA WORK:

Extra work means the providing of materials and equipment and the performing of work not directly or by implication called for by the contract. Changes in quantity under a unit price contract or item shall not be considered extra work. If the Owner requires extra work he may (1) do it himself, (2) employ others to do it, (3) direct the Contractor to perform the extra work at a mutually agreed upon lump sum, or (4) direct the Contractor to perform the extra work on a time and expense basis.

C. OMITTED WORK:

The Owner may, by written order to the Contractor, omit work, equipment and material to be provided under the contract, and the value of the omitted work, equipment and material will be deducted from the contract price. The deducted value will be a lump sum or unit price agreed upon in writing by the Contractor and Owner based on breakdown and cost information submitted by the Contractor.

D. LUMP SUM CHANGE ORDERS:

Whenever practicable, changes in contract price resulting from extra work will be determined by a mutually agreed upon lump sum price. The Contractor's proposal for such changes shall include a detailed breakdown of labor and materials to be performed by his forces or the forces of his subcontractors or material supplier. The breakdown shall include labor surcharge and sales tax cost. Whenever the Owner requests that the Contractor prepare a lump sum price in connection with the change order, the Contractor shall be entitled to the costs incurred in the preparation of that price whether or not the lump sum amount is finally accepted by the Owner. Such costs will be incorporated in the lump sum amount.

7.02 D.

If the change involves extra work, the increase in the contract price shall be negotiated in accordance with 40 CFR 33.1030, Clause 8, which is contained in Section 00585 of this project manual.

When the change order involves work omitted, the reduction of the contract price shall be based on the direct costs listed in the detailed proposal submitted by the Contractor. An additional reduction may be made of an amount which can be identified as reduced overhead costs attributable to the work omitted. Reductions for profit originally attributable to the omitted work shall be negotiated in accordance with 40 CFR 33.1030, Clause 8, which is contained in Section 00585 of this project manual.

E. TIME AND EXPENSE CHANGE ORDERS:

1. **GENERAL:** Whenever the Contractor is directed to perform extra work on a time and expense basis, he will maintain accurate records in accordance with the requirements in 40 CFR 33.1030, Clause 9. Each day a record of labor, materials and equipment costs will be submitted to the Construction Manager for verification. These records will reflect the actual and necessary expenses pertaining to the extra work and shall be available for audit as provided for under 40 CFR 33.1030, Clause 9.

Payment to the Contractor for extra work performed on a time and expense basis shall consist of the actual necessary expense for doing the work, plus a negotiated cost for overhead (including general superintendence) and profits, in conformance with 40 CFR 33.1030, Clause 8, which is contained in Section 00585 of this project manual.

In determining time and expense compensation, the term "actual necessary expense" shall mean the sum of (1) materials and equipment, (2) labor, (3) supervision, (4) construction equipment, (5) professional services, and (6) other costs. Charges for such items shall mean the actual cost whether incurred by the Contractor, a subcontractor or others. The items making up "actual necessary expense" are defined in paragraphs 00710-7.02 E.2 through 7.

2. **MATERIALS AND EQUIPMENT:** Costs for materials and equipment provided by the Contractor and necessarily used in the work shall include applicable taxes.

3. **LABOR:** The cost of labor shall be the sum of actual wages, labor surcharge, and subsistence and travel allowances. Actual wages paid shall include employer payments to or on behalf

7.02 E.3.

of the worker for health and welfare, pension, vacation and similar purposes. The labor surcharge includes applicable labor related taxes, Workers Compensation Insurance premiums, public liability and property damage insurance premiums, and other legally required costs directly related to labor. Where subsistence and travel allowance are required for performance of extra work, the charges shall consist of the actual amount paid to each worker for these items.

4. SUPERVISION: If, in the Owner's judgment, full-time supervision of the extra work is required, it will be authorized in writing by the Construction Manager and charges for such supervision will be included as an actual necessary expense. Charges for supervision of the extra work by the Contractor's representative or general superintendent are regarded as part of overhead and are not chargeable costs.

5. CONSTRUCTION EQUIPMENT: Charges for the use of construction equipment required in the performance of extra work shall be based on rental rates set forth in the State of California current official published document covering rental of equipment used on force account work. For equipment not listed in said document, the rental rate shall be as listed by the local section of the Associated General Contractors. If the equipment is not listed by the Associated General Contractors, the rental rate will be mutually agreed upon in writing between the Contractor and Owner prior to the use of said unlisted equipment. The reasonable cost of moving equipment onto and off the job site shall be included, but equipment rental shall not be paid when the equipment is inoperative due to breakdowns. Individual pieces of equipment or small tools having a replacement value of \$100 or less shall be considered expendable and no payment therefor shall be made.

When equipment is used on the extra work for less than five days, hourly rates shall be used. Less than 30 minutes of operation shall be considered one-half hour of operations. When equipment is used on the extra work for more than five days, daily rates shall apply. In this case, less than four hours of operation shall be considered to be one-half day of operation.

6. PROFESSIONAL SERVICES: Professional services shall be included in "actual necessary expense" provided both the Owner has determined that such services are necessary and the Construction Manager has authorized in writing the provision of such services.

7. OTHER COSTS: Charges for items not included in paragraphs 7.02 E.1 through 6 may be included as "actual necessary expense" if such additional items are authorized in advance and in writing by the Construction Manager.

7.03 CHARGES TO CONTRACTOR

Everything charged to the Contractor under the terms of this contract shall be paid by the Contractor to the Owner on demand. Such charges may be deducted by the Owner from money due or to become due to the Contractor under the contract. The Owner may recover such charges from the Contractor or from his surety.

7.04 COMPENSATION TO OWNER FOR TIME EXTENSION

The Owner, in exchange for granting an extension of time for avoidable delay, shall be compensated by the Contractor for the actual costs to the Owner of engineering, inspection, general supervision and overhead expenses which are directly chargeable to the work and which accrue during the period of such extension. The actual costs do not include charges for final inspection and preparation of the final estimate by the Owner.

7.05 SUBSTANTIAL COMPLETION

The Contractor, on considering the work to be substantially complete and ready for its intended use, shall so notify the Construction Manager in writing. The notification shall include an itemized list of remaining incomplete work. If the Construction Manager determines that the work is not substantially complete, he will so notify the Contractor in writing identifying the reasons for such a determination. If the Construction Manager finds the work substantially complete, he will meet with the Contractor to (1) prepare a punch list of incomplete items of work; (2) define the division of responsibility between Owner and Contractor with respect to security, operation, maintenance, heat, utilities, insurance, and warranties; and (3) describe any other issues related to acceptance of the substantially completed work. Upon reaching agreement with the Contractor, the Construction Manager will write to the Owner, certifying that the work is substantially complete, listing the items of incomplete work, stating the date for completion of incomplete work, defining the division of responsibilities, and setting forth any other terms related to acceptance.

The Owner, who has sole discretion for determination of substantial completion, will review the Construction Manager's certification that the work is substantially complete and concurring with that certification, will notify the Contractor, in writing, that the work is accepted as substantially complete. Except for any portion(s) of work specified for early completion or required by the Owner for early possession (paragraph 00710-7.-06), substantial completion will not occur for any work until the

7.05

entire project is ready for possession and use. The acceptance notice will include a punch list of incomplete work items, set the date for their completion, describe the division of responsibility between the Owner and Contractor, and describe any other terms of acceptance. The Contractor will acknowledge receipt of the acceptance notice in writing, indicating acceptance of all of its terms and provisions.

Upon receipt of the Contractor's acknowledgment letter, the Owner shall take possession of the work or portion of the work and put it into its intended service. The date that the work or portion of the work is put into service will become the date of substantial completion. Unless otherwise specified, warranties will begin on the date of substantial completion.

Subsequent to the substantial completion date, the Owner may exclude the Contractor from the work during such periods when construction activities might interfere with the operation of the project. The Owner, however, shall allow the Contractor reasonable access for completion or correction of incomplete punch list items.

7.06 POSSESSION OF PORTIONS OF THE PROJECT

Should the Contractor fail to meet any date specified for substantial completion of the work or any portion of the work requiring early possession and use by the Owner, the Owner may, after a 10-day written notice to the Contractor, take over such portion or all of the work that is behind schedule. In such case, the Construction Manager will prepare a punch list of incomplete work. The Owner may allow the Contractor reasonable access to the work at such times that the operation of the project will not be affected or he may complete the work himself after giving the Contractor notice of his intention to do so. The cost of Owner's work will be charged to and deducted from amounts due to the Contractor. The substantial completion date will be established as the date when the Owner actually begins using the project or portion of the project for its intended purpose. Division of responsibilities between Owner and Contractor, beginning of warranties, and any other issues relating to substantial completion shall be as specified in paragraph 00710-7.05.

7.07 ACCEPTANCE OF THE PROJECT

Upon completion of the work, including portions of the work previously accepted as substantially complete, the Contractor shall so notify the Construction Manager in writing. Upon receipt of the notification, the Construction Manager will determine if

the work conforms to the terms of the contract. If he finds materials, equipment, or workmanship which do not meet the terms of the contract, he shall prepare a punch list of such items and submit it to the Contractor. Following completion of the corrective work by the Contractor, the Construction Manager shall notify the Owner that the work has been completed in accordance with the contract.

Final determination of the acceptability shall be made by the Owner. Upon acceptance of the project, the Owner shall immediately file a notice of completion. For portions of the project not previously accepted as substantially complete, the conditions of guarantee shall commence on the date that the Owner files a notice of completion.

The final application for payment shall be accompanied by all required documentation called for in the contract including complete and legally effective releases or waivers of liens in a form acceptable to Owner. Subject to prior approval of Owner, Contractor may submit in lieu of the lien releases and waivers: (1) receipts of releases in full; (2) an affidavit that the releases and receipts cover all labor, services, materials, and equipment for which a lien could be filed and that all payrolls, materials, and equipment bills and other indebtedness connected with the work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied; and (3) consent of the surety, if any, to final payment. If any subcontractor or supplier fails to furnish a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any lien.

If, after reviewing the Contractor's final application for payment including all documentation required, the Construction Manager determines that the work is complete, he will recommend that final payment, including all retainages, be made by the Owner. The final payment will be due and payable by the Owner within 30 days after any legal notice periods have expired.

****END OF SECTION****

SECTION 00800

SUPPLEMENTARY CONDITIONS

1.0 EPA REQUIREMENTS

EPA requirements set forth under 40 CFR Part 33, Subpart F, are presented in Section 00585 and are hereby incorporated into and made an integral part of these contract documents. For the purpose of this contract, where the term "recipient" is used in 40 CFR Part 33, Subpart F, it shall mean "the Owner," and where the terms "Agreement" and "Subagreement" are used, they shall mean "this contract."

2.0 ABNORMAL WEATHER CONDITIONS

A rain, windstorm, high water or other natural phenomenon for the specific locality of the work, which might reasonably have been anticipated from historical records of the general locality of the work, shall not be construed as abnormal. It is hereby agreed that rainfall greater than the following cannot be reasonably anticipated:

1. Daily rainfall equal to, or greater than, 1.9 inch during a month when the monthly rainfall exceeds the normal monthly average by 15 percent or more.
2. Daily rainfall equal to, or greater than, 2.4 inch at any time.

Rainfall data shall be assumed to be the same as that measured at Sky Harbor International Airport by the Environmental Data Service of the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce.

3.0 COMPLIANCE WITH REQUIREMENTS FOR VIOLATING FACILITIES

The Contractor shall comply with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act (42 U.S.C. 1857(h)), Section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and EPA regulations (40 CFR Part 15) pertaining to facilities included in the EPA List of Violating Facilities. The Contractor shall report all violations to the EPA or appropriate state agency.

4.0

4.0 COMPLIANCE WITH REQUIREMENTS FOR ENERGY EFFICIENCY

The Contractor shall comply with the mandatory standards and policies on energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (P.L. 94-163).

5.0 CULTURAL RESOURCES SPECIFICATION

Cultural resource requirements established by the National Historic Preservation Act of 1966 are presented in Section 00586 and hereby incorporated into and made an integral part of these contract documents. For the purpose of this contract, where the term "Engineer" is used in Section 00586, it shall mean "Construction Manager."

END OF SECTION

SECTION 00802

U.S. ENVIRONMENTAL PROTECTION AGENCY

FORM 5700-41

00802-1

COST OR PRICE SUMMARY FORMAT FOR SUBAGREEMENTS UNDER U.S. EPA GRANTS
 (See accompanying instructions before completing this form)

Form Approved
 OMB No. 158-R0144

PART I - GENERAL

| | | | |
|--|--|------------------------------------|--|
| 1. GRANTEE | | 2. GRANT NUMBER | |
| 3. NAME OF CONTRACTOR OR SUBCONTRACTOR | | 4. DATE OF PROPOSAL | |
| 5. ADDRESS OF CONTRACTOR OR SUBCONTRACTOR (Include ZIP code) | | 6. TYPE OF SERVICE TO BE FURNISHED | |

PART II - COST SUMMARY

| 7. DIRECT LABOR (Specify labor categories) | ESTI- MATED HOURS | HOURLY RATE | ESTIMATED COST | TOTALS |
|--|-------------------------|----------------|-------------------|-------------------|
| | | \$ | \$ | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| DIRECT LABOR TOTAL: | | | | \$ |
| 8. INDIRECT COSTS (Specify indirect cost pools) | RATE | x BASE = | ESTIMATED COST | |
| | | \$ | \$ | |
| | | | | |
| INDIRECT COSTS TOTAL: | | | | \$ |
| 9. OTHER DIRECT COSTS | | | | |
| a. TRAVEL | | | ESTIMATED COST | |
| (1) TRANSPORTATION | | | \$ | |
| (2) PER DIEM | | | \$ | |
| TRAVEL SUBTOTAL: | | | \$ | |
| b. EQUIPMENT, MATERIALS, SUPPLIES (Specify categories) | | QTY | COST | ESTIMATED COST |
| | | | \$ | \$ |
| | | | | |
| | | | | |
| EQUIPMENT SUBTOTAL: | | | | |
| c. SUBCONTRACTS | | | ESTIMATED COST | |
| | | | \$ | |
| | | | | |
| SUBCONTRACTS SUBTOTAL: | | | \$ | |
| d. OTHER (Specify categories) | | | ESTIMATED COST | |
| | | | \$ | |
| | | | | |
| OTHER SUBTOTAL: | | | \$ | |
| e. OTHER DIRECT COSTS TOTAL: | | | \$ | |
| 10. TOTAL ESTIMATED COST | | | | \$ |
| 11. PROFIT | | | | \$ |
| 12. TOTAL PRICE | | | | \$ |

PART III - PRICE SUMMARY

| 13. COMPETITOR'S CATALOG LISTINGS, IN-HOUSE ESTIMATES, PRIOR QUOTES <i>(Indicate basis for price comparison)</i> | MARKET PRICE(S) | PROPOSED PRICE |
|---|-----------------|----------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | \$ |

PART IV - CERTIFICATIONS

14. CONTRACTOR

14a. HAS A FEDERAL AGENCY OR A FEDERALLY CERTIFIED STATE OR LOCAL AGENCY PERFORMED ANY REVIEW OF YOUR ACCOUNTS OR RECORDS IN CONNECTION WITH ANY OTHER FEDERAL GRANT OR CONTRACT WITHIN THE PAST TWELVE MONTHS?

YES NO *(If "Yes" give name address and telephone number of reviewing office)*

14b. THIS SUMMARY CONFORMS WITH THE FOLLOWING COST PRINCIPLES

14c.

This proposal is submitted for use in connection with and in response to (1) _____

_____ . This is to certify to the best of my knowledge and belief that the cost and pricing data summarized herein are complete, current, and accurate as of

(2) _____ and that a financial management capability exists to fully and accurately account for the financial transactions under this project. I further certify that I understand that the subagreement price may be subject to downward renegotiation and/or recoupment where the above cost and pricing data have been determined, as a result of audit, not to have been complete, current and accurate as of the date above.

(3) _____
DATE OF EXECUTION

SIGNATURE OF PROPOSER

TITLE OF PROPOSER

14. GRANTEE REVIEWER

I certify that I have reviewed the cost/price summary set forth herein and the proposed costs/price appear acceptable for subagreement award.

DATE OF EXECUTION

SIGNATURE OF REVIEWER

TITLE OF REVIEWER

16. EPA REVIEWER *(If applicable)*

DATE OF EXECUTION

SIGNATURE OF REVIEWER

TITLE OF REVIEWER

PART B
TECHNICAL SPECIFICATIONS

DIVISION 1
GENERAL REQUIREMENTS

| <u>Section</u> | <u>Title</u> |
|----------------|--|
| 01010 | SUMMARY OF WORK |
| 01011 | CONTRACT TIME |
| 01050 | SURVEY INFORMATION |
| 01060 | SAFETY AND HEALTH |
| 01070 | ABBREVIATIONS |
| 01071 | STANDARD REFERENCES |
| 01300 | SUBMITTAL PROCEDURE |
| 01310 | CONSTRUCTION SCHEDULE |
| 01380 | PHOTOGRAPHS |
| 01500 | CONTRACTOR'S UTILITIES |
| 01560 | ENVIRONMENTAL CONTROLS |
| 01620 | PROTECTION OF MATERIALS AND EQUIPMENT |
| 01660 | INSTALLATION, TESTING AND COMMISSIONING |
| 01700 | RESTORATION OF IMPROVEMENTS |
| 01710 | FINAL CLEANUP |
| 01720 | RECORD DRAWINGS |
| 01730 | OPERATING AND MAINTENANCE INFORMATION |
| 01800 | ENVIRONMENTAL CONDITIONS |
| 01999 | REFERENCE FORMS |

SECTION 01010

SUMMARY OF WORK

1.0 SCOPE

This work includes all labor, materials, and equipment required for construction of: (1) a wastewater interceptor, (2) a 3.5-million-gallon-per-day (mgd) (average dry weather flow) wastewater treatment plant, and (3) a 48-inch diameter outfall from the treatment plant to the Salt River Project canal for the City of Avondale.

Work on the wastewater interceptor includes the construction of a raw sewage lift station with 2 pumps, a motor control center, an emergency generator, and a ferrous chloride feed system; approximately 4,200 linear feet of 16-inch diameter force main; approximately 120 linear feet of 36-inch diameter reinforced concrete pipe jacked in place under a soil-cement levee; approximately 1100 linear feet of 30-inch diameter gravity sewer; and approximately 2,600 linear feet of 48-inch diameter gravity sewer.

Work on the wastewater treatment plant includes the construction of a raw sewage pumping station with 2 pumps; headworks with 1 manual and 1 mechanical bar screen, agitation air blower, chemical mist type odor removal system, and vortex type grit removal system; oxidation channel with a jet aeration system including 3 pumps and 3 blowers; mixed liquor transfer channel with 2 blowers; 2 secondary clarifiers; chlorination system; effluent pumping station; service water pumping station; solids handling system including a dissolved air flotation thickener, waste sludge holding tank, and 14 sludge drying beds; necessary appurtenances to make the plant fully operational; landscaping, paving and grading; outside piping; electrical and instrumentation work; equipment testing and commissioning; and all work necessary for a complete and operable installation as shown and specified.

Work on the effluent outfall includes the construction of approximately 1,100 linear feet of 48-inch diameter outfall pipe with discharge to the Salt River Project (SRP) canal which crosses Dysart Road approximately a quarter of a mile north of Southern Avenue. Jacking will be required to pass under the 114-inch diameter Arizona Nuclear Power Plant cooling water pipe line along the south side of the treatment plant site. A headwall will be constructed at the SRP canal.

****END OF SECTION****

SECTION 01011

CONTRACT TIME

1.0 COMPLETION DATE SCHEDULE

Time for completion is 540 calendar days from the date of Notice to Proceed.

2.0 SPECIFIC DATE SCHEDULE

The following schedule contains specific dates which are the last acceptable dates for completion of the Contractor's work. In the event the Notice to Proceed date is later than the date specified, all dates following it shall be adjusted day-for-day accordingly.

| <u>Event</u> | <u>Specific Date</u> |
|---------------------------------------|----------------------|
| Owner issues Notice to Proceed | |
| Substantial completion of the project | |
| Final completion of the project | |

Failure of the Contractor to meet a specified schedule requirement or to complete a submittal or any contract requirement within the time specified shall not affect subsequent dates in the Specific Date Schedule.

The Contractor is allowed 10 calendar days after receiving written notice of the award to submit agreements, bonds and insurance certificates in accordance with the contract requirements. Failure of the Contractor to produce acceptable agreements, bonds and evidences of insurance within the required 10 days of Notice of Award shall not affect schedule requirements in the Specific Date Schedule. The time allowed to complete the project will begin no later than 10 days after Notice of Award.

END OF SECTION

SECTION 01050

SURVEY INFORMATION

The Owner will establish reference bench marks and base lines identified on the drawings. From the information provided, the Contractor shall develop and make such additional surveys as are needed for construction, such as control lines, slope stakes, batter boards, stakes for pipe locations and other working points, lines, and elevations. Survey work shall be performed under the supervision of a licensed land surveyor. Contractor shall reestablish any reference bench marks and survey control monuments destroyed by his operations at no cost to the Owner.

****END OF SECTION****

SECTION 01060

SAFETY AND HEALTH

1.0 SAFETY AND HEALTH REGULATIONS

The Contractor shall comply with Safety and Health Regulations for Construction, promulgated by the Secretary of Labor under Section 107 of the Contract Work Hours and Safety Standards Act, as set forth in Title 29, C.F.R. Copies of these regulations may be obtained from Labor Building, 14th and Constitution Avenue NW, Washington, DC 20013.

The Contractor shall also comply with the provisions of the Federal Occupational Safety and Health Act, as amended.

END OF SECTION

SECTION 01070

ABBREVIATIONS

Wherever used in the project manual the following abbreviations will have the meanings indicated. Abbreviations which are not included in the following list shall be as defined in ANSI Y1.1.

| | |
|--------|---|
| amp | Ampere(s) |
| ab | Anchor Bolt |
| AC | Asphaltic Concrete, Alternating Current |
| ACC | Area Control Center |
| acp | Asbestos Cement Pipe |
| acst | Acoustic |
| add | Add, Additional |
| adj | Adjust(able), Adjacent |
| adptr | Adapter |
| aggr | Aggregate |
| ahr | Anchor |
| Al | Aluminum |
| alum | Aluminum |
| alt | Alternate |
| approx | Approximate(ly) |
| arch | Architecture(al) |
| arcw | Arc Weld |
| asb | Asbestos |
| asph | Asphalt |
| atm | Atmosphere |
| auto | Automatic |
| aux | Auxilliary |
| av | Angle Valve |
| avg | Average |
| awg | American Wire Gauge |
| bc | Bolt Circle |
| bcop | Bare Copper |
| bet | Between |
| bf | Blind Flange |
| bfv | Butterfly Valve |
| bhd | Bulkhead |
| BHP | Brake Horsepower |
| bldg | Building |
| blk | Block |
| bm | Beam, Benchmark |
| bo | Blowoff |
| bot | Bottom |
| bp | Baseplate |
| brg | Bearing |
| brkr | Breaker |
| brkt | Bracket |
| brz | Bronze |

| | |
|-------|---|
| b&s | Bell and Spigot |
| bt | Bent |
| btry | Battery |
| Btu | British Thermal Unit |
| bv | Ball Valve |
| | |
| c | Celsius |
| cab | Direct Burial Cable |
| cap | Capacity |
| cb | Catch Basin, Circuit Breaker |
| c-c | Center to Center |
| ccp | Concrete Cylinder Pipe |
| ccsp | Concrete (or Cement) Lined and Coated Steel Pipe |
| cd | Ceiling Diffuser |
| ced | Ceiling Exhaust Diffuser |
| cem | Cement |
| cer | Ceiling Exhaust Register |
| cfh | Cubic Feet per Hour |
| cfm | Cubic Feet per Minute |
| cfs | Cubic Feet per Second |
| CFR | Code of Federal Regulations |
| chkr | Checker(ed) |
| ci | Cast Iron |
| cip | Cast Iron Pipe |
| cir | Circle |
| cj | Construction Joint |
| ckpl | Checker Plate |
| ckt | Circuit |
| cl | Chlorine Clearance |
| clk | Clock |
| clr | Clear |
| cmp | Corrugated Metal Pipe |
| cmpa | Asbestos Protected Corrugated Metal Pipe |
| cnd | Conduit |
| cndct | Conductor |
| cnds | Condensate |
| cntl | Control |
| co | Cleanout |
| CO2 | Carbon Dioxide |
| col | Column |
| coll | Collector |
| compt | Compartment |
| conc | Concrete |
| conn | Connect(ion) |
| const | Construction |
| cont | Continue(ous) |
| contd | Continued |
| contr | Contractor |
| corr | Corrugate(ion), Correct |

| | |
|-------|-----------------------------------|
| cplg | Coupling |
| cpvc | Chlorinated Polyvinyl Chloride |
| cr | Exposed Rigid Steel Conduit Rack |
| crej | Corrugated Rubber Expansion Joint |
| csd | Ceiling Supply Diffuser |
| csk | Countersunk |
| ctr | Center |
| cu | Cubic, Control Unit |
| Cu | Copper |
| cu ft | Cubic Feet |
| cu yd | Cubic Yard |
| cyl | Cylinder |
| d | Depth |
| d/b | Duct Bank |
| decr | Decrease(ing) |
| det | Detail |
| df | Drinking Fountain |
| dfac | Demand Factor |
| dfd | Duct Fire Damper |
| dg | Door Grille |
| dia | Diameter |
| diag | Diagonal, Diagram |
| diff | Differential |
| dim | Dimension |
| disch | Discharge |
| dl | Dead Load |
| dm | Density Meter |
| dmprm | Damper Motor |
| dn | Down |
| dr | Drain(age), Door, Drain Rock |
| dt | Drip Trap |
| dwg | Drawing |
| dwl | Dowel |
| E | East |
| ea | Each |
| eat | Entering Air Temperature |
| ed | Equipment Drain |
| edf | Electric Drinking Fountain |
| ee | Each End |
| efl | Effluent |
| ej | Expansion Joint |
| el | Elevate, Elevation |
| elb | Elbow |
| elec | Electric(al) |
| elev | Elevation |
| embd | Embedded |
| emer | Emergency |
| enr | Engineer |
| ep | Electrical/Pneumatic |
| eq | Equal |
| equip | Equipment |

| | |
|-------|---------------------------------------|
| es | Existing Surface |
| ew | Each Way |
| ewef | Each Way Each Face |
| ewt | Entering Water Temperature |
| ex | Extra |
| exc | Excavate(ion) |
| exg | Exhaust Grille |
| exh | Exhaust |
| exhvy | Extra Heavy |
| exp | Expansion |
| exist | Existing |
| exstr | Extra Strong |
| ext | Exterior, Extension |
| f | Face, Farenheit |
| fa | Fresh Air |
| fab | Fabricate(d)(ion) |
| fai | Fresh Air Intake |
| fb | Flat Bar, Floor Beam |
| fco | Floor Cleanout |
| ff | Finish Floor |
| fig | Figure |
| FH | Fire Hydrant |
| fl | Floor, Flow Line |
| flex | Flexible |
| flg | Flange(d) |
| flh | Flat Head |
| fll | Flow Line |
| flm | Flow Meter |
| fltr | Filter |
| fm | Force Main |
| fmh | Flexible Metal Hose |
| fin | Finish(ed) |
| fpc | Flexible Pipe Coupling |
| fpc-t | FPC to Take Tension |
| fps | Feet per Second |
| fs | Far Side |
| ft | Feet, Foot |
| ftg | Footing |
| fu | Fused |
| furn | Furnish |
| fut | Future |
| g | Girder |
| ga | Gage |
| galv | Galvanized |
| gc | Grade Change |
| gd | Guard |
| gen | General |
| gf | Ground Fault Interruption Designation |
| gl | Glass |
| gnd | Ground |
| gpd | Gallons per Day |

| | |
|--------|---|
| gph | Gallons per Hour |
| gpm | Gallons per Minute |
| gps | Gallons per Second |
| gr | Grade |
| grd | Grind |
| grdr | Grinder |
| grsc | Galvanized Rigid Steel Conduit |
| grt | Grout |
| grtg | Grating |
| gskt | Gasket |
| gtv | Gate Valve |
| h/a | Hand Auto |
| hb | Hose Bibb |
| hd | Hard |
| hdot | Heavy Duty Oiltight |
| hdr | Header |
| hex | Hexagon |
| hgt | Height |
| hh | Handhole |
| hhv | Heat Hose Valve |
| hndrl | Handrail |
| hoa | Hand Off Auto |
| hor | Horizontal |
| HP | Horsepower |
| htg | Heating |
| htr | Heater |
| hv | High Voltage |
| HVAC | Heating, Ventilating & Air Conditioning |
| hvy | Heavy |
| hw | High Water |
| hwl | High Water Line |
| hyd | Hydraulic |
| hz | Hertz |
| ID | Inside Diameter |
| if | Inside Face |
| in | Inch |
| incl | Include |
| ind | Indicate(ion) |
| ind lp | Indicating Lamp |
| inf | Influent |
| inst | Instantaneous |
| instl | Install |
| insul | Insulated(ion) |
| intlk | Interlock |
| intmd | Intermediate |
| intr | Interior |
| inv el | Invert Elevation |
| inv | Invert |
| i/o | Input/Output |
| it | Instrument Tap |

| | |
|-------|---------------------------------|
| j | Joist |
| jb | Junction Box |
| jct | Junction |
| jt | Joint |
| | |
| K | Kelvin |
| ko | Knockout |
| kpl | Kick Plate |
| kV | Kilovolt |
| kW | Kilowatt(s) |
| kwy | Keyway |
| | |
| lam | Laminated |
| lat | Leaving Air Temperature |
| latl | Lateral |
| lb | Pound |
| lct | Locate |
| ldg | Landing |
| lfbr | Linear Feet Baseboard Radiation |
| lg | Length |
| lh | Left Hand |
| liq | Liquid |
| LL | Live Load |
| Intl | Lintel |
| lo | Lubricating Oil |
| long | Longitude(inal) |
| LOS | Lockout Stop |
| lp | Low Point, Low Pressure |
| ltg | Lighting |
| lubo | Lubricating Oil |
| lv | Low Voltage |
| | |
| mA | Milliampere |
| mach | Machine |
| maint | Maintenance |
| man | Manual |
| matl | Material |
| max | Maximum |
| mbh | Thousand BTUs per Hour |
| MCC | Motor Control Center |
| mcm | Thousand Circular Mills |
| mech | Mechanical |
| mfd | Manufactured |
| mfr | Manufacture(r) |
| MG | Million Gallons |
| mgd | Million Gallons per Day |
| mg/l | Milligrams per Liter |
| MH | Manhole |
| mi | Malleable Iron |
| min | Minimum |
| misc | Miscellaneous |
| mj | Mechanical Joint |

| | |
|------|---|
| mk | Mark |
| ml | Milliliter |
| mo | Motor Operator (ed) |
| mom | Moment |
| mot | Motor |
| mtd | Mounted |
| mtg | Mounting |
| mtzd | Motorized Damper |
| mV | Millivolts |
| mx | Mixer |
| | |
| N | North |
| na | Nonautomatic |
| nc | Normally Closed |
| neg | Negative |
| nf | Near Face, Nonfuse |
| nic | Not in Contract |
| No. | Number |
| NO | Normally Open |
| nom | Nominal |
| np | Nameplate |
| npsh | Net Positive Suction Head |
| nrs | Nonrising Steam |
| ns | Near Side |
| nts | Not to Scale |
| | |
| oc | On Center |
| oai | Outside Air Intake |
| ob | Opposed Blade |
| ocew | On Center Each Way |
| od | Outside Diameter |
| of | Outside Face |
| o-o | Out to Out |
| opng | Opening |
| opp | Opposite |
| ovhd | Overhead |
| ovld | Overload |
| | |
| pb | Pushbutton |
| pc | Piece |
| PCC | Plant Control Center |
| pchv | Pinch Valve |
| pcp | Plain Concrete Pipe |
| pc-t | Pipe Coupling To Take Tension |
| pen | Penetration |
| pg | Pressure Gage |
| ph | Phase |
| pk | Peak |
| pkg | Packing |
| pl | Plate, Pilot Light (in Switch or Control Station) |

| | |
|--------|----------------------------------|
| plas | Plaster |
| plc | Plain Concrete |
| plstc | Plastic |
| plywd | Plywood |
| pneu | Pneumatic |
| pnl | Panel, Panelboard |
| ppln | Pipeline |
| prcst | Precast |
| prefab | Prefabricated |
| press | Pressure |
| proj | Project(ion) |
| prop | Property |
| prv | Pressure Regulating Valve |
| ptct | Protection |
| ps | Pressure Switch, Pressure Sensor |
| psf | Pounds per Square Foot |
| psi | Pounds per Square Inch |
| psia | Pounds per Square Inch Absolute |
| psig | Pounds per Square Inch Gage |
| psl | Pipe Sleeve |
| pt | Point |
| pv | Plug Valve |
| pvc | Polyvinyl Chloride |
| pvt | Pavement |
| qcplg | Quick Coupling |
| r | Right, Riser |
| ra | Return Air |
| rad | Radius |
| raf | Roll Type Air Filter |
| rbr | Rubber |
| rc | Reinforced Concrete |
| rcdr | Recorder |
| rcp | Reinforced Concrete Pipe |
| rcpt | Receptacle |
| rd | Roof Drain, Road |
| rdy | Ready |
| red | Reducer |
| ref | Reference |
| reinf | Reinforce |
| rem | Removable |
| req | Require |
| reqd | Required |
| rf | Roof |
| rgs | Rigid Galvanized Steel |
| rh | Right Hand |
| rlg | Railing |
| rlvl | Reduced Level |
| rm | Room |
| rpm | Revolutions per Minute |
| rpr | Repair |
| rr | Railroad |

| | |
|--------|---------------------------------|
| rtd | Resistance Temperature Detector |
| rv | Relief Valve |
| r/w | Right of Way |
| rwl | Rainwater Leader |
| rwp | Rainwater Pipe |
| | |
| s | South |
| sa | Supply Air, Service Air |
| sched | Schedule |
| sd | Splitter Damper |
| sdv | Solenoid Valve |
| sect | Section |
| sel | Selector |
| sg | Slide Gate |
| sh | Sheet |
| shr | Shear |
| sibx | Signal Box |
| sim | Similar |
| sk | Sink |
| slg | Sluice Gate |
| slp | Slope |
| sltd | Slotted |
| sp | Static Pressure |
| spcl | Special |
| spec | Specification(s) |
| spg | Spacing |
| splc | Splice |
| sprt | Support |
| spt | Intercom Telephone Jack |
| sq | Square |
| ss | Stainless Steel |
| ssk | Service Sink |
| sst | Stainless Steel |
| st | Start |
| sta | Station |
| std | Standard, Storm Drain |
| stga | Starting Air |
| stif | Stiffener |
| stir | Stirrup |
| stl | Steel |
| str | Straight |
| strg | Strong |
| strl | Structural |
| struct | Structure |
| stwy | Stairway |
| sw | Switch |
| swgr | Switch Gear |
| symm | Symmetrical |
| | |
| t | T-Bar |
| tanp | Tangent Point |
| tb | Thermal Box |

| | |
|-----------|----------------------------|
| t&b | Top and Bottom |
| tc | Top of Curb |
| tcl | Totally Closed |
| tcp | Temperature Control Panel |
| td | Temperature Difference |
| temp | Temperature |
| tf | Trickling Filter |
| thd | Thread |
| therm | Thermometer |
| THERMSTCV | Thermostatic Valve |
| thk | Thick |
| tk | Tank |
| tkd | Tank Drain |
| tkS | Tanks |
| toc | Top of Concrete |
| topg | Topping |
| transv | Transverse |
| trd | Tread |
| trx | Triplexed |
| try | Tray |
| typ | Typical |
| tw | Top of Wall |
| ugnd | Underground |
| ul | Ultimate Load |
| ult | Ultimate |
| un | Union, Unless Noted |
| unb | Union Bonnet |
| uon | Unless Otherwise Noted |
| util | Utility |
| us | Utility Station |
| v | Valve, Vent, Volts |
| vac | Vacuum |
| VAC | Volts Alternating Currents |
| var | Varies, Variable |
| vb | Valve Box |
| vcp | Vitrified Clay Pipe |
| vd | Volume Damper |
| VDC | Volts Direct Current |
| vert | Vertical |
| vol | Volume |
| vs | Versus |
| vtr | Vent through Roof |
| w | West, Watt(s), Wall |
| w/ | With |
| wc | Water Closet |
| wco | Wall Cleanout |

| | |
|-------|-------------------------------|
| wd | Width, Wood |
| weg | Wall Exhaust Grille |
| wer | Wall Exhaust Register |
| wf | Wide Flange |
| wg | Waste Gas |
| wh | Water Heater |
| | |
| wi | Wrought Iron |
| WL | Wind Load |
| w/o | Without |
| wp | Work(ing) Point, Weatherproof |
| wpj | Weakened Plane Joint |
| ws | Water Surface |
| wsr | Wall Supply Register |
| wstp | Water Stop |
| wt | Weight |
| wtrtt | Watertight |
| wwf | Welded Wire Fabric |
| wwx | Wireway |
| | |
| x | Spare Conduit |
| xfr | Transfer |
| xfmr | Transformer |
| xmtr | Transmitter |
| xp | Explosionproof |
| | |
| yco | Yard Cleanout |
| yd | Yard |

END OF SECTION

SECTION 01071

STANDARD REFERENCES

Wherever used in the project manual, the following abbreviations will have the meanings listed:

- AASHO American Association of State Highway and Transportation Officials
444 North Capitol Street, N.W., Suite 225
Washington, DC 20001
- ACI American Concrete Institute
P.O. Box 19150
Detroit, MI
- AEIC Association of Edison Illuminating Companies
51 East 42nd Street
New York, NY 10017
- AFBMA Anti-Friction Bearing Manufacturer's Association
60 East 42nd Street
New York, NY 10017
- AGA American Gas Association
8501 East Pleasant Valley Road
Cleveland, OH 44131
- AGMA American Gear Manufacturer's Association
1330 Massachusetts Avenue, N.W.
Washington, DC
- AISC American Institute of Steel Construction
101 Park Avenue
New York, NY 10017
- AISI American Iron and Steel Institute
150 East 42nd Street
New York, NY 10017
- AITC American Institute of Timber Construction
333 West Hampden Avenue
Englewood, CO 80110
- AMCA Air Moving and Conditioning Association, Inc.
30 West University Drive
Arlington Heights, IL 60004
- ANSI American National Standards Institute, Inc.
1430 Broadway
New York, NY 10018
- APA American Plywood Association
1119 A Street
Tacoma, WA 98401
- API American Petroleum Institute
1801 K Street N.W.
Washington, DC 20006

ARI Air-Conditioning and Refrigeration Institute
1814 North Fort Myer Drive
Arlington, VA 22209

ASCE American Society of Civil Engineers
345 East 47th Street
New York, NY 10017

ASCII American Standard Code for Information Interchange
United States of America Standards Institute
10 East 40th Street
New York, NY 10016

ASE American Standard Safety Code for Elevators,
Code Dumbwaiter and Escalators
American National Standards Institute
1430 Broadway
New York, NY 10018

ASHRAE American Society of Heating, Refrigeration and Air
Conditioning Engineers
United Engineering Center
345 East 47th Street
New York, NY 10017

ASME American Society of Mechanical Engineers
345 East 47th Street
New York, NY 10017

ASTM American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

AWPA American Wood Preservers Association
1625 Eye Street
Washington, DC 20006

AWS American Welding Society
2501 N.W. 7th Street
Miami, FL 33125

AWWA American Water Works Association
6666 West Quincy Avenue
Denver, CO 80235

BOCA Building Officials and Code Administrators
17926 Halstead
Homewood, IL 60430

CBM Certified Ballast Manufacturers
2120 Keith Building
Cleveland, OH 44115

CMAA Crane Manufacturers Association of America, Inc.
(Formerly called: Overhead Electrical Crane
Institute) (OECI)
1326 Freeport Road
Pittsburgh, PA 15238

CRSI Concrete Reinforcing Steel Institute
180 North La Salle Street
Chicago, IL 60601

CSA Canadian Standards Association
178 Rexdale Boulevard
Rexdale, Ontario, M9W 1R3, Canada

DEMA Diesel Engine Manufacturer's Association
 122 East 42nd Street
 New York, NY 10017

EEI Edison Electric Institute
 90 Park Avenue
 New York, NY 10016

EIA Electronic Industries Association
 2001 Eye Street N.W.
 Washington, DC 20006

EJMA Expansion Joint Manufacturer's Association
 331 Madison Avenue
 New York, NY 10017

FEDSPEC Federal Specifications
 General Services Administration
 Specification and Consumer Information
 Distribution Branch
 Washington Navy Yard, Bldg. 197
 Washington, DC 20407

FEDSTDS Federal Standards
 (see FEDSPECS)

FM Factory Mutual Research
 1151 Boston-Providence Turnpike
 Norwood, MA 02062

HEI Heat Exchange Institute
 122 East 42nd Street
 New York, NY 10017

HI Hydraulic Institute
 1230 Keith Building
 Cleveland, OH 44115

IAPMO International Association of Plumbing
 and Mechanical Officials
 5032 Alhambra Avenue
 Los Angeles, CA 90032

ICBO International Conference of Building Officials
 5360 South Workman Mill Road
 Whittier, CA 90601

ICEA Insulated Cable Engineers Association
 P.O. Box P
 South Yarmouth, MA 02664

IEEE Institute of Electrical and Electronics Engineers, Inc.
 345 East 47th Street
 New York, NY 10017

IES Illuminating Engineering Society
 c/o United Engineering Center
 345 East 47th Street
 New York, NY 10017

ISA Instrument Society of America
 400 Stanwix Street
 Pittsburgh, PA 15222

JIC Joint Industrial Council
 7901 Westpark Drive
 McLean, VA 22101

MAG Uniform Standard Specifications and Uniform
 Standard Details for Public Works construction
 Maricopa Association of Governments
 1820 West Washington
 Phoenix, Arizona 85007

MILSPEC Military Specifications
 Naval Publications and Forms Center
 5801 Tabor Avenue
 Philadelphia, PA 19120

NAAMM National Association of Architectural Metal
 Manufacturers
 100 South Marion Street
 Oak Park, IL 60302

NACE National Association of Corrosion Engineers
 P.O. Box 986
 Katy, TX 77450

NEC National Electric Code
 National Fire Protection Association
 470 Atlantic Avenue
 Boston, MA 02210

NEMA National Electrical Manufacturer's Association
 155 East 44th Street
 New York, NY 10017

NESC National Electric Safety Code
 American National Standards Institute
 1430 Broadway
 New York, NY 10018

NFPA National Forest Products Association
 (Formerly National Lumber Manufacturer's Association)
 1619 Massachusetts Avenue, N.W.
 Washington, DC 20036

NFPA National Fire Protection Association
 470 Atlantic Avenue
 Boston, MA 02210

OSHA Occupational Safety and Health Act
U.S. Department of Labor
Occupational and Health Administration
San Francisco Regional Office
450 Golden Gate Avenue, Box 36017
San Francisco, CA 94102

SAE Society of Automotive Engineers
2 Pennsylvania Plaza
New York, NY 10001

SAMA Scientific Apparatus Makers Association
One Thomas Circle
Washington, DC 20005

SBCC Southern Building Code Congress
1116 Brown-Marx Building
Birmingham, AL 35203

SSPWC Standard Specifications for Public Works Construction
Building News, Inc.
3055 Overland Avenue
Los Angeles, CA 90034

TEMA Tubular Exchanger Manufacturer's Association
331 Madison Avenue
New York, NY 10017

UBC Uniform Building Code
Published by ICBO

UL Underwriters Laboratories Inc.
207 East Ohio Street
Chicago, IL 60611

UMC Uniform Mechanical Code
Published by ICBO

UPC Uniform Plumbing Code
Published by IAPMO

USBR Bureau of Reclamation
U.S. Department of Interior
Engineering and Research Center
Denver Federal Center, Building 67
Denver, CO 80225

WWPA Western Wood Products Association
(Formerly called: West Coast Lumbermen's
Association (WCLA))
Yeon Building
Portland, OR 97204

END OF SECTION

SECTION 01300

SUBMITTAL PROCEDURE

1.0 GENERAL

Where required by the specifications, the Contractor shall submit descriptive information which will enable the Construction Manager to advise the Owner whether the Contractor's proposed materials, equipment or methods of work are in general conformance to the design concept and in compliance with the drawings and specifications. The information to be submitted shall consist of drawings, specifications, descriptive data, certificates, samples, test results and such other information, all as specifically required in the specifications. In some instances, specified submittal information describes some, but not all, features of the material, equipment, or method of work. Features not requiring submittals shall be as specified.

2.0 CONTRACTOR'S RESPONSIBILITIES

Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the material, equipment or method of work shall be as described in the submittal. The Contractor shall verify that all features of all products conform to the requirements of the specifications and drawings. The Contractor shall insure that there is no conflict with other submittals and notify the Construction Manager in each case where his submittal may affect the work of another contractor or the Owner. The Contractor shall insure coordination of submittals among the related crafts and subcontractors.

The Contractor may authorize in writing a material or equipment supplier to deal directly with the Construction Manager or with the Owner with regard to a submittal. These dealings shall be limited to contract interpretations.

3.0 TRANSMITTAL PROCEDURE

A. GENERAL:

Submittals regarding material and equipment shall be accompanied by Transmittal Form 01300-A specified in Section 01999. A separate form shall be used for each specific item, class of material, equipment, and items specified in separate, discrete sections, for which the submittal is required. Submittals for various items shall be made with a single form when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates checking or review of the group or package as a whole.

3.0 A.

Transmittal forms used for operation and maintenance data, general correspondence, and questions shall be five part, multicolor, pressure sensitive type, and shall be clearly and differently identified from those used for manufacturers' submittals.

A unique number, sequentially assigned, shall be noted on the transmittal form accompanying each item submitted. Original submittal numbers shall have the following format: "XXX"; where "XXX" is the sequential number assigned by the Contractor. Resubmittals shall have the following format: "XXX-Y"; where "XXX" is the originally assigned submittal number and "Y" is a sequential letter assigned for resubmittals, i.e., A, B, or C being the 1st, 2nd, and 3rd resubmittals, respectively. Submittal 25B, for example, is the second resubmittal of submittal 25.

B. DEVIATION FROM CONTRACT:

If the Contractor proposes to provide material, equipment, or method of work which deviates from the project manual, he shall indicate so under "deviations" on the transmittal form accompanying the submittal copies. He shall prepare his reason for a change, including cost differential, and shall request a change order to cover the deviations.

C. SUBMITTAL COMPLETENESS:

Submittals which do not have all the information required to be submitted, including deviations, are not acceptable and will be returned without review.

4.0 REVIEW PROCEDURE

Submittals are specified for those features and characteristics of materials, equipment, and methods of operation which can be selected based on the Contractor's judgment of their conformance to the requirements of the drawings and specifications. Other features and characteristics are specified in a manner which enables the Contractor to determine acceptable options without submittals. The review procedure is based on the Contractor's guarantee that all features and characteristics not requiring submittals conform to the drawings and specifications. Review shall not extend to means, methods, techniques, sequences or procedures of construction, or to verifying quantities, dimensions, weights or gages, or fabrication processes (except where specifically indicated or required by the contract manual) or to safety precautions or programs incident thereto. Review of a separate item, as such, will not indicate approval of the assembly in which the item functions.

When the contract documents require a submittal, the Contractor shall submit five (5) copies of the specified information as follows:

4.0

1. Clean, legible, full-size copies of all submitted information where originals are 8 1/2 inches by 11 inches in size.
2. Blueline print, or clean, legible, full-size copies of all submitted information where originals exceed 8 1/2 inches by 11 inches in size. Reduced photocopies are not an acceptable substitute for blueline prints.

Unless otherwise specified, within 21 calendar days after receipt of the submittal, the Construction Manager shall review the submittal and return three (3) copies of the marked-up submittal. The returned submittal shall indicate one of the following actions:

1. If the review indicates that the material, equipment or work method complies with the project manual, submittal copies will be marked "NO EXCEPTIONS." In this event, the Contractor may begin to implement the work method or incorporate the material or equipment covered by the submittal.
2. If the review indicates limited corrections are required, copies will be marked "MAKE CORRECTIONS NOTED." The Contractor may begin implementing the work method or incorporating the material and equipment covered by the submittal in accordance with the noted corrections. Where submittal information will be incorporated in O&M data, a corrected copy shall be provided.
3. If the review reveals that the submittal is insufficient or contains incorrect data, copies will be marked "AMEND AND RESUBMIT." Except at his own risk, the Contractor shall not undertake work covered by this submittal until it has been revised, resubmitted and returned marked either "NO EXCEPTIONS" or "MAKE CORRECTIONS NOTED."
4. If the review indicates that the material, equipment, or work method does not comply with the project manual, copies of the submittal will be marked "REJECTED - SEE REMARKS." Submittals with deviations which have not been identified clearly may be rejected. Except at his own risk, the Contractor shall not undertake the work covered by such submittals until a new submittal is made and returned marked either "NO EXCEPTIONS" or "MAKE CORRECTIONS NOTED."

5.0

5.0 EFFECT OF REVIEW OF CONTRACTOR'S SUBMITTALS

Review of drawings, methods of work, or information regarding materials or equipment the Contractor proposes to provide, shall not relieve the Contractor of his responsibility for errors therein and shall not be regarded as an assumption of risks or liability by the Construction Manager or the Owner, or by any officer or employee thereof, and the Contractor shall have no claim under the contract on account of the failure, or partial failure, of the method of work, material, or equipment so reviewed. A mark of "NO EXCEPTIONS" or "MAKE CORRECTIONS NOTED" shall mean that the Owner has no objection to the Contractor, upon his own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULE

1.0 SCOPE

This section specifies the procedures for preparing and revising the cost-loaded construction schedule used for planning and managing construction activities. The schedule provides a basis for determining the progress status of the project relative to the completion time, specific dates, and for determining the acceptability of the Contractor's progress payment estimates.

2.0 DESCRIPTION

The Contractor shall prepare a time scale network schedule using a critical path method. A general guide for preparing such a schedule is contained in "The Use of CPM in Construction, a Manual for Contractors," published by the Associated General Contractors of America.

The schedule shall depict all significant construction activities and all items of work listed in the breakdown of contract prices submitted by the Contractor in accordance with paragraph 00710-7.01 A. Assigned values for each part of the work shall be indicated. The dependencies between activities shall be indicated so that it may be established what effect the progress of any one activity has on the schedule.

Completion time and all specific dates given in Section 01011, and sequencing requirements described in Section 01014, shall be shown on the schedule. Activities making up the critical path shall be identified.

No activity on the schedule shall have a duration longer than 21 days or assigned value greater than \$100,000, except activities comprising only fabrication and delivery may extend for more than 21 days. Activities which exceed these limits shall be divided into more detailed components. The scheduled duration of each activity shall be based on the work being performed during the normal 40-hour work week with allowances made for legal holidays and normal weather conditions.

3.0 SUBMITTAL PROCEDURES

Within 20 days after the date of the Notice to Proceed, the Contractor shall complete a construction schedule conforming to paragraph 2.0 of this section and representing in detail all planned procurement and on-site construction activities. The schedule shall be prepared on reproducible paper and may be in draft form with legible freehand lines and lettering. Upon completion of the schedule, the Contractor shall submit the original and two copies to the Construction Manager in accordance with Section 01300.

3.0

Within 7 days after receipt of the submittal, the Construction Manager shall review the submitted schedule and return one copy of the marked up original to the Contractor. If the Construction Manager finds that the submitted schedule does not comply with specified requirements, the corrective revisions will be noted on the submittal copy returned to the Contractor for corrections and resubmittal as specified in Section 01300. Upon receipt of a schedule and breakdown of contract prices (00710-7.01 A) conforming to the contract, the Construction Manager will computerize the Contractor's scheduling and cost data. Within 14 days, the Construction Manager will deliver three computer reports to the Contractor. The reports will be on 8-1/2-inch by 11-inch sheets as follows:

1. Tabular listing of activities showing early and late start and finish dates.
2. Bar chart schedule of all activities.
3. Report on cost and payment status for each activity.

These reports will serve as the basis for the Contractor's progress payment requests and shall be completed prior to the first progress payment application. Computerization of the Contractor's schedule and furnishing reports to the Contractor by the Construction Manager shall not relieve the Contractor of responsibility for the adequacy of the schedule and for managing all construction activities including those of subcontractors and suppliers.

4.0 SCHEDULE REVISIONS

Revisions to the accepted cost-loaded construction schedule may be made only with written approval of the Contractor and Owner. Changes in timing for activities which are not on the critical path may be modified with written agreement of the Contractor and Construction Manager. A change affecting the contract value of any activity, the timing of any activity on the critical path, the completion time and specific dates (Section 01011) and work sequencing (Section 01014) may be made only in accordance with applicable provisions of paragraphs 00710-7.02, 7.03, and 7.04.

5.0 PROJECT STATUS UPDATE

Within 7 days of acceptance by the Construction Manager of the Contractor's written progress report specified in paragraph 00710-7.01 B, the Construction Manager will process the update data by computer and generate the reports outlined in paragraph 01310-3.0. These reports will reflect the current status of the work and will be provided to and used by the Contractor as the basis of his progress payment request.

END OF SECTION

SECTION 01380

PHOTOGRAPHS

1.0 PRECONSTRUCTION PHOTOGRAPHS

The Contractor shall provide preconstruction photographs prior to commencement of work on the site. The photographs shall be minimum 35-mm film size, and shall indicate on the front of each print the date, name of work, and the location where the photograph was taken. Before construction may start, two (2) 8-inch by 10-inch glossy prints of each exposure, together with the negative, shall be delivered to the Construction Manager. Samples of prints of acceptable quality and identification are available in the office of the Construction Manager for examination. Preconstruction photographs shall be taken at locations to be designated by the Construction Manager. The photographer shall be equipped to photograph either interior or exterior exposures, with lenses ranging from wide angle to 135 mm.

2.0 CONSTRUCTION PHOTOGRAPHS

The Contractor shall provide construction photographs showing the progress of the work. The photographs shall be taken of such subjects as may be directed, shall be minimum 35-mm film size, and shall indicate on the front of each print the date, job title and brief description of the photograph including the location where the photograph was taken. Starting one month after the date of the preconstruction photographs and continuing as long as the work is in progress, monthly photographs shall be taken.

Upon acceptance of the work, color exposure photographs shall be made of the work where directed by the Construction Manager. The photographer shall be equipped to take either interior or exterior exposures, with lenses ranging from wide angle to 135 mm.

Two (2) 8-inch by 10-inch glossy prints of each exposure, together with the negative, shall be delivered to the Construction Manager within 10 days following each set of exposures.

3.0

3.0 REQUIRED NUMBER OF PHOTOGRAPHS

For the work of this contract, black and white and color exposures shall be provided as follows:

| | <u>Black and White</u> | <u>Color</u> |
|---|------------------------|--------------|
| Preconstruction | 48 | -- |
| Construction | 360 | -- |
| Acceptance | -- | 48 |
| Total number of photographs required | 408 | 48 |

Photographs required in excess of the total number of exposures specified shall be paid for as additional work.

END OF SECTION

SECTION 01500

CONTRACTOR'S UTILITIES

1.0 OFFICE

The Contractor shall maintain a suitable office at the site of the work. Office location and employee parking within the plant site shall be restricted to the locations shown on the drawings.

2.0 POWER

The Contractor shall provide power for construction at the plant site. He shall make arrangements with the electrical utility and with the Owner for power takeoff points, voltage and phasing requirements, transformers and metering and shall pay the costs and fees arising therefrom. The Contractor shall provide the special connections required for his work.

3.0 TELEPHONE

The Contractor shall provide telephone service at his construction site office. Radio-telephone service is not acceptable as a substitute for telephone service.

4.0 SANITARY FACILITIES

The Contractor shall provide toilet and washup facilities for his work force at the site of work. They shall comply with applicable laws, ordinances, and regulations pertaining to the public health and sanitation of dwellings and camps. Existing plant sanitary facilities are not available for the Contractor's use.

5.0 WATER

The Contractor shall provide a potable water supply to his own and the Construction Manager's site facilities at his own cost.

6.0 CONSTRUCTION MANAGER'S OFFICE

The Contractor shall provide a mobile office trailer 12 feet by 55 feet as manufactured by Porta House mobiles, or equal for the Construction Manager's office. Standard construction shall include 1-1/8 inch foil backed fiberglass insulation throughout, vinyl tile flooring, and acoustic tile ceiling.

In addition, the following equipment shall be built into the mobile office: two partitions with doors; an adequate number of windows fitted with screens and blinds; a standard washroom with a flush toilet, sink, electric water heater, toilet accessories, and mirror; a central air conditioning and heating unit capable of

6.0

automatically maintaining an office temperature of 72 degrees F during all seasons; ten 110V duplex convenience outlets; adequate lighting to provide 100-foot candles at desk height; two exterior doors, exterior lights, and wood exterior stairs with railings; a supply of drinking water of the bottle type fitted with a unit that provides both hot and cold water; and two telephone outlets complete with handsets.

Each of the two smaller partitioned areas shall be furnished with a desk, two chairs, a table, a suitable stool, a two-drawer legal file cabinet, and a 5-foot by 3-foot bookshelf. The main partitioned area shall be furnished with two desks and chairs, a conference table (6 feet by 3 feet minimum) with eight chairs, four 4-drawer legal file cabinets suitable for Class C fire classification and two 5-foot by 3-foot bookshelves.

Additional furnishings and equipment to include plan racks, typewriter, photocopy machine, adding machine with tape, calculator, refrigerator, and wastepaper baskets. The photocopy machine shall be a table-top model with reduction feature and capable of producing 8 1/2 by 11 and 11 by 17 copies. The photocopy machine shall be Xerox Model 1035, or equal.

With the exception of telephone calls made by the Construction Manager, all utility connection charges and bills shall be paid by the Contractor for the duration of the contract. Telephone calls made by the Construction Manager will be billed directly to and paid by the Construction Manager.

The Contractor shall provide all labor necessary to weekly maintain and clean the office.

A proposed layout of the interior of the trailer shall be submitted to the Construction Manager for approval within 10 days of the issuance of a Notice to Proceed. The trailer and all items furnished shall be located at the site of the work as directed by the Construction Manager within 20 days of the date of Notice to Proceed and shall remain on site for the sole use of the Construction Manager for a period ending 1 month after final acceptance of the work. With the exception of the four 4-drawer legal file cabinets, the trailer and other items furnished with the Construction Manager's office shall remain the property of the General Contractor. The four 4-drawer legal file cabinets shall become the property of the Owner upon delivery to the job site.

****END OF SECTION****

SECTION 01560

ENVIRONMENTAL CONTROLS

1.0 SITE MAINTENANCE

The Contractor shall keep the work site clean and free from rubbish and debris. Materials and equipment shall be removed from the site when they are no longer necessary. Upon completion of the work and before final acceptance, the work site shall be cleared of equipment, unused materials, and rubbish to present a clean and neat appearance.

2.0 TEMPORARY DAMS

Except in time of emergency, earth dams are not acceptable at catch basin openings, local depressions, or elsewhere. Temporary dams of sand bags, asphaltic concrete, or other acceptable material will be permitted when necessary to protect the work, provided their use does not create a hazard or nuisance to the public. Such dams shall be removed from the site as soon as they are no longer necessary.

3.0 AIR POLLUTION CONTROL

The Contractor shall not discharge smoke, dust, and other contaminants into the atmosphere that violate the regulations of any legally constituted authority. He shall also abate dust nuisance by cleaning, sweeping, and sprinkling with water, or other means as necessary. The use of water, in amounts which result in mud on public streets, is not acceptable as a substitute for sweeping or other methods.

4.0 NOISE CONTROL

Between 6:00 p.m. and 5:00 a.m., noise from Contractor's operations shall not exceed limits established by applicable laws or regulations and in no event shall exceed 86 dBA at a distance of 50 feet from the noise source.

5.0 LOCAL TRAFFIC

The Contractor shall maintain the streets around the project site open to public traffic. If it is necessary to temporarily close off portions of the plant roads, the Contractor shall obtain approval from the Construction Manager. Appropriate barricades, warning signals and detour signs shall be provided by the Contractor as approved by the Construction Manager, or the traffic agency having jurisdiction in the case of public streets.

****END OF SECTION****

SECTION 01620

PROTECTION OF MATERIALS AND EQUIPMENT

1.0 GENERAL

Materials and equipment shall be shipped, handled, stored, and installed by methods which will prevent damage to the items. Damaged items will not be permitted as part of the work except in cases of minor damage that have been satisfactorily repaired and are acceptable to the Construction Manager.

2.0 PIPE

Pipe and appurtenances shall be handled, stored, and installed as recommended by the manufacturer. Pipes with soft coatings such as coal tar enamel, paint, or the like shall be stored to protect the coating from physical damage or other deterioration and shall only be handled with padded, wide slings. Pipes shipped with interior bracing shall have the bracing removed only when recommended by the pipe manufacturer.

3.0 EQUIPMENT

A. DEFINITION:

For the purpose of this section, equipment means any mechanical, electrical, or instrumentation devices, and other items with one or more moving parts requiring an electrical, pneumatic, electronic or hydraulic connection.

B. PACKING AND MARKING:

All equipment shall be adequately and effectively protected against damage from moisture, dust, handling, or other cause during transport from manufacturer's premises to site. Each item or package shall be clearly marked with the number unique to the specification reference covering the item. Each separate portion of plant shall receive, as far as practicable, a fitting or distinguishing mark which shall be shown on the packing lists.

The bearings of motors shall be relieved of load during transport by means of jacks or some other method to prevent Brinelling.

Stiffeners shall be used where necessary to maintain shapes and to give rigidity. Parts of equipment shall be delivered in assembled or subassembled units where possible.

3.0 C.

C. IDENTIFICATION OF EQUIPMENT:

All equipment items and valves with an assigned equipment number in the contract documents shall have affixed to them in a prominent location, a label or tag displaying the assigned equipment number. Equipment items and valves lacking a number shall have a similar tag providing a unique description of the item. Markers shall be of stainless steel or aluminum, affixed to the item in question with stainless steel fasteners or as otherwise approved by the Construction Manager. Plastic tape labels will not be acceptable.

D. STORAGE OF EQUIPMENT:

During the interval between delivery and installation, all equipment to be incorporated into the project shall be stored in enclosed, weathertight structures, trailers, or licensed commercial warehouses. Equipment too large to be accommodated in enclosed areas shall be protected against the elements in accordance with the manufacturer's recommendations. Environmental controls such as heaters or protective encapsulation shall be provided to ensure against condensation and moisture damage. In the event prolonged (more than 90 days) storage is required for any item of rotative equipment, the Contractor shall institute a preventive maintenance program which shall include grease protection of bare metal surfaces, periodic indexing of rotating parts, renewal of grease in bearings and any procedures recommended by the manufacturer. The Contractor shall maintain adequate records to demonstrate full compliance with these requirements. All equipment shall be available for inspection by the Construction Manager.

The Contractor shall obtain full coverage insurance covering all stored equipment against loss due to fire, flood, and windstorm. Evidences of insurance demonstrating compliance with this requirement shall be filed with the Owner.

E. PROTECTION OF EQUIPMENT AFTER INSTALLATION:

After installation, all equipment shall be protected from damage, including but not limited to, dust, abrasive particles, debris and dirt generated by the placement, chipping, sandblasting, cutting, finishing and grinding of new or existing concrete, terrazzo and metal; and the fumes, particulate matter, and splatter from welding, brazing and painting of new or existing piping and equipment. The Contractor is advised that as minimum, vacuum cleaning, blowers with filters, protective shieldings, and other dust suppression methods will be required at all times to adequately protect all equipment. During concreting, including finishing, all equipment that may be affected by cement dust must be completely covered. During painting operations, all grease fittings and similar openings shall be covered to prevent the entry of paint. Electrical switchgear, unit substation, and motor control centers shall not be installed until after all concrete work and sandblasting in those areas have been completed and accepted.

4.0

4.0 DELIVERY OF MATERIAL OR EQUIPMENT

The Owner's personnel or representatives of the Owner will not accept materials or equipment deliveries for the Contractor.

END OF SECTION

SECTION 01660

INSTALLATION, TESTING AND COMMISSIONING

PART 1--GENERAL

1.01 DESCRIPTION

This section provides specifications for the installation and testing of all mechanical and electrical systems. All commissioning work for the equipment installed under all phases of this contract shall be performed by the Contractor.

1.02 QUALITY ASSURANCE

A. INSTALLATION:

All mechanical and electrical equipment furnished under this contract shall be installed in conformity with the details shown and specified, including approved submittals where applicable, and with the manufacturer's requirements. Should a manufacturer's installation recommendations conflict with specific requirements of the contract documents, the Contractor shall bring the matter to the attention of the Construction Manager. Any additional costs incurred arising out of changes authorized by the Construction Manager to accommodate manufacturer's installation recommendations will be considered extra work. Any costs incurred by the Contractor through failure to timely notify the Construction Manager of a difference between the manufacturer's installation requirements and those specified shall be borne by the Contractor. Installation certification shall be recorded on Form 11000-A specified in Section 01999 where required by the individual specification sections or prepurchase contracts assigned to the General Contractor, and delivered to the Construction Manager.

B. TESTING:

1. GENERAL REQUIREMENTS: All materials, equipment, and work included in this contract shall be tested and inspected to prove compliance with the contract documents. Unless otherwise specified, all costs of testing, including temporary facilities and connections, shall be borne by the Contractor. For the purpose of this section, equipment shall mean any mechanical, electrical, instrumentation, or other device with one or more moving parts or devices requiring an electrical, pneumatic or hydraulic connection. Installed leakage tests and other piping tests shall be as specified in Division 15. Installed tests for heating, ventilation, and air conditioning systems shall be as specified in Division 15. Installed tests for electrical and instrumentation devices and systems shall be in accordance with Divisions 16 and 17.

1.02 B. 1.

No tests specified herein shall be conducted until the item to be tested has been inspected and approval given for the conductance of such test.

Tests and inspection shall include:

1. The delivery acceptance test and inspections.
2. The installed tests and inspections of items as installed.

Tests and inspections, unless otherwise specified or accepted, shall be in accordance with the recognized standards of the industry.

The form of evidence of satisfactory fulfillment of delivery acceptance test and of installed test and inspection requirements shall be, at the discretion of the Construction Manager, either by tests and inspections carried out in his presence or by certificates or reports of tests and inspections carried out by approved persons or organizations. The Contractor shall provide and use forms which include all test information, including specified operational parameters, and shall be acceptable in content to the Construction Manager.

2. DELIVERY ACCEPTANCE TESTS AND INSPECTIONS: The delivery acceptance tests and inspections shall be at the Contractor's expense for any materials or equipment specified herein and shall include the following:

- (a) Test of items at the place of manufacture during and/or on completion of manufacture, comprising material tests, hydraulic pressure tests, electric and instrumentation subsystem tests, performance and operating tests and inspections in accordance with the relevant standards of the industry and more particularly as detailed in individual clauses of these specifications to satisfy the Construction Manager that the items tested and inspected comply with the requirements of this contract. Tests other than those specified shall be in accordance with Volume I Part A of the contract documents.
- (b) Inspection of all items delivered at the site or to any authorized place of storage in order that the Construction Manager may be satisfied that such items are of the specified quality and workmanship and are in good order and condition at the time of delivery, notwithstanding the requirements of Section 01620. To that end, the Contractor shall be prepared to remove all coverings, containers or

1.02 B. 2. b.

crates to permit the Construction Manager to conduct his inspection. Should the Construction Manager find, in his opinion, indication of damage or deficient quality of workmanship, the Contractor shall provide the necessary documentation or conduct such tests deemed necessary by the Construction Manager to demonstrate compliance. Compensation for tests and work related thereto arising out of this requirement shall be in accordance with the provisions of Volume I Part A of the contract documents.

3. INSTALLED TESTS AND INSPECTION:

a. GENERAL: All equipment shall be tested by the Contractor before any facility is put into operation. Tests shall be as specified herein and shall be made to determine whether the equipment has been properly assembled, aligned, adjusted and connected. Any changes, adjustments or replacements required to make the equipment operate as specified shall be carried out by the Contractor as part of the work.

b. PROCEDURES:

(1) GENERAL: Prior to receipt of any progress payments in excess of 60 percent of the Contractor's lump sum bid for the work, the Contractor shall submit to the Construction Manager, in quintuplicate, details of the procedures he proposes to adopt for testing and startup of all equipment to be operated singly and together, excepting when the details of such procedures have been covered in previous submittals or in the specifications.

The procedures shall be divided into three distinct stages; preoperation checkout, initial operation, and plant operational tests. Testing procedures shall be designed to duplicate, as nearly as possible, all conditions of operation and shall be carefully selected to ensure that the equipment is not damaged. Once the testing procedures have been reviewed by the Construction Manager, the Contractor shall produce checkout, alignment, adjustment and calibration signoff forms for each item of equipment to be used in the field by the Contractor and the Construction Manager jointly to ensure that each item of electrical and mechanical equipment has been properly installed and tested. Manufacturer's certifications, if specified, shall be delivered to the Construction Manager prior to initial operation of affected equipment items. The Contractor is advised that failure to observe these precautions may place the acceptability of the subject equipment in question.

1.02 B.3.b.(2)

(2) PREOPERATION CHECKOUT: The procedures shall incorporate all requirements of these specifications and shall proceed in a logical, step-wise sequence to ensure that all equipment has been properly serviced, aligned, connected, calibrated, and adjusted prior to operation. Preoperation checkout procedures shall include, but not necessarily be limited to:

- (a) Electrical and instrumentation system testing as specified in Divisions 16 and 17.
- (b) Piping system pressure testing and cleaning as specified in Division 15.
- (c) Alignment of equipment.
- (d) Preoperation lubrication.
- (e) Inspection by Manufacturer's authorized field service engineer, when specified.

(3) INITIAL OPERATION: Once all affected equipment have been subjected to the required preoperational checkout procedures and the Construction Manager has witnessed and has not found deficiencies in that portion of the work, individual systems may be started and operated under simulated operating conditions to determine as nearly as possible whether the equipment and systems meet the requirements of the contract documents. Potable water, or 3W water (plant effluent) shall be employed for the testing of all liquid systems except potable water, gaseous, oil or chemical systems. Test media for these systems shall either be the intended fluid or a compatible substitute. The equipment shall be operated a sufficient period of time to determine machine operating characteristics, including temperatures and vibration; to observe performance characteristics; and to permit initial adjustment of operating controls. When testing requires the availability of auxiliary systems such as power, flushing or cooling water, or control air which have not yet been placed in service, the Contractor shall provide acceptable substitute sources, capable of meeting the requirements of the machine, device or system, at no additional cost to the Owner. Disposal methods for test media shall be subject to review by the Construction Manager.

If under test, any portion of the work should fail to fulfill the contract requirements and is adjusted, altered, renewed or replaced, tests on that portion when so adjusted, altered, removed or replaced, together with all other portions of the work as are affected thereby, shall, if so required by the Construction Manager, be repeated within reasonable time and in accordance with the specified conditions. The Contractor shall pay to the Owner all reasonable expenses incurred by the Owner as a result of repeating such tests.

1.02 B.3.b.(3)

Once initial operation has been completed, all machines shall be rechecked for proper alignment, realigned, if necessary, and doweled in place. All equipment shall be checked for loose connections, unusual movement or other indications of improper operating characteristics. Any deficiencies shall be corrected to the satisfaction of the Construction Manager. All machines or devices which exhibit unusual or unacceptable operating characteristics shall be disassembled and inspected. They shall then be repaired, or removed from the site and replaced, at no cost to the Owner.

Test results shall be within the tolerances set forth in the contract documents, including standards referenced therein. If no tolerances have been specified, test results shall conform to tolerances established by recognized industry practice. Where, in the case of an otherwise satisfactory installed test, any doubt, dispute, or difference should arise between the Construction Manager and the Contractor regarding the test results or the methods or equipment used in the performance of such test, then the Construction Manager may order the test to be repeated. If the repeat test, using such modified methods or equipment as the Construction Manager may require, substantially confirms the previous test, then all costs in connection with the repeat test will be paid by the Owner, otherwise the costs shall be borne by the Contractor. Where the results of any installed test fail to comply with the contract requirements for such test, then such repeat tests as may be necessary to achieve the contract requirements shall be made by the Contractor at his expense.

Unless otherwise specified, the Contractor shall provide at no expense to the Owner, all power, fuel, water, utilities, supplies, labor and all other necessary items and work required to complete all tests and inspection specified in this section. Plant effluent (3W) will be available as specified in Section 01500. The Contractor shall provide at no expense to the Owner temporary heating, ventilating and air conditioning for any areas requiring it in the case where permanent facilities are not complete and operable at the time of installed tests. Temporary facilities shall be maintained until permanent systems are in service.

(4) PLANT OPERATIONAL TESTING: After completion of all installed testing and certification by the Construction Manager that all equipment complies with the requirements of the specifications, the Contractor shall fill all process units and liquid process systems, except those employing potable water, gas, oil or chemicals, with potable water or plant effluent (3W) as specified or approved by the Construction Manager. All potable water, gas, oil and chemical systems shall be filled with the specified fluids.

Upon completion of the filling operations, the Contractor shall circulate wastewater through the completed facility for a period of not less than that specified in paragraph 01660-3.01, during which

1.02 B.3.b.(4)

all systems shall be operated as a complete facility at various loading conditions, as directed by the Construction Manager. Should the operational testing period be halted for any reason related to the facilities constructed or the equipment furnished under this contract, or the Contractor's temporary testing systems, the operational testing program shall be repeated until the specified continuous period has been accomplished without interruption. All process units shall be brought to full operating conditions, including temperature, pressure, and flow.

All costs for water, fuel, power, and chemicals required during this plant operational test shall be borne by the Contractor.

5. OPERATIONAL INSTRUCTION: During the initial operation testing of equipment, the Contractor shall make available experienced factory-trained representatives of the manufacturer, as required by the contract documents, who shall assist in the startup and testing of equipment and instruct the Owner's personnel in the operation and care thereof. Instructions shall include step-by-step troubleshooting procedures with all necessary test equipment. Instruction shall be in sufficient detail to satisfy the Construction Manager the above requirements have been met. Form 11000-B specified in Section 01999 shall be completed and delivered to the Construction Manager. The instruction shall take place within a 30-day period and shall be coordinated with the Construction Manager. The Construction Manager shall be notified in writing 30 days in advance of the instruction period. All manufacturer's instructions shall be provided in writing in accordance with Section 01730.

C. COMMISSIONING:

After completion of all installed and operational testing, the Contractor shall make written application to the Construction Manager for permission to introduce wastewater into the facility and demonstrate compliance of the equipment, structures, and systems furnished under this contract with all requirements of the contract documents. Such application shall be furnished to the Construction Manager not less than 30 days prior to the date wastewater is to be released into completed portions of the facility.

Upon receipt of written permission from the Construction Manager, and on the agreed upon date, the Contractor shall do all things necessary to affect the release of wastewater into the facility and to permit the discharge of treated effluent.

The Contractor shall allow for a commissioning period as set forth in paragraph 01660-3.02 to satisfy the Construction Manager that the contract requirements have been fulfilled. The commissioning period may be broken into several segments at the discretion

1.02 C.

of the Construction Manager. All time in excess of the period specified in Part 3 (sum of segments) will be paid for as extra work provided the appropriate conditions covering delays are satisfied.

During the commissioning period, the Owner will provide a full-time (24 hours per day, 7 days per week) staff for operation and maintenance of the plant. The Contractor shall provide full-time (8 hours per day for 5 days per week) and on-call (remaining time of 24 hours, 7 days per week) coordinator service to coordinate other Contractor personnel including equipment manufacturer service representatives for trouble shooting, training of Owner personnel, or repair and maintenance of equipment within the terms of the contract. Contractor furnished personnel for troubleshooting, repair, or maintenance of equipment shall be furnished as soon as possible and in no case longer than 8 hours after notification of the Contractor's coordinator. Such coordinators shall be familiar with the plant equipment and processes and shall be acceptable to the Construction Manager. "Coordinator service" shall mean attendance at the plant for whatever period is required at whatever time necessary in response to a request from the senior operating superintendent.

The Owner will pay for all electrical power, water, chemicals, and fuel necessary for operation of the plant during commissioning.

PART 2--MATERIALS AND METHODS

2.01 MATERIALS

A. INSTALLATION:

Materials employed in the installation shall conform to the requirements of the contract documents including approved submittals where applicable, and the recommendations of the equipment manufacturers. Where conflict exists between the contract documents and the manufacturer's recommendations, the Contractor shall bring the matter to the attention of the Construction Manager and request a resolution of the conflict. Any additional costs incurred by the Contractor as the result of the Construction Manager's direction in the resolution of the conflict will be reimbursed as extra work. Any costs incurred by the Contractor, through failure to timely notify the Construction Manager of a conflict, shall be borne by the Contractor.

B. TESTING:

1. GAGES, METERS, RECORDERS AND MONITORS: Gages, meters, recorders and monitors shall be provided by the Contractor as required to supplement or augment the instrumentation system provided under this contract to properly demonstrate that all equipment fully satisfies the requirements of the contract documents.

2.01 B.1.

All devices employed for the purpose of measuring the performance of the facility's equipment and systems shall be specifically selected to provide a level of accuracy consistent with the variables to be monitored. All instruments shall be recently calibrated, and the Contractor shall be prepared at all times to demonstrate, through recalibration, the accuracy of all instruments employed for testing purposes. Calibration procedures shall be in accordance with applicable standards of ASTM, ISA and IEEE. The adequacy of all gages, meters, recorders and monitors shall be subject to review of the Construction Manager.

2. RECORDS: The Contractor shall provide signoff forms for all installed and operational testing to be accomplished under this contract. The signoff forms shall be produced in quadruplicate on pressure sensitive paper. Signoff forms shall be provided for each item of mechanical, electrical and instrumentation equipment provided or installed under this contract and shall contain provisions for recording relevant performance data for original testing and not less than three retests. Separate sections shall be provided to record values of the preoperation checkout, initials of representatives of the equipment manufacturers, the Contractor and the Construction Manager.

The Contractor shall maintain a master file of all equipment signoff sheets, which shall be available for inspection by the Construction Manager. Upon completion of testing, the Contractor shall furnish the Construction Manager with the original and two copies of the signoff sheet for each equipment item.

2.02 METHODS

A. INSTALLATION:

All equipment shall be installed by specialists properly skilled in the trades and professions required to assure first-class workmanship. Where required by the contract documents, the Contractor shall cause the installation of specific equipment items to be accomplished under the supervision of factory-trained installation specialists furnished by the equipment manufacturers. The Contractor shall be prepared to document the skills and training of all workmen engaged in the installation of all equipment furnished either by the Contractor or by system subcontractors.

B. TESTING:

Testing shall proceed on a step-by-step basis in accordance with the Contractor's written testing procedures. The Contractor's testing work shall be accomplished by a skilled team of specialists under the direction of a coordinator whose sole responsibility shall be the orderly, systematic testing of all equipment, systems, structures and the complete facility as a unit. Each individual step in the procedures shall be witnessed by a representative of the Construction Manager.

2.02 B.

During the plant operational testing period, all equipment and systems shall be operated, to the greatest extent practicable, at conditions which represent the full range of operating parameters as defined by the contract documents.

PART 3--EXECUTION

3.01 PLANT OPERATIONAL TEST

The duration of the plant operational test shall be 5 days. During that period, the Contractor shall demonstrate the operation of all equipment. Substantial completion of systems dependent upon wastewater constituents or wastewater-derived constituents shall be delayed until the plant commissioning period. Examples of these systems include, but are not limited to, the following:

1. Mechanical bar screen.
2. Grit removal system.
3. Channel agitation piping and equipment.
4. Oxidation channel and associated aeration pumps, blowers and piping.
5. Mixed liquor transfer channel, and secondary sedimentation tanks and equipment.
6. Return sludge and waste mixed liquor systems.
7. Chlorination system.
8. Effluent pumps.
9. Waste sludge thickener.

Nonetheless, the Contractor shall operate these systems using potable water, air, or the testing medium specified, as an initial step in the operational testing process.

3.02 PLANT COMMISSIONING

Plant commissioning period for each portion of the plant, system, or subsystem shall be 30 days, commencing not before the date of substantial completion of each portion of the plant, system or subsystem. Plant commissioning shall provide for not less than 14 days during which the entire facility shall be operated as a

3.02

unit producing treated effluent. The Contractor is advised that the oxidation channel will require approximately 30 days of continuous operation on wastewater to establish itself biologically before treated effluent can be produced and released from the plant. Final acceptance of any individual unit will not be made until the total facility is accepted.

****END OF SECTION****

SECTION 01700

RESTORATION OF IMPROVEMENTS

1.0 STRUCTURES

The Contractor shall remove such existing structures, including curbs, gutters, pipelines and utility poles, as may be necessary for the performance of the work and shall rebuild the structures thus removed in as good a condition as found with the requirements specified. He shall also repair existing structures which may be damaged as a result of the work under this contract.

2.0 ROADS AND STREETS

Unless otherwise specified, roads and streets in which the surface is removed, broken, or damaged, or in which the ground has caved or settled as a result of the work under this contract, shall be resurfaced and brought to the original grade and section. Roadways used by the Contractor shall be cleaned and repaired. Before resurfacing material is placed, edges of pavements shall be saw cut back far enough to provide clean, solid, vertical faces, and shall be free of loose material. Repair work shall conform to the paving specifications.

3.0 CULTIVATED AREAS AND OTHER SURFACE IMPROVEMENTS

Cultivated or planted areas and other surface improvements which are damaged by actions of the Contractor shall be restored as nearly as possible to their original condition.

Existing guard posts, barricades, and fences shall be protected and replaced if damaged by the Contractor's operations.

4.0 PROTECTION OF EXISTING INSTALLATIONS

The Contractor shall immediately correct or replace existing equipment, controls or systems which are damaged as a result of his operations.

****END OF SECTION****

SECTION 01710

FINAL CLEANUP

As a condition precedent to final acceptance or release of a structure, space or process unit for use by the Owner, the Contractor shall thoroughly clean all floors, walls, doors, and windows to leave same in first-class condition.

All pits and sumps shall be cleared of silt, sand, debris and construction materials. Ductwork air intakes and exhaust grilles shall be inspected and cleared of extraneous material, and all grounds shall be cleared of all debris. Finished floors shall be thoroughly cleaned and sealed.

****END OF SECTION****

SECTION 01720

RECORD DRAWINGS

Record documents refer to those documents maintained and annotated by the Contractor during construction and are defined as (1) a neatly and legibly marked set of contract drawings showing the final location of piping, equipment, electrical conduits, outlet boxes and cables; (2) additional documents such as schedules, lists, drawings, and electrical and instrumentation diagrams included in the specifications; and (3) Contractor layout and installation drawings.

Unless otherwise specified, record drawings shall be full size and maintained in a clean, dry, and legible condition. Record documents shall not be used for construction purposes and shall be available for review by the Construction Manager during normal working hours at the Contractor's field office. Marking of the drawings shall be kept current and shall be done at the time the material and equipment are installed. Annotations to the record documents shall be made with an erasable colored pencil conforming to the following color code:

Additions - Red
Deletions - Green
Comments - Blue
Dimensions - Graphite*

*Legibly mark to record actual depths, horizontal and vertical location of underground raceways, cables, and appurtenances referenced to permanent surface improvements.

END OF SECTION

SECTION 01730

OPERATING AND MAINTENANCE INFORMATION

1.0 SCOPE

Where specified, operating and maintenance information shall be provided in accordance with paragraph 00710-4.02 and shall consist of the names and addresses of the manufacturer, the nearest representative of the manufacturer, and the nearest supplier of the manufacturer's equipment and parts. In addition, one or more of the following items of information will be provided when specified.

1. Lubrication Information: This shall consist of the manufacturer's recommendations regarding the lubricants to be used and the lubrication schedule to be followed.
2. Control Diagrams: Diagrams shall show internal and connection wiring.
3. Start-Up Procedures: These instructions consist of equipment manufacturer's recommendations for installation, adjustment, calibration, and troubleshooting.
4. Operating Procedures: These instructions consist of the equipment manufacturer's recommended step-by-step procedures for starting, operating, and stopping the equipment under specified modes of operation.
5. Preventive Maintenance Procedures: These instructions consist of the equipment manufacturer's recommended steps and schedules for maintaining the equipment.
6. Overhaul Instructions: These instructions consist of the manufacturer's directions for the disassembly, repair and reassembly of the equipment and any safety precautions that must be observed while performing the work.
7. Parts List: This list consists of the generic title and identification number of each component part of the equipment.
8. Spare Parts List: This list consists of the manufacturer's recommendations of number of parts which should be stored by the Owner and any special storage precautions which may be required.

9. Exploded View: Exploded or cut views of equipment shall be provided if available as a standard item of the manufacturer's information. When exploded or cut views are not available, plan and section views shall be provided with detailed callouts.
10. Specific Information: Where items of information not included in the above list are required, they will be provided as described in the specification for the equipment.
11. Equipment Data: Information listed on the Equipment Maintenance Summary Form shown in Section 01999 shall be provided.

2.0 TRANSMITTAL PROCEDURE

Three copies of the specified operating and maintenance information shall be provided. For ease of identification, each manufacturer's brochure and manual shall be appropriately labeled with the equipment name and equipment number as it appears in the project manual. The information shall be organized in the binders in numerical order by the equipment numbers assigned in the project manual. The binders shall be provided with a table of contents and tab sheets to permit easy location of desired information. Each numerical section shall contain a complete itemized data list with equipment name and equipment number for the information contained in that section. Binders shall be of the three-post type with metal piano hinges, back and locking slide bar assembly and be capable of extending to a maximum of 6 inches but used as 4-inch binders. All binders shall be similar and be National 98-381, Wilson Jones catalog covers No. 564-64 LH, or equal.

If manufacturer's standard brochures and manuals are used to describe operating and maintenance procedures, such brochures and manuals shall be modified to reflect only the model or series of equipment used on this project. Extraneous material shall be crossed out neatly or otherwise annotated or eliminated.

3.0 PAYMENT

Acceptable operating and maintenance information shall be delivered to the Construction Manager before the Contractor will be paid for more than 80 percent of the purchase value of that equipment. Purchase value shall be the net price for the equipment as given on the invoice. Acceptable operating and maintenance information for the project must be delivered to the Construction Manager prior to the project being 75 percent complete. Progress payments for work in excess of 75 percent completion will not be made until the specified acceptable operating and maintenance information has been delivered to the Construction Manager.

4.0

4.0 FIELD CHANGES

Following the acceptable installation and operation of an equipment item, the item's instructions and procedures shall be modified and supplemented by the Contractor to reflect any field changes or information requiring field data.

END OF SECTION

01730-3

SECTION 01800

ENVIRONMENTAL CONDITIONS

This section describes environmental conditions observed at the site of the work and which may reasonably be anticipated throughout the life of the project.

The site of the work is at an elevation of 930 feet above mean sea level. The site, within the influence of a desert environment, is affected by windblown sand. The plant will treat moderate strength municipal wastewater flowing in open channels and pipelines. Conditions are described as follows:

| <u>Description</u> | <u>Range of Conditions</u> |
|--|----------------------------|
| Winter | Mild |
| Summer | Hot, dry, sunny |
| Relative humidity (indoors), percent | 10 to 70 |
| Relative humidity (outdoors), percent | 10 to 100 |
| Air temperature, degrees F | 30 to 120 |
| Average wind speed, mph | 6.3 |
| General wind direction | West, southwest |
| Wastewater temperature, degrees F | 65 to 95 |
| Temperature in enclosed spaces, degrees F | 40 to 120 |

Additional conditions which may be applicable are specified in other sections.

END OF SECTION

SECTION 01999

REFERENCE FORMS

The forms listed below and included in this section are referenced from other sections of the project manual:

| <u>Form No.</u> | <u>Title</u> |
|-----------------|---|
| 01300-A | Submittal Transmittal Form |
| 01730-A | Equipment Maintenance Summary Form |
| 11000-A | Manufacturer's Installation Certification Form |
| 11000-B | Manufacturer's Instruction Certification Form |
| 11060-A | Motor Data Form |
| 16000-A | Wire and Cable Resistance Test Data Form |
| 16000-B | Installed Motor Test Data Form |
| 16000-C | Dry Transformer Test Data Form |
| 16000-D | Motor Control Center Test Form |
| 16000-H | Low Voltage Switchgear Test Form |
| 17000-A | Loop Wiring and Insulation Resistance Test Data Form |
| 17000-B | Control Circuit Piping Leak Test Form |
| 17000-C | Controller Calibration Test Data Form |
| 17000-D | Panel Indicator Calibration Test Data Form |
| 17000-E | Recorder Calibration Test Data Form |
| 17000-F | Signal Trip Calibration Test Data Form |
| 17000-G | Field Switch Calibration Test Data Form |
| 17000-H | Transmitter Calibration Test Data Form |
| 17000-I | Miscellaneous Instrument Calibration Test Data Form |
| 17000-J | Individual Loop Test Data Form |
| 17000-K | Loop Commissioning Test Data Form |

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01300-A. SUBMITTAL TRANSMITTAL FORM:

Date: _____ Submittal No:^a _____
To: _____ Contract No: _____
_____ Spec. Section: _____
_____ From: _____

Attention: _____

The following material is transmitted for submittal review:

| <u>No.</u> | <u>Date</u> | <u>Copies</u> | <u>Description/Equipment No></u> |
|------------|-------------|---------------|-------------------------------------|
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |

We have verified that the material transmitted herein is in compliance with the specifications:

_____ with no exceptions

_____ except for the following deviations

| <u>No.</u> | <u>Deviation</u> |
|------------|------------------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

Contractor's Signature

^aSee paragraph 01300-3.0, Transmittal Procedure.

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

01730-A. EQUIPMENT MAINTENANCE SUMMARY FORM:^a

Contract No. _____ Equipment No. _____

Specification Section: _____ Instrumentation Diagram No. _____

Equipment Name _____

Manufacturer _____

Address _____

Service Representative _____

Address _____ Phone _____

Plant Location or Service _____

Make _____ Model _____

Serial No. _____ Type _____

Size _____

Input Characteristics _____

Output Characteristics _____

Speed _____ Service Factor _____

Capacity _____

Material _____

Operating Range _____

Alarm _____ Alarm Diagram Symbol _____

Alarm _____ Alarm Diagram Symbol _____

Auto Reset _____

Coupling Ratio _____

^aComplete as applicable, attach supplementary pages as necessary.

Equipment Maintenance Summary
Sheet 1 of 3

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

Maintenance Requirements

(Use additional sheets if more space is needed.)

Lubrication

| <u>Item</u> | <u>Generic Type of Lubricant</u> | <u>Supplier</u> | <u>Selected Supplier^b</u> | <u>Frequency</u> | <u>Estimated Annual Quantity</u> |
|-------------|--------------------------------------|-----------------|--|------------------|--|
|-------------|--------------------------------------|-----------------|--|------------------|--|

^bTo be determined by Owner.

Preventive Maintenance

| <u>Item</u> | <u>Action</u> | <u>Frequency</u> | <u>Reference</u> |
|-------------|---------------|------------------|------------------|
|-------------|---------------|------------------|------------------|

Suggested Minimum Spare Parts List

| <u>Mfg.</u> | <u>Part Number</u> | <u>Qty. Unit</u> | <u>Description</u> |
|-------------|--------------------|------------------|--------------------|
|-------------|--------------------|------------------|--------------------|

Equipment Maintenance Summary
Sheet 2 of 3

CITY OF AVONDALE
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The following information is provided:

Check or
mark N/A

1. Recommended installation, adjustment, calibration and troubleshooting. _____
2. Complete internal and connection wiring diagrams. _____
3. Complete parts lists, by generic title and identification number, with exploded views of each assembly. _____
4. Disassembly, overhaul and reassembly instructions. _____
5. Recommended prestart checks. _____
6. Recommended start procedure. _____
7. Recommended shutdown procedure for both short and long term. _____
8. Recommended operating precautions that include safety for personnel and equipment. _____
9. Recommended standing maintenance procedure. _____

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11000-A. MANUFACTURER'S INSTALLATION CERTIFICATION FORM:

Contract No: _____ Specification Section: _____

Equipment name: _____

Contractor: _____

Manufacturer of equipment item: _____

The undersigned manufacturer of the equipment item described above hereby certifies that he has checked the installation of the equipment and that the equipment, as specified in the project manual, has been installed in accordance with the manufacturer's recommendations and that the trial operation of the equipment item has been satisfactory.

Comments: _____

Date

Manufacturer

Signature of
Authorized Representative

Date

General Contractor

Signature of
Authorized Representative

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

11000-B. MANUFACTURER'S INSTRUCTION CERTIFICATION FORM:

Contract No.: _____ Specification Section: _____

Equipment name: _____

Contractor: _____

Manufacturer of equipment item: _____

The undersigned manufacturer certifies that a service engineer has instructed the wastewater treatment plant operating personnel in the proper maintenance and operation of the equipment designated herein.

Operations Check List (check appropriate spaces)

| | |
|-------------------------------------|-------|
| Start-up procedure reviewed | _____ |
| Shutdown procedure reviewed | _____ |
| Normal operation procedure reviewed | _____ |
| Others: _____ | _____ |
| _____ | _____ |
| _____ | _____ |

Maintenance Check List (check appropriate spaces)

| | |
|--|-------|
| Described normal oil changes (frequency) | _____ |
| Described special tools required | _____ |
| Described normal items to be reviewed for wear | _____ |
| Described preventive maintenance instructions | _____ |
| Described greasing frequency | _____ |
| Others: _____ | _____ |
| _____ | _____ |
| _____ | _____ |

Date

Manufacturer

Signature of
Authorized Representative

Date

Signature of
Owner's Representative

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

11060-A. MOTOR DATA FORM:

Equipment Name _____ Equipment Number(s) _____
Site Location _____
Nameplate Markings

Mfr _____ Mfr Model _____ Frame _____ HP _____
Volts _____ Phase _____ RPM _____ Service factor _____
FLA _____ LRA _____ Freq _____ Ambient temp rating _____ °C
Time rating _____ Design letter _____
(NEMA MG1-10.35) (NEMA MG1-1.16)
KVA code letter _____ Insulation class _____

The following information is required for explosionproof motors only:

- A. Approved by UL for installation in Class _____, Div _____
B. UL frame temperature code _____; Group _____ Atmosphere
(NEC Tables 500-2 and 500-2(b))

The following information is required for high efficiency motors only:

- A. Guaranteed minimum efficiency at full load or NEMA efficiency index _____
(NEMA MG1-12.53b)
B. Nameplate or nominal efficiency _____

Data Not Necessarily Marked on Nameplate

Type of enclosure _____ Enclosure material _____
Temp rise _____ °C (NEMA MG1-12.41,42)
Space heater included? ___ Yes ___ No; if Yes, ___ watts ___ volts
Type of motor winding overtemperature protection, if specified:

Use the space below to provide additional information on other motor modifications, if specified:

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16000-A. WIRE AND CABLE RESISTANCE TEST DATA FORM:

Wire or Cable No.: _____

Temperature, °F _____

Location of Test

Insulation
Resistance,
megohms

1.

2.

3.

4.

5.

6.

7.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

16000-B. INSTALLED MOTOR TEST FORM:

Motor Equipment Number _____ Date of test _____

Equipment Driven _____

MCC Location _____

Ambient temp _____ °F

Resistance:

Insulation resistance phase-to-ground megohms:

Phase A _____, Phase B _____, Phase C _____

Current at Full Load:

Phase _____ Current, amps _____

Phase _____ Current, amps _____

Phase _____ Current, amps _____

Thermal Overload Device: Manufacturer/catalog # _____ Amperes _____

Circuit breaker (MCP) setting: _____

Motor Nameplate Markings:

Mfr _____ Mfr type _____ Frame _____ HP _____

Volts _____ Phase _____ RPM _____ **Service factor _____

Amps _____ Freq _____ Ambient temp rating _____ °C

Time rating _____ **Design letter _____
(NEMA 1-10.35) (NEMA MG1-1.16)

Code letter _____ Insulation class _____

**Required for 3-phase squirrel cage induction motors only.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

16000-C. DRY TRANSFORMER TEST DATA FORM:

Equipment No. _____ Temperature _____

Location _____

Winding: Primary _____ Secondary _____

A. INSULATION-RESISTANCE TEST:

The test shall be made with a megohmmeter at the test voltage for a period of 1 minute.

| Voltage rating | Test voltage | Test results (megohms) | |
|----------------|--------------|------------------------|-----------|
| | | Phase | Phase |
| 0-600 | 1000 | A-GRD _____ | A-B _____ |
| 601-5000 | 2500 | B-GRD _____ | B-C _____ |
| 5000+ | 5000 | C-GRD _____ | C-A _____ |

Resistance readings less than the manufacturer's recommended value or less than 10 megohms shall be brought to the attention of the Construction Manager.

B. DIELECTRIC-ABSORPTION TEST:

The test shall be made with a megohmmeter at the test voltage for a period of 10 minutes.

1. TEST RESULTS:
(Megohms)

| Phase | Phase |
|-------------|-----------|
| A-GRD _____ | A-B _____ |
| B-GRD _____ | B-C _____ |
| C-GRD _____ | C-A _____ |

2. POLARIZATION INDEX:

$\frac{\text{Ten minute reading}}{\text{One minute reading}} = \text{polorization index}$
(from paragraph "A" above)

| Phase | Phase |
|-------------|-----------|
| A-GRD _____ | A-B _____ |
| B-GRD _____ | B-C _____ |
| C-GRD _____ | C-A _____ |

Polorization index values less than 2 shall be brought to the attention of the Construction Manager.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

16000-D. MOTOR CONTROL CENTER TEST FORM:

Equipment No. _____ Ambient room temperature _____

Location _____

A. MECHANICAL CHECK:

All bolted connections either bus to bus or cable to bus shall be torqued to the manufacturer's recommendations.

B. ELECTRICAL TESTS:

1. Measure insulation resistance of each bus section phase to phase and phase to ground for 1 minute using a megohmmeter at 1000 volts.

Test results (megohms)

| <u>Phase</u> | <u>Phase</u> |
|--------------|--------------|
| A-GRD _____ | A-B _____ |
| B-GRD _____ | B-C _____ |
| C-GRD _____ | C-A _____ |

2. Set the circuit breaker in the starter unit to comply with the requirements of NEC, Article 430-52 and table 430-152.
3. Motor overload heater elements shall be sized and installed based on the actual nameplate full load amperes of the motor connected to the starter.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

16000-H. LOW VOLTAGE SWITCHGEAR TEST FORM:

Equipment No. _____

Location _____

Room Temperature _____

The protective devices shall be set in accordance with the specification before the tests are performed.

1. Measure contact resistance (micro-ohms)

Phase: A _____ B _____ C _____

Contacts shall be replaced if resistance exceeds 50 micro-ohms.

2. Perform an insulation resistance test (1000 volts DC for 1 minute).

| <u>Phase</u> | <u>A</u> | <u>B</u> | <u>C</u> | |
|------------------|----------|----------|----------|---------|
| Pole to ground | _____ | _____ | _____ | megohms |
| Across open pole | _____ | _____ | _____ | megohms |
| Pole to pole | AB _____ | BC _____ | CA _____ | megohms |

3. Minimum pickup current shall be determined by primary current injection.
4. Long time delay shall be determined by primary injection at three hundred percent (300%) pickup current.
5. Short time pickup and time delay shall be determined by primary injection of current.
6. Instantaneous pickup current shall be determined by primary injection.
7. Trip unit reset characteristics shall be verified.
8. Auxiliary protective devices, such as ground fault or under voltage relays, shall be activated to insure operation of shunt trip devices.

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17000-A. LOOP WIRING AND INSULATION RESISTANCE TEST DATA FORM:

Loop No.:

List all wiring associated with a loop in table below. Make applicable measurements as indicated after disconnecting wiring.

| Wire No. | Panel Tie | Field TB | Continuity Resistance ^a | | Insulation Resistance ^b | | | |
|----------|-----------|----------|------------------------------------|---------------|------------------------------------|---------------|-------------|----------------|
| | | | Cond./ Cond. | Cond./ Shield | Shield/ Gnd. | Shield/ Cond. | Cond./ Gnd. | Shield/ Shield |
| A | | | -- | (A/SH) | | | | |
| B | | | (A/B) | -- | | | | |
| C | | | (A/C) | -- | | | | |
| D | | | (A/D) | -- | | | | |
| etc. | | | | | | | | |

a. Continuity Test. Connect ohmmeter leads between wires A and B and jumper opposite ends together. Record resistance in table. Repeat procedure between A and C, A and D, etc. Any deviation of +2 ohms between any reading and the average of a particular run indicates a poor conductor, and corrective action shall be taken before continuing with the loop test.

b. Insulation Test. Connect one end of a 500 volt megger to the panel ground bus and the other sequentially to each completely disconnected wire and shield. Test the insulation resistance and record each reading.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

17000-B. CONTROL CIRCUIT PIPING LEAK TEST FORM:

Loop No.:

List tubing associated with loop in table below. Make applicable measurements after isolating any air consuming pilots from circuit.

| <u>Tube No.</u> | <u>Tubing Equivalent Length of 1/4-Inch Copper^a</u> | <u>Test Period (seconds)</u> | <u>Permitted Pressure Drop (psi)^b</u> | <u>Measured Pressure Drop (psi)</u> |
|-----------------|--|------------------------------|--|-------------------------------------|
| A | | | | |
| B | | | | |
| C | | | | |
| D | | | | |
| etc. | | | | |

a. Convert actual tubing and air motor volume to equivalent 1/4-inch copper tubing.

b. Pressure drop shall not exceed 1 psi per hundred feet 1/4-inch tubing per 5 seconds.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

17000-C. CONTROLLER CALIBRATION TEST DATA FORM:

Tag No. and Description: _____

Make and Model No.: _____ Serial No.: _____

Input: _____ Process Variable (PV) Scale: _____

Output: _____ Output Scale: _____

PV Scale Calibration

| <u>% of Range</u> | <u>Input</u> | <u>Expected Reading</u> | <u>Actual Reading</u> | <u>% Deviation</u> |
|-------------------|--------------|-------------------------|-----------------------|--------------------|
|-------------------|--------------|-------------------------|-----------------------|--------------------|

0
50
100

% Deviation Allowed: _____

Connect output to PV for following tests:

| <u>SP</u> | <u>Set Point (SP) Indicator Accuracy</u> | | <u>Output Meter Accuracy</u> | | | <u>Controller Accuracy</u> | | |
|-----------------------|--|-----------------------|----------------------------------|---------------------------|-----------------------|----------------------------|--------------------------|---------------|
| | <u>PV Reading</u> | <u>% Dev.</u> | <u>Expected Reading</u> | <u>Actual Reading</u> | <u>% Dev.</u> | <u>Expected Output</u> | <u>Actual Output</u> | <u>% Dev.</u> |
| (0%) | | | 0% | | | | | |
| (50%) | | | 50% | | | | | |
| (100%) | | | 100% | | | | | |
| % Dev. Allowed: _____ | | % Dev. Allowed: _____ | | | % Dev. Allowed: _____ | | | |

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

17000-D. PANEL INDICATOR CALIBRATION TEST DATA FORM:

Tag No. and Description: _____

Make and Model No.: _____ Serial No.: _____

Input: _____

Scale: _____ Range: _____

PV Scale Calibration

| <u>% of Range</u> | <u>Input</u> | <u>Expected Reading</u> | <u>Actual Reading</u> | <u>% Deviation</u> |
|-------------------|--------------|-------------------------|-----------------------|--------------------|
| 0 | | | | |
| 50 | | | | |
| 100 | | | | |

% Deviation Allowed: _____

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

17000-E. RECORDER CALIBRATION TEST DATA FORM:

Tag No. and Description: _____

Make and Model No.: _____ Serial No.: _____

Input: _____ Chart: _____

Scale: _____ Range: _____

| <u>% of Range</u> | <u>Input</u> | <u>Expected Scale Reading</u> | <u>Actual Scale Reading</u> | <u>% Deviation</u> |
|-------------------|--------------|-----------------------------------|---------------------------------|--------------------|
| 0 | | | | |
| 50 | | | | |
| 100 | | | | |

% Deviation Allowed: _____

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

17000-F. SIGNAL TRIP CALIBRATION TEST DATA FORM:

Tag No. and Description: _____

Make and Model No.: _____ Serial No.: _____

Input: _____

Scale: _____ Range: _____

Set Point(s): _____

After setting set point(s), run signal input through entire range and calculate deadband.

| <u>Set Point</u> | <u>Incr. Input Trip Point</u> | <u>Decr. Input Trip Point</u> | <u>Calc. Deadband</u> | <u>Required Deadband</u> |
|------------------|-----------------------------------|-----------------------------------|---------------------------|------------------------------|
|------------------|-----------------------------------|-----------------------------------|---------------------------|------------------------------|

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

17000-G. FIELD SWITCH CALIBRATION TEST DATA FORM:

Tag No. and Description: _____

Make and Model No.: _____ Serial No.: _____

Input: _____

Range: _____

Set Point(s): _____

Simulate process variable (flow, pressure, temperature, etc.) and set desired set point(s). Run through entire range of switch and calculate deadband.

| <u>Set Point</u> | <u>Incr. Input Trip Point</u> | <u>Decr. Input Trip Point</u> | <u>Calc. Deadband</u> | <u>Required Deadband</u> |
|------------------|-----------------------------------|-----------------------------------|---------------------------|------------------------------|
|------------------|-----------------------------------|-----------------------------------|---------------------------|------------------------------|

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

17000-H. TRANSMITTER CALIBRATION TEST DATA FORM:

Tag No. and Description: _____

Make and Model No.: _____ Serial No.: _____

Input: _____

Output: _____

Range: _____ Scale: _____

Simulate process variable (flow, pressure, temperature, etc.) and measure output with appropriate meter.

| <u>% of Range</u> | <u>Input</u> | <u>Expected Output</u> | <u>Actual Output</u> | <u>% Deviation</u> |
|-------------------|--------------|------------------------|----------------------|--------------------|
| 0 | | | | |
| 50 | | | | |
| 100 | | | | |

% Deviation Allowed: _____

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

17000-I. MISCELLANEOUS INSTRUMENT CALIBRATION TEST DATA FORM:

(For instruments not covered by any of the preceding test forms,
the Contractor shall create a form containing all necessary
information and calibration procedures.)

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

17000-J. INDIVIDUAL LOOP TEST DATA FORM:

Loop No.:

Description: (Give complete description of loop's function
using tag nos. where appropriate.)

P&ID No.: (Attach copy of P&ID.)

- a. Wiring tested:
(Attach test form 17000-A)
- b. Instrumentation tubing/piping tested:
(Attach test form 17000-B)
- c. Instruments calibrated:
(Attach test forms 17000-C through I)
- d. List step-by-step procedures for testing loop
parameters. Test loop with instruments, including
transmitters and control valves, connected and functioning.
If it is not possible to produce a real process variable,
then a simulated signal may be used with the Construction
Manager's approval.

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

CITY OF AVONDALE
WASTEWATER TREATMENT PLANT

17000-K. LOOP COMMISSIONING TEST DATA FORM:

Loop No.:

- a. Loop tested:
(Attach test form 17000-J)
- b. Controlled or connected equipment tests confirmed:
- c. Give complete description of loop's interface with process.
- d. With associated equipment and process in operation, provide annotated chart trace of loop response to changes in set points for verification of performance. This chart should demonstrate 1/4-amplitude damping as output adjusts to set point change. Show set points, starting and finishing times on chart, as well as any other pertinent data.

Connect 2-pen recorder to process variable (PV) and to controller output. Use 1 inch/second chart speed.

Pen 1 - PV - Connections:

Pen 2 - Output - Connections:

CERTIFIED _____
Contractor's Representative

Date _____

WITNESSED _____
Owner's Representative

Date _____

DIVISION 2

SITework

| <u>Section</u> | <u>Title</u> |
|----------------|--------------------------------------|
| 02100 | SITE PREPARATION |
| 02200 | EARTHWORK |
| 02281 | TERMITE CONTROL |
| 02327 | JACKED CASINGS |
| 02445 | CHAIN LINK FENCE |
| 02447 | ORNAMENTAL FENCE |
| 02500 | PAVING |
| 02805 | POLYVINYL CHLORIDE PROTECTIVE LINING |
| 02810 | IRRIGATION SYSTEM |
| 02900 | LANDSCAPE CONSTRUCTION |

SECTION 02100
SITE PREPARATION

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies site preparation which consists of clearing, grubbing and demolition.

1.02 QUALITY ASSURANCE

A. GENERAL:

All work shall be performed in accordance with local building codes, applicable state industrial safety provisions, and the requirements of the Occupational Safety and Health Act.

B. EXISTING CONDITIONS:

The Contractor shall determine the actual condition of the site as it affects this portion of work.

C. PROTECTION:

Site preparation shall not damage structures, landscaping or vegetation adjacent to the site. The Contractor shall repair, or replace any damaged property.

PART 2--EXECUTION

2.01 GENERAL

The Contractor shall notify the Construction Manager when site preparation is complete. Further work shall not be started until the conditions of paragraph 02100-2.02 are satisfied.

2.02 PERFORMANCE

A. CLEARING AND GRUBBING:

Unless otherwise specified, the Contractor shall remove obstructions such as brush, trees, logs, stumps, roots, heavy sod, vegetation, rock, stones larger than 6 inches in any dimension, broken or old concrete and pavement, debris, and structures where the completion of the work require their removal.

Topsoil removed during site preparation shall be stockpiled on site for use in landscaping.

2.02

Material that is removed and is not to be incorporated in the work shall be disposed of off the site.

B. DEMOLITION AND REMOVAL:

1. STRUCTURES: Demolition and removal of structures consist of removal of abandoned superstructures, foundation walls, footings, slabs and any other structures. Excavations caused by existing foundations shall be cleared of waste, debris and loose soil, and refilled as specified.

Unless otherwise shown or specified in Section 02050 or elsewhere, demolition of structures shall be carried to at least 24 inches below finished grade or the foundation of the new structure to be constructed at the same location. Where adjoining structures are to be kept in place, the demolition limit lines shall be neatly saw cut. Sections to be removed shall be broken out, and the remaining face shall be chipped back to the saw-cut line. The Contractor shall do the necessary work to provide the remaining face with a like finish compatible with surrounding surfaces.

2. PAVEMENT: When portions of asphalt pavements and concrete pads are to be removed and later construction is to be connected, edges shall be saw cut, on a neat line at right angles to the curb face.

3. SALVAGE: The Owner has the right to salvage any items scheduled for removal. The Contractor shall notify the Construction Manager 5 days prior to any salvage or demolition work to determine the disposition of items to be removed. The Construction Manager will mark items to be salvaged. Such items shall be properly disconnected, removed from their foundations, cleaned, and stored at a location on the plant site designated by the Owner.

C. UTILITY INTERFERENCE:

Where existing utilities interfere with the prosecution of the work, the Contractor shall relocate them in accordance with paragraph 00710-3.03 C.

2.03 REMOVED MATERIAL AND DEBRIS

All removed material not designated for salvage and all debris shall become the property of the Contractor and shall be removed from the site and disposed of in accordance with applicable laws.

Materials and debris generated by demolition activities shall not be allowed to accumulate. Debris shall be removed daily and disposed of in a manner allowed by law.

****END OF SECTION****

SECTION 02200

EARTHWORK

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies earthwork which consists of excavation, filling, grading, and excess material control.

1.02 DEFINITIONS

A. COMPACTION:

The degree of compaction is specified as percent compaction. Maximum or relative densities refer to dry soil densities obtainable at optimum moisture content.

B. EXCAVATION SLOPE:

Excavation slope shall be defined as an inclined surface formed by removing material from below existing grade.

C. EMBANKMENT SLOPE:

Embankment slope shall be defined as an inclined surface formed by placement of material above existing grade.

1.03 QUALITY ASSURANCE

A. REFERENCES:

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|------------------|--|
| ASTM C136-84a | Standard Method for Sieve Analysis of Fine and Coarse Aggregates |
| ASTM D1556-82 | Test for Density of Soil in Place by the Sand-Cone Method |
| ASTM D1557-78 | Tests for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.5-kg) Rammer and 18-in. (457-mm) Drop |

1.03 A.

| <u>Reference</u> | <u>Title</u> |
|------------------|--|
| ASTM D3017-78 | Test for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth) |

B. TESTS:

The Construction Manager will take samples and perform moisture content, gradation, compaction, and density tests during placement of backfill materials to check compliance with these specifications. The Contractor shall remove surface material at locations designated by the Construction Manager and provide such assistance as necessary for sampling and testing. Retesting of fill materials shall comply with paragraph 00710-4.06 B. The Construction Manager may direct the Contractor to construct inspection trenches in compacted or consolidated backfill to determine that the Contractor has complied with these specifications. Payment for inspection trenches shall be as specified in paragraph 00710-4.06 A.

Tests will be made by the Construction Manager in accordance with the following:

| <u>Test</u> | <u>Standard Procedure</u> |
|--------------------------------|---------------------------|
| Moisture content | ASTM D3017 |
| Gradation | ASTM C136 |
| Density in-place | ASTM D1556 |
| Moisture-density relationships | ASTM D1557 |

C. SUBMITTALS:

Samples of fill materials to be used shall be submitted 60 days in advance of use. Samples shall consist of 0.5 cubic feet of each type of material. Retesting of fill materials shall comply with paragraph 00710-4.06 B.

PART 2--MATERIALS

2.01 FILL MATERIALS

A. TYPE A:

Type A material shall be a clean gravel-sand mixture free from organic matter. The material shall have a minimum sand equivalent value of 50, and shall conform to the following gradation:

2.01 A.

| <u>U.S. standard sieve size</u> | <u>Percent by weight passing</u> |
|-------------------------------------|--------------------------------------|
| 3/4 inch | 100 |
| 3/8 inch | 70-100 |
| No. 4 | 55-100 |
| No. 10 | 35-95 |
| No. 20 | 20-80 |
| No. 40 | 10-55 |
| No. 100 | 0-2 |

B. TYPE B: NOT IN CONTRACT

C. TYPE C:

Type C material shall be unclassified material which is free from peat, wood, roots, bark, debris, garbage, rubbish or other extraneous material. The maximum size of stone shall not exceed 6 inches. If the material excavated from the site meets these requirements, it may be classified as Type C.

D. TYPE D:

Type D material shall be granular material commonly known as pea gravel and shall conform to the following gradation:

| <u>U.S. standard sieve size</u> | <u>Percent by weight passing</u> |
|-------------------------------------|--------------------------------------|
| 1/2 inch | 100 |
| 1/4 inch | 0-10 |
| No. 8 | 0-5 |

E. TYPE E:

Type E material shall be crushed rock or river run stone commonly known as drain rock and shall conform to the following gradation:

| <u>U.S. standard sieve size</u> | <u>Percent by weight passing</u> |
|-------------------------------------|--------------------------------------|
| 1-1/2 inch | 100 |
| 3/4 inch | 30-75 |
| 1/2 inch | 15-55 |
| 1/4 inch | 0-5 |

Type E material shall be composed of hard, durable, sound pieces having a specific gravity of not less than 2.65

2.01 F.

F. TYPE F:

Type F material shall be crushed rock or river run stone and shall conform to the following gradation:

| <u>U.S. standard sieve size</u> | <u>Percent by weight passing</u> |
|-------------------------------------|--------------------------------------|
| 1-1/2 inch | 87-100 |
| 3/4 inch | 45-90 |
| No. 4 | 20-50 |
| No. 30 | 6-29 |
| No. 200 | 0-12 |

Type F material shall be composed of hard, durable, sound pieces having a specific gravity of not less than 2.65.

G. TYPE G:

Type G material shall be pervious backfill. Pervious backfill material shall conform to the following gradation:

| <u>U.S. standard sieve size</u> | <u>Percent by weight passing</u> |
|-------------------------------------|--------------------------------------|
| 2 inch | 100 |
| No. 50 | 0-100 |
| No. 100 | 0-8 |
| No. 200 | 0-4 |

H. TYPE H:

Type H material shall be 6-inch riprap. Riprap shall be graded rock having a range of individual rock weights as follows:

| <u>Weight of stone</u> | <u>Percent smaller by weight</u> |
|------------------------|--------------------------------------|
| 10 pounds | 100 |
| 5 pounds | 80-100 |
| 2 pounds | 45-80 |
| 1 pound | 15-45 |
| 1/2 pound | 5-15 |
| Below 1/2 pound | 0-5 |

Specific gravity shall be between 2.5 and 2.82.

2.02 I.

I. TYPE I: NOT IN CONTRACT

J. TYPE J: NOT IN CONTRACT

PART 3--EXECUTION

3.01 GENERAL

A. CONTROL OF WATER:

The Contractor shall keep excavations reasonably free from water during construction. The static water level shall be drawn down a minimum of 1 foot below the bottom of excavations to maintain the undisturbed state of natural soils and allow the placement of any fill to the specified density. Disposal of water shall not damage property or create a public nuisance. The Contractor shall have on hand pumping equipment and machinery in good working condition for emergencies and shall have workmen available for its operation. Dewatering systems shall operate continuously until backfill has been completed to 1 foot above the normal static groundwater level.

Groundwater shall be controlled to prevent softening of the bottom of excavations, or formation of "quick" conditions. Dewatering systems shall not remove natural soils. The Contractor shall control surface runoff to prevent entry or collection of water in excavations.

Release of groundwater to its static level shall be controlled to prevent disturbance of the natural foundation soils or compacted fill and to prevent flotation or movement of structures or pipelines.

B. OVEREXCAVATION:

Where the undisturbed condition of natural soils is inadequate for support of the planned construction, the Construction Manager will direct the Contractor to overexcavate to adequate supporting soils. The excavated space shall be filled to the specified elevation with backfill. The overexcavated space under footings may be filled with concrete. The quantity and placement of such material will be paid for as extra work.

C. SURPLUS MATERIAL:

Unless otherwise specified, surplus excavated material shall be disposed of off site in accordance with applicable ordinances and environmental requirements.

3.01 C.

If the quantity of surplus material is specified, the quantity specified is approximate. The Contractor shall satisfy himself that there is sufficient material available for the completion of the embankments before disposing of any material inside or outside the site. Shortage of material, caused by premature disposal of any material by the Contractor, shall be replaced by the Contractor.

Material shall not be stockpiled to a depth greater than 5 feet above finished grade within 25 feet of any excavation or structure except for those areas designated to be preconsolidated. For these areas, the depth of stockpiled material shall be as specified. The Contractor shall maintain stability of the soil adjacent to any excavation.

D. BORROW MATERIAL:

If the quantity of acceptable material from excavation is not sufficient to construct the embankments required by the work, the quantity of material needed to complete the embankments shall consist of imported borrow conforming to specified requirements.

E. HAULING:

When hauling is done over highways or city streets, the loads shall be trimmed and the vehicle shelf areas shall be cleaned after each loading. The loads shall be watered after trimming to eliminate dust.

F. HAUL ROADS:

The Contractor shall construct haul roads required to transport materials on site. Alignment of haul roads shall be selected to avoid interference with plant operations. Haul roads shall be removed after completion of embankment construction.

G. FINISH GRADING:

Finished surfaces shall be smooth, compacted and free from irregularities. The degree of finish shall be that normally obtainable with a blade-grader.

Finished grade shall be as specified by the contours plus or minus 0.10 foot except where a local change in elevation is required to match sidewalks, curbs, manholes and catch basins, or to ensure proper drainage. Allowance for topsoil and grass cover, and subbase and pavement thickness shall be made so that the specified thickness of topsoil can be applied to attain the finished grade.

When the work is an intermediate stage of completion, the lines and grades shall be as specified plus or minus 0.5 foot to provide adequate drainage.

3.01 G.

If the soil is to be cultivated or straw is to be incorporated into the surface, rocks larger than 2-1/2 inches in maximum dimension, roots and other debris on the surface of the slope shall be removed and disposed of prior to cultivation or placement of straw.

H. CONTROL OF EROSION:

The Contractor shall maintain earthwork surfaces true and smooth and protected from erosion. Where erosion occurs, the Contractor shall provide fill or shall excavate as necessary to return earthwork surfaces to the grade and finish specified.

3.02 CLASSIFICATION OF FILL

Fill material shall be placed in horizontal layers and compacted with power operated tampers, rollers, idlers, or vibratory equipment. Material type, maximum layer depth, relative compaction, and general application are specified in Table A. Unless otherwise specified, fill classes shall be used where specified in Table A under general application.

Table A, Fill Classifications

| <u>Fill Class</u> | <u>Material type</u> | <u>Maximum uncompressed layer depth, inches</u> | <u>Minimum relative compaction, percent</u> | <u>General application</u> |
|-------------------|----------------------|---|---|---|
| A1 | A | 8 | 90-95 | Slabs on grade (other than specified for Class E1), Structure Backfill |
| A2 | A | 48 | 95 | Initial and subsequent pipeline backfill when ponding or jetting allowed per Construction Manager |
| C1 | C | 8 | 90 | Subsequent pipeline backfill; compaction as specified |
| C2 | C | 8 | 90 | Site fill, embankments and dike backfill |
| D1 | D | - | 95 | Bedding for all pipelines except plastic pipe, bedding and initial backfill for concrete pipelines 24 inches in diameter and larger |
| E1 ^a | E | 8 | 95 | Fill under slabs for structures and tanks below grade |
| F1 | F | 12 | 95 | Structure backfill, where specified, initial and subsequent pipeline backfill |
| G1 | G | 8 | 95 | Bedding for plastic pipe, initial and subsequent pipeline backfill |
| H1 | H | - | - | Embankment slope face, channel slope face |

^aCompaction of layers shall be accomplished in two passes of equipment with complete coverage across the width of the field.

3.03 A.

3.03 EARTHWORK FOR STRUCTURES

A. STRUCTURE EXCAVATION:

Ground shall not be dug by machinery nearer than 3 inches from any finished subgrade. The last 3 inches shall be removed without disturbing the subgrade.

The bottom shall not be more than 0.15 foot above or below the lines and grades specified. If the elevation of structure excavation is not specified, the excavation shall be not more than 0.15 foot above or below the elevation specified for fill material below the structure. Slopes shall vary no more than 0.5 foot from specified grade unless the excavation is in rock where the maximum variation shall be 2 feet.

Should the excavation be carried below the lines and grades specified on the drawings or should the bottom of the excavation be disturbed because of the Contractor's operations and require overexcavation and backfill, the Contractor shall refill such excavated space to the proper elevation in accordance with the procedure specified for backfill.

Unless otherwise specified, excavations shall extend a sufficient distance from walls and footings to allow for placing and removal of forms, installation of services, and for inspection, except where concrete is specified to be placed directly against excavated surfaces.

B. FOUNDATION TREATMENT:

Whenever any structure excavation is substantially completed to grade, the Contractor shall notify the Construction Manager who will make an inspection of the foundation. No concrete or masonry shall be placed until the foundation has been inspected by the Construction Manager. The Contractor shall, if directed by the Construction Manager, dig test pits and make test borings and foundation bearing tests. If the material tested is undisturbed soil, the cost thereof will be paid for as extra work. If the material tested is backfill material, the cost thereof will be paid as specified in 00710-4.06 A.

C. STRUCTURE BACKFILL:

Unless otherwise specified, structure backfill shall be Class A1.

After completion of construction below the elevation of the final grade, and prior to backfilling, forms shall be removed and the excavation shall be cleaned of debris.

3.03 C.

Structure backfill shall not be placed until the subgrade portions of the structure have been inspected by the Construction Manager. No backfill material shall be deposited against concrete structures until the concrete has developed a strength of not less than 2500 pounds per square inch in compression, or until the concrete has been in place for 28 days, whichever occurs first.

Backfill material shall be placed in uniform layers and shall be brought up uniformly on all sides of the structure. When compaction is done by ponding and jetting, thickness of uncompacted layers shall not exceed 4 feet.

Compaction of structure backfill may be performed by ponding and jetting if the backfill material is of such character that it will be self-draining when compacted and that foundation materials will not be damaged by the applied water and no damage from hydrostatic pressure will result to the structure. Ponding and jetting shall not be used within 4 feet of finished grade and shall be performed in such a manner that water will not be impounded.

Unless otherwise specified, backfill around and above pipelines within the excavation line of any structure shall be the same as that specified for structures.

3.04 EARTHWORK FOR PIPELINES AND CONDUITS

Earthwork for pipelines and conduits is specified in Table A and in the standard details.

3.05 EARTHWORK FOR EMBANKMENTS

A. FOUNDATION PREPARATION:

The surface of the foundation shall not contain standing water and shall be free of loose material, foreign objects and rocks greater than 6 inches in maximum dimension. Immediately prior to placement of embankment fill material, the foundation surface shall be thoroughly moistened, scarified to a depth of 6 inches, moisture conditioned again as necessary and recompact to 90 percent relative compaction. After the preparation has been completed, the Contractor shall promptly place and compact the first lift of embankment on the foundation to prevent damage to the surface. If the foundation surface is damaged, the Contractor shall repair the surface to the specified condition. In any areas where materials become soft or yielding, such materials shall be removed, disposed of, and replaced with specified material. The surface of the embankment shall be maintained to permit travel of construction equipment. Ruts in the surface of any layer shall be filled and leveled before compacting.

3.05 B.

B. EMBANKMENT FILL:

Rocks, broken concrete, or other solid materials, which are larger than 4 inches in greatest dimension, shall not be placed in embankment areas where piles are to be placed or driven.

Fill material having a sand equivalent value less than 10 shall be placed in the lower portions of embankments and shall not be placed within 2.5 feet of finished grade.

When the embankment material consists of large, rocky material, or hard lumps, such as hardpan or cemented gravel which cannot be broken readily, such material shall be well distributed throughout the embankment. Sufficient earth or other fine material shall be placed around the larger material as it is deposited so as to fill the interstices and produce a dense, compact embankment.

Unless otherwise specified, the embankment shall be raised to form an approximately horizontal plane extending transversely to the final slopes. The embankment shall be crowned at all times during construction so that water will drain readily off the embankment.

The temporary differential elevation between any two adjoining zones of the embankment due to construction operations shall not exceed 24 inches.

If the compacted surface of any layer of material is too smooth to bond properly with the succeeding layer, the surface shall be scarified. If required, the surface shall be sprinkled or otherwise moisture conditioned before the succeeding lift is placed. Any surface crust formed on a layer of fill material that has been dumped and spread shall be broken up by harrowing and, if required, the full depth of the affected layer shall be moisture conditioned immediately prior to rolling.

C. KEY CONSTRUCTION:

Where specified, a key shall be excavated along the length of the toe of fill slopes. The exposed soils along the key and under fill areas shall be disced and/or scarified to a depth of at least 12 inches, moisture conditioned to within 3 percent of optimum moisture content, and compacted to at least 90 percent of maximum dry density.

D. EMBANKMENT TOLERANCES:

1. GENERAL: Embankment slopes within 4 feet of shoulder grade shall vary less than 0.5 foot from the designated slope. Slopes beyond 4 feet from shoulder grade shall vary less than

3.05 D.1.

1 foot from the designated slope. Measurements for variance shall be made perpendicular to the slope. Slopes which are 6 to 1 or flatter shall vary less than 0.2 foot from the designated slope.

If embankments are constructed of rock greater than 12 inches in diameter, the slopes more than 4 feet below shoulder grade may vary up to 2 feet from the designated slope.

2. ROADWAY EMBANKMENT TOLERANCES: The excavated surface shall be less than 0.08 foot above or below the grades specified after deducting for the roadway pavement thickness.

Vertical alignment tolerances permitted on the roadway surface shall not exceed plus or minus 0.30 feet from the vertical alignment specified, with the provision that within the tolerance range local surface irregularities shall not exceed 0.15 feet as measured by the gap between the roadway surface and a 10-foot straightedge placed on any flat graded surface. On vertical curves, the same standards will apply except that an additional gap allowance will be made for the road surface curvature over the 10-foot length of the straightedge.

Horizontal alignment tolerances permitted shall not exceed plus or minus 1 foot providing the departure is relatively uniform over any specific length of the roadway.

Roadway median strips shall be graded to drain and shall not vary more than 0.1 foot from the specified grade.

3.06 SUBGRADE FOR PAVEMENT

The prepared subgrade shall be scarified to a depth of at least 12 inches and recompact to at least 95 percent of the maximum density.

3.07 SITE FILL

Unless otherwise specified, site fill shall be Class C2 fill. If the existing slope in an area to be filled is greater than 5:1, the Contractor shall bench the area prior to filling.

****END OF SECTION****

SECTION 02281

TERMITE CONTROL

PART 1 GENERAL

1.01 WORK INCLUDED

A. Soil treatment below slabs-on-grade for subterranean insects at new construction.

B. Soil treatment at interior and exterior foundation perimeter, for subterranean insects at new construction.

1.02 RELATED WORK

A. Section 02200 - Earthwork.

1.03 QUALITY ASSURANCE

A. Applicator: Company specializing in soil treatment for termite control with five (5) years documented experience.

B. Materials: Provide certification that toxicants conform to specified requirements.

C. Material Packaging: Manufacturer's labels and seals identifying content.

D. Applicator's equipment shall include a flow meter to assure quantity of termite treatment chemicals have been applied.

1.04 REGULATORY REQUIREMENTS

A. Conform to State of Arizona requirements for application licensing and authority to use toxicant chemicals.

1.05 REFERENCES

A. Insecticides used shall be registered with and approved by the Production and Marketing Administration of the U.S.D.A.

B. EPA - Federal Insecticide, Fungicide and Rodenticide Act.

1.06 PRODUCT DATA

A. Submit product data in accordance with Section 01300.

B. Indicate toxicants to be used, composition by percentage, dilution schedule, and intended application rate.

1.07 PROJECT RECORD DOCUMENTS

A. Accurately record moisture content of soil before treatment, date and rate of application, areas of application, diary of meter readings and corresponding soil coverage.

1.08 WARRANTY

A. Provide five (5) year bonded guaranty for material and installation in accordance with Section 01700.

B. Bonded Guaranty: Cover against invasion or propagation of subterranean termites, damage to building or building contents caused by termites; repairs to building or building contents so caused.

C. Inspect work annually and report in writing to Owner.

D. Owner reserves right to renew bonded guaranty for an additional five (5) years.

PART 2 PRODUCTS

2.01 MATERIALS

A. Toxicant Chemical: Water-based emulsion, uniform composition, synthetic dye to permit visual identification of treated soil chemical of Durasban TC as manufactured by Dow Chemical, Torpedo or other EPA and State of Arizona-approved toxicant. Submit information for approval prior to application.

2.02 MIX DILUTION

A. Dilute toxicant chemical in accordance with manufacturer's printed instructions.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify the soil surfaces are unfrozen, sufficiently dry to absorb toxicant, ready to receive treatment.

B. Beginning of application means acceptance of soil conditions.

C. Time of Application:

1. Do not begin termite treatment work until all preparation for slab placement has been completed.

2. Do not apply termite treatment when surface water is present.

3.02

3. Apply no material without notification to Architect so he may be present during application. Make application during normal working hours.

3.02 APPLICATION

A. Apply toxicant immediately prior to installation of vapor barrier under slab-on-grade or finish grading outside foundation walls.

B. Apply toxicant at application rates in accordance with manufacturer's written instructions, at the following locations, using metered applicator:

1. Under floor slabs-on-grade.
2. Both sides of foundation wall.
3. Soil within 10 feet of building perimeter for a depth of 2 feet.

C. Apply extra treatment to structure penetrations, pipe, ducts, and other soil penetrations.

D. Apply as a coarse spray to ensure uniform distribution.

E. Coordinate soil treatment at foundation perimeter with finish grading and landscaping work to avoid disturbance of treated soil. Re-treat disturbed treated soil.

3.03 RETREATMENT

A. If inspection identifies the presence of termites, retreat soil and retest.

B. Use same toxicant as for original treatment.

****END OF SECTION****

SECTION 02327

JACKED CASINGS

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies jacked casings for the pipe crossing beneath the soil cement levee in the Agua Fria River.

PART 2--PRODUCTS

2.01 CASING PIPE

See Page 00020-1

The casing pipe shall be a 36-inch diameter steel casing, 0.375 inch thick. The Contractor is responsible for fully acquainting himself with the conditions of the work to verify the diameter and thickness of the casing pipe required to do the work. The pipe shall be unlined and uncoated, meeting the requirements of AWWA C200. Joints as required by the Contractor's operation shall be continuous butt-welded joints capable of developing the strength of the pipe and in full conformance with the requirements of AWWA C206. Pipe shall be Grade A-36 steel minimum.

PART 3--EXECUTION

3.01 INSTALLATION OF JACKED STEEL CASING PIPE

Casing pipe shall be installed by jacking. The Contractor shall remove or penetrate all obstructions encountered with the exception of the soil cement levee. The casing pipe shall pass under the levee with a minimum clearance of 3 feet. If groundwater is found during construction, the Contractor shall control the flow sufficiently to protect the excavation, pipe and equipment. Groundwater shall be controlled as specified in Section 02200. Any pipe damaged during the jacking operation shall be repaired by the Contractor at no expense to the Municipality in a manner acceptable to the Construction Manager.

A bentonite slurry may be used for lubricating the pipe but shall not be projected ahead of the pipe.

Sluicing or jetting will not be permitted.

3.01

In the event that the pipe is damaged during jacking operations and the defects cannot be corrected to the satisfaction of the Construction Manager, the Contractor shall fill the pipe with a lean concrete mixture and seal in a manner to prevent future settlement and begin jacking in an alternative location as designated by the Construction Manager.

Deviations in line and grade of the casing pipe will only be allowed to the extent that the carrier pipe can be shifted within the casing to compensate for the deviation. Final allowable deviation in line and grade will be in accordance with the Construction Manager. The Contractor shall remove all augers and check the alignment and grade of the leading end of the casing often enough to be able to correct any line or grade deviations while the boring is in progress. In no event shall the line and grade checks be at intervals exceeding 8 feet. The Contractor shall correct any deviation from grade or alignment resulting from the bore at no cost to the Municipality.

Special care shall be taken during the installation of the jacked pipe to ensure that no settlement or caving be caused to the above surface. Any caving caused by the placement of the pipe shall be the Contractor's responsibility and he shall repair any area so affected as directed by the Construction Manager. The cutting blades or auger shall at all times be set a minimum of 6 inches behind the cutting edge of the casing in the event the Contractor selects use such devices. If excavation is performed manually, excavation shall be a minimum of 6 inches behind the cutting edge of the casing.

During jacking operations, particular care shall be exercised to prevent caving ahead of the pipe which will cause voids outside of the pipe. If caving occurs, the Contractor shall install three 1-1/2-inch grout ports, 120 degrees apart every eight feet along the casing. The Construction Manager will inspect each port after opening to confirm the requirement for grouting. Cement grout shall then be pumped into each port under low pressure. Grout shall be placed by positive displacement pumps capable of placing grout at pressures up to 50 psi unless otherwise approved by the Construction Manager. Grout shall be placed at pressures which are requisite for the conditions encountered and will normally be less than 10 psi except in cases where large cave-ins or other adverse conditions may require higher pressures. Gages shall be provided to indicate grout pressure obtained. All voids shall be filled to the satisfaction of the Construction Manager. After grouting is complete all grout parts shall be plugged with a threaded metal plug.

3.01

The carrier pipe shall be installed in the casing using redwood skids as shown on the drawings or alternate acceptable to the Construction Manager. The first pipe joint outside all casings shall be within 12 inches of the end of the casing. The casing pipe shall then have cement grout placed in it to the top of the casing pipe. After the lines have been pressure tested, cement grout plugs shall be placed at each end of the casing pipe.

The pipe shall be jacked ahead when stopping work each night to create a plug of sufficient thickness to assure material stability and minimal groundwater leakage.

Care shall be taken to avoid any metal to metal contact between the casing pipe and the carrier pipe.

****END OF SECTION****

SECTION 02445

CHAIN LINK FENCE

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies galvanized chain link fence comprising fences, gates, and appurtenances.

1.02 QUALITY ASSURANCE

A. FACTORY TESTING:

Wire fabric and barbed wire shall be tested for zinc coating weight by the method specified in ASTM A90. Ferrous metal, except the fabric, shall be tested for zinc coating uniformity by the method specified in ASTM A239; zinc coating shall withstand six 1-minute dips.

B. REFERENCES:

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|------------------|---|
| ASTM A90-81 | Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles, Test Methods for |
| ASTM A120-84 | Pipe, Steel, Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless, for Ordinary Uses |
| ASTM A121-81 | Zinc-Coated (Galvanized) Steel Barbed Wire |
| ASTM A123-84 | Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products |
| ASTM A153-82 | Zinc Coating (Hot Dip) on Iron and Steel Hardware |
| ASTM A239-73 | Locating the Thinnest Spot in a Zinc (Galvanized) Coating on Iron or Steel Articles by the Preece Test (Copper Sulfate Dip), Test Methods for |
| ASTM A392-84 | Zinc-Coated Steel Chain-Link Fence Fabric, Spec for |

2.01 A.

PART 2--PRODUCTS

2.01 MATERIALS

A. CHAIN LINK FABRIC:

Chain link fabric shall be 2-inch mesh 9-gage wire, hot-dip galvanized after fabrication. Width of fabric shall be 6 feet 0 inch (plus or minus 3/4 inch). Fabric shall conform with the requirements of ASTM A392 and shall have a Class 2 zinc coating.

B. TOP AND BOTTOM TENSION WIRE:

Top and bottom tension wires shall be at least 7-gage galvanized coil spring steel.

C. BARBED WIRE:

Barbed wire shall be double strand 12-1/2-gage galvanized steel with 14-gage barbs in 4-point pattern on 5-inch centers and shall have a Class 1 galvanized coating per ASTM A121.

D. POSTS, TOP RAIL, BRACES AND GATE FRAMES:

Pipe used shall be ASTM A120, Schedule 40 steel pipe. Posts, rails, braces and frames shall be hot-dip galvanized per ASTM A120, A123 or A153, whichever is applicable. Galvanizing shall apply at least 2.0 ounces of zinc per square foot of surface.

Line posts shall be either "H" columns weighing not less than 2.7 pounds per foot or 2-3/8-inch outside diameter pipe weighing 3.65 pounds per foot. Corner and end posts shall be minimum 2-7/8-inch outside diameter pipe weighing a minimum of 5.79 pounds per foot. Braces shall be 1-5/8-inch outside diameter pipe weighing 2.27 pounds per foot. Gate frames shall be made of minimum 2-inch outside diameter pipe. Gate posts shall be 6-5/8 inch outside diameter weighing 19.0 pounds per foot.

E. TRUSS RODS AND MISCELLANEOUS FITTINGS:

Truss rods shall be fabricated of 3/8-inch diameter steel rods and shall have turnbuckles or similar means of adjustment. Extension arms for barbed wire shall be steel or malleable iron. Gate hinges, drop bar locking devices, caps, gate stops and miscellaneous bolts, bands, and other appurtenances shall be consistent in quality and strength to the rest of the fence. Fittings used shall be hot-dip galvanized iron or steel with a minimum coating of at least 2.0 ounces of zinc per square foot of surface in accordance with ASTM A123 or A153, whichever is applicable.

2.01 F.

F. CONCRETE:

Concrete for post foundations shall be Class C as specified in Section 03300.

2.02 PRODUCT DATA

The following information shall be provided in accordance with paragraph 00710-4.02:

1. Manufacturer's product information designating specific materials provided.
2. Results of the factory testing specified in paragraph 02445-1.02 A.
3. The layout of the chain link fence as it is to be provided illustrating fence height, post sizes, bracing configurations, and accessories.

PART 3--EXECUTION

3.01 FENCE

Line posts shall be equally spaced between corners, end posts, and gate posts at a spacing not exceeding 10 feet. The base top shall be at least 1 inch above grade and sloped for drainage. Posts shall be set vertical, shall be accurately aligned, and shall have their tops level or at a constant slope between changes in grade. Tubular posts shall be fitted with rainproof malleable iron caps.

Corner, end, and gate posts shall be braced to the nearest line post. Corner and end posts shall be diagonally braced. Bracing for gate posts shall be horizontal braces with truss rods. Line posts shall be braced horizontally and trussed in both directions with truss rods at 1000-foot minimum intervals.

Chain link fabric shall be taut and shall be attached to posts and wires with galvanized fabric bands or tie wires at a maximum spacing of 12 inches on posts and 18 inches on the tension wires. Stretcher bars shall be provided at ends of fabric. The bottom tension wire shall be stretched tight and shall be located 2 inches maximum above finished grade and on a straight grade between posts by excavating the high points of ground, and in no case shall depressions be filled.

Three strands of barbed wire attached to extension arms shall be provided along the fence top. Extension arms shall overhang the outside of the fence at a 45-degree angle. The topmost strand of barbed wire shall be 12 inches above the top of the fabric.

3.02 GATES

Gate frames shall be fabricated with welded joints or rigid connectors. The fabric shall be the same as that used for the fence and shall be rigidly attached to the frames. Frames shall be suitably braced and trussed. Gates shall be equipped with suitable offset hinges to permit a 180-degree swing and a drop bar locking device with provision for padlocking. A stop to hold the gate open and a center rest with catch shall be provided. Three strands of barbed wire shall be provided on top of chain link gates.

****END OF SECTION****

SECTION 02447

ORNAMENTAL FENCE

PART 1 GENERAL

1.01 WORK INCLUDED

A. Ornamental tubular section fence, complete with pickets, scrolls, rails and miscellaneous hardware.

1.02 RELATED WORK

A. Section 04340 - Reinforced Unit Masonry.

B. Section 08700 - Finish Hardware.

1.03 ERECTOR QUALIFICATIONS

A. Minimum of two (2) years experience installing similar fencing.

1.04 SHOP DRAWINGS AND PRODUCT DATA

A. Submit shop drawings and product data in accordance with Section 01300.

B. Clearly indicate plan layout, grid, spacing of components, accessories, fitments, and anchorage.

C. Submit manufacturer's installation instructions and procedures, including standard details of fence and gate installation.

PART 2 PRODUCTS

2.01 FENCE AND WINDOW GUARDS

A. Fence shall be 8'-0" high ornamental tubular steel, commercial quality, similar to Model 204A "LaJolla", as manufactured by American Fence Company, including all necessary posts, fittings, hardware and gates required to complete the installation.

B. Operable window guards shall be 5'-0" high ornamental tubular steel, commercial quality, similar to Style 706 as manufactured by American Fence Company, including all necessary rails, pickets, hinges, and provisions for padlocks required for a complete installation.

C. Material to be fabricated from commercial quality steel strip (SAE 1010) with a zinc coating designation of G60 per ASTM A-525, hot dipped zinc coating on both interior and exterior surfaces. All shapes shall be cold rolled and electrically welded with all welded areas protected by a zinc rich paint to prevent corrosion.

2.01 C.

C. All parts shall be dipped in Sherwin Williams Kem Lustral Flat Black Industrial Enamel.

2.02 FENCE MATERIALS

- A. All line, corner or terminal posts 3 inch x 3 inch x .107 square steel.
- B. All rails 1-1/2 inch x 1-1/2 inch x 16-gage square steel.
- C. All pickets 1 inch x 1 inch x 16-gage square steel.
- D. All scrolls made from flat steel 3/16 inch x 3/4 inch.
- E. All shop or field welding done by Arc-gas shield weld for smooth, clean, slag-free welds. No weld residue to chip off.

PART 3 EXECUTION

3.01 ERECTION

- A. Install ornamental fencing and gates around two building entrances as indicated on the drawings.
- B. All line posts spaced at 6'-8" o.c., securely anchored to cast-in-place concrete.
- C. Rails installed at top and bottom of fence.
- D. All posts shall be set no less than 2 feet deep in a concrete footing of 10 inches diameter. Concrete shall be 30,000 psi.
- E. Entire installation installed in strict accordance with manufacturer's recommendations to obtain a rigid installation.
- F. Remove site cuttings from finish surfaces.

3.02 TOLERANCES

- A. Maximum offset from true alignment between adjacent members butt-in or in-line, 1/16 inch.
- B. Maximum variation from plane or location indication on drawings, 1/8 inch.

END OF SECTION

SECTION 02500

PAVING

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies paving consisting of aggregate base, asphaltic concrete, and associated materials.

1.02 QUALITY CONTROL

A. REFERENCES:

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference

Title

ASTM D1557-78 Tests for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb. (4.5-kg) Rammer and 18-inch (457-mm) Drop

ADOT Standard Specifications for Road & Bridge Construction, 1982 (Supplemented 1985)

B. TESTING:

Testing will be conducted by the Construction Manager to determine compliance with the specified degree of compaction and moisture content.

PART 2--PRODUCTS

2.01 MATERIALS

A. AGGREGATE BASE:

Aggregate base shall be Class 1 conforming to Section 303 of the ADOT.

B. LIQUID ASPHALT:

Liquid asphalt for tack coats and treatment of aggregate base shall be Grade MC 250 and shall comply with Section 404 of the ADOT.

2.01 C.

C. ASPHALTIC CONCRETE:

Asphaltic concrete shall conform to Section 406 of the ADOT, 1/2-inch mix. Asphalt binder shall be paving asphalt, Grade AC-40, complying with Section 406 of the ADOT.

D. TRAFFIC LINE PAINT:

Traffic line paint shall be a white chlorinated rubber traffic paint 39506 by Glidden, Vin-L-Stripe traffic paint W-801 by Dunn-Edwards, or equal.

PART 3--EXECUTION

3.01 GENERAL

Construction shall conform to the details, dimensions and grades specified. Maximum variations in finished grade of paving shall be plus or minus 0.05 feet.

3.02 AGGREGATE BASE PLACEMENT

A. SUBGRADE:

Areas to be paved shall be graded and compacted in accordance with Section 02200-3.06.

B. AGGREGATE BASE:

Placing of aggregate base shall comply with Section 303 of the ADOT. Relative compaction shall be a minimum of 95 percent as determined using methods set forth in ASTM D1557.

3.03 ASPHALT CONCRETE PAVEMENT

A. ASPHALT CONCRETE:

Placement of asphalt concrete pavement shall comply with Section 406 of the ADOT. Berms shall be shaped and compacted with an extrusion machine.

B. TACK COAT APPLICATION:

A tack coat shall be applied to all vertical surfaces of existing pavement; to curbs, gutters, and construction joints against which asphaltic concrete will be placed; to pavements to be surfaced; and where specified at the approximate rate of

3.03 B.

0.07 gallons per square yard. Application shall comply with Section 404 of the ADOT. Immediately prior to placing asphaltic concrete, additional tack coat shall be applied to areas where the tack coat has been damaged.

Immediately prior to construction of asphaltic concrete berms, a continuous tack coat shall be applied to the pavement surface. Application of the tack coat shall not cause a slip or weakened plane between the two joined surfaces.

C. TRAFFIC LINE PAINTING:

Traffic lines shall be painted on pavement surfaces where specified. Surfaces are to be free of contaminants that may interfere with adhesion. Thinning and coverage shall be as recommended by the manufacturer, but coverage shall not exceed 400 square feet per gallon. Traffic lines shall be of uniform width with the edges straight and even. Traffic shall be restricted from the area until the paint has dried.

****END OF SECTION****

SECTION 02805

POLYVINYL CHLORIDE PROTECTIVE LINING

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies materials and fabrication methods used in the construction of a Polyvinyl Chloride (PVC) lining system for sludge drying beds.

1.02 QUALITY ASSURANCE

A. QUALIFICATIONS OF INSTALLERS:

Installation of the drying bed lining system shall be performed only by competent and skilled personnel completely familiar with the products and the manufacturer's most current recommended installation methods.

The liner installer proposing to perform the lining work shall have demonstrated by previous experience his ability to do the work. The installer shall have been continuously in the business of installing PVC lining systems for at least 5 years and shall be approved for such work by the lining manufacturer. The installer shall have previous experience consisting of the successful installation of at least 1 million square feet of PVC lining material. The installer shall have installed at least five successful PVC lining systems. The Contractor shall provide the following information to the Construction Manager for at least three installations, prior to beginning construction:

1. Owner--name, address, and telephone number
2. Location of installation
3. Size of installation
4. Name of project manager
5. Date completed

1.03 DELIVERY AND STORAGE

All material shall be delivered to the job site in new and unused condition. Material shall be delivered in unopened packages or containers bearing the manufacturer's name and identification of type and quality.

PART 2--MATERIALS

2.01 POLYVINYL CHLORIDE LINING

The lining material shall be a Polyvinyl Chloride membrane as manufactured by Pako, the J.P. Stevens Company, the Burke Rubber Company, B.F. Goodrich, or approved equal. The material shall be manufactured specifically for wastewater storage applications.

The PVC lining shall be manufactured by the calendaring process. The lining material shall be uniform in color, thickness, size, and surface texture. The finished liner shall be free from pinholes, blisters, and contaminants. The liner shall have a smooth or matte finish on both sides and shall not be embossed.

The PVC membrane shall be manufactured from a composition of high quality ingredients specifically compounded for use in hydraulic structures. Only domestic materials shall be used. Reprocessed or reground materials will not be acceptable. Clean rework (edge trim) of the same virgin ingredients generated from the manufacturer's own production line will be allowed.

MINIMUM MATERIAL PROPERTIES

| <u>Property</u> | <u>Test method</u> | <u>Test value</u> |
|--|-------------------------------|--------------------------------|
| Gauge (nominal) | | 20 mils |
| Thickness, minimum | ASTM D1593 Par. 9.1.3 | 19 mils |
| Specific gravity (minimum) | ASTM D792 MTD A-1 | 1.24 to 1.30 |
| Minimum tensile properties (each direction) | ASTM D882 | |
| 1. Breaking factor (lbs/inch width) | MTD A or B (one inch wide) | 46 lbs/in width (2,300 psi) |
| 2. Elongation at break (percent) | MTD A or B | 300 percent |
| 3. Modulus (force) at 100 percent elongation (lbs/inch width) | MTD A or B | 18 lbs/in width (900 psi) |
| Tear resistance (minimum average pounds) | ASTM D1004 Die C | 6 lbs |

2.01

| <u>Property</u> | <u>Test method</u> | <u>Test value</u> |
|---|------------------------------------|--------------------------------------|
| Low temperature impact (50 percent pass) | ASTM D1790 | -15°F |
| Dimensional stability (each direction, per- cent change maximum) | ASTM D1204 212°F 15 minimum | +5 percent |
| Water extraction (maximum percent wt loss) | ASTM D3083 (as modified by NSF) | 0.35 percent |
| Volatile loss (maximum percent wt loss) | ASTM D1203 MTD A | 0.9 percent |
| Resistance to soil burial (percent change maximum in original value) | ASTM D3083 (as modified by NSF) | |
| 1. Breaking factor | | 5 percent |
| 2. Elongation at break | | 20 percent |
| 3. Modulat at 100 per- cent elongation | | 20 percent |
| Hydrostatic resistance (pounds/square inch minimum) | ASTM D751 MTD A | 60 psi |
| <u>FACTORY SEAM REQUIREMENTS:</u> | | |
| Factory seaming method | | Dielectric fusion weld |
| Bonded seam strength (factory seam break- ing factor, ppi width) | ASTM D3083 (as modified by NSF) | 36.8 lbs/in width |
| Peel adhesion (pounds/inch minimum) | ASTM D413 (as modified by NSF) | 10 lbs/in or tearing bond film |
| Resistance to soil burial (percent change maximum in original value) | ASTM D3083 (as modified by NSF) | |
| Bonded seam strength | | - 20 percent |
| Peel adhesion | | - 20 percent |

2.01

| <u>Property</u> | <u>Test method</u> | <u>Test value</u> |
|---|---------------------------------|---------------------|
| <u>FIELD SEAM REQUIREMENTS:</u> | | |
| Field seaming method | | Bodied solvent weld |
| Bonded seam strength (seam breaking factor) | ASTM D3083 (as modified by NSF) | 36.8 lbs/in width |

2.02 PRODUCT DATA

The Contractor shall take duplicate representative liner samples from each manufacturing run of PVC liner. Each time the manufacturing process is modified, new samples shall be taken and tested.

One set of samples shall be tested in an approved laboratory to show conformance with the properties listed in paragraph 02805-2.01. Certified test results from these tests along with the remaining set of samples shall be provided to the Construction Manager in accordance with the requirements of paragraph 00710-4.02.

Duplicate sets of representative factory seams and field seams shall also be taken by the Contractor. One set of factory and field seams shall be tested in an approved laboratory to verify the specified seam requirements are met.

The certified test results and the remaining set of sample seams shall be provided to the Construction Manager in accordance with the requirements of paragraph 00710-4.02.

PART 3--EXECUTION

3.01 DRYING BED SURFACE PREPARATION

The drying bed surfaces shall be prepared as specified in Section 02200 and as shown. Compaction as specified shall be achieved prior to the application of any lining material.

All materials in the drying beds where the liner is to be placed shall be free of materials such as cobbles larger than 3/4 inch, stakes, nails, and other material which might damage the fabric membrane. The entire area to receive PVC protective lining shall be lightly hand raked to remove all surface irregularities, debris, and foreign substances prior to placement of the liner material.

3.02

3.02 PLACEMENT OF THE LINER MATERIAL

The sheeting shall be of such length and so arranged as to require a minimum number of field joints. The PVC sheets shall be arranged so that the major field seams run parallel to the drying bed side walls. The liner shall be attached to the walls of the drying beds as shown on the drawings.

3.03 FIELD SEAMS

Only manufacturer's approved materials and methods shall be used for making field seams. The joint seam shall be washed with solvent, and adhesive shall be applied as specified by the lining manufacturer. PVC field seam shall be a bonded lap joint with a minimum 2-inch lap. The joint shall extend to the edges of the sheet so that no loose edges are present after bonding.

3.04 STRUCTURES

The PVC liner material shall be connected to the walls of the drying beds as shown. The corners and edges of the concrete walls where the liner is to be attached shall be rounded to a minimum 1-inch radius.

3.05 LEAKAGE LIMITATION

No leakage will be allowed from the completed liner system. The Contractor shall be responsible for locating and repairing any leaks during the warranty period to meet this requirement.

3.06 LINER WARRANTY

The Contractor shall warranty for 5 years the liner material and liner installation against any defects or leakage in excess of the allowable leakage specification in 3.05 above. All the provisions of Specification Section 00710-4.10 shall apply with exception that the warranty period shall extend for 5 years from the final acceptance of the work by the Owner.

****END OF SECTION****

SECTION 02810
IRRIGATION SYSTEM

PART 1--GENERAL

1.01 WORK SPECIFIED HEREIN

The work of this section shall include all labor, materials, equipment, and services necessary to complete the work of the irrigation system as detailed and specified, and all work incident thereto.

1.02 JOB CONDITIONS

A. The work consists of providing a complete automatic underground water system.

B. Irrigation system is designed for psi shown in plans; contractor shall verify water pressure in field prior to construction. Should a discrepancy exist between design pressure and the field pressure, the Construction Manager shall be notified immediately.

1.03 INSPECTION OF CONDITIONS

Examine related work and surfaces before starting work. Report to the Construction Manager, in writing, conditions which will prevent the proper provision of this work. Beginning the work of this section without reporting and then receiving a written response from the Construction Manager constitutes acceptance of conditions by the Contractor.

1.04 INSPECTIONS AND TESTS

A. Submit request for inspections to Construction Manager at least 48 hours prior to anticipated inspection.

B. Inspection of completed installation will be made by the Construction Manager prior to backfilling of trenches and will be made during hydrostatic testing.

C. Make hydrostatic tests when welded PVC joints have cured at least 24 hours. Apply continuous static water pressure of 45 as follows:

1. All piping on the non-pressure side of control valves shall pass a visual operation inspection before backfilling.

1.04 C.2.

2. Leaks resulting from tests shall be repaired and tests repeated until system passes tests.

PART 2--PRODUCTS

2.01 STANDARD OF INSTALLATION

Materials and workmanship in accordance with local codes and ordinances, except that where provisions of these specifications shall govern.

A. SUBMITTALS:

1. Samples: Submit for all fittings, fixtures, and as required.

2. Submit 2 service manuals. Manuals may be loose-leaf and contain complete exploded drawings of all equipment installed showing components and catalog numbers together with manufacturer's name and address. Additional sheets shall cover operation instructions simple enough to be understood without specialized knowledge.

3. Loose equipment to furnish: Loose sprinkler equipment, operating keys and spare parts will be furnished by the Contractor in quantities as shown on the plans.

4. Materials list: Within 30 days after award of contract, submit 6 copies of complete list of materials and equipment including manufacturer's name and numbers. List shall include manufacturer's installation and operating data for automatic controllers and remote control valves.

5. Prepare "as-built" drawings on sepias which show deviations from the bid documents made during construction affecting main line pipe, controller locations, remote control valves, quick coupling valves and all sprinkler heads. Drawings shall indicate and show approved substitutions of size, material and manufacturer's name and catalog number. Drawings shall be delivered to the Construction Manager before final acceptance of work.

2.02 COORDINATION

Source of water supply: Verify and be familiar with location, size and detail of source of water supply to sprinkler system, as shown on plans, and existing.

2.03 PIPES AND FITTINGS

A. COPPER:

Seamless annealed copper tube conforming to B88-58, Type K. Fittings for copper pipe standard wrought copper fittings manufactured by Phelps Dodge Copper Products or NIBCO, Inc.

B. BRASS PIPE:

IPS standard weight, 85 percent red brass. Fittings standard 125-pound cast bronze threaded fittings.

C. PVC:

PVC Pressure rated pipe, Type 1220 (PVC Class 160, 200 and 315) and Type 1120 (PVC Schedule 40):

1. Type 1, Grade II pressure rated pipe.
2. ASTM D1784-60T.
3. Outside diameter same size as iron pipe.
4. Pipe marked at maximum 60-inch intervals with the following: Manufacturer's name, nominal pipe size, PVC type and grade (i.e. PVC 1120), SDR rating class, NSF approvals and commercial standard designation CS 256-63.
5. PVC pipe comply with CVS 256-63.
6. PVC Type I shall not be threaded.
7. PVC fittings: Type II, Schedule 40, NSF approved.
8. Solvent: Industrial Polychemical Service, Gardena, California, #715 Gray NSF approved.
9. Plastic to metal connection: Male adaptors hand tightened, plus one turn with strap wrench.
10. Joint compound: Permatex, Type II.

PVC high impact pipe, Type 2110 (PVC Schedule 40 and 80.

1. Type II, Grade I high impact pipe.

2.03 C.

2. Outside diameter same size as iron pipe.
3. Pipe marked at maximum 60-inch intervals with the following: Manufacturer's name, nominal pipe size, PVC type and grade (i.e. 2110) schedule, NSF approval and commercial standard designation CS 207-60.
4. PVC pipe comply with CS 207-60.
5. Schedule 40 and Schedule 80 used accordingly so that static pressure does not exceed working pressure.
6. PVC Schedule 40 shall not be threaded.
7. Fittings Schedule 40, Type II, NSF approved.
8. All threaded PVC pipe: Schedule 80, Type 2110.
9. Solvent shall be #715 Gray, NSF approved as manufactured by Industrial Polychemical Service, Gardena, California or approved equal.
10. Plastic to metal connection: Use male adaptors, hand tightened, plus one turn with a strap wrench. Joint compound Permatex, Type II.

2.04 VALVES

A. GATE VALVES:

| <u>Manufacturer</u> | <u>2 inch and less</u> | <u>2 1/2 inch and over</u> |
|---------------------|------------------------|----------------------------|
| Nibco-Scott | T-413 | T or F 619 |
| Crane | 438 | 461 or 460 |

Underground valves 3 inches and smaller: Furnished with operating nuts or hand wheels.

B. REMOTE CONTROL VALVES:

Electric valve shall be all brass EFA-CP Series by Rainbird.

C. QUICK COUPLING VALVES:

As indicated on plan with locking cover. Each valve shall have molded vinyl cover, green in color. All quick coupling valve keys and hose swivels same manufacturer as quick couplers.

2.04 D.

D. VALVE BOXES:

Ameteks. Install remote control valves, gate valves, and pressure relief valves in suitable valve boxes as shown in details, complete with locking and hinged cover. Marked "PRV", "GV" OR "RCV". Remote control valve boxes green, rectangular, and with station numbers for control valves stenciled in white on valve cover. All other valve boxes green and round.

2.05 SPRINKLER HEADS

Types and sizes indicated on plans. Bronze, brass, stainless steel and/or plastic.

Heads with same function in system of same manufacture and marked with manufacturer's name and identification in such position that they can be identified without being removed from system.

Sprinkler risers as indicated on drawings.

2.06 CONTROLS

A. AUTOMATIC CONTROLLER:

Rainmaster RM Series with size as indicated on plans.

B. LOW VOLTAGE CONTROL WIRE:

(For connecting automatic controller to electric solenoid actuated remote control valve.) Type UF-600V, 7 strand or solid copper, PVC insulation, single conductor, UL approved underground feeder cable. Each pilot or "hot" wire color coded with common wire being either black or white.

C. CONTROL WIRE:

Solid copper wire, UL approved for direct burial in ground. Minimum gauge #14.

1. Splicing Material: Sta-Kon No. PT-70 connector, Scotchlok #3576 sealing pack. Rainbird PT-103.

PART 3--EXECUTION

3.01 LAYOUT

Install sprinkler layout as shown on plans. Where connections to existing stubouts are required, make necessary adjustments in layout to connect should stubs not be located exactly as shown. Adjust layout as necessary to install around existing work.

3.01

Guarantee full coverage upon completion of job. System is designed for a minimum static pressure at water meter as noted. Verify static pressure prior to starting any work if the static pressure is lower than the design pressure noted.

3.02 EXCAVATING AND TRENCHING

Perform excavations and backfill as required for this work in accordance with Section 02200.

Cut trenches for pipe to required grade lines and compact trench bottom to prove accurate grade and uniform bearing for full length of line.

When 2 pipes are placed in same trench, maintain 6-inch space between pipes.

3.03 BACKFILLING OF TRENCHES

Material approved soil. Unsuitable material, including clods and rocks over 2-1/2 inches in size shall be removed from site.

Backfill for all trenches, regardless of the type of pipe covered, shall be compacted to 95 percent minimum density under pavements, 85 percent under planted areas.

Depth of trenches sufficient to provide minimum cover above top of pipe as follows:

- 12 inches over non-pressure lateral lines.
- 18 inches over control wires.
- 18 inches over sprinkler main line.
- 18 inches over sprinkler main line under paving.
- 24 inches over potable main line.

Compact all trenches by thoroughly flooding during and after backfill operation. Jetting process may be used in those areas.

Dispose of surplus earth remaining after backfilling as directed.

Sprinkler lines tested in place before backfilling for not less than 2 hours with no leakage or loss of pressure. During test period, minimum test pressure at highest point of section being tested 100 pounds per square inch.

At conclusion of the pressure test, heads and test for operation shall be installed in accordance with design requirements under normal operating pressure.

3.03

Dress off all areas to finish grades.

Notify Construction Manager for a final coverage inspection prior to final acceptance.

3.04 PIPELINE ASSEMBLY

A. COPPER PIPE:

1. Cut ends of pipes, clean and square.
2. All burrs removed.
3. Outside end of copper pipe longer than end of fittings cleaned to a bright finish. Inside of fitting cleaned to a bright finish.
4. Pipe and fitting coated with solder flux applied with brush.
5. Pipes soldered according to best standard practices of trade.

B. PVC PIPE

1. Snake pipe from side to side of trench bottom to allow for expansion and contraction.
2. Plastic to metal joints made with plastic male adaptor.
3. Joints allowed to set at least 24 hours before pressure is applied to system.
4. After new sprinkler piping and risers are in place and connected and prior to installation of sprinkler heads control valves opened and full head of water used to flush out system. After system is thoroughly flushed, riser and pressure test system shall be capped off.

3.05 VALVES

Piping systems with valves at points indicated on drawings or specified herein, arranged to give complete regulating control throughout.

Valves full size of line in which they are installed unless otherwise indicated.

3.05

Remote control valves adjusted so that most remote sprinkler heads operate at pressure recommended by head manufacturer. Uniform distribution of water applied by sprinkler heads to planting areas for each individual valve system.

Quick coupling valves set approximately 3 inches minimum from walks, curbs, header boards, or paved areas where applicable or as otherwise noted. Vertical positioning of quick coupling valves such that sleeve top will be flush with settled finish grade as determined after turf is established and 3 inches above grade in ground cover areas.

Relief covers installed in plastic valve boxes with locking covers with 1 cubic foot pea gravel under valve. Valves preset at 150 psi.

Valves installed as shown in details and in accordance with manufacturer's instructions.

3.06 VALVE BOXES

Valve boxes set 1/2 inch above designated finish grade in lawn areas and 2 inches above finish grade in ground cover areas.

Valve boxes installed near walks, curbs, headerboards and paving shall not be placed closer than 12 inches. Top surfaces flush with items listed above.

3.07 SPRINKLERS

Install shrub heads 6 inches from edge of paving or buildings. In areas adjacent to traffic and at corners set head flush with adjacent paving.

Nozzels on stationary pip-up sprinklers tightened after installation. All sprinklers having adjustment stem adjusted on lateral line for proper radius, diameter and/or gallonage.

Sprinkler heads and quick coupling valves set perpendicular to finished grades unless otherwise designated on the plans.

Sprinkler heads and risers installed according to detail sheet.

3.09 AUTOMATIC CONTROLLER LOCATION AND INSTALLATION

Installed approximate location indicated on plan. Pedestal mounted controllers mounted on suitable concrete base.

3.09

Controller location is diagrammatic and will be specifically located by Owner.

All applicable codes shall take precedence in connecting 110 volt electrical service to controller.

Coverage at earth 12 inches minimum over 24 volt control wire. Install wire in trench and tape to main lines on side of pipe at 10-foot intervals.

3.10 CONTROL WIRE

All electrical equipment and wiring comply with applicable codes and installed by those skilled and licensed in trade.

Connecting and splicing of wire at valves or in field made using Pen-Tite connectors.

3.11 BACKFLOW PREVENTION UNITS

Size and type specified provided at locations specified on plans in accordance with details shown or as recommended by manufacturer in accordance with applicable codes.

3.13 ELECTRICAL WORK

Electrical work installed in accordance with applicable code.

****END OF SECTION****

SECTION 02900

LANDSCAPE CONSTRUCTION

PART 1--GENERAL

1.01 GENERAL CONDITIONS

The bidder shall visit and inspect site to thoroughly inform himself of all existing conditions. Any discrepancies between existing conditions and those shown on drawings should be brought to the attention of the Construction Manager in writing for clarification. Beginning the work of this section without reporting and then receiving a written response from the Construction Manager constitutes acceptance of conditions by the Contractor. Any required removal, repair or replacement of this work caused by unsuitable conditions to be done at no additional cost to Owner.

1.02 COORDINATION

Inspect and approve sprinkler work prior to start of any work in this section.

Prior to excavating or placing of stakes, locate all utilities, electric cables, conduits, sprinkler lines, heads, valves and valve control wires and all utility lines so that proper precautions may be taken not to damage such improvements. In event of conflict between such lines and plant locations, promptly notify the Construction Manager and propose relocation for one or the other. Failure to follow this procedure places upon Contractor responsibility for, at his own expense, making any and all repairs for damages resulting for work hereunder and for any adjustments required.

Quantities and type of plant materials shall be furnished in quantities and spacing as indicated for each location and shall be of species, kinds, sizes, as symbolized and described in "Plant Material Legend". List on drawings prepared only as convenience to Contractor and its accuracy is not assured. Verify all sizes and quantities.

1.03 QUALITY ASSURANCE

Observations listed herein will be made by Contractor. Contractor to notify Construction Manager 2 days in advance of time observation can be made and allow Construction Manager opportunity to make observations.

1.03

1. During preliminary finish grading and soil preparation.
2. Plants, after delivery to site, when shrubs and trees are spotted for planting, but prior to when planting holes are excavated.
3. Specimen trees at source, before delivery.
4. Potted plants prior to locating.
5. Lawn areas prior to sodding.
6. Planting areas prior to planting.
7. Landscape construction items, prior to start of maintenance period (final inspection).
8. At completion of maintenance period (final maintenance inspection).

Prior to job acceptance, submit written certification for the following:

1. Quantity of sod.
2. Quantity of soil amendments called for by plans and specifications.
3. Certificate with every delivery of bulk material stating source, quantity, type of material and that material conforms to specification requirements. For bulk delivered organic fertilizer, certificate shall state volume, net weight, percentage of nitrogen, potassium and phosphoric acid. For each fertilizer and soil conditioner in containers, furnish similar certificate stating total quantities by weight and volume for each material.

1.04 PROTECTION

Furnish and maintain all warning signs, shoring, barricades, red lanterns, etcetera, as required by the safety orders of the Division of Industrial Safety and local ordinances.

1.05 GUARANTEE AND REPLACEMENT

Guarantee period shall begin at date of final acceptance of project.

1.05

All shrubs and ground cover shall be guaranteed as to growth and health for a period of 90 days. All trees up to 20 inches box size guaranteed to live and grow in acceptable upright position for six months. Trees in 20-inch boxes or larger, and all field grown specimens guaranteed to live and grow in acceptable upright position for 1 year.

Signs of failing growth at any time during life of contract, including maintenance period or those plants so injured or damaged as to render them unsuitable for purpose intended, shall be immediately replaced in kind and size.

Within 15 days of notification remove and replace guaranteed plant materials which, for any reason, fail to meet requirements of guarantee.

1.06 PERMITS AND FEES

Obtain all permits and pay required fees to any governmental agency having jurisdiction over the work. Arrange inspection required by local agencies and ordinances during the course of construction as required.

1.07 WORK SCHEDULE

Submit a proposed work schedule to the Construction Manager at least 30 days prior to start work. After approval, no modification shall be made to this schedule without written authorization by the Construction Manager.

1.08 PRECONSTRUCTION CONFERENCE

Schedule a preconstruction conference with the Construction Manager and Contractor at least 7 days before beginning work under this section. Purpose of this conference is to review questions Contractor may have regarding the work, administrative procedures during construction, and project work schedule.

1.09 WEATHER

No planting shall occur or will be permitted during weather conditions which will adversely affect materials, nor will it be permitted when soil is in muddy condition.

Part 2

PART 2--PRODUCTS

2.01 PLANTS

A. NOMENCLATURE:

Plant names indicated in "List of Plant Materials" on drawings, conform to "Standard Plant Materials" on drawings, conform to "Standard Plant Names" established by American Joint Committee on Horticulture. Except for names covered therein, established custom of nursery is followed.

B. CONDITION:

Plants shall be symmetrical, typical for variety and species, sound, healthy, vigorous, free from plant disease, insect pests or their eggs and shall have healthy normal root systems, well filling their containers, but not to the point of being root bound. Do not prune plants prior to delivery, except as authorized by the Construction Manager. In no case shall trees be topped before delivery.

C. DIMENSIONS:

Height and spread of all plant material measure with branches in their normal position and as indicated in drawings. Caliper of all trees measured 4 feet above surface of ground. When caliper or other dimensions of any plant materials are omitted from "Plant Legend", these plant materials shall be normal stock for type listed.

D. INSPECTION:

Plant materials must have been previously inspected at nursery and subject to inspection and acceptance by the Construction Manager before planting.

E. PLANT LIST:

Indicated on drawings.

F. SIZES OF PLANTS:

Stated on plan. Container stock (1 gallon, 5 gallons, and 15 gallons) shall have been grown in containers for at least 1 year, but not over 2 years.

G. SUBSTITUTIONS:

Substitutions for indicated plant materials only pursuant to Article 12 of Section 00800.

2.10 H.

H. Plants not approved to be removed from site immediately and replaced with suitable plants. Construction Manager reserves the right to reject entire list of plants represented by defective samples.

I. Ground cover plants shall have been grown in flats or pots and shall remain in those flats until transplanted. At time of transplanting, the flat soil shall contain sufficient moisture so that the soil does not fall apart when lifting plants from the flat. Each plant shall be planted with its proportionate amount of the flat soil in a manner that will insure a minimum disturbance to the root system.

J. Certificates shall accompany all shipments as proof of inspection and quality as may be required by federal, state, or other authorities. Label each plant or bundle and deliver bulk materials in sealed, labeled bags, testifying as to percent and purity of contents. Should any conflict arise as to the quality of any plant materials, the decision of the Construction Manager is final.

2.02 TOPSOIL

Topsoil shall be screened, fertile, friable soil from well drained arid land and free from nut grass, refuse, roots, heavy clay, noxious weeds or any material toxic to plant growth. Topsoil content shall be as follows: silt 20 to 45 percent; clay 15 to 20 percent; sand 30 to 60 percent; with a minimum of 5 percent organic material (natural or added). Topsoil existing in the site may be used if it meets the above specification. Ph shall not be lower than 5.5 nor exceed 8.3 and soluble salts not exceed 1,500 ppm.

2.03 SOIL PREPARATION

Planting backfill for all trees and shrubs shall be as follows:

- 50 percent by volume on imported soil.
- 30 percent by volume nitrolized sawdust.
- 20 percent by volume gypsum.

Plants with the exception of ground covers and turf areas to receive agriform (20-10-5) plant tabs at the following rates:

| | |
|-------------|-------------------|
| 1 gallon | 1-21 gram tablets |
| 5 gallons | 2-21 gram tablets |
| 15 gallons | 4-21 gram tablets |
| 24 inch box | 6-21 gram tablets |
| 30 inch box | 7-21 gram tablets |
| 36 inch box | 8-21 gram tablets |

2.03

Set tablets 3 inches below finished grade and space evenly around plant's perimeter.

2.04 STAKING AND GUYING MATERIALS

A. TREE STAKES:

Shall be 2 inches diameter by 8 feet new lodge pole pine treated with copper naphthenate or approved equal single or double stake. See plant legend remarks and details.

B. GUY WIRES AND PLANT TIES:

Pliable, zinc coated, 10 gauge iron.

C. STAKES FOR HOLDING GUY WIRES:

2 inches by 4 inches by 2 feet clear, rough redwood.

D. HOSE FOR COVERING WIRE:

New or used garden hose at least 1/2 inch in diameter.

E. GUY WIRES:

"Flagged" with a white neoprene cover 6 feet above grade.

F. TIES FOR HOLDING TREES TO SUPPORTS:

"Cinch ties". Use 3 per tree (see drawings).

G. STEEL REBAR:

"Maxwell" tree support #55-44 (18 inches) per plans.

2.05 LAWN

The Construction Manager will be responsible for providing the type of lawn specified on the plans, in accordance with the following specifications:

A. WINTER LAWN--OCTOBER THROUGH APRIL:

Broadcast annual rye grass at the rate of 10 pounds per 1,000 square feet. Apply a top dressing of steer manure at the rate of 1 cubic year per 1,000 square feet. Keep lawn areas moist until germination.

2.05 B.

B. SUMMER LAWN--MAY THROUGH SEPTEMBER:

Common bermuda. Hydromulch common bermuda at the rate of 3 pounds per 1,000 square feet using 1,750 pounds fiber/acre. Keep lawn areas moist until germination.

C. SOD:

Materials, grade and composition of sod: Grade 1 as grown and marketed by Western Sod. For composition of sod see planting plan.

Thickness: Machine cut at uniform soil thickness of 5/8 inch to 7/8 inch. Measurement for thickness shall exclude top growth and thatch.

Size of roll or slab: Individual pieces of sod cut to supplier's standard width and length. Maximum allowable deviation from standard width and length 2 percent. Broken rolls or slabs or torn or uneven ends are not acceptable.

Strength of sod sections: Standard size sections of sod strong enough to support their own weight and retain their size and shape when suspended vertically from a firm grasp on upper 10 percent of section.

Moisture content: Do not harvest or transplant sod when moisture content (excessively dry or wet) may adversely affect its survival.

Time limitations: Sod harvested, delivered and installed within period of 24 hours, unless a suitable preservation method is approved prior to delivery. Sod not installed within this period may be rejected without other cause.

2.06 REDWOOD HEADER

As detailed and arranged as indicated on drawings. Construction grade, wood. Insert top 1-1/2 inches above finish grade.

2.07 BRICK HEADER

As detailed and arranged as indicated on drawings. Set tops 1-1/2 inches above finish grade.

2.08 DECOMPOSED GRANITE

Size as indicated on drawings, "Desert Gold" color, shall be free from lumps or balls of clay and containing no calcareous

coatings, caliche or organic matter deleterious substances. Source of decomposed granite shall be approved by the Construction Manager. All material from a single production source presenting a uniform appearance. Material containing clumps which will not disintegrate with a shovel blow shall be rejected.

2.09 WEED CONTROL CHEMICALS

Non-selective contact herbicide(s) and/or non-selective systematic herbicide(s) compatible with seed mixture(s) and vegetatively planted materials are all that are permitted. Use pre-emergent herbicide(s) compatible with seed mixture(s) and vegetatively planted materials. Use only approved weed control materials and a licensed applicator.

PART 3--EXECUTION

3.01 FINISH GRADING

When preliminary grading, including weeding and fertilizing, has been completed and soil has dried sufficiently to be readily worked, all lawn and planting areas. Grades not indicated to have uniform levels or slopes between points where elevations are indicated. Minor adjustments of finish grades made at direction of Construction Manager. Finish grade smooth, even and uniform plane without abrupt change of surface. Slope areas adjacent to buildings away from building to allow a natural runoff of water, and surface drainage by remodeling surfaces to facilitate natural "runoff" of water. Low spots and pockets graded to drain properly. Finish grade of planting and lawn areas 1 inch below grade of adjacent pavement of any kind. Grading to be done when soil is at optimum moisture content for working. Finish grade to within 1/10 of 1 foot of elevation indicated.

3.02 SOIL PREPARATION

Soil not to be worked when moisture content is such that excessive compaction will occur nor when so dry that dust forms in air or that clods will not break readily. Water, if necessary, to provide ideal moisture content for tilling and for planting.

Before and during preliminary and finish grading, weeds and grasses dug out by roots and disposed of off site (except those weeds and grasses not of perennial type, less and 2-1/2 inches high and not bearing seeds, which may be turned under). Oats more than 2-1/2 inches high and not bearing seeds may be turned under. Perennial weeds and grasses to be removed include nut grass,

alfalfa, St. Augustine grass, Puncture Vine, Dallas grass, Mustard Plant, Johnson grass, Wire weed and Morning Glory.

Planting areas scarified to depth of 8 inches below grade with spacing of ripper teeth no greater than 12 inches on center prior to placing conditioners and fertilizers. All rock and debris more than 2 inches in diameter removed from site.

If irrigation system is installed after grading and fertilizing is completed, upper portion of backfill shall be retilled and fertilized to depth specified for area.

3.03 METHOD OF PLANTING AND WORK PROCEDURE

No planting done until all operations in conjunction with installation of sprinkler system have been completed, final grades have been established, planting areas have been properly graded and prepared as herein specified.

Relative position of trees and plants is subject to approval, and relocation as directed.

Plants shall not dry out before or while being planted. Keep exposed roots moist by means of wet sawdust, peat moss, or burlap at all times during planting operations. Do not expose roots to air except while being placed in ground. Wilted plants, whether in place or not, will not be accepted and shall be replaced at Contractor's expense.

All plants removed from their containers and set so that, when settled, they bear same relation to required grade that they bore to natural grade before being transplanted. Each plant shall be planted in center of pit and backfilled, unless otherwise specified, with prepared soil. No soil in muddy condition shall be used for backfilling. No filling permitted around trunks and stems. All broken or frayed roots properly cut off.

Prepared soil uniformly blended in area adjacent to planting work and accurately proportioned using a suitable measuring container. Unused excavated soil cleaned up and disposed of off site. Mix protected from water until placed in backfill around plants.

Cut plant containers (cans) on 2 sides without injuring root ball, and carefully remove the plant. Do not cut container with spade. Any plant injured or root ball broken during planting operations will be rejected.

3.03

No boxed, balled or canned plants shall be planted if the ball is broken, cracked or rootbound, whether before or during the process of planting. Any trees transplanted that die or have bark, branch or die back injury shall be replaced with equal trees approved by the Construction Manager at no expense to the Owner.

Sidewalks and paving shall be kept broom swept clean daily during planting operation. Plant containers, empty fertilizer bags and seed bags and containers to be picked up and disposed of daily.

Immediately after planting, ground cover areas shall be top dressed with 1 inch of mulch.

3.04 PLANTING OF TREES

Pits for trees dug square with bottoms level, length of sides equal to 2 times diameter of tree. Pit bottom twice depth of rootball. Compacted soil at sides and bottoms loosened by scarifying or other approved method. Pits backfilled with prepared soil to bottom of tree ball. Tree set to required grade and balance of the pit filled with prepared soil, thoroughly settled by water application.

3.05 PLANTING OF VINES AND SHRUBS

Vines and shrubs planted in pits at least 18 inches greater in diameter than their ball or earth and at least 12 inches below bottom of ball. Compact soil at bottom of pit loosened and fill pot with "prepared soil" to bottom of ball. When plant properly set, fill pit to required greater with prepared soil and thoroughly settle by tamping and watering. Remove vines from stakes, untie and securely fastened in approved manner to wall, fence or other surface next to which they are planted.

3.06 PLANTING OR FLATTED GROUND COVER

Pits for flat sized plants at least 6 inches by 6 inches by 6 inches. Ground cover areas moistened prior to planting.

Set plants in center of pits so that crown of plant level with finished grade after settled of soil, then backfill and water.

Flatted plants well rooted with runners at least 4 inches but not more than 6 inches in length.

3.07 PLANTING OF SODDED LAWN

Lay sod so individual pieces butt up to each other. Maximum allowance space between rolls 1/8 inch.

If sod is laid on slopes requiring fastening, use wooden pegs (2 minimum per roll) and plywood to prevent foot damage.

If patching is required, use sharp knife to cut sections to insure proper fit with adjoining pieces.

Sod rolled lightly after placement to insure union and good soil contact.

3.08 WEED CONTROL

The applicator of all weed control materials shall be licensed by the State of Arizona as a pest control operator and a pest control advisor in addition to holding any subcontractor licenses that are required.

Prior to the installation of any weed control materials, the pest control advisor shall submit a list of weed types prevalent and expected on this site. Pest control advisor shall furnish data to demonstrate the compatibility of the weed control materials and methods with the intended planting and seeding varieties.

No material or method shall affect the landscape planting or hydroseed germination and establishment. Materials and methods must conform to federal, state and local regulations.

3.09 CINDER OR GRANITE

Furnish and place the cinder or granite in accordance with the details shown and the requirements of the specifications.

Prior to placing, the area shall be totally free to weeds, using chemical control if necessary. Apply a reemergence control according to manufacturer's recommendations. The decomposed granite shall be evenly distributed at the designated areas to a depth of 2 inches.

After placing and grading lightly water to remove fine material from the surface and water settle or roll to an extent satisfactory to the Construction Manager. Apply second application of reemergence control according to manufacturer's recommendation.

3.10 WATERING BASINS

Construct firmly compacted mound of soil around each tree and plant to form watering basin at edge of and following shape of planting pit area. Mounds for trees and for vines from 5 gallons or larger containers at least 4 inches high. Mounds for all other

3.10

trees, vines or plants not otherwise specified be at least 2 inches high. Excavated earth, if capable of retaining water, may be used. Any settlement within basins after watering refilled to required grade with prepared soil and additional nitrogen stabilized sawdust worked into surface as required to restore mulched condition.

At end of day maintenance period all watering basins in lawn areas leveled to be finish grade and sodded.

3.11 WATERING

Immediately after planting, water each tree and vine by means of hose. Water applied in moderate stream in planting holes until material about roots is completely saturated from bottom of hole to top of ground.

Watering commenced immediately after completion of job and continue as necessary to keep mulch moist without drying out or puddling. Normally irrigating once an hour for short duration and continuing this procedure each and every daylight hour 7 days a week will be sufficient. This continual moist condition shall prevail each and everyday until all stolons are well rooted. After the rooting stage is complete, irrigation should still continue at least once or twice a day until turf is well established.

Plants which cannot be watered efficiently with existing water system shall be watered by means of hose.

3.12 TREE STAKING

All trees not to be guyed at time of planting staked by placing stake in prepared hole and driving stake 18 inches into solid ground. Tree planted as close to stake(s) as possible without crowding roots. Tree fastened to upper end of stake in accordance with staking detail on plans.

3.13 MAINTENANCE

Plant maintenance work shall consist of applying water, weeding, caring for plants, including ground cover, shrubs, vines and trees, edging and mowing of lawns, fertilizing and control of pests and diseases and following final plant establishment work:

1. Entire project maintained for a period of 90 days, commencing from date of substantial completion.
2. Keep plants and planted areas kept well watered and weed free.

3.13

3. Damage planted areas repaired promptly.
4. Lawn areas ground cover or slope areas that do not show prompt catch of grass or establishment of plant material to be resodded or replanted at 10-day intervals until accepted.
5. All planted areas fertilized at 30-day intervals by application of 5 pounds ammonium phosphate per 1,000 square feet.
6. Plants be maintained in disease and pest free condition.
7. Shrubs and trees pinch pruned as necessary to encourage new growth and to eliminate rank sucker growth. Old flowers and dead foliage and limbs removed. No major pruning done without approval.
8. Grass mowed with reel-type mower at height of not less than 3/8 inch and not more than 1 inch. Grass clippings collected during mowing operations and removed from site. After each cutting of grass trim to neat and uniform. Do not walk unnecessarily on lawn areas.
9. Minor pick-up items may be completed during the basic maintenance such as:

Reseeding of bare spots.

Replacement of damaged or nonconforming plant material.

Restaking or tying of trees.

Removal of watering basins.

Lowering of sprinkler heads to grade after turf has established.

Filling of settled areas caused by application of normal watering.

10. At the end of 60 days minimum and when ground covers and turf have become established and pick-up items have been completed, request a final inspection.
11. If the work is satisfactory, the basic maintenance period will end. If the work is unsatisfactory, the basic maintenance period will continue at no additional expense to the Owner until the work has been completed, inspected and approved.

3.14 GUARANTEE AND REPLACEMENT

Guarantee all lawns and planting for a period of 60 days from the date of acceptance. All lawns and planting shall be alive and in satisfactory growth at the end of the guarantee period.

3.14

Lawn areas will be acceptable when a satisfactory strand of grass of sturdy growth is obtained.

During the guarantee period all plants shall be in a healthy, viable condition. Replace any plant not in a healthy condition when notified by the Construction Manager. Should any difference of opinion arise over replacement, the Construction Manager's decision is final.

Guarantee replacements for a period of 30 days.

The guarantee period for the deciduous trees shall be in effect until all are showing new growth the spring following planting.

****END OF SECTION****

DIVISION 3

CONCRETE

| <u>Section</u> | <u>Title</u> |
|----------------|------------------------|
| 03200 | CONCRETE REINFORCEMENT |
| 03300 | CAST-IN-PLACE CONCRETE |
| 03400 | PRECAST CONCRETE |
| 03600 | GROUT |

SECTION 03200

CONCRETE REINFORCEMENT

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies reinforcing steel for use in reinforced concrete.

1.02 QUALITY ASSURANCE

A. QUALITY CONTROL BY CONTRACTOR:

To demonstrate conformance with the specified requirements for cast-in-place concrete, the Contractor shall provide the services of an independent testing laboratory which complies with the requirements of ASTM E329. The testing laboratory shall sample and test concrete materials as required in Section 03300. Costs of testing laboratory services shall be borne by the Contractor.

B. REFERENCES:

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|-------------------|---|
| ASTM A82-79 | Cold-Drawn Steel Wire for Concrete Reinforcement |
| ASTM A185-79 | Welded Steel Wire Fabric for Concrete Reinforcement |
| ASTM A615-84a | Deformed and Plain Billet-Steel Bars for Concrete Reinforcement |
| ASTM E329-77 | Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction |
| AWS D1.4-79 | Structural Welding Code - Reinforcing Steel |
| CRSI-78 | Placing Reinforcing Bars |
| CRSI-80 | Manual of Standard Practice |
| FEDSPEC QQ-W-461H | Wire, Steel, Carbon (Round, Bare, and Coated) |

PART 2--PRODUCTS

2.01 BAR REINFORCEMENT

Reinforcing bars, except No. 2 bars, shall be deformed billet-steel conforming to ASTM A615, Grade 60, including supplementary requirements.

2.02 WIRE FABRIC

Wire fabric shall be 6-inch by 6-inch welded steel mesh conforming to ASTM A185.

2.03 WIRE AND PLAIN BARS

Wire used as reinforcement and bars used as spiral reinforcement in structures as shown on the drawings shall be cold drawn steel conforming to ASTM A82.

2.04 TIE WIRE

The wire shall be minimum 16 gage annealed steel conforming to FEDSPEC QQ-W-461H.

2.05 BAR SUPPORTS

Bar supports shall be located and placed in accordance with CRSI standards. Concrete block supports shall be provided for footing and slabs. Standard steel supports shall be provided for other work.

2.06 PRODUCT DATA

The following information shall be provided in accordance with paragraph 00710-4.02:

1. Bar placement drawings
2. Bar lists and bending details
3. Certified mill test reports
4. Bar tags
5. Welder qualification certificate in accordance with AWS D1.4.

PART 3--EXECUTION

3.01 GENERAL

As provided in paragraph 00710-2.03, the Owner is defining the quality of concrete reinforcement by specifying in this part some of the means, methods, techniques, sequences and procedures for installation of concrete reinforcement. The Contractor, without relinquishing authority and responsibility for supervision and direction of the work, agrees to follow the specified means, methods, techniques, sequences and procedures.

3.02 FABRICATION

Reinforcing steel shall not be bent or straightened in a manner which will injure the material. Bars with kinks or with bends not shown shall not be used. Heating or welding bars shall be performed in accordance with AWS D1.4. Bars shall not be welded at the bend. Tack welding of cross bars is not acceptable.

3.03 PLACEMENT

Reinforcing steel shall be placed in accordance with CRSI standards.

Reinforcing steel shall be positioned accurately and secured against displacement by using annealed iron wire or clips at intersections and shall be supported by concrete or metal chairs, spacers or metal hangers. Steel rods and pegs may be used to support reinforcing steel on rock foundations. Reinforcing steel shall be placed in such a manner as to not damage waterproofing membrane or plastic lining which have been previously applied or constructed. Reinforcing steel shall be bent or slightly relocated where necessary to clear waterstop. Reinforcing steel shall not be placed on fresh concrete or forced into fresh concrete.

Positioning support for embedded items shall not be welded to the reinforcement. Additional reinforcement may be provided for this purpose.

3.04 SPLICING

Reinforcing steel shall be spliced as shown.

In slabs, beams, girders and walls subject to lateral pressure, reinforcing steel shall not be spliced in areas of maximum stress. Splices of adjacent bars shall be staggered. Splices in welded wire fabric shall be at least 1-1/2 meshes wide.

3.05

3.05 CLEANING

Reinforcing steel shall be cleaned of mill rust scale, dried concrete, or other coatings that may reduce bond. Reinforcement reduced in section is not acceptable. When concrete placement is delayed, reinforcement shall be cleaned by sandblasting.

****END OF SECTION****

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies cast-in-place concrete which consists of furnishing all material, mixing and transporting equipment, and performing all labor for the proportioning, mixing, transporting, placing, consolidating, finishing and curing of concrete in the structure. Concrete shall be composed of Portland cement, fine aggregate, coarse aggregate, air entraining admixture and water as hereinafter specified.

1.02 QUALITY ASSURANCE

A. QUALITY CONTROL BY CONTRACTOR:

To demonstrate conformance with the specified requirements for cast-in-place concrete, the Contractor shall provide the services of an independent testing laboratory which complies with the requirements of ASTM E329. The testing laboratory shall sample and test concrete materials as specified in paragraphs 03300-2.01, 2.02, and 3.16. Costs of testing laboratory services shall be borne by the Contractor.

B. BASIS FOR QUALITY:

Cast-in-place concrete shall conform to the requirements of ACI 301, except as modified herein.

C. REFERENCES:

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|------------------|--|
| AASHTO M251-74 | Laminated Elastomeric Bridge Bearings |
| AASHTO T210-84 | Aggregate Durability Index |
| ACI 211.1-81 | Selecting Proportions for Normal, Heavy Weight and Mass Concrete |

1.02 C.

| <u>Reference</u> | <u>Title</u> |
|------------------|--|
| ACI 214-77 | Evaluation of Strength Test Results of Concrete |
| ACI 301-84 | Structural Concrete for Buildings |
| ACI 305R-77 | Hot Weather Concreting |
| ACI 306R-78 | Cold Weather Concreting |
| ACI 347-78 | Concrete Formwork |
| ASTM C31-85 | Making and Curing Concrete Test Specimens in the Field |
| ASTM C33-86 | Concrete Aggregates |
| ASTM C39-86 | Compressive Strength of Cylindrical Concrete Specimens |
| ASTM C40-84 | Organic Impurities in Fine Aggregate for Concrete |
| ASTM C42-84 | Obtaining and Testing Drilled Cores and Sawed Beams of Concrete |
| ASTM C88-83 | Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate |
| ASTM C94-86 | Ready-Mixed Concrete |
| ASTM C117-84 | Materials Finer Than 75-um (No. 200) Sieve in Mineral Aggregates by Washing |
| ASTM C131-81 | Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine |
| ASTM C136-84a | Sieve Analysis of Fine and Coarse Aggregates |
| ASTM C142-78 | Clay Lumps and Friable Particles in Aggregates |
| ASTM C143-78 | Slump of Portland Cement Concrete |
| ASTM C150-85 | Portland Cement |
| ASTM C157-86 | Length Change of Hardened Cement Mortar and Concrete |

1.02 C.

| <u>Reference (cont'd)</u> | <u>Title</u> |
|---------------------------|---|
| ASTM C172-82 | Sampling Freshly Mixed Concrete |
| ASTM C231-82 | Air Content of Freshly Mixed Concrete by the Pressure Method |
| ASTM C260-86 | Air-Entraining Admixtures for Concrete |
| ASTM C289-81 | Potential Reactivity of Aggregates (Chemical Method) |
| ASTM C309-81 | Liquid Membrane-Forming Compounds for Curing Concrete |
| ASTM C494-86 | Chemical Admixtures for Concrete |
| ASTM C595-86 | Blended Hydraulic Cements |
| ASTM C618-85 | Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete |
| ASTM D75-82 | Sampling Aggregates |
| ASTM D2419-74 | Test Method for Sand Equivalent Value of Soils and Fine Aggregates |
| ASTM E329-77 | Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction |

1.03 SUBMITTALS

Reports of concrete mix designs shall be submitted in accordance with Section 01300. Requirements for the reports are specified in paragraph 03300-2.02 C.

1.04 SAMPLES OF CONCRETE FLOOR FINISHES

A sample concrete panel, 2 feet by 2 feet, 3 inches thick, representative of each specified finish, shall be provided. The panels shall be representative of the workmanship and finishes required.

2.01 A.

PART 2--PRODUCTS

2.01 MATERIALS

A. CEMENT:

Portland cement shall be ASTM C150, Type II or Type V, low alkali, containing less than 0.60 percent alkalies. Portland-pozzolan cement shall be ASTM C595, Type IP(MS), interground, low alkali.

B. AGGREGATES:

1. GENERAL: Except as modified herein, fine and coarse aggregates shall conform to ASTM C33. Fine and coarse aggregates shall be regarded as separate ingredients. Aggregates shall be nonreactive and shall be washed before use.

When sources of aggregates are changed, test reports shall be provided for the new material.

The tests specified shall be performed prior to commencing concrete work.

2. FINE AGGREGATE: Fine aggregate shall be hard, dense, durable particles of either sand or crushed stone regularly graded from coarse to fine. When tested in accordance with ASTM C136, gradation shall conform within the following limits:

| <u>U.S. Standard Sieve Size</u> | <u>Percent by Weight Passing</u> |
|-------------------------------------|--------------------------------------|
| 3/8 inch | 100 |
| No. 4 | 95-100 |
| No. 8 | 65-95 |
| No. 16 | 47-70 |
| No. 30 | 27-45 |
| No. 50 | 10-21 |
| No. 100 | 2-8 |
| No. 200 | 0-2 |

Fine aggregate shall not exceed 40 percent by weight of combined aggregate total, except for concrete with coarse aggregate of less than maximum size 1/2 inch.

Variations from the specified gradations in individual tests will be acceptable if the average of three consecutive tests is within the specified limits and the variation is within the permissible variation listed below:

2.01 B.2.

| <u>U.S. Standard Sieve Size</u> | <u>Permissible Variation in Individual Tests, Percent</u> |
|-------------------------------------|---|
| 30 and coarser | 2 |
| 50 and finer | 0.5 |

Other tests shall be in accordance with the following specifications:

| <u>Test</u> | <u>Test Method</u> | <u>Requirements</u> |
|--|--------------------|------------------------------------|
| Amount of material passing No. 200 sieve | ASTM C117 | 3 percent maximum by weight |
| Reactivity | ASTM C289 | As specified in ASTM C33, Appendix |
| Sand equivalent | ASTM D2419 | Minimum 75 |

3. COARSE AGGREGATE: Coarse aggregate shall be hard, dense and durable gravel or crushed rock free from injurious amounts of soft and friable particles, alkali, organic matter and other deleterious substances. The grading requirements for coarse aggregates, tested in accordance with ASTM C136, shall be as follows:

| <u>Size number (ASTM C33)</u> | | | | |
|-------------------------------|----------------|----------------|----------------|----------------|
| <u>Class A</u> | <u>Class B</u> | <u>Class C</u> | <u>Class D</u> | <u>Class E</u> |
| 467 or 57 | 57 or 67 | 57 or 67 | 8 or 7 | 57 or 67 |

Before and during field trial mixes, the Contractor may make minor adjustments to the above gradation to produce the specified concrete.

During progress of the work, variations from the specified gradations will be acceptable in individual tests if the average of three consecutive tests is within the specified limits.

Other tests shall be in accordance with the following specifications:

2.01 B.3.

| <u>Test</u> | <u>Test Method</u> | <u>Requirements</u> |
|--|--------------------|--|
| Durability index | AASHTO T210 | Minimum 75 |
| Soundness | ASTM C88 | 10 percent maximum loss with sodium sulfate |
| Amount of material passing No. 200 sieve | ASTM C117 | 1.0 percent maximum by weight |
| Abrasion | ASTM C131 | 35 percent maximum loss after 500 revolutions in Los Angeles machine |
| Clay lumps and friable particles | ASTM C142 | 4.5 percent maximum by weight |
| Reactivity | ASTM C289 | As specified in ASTM C33, Appendix |

C. POZZOLAN:

Pozzolan shall be Class N, natural pozzolan, or Class F, fly ash, conforming to ASTM C618. Fly ash pozzolan shall contain less than 1 percent by weight carbon and less than 3 percent by weight sulfur trioxide. Pozzolan supplied during the life of the project shall have been formed at the same single source.

The pozzolan color shall not substantially alter the resulting concrete from the normal grey color and appearance.

D. ADMIXTURES:

1. GENERAL: Admixtures shall be compatible with the concrete. Calcium chloride or admixtures containing calcium chloride are not acceptable. Admixtures shall be used in accordance with the manufacturer's recommendations and shall be added separately to the concrete mix.

2. WATER REDUCING RETARDER: Water reducing retarder shall be ASTM C494, Type D, and shall be Master Builders, Pozzolite 300-R; Sika Chemical Corp., Plastiment; or equal.

The water reducing retarder shall reduce the water required at least 11 percent for a given concrete consistency and shall comply with the water/cement ratio standards of ACI 211.1.

2.01 D.3.

3. AIR ENTRAINING AGENT: Air entraining agent shall be Master Builders, MB-AE10; W. R. Grace and Co., DaraVair; or equal. The air entraining agent added shall produce an entrained air content between 3 and 5 percent in accordance with ASTM C260.

E. WATER:

Water for washing aggregate, for mixing and for curing shall be free from oil and deleterious amounts of acids, alkalies, and organic materials; shall not contain more than 1000 mg/l of chlorides as Cl, nor more than 1300 mg/l of sulfates as SO₄; and shall not contain an amount of impurities that may cause a change of more than 25 percent in the setting time of the cement nor a reduction of more than 5 percent in the compressive strength of the concrete at 14 days when compared with the result obtained with distilled water. Additionally, water used for curing shall not contain an amount of impurities sufficient to discolor the concrete.

F. PLASTIC LINING:

Plastic lining against which new concrete is placed shall be as specified in Section 09876.

Plastic lining shall be provided in the following areas:

1. Interceptor pumping station sump.
2. Interceptor manholes and junction structures.
3. Raw sewage pumping station.
4. Headworks.
5. Grit removal unit.
6. Raw sewage channel.

2.02 CONCRETE CHARACTERISTICS

A. MIX PROPORTIONING:

Concrete shall be normal weight concrete composed of specified cement, pozzolan, admixtures, aggregates and water proportioned and mixed to produce a workable, strong, dense, and impermeable concrete. The Contractor may substitute interground portland-pozzolan cement conforming to ASTM C595, containing the specified amount of pozzolan in lieu of portland cement and pozzolan. Pozzolan may be omitted in concrete exposed to normal atmospheric conditions and concrete not in contact with the ground or liquid.

Concrete shall be provided in accordance with the following:

2.02 A.

| <u>Concrete class</u> | <u>Coarse aggregate class</u> | <u>Min. cement content, sacks/cu yd concrete</u> | <u>Pozzolan, percent by weight of portland cement</u> | <u>Air entraining agent</u> | <u>Water reducing retarder</u> | <u>Minimum^(a) 28-day compressive strength, psi</u> |
|-----------------------|-------------------------------|--|---|-----------------------------|--------------------------------|---|
| A-1 | A | 4.75 | 18-20 | Yes | Yes | 4000 |
| A-2 | A | 5.0 | 0 | Yes | Yes | 4000 |
| B-1 | B | 5.0 | 18-20 | Yes | Yes | 4000 |
| B-2 | B | 5.25 | 0 | Yes | Yes | 4000 |
| C-1 | C | 5.0 | 18-20 | Yes | Yes | 4000 |
| C-2 | C | 5.25 | 0 | Yes | Yes | 4000 |
| D | D | 5.50 | 0 | No | Yes | 4000 |
| E(b) | E | 3.0 | 0 | No | No | 2000 |

Notes for table:

- (a) Compressive strength shall be determined at the end of 28 days based on test cylinders made and tested in accordance with ASTM C39.
- (b) Concrete encasement for electrical conduit shall contain 3 pounds of red oxide per sack of cement.

B. USE:

Concrete shall be provided by class for the corresponding use listed as follows:

| <u>Type of Use</u> | <u>Class of Concrete</u> |
|--|--------------------------|
| Concrete greater than 24 inches thick. | A |
| Concrete 12 to 24 inches thick, inclusive. | B |
| Concrete less than 12 inches thick. | C |
| Topping concrete. | D |
| Pipe bedding and encasement, electrical conduit encasement (duct banks) and concrete fill. | E |

2.02 B.

For the use listed, concrete slump, sampled in accordance with ASTM C172 and tested in accordance with ASTM C143, shall be as follows:

| <u>Type of Use</u> | <u>Working Limit, inches</u> | |
|---|------------------------------|----------------|
| | <u>Minimum</u> | <u>Maximum</u> |
| Mass concrete, foundation slabs greater than 24 inches thick, tunnel inverts and unformed slopes. | 1 | 2 |
| Floor slabs, beams, foundation slabs and footings 24 inches thick or less, pavement, sidewalks and curbs. | 2 | 3 |
| Walls and columns. | 3 | 4-1/2 |
| Topping concrete. | | 1 |
| Pipe bedding encasement, electrical conduit encasement. | 4 | 8 |
| Concrete fill. | 3 | 4 |

C. CONTROL TESTS:

1. MIX DESIGN: Before beginning concrete work, the Contractor shall determine the proper proportions of materials for each strength and class of concrete. The mix shall consist of specified cement, pozzolan, admixtures, aggregate and water. Methods for selecting and adjusting proportions of the ingredients shall be in accordance with ACI 211.1. The laboratory reports of each mix design shall state whether the items reported comply with the specifications and shall show (1) the expected strength, (2) corresponding slump, (3) expected drying shrinkage, (4) weights and test results of the ingredients, and (5) other physical properties necessary to check each mix design. Copies of the laboratory reports shall be submitted in accordance with paragraph 03300-1.03.

Each mix design shall be checked in the laboratory by the preparation of two trial batches, one with 2-inch slump and one with 5-inch slump. For each batch, six standard test cylinders shall be cast and cured as specified for the field concrete. Three cylinders from each batch shall be tested at age 7 days, two at age 14 days, and one at age 28 days. Drying shrinkage shall be measured as specified in paragraph 03300-2.02 C.3.

2. FIELD TRIAL MIX: After acceptance of laboratory mix design and prior to concrete placement, the Contractor shall establish, based upon the accepted design mixes, field proportions for the classes of concrete required. Field trial concrete shall

2.02 C.2.

be manufactured using the equipment to be used for the work. Minor adjustments shall be made in the design mixes to provide a dense, homogeneous, durable concrete with good workability and finishing qualities. Six standard test cylinders shall be obtained from the field trial mixes for concrete Classes A, B and C and tested as specified for mix design test cylinders. Drying shrinkage shall be measured as specified in paragraph 03300-2.02 C.3. The Construction Manager shall be notified 1 week in advance of field trial mix work; field trial mix work shall be performed with representatives of the Construction Manager and the testing laboratory being present. Sampling and testing of concrete shall be done by the independent testing laboratory specified in paragraph 03300-1.02 A. Certified copies of the laboratory test results shall be submitted to the Construction Manager.

Concrete shall not be placed in the field prior to acceptance of the field trial mix.

3. DRYING SHRINKAGE: Drying shrinkage specimens shall be prepared from the same concrete used for preparing compression test cylinders for mix design and for field trial mix and are required only for Classes A, B and C concrete. From each mix, three specimens shall be prepared. The drying shrinkage specimens shall be 4 x 4 x 11 inch prisms with an effective gage length of 10 inches, prepared, cured, dried and measured in accordance with ASTM C157 and as modified herein. Specimens shall be removed from molds at an age of 23 ± 1 hour after batching and shall be placed immediately in water at 73 ± 3 degrees F. Expansion, expressed as a percentage of original length, shall be measured at age 7 days. This length at age 7 days shall be the base length for drying shrinkage calculations. Specimens shall then be stored immediately in a humidity control room maintained at 73 ± 3 degrees F and 50 ± 4 percent relative humidity for the remainder of the test. Measurement, to determine the drying shrinkage, expressed as percentage of base length, shall be made and reported separately for 7, 14, 21 and 28 days of drying after 7 days of moist curing.

The average drying shrinkage of each group of the test specimens after 28 days of drying shall not exceed the following:

| <u>Specimen</u> | <u>Drying shrinkage, percent</u> |
|-----------------|----------------------------------|
| Mix design | 0.043 |
| Field trial | 0.055 |

2.03 WATERSTOPS

Waterstops shall be manufactured from virgin polyvinyl-chloride (PVC) conforming to the Corps of Engineers Specification No. CRD-C572.

2.03

Waterstops in construction joints shall be Burke Concrete Accessories, Inc., Vinylock Type RB316-6; Water Seals, Inc., 6-inch Flex-Bulb; or equal. Waterstops in expansion joints shall be Burke Concrete Accessories, Inc., Vinylock Type RB38-9; Water Seals, Inc., 9-inch heavy-duty Flex-Bulb; or equal.

2.04 SEALANTS AND JOINT FILLERS

Sealants and preformed joint fillers shall be as specified in Sections 07900 and 07905.

2.05 BONDING COMPOUNDS

Epoxy resin bonding compounds shall be used for wet areas and shall be Adhesive Engineering, Concrete Nos. 1001, 1001-LPL or 1180 as applicable; Sika Chemical Corporation, Sikastix 350, 370 or 390 as applicable; or equal.

Nonepoxy bonding compounds shall be used for dry areas and shall be Burke Concrete Accessories, Inc., Standard Dry Wall Products, Inc., Acryl 60; Thorobond; or equal.

Bonding compounds shall be applied in accordance with the manufacturer's instructions.

2.06 RETARDANT

Retardant for exposing aggregates for nonformed surfaces in construction joints shall be Sika Rugasol-S, Horn Aggretex-H, or Burke Aggreveal-C, or equal. Retardant shall be applied in accordance with manufacturer's instructions sufficient to assure a minimum penetration of 1/8 inch.

2.07 SURFACE HARDENER

Surface hardener shall be premixed, noncolored, nonmetallic Master Builders, Mastercron; W. R. Grace and Co., Durafax; or equal. Surface hardener shall be applied in accordance with manufacturer's instructions.

2.08 CURING AND SEALING COMPOUNDS

Curing and sealing compound shall be Master Builders, Masterseal; W. R. Grace and Co., Horn Clearseal; or equal, conforming to ASTM C309. Curing compounds shall be applied in accordance with the manufacturer's instructions, except as otherwise specified.

2.09 ELASTOMERIC BEARING PADS

Elastomeric bearing pads shall be laminated and reinforced and shall conform to AASHTO M251.

2.10 PRODUCT DATA

The following information shall be provided in accordance with paragraph 00710-4.02.

A. MANUFACTURER'S DATA:

Three copies of manufacturer's data shall be provided for the following:

1. Waterstops
2. Retardants
3. Curing compounds
4. Bonding compounds
5. Surface hardener
6. Pozzolan

B. LABORATORY TEST REPORTS:

Before delivery of materials, three copies of the reports of the tests specified herein shall be provided. Test reports on previously tested materials shall be accompanied by the manufacturer's statement that the previously tested material is the same type, quality, manufacture and make as that proposed for use in this project. Test reports are required for the following:

1. Cement
2. Aggregates
3. Pozzolan
4. Admixtures
5. Curing compounds
6. Retardants
7. Bonding compounds

C. READY-MIXED CONCRETE TRUCK DELIVERY TICKETS:

Each load of ready-mixed concrete delivered to the job site shall be accompanied by a delivery ticket showing the information listed in ASTM C94, Section 15.

D. EVIDENCE OF TESTING LABORATORY COMPETENCE:

The Contractor shall require that the laboratory provide directly to the Construction Manager evidence of the most recent inspection of its facilities by the Cement and Concrete Reference Laboratory of the National Bureau of Standards. The evidence shall show that deficiencies mentioned in the report of that inspection have been corrected. The evidence of inspection shall be provided prior to beginning the work of this section.

PART 3--EXECUTION

3.01 GENERAL

As provided in paragraph 00710-2.03 B, the Owner is defining the quality of cast-in-place concrete by specifying in this part

3.01

some of the means, methods, techniques, sequences and procedures for construction of cast-in-place concrete. The Contractor, without relinquishing authority and responsibility for supervision and direction of the work, agrees to follow the specified means, methods, techniques, sequences and procedures.

3.02 CONCRETE

Concrete shall be truck-mixed, ready-mixed concrete conforming to the applicable portions of ASTM C94. Materials shall be proportioned by weighing. Pozzolan shall be introduced into the mixer with cement and other components of the concrete mix; pozzolan shall not be introduced into a wet mixer ahead of other materials or with mixing water. Water shall be introduced at the time of charging the mixer; additional water may be introduced within 45 minutes from charging the mixer, provided the specified slump is not exceeded; or the Contractor shall be responsible for producing concrete of the specified characteristics. He shall arrange with his testing laboratory for inspection as required to comply with these specifications.

Concrete shall be delivered to the site of work and discharge shall be completed within 1-1/2 hours after introduction of the water to the mixture.

3.03 CONVEYING AND PLACING CONCRETE

A. CONVEYING CONCRETE:

Concrete shall be conveyed from the mixer to the forms in accordance with ACI 301, Chapter 8. Concrete which has segregated in conveying shall be removed from the site of the work.

B. PLACING CONCRETE:

1. GENERAL: Concrete shall be placed in accordance with ACI 301, Chapter 8, and ACI 304, Chapter 6.

2. PLACING CONCRETE BY PUMPING: Pumped concrete shall be the class and consistency specified in paragraph 03300-2.02 A for the use specified in paragraph 03300-2.02 B and in accordance with a design accepted under paragraphs 03300-2.02 C.1 and 03300-2.02 C.2.

Slump shall be measured at the hose discharge. Slump loss in pumping, measured between the pumping unit inlet hopper and the hose discharge, shall not exceed 1 inch. Before starting each pumping operation, the pump and line shall be primed with a cement slurry to lubricate the system. Cement slurry shall be wasted outside the forms.

3. PLACING CONCRETE IN HOT WEATHER: In hot weather, concrete shall be placed in accordance with ACI 305.

3.03 B.4.

4. PLACING CONCRETE IN COLD WEATHER: In cold weather, concrete shall be placed in accordance with ACI 306.

5. PLACING PLASTIC LINING: Liner sheets shall be provided as specified in Section 09876.

3.04 CONSOLIDATING CONCRETE

Concrete shall be consolidated in accordance with ACI 301, Chapter 8. Concrete placing shall be suspended if proper consolidation is not being secured until proper consolidation can be achieved.

3.05 CURING AND SEALING

Concrete shall be kept wet continuously for a minimum of 10 days after placement. Absorptive mats or fabric may be used to retain moisture during the curing period. Repairs or treatment of concrete surfaces shall be coordinated so that interruption of the curing will not be necessary. Concrete surface temperature shall be maintained between 50 degrees F and 80 degrees F for at least 5 days.

After 48 hours of water cure, and except as specified below, concrete curing may be completed using a membrane curing compound.

Curing compound shall not be used on concrete surfaces to be coated, waterproofed, moistureproofed, tiled, roofed or where other coverings are to be bonded, unless the curing compound is compatible with the final finish covering or it is removed prior to covering.

Steel troweled finish concrete floors which are not to receive tile, roofing, grout, terrazzo or other bonded coverings shall be cured with a curing and sealing compound. It shall be applied as soon as the concrete has set sufficiently so as not to be marred by the application. Preparation of surfaces, quantities used, application procedures and installation precautions shall be followed in strict compliance with the manufacturer's instructions, except that application shall be by roller.

3.06 PROTECTION

Concrete shall be protected from injurious action by sun, rain, flowing water, frost and mechanical injury, and shall not be allowed to dry out from the time it is placed until the expiration of curing periods.

Steel troweled slabs shall be protected with kraft paper, 6 mil thick polyethylene membrane, or other similar waterproof material for at least 2 weeks after placement. Joints between adjacent strips of the paper shall be sealed. Float or broom finished slabs need be protected after curing only in areas subject to damage during construction.

3.07 CONSTRUCTION JOINTS

A. GENERAL:

Concrete in each unit of construction shall be placed continuously. Before new concrete is placed on or against concrete which has set, forms shall be retightened and the surface of the set concrete shall be cleaned of foreign matter. Concrete surfaces on which new concrete is placed shall not be wetted. Watertight joints shall be provided as specified in paragraph 03300-3.10.

B. CONSTRUCTION:

Construction joints shall be formed as specified. A rough surface of exposed concrete aggregates shall be produced using a surface retardant at construction joints, including joints between slab and topping concrete. The limit of the treated surfaces shall be 1 inch away from the joint edges. Within 24 hours after placing, retarded surface mortar shall be removed either by high pressure water jetting or stiff brushing or combination of both so as to expose coarse aggregates. A rough surface of exposed aggregate may also be produced by sandblasting followed by high pressure water jetting. Sandblasting, if used, shall remove 1/8 inch of laitance film and shall expose coarse aggregate to insure adequate bond and watertightness at the construction joints.

C. LOCATIONS:

Construction joint locations shall be as follows:

1. Walls exceeding 50 feet in length shall be cast in panels not to exceed 30 feet in length. Where the number of panels is three or more, the panels shall be cast in an alternating pattern, unless 5 days have elapsed between casting of adjoining panels.
2. Joints in beams or girders shall be located at or near the midpoint between supports.
3. Joints in the members of a floor system shall be made at or near the center of the span.
4. Joints in walls and columns shall be at the underside of floors, slabs, beams or girders and at the tops of footings or floor slabs. Joints in columns shall be perpendicular to the axis.
5. Slabs shall be cast in panels not to exceed 40 feet in length or not to exceed 1600 square feet in area. Panels shall be cast in checkerboard patterns. Minimum lapsed time between placing adjacent panels shall be 24 hours.

3.07 C.

Vertical construction joints shall be grooved at exposed faces. Grooves subjected to wetting or weather shall be calked with joint sealer as specified.

Reinforcing steel and welded wire fabric shall be continued across construction joints. Girders and floor slabs shall not be constructed over columns or walls until at least one hour has elapsed to allow for shrinkage in the column or wall. No joint will be allowed between a slab and a beam or girder unless otherwise specified. Joints shall be perpendicular to the main reinforcement. Waterstops shall be provided in construction joints at locations as specified in paragraph 03300-3.10.

3.08 INSERTS AND EMBEDMENTS

A. INSERTS:

Where pipes, castings or conduits are to pass through structures, the Contractor shall place such pipes or castings in the forms before placing the concrete, or he may provide openings in the concrete for subsequent insertion of such pipes, castings or conduits. Such openings shall be provided with waterstops and V-shaped construction joint as shown and shall have a slight flare to facilitate grouting and permit the escape of entrained air during grouting.

Additional reinforcement shall be provided around large openings as shown. The grout shall be nonshrink grout as specified in Section 03600.

B. EMBEDMENTS:

Gate frames, gate thimbles, special castings, channels or other miscellaneous metal parts that are to be embedded in the concrete shall be set and secured in the forms prior to concrete placement. Unless otherwise specified, anchor bolts and inserts shall be embedded in concrete as shown. The Contractor shall provide inserts, anchors or other bolts necessary for the attachment of piping, valves, metal parts and equipment. Nailing blocks, plugs, strips, and the like necessary for the attachment of trim, finish and similar work shall be provided. Voids in sleeves, inserts and anchor slots shall be filled temporarily with readily removable material to prevent the entry of concrete into the voids. Operators or sleeves for gate or valve stems shall be positioned to clear reinforcing steel, conduit and other embedments, and to align accurately with equipment.

3.09 EXPANSION JOINTS

Expansion joints shall be as shown. Reinforcement or other embedded metal items bonded to the concrete shall not extend through expansion joints. Waterstops shall be provided in expansion joints as specified in paragraph 03300-3.10.

3.10 WATERSTOPS

Waterstops shall conform to ACI 301, paragraph 6.3. Waterstops shall be securely held in position during placing of concrete. If, after placing concrete, waterstops are materially out of position or shape, the surrounding concrete shall be removed, the waterstop reset, and concrete replaced in accordance with paragraph 03300-3.11 A.

Waterstops shall be provided at the following joints:

1. Expansion joints in structures.
2. Joints in parts of structures exposed to ground or water on one side and to areas to be occupied by nonsubmerged equipment or by personnel on the other.
3. Joints of tanks and channel walls above ground level and subject to water pressure. Waterstops shall be provided from 6 inches above high water level to 2 feet below finished grade.

Field splices are acceptable only in straight sections. Crosses, tees and other shapes shall be fabricated prior to delivery to the site of the work.

3.11 MODIFICATION OF EXISTING CONCRETE

Existing concrete shall be removed and the remaining surfaces resurfaced as specified. The remaining concrete shall be protected from damage. Where possible, clean lines shall be made by sawing through the existing concrete. The concrete may be broken out after initial saw cuts in the event thickness prevents cutting through. Where it is not possible to use a saw, the initial cuts shall be made with chipping hammers. These cuts shall be sufficient to prevent damage to the remaining concrete. In general, an opening in existing concrete shall be oversized 1 inch on all sides and built back to the correct dimension with an epoxy grout. Where oversized openings cannot be made, the concrete shall be cut to the correct dimension, with the exposed reinforcing cut back an additional 1 inch and the resulting hole filled with epoxy grout. Cut or broken concrete surfaces shall be resurfaced with an epoxy grout. Concrete surfaces to be coated shall be dry. Where new concrete adjoins existing concrete surfaces or surfaces which have been cut, such surfaces shall be cleaned by sandblasting to remove laitance, loose coatings and foreign materials, and coated with the bonding compound just prior to the placement of the new concrete. Bonding compounds shall be as specified in paragraph 03300-2.05. Unless otherwise specified, continuity of reinforcing steel shall be obtained across the joint either by exposing existing bars to provide sufficient laps with new bars or by welding existing bars with new bars. Where shown, dowels shall be drilled and set with epoxy grout into existing concrete.

3.12 A.

3.12 FORMED SURFACE FINISHES

A. REPAIR OF SURFACE DEFECTS:

Surface defects, including tie holes, minor honeycombing or otherwise defective concrete shall be repaired in accordance with ACI 301, Chapter 9. Areas to be patched shall be cleaned. Minor honeycombed or otherwise defective areas shall be cut out to solid concrete to a depth of at least 1 inch. The edges of the cut shall be perpendicular to the surface of the concrete. Patches on exposed surfaces shall be finished to match the adjoining surfaces after they have set. Patches shall be cured as specified for the concrete. Finished surfaces shall be protected from stains and abrasions. Finishes shall be equal in workmanship, texture and general appearance to that of the adjacent concrete. Concrete with honeycombing which exposes the reinforcing steel or with defects which affect structural strength shall be corrected.

B. FORMED SURFACE FINISHING:

Formed surfaces shall be finished as soon as practicable after form removal and repair of surface defects. Finishes shall be as follows.

1. FINISH A: Finish A shall be a grout clean finish in accordance with ACI 301, Section 10.3.2. Surfaces shall be lightly sandblasted prior to sacking. For interior areas not exposed to moisture or weather, water used in the mortar shall be mixed with a PVA bonding compound as recommended by the manufacturer. Finish A shall be provided for painted and unpainted surfaces; surfaces of stair wells; interior surfaces of equipment rooms, galleries and tunnels; operations areas; exposed channels and tanks from 1 foot below minimum water surfaces and up; and permanently exposed vertical and sloped surfaces, such as pipe chases.

2. FINISH B: Finish B shall be the same as Finish A, except that the final burlap rubbing may be omitted, providing the steel trowel scraping removes the loose buildup from the surface. Finish B shall be provided for waterproof and moistureproof coated surfaces.

3. FINISH C: Finish C shall be referred to as a finish which has surface imperfections less than 3/8 inch in any dimension. Surface imperfections greater than 3/8 inch shall be repaired or removed and the affected areas neatly patched. Finish C or smoother shall be provided for interior surfaces of wet wells, tanks and channels from 1 foot below minimum water surfaces and down and otherwise unfinished interior surfaces.

4. FINISH D: Finish D shall be the finish for surfaces which may be left as they come from the forms, except that tie holes shall be plugged and defects greater than 1/2 inch in any dimension shall be repaired.

3.13 A.

3.13 SLAB FINISHES

A. GENERAL:

The finishes specified herein include surface finishes, treatments and toppings for floors and slabs. Floors shall be sloped to drain uniformly. Unless otherwise specified, slope shall be minimum 1/8 inch per foot towards nearest drain. Where finish is not specified, floor slabs shall receive steel troweling. Dry cement shall not be used on new concrete surfaces to absorb excess moisture. Edges shall be rounded to a radius of 1/2 inch. Joints shall be grooved to a radius and depth of 1/4 inch each. Finishes shall match the sample panels provided under paragraph 03300-1.03.

B. FLOAT FINISH:

Float finish shall conform to ACI 301, Section 11.7.2. Floating shall be performed with a hand or power-driven float. Floating of any one area shall be the minimum necessary to produce the finish specified. Floating shall compact and smooth the surface and close any cracks and checking of surfaces. Float finish shall be applied to surfaces of channel and tank bottom slabs and to footings.

C. STEEL TROWEL FINISH:

Steel trowel finish shall conform to ACI 301, Section 11.7.3. Immediately after final troweling, the surface shall be cured and protected as specified in paragraphs 03300-3.04 and 03300-3.05. Steel trowel finish shall be provided on floors unless specified otherwise. Surface hardener shall be troweled into the finished surface where specified.

D. BROOMED FINISH:

Broomed finish shall conform to ACI 301, Section 11.7.4. Broomed finish shall be provided for walks, tops of tanks, slabs on grade exposed to atmosphere, and where otherwise indicated or specified.

3.14 TOPPING CONCRETE

A. SUBFLOOR FINISH:

Slabs to receive topping, tile or grout as shown shall be float finished to required elevations. Immediately following the final finishing, the slab shall be treated with a retardant.

3.14 B.

B. TOPPING CONCRETE:

These requirements shall apply to the placement of normal concrete topping, with or without surface hardener, on a hardened base slab.

Slabs to receive topping concrete shall have an exposed aggregate subfloor finish as specified in paragraph 03300-3.14 A. Dirt, laitance and loose aggregate shall be removed. The cleaned base shall be kept wet for a period of 24 hours prior to the application of topping. Excess water shall be removed, and a neat cement grout shall be applied and brushed into the surface of the base. The cement grout shall not be allowed to dry and shall be spread within 15 minutes of the topping placement. The topping shall then be placed to grade, compacted by rolling or tamping, and floated. The surface shall be tested with a straightedge to detect high and low spots of over 1/8 inch in 10 feet which shall be eliminated. Surface hardener shall be incorporated where specified. When the floor has hardened sufficiently, it shall receive a steel trowel finish.

3.15 RELATED SURFACES

A. MONOLITHIC SURFACING:

Monolithic surfacing shall be provided on floor areas as specified. Monolithic surfacing shall consist of a steel trowel finish hardened with a surface hardener as specified in paragraph 03300-2.07. Surface hardener shall be applied in an amount of at least 0.75 pounds per square foot. Surface hardener shall be applied in accordance with the manufacturer's recommendations and directions.

B. STAIR TREAD:

Stair tread shall be constructed with nonskid nosing as specified in Section 05530. Tread shall have a steel trowel finish with surface hardener and shall have a slope of 1/8 inch per foot toward the front. Ends of treads shall have a 1/16 to 1/8 inch cut between concrete and metal tread to allow for expansion.

C. FINISHING OF UNFORMED SURFACES:

1. RELATED UNFORMED SURFACES: Tops of walls or buttresses, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces shall be struck smooth after concrete is placed and shall be floated to a texture reasonably consistent with that of the adjacent formed surfaces. Final treatment of formed surfaces shall continue uniformly across the unformed surfaces.

2. PAVEMENTS AND SIDEWALKS: The surfaces of the concrete shall be screeded to grade and sloped to drain. After screeding, the surface shall receive a broomed finish as specified in

3.15 C.2.

paragraph 03300-3.13 D. Edges and expansion joints shall be rounded to a radius of 1/2 inch. Joints shall be grooved to a radius and depth of 1/4 inch each.

3.16 FIELD SAMPLING AND TESTS

A. GENERAL:

Field sampling and testing shall be performed by the independent testing laboratory specified in paragraph 03300-1.01 A. Samples of aggregates and concrete shall be taken at random locations and at such times to represent the quality of the materials and work throughout the project. The laboratory shall provide the necessary labor, materials and facilities for sampling the aggregate and for casting, handling and storing the concrete samples at the site of work. Aggregates shall be sampled in accordance with paragraph 03300-3.16 B not less than 30 days prior to the use of such aggregates in the work. The minimum number of samples and tests are specified in paragraph 03300-3.16 C.

B. SAMPLING:

Materials shall be sampled as follows and tested in accordance with paragraph 03300-3.16 C.

1. AGGREGATES:

a. GENERAL: Fine and coarse aggregates shall be sampled in accordance with ASTM D75. Samples shall be taken at the discharge gates of the bins feeding the weigh hopper. The Contractor shall provide safe and suitable facilities for obtaining samples. Samples shall be obtained at the concrete batch plant at the frequency specified in paragraph 03300-3.16 C. Sampling shall be repeated when the source of material is changed or when unacceptable deficiencies or variations from the specified requirements of materials are found in testing. Aggregate samples shall be tagged and their sources identified.

b. COARSE AGGREGATE: A sample weighing between 50 and 60 pounds shall be taken after the batch plant is brought up to full operation. The samples shall be taken so that a uniform cross section, accurately representing the materials on the belt or in the bins, is obtained.

c. FINE AGGREGATE: Samples shall be taken as specified for coarse aggregate. The samples shall be taken for sieve analysis of fine aggregate and specific gravity tests. Samples of sand shall be taken when the sand is moist.

2. CONCRETE: Samples of plastic concrete shall be obtained in accordance with ASTM C172. Samples for pumped concrete

3.16 B.2.

shall be taken at the hose discharge point. Samples for other concrete shall be taken at the hopper of concreting equipment or transit mix truck.

Samples taken in accordance with this paragraph shall be tested as follows.

C. TESTING:

1. AGGREGATE: A minimum of one test of coarse aggregate per 400 cubic yards of concrete and a minimum of one test of fine aggregate per 200 cubic yards of concrete used shall be made to confirm continuing conformance with specifications for gradation, cleanliness and sand equivalent. A maximum of one test per day of each aggregate is required. The full test program is required before source changes will be accepted.

2. CONCRETE:

a. STRENGTH TESTS: The strengths specified for the design mix shall be verified by the testing laboratory during placement of the concrete. Verification shall be accomplished by testing standard cylinders of concrete samples taken at the job site.

Standard cylinders shall represent the concrete placed in the forms. One set of four standard cylinders shall be cast of each class of concrete for each 100 cubic yards or less or for each 4000 square feet of surface area poured per day in each separate structure of each class of concrete. A fifth cylinder shall be cast for every three sets of four cylinders. Casting, handling and curing of cylinders shall be in accordance with ASTM C31. Additional cylinders shall be provided when an error in batching is suspected. For the first 24 hours after casting, the cylinders shall be kept moist in a storage box constructed and located so that its interior air temperature will be between 60 and 80 degrees F. At the end of 24 hours, the cylinders shall be transported to the testing laboratory.

Testing of specimens for compressive strength shall be in accordance with ASTM C39. Tests shall be made at 7 and 28 days from time of casting. Two test cylinders from each group of four shall be tested at the end of 7 days and two shall be tested at the end of 28 days. The fifth cylinder shall be tested at the end of 90 days only. A strength test shall consist of the average strength of two cylinders cast from material taken from a single load of concrete.

Each strength test result shall be the average of the strengths of two test cylinders at 28 days, except that if one cylinder in a set of two shows evidence of low strength due to improper sampling, casting, handling or curing, the result of the remaining one cylinder shall be used.

3.16 C.2.a.

The average of any three consecutive 28-day strength test results of the cylinders representing each class of concrete for each structure shall be equal to or greater than the specified strength and not more than 10 percent of the strength test results shall have values less than the specified 28-day strength for the total job concrete. No individual strength test results shall be less than the specified strength by more than 500 pounds per square inch.

Certified reports of the test results shall be provided directly to the Construction Manager. Test reports shall include sufficient information to identify the mix used, the stationing or location of the concrete placement, and the quantity placed. Slump, air content, temperature of concrete, and ambient temperature shall be noted. The 28-day strength test results shall be evaluated in accordance with ACI 214. Quality control charts showing field test results shall be included with the test results for each class of concrete in each major structure. Charts shall be prepared in accordance with ACI 214. Quality control charts shall be maintained throughout the entire job and shall be available for the Construction Manager's inspection at any time.

If the 28-day test results fall below the specified compressive strength for the class of concrete required for any portion of the work, adjustment in the proportions, water content, or both, shall be made as necessary at the Contractor's expense. Changes and adjustments shall be reported in writing to the Construction Manager.

If compressive test results indicate concrete in place may not meet structural requirements, tests shall be made to determine if the structure or portion thereof is structurally sound. Tests may include, but not be limited to, cores in accordance with ASTM C42 and any other analyses or load tests acceptable to the Construction Manager. Costs of such tests shall be borne by the Contractor.

b. TESTS FOR CONSISTENCY OF CONCRETE. The slump shall be as specified when measured in accordance with ASTM C143. Samples for slump determination shall be taken from the concrete during placing. Tests shall be made at the beginning of concrete placement operation and at subsequent intervals to insure that the specification requirements are met. Slump tests shall also be performed whenever standard cylinders are cast.

c. TESTS FOR TEMPERATURE AND AIR CONTENT: Temperature tests shall be made at frequent intervals during hot or cold weather conditions until satisfactory temperature control is established. Whenever standard cylinders are cast, temperature tests shall be performed.

Air content shall be as specified when measured in accordance with ASTM C231. Air content shall be measured whenever standard cylinders are cast.

3.16 D.

D. FINAL LABORATORY REPORT:

A final report, prepared by the testing laboratory, shall be provided at the completion of all concreting. This report shall summarize the findings concerning concrete used in the project and provide totals of concrete used by class and structure. Final quality control charts for compressive strength tests for classes of concrete specified in each major structure shall be included. The report shall also include the concrete batch plant's coefficient of variation and standard deviation results for each class of concrete as determined in accordance with ACI 214.

3.17 WATERTIGHTNESS, TESTING AND REPAIR

Concrete tanks and channels subjected to hydrostatic pressure and which have walls or slabs that are exposed above grade or are common with areas occupied by equipment or personnel shall be tested for watertightness. The tests shall be made prior to application of waterproofing coating. Testing shall consist of filling the tank with water to the maximum operating water surface for at least 24 hours. Leaks revealed by the test, including those caused by shrinkage of concrete or other sources shall be repaired by either or both of the following methods:

- A. Grouting of the joint by drilling grout holes to the center of the structural unit and forcing epoxy grout into the joint under pressure.
- B. Cutting of a bevel groove on the water side of the joint. The groove shall be 1/2 to 3/4 inch in width and depth and shall be calked with epoxy joint sealer in accordance with manufacturer's instructions.

The Contractor shall retest tanks or channels which have been repaired to check the suitability of repairs. Water required for the testing and retesting shall be provided by the Contractor and disposed of so as not to create a nuisance.

3.18 CLEANUP

Upon completion of the work and prior to final inspection, the Contractor shall clean all concrete surfaces, except outside sidewalks or paved areas and those having curing and sealing compound. The cleaning procedures shall be as follows: After sweeping with an ordinary broom to remove the loose dirt, the finish shall be wetted with soapsuds and rubbed with a scrubbing machine fitted with a wire brush or fine steel wool. The suds shall be mopped up, and the surface shall be flushed with clean water. Final scrubbing by hand or machine shall follow.

3.18

Floors having curing and sealing compound shall be cleaned of loose dirt and debris by sweeping with ordinary brooms. They shall then be washed and mopped with clean water. Finally, one additional coat of the same curing and sealing compound shall be applied in the same manner as specified.

****END OF SECTION****

SECTION 03400
PRECAST CONCRETE

PART 1--GENERAL

1.01 DESCRIPTION

A. SCOPE:

This section specifies the materials and labor required for the manufacture and erection of precast structural concrete.

1.02 QUALITY ASSURANCE

A. GENERAL:

The Contractor shall provide certification from the precast concrete manufacturer that the materials and manufacture of precast work supplied conforms to these specifications. Certification shall be provided to the Construction Manager as information and shall be certified correct under penalty of perjury by an officer of the manufacturer's corporation.

The responsibility for furnishing and installing precast concrete conforming to the specifications is solely that of the Contractor.

B. TESTING LABORATORY:

All testing shall be performed by recognized independent laboratories specializing in the particular test to be performed, and conforming to the requirements of the National Bureau of Standards and ASTM E329.

C. REFERENCES:

This section references the latest revisions of the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

1.02 C.

| <u>References</u> | <u>Title</u> |
|-------------------|---|
| ACI 533.4R | Design of Precast Concrete Wall Panels |
| ACI 533.2R | Selection and Use of Materials for Precast Concrete Wall Panels |
| ACI 533.3R | Fabrication, Handling and Erection of Precast Concrete Wall Panels |
| ACI 512.1R | Suggested Design of Joints and Connections in Precast Structural Concrete |

1.03 SUBMITTALS TO BE PROVIDED

Submittals shall be provided in accordance with paragraphs of Section 01300. The Contractor shall review all drawings relating to precast structural concrete members for required openings, embedded items, inserts, etc., for preparing shop drawings. The Contractor shall submit complete shop drawings to the Construction Manager for his review. These drawings shall show product location, fabrication details, number identification marks, reinforcement, connection details, openings, embedded items and inserts, dimensions and relationship to adjacent materials in sufficient detail to cover manufacture, handling and erection. For precast members designed by Contractor, calculations for all structural elements for which design criteria are shown on the drawings shall be prepared by a civil or structural engineer registered in the State of Arizona and submitted with the shop drawings to the Construction Manager for his review.

Prior to casting any precast elements, concrete mix design shall be submitted to the Construction Manager for acceptance.

Submittals shall be received by the Construction Manager at least 30 days prior to the fabrication of the subject precast members.

1.04 HANDLING AND STORAGE

Unless specified otherwise herein, fabrication, handling and erection of precast elements shall be in accordance with the recommendations made by ACI 318 and ACI Committee 533.

Precast elements shall be properly supported to avoid damage during curing, storage, handling and hauling. Lateral support shall be sufficient to prevent bowing, warping, or permanent set

due to creep. Edges of the units shall be adequately protected by padding or other means to prevent staining, chipping or spalling of concrete.

PART 2--PRODUCTS

2.01 PERFORMANCE AND DESIGN REQUIREMENTS

Concrete shall be as specified in Section 03300.

2.02 PRECAST CONCRETE MATERIALS

A. CEMENT:

Cement shall be as specified in Section 03300, conforming to ASTM C150. Cement shall be from one source throughout the entire project.

B. AGGREGATES:

Aggregates for normal weight concrete shall conform to ASTM C33 with a maximum size of 3/4 inch. Aggregates for lightweight concrete shall conform to ASTM C33 with a maximum size of 5/8 inch. Aggregates for exposed surfaces of the panels shall be as required to match the display panels at the job site. Fine and coarse aggregates for each type of exposed finish shall be from a single source for the entire project. They shall be clean, hard, durable, inert, and free from staining or deleterious materials.

C. WATER:

Water shall be clean, potable, free from injurious amounts of oil, alkalies, organic materials and other deleterious substances.

D. ADMIXTURE:

Admixture shall be Pozzolith 300-R manufactured by Master Builders, Plastiment manufactured by Sika Chemical Corp., or equal. Admixture shall be used in strict accordance with manufacturer's recommendations. Calcium chloride or any admixture containing calcium chloride shall not be used.

E. REINFORCING STEEL:

Reinforcing steel shall conform to ASTM A615, Grade 60.

2.02 F.

F. EMBEDDED ITEMS AND ANCHORAGE DEVICES:

All embedded items, inserts, and anchorage devices exposed to view, moisture or weather shall be hot-dipped galvanized steel. Anchorage devices shall be fabricated from ASTM A36 steel.

2.03 PRODUCT DATA

A. GENERAL:

The following shall be provided in accordance with paragraph 00710-4.02:

Copies certified by the manufacturer's approved laboratory or a registered civil engineer of manufacturer's test results on each day's run of concrete and each shipment of steel shall be submitted to the Construction Manager for acceptance.

Each panel or member shall have an identification mark and date of casting.

PART 3--EXECUTION

3.01 INSTALLATION

A. CASTING:

Casting shall be accomplished by methods and equipment that are in conformance with generally acceptable systems for this type of work.

Casting, bowing, warpage and dimensional tolerances shall be in accordance with the following:

| | |
|---------------------------------------|--------------------------|
| Length, width and diagonal tolerances | Plus or minus 1/8 inch |
| Thickness | Plus or minus 1/8 inch |
| Insert location | Plus or minus 1/8 inch |
| Bowing or warpage | 1/700 of panel dimension |

B. CURING:

All precast units shall be cured as specified in Section 03300-3.05. Precast elements shall not be removed from the forms until concrete has attained a minimum compressive strength of 3,000 pounds per square inch.

3.01 C.

C. FINISHING:

All exposed surfaces of the precast units shall receive a Finish A and all hidden surfaces or those surfaces to receive a subsequent coating shall receive a Finish D as defined in Section 0330-3.12 B.

3.02 ERECTION

Any errors or misalignment in the structure which would prevent the proper setting of the elements shall be corrected by the Contractor before the erection is commenced. Erection shall be supervised and performed by workmen skilled in this type of work. Each element shall be set in the proper position, carefully plumbed and anchored securely to the structural frame. The cured wall panels and buttresses shall be accurately placed and maintained in position as shown on the contract drawings. During casting pilaster concrete, adjustments or changes in connections which could involve additional stresses in the products or connections shall not be permitted without approval of the Construction Manager. All bearing surfaces shall be true to line and grade.

Erection tolerances shall be in accordance with the following: Installation alignment of the tops of all precast wall units with a true horizontal plane shall not exceed plus or minus 1/4 inch. Faces of installed panels shall be within 1/8 inch of a common plane, i.e., 1/4-inch offset maximum. All joints shall be uniform and straight.

3.03 CLEANING AND REPAIRING

After installation, precast elements shall be protected from all damage until final acceptance by the Construction Manager. Precast units with cracks, spalls, and other defects shall be subject to rejection. Units approved for repair shall be repaired to the satisfaction of the Construction Manager. Just before final acceptance by the Construction Manager, all precast units shall be thoroughly cleaned to remove all dirt and stains. Care shall be taken that no part of adjacent areas be damaged or that the finish be changed by the cleaning material or process.

3.04 ALTERNATIVE DESIGN

The Contractor may offer an alternative design for any precast element. Such design shall be comparable in terms of strength, deflection, finish and all other design criteria indicated. Complete drawings together with structural design calculations

3.04

prepared by a civil or structural engineer registered in the State of Arizona shall be submitted to the Construction Manager for his review. No alternative design will be permitted unless it has been specifically accepted in writing by the Construction Manager. If an alternative design is accepted, all expenses resulting therefrom shall be borne by the Contractor.

****END OF SECTION****

SECTION 03600

GROUT

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies grout for uses other than masonry. Masonry grout is specified in Section 04200.

1.02 QUALITY ASSURANCE

A. QUALITY CONTROL BY CONTRACTOR:

To demonstrate conformance with the specified requirements for grout, the Contractor shall provide the services of an independent testing laboratory which complies with the requirements of ASTM E329. The testing laboratory shall sample and test grout materials as required in this section. Costs of testing laboratory services shall be borne by the Contractor.

B. REFERENCES:

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|------------------|--|
| ASTM C33-85 | Concrete Aggregates |
| ASTM C40-84 | Organic Impurities in Fine Aggregates for Concrete |
| ASTM C88-83 | Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate |
| ASTM C117-84 | Material Finer Than 75 um (No. 200) Sieve in Mineral Aggregates by Washing |
| ASTM C136-84a | Sieve Analysis of Fine and Coarse Aggregates |
| ASTM C150-85 | Portland Cement |
| ASTM C289-81 | Potential Reactivity of Aggregates (Chemical Method) |
| ASTM C494-82 | Chemical Admixtures for Concrete |

1.02 B.

| <u>Reference (cont'd)</u> | <u>Title</u> |
|---------------------------|---|
| ASTM D2419-74 | Test Method for Sand Equivalent Value of Soils and Fine Aggregate |
| ASTM E329-77 | Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction |
| CRD-C621-82B | Corps of Engineers Specification for Nonshrink Grout |

PART 2--PRODUCTS

2.01 MATERIALS

A. CEMENT:

Portland cement shall be ASTM C150 Type II or Type V, low alkali, containing less than 0.60 percent alkalis.

B. AGGREGATE:

1. GENERAL: Aggregate shall be nonreactive and shall be washed before use.

When sources of aggregate are changed, test reports shall be provided for the new material. The tests specified shall be performed prior to commencing grout work.

2. FINE AGGREGATE: Fine aggregate shall be hard, dense, durable particles of either sand or crushed stone regularly graded from coarse to fine and shall conform to ASTM C33 as modified herein. When tested in accordance with ASTM C136, gradation shall be such that 100 percent by weight will pass a standard No. 8 mesh sleeve and no less than 45 percent by weight will pass a standard No. 40 mesh sieve.

Variation from the specified gradations in individual tests will be acceptable if the average of three consecutive tests is within the specified limits and the variation is within the permissible variation listed below:

| <u>U.S. standard sieve size</u> | <u>Permissible variation in individual tests, percent</u> |
|-------------------------------------|---|
| 30 or coarser | 2 |
| 50 or finer | 0.5 |

2.01 B.2.

Other tests shall be in accordance with the following specifications:

| <u>Test</u> | <u>Test Method</u> | <u>Requirements</u> |
|--|--------------------|---|
| Organic Impurities Amount of Material | ASTM C40 | Color lighter than standard |
| Passing No. 200 Sieve | ASTM C117 | 3% maximum by weight |
| Soundness | ASTM C88 | 10% maximum loss with sodium sulfate |
| Reactivity | ASTM C289 | Innocuous aggregate |
| Sand Equivalent | ASTM D2419 | Minimum 80 |

C. ADMIXTURES:

1. GENERAL: Admixtures shall be compatible with the grout. Calcium chloride or admixtures containing calcium chloride are not acceptable. Admixtures shall be used in accordance with the manufacturer's recommendations and shall be added separately to the grout mix.

2. WATER REDUCING RETARDER: Water reducing retarder shall be ASTM C494 Type D and shall be Master Builders Pozzolith 300-R, Sika Corporation Plastiment, or equal.

3. LUBRICANT FOR CEMENT PRESSURE GROUTING: Lubricant additive for cement pressure grouting shall be Intrusion Prepekt Intrusion Aid, Sika Intraplast N, or equal.

D. WATER:

Water for washing aggregate, for mixing and for curing shall be free from oil and deleterious amounts of acids, alkalis, and organic materials; shall not contain more than 1000 mg/l of chlorides as Cl, nor more than 1300 mg/l of sulfates as SO₄; and shall not contain an amount of impurities that may cause a change of more than 25 percent in the setting time of the cement nor a reduction of more than 5 percent in the compressive strength of the grout at 14 days when compared with the result obtained with distilled water. Additionally, water used for curing shall not contain an amount of impurities sufficient to discolor the grout.

2.02 GROUT

A. DRYPACK GROUT:

Drypack grout shall be a mixture of approximately one part cement, 1-1/2 to 2 parts sand, water reducing retarder, and sufficient water to make a stiff workable mix.

2.02 B.

B. CEMENT GROUT:

Cement grout shall be a mixture of one part cement, two parts sand, proportioned by volume, admixtures for pressure grouting, and sufficient water to form a workable mix.

C. NONSHRINK GROUT:

Nonshrink grout is available with both metallic and nonmetallic aggregate. Metallic aggregate grout shall be Master Builders Embeco 636, Sonnoborn Ferrolith G Redimix, or equal. Nonmetallic aggregate grout shall be U.S. Group Corp. Five start grout, Master Builders Masterflow 713, or equal.

D. EPOXY GROUT:

Epoxy grout shall be Adhesive Engineering Concrecive 1380 as applicable, Sika Corporation Sikastix 350, or equal.

2.03 PRESSURE GROUTING EQUIPMENT

Pressure grouting equipment shall include a mixer and holdover agitator tanks and shall be designed to place grout at pressures up to 50 psi. Gages shall be provided to indicate pressure used. The mixer shall be provided with a meter capable of indicating to one-tenth of a cubic foot the volume of grout used.

2.04 PRODUCT DATA

The following information shall be provided in accordance with paragraph 00710-4.02.

A. MANUFACTURER'S DATA:

Three copies of manufacturer's data shall be provided for the following:

1. Bonding compounds
2. Nonshrink grout
3. Pressure grout
4. Retardants

B. LABORATORY TEST REPORTS:

Before delivery of materials, three copies of the reports of the tests specified herein shall be provided. Test reports on previously tested materials shall be accompanied by the manufacturer's statement that the previously tested material is the same type, quality, manufacture, and make as that proposed for use in this project. Test reports are required for the following:

2.04 B.

1. Cement
2. Aggregates
3. Retardants
4. Bonding compounds

C. EVIDENCE OF TESTING LABORATORY COMPETENCE:

The Contractor shall require that the laboratory provide directly to the Construction Manager evidence of the most recent inspection of its facilities by the Cement and Concrete Reference Laboratory of the National Bureau of Standards. The evidences shall show that deficiencies mentioned in the report of that inspection have been corrected. The evidence of inspection shall be provided prior to delivery of materials to the job site.

PART 3--EXECUTION

3.01 GENERAL

Holes required for grouting shall be blown clean. Horizontal holes for grouting shall be drilled at a slight downward angle to facilitate holding the grout until setting is complete. Bolts or reinforcing steel installed in horizontal grout holes shall be bent slightly accordingly.

Bonding compound for use with grout is specified in Section 03300.

3.02 DRYPACK GROUT

Drypack grout shall be used for built-up surfaces, setting miscellaneous metal items and minor repairs.

Surfaces required to be built up with drypack grout shall be roughened by brushing, cleaned, and coated with the bonding compound specified in paragraph 03300-2.05 before the application of the grout. The drypack grout shall be applied immediately following the application of the bonding compound in bands or strips to form a covering of the required thickness. The covering shall be smooth. Construction joints in the grout shall be sloped and shall be cleaned and wetted before application is resumed.

Drypack grout shall be cured in accordance with Section 03300.

Grout shall not be placed during freezing weather unless adequate protection is provided.

3.03 CEMENT GROUT

Cement grout shall be used for filling nonbearing portions of equipment pads and pressure grouting.

3.03

Except for the specialized equipment for pressure grouting, mixing and placing apparatus shall be similar to that normally used for cast-in-place concrete. Grout shall be mixed for a period of at least 1 minute. Diluted grout shall be agitated to keep ingredients mixed.

3.04 NONSHRINK GROUT

Nonshrink, nonmetallic aggregate grout shall be used for the bearing surfaces of machinery and equipment bases, column base plates and bearing plates. Nonshrink metallic aggregate grout shall be used for setting anchor bolts and grouting reinforcing steel holes. Grout shall meet the requirements of CRD-C621 and shall be placed in accordance with manufacturer's instructions.

3.05 EPOXY GROUT

Epoxy grout shall be used for repairing cracks by pressure grouting, repairing structural concrete, and setting reinforcing dowels into holes for grouting. Concrete shall be primed in accordance with the grout manufacturer's instructions.

3.06 PRESSURE GROUTING

Prior to grouting, systems and holes to be grouted shall be washed clean. Washing is not required for grouting soil voids outside pipe cylinders or casing pipes. Grouting, once commenced, shall be completed without stoppage. In case of breakdown of equipment, the Contractor shall wash out the grouting system sufficiently to ensure fresh grout and adequate bond and penetration will occur upon restarting the grouting operation. Grout pressure shall be maintained until grout has set.

****END OF SECTION****

DIVISION 4

MASONRY

Section

Title

04100

MORTAR AND GROUT

04200

MASONRY

04340

REINFORCED UNIT MASONRY

SECTION 04100

MORTAR AND GROUT

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Mortar and grout for unit masonry.

1.02 RELATED WORK

- A. Section 01400 - Quality Control: Testing laboratory services.
B. Section 04340 - Reinforced Unit Masonry.

1.03 MIX TESTS

- A. Testing: In accordance with Section 01400.

1. During each day masonry work is under way, take one (1) mortar and one (1) grout test at time designated by Construction Manager. Test samples taken by an approved independent testing laboratory and reports of test results submitted in original and two (2) copies directly to Construction Manager by testing laboratory.

B. Mortar Test: Compressive test specimens when required prepared and tested as directed by ASTM C-270.

1. Method of Sampling: Mortar samples when taken from "field" mortar mixers and prior to placing mortar in sample molds handled in accordance with Arizona Masonry Guild Standard 104, "Field Testing of Mortar with the Use of the Cone Penetrometer."

C. Grout Test: Obtain grout specimens from job mix. Form a 3½" prism using masonry units on job. Line square with absorbent paper so water may pass through paper into masonry units. Place grout into mold in two layers and puddle each layer to consolidate grout. Level top and keep damp for 48 hours.

D. Tests made for each 7-day and 28-day strengths. Three specimens molded for each test set: one for 7-day test, one for 28-day test and one for hold.

1.04 REFERENCES

- A. ASTM C91 - Masonry Cement.
B. ASTM C94 - Ready-Mixed Concrete.
C. ASTM C144 - Aggregate for Masonry Mortar.

1.04 D.

- D. ASTM C150 - Portland Cement.
- E. ASTM C207 - Hydrated Lime for Masonry Purposes.
- F. ASTM C270 - Mortar for Unit Masonry.
- G. ASTM C387 - Packaged, Dry, Combined Materials for Mortar and Concrete.
- H. ASTM C476 - Grout for Reinforced and Non-reinforced Masonry.
- I. ASTM C780 - Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
- J. International Masonry Industry All-Weather Council (IMIAC) - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

1.05 SUBMITTALS

- A. Submit Product Data in accordance with Section 01300.
- B. Include design mix, environmental conditions, and admixture limitations.
- C. Submit manufacturer's installation instructions in accordance with Section 01600.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Maintain materials and surrounding air temperature to minimum 50°F (10°C) prior to, during, and 48 hours after completion of masonry work.
- B. In hot dry weather wet mortar board before loading; cover mortar to retard drying when not in use.
- C. At temperatures below 40°F, adequate equipment installed for heating mortar materials. Antifreeze and accelerating materials prohibited. While being used mortar to have a temperature between 50°F and 90°F.
- D. Protect all freshly laid walls with necessary equipment and materials if temperatures below 40°F are indicated.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Deliver and store manufactured products in original unopened containers.
- B. Store cementitious ingredients in weathertight enclosures protected from contamination and warehouse set.

1.07 C.

C. Stockpile and handle aggregates to prevent contamination from foreign materials.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Portland Cement: ASTM C150, Type II; low alkali, standard gray color.

B. Mortar Aggregate: ASTM C144, standard masonry type; clean, dry, protected against dampness, freezing, and foreign matter. No less than 3% nor more than 10% pass No. 100 sieve, washed.

C. Grout Coarse Aggregate: ASTM C-404, No. 8, washed.

D. Grout Fine Aggregate: ASTM C-404 sand; Size No. 1, washed.

E. Hydrated Lime: ASTM C207, Type S.

F. Quicklime: ASTM C5, non-hydraulic type.

G. Premix Mortar: ASTM C387, using gray cement.

H. Water: Clean and potable.

I. Non-Shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2400 psi in 2 days and 7000 psi in 28 days.

2.02 ADMIXTURES

A. Plasticizer: Water reducing type which reduces porosity and absorption to increase bond strength.

1. To contain no calcium chloride.

2. Submit manufacturer's printed data for approval prior to use.

3. Use in strict accord with manufacturer's printed instructions.

2.03 MORTAR MIX

A. Type "S" mortar, freshly prepared, uniformly mixed, in ratio one part Portland cement, 1/2 part lime, 3-4 parts sand and conform to ASTM C-270, 1800 psi in 28 days.

B. Add sand, cement, admixture and mix with lime. Mix ingredients for five minutes minimum or until uniform mix is obtained whichever period is longer.

2.04

2.04 GROUT MIX

A. Course type, one part Portland cement, 1/10 part lime and 2-1/2 parts sand, 1-1/2 part pea gravel, 2000 psi in 28 days.

2.05 MORTAR MIXING

A. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C270.

B. Do not use antifreeze compounds to lower the freezing point of mortar or grout.

C. Use mortar and grout within one hour of initial mixing. Use no mortar or grout after it has begun to set or after it has become harsh or nonplastic.

PART 3 - EXECUTION

3.01 INSTALLATION

A. After inspection of concrete grout spaces by Architect/Engineer, plug cleanout holes with masonry units. Brace against wet grout pressure.

B. Clean concrete grout spaces of excess mortar and debris.

C. Install mortar and grout in accordance with 04340.

D. Rod grout into cores and cavities immediately after pouring and again approximately five (5) minutes later.

E. Do not displace reinforcing steel placing grout.

F. Clean all masonry unit walls of excess mortar and grout drippings as work progresses.

G. Provide cleanouts if grout lift exceeds 4'-0" in all concrete block walls. Maximum grout lift shall be no more than 8'-0"; maximum grout lift in exposed block walls shall be no more than 4'-0".

3.02 NON-SHRINK GROUT INSTALLATION

A. Coordinate with structural steel requirements. Solidly pack non-shrink grout under all structural steel bearing plates, base plates where indicated after leveling operations.

END OF SECTION

SECTION 04200

MASONRY

PART 1 - GENERAL

1.01 DESCRIPTION

A. SCOPE:

This section specifies the materials and labor required to complete the masonry work as shown.

B. TYPE:

Masonry work shall be constructed from modular units of concrete or clay in combination with reinforcing, mortar and grout as shown and specified.

1.02 QUALITY ASSURANCE

Referenced standards shall be the latest edition, including addenda, supplements and revisions:

| <u>Reference</u> | <u>Title</u> |
|------------------|--|
| ASTM A82 | Standard Specification for Cold-Drawn Steel Wire for Concrete Reinforcement |
| ASTM A615 | Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement |
| ASTM C5 | Standard Specification for Quicklime for Structural Purposes |
| ASTM C62 | Standard Specification for Building Brick |
| ASTM C90 | Standard Specification for Hollow Load-Bearing Concrete Masonry Units |
| ASTM C144 | Standard Specification for Aggregate for Masonry Mortar |
| ASTM C150 | Standard Specification for Portland Cement |
| ASTM C207 | Standard Specification for Hydrated Lime for Masonry Purposes |
| ASTM C216 | Standard Specification for Facing Brick |

1.02

| <u>Reference</u> (cont'd) | <u>Title</u> |
|--|---|
| ASTM C270 | Standard Specification for Mortar for Unit Masonry |
| ASTM C404 | Standard Specification for Aggregates for Masonry Grout |
| ASTM C652 | Standard Specification for Hollow Brick |
| ACI 318-71 | Building Code Requirements for Reinforced Concrete |
| Uniform Building Code-Latest Edition | |
| Uniform Building Code Standard No.30-1, Veneer Application | |

1.03 SUBMITTALS

Three sample specimens of the masonry units proposed for incorporation into the project shall be submitted to the Construction Manager.

All submittals shall be made in accordance with the provisions of Section 01300.

1.04 INFORMATION TO BE SUBMITTED

A. GENERAL:

All items of information shall be approved by the Construction Manager prior to the beginning of masonry work. Information shall be received by the Construction Manager at least 14 days prior to the beginning of masonry work.

B. SAMPLE PANEL:

A sample masonry panel approximately 6 feet long by 4 feet high shall be constructed on the site for each type of masonry unit as a sample of workmanship and jointing. The sample panel shall remain on site until removal is approved by the Construction Manager.

C. MASONRY UNITS:

Certificates showing compliance to the specifications shall be submitted for each type of masonry unit.

D. REINFORCING STEEL:

Certificates showing compliance to the specifications shall be submitted for reinforcing steel, including reinforcing steel wire, as specified in Section 03200.

1.04 E.

E. ANCHOR TIES AND ACCESSORIES:

Manufacturer's literature for anchor ties and any other accessories used shall be submitted along with the Contractor's proposed placement details.

F. ADMIXTURES:

Manufacturer's literature for mortar and grout admixtures used shall be submitted along with the Contractor's proposed usage details.

PART 2 - PRODUCTS

2.01 MATERIALS

A. MASONRY UNITS:

1. UNIT, GRADE AND TYPE: Masonry units shall conform to the requirements of the following table:

| <u>Unit</u> | <u>ASTM</u> | <u>Grade</u> | <u>Type</u> |
|--|-------------|--------------|-------------|
| Concrete blocks, lightweight or medium weight | C90 | N | I |

2. SIZE: The size of masonry units shall be as indicated on the drawings, and shall otherwise match the existing masonry work on the site. Special shapes and sizes shall be provided as required.

3. SURFACES: Special surface texture or architectural faces shall be provided where indicated on the drawings and shall otherwise match the existing masonry work on the site.

4. COLOR: Where the finished surface will be visible, masonry units shall be integrally colored. Color shall match existing masonry.

B. CEMENT:

Cement shall be portland cement conforming to ASTM C150, Type II, low alkali.

C. AGGREGATE:

Aggregate for mortar shall be sand conforming to ASTM C144. Aggregate for grout shall conform to ASTM C404.

2.01 D.

D. LIME:

Lime shall be quicklime conforming to ASTM C5 or hydrated lime conforming to ASTM C207. Lime putty shall be made from quicklime or hydrated lime.

E. WATER:

Water shall be clean and free from injurious amounts of oil, acid, alkali, organic matter, or other harmful substances.

F. ADMIXTURES:

Mortar shall contain an admixture of Master Builders Omicron Mortarproofing, Sonneborn Hydrocide Powder, or equal. Grout shall contain an admixture of Suconem Grout Aid, Master Builders Pozzoloth-N, or equal. Admixtures shall be used in strict accordance with the manufacturer's specifications.

G. REINFORCING STEEL:

Reinforcing steel shall be as specified in Section 03200. Reinforcing steel wire shall conform to ASTM A82 and shall be supplied in prefabricated units with special units for corners and intersections.

H. ANCHOR TIES:

Anchor ties shall be constructed of a noncorrodible or corrosion protected metal. Anchor ties used for installation of veneer shall have a minimum size as required by Uniform Building Code Standard No. 30-1.

I. LIQUID WATERPROOFING:

Waterproofing shall be as specified in Sections 07121 and 09900.

2.02 MIXES

A. MORTAR:

Mortar shall be ASTM C270, Type M for exterior and Type S for interior. Waterproofing compound shall be added in accordance with manufacturer's recommendations. Mortar for exposed concrete masonry walls shall be colored to match the masonry units.

B. GROUT:

1. GENERAL: Grout shall be proportioned by volume and shall have sufficient water added to produce a consistency for pouring without segregation.

2.02 B.2.

2. FINE GROUT: Fine grout shall be composed of one part cement, not more than 1/10 part lime, and 2-1/4 to 3 parts fine aggregate. Fine grout shall be used in spaces smaller than those specified for coarse grout.

3. COARSE GROUT: Coarse grout shall be composed of one part cement, not more than 1/10 part lime, 2 to 3 parts fine aggregate, and not more than 2 parts coarse aggregate. Coarse grout shall be used in continuous grout spaces 2 inches or more wide and in cells 4 inches by 4 inches or larger.

PART 3 - EXECUTION

3.01 INSPECTION

Special masonry inspection as defined by the Uniform Building Code shall be provided by the Owner where indicated on the drawings. Contractor shall notify the Construction Manager at least 48 hours before masonry work requiring special inspection is begun.

3.02 PREPARATION

Foundations for masonry work shall be straight and level. All surfaces to be bonded with masonry shall be clean and free from laitance or foreign materials. Reinforcing dowels shall be in the correct location as shown. The placement and location of anchor ties, inserts and other embedded items in concrete or other adjoining work shall be coordinated by the Contractor to suit the masonry work.

3.03 INSTALLATION

A. WORKMANSHIP:

Masonry shall be constructed to meet the dimensions shown on the drawings. All courses shall be started from the corners where possible. Story poles and level lines shall be maintained at all times, and string lines shall be raised with the work.

The maximum variation from vertical alignment for masonry work shall be 1/16 inch per foot of height and 1/4 inch in 10 feet and 1 inch maximum for the total height. The maximum variation in horizontal alignment shall be 1/16 inch per foot and 1/4 inch in 10 feet and 1/2 inch for the total length. The maximum variation in level for any course shall be 1/8 inch in 10 feet and 1/2 inch for the total length.

When being laid, brick shall have sufficient suction to hold the mortar and to absorb excess water from the grout.

3.03 A.

Masonry units shall be laid in running or 1/2 bond, or 1/3 bond depending on the unit size.

All exposed joints shall be compressed with a circular jointer.

B. LOW-LIFT GROUTED CONSTRUCTION:

1. SOLID UNITS: Solid units shall be laid with full bed and full shoved head joints. One wythe may be laid up to 18 inches high, but the other wythe shall be laid up and grouted in lifts not exceeding 8 inches. All grout shall be puddled with a stick immediately after pouring. When work is stopped for more than one hour, the wythes shall be stopped at the same elevation with the grout 1 inch below the top and the horizontal steel fully covered.

2. HOLLOW UNITS: Hollow units shall be laid with the bed and head joint depth from each face at least as thick as the face shells. Cells containing reinforcing shall be fully sealed with mortar around the cell to prevent grout leakage. Cleanout openings shall be provided at the bottom of each pour which exceeds 4 feet in height. Overhanging mortar, mortar droppings, and debris shall be removed from inside the cells. The cleanout openings shall be sealed after inspection and before grouting. Grout shall be poured in lifts not more than 8 feet high. Grout shall be consolidated with a stick or vibrator immediately after pouring. When work is stopped for more than one hour, the grout shall be stopped 1/2 inch below the top unit and the horizontal steel shall be fully covered. Only cells containing reinforcing bars or wire shall be grouted unless noted otherwise on the drawings.

C. HIGH-LIFT GROUTED CONSTRUCTION:

High-lift grouted construction shall conform to the requirements of the Uniform Building Code and special inspection shall be provided.

D. REINFORCING STEEL:

Reinforcing steel shall be provided as specified in Section 03200 except as specified herein. Reinforcing steel bars shall be held in position at top and bottom and at intervals not exceeding 192 bar diameters. The minimum clear distance between bars, except for lapped splices, shall be 1-1/2 bar diameters at columns and 1 bar diameter elsewhere. Lap splices for reinforcing bars shall be 40 bar diameters. Reinforcing steel wire shall be lap spliced 12 inches for smooth wire and 6 inches for deformed wire. The minimum masonry cover shall be 2 inches for reinforcing bars and 5/8 inch for reinforcing wire. Vertical bars shall be on the wall centerline for single curtain reinforcing unless shown otherwise.

3.03 E.

E. ANCHOR TIES:

The size and spacing of ties used for wall construction and veneer application shall conform to the requirements of the Uniform Building Code and Uniform Building Code Standard No. 30-1 unless shown otherwise.

3.04 CLEANING AND PROTECTION

Exposed faces of all masonry shall be kept clean as the work progresses. Mortar and grout stains shall not be allowed to dry on the faces. Clean water and fiber brushes only shall be used for cleaning. Muriatic acid shall not be used. Holes or defects in mortar joints shall be filled and pointed up when necessary. All masonry work shall be protected from damage or staining until acceptance of the work, and all damaged units shall be replaced.

3.05 COLD WEATHER CONDITIONS

Masonry shall not be laid when the ambient temperature is below 40 degrees F. All masonry work shall be protected against freezing for a period of 48 hours after being laid.

****END OF SECTION****

SECTION 04340

REINFORCED UNIT MASONRY

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Natural concrete unit masonry exterior walls and interior partitions, complete with reinforcement and anchorages.
- B. Decorative screen concrete masonry units.
- C. Mortar for masonry.
- D. Form control joints.
- E. Built-in items supplied by other trades.
- F. Cut and fit for other sections of work.
- G. Masonry fill insulation in all ungrouted exterior walls.

1.02 RELATED WORK

- A. Section 04100 - Mortar and Grout.
- B. Section 05120 - Structural steel items to be built in masonry work.
- C. Section 05500 - Metal fabrications to be built in masonry work.
- D. Section 07210 - Loose fill insulation for concrete block.
- E. Section 07900 - Sealants for expansion/contraction joints.

1.03 QUALITY ASSURANCE

- A. Perform masonry work in accordance with requirements of ANSI A41.1 unless indicated otherwise herein.
- B. Perform mortar work in accordance with requirements of ASTM C476 unless indicated otherwise herein.
- C. When requested by Architect/Engineer, provide evidence and test data conforming that concrete block and brick conform to standards stated herein.

1.04 SUBMITTALS

- A. Submit manufacturer's recommendations and product data in accordance with Section 01300.

1.05 B.

B. Submit two (2) samples of concrete masonry units to illustrate color, texture and extremes of color range.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Maintain materials and surrounding air temperature to minimum 50°F prior to, during and 48 hours after completion of masonry work.

B. During freezing or near freezing weather, provide adequate equipment or cover to maintain a minimum temperature of 50°F and to protect masonry work completed or in progress. Conform to all other requirements stated in Division 1.

C. Hot Weather Requirements:

1. Masonry erected when air temperature is above 99°F and relative humidity of less than 50%, protect from direct exposure to wind and sun for 48 hours after installation.

2. Protect masonry against too rapid drying by hosing twice each day for five days, once each day sufficient when temperature for day does not exceed 80°F.

D. Cold Weather Requirements:

1. IMIAC Recommended practices and specifications for cold weather masonry construction.

2. When supplemental heat is used, keep masonry moist to prevent rapid drying.

1.06 CERTIFICATES

A. Submit manufacturers certificates that materials meet or exceed specified requirements.

1.07 PROTECTION

A. Maintain protective boards at exposed external corners which may be damaged by construction activities. Provide such protection without damaging completed work.

B. Keep expansion joint voids clear of mortar.

C. Provide temporary bracing against high winds during masonry erection. Maintain in place until building structure provides permanent bracing.

D. Tops of walls left incomplete at conclusion of day's work carefully covered with roofer's felt or tarpaulins and securely held in place.

1.08 STORAGE AND HANDLING

A. Store units above ground to allow air circulation under stacks, cover and protect units from weather.

B. Transport and handle masonry units in such a manner to prevent chipping and breakage. Locate storage piles, stacks or bins to avoid or protect materials from heavy and unnecessary traffic.

PART 2 - PRODUCTS

2.01 MASONRY

A. Natural Concrete Masonry Units: ASTM C90 hollow core, Grade N, Type I, $f'm = 1350$ psi, modular 8 inch x 8 inch x 16 inch with all other required sizes complete with corners, bases, bond beams, lintels and fillers to match and compliment block units; light weight aggregate conforming to ASTM C-331, standard grey color.

B. Decorative Screen Masonry Units: Coronado #3, 11-5/8 inch x 11-5/8 inch x 3-5/8 inch, beige color, as manufactured by Superlite.

2.02 MORTAR

A. Mortar, types, strengths as specified in Section 04100.

2.03 REINFORCEMENT AND ANCHORAGES

A. Reinforcing Steel for Bond Beams, Lintels and Vertical Reinforcing: Type specified in Section 03200.

B. Horizontal Reinforcement: Truss type; galvanized steel construction; No. 9 gauge side rods with No. 9 gauge cross ties conforming to ASTM A-82. Furnish joint reinforcing in flat sections 10 feet to 20 feet in length. Use prefabricated or job-fabricated reinforcement around corners and for anchoring abutting partitions or walls at same spacing as joint reinforcement.

2.04 GROUT

A. Grout for Bond Beams, Lintels and Vertical Reinforcement: Type and strength specified in Section 04100.

2.05 ACCESSORIES

A. Control Joints: Prefomed material; of sizes and profiles indicated; manufactured by:

1. Quadri-Seal Rubber Control Joint, HQS-4; Hohmann & Barnard, Inc.
2. Rapid Control Joint, Regular; Dur-O-Wall, Inc.

2.05 B.

B. Joint Filler: Closed cell polyvinylchloride oversized 50% self expanding, 1/2 inch wide x maximum lengths.

2.06 MORTAR MIX

A. Provide minimum 1800 psi mortar for all walls.

2.07 GROUT MIX

A. Provide minimum 2000 psi grout for all masonry.

PART 3 - EXECUTION

3.01 PREPARATION

A. Supply metal anchors to Sections 03300 and 05120 for placement. Provide sufficient quantity, and direct their correct placement.

B. Ensure items built-in by other trades for this work are properly located and sized.

C. Establish lines, levels and coursing. Protect from disturbances.

3.02 WORKMANSHIP AND INSTALLATION

A. Place masonry in accordance with lines and levels indicated on drawings.

B. Fully bond external and internal corners and intersections with joint reinforcements.

C. Isolate masonry partitions from vertical structural framing members with a control joint, with mortar raked back 1/4 inch regardless of joint treatment.

D. Buttering corners of joints, deep or excessive furrowing of mortar joints is not permitted.

E. Do not shift or tap masonry after mortar has taken initial set. Where adjustment must be made, remove mortar and replace.

F. Perform jobsite cutting of masonry with proper power tools to provide straight and true, unchipped edges.

G. Where non-bearing masonry partitions extend to underside of floor, roof deck or structural system, stop masonry short 3/8 to 1/2 inch to allow for live load deflection. Fill gap with joint filler. Provide structural anchorage in accordance with ANSI A41.1.

3.02 H.

H. Lay units in uniform and true courses, level and plumb. Full mortar bedding is required. Provide full mortar coverage on face sheets and on webs surrounding cells to be grouted solid. Butter vertical head joints well for a thickness equal to face shell of unit and shove joints tight so mortar bonds well to both units. Solidly fill joints from face of unit to depth of face shell.

I. Remove excess mortar and projections. Take care to prevent breaking masonry corners.

J. Lay concrete block in running bond. Course 1 block unit and 1 mortar joint to equal 4 inches and/or 8 inches vertically. Form concave mortar joints horizontally and vertical where exposed and flush mortar joints where masonry will be concealed, or finished with cement plaster (stucco). Lay block in row locks, stack bond, soldier course, and toothed pattern where indicated on drawings.

K. Cure and dry masonry units before using. Surfaces clean and free of dirt when laid. Masonry units not wet before being used.

L. Cut mortar joints of concrete block flush, where resilient floor base is scheduled.

M. Do not lay chipped, cracked or otherwise defective units in wall exposed to view. Remove and replace any units that are chipped, cracked, broken or otherwise defective, whether before or after setting.

N. Joints of uniform thickness, bond plumb throughout.

O. Lay masonry units so cracks are not formed at time units are placed in wall.

P. Adjust concrete masonry units to final position in wall while mortar is still soft and plastic enough to ensure a good bond. If position of unit is shifted after mortar has stiffened or bond broken or cracks formed, relay unit in new mortar.

3.03 TOLERANCES

A. Maximum variation from masonry unit to adjacent masonry unit is 1/16 inch.

B. Maximum variation from vertical and horizontal building lines is 1/4 inch in 10 ft.

C. Maximum variation from cross sectional thickness of cavity and composite walls is plus or minus 1/4 inch.

D. Maintain flush face on exposed masonry surfaces.

3.04 BONDING

A. Bond pattern in straight uniform course with regular bond or as indicated.

B. Joining of Work:

1. Where fresh masonry joins partially or totally set masonry, clean exposed surface of set masonry and remove loose mortar and foreign material from set masonry.

C. If necessary to stop off horizontal run, rack back 1/2 block length in each course. No tothing allowed.

3.05 JOINTS

A. Mortar joints straight, clean and uniform in thickness. All interior joints tooled concave and exterior joints raked, unless otherwise indicated or specified, and tooled firmly to block edges.

B. Unless otherwise specified or detailed horizontal and vertical mortar joints a nominal 3/8" thick to course vertically to 4 inches and/or 8 inches as indicated, and horizontally 16 inches.

C. Joints tooled producing surface well bonded to block at edges.

3.06 REINFORCEMENT AND ANCHORAGES

A. Horizontal Reinforcing:

1. Install truss-type horizontal joint reinforcing in first and second bed joints above and below openings and at 16" vertically throughout remainder of structure. Continuously reinforce first bed joint immediately above and below openings. In second bed joint it shall extend 2 feet beyond each side of openings. Lap reinforcement a minimum of 6 inches at splices and cut inside wire only and bend outside wires at corners.

2. Place (2) #5 or as indicated in minimum 8 inch deep grouted continuous bond beam at elevated floor and roof lines. Place these bars continuous through expansion joints. Wrap mastic tape for 1'-6" each side of expansion joint.

3. Provide corner lap bars for bond beam reinforcing at corners and intersections of bar size equal to that of bond beam steel. Lap splices 40 bar diameters. Do not splice within 8'-0" of a control joint.

B. Vertical Reinforcing

1. Lap splices in reinforcing as indicated but in no case less than 40 bar diameters. Use spacers to position reinforcing steel in cells and at all laps in steel bars. Reinforce all walls vertically as indicated. In addition provide vertical reinforcing at all wall ends, corners, intersections and at jambs of openings.

2. Install bars in center of block cell, continuous full height of wall from foundation to roof level.

3.06 B.3.

3. Use minimum of 1 No. 5 (No. 6 @ 12 inch thick wall) bar at all corners, intersections, wall ends, jambs and each side of expansion joints and at intervals noted on drawings.

- a. Provide #5 vertical at 32 inches o.c. maximum spacing in 8 inch walls. (Unless otherwise indicated.)
- b. Provide #6 vertical at 24 inches o.c. maximum spacing 12 inch walls. (Unless otherwise indicated.)

C. Ensure that anchorages embedded in concrete and attached to structural steel members for concrete block are properly placed. Embed free end of anchorages in every second brick or block joint.

D. Provide two vertical bars in grouted cells below beam bearings.

3.07 LINTELS

A. Provide reinforced concrete block lintels over openings where indicated or where steel lintels are not scheduled.

B. Construct lintels using concrete and reinforcing specified. Maintain minimum 12 inch bearing on each side of openings.

C. Use reinforcing bars of full lengths only.

D. Place and consolidate concrete without disturbing reinforcing.

E. Allow lintels to reach maximum strength before removing temporary supports.

3.08 BOND BEAMS

A. Provide all reinforcing indicated. Bond beams reinforced continuous with minimum number of laps. Splice laps as indicated above. Provide bent corner bar splices with indicated laps at all corners and intersections. Grease or wrap bond beam steel at laps between control or expansion joints as detailed.

B. Place and consolidate concrete without disturbing reinforcing.

C. Bond beam steel to run through control joints as detailed and specified.

3.09 GROUT FILLED CELLS

A. Align vertical cells to provide continuous, unobstructed openings without fins, droppings, etc. Maintain clean cells full height.

B. Reinforcing steel in place and inspected before grouting starts. Fill cells solidly with grout in lifts not to exceed 4' and stop

3.09 B.

pours 1-1/2 inches below top of a course to form a key at pour points. Grout beams over openings and bond beams in a continuous operation. Solidly grout in place all bolts, anchors, etc.

3.10 CONTROL JOINTS

A. Provide control joints as detailed and indicated at all masonry walls where such exceed 40 feet in length. In long length of walls provide joints at approximately 24'-0" o.c. or as indicated, except that exterior Dome wall shall be at approximately 38 inches o.c. as shown on drawings. Coordinate with Construction Manager.

B. Control joints continuous full height of walls. At bond beams control joint separate both block and grout; however, steel reinforcing continuous.

C. Hold control joint fill materials back from finished surface for installation of sealants as specified under Section 07900.

D. Premolded control joint material continuous in as long lengths as practicable.

3.11 BUILT-IN WORK

A. As work progresses, build-in hollow metal frames, window frames, steel angle lintels, nailing strips, anchor bolts, plates, and other items supplied by other trades.

B. Build-in items plumb and true.

C. Bed anchors of hollow metal frames in mortar joints. Fill frame voids solid with grout as each 2 feet of masonry is laid. Fill reinforced masonry cores with grout at framed openings as detailed.

D. Where masonry is to enclose conduit or piping bring to proper level indicated. Cover no pipe, conduit chases or enclosures until advised that work has been inspected and tested.

E. Do not build-in organic materials which will be subjected to rot or deterioration.

3.12 CUTTING AND FITTING

A. Cut and fit concrete block and/or brick for chases, pipes, conduit, sleeves and grounds. Cooperate fully with other sections of work to ensure correct size, shape and location.

B. Obtain Construction Manager's review prior to cutting or fitting any area which not indicated on drawings, or which may impair appearance or strength of masonry work.

3.13 CLEANING AND POINTING

A. Point and fill holes and cracks in exposed mortar joints. Cut out defective mortar joints, refill solidly with mortar and tool as specified. Pointing mortar identical to adjacent mortar in similar joints and finish results match and be undistinguished from original mortar used. Reclean pointed surfaces as required.

B. Dry brush masonry surfaces at end of each day's work and after final pointing.

C. Leave work clean and free of mortar spots and droppings.

D. Upon completion of masonry work, clean all exposed masonry in an approved manner acceptable to Construction Manager. Remove all scaffolding and equipment used in work, clean all debris, refuse and surplus material and remove from premises.

E. Clean soiled surfaces using a non-acidic solution which will not harm masonry or adjacent materials. Consult masonry manufacturer for acceptable cleaners. Use non-metallic tools in cleaning operations.

END OF SECTION

DIVISION 5

METALS

| <u>Section</u> | <u>Title</u> |
|----------------|---|
| 05100 | STRUCTURAL METALS |
| 05210 | STEEL JOISTS |
| 05310 | METAL ROOF DECKING |
| 05500 | METAL FABRICATIONS |
| 05501 | ANCHOR BOLTS |
| 05505 | MISCELLANEOUS METALWORK |
| 05520 | HANDRAILING |
| 05530 | GRATING, STEEL STAIRS, FLOOR PLATES, SAFETY STAIR TREADS, AND COVER PLATES |
| 05541 | MANHOLE FRAMES AND COVERS |
| 05910 | HOT-DIP ZINC COATING |
| 05911 | MECHANICAL ZINC COATING |

SECTION 05100
STRUCTURAL METALS

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies structural metals consisting of standard shapes, fasteners, rods and plates that are used in structural supports and connections.

1.02 QUALITY ASSURANCE

A. GENERAL:

Structural assemblies and shop and field welding shall meet the requirements of the AISC specifications.

The use of salvaged, reprocessed or scrap materials shall not be permitted.

B. REFERENCES:

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|---------------------|---|
| AISC 8th Edition | Framed Beam Connections |
| AISC S326-78 | Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings |
| ASTM A36/A36M-84a | Structural Steel |
| ASTM A53-84 | Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless |
| ASTM A283-84a | Low and Intermediate Tensile Strength Carbon Steel Plates, Shapes and Bars |
| ASTM A307-84 | Carbon Steel Externally Threaded Standard Fasteners |
| ASTM A320-85 | Alloy-Steel Bolting Materials for Low-Temperature Service |

1.02 B.

| <u>Reference</u> (cont'd) | <u>Title</u> |
|---------------------------|--|
| ASTM A500-84 | Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes |
| ASTM A666-84 | Austenitic Stainless Steel, Sheet, Strip, Plate and Flat Bar for Structural Applications |
| ASTM B308-84 | Aluminum-Alloy Standard Structural Shapes, Rolled or Extruded |
| AWS-B3.0-77 | Welding Procedures and Performance Qualifications |
| AWS-D1.1-85 | Code for Arc Welding in Building Construction |

PART 2--PRODUCTS

2.01 MATERIALS

A. STEEL:

Materials for structural metals shall be as specified in Table A.

B. ALUMINUM:

Unless otherwise specified, aluminum shall be extruded from 6061-T6 or 6063-T6 alloy, conforming to ASTM B308.

2.02 FABRICATION

Fabrication shall be in accordance with AISC S326.

PART 3--EXECUTION

3.01 INSTALLATION

A. GENERAL:

Measurements shall be verified at the job.

Holes shall be punched 1/16 inch larger than the nominal size of the bolts, unless otherwise specified. Whenever needed, because of the thickness of the metal, holes shall be subpunched and reamed or drilled. No drifting of bolts nor enlargement of holes will be allowed to correct misalignment. Mismatched holes shall be corrected with new material.

Table A, Steel Materials

| <u>Material</u> | <u>Specification</u> |
|---|------------------------------|
| Standard rolled steel sections | ASTM A36 |
| Pipe columns | ASTM A53, Grade B |
| Structural steel tubing | ASTM A500, Grade B |
| Structural bars, plates and similar items | ASTM A36 or A283 |
| Stainless steel | ASTM A666, Grade A, type 304 |
| Stainless steel bolts, nuts and washers | ASTM A320, type 304 |
| Steel bolts | ASTM A307, Grade A |

3.01 A.

Dissimilar metals shall be protected from galvanic corrosion by means of pressure tapes, coatings or isolators. Aluminum in contact with concrete or grout shall be protected with a heavy coat of bituminous paint.

Metalwork to be embedded in concrete shall be as specified in Section 03300. Metalwork shall be placed accurately and held in correct position while the concrete is placed or, if specified, recesses or blockouts shall be formed in the concrete after design strength is attained, and the metalwork shall be grouted in place in accordance with Sections 03300 and 03600. The surfaces of metalwork in contact with or embedded in concrete shall be thoroughly cleaned.

Structural steel completely encased in concrete shall not be galvanized or painted and shall have a clean surface for bonding to concrete. Metalwork which is bent, broken or otherwise damaged shall be repaired or replaced by the Contractor.

B. WELDING:

Welding shall be done by operators who have been qualified by tests as prescribed by AWS WI Sect. 7 to perform the type of work required. The quality of welding shall conform to AWS Code for Arc Welding in Building Construction Section 4, Workmanship.

C. BOLTED CONNECTIONS:

Bolted connections shall conform to AISC Framed Beam Connections and shall be bearing type connections with threads excluded from shear planes.

3.02 CLEANING

After installation, damaged surfaces of shop primed metals shall be cleaned and touched up with the same material used for the shop coat. Damaged surfaces of galvanized metals shall be repaired as specified in Section 05910.

****END OF SECTION****

SECTION 05210

STEEL JOISTS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Open web steel joists with bridging, attached bearing plates, angles and anchors.
- B. Loose bearing plates and anchor bolts for site placement.
- C. It is the responsibility of steel joist manufacturer to provide for concentrated loads indicated, superimposed on the steel joists which may fall between panel points of joists; i.e., miscellaneous loading conditions.

1.02 RELATED WORK

- A. Section 04100 - Mortar and Grout: Grouting base plates and bearing plates.
- B. Section 05120 - Structural Steel.
- C. Section 05310 - Metal Roof Deck: Support framing for small openings in metal deck.

1.03 QUALITY ASSURANCE

- A. All steel joints shall be designed, fabricated and installed in accordance with latest edition of the standard specifications of the steel joint institute.
- B. Joist sizes indicated on plans are minimums. Joist manufacturer shall design and submit calculations by an Engineer registered in the State of Arizona for all joists except parallel chord joists with uniform loads and continuously supported compression chord. Joist design shall include weight of all mechanical equipments located in attic or on roof and supported thereon. Calculations shall include deflection and camber requirements. Live load deflections shall be limited to span/360. Total load deflections shall be limited to span/240. All joists shall be cambered for design dead load.

1.04 REFERENCES

- A. A307 - Carbon Steel Threaded Standard Fasteners.
- B. AWS D1.1 - Structural Welding Code.

1.05 C.

C. The following joint Steel Joist Institute, American Institute of Steel Construction (SJI-AISC) standard specifications listed below form a part of this Specification:

1. Standard specifications for Open Web Steel Joists, K-Series.

D. SSPC-15: Red Oxide.

1.05 SHOP DRAWINGS

A. Submit shop drawings in accordance with Section 01300.

B. Indicate standard designations, configuration, sizes, spacing and locations of joists, joist coding, bridging, connections, attachments, cambers and end anchorage.

C. Prepare shop drawings under seal of a Professional Structural Engineer registered in the State of Arizona.

1.06 DELIVERY AND STORAGE

A. Materials shall be delivered to site in undamaged condition and stored in a manner and at a location which will minimize formation of water-holding pockets, soiling and deterioration of paint film.

B. Steel joists, bridging and all accessories shipped to site with identification marks. Placing plans showing location of all pieces with sufficient information for proper installation furnished by Erector.

C. Joists handled in a manner to avoid damage. Damaged joists removed from site, except when field repair is approved and such repairs are satisfactorily made in accordance with manufacturer's recommendation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Open Web Joist Members: SJI Type K Open Web Series members.

B. Bridging: Size and spacing and connection as recommended by manufacturers and Steel Joist Institute. l/r ratio not to exceed more than 200.

C. Extended Ends: To have load carrying capacity at least equal to loads shown on Drawings.

D. Anchor Bolts, Nuts and Washers: ASTM A307.

2.02 E.

E. Primer: SSPC15, Type 1 Red Oxide.

2.02 FABRICATION

A. Fabricate steel joists in accordance with SJI Standard Specifications, including headers and other supplementary framing.

B. Provide bottom and top joist chord extensions indicated.

C. Joists shall have cambers as recommended by manufacturer for span and load.

D. Prepare and shop prime with one (1) coat primer.

E. Coordinate with structural steel all components and their anchorages to all joist systems for mechanical equipment, athletic equipment and other miscellaneous components, and ensure joists are adequately reinforced as required and/or designed to receive imposed loading conditions.

PART 3 - EXECUTION

3.01 ERECTION

A. Erect steel joists in accordance with SJI Standard Specifications.

B. Bear joists on supports in accordance with SJI. End bearing on supports other than steel, so proportioned that bearing pressure does not exceed 200 psi. Joist ends extend over masonry 4" minimum and over steel 2-1/2" minimum.

C. During erection, provide temporary bracing for induced loads and stresses.

D. Coordinate placement of anchorages in concrete masonry construction for securing bearing plates, angles.

E. Field-weld joist seat to placed bearing plates after alignment, positioning after installation of bridging.

F. Do not permit erection of decking until joists are braced and bridged.

G. Do not field-cut or alter joists without approval of Construction Manager.

H. After erection, prime welds, abrasions and surfaces not primed. Use primer consistent with shop coat.

3.01 I.

I. Bridging shall be rigid horizontal type for K-type joists. Spacing of bridging shall be as required by Steel Joists Institute, unless shown on framing plan.

****END OF SECTION****

05210-4

SECTION 05310

METAL ROOF DECKING

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies metal roof decking, bent plate and sheet metal closures, and holes through decking with reinforcing.

1.02 QUALITY ASSURANCE

Contractor shall furnish decking manufacturer's certified mill analyses and test reports covering all decking. Contractor shall furnish an International Conference of Building Officials Research Report number for all metal decking.

1.03 SUBMITTALS

Submittals shall be in accordance with Section 01300.

Contractor shall submit shop drawings, detailing and dimensioning metal decking including accessories, fastenings, welding, holes with reinforcing, flashings, and closures. Welding shall be indicated according to AWS Standard Welding Symbols. Dimensioned layouts shall be shown for openings and reinforcing details.

PART 2--PRODUCTS

2.01 MATERIALS

Metal decking shall have galvanized coating conforming to ASTM A525, Class G90.

Roof decking shall span over at least three supports unless otherwise indicated, each panel factory slotted or having rolled-in moisture venting provisions.

Contractor shall furnish all indicated and necessary decking accessories including, without limitation, welding washers and welding anchors, closures, transitions, and filler strips, as required for complete installations. Contractor shall provide bent plate closures, angles, channels, and other attachments as required for all openings through decking for ducts, shafts, piping, and other penetrations; where decking changes direction; and at decking perimeter; fabricated of 16-gauge galvanized steel unless otherwise shown. Contractor shall provide roof drain and overflow sumps of minimum 14-gauge galvanized steel.

PART 3--EXECUTION

3.01 INSTALLATION OF DECKING

Contractor shall place metal decking on supports with full bearing, end joints centered on supports, and adjust to correct final position before completing permanent attachments. Contractor shall place units in straight alignment for the entire length of run of flutes with close registration of flutes and with maximum 1/8-inch gap between ends of units, minimum 2-inch bearing on the supports. Units shall not be spliced except at supports.

Contractor shall perform cutting and tight fitting at columns, perimeters, shafts, stairs, and other openings. Contractor shall provide tight fitting closures at the open uncovered ends and edges of decking, and all miscellaneous supports required to carry the metal decking. Contractor shall secure hole reinforcement to decking with fillet welds placed on both sides of reinforcing members. Contractor shall place reinforcement channels and angles across flutes and to project a distance beyond sides of openings equal to the maximum size of the opening unless otherwise shown. Contractor shall perform field cutting and trimming square and neat, equal to factory cutting.

Contractor shall use materials and methods in strict accordance with printed instructions of metal decking manufacturer and approved submittals. Contractor shall conform to AWS D1.3 and to the patterns and weld types shown, finished welds free of sharp points or edges. Contractor shall field coat all welds and abraded surfaces upon completion with repair material. Omit the field coating where welds or abrasions are covered by concrete fill or sprayed fireproofing.

Welding shall be performed as specified in Section 05100.

Contractor shall remove and replace all metal decking showing denting or other damage that adversely affects decking strength or subsequent materials, as directed.

3.02 CLEANING AND TOUCH-UP

Contractor shall remove surplus materials, clean and touch-up raw edges of decking cut for openings with repair material, and leave decks ready to receive subsequent materials.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Shop fabricated ferrous metal items, galvanized and prime painted.
- B. Special metal items - Refer to Schedule at end of this Section.

1.02 WORK FURNISHED BUT NOT INSTALLED

- A. Section 03300 - Cast-In-Place Concrete: Metal fabrications cast in concrete.
- B. Section 04340 - Reinforced Unit Masonry System: Metal fabrications embedded in masonry.

1.03 RELATED WORK

- A. Section 05120 - Structural Steels.
- B. Section 09900 - Painting.

1.04 REFERENCES

- A. ASTM A36 - Structural Steel.
- B. ASTM A53 - Hot-Dipped, Zinc-coated Welded and Seamless Steel Pipe.
- C. ASTM A307 - Low-Carbon Steel Externally and Internally Threaded Fasteners.
- D. ASTM A325 - High Strength Bolts for Structural Steel Joints.
- E. ASTM A386 - Zinc-coating (Hot-Dip) on Assembled Steel Products.
- F. ASTM A501 - Hot-formed Welded and Seamless Carbon Steel Structural Tubing.
- G. AWS D1.1 - Structural Welding Code.
- H. FS TT-P-31 - Paint, Oil: Iron Oxide, Ready Mix, Red and Brown.
- I. FS TT-P-641 - Primer Coating, Zinc Dust-Zinc Oxide (for Galvanized Surfaces).

1.04 J.

J. FS TT-P-645 - Primer, Paint, Zinc Chromate, Alkyd Type.

1.05 SHOP DRAWINGS

A. Submit Shop Drawings in accordance with Section 01300.

B. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.

C. Include erection drawings, elevations, and details where applicable.

D. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.

E. Prepare Shop Drawings under seal of a professional structural engineer registered in the State of Arizona.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Steel Sections: ASTM A36.

B. Steel Tubing: ASTM A501.

C. Bolts, Nuts and Washers: ASTM A307.

D. Welding Materials: AWS D1.1; type required for materials being welded.

E. Primer: FS TT-P-31, red, for shop application and field touch-up.

F. Touch-up Primer for Galvanized Surfaces: FS TT-P-641.

2.02 FABRICATION

A. Verify dimensions on site prior to shop fabrication.

B. Fabricate items with joints tightly fitted and secured.

C. Fit and shop assemble in largest practical sections, for delivery to site.

D. Grind exposed welds flush and smooth with adjacent finished surface. Ease exposed edges to small uniform radius.

E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts, unobtrusively located, consistent with design of structure, except where specifically noted otherwise.

2.02 F.

F. Make exposed joints butt tight, flush and hairline.

G. Supply components required for anchorage of metal fabrications. Fabricate anchorage and related components of same material and finish as metal fabrication, except where specifically noted otherwise.

2.03 FINISH

A. Clean surfaces of rust, scale, grease and foreign matter prior to finishing.

B. Do not prime surfaces in direct contact bond with concrete or where field welding is required.

C. Prime paint items scheduled with one coat.

D. Galvanize items to minimum 1.25 oz./sq. ft. zinc coating in accordance with ASTM A386.

PART 3 - EXECUTION

3.01 PREPARATION

A. Obtain Architect/Engineer approval prior to site cutting or making adjustments not scheduled.

B. Clean and strip site primed steel items to bare metal where site welding is scheduled.

C. Make provision for erection loads with temporary bracing. Keep work in alignment.

D. Supply items required to be cast into concrete or embedded in masonry with setting templates, to appropriate sections.

3.02 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Perform field welding in accordance with AWS D1.1.

C. After installation, touch-up field welds, scratched or damaged surfaces with primer.

D. Rod suspended items to have threads "spoiled" or tack welded at bolts to rods after erection and leveling of all systems at both upper and lower connections.

3.03

3.03 SCHEDULE: Provide and install items listed in Schedule and shown on Drawings with anchorage and attachments necessary for installation. The Schedule is a list of principal items only. Refer to Drawing details for items not specifically scheduled.

A. Ledge and shelf angles, and channels and plates not attached to structural framing, for support of miscellaneous items as indicated, prime paint finish.

B. Lintels: Prime paint finish. Sizes as indicated at all openings. Minimum bearing 8 inches at each side of opening.

C. Mechanical Equipment: Provide all miscellaneous structural support members and coordinate required attachments for proper suspension system. Provide nailer anchorage as detailed. See Section 06100.

D. Carpenter's Iron Work: Provide as required custom fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required for framing and supporting woodwork and/or anchoring or securing woodwork to concrete, masonry or other structure.

E. Counter, Vanity Support Brackets: Install in conjunction with stud and/or masonry systems as detailed, prime painted steel.

F. Channel and angle door frames and wall openings for overhead door openings; prime paint finish.

G. Bollards: 6 inch diameter, extra-strong Schedule 80 steel pipe, ASTM A501, sizes as shown on drawings, prime painted steel.

H. Downspout Boots: Type DSI, 4 inch x 4 inch x 6'-0" iron downspout boots with one (1) coat rust-inhibitive primer, as manufactured by McKinley Iron Works, Neenah, or prior approved equal.

END OF SECTION

SECTION 05501

ANCHOR BOLTS

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies anchor bolts complete with washers and nuts. Unless otherwise specified, anchor bolts shall be hot-dip galvanized or type 304 stainless steel.

1.02 REFERENCES

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|-------------------|---|
| ANSI A58.1-82 | Minimum Design Loads for Buildings and Other Structures |
| ASTM A36/A36M-84a | Structural Steel |
| ASTM A307-84 | Carbon Steel Externally Threaded Standard Fasteners |
| ASTM A320-85 | Alloy-Steel Bolting Materials for Low Temperature Service |
| UBC-1985 | Uniform Building Code |

PART 2--PRODUCTS

2.01 GENERAL

Anchor bolt holes in equipment support frames shall not exceed the bolt diameters by more than 25 percent, up to a limiting maximum oversizing of 1/4 inch. Minimum anchor bolt diameter shall be 1/2 inch. Anchor bolts shall be furnished with leveling nuts, the faces of which shall be tightened against flat surfaces as shown to not less than 10 percent of the bolt's safe tensile stress.

Tapered washers shall be provided where mating surface is not square with the nut.

2.01

Expansion shields set in holes drilled in the concrete after the concrete is placed will not be permitted in substitution for anchor bolts except where otherwise specified. Upset threads shall not be acceptable.

2.02 MATERIALS

Anchor bolt materials shall be as specified in Table A.

Table A, Anchor Bolt Materials

| <u>Material</u> | <u>Specification</u> |
|--------------------------------------|--|
| Steel bolts | ASTM A307, Grade A |
| Fabricated steel bolts | ASTM A36 |
| Stainless steel bolts, nuts, washers | ASTM A320, type 304 |
| Expansion anchors | HILTI-BOLT, McCulloch Industries, or equal |
| Wedge anchors | ITT, Phillips Drill Co., or equal. |

2.03 DESIGN

Anchor bolts for equipment frames and foundations shall be designed in accordance with the Uniform Building Code for seismic zone 2.

PART 3--EXECUTION

Fieldwork, including cutting and threading, shall not be permitted on galvanized items.

Dissimilar metals shall be protected from galvanic corrosion by means of pressure tapes, coatings or isolators.

Anchor bolts to be embedded in concrete shall be placed accurately and held in correct position while the concrete is placed or, if specified, recesses or blockouts shall be formed in the concrete and the metalwork shall be grouted in place in accordance with Section 03300. The surfaces of metalwork in contact with concrete shall be thoroughly cleaned.

After anchor bolts have been embedded, their threads shall be protected by grease and the nuts run on.

****END OF SECTION****

SECTION 05505

MISCELLANEOUS METALWORK

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies miscellaneous metalwork, which consists of custom fabricated steel metalwork other than structural metalwork.

1.02 QUALITY ASSURANCE

A. GENERAL:

Shop and field welding shall conform to the requirements of AISC M010.

The use of salvaged, reprocessed or scrap materials will not be permitted.

B. REFERENCES:

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|-----------------------|---|
| AISC 8th Edition | Manual of Steel Construction |
| ASTM A36/A36M- 84a | Structural Steel |
| ASTM A48-83 | Gray-Iron Castings |
| ASTM A283-84a | Low and Intermediate Tensile Strength Carbon Steel Plates, Shapes and Bars |
| ASTM A307-84 | Carbon Steel Externally Threaded Standard Fasteners |
| ASTM A320-85 | Alloy-Steel Bolting Materials for Low Temperature Service |
| ASTM A500-84 | Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes |

PART 2--PRODUCTS

2.01 MATERIALS

Materials for miscellaneous metalwork are specified in Table A.

2.02 FABRICATION

A. GENERAL:

Holes shall be punched 1/16 inch larger than the nominal size of the bolts, unless otherwise specified. Whenever needed, because of the thickness of the metal, holes shall be subpunched and reamed or shall be drilled.

Fabrication including cutting, drilling, punching, threading and tapping required for miscellaneous metal or adjacent work shall be performed prior to hot-dip galvanizing.

B. SEAT ANGLES, SUPPORTS AND BRACKETS:

Seat angles over slide gate guides shall be welded to the guides. Seat angles for grating, supports for floor plates, clips for precast panels and brackets for piping shall be steel, hot-dip galvanized after fabrication unless otherwise specified.

C. POWER DRIVEN PINS:

Power driven pins may be used in interior locations of nonprocess areas. Pins shall be heat treated steel alloy in accordance with AISI 1062 or 4063 and shall be zinc-plated. Pins shall have capped or threaded heads capable of transmitting the loads the shanks are required to support. Pins that are connected to steel shall have longitudinal serrations around the circumference of the shank. Complete information describing pin capacities and connections shall be provided to the Construction Manager. Proposed use and locations shall be approved by the Construction Manager prior to their use.

D. IRON CASTINGS:

Castings shall be as specified on the drawings. Castings weighing less than 100 pounds shall be hot-dip galvanized after machining. Castings weighing greater than 100 pounds shall be galvanized where specified.

E. OTHER MISCELLANEOUS STEEL METALWORK:

Other miscellaneous steel metalwork including embedded and nonembedded steel metalwork, hangers and inserts shall be as specified on the drawings and shall be hot-dip galvanized after fabrication.

Table A, Materials for Miscellaneous Metalwork

| <u>Material</u> | <u>Specification</u> |
|--|-----------------------|
| Nonstructural steel bars, angles, clips, and similar items | ASTM A36 or ASTM A283 |
| Iron castings | ASTM A48 |
| Structural steel tubing | ASTM A500, Grade B |
| Steel bolts (except flanges and anchor bolts) | ASTM A307, Grade A |
| Stainless steel | ASTM A320, type 304 |

3.01 A.

PART 3--EXECUTION

3.01 INSTALLATION

A. GENERAL:

Fieldwork shall not be permitted on galvanized items. Drilling of bolts or enlargement of holes to correct misalignment will not be allowed.

Dissimilar metals shall be protected from galvanic corrosion by means of pressure tapes, coatings or isolators.

Metalwork to be embedded in concrete shall be placed accurately and held in correct position while the concrete is placed or, if specified, recesses or blockouts shall be formed in the concrete. The surfaces of metalwork in contact with or embedded in concrete shall be thoroughly cleaned. If accepted, recesses may be neatly cored in the concrete after it has attained its design strength and the metalwork grouted in place. Embedments shall be as specified in Section 03300.

B. SEAT ANGLES, SUPPORTS AND GUIDES:

Seat angles for grating and supports for floor plates shall be set so that they are flush with the floor and also maintain the grating and floor plates flush with the floor.

C. POWER DRIVEN PINS:

Power driven pins shall be set by a craftsman who is certified by the manufacturer. Pins shall be driven in one initial movement by an instantaneous force that has been selected to attain the required penetration. Driven pins shall conform to the following:

| <u>Material penetrated by pin</u> | <u>Penetrated material's minimum thickness</u> | <u>Penetration of pin's shank in supporting material</u> | <u>Minimum space from center of pin's shank to edge of penetrated matl.</u> | <u>Minimum pin spacing</u> |
|-----------------------------------|--|--|---|----------------------------|
| Concrete | 16D | 6D minimum | 14D | 20D |
| Steel | 1/4 inch | Steel thickness plus 2D | 4D | 7D |

Where D = pin shank diameter.

When required by the Construction Manager, pullout tests shall be carried out by the Contractor to prove the effectiveness of the anchorage and the capacity of the pin.

3.02

3.02 CLEANING

After installation, damaged surfaces of shop primed metals shall be cleaned and touched up with the same material used for the shop coat. Damaged surfaces of galvanized metals shall be repaired as specified in Section 05910.

END OF SECTION

SECTION 05520

HANDRAILING

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies prefabricated aluminum handrailing.

1.02 QUALITY ASSURANCE

A. GENERAL:

Handrailing shall conform to the standards of the Occupational Safety and Health Administration (OSHA) and the Uniform Building Code.

B. REFERENCES:

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|------------------|--|
| ASTM A320-85 | Alloy-Steel Bolting Materials for Low-Temperature Service |
| ASTM B241-83a | Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube |

PART 2--PRODUCTS

2.01 MATERIALS

| <u>Material</u> | <u>Component</u> |
|-------------------------|-------------------------------------|
| Aluminum | ASTM B241, alloy 6061-T6 or 6063-T6 |
| Bolts, nuts and washers | ASTM A320, type 304 or 305 |

2.02 FABRICATION

A. GENERAL:

Pipe cuts shall be clean, straight, square and accurate for minimum joint gap. Work shall be done in conformance with the

2.02 A.

handrail manufacturer's instructions. Work shall be free from blemishes, defects, and misfits of any type which can affect durability, strength, or appearance.

Handrailing shall be connected by screws or bolts. Holes shall be punched 1/16 inch larger than the nominal size of the bolts, unless otherwise specified. Wherever needed because of the thickness of the metal, holes shall be subpunched and reamed or drilled. Handrail components with mismatched holes shall be replaced. No drifting of bolts nor enlargement of holes will be allowed to correct misalignment.

B. ALUMINUM HANDRAILS:

Aluminum handrails shall be Reyno-Rail II as manufactured by Reynolds Metal Company; Connectorail as manufactured by Julius Blum and Company, Inc.; C-V Pipe rail as manufactured by Crane-Veyor Corporation; or equal. Aluminum railing components shall have a clear satin anodized architectural Class I finish of minimum 0.7 mil thickness. Rails, posts, stanchions, and specials shall be fabricated from 1-1/2-inch diameter, Schedule 40 cylindrical sections.

Toeboards shall be provided where specified on the drawings. Toeboards shall be aluminum with a minimum thickness of 3/16 inch and shall be bolted to the vertical railing supports. Toeboards shall be designed to allow for thermal contraction and expansion.

PART 3--EXECUTION

Handrailing shall be Type A or Type B as specified on the drawings. Measurements for railings shall be field-verified before fabrication.

Dissimilar metals shall be protected from galvanic corrosion by means of pressure tapes, coatings, or isolators. Aluminum in contact with concrete or grout shall be protected with a heavy coat of bituminous paint.

Metal to be embedded in concrete shall be placed accurately and held in correct position while the concrete is placed. Recesses or blockouts shall be formed in the concrete, and the metalwork shall be grouted in place after concrete has attained its design strength in accordance with Section 03300.

END OF SECTION

SECTION 05530

GRATING, STEEL STAIRS, FLOOR PLATES,
SAFETY STAIR TREADS, AND COVER PLATES

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies floor grating, floor plates, cover plates, steel stairs, and safety stair treads.

1.02 REFERENCES

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|---------------------|---|
| AISC, 8th Edition | Manual of Steel Constructions |
| ASCE Vol. 88-ST6 | Suggested Specifications for Structures of Aluminum Alloys 6061-T6 and 6063-T6 |
| ASTM A36/A36M-84a | Structural Steel |
| ASTM A569-72 | Steel, Sheet and Strip, Carbon, Hot Rolled, Commercial Quality |
| ASTM B210-82a | Aluminum-Alloy Drawn Seamless Tubes |
| ASTM B221-85 | Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes |

PART 2--PRODUCTS

2.01 MATERIALS

A. ALUMINUM:

Aluminum grating bearing bars and aluminum floor plates and cover plates shall be of alloy 6061-T6 conforming to ASTM B221. Aluminum grating cross bars shall be of an alloy conforming to either ASTM B221 (extrusions) or B210 (drawn).

2.01 B.

B. STEEL:

Steel grating bearing bars and cross bars shall be of welding quality mild carbon steel conforming to ASTM A569. Steel floor plates and cover plates shall be of structural quality steel conforming to ASTM A36.

2.02 FABRICATION

A. GENERAL:

Rough weld beads and sharp metal edges on gratings and plates shall be ground smooth. Welds exposed to view shall be uniform and neat. Welds to be galvanized shall be sandblasted prior to galvanizing.

Holes shall be punched 1/16 inch larger than the nominal size of the bolts, unless otherwise specified. Whenever needed, because of the thickness of the metal, holes shall be subpunched and reamed or shall be drilled.

Cutting, drilling, punching, threading and tapping shall be performed prior to hot-dip galvanizing.

B. GRATING:

1. GENERAL: Grating shall be as specified. Both bearing bars and cross bars shall be continuous. Openings shall be banded with bars having the same dimensions as the bearing bars. Perimeter edges shall be banded with bars flush at the top surface of the grating and 1/4 inch clear of the bottom surface. Bars terminating against edge bars shall be welded to the edge bars when welded construction is used. When crimped or swaged construction is used, bars at edges shall protrude a maximum of 1/16 inch and shall be peened or ground to a smooth surface. No single piece of grating shall weigh more than 80 pounds unless specifically detailed otherwise.

2. ALUMINUM GRATING: Unless otherwise specified, grating shall be fabricated of aluminum. Bearing bars shall be punched to receive the cross bars. After insertion in the bearing bars, cross bars shall be deformed by a hydraulic press or similar means to permanently lock the bars into the bearing bar openings. Fabrication methods employing bending or notching of cross bars will not be permitted. Aluminum grating shall be Gary Galok, Seidelhuber, or equal.

3. STEEL GRATING: Steel grating shall be used only where specified. Steel grating shall be hot-dip galvanized. Notching, slotting, or cutting the top or bottom edges of bearing bars to receive cross bars will not be permitted unless each intersection

2.02 B.3.

of bars is fully welded to restore each bearing bar to its full cross-sectional strength. Steel grating shall be Irving Type IWA, Gary Type GW, or equal.

C. FLOOR AND COVER PLATES:

Floor and cover plates (Checkered Plate) shall be Alcoa C-102 aluminum tread plate, Reynolds diamond tread plate, or equal. Hinged cover plates shall be as specified and shall be set flush with surrounding floor. No single piece of floor and cover plate shall weigh more than 80 pounds unless specifically detailed otherwise.

D. STAIRS AND LADDERS:

Unless otherwise specified, stairs and ladders shall be steel and shall be hot-dip galvanized after fabrication.

E. SAFETY STAIR TREADS:

Safety stair treads shall be 4 inches wide and shall be Alumogrit, Type 101, as manufactured by Wooster Products, Incorporated; Alumalum, Style A, as manufactured by American Abrasive Metals Company; Style AX as manufactured by Safe-T-Metal Company, Incorporated, or equal.

PART 3--EXECUTION

3.01 INSTALLATION

A. GENERAL:

Fieldwork shall not be permitted on galvanized items. Drilling of bolts or enlargement of holes to correct misalignment will not be allowed.

Dissimilar metals shall be protected from galvanic corrosion by means of pressure tapes, coatings or isolators. Aluminum in contact with concrete shall be protected by a heavy coat of bituminous paint.

Metalwork to be embedded in concrete shall be placed accurately and held in correct position while the concrete is placed or, if specified, recesses or blockouts shall be formed in the concrete after it has attained its design strength and the metalwork grouted in place as specified in Section 03300. The surfaces of metalwork in contact with or embedded in concrete shall be thoroughly cleaned. If accepted, recesses may be neatly cored in the concrete.

3.01 B.

B. GRATING, FLOOR AND COVER PLATES:

Grating, floor and cover plates shall be field measured for proper cutouts and proper sizes. Field welding of aluminum grating and cover plates, where specified, shall be in accordance with ASCE Vol. 88-ST6.

C. STAIRS AND LADDERS:

Stairs and ladders shall be fitted accurately and field measured where necessary.

D. SAFETY STAIR TREADS:

Unless otherwise specified, safety stair treads shall be installed on all concrete stairs. Treads shall be secured to concrete with suitable anchors at 15 inches on centers and not more than 4 inches from the ends. Rubber tape, 1/8 inch thick, shall be provided at both ends and cut to fit shape of tread prior to concrete placement.

3.02 CLEANING

After installation, damaged surfaces of shop primed metals shall be cleaned and touched up with the same material used for the shop coat. Damaged surfaces of galvanized metals shall be repaired as specified in Section 05910.

END OF SECTION

SECTION 05541

MANHOLE FRAMES AND COVERS

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies manhole frames and covers.

1.02 REFERENCES

This section contains references to the following document. It is a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed document, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|------------------|--------------------|
| ASTM A48-83 | Gray-Iron Castings |

PART 2--FABRICATIONS

2.01 MATERIALS

The materials for manhole frames and covers shall be cast iron in accordance with ASTM A48, Class 30.

2.02 FABRICATION

Manhole frames and covers shall be the locking type with a 24-inch clear frame opening, a 4-1/8-inch minimum flange height and two locking wedges in the frame. Covers shall have two fingers which engage the locking wedges when the cover is positioned in the frame and turned. Bearing and wedging surface shall be machined to ensure a tight fit and to prevent rocking. Sanitary sewer manhole frames shall be 6 inches deep unless otherwise specified.

The use of salvaged or scrap materials will not be permitted.

PART 3--EXECUTION

Manhole frames and covers shall be set flush with the surrounding surfaces unless otherwise specified.

END OF SECTION

SECTION 05910

HOT-DIP ZINC COATING

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies hot-dip zinc coating.

1.02 REFERENCES

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|---------------------------|--|
| ASTM A123-84 | Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products |
| ASTM A143-74 (1984) | Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement |
| ASTM A153-82 | Zinc Coating (Hot-Dip) on Iron and Steel Hardware |
| ASTM A384-76 (1980) | Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies |
| ASTM A385-80 | Providing High-Quality Zinc Coatings (Hot-Dip) |
| ASTM A780-80 | Repair of Damaged Hot-Dip Galvanized Coatings |
| MILSPEC DOD-P-21035-78 | Paint, High Zinc Dust Content, Galvanizing Repair |

PART 2--PRODUCTS

2.01 MATERIALS

A. ZINC COATING:

Zinc coating material shall be as specified in ASTM A153.

2.01 B.

B. ZINC DUST-ZINC OXIDE COATING:

Zinc dust-zinc oxide coating shall conform to MILSPEC DOD-P-21035. Coating shall be as manufactured by Z.R.C. Chemical Products Co., Galvicon Co., or equal.

2.02 FABRICATION REQUIREMENTS

Fabrication practices for products to be galvanized shall be in accordance with applicable portions of ASTM A143, A384 and A385.

2.03 PRODUCT DATA

The following information shall be provided in accordance with paragraph 00710-4.02:

1. Zinc dust-zinc oxide coating manufacturer's product data showing conformance to the specified product.
2. Manufacturer's recommendation for application of zinc dust-zinc oxide coating.
3. Coating applicator's Certificate of Compliance that the hot-dip galvanized coating meets or exceeds the specified requirements of ASTM A123 or A153, as applicable.

PART 3--EXECUTION

3.01 APPLICATION

Steel members, fabrications and assemblies shall be galvanized after fabrication in accordance with ASTM A123.

Unless otherwise specified, steel items weighing 100 pounds or less shall be hot-dip zinc coated. Anchor bolts and nuts 5/8 inch and larger shall be hot-dip zinc coated in accordance with ASTM A153. Anchor bolts and nuts smaller than 5/8 inch and all other bolts, screws, nuts, washers and other minor steel fasteners shall be mechanically zinc coated as specified in Section 05911.

3.02 COATING REQUIREMENTS

Coating weight shall conform with paragraph 5.1 of ASTM A123 or Table 1 of ASTM A153, as appropriate.

3.03 REPAIR OF DEFECTIVE GALVANIZED COATING

Where zinc coating has been damaged after installation, substrate surface shall be first cleaned and then repaired with zinc dust-zinc oxide coating in accordance with ASTM A780. Application shall be as recommended by the zinc dust-zinc oxide coating manufacturer. Coating shall consist of multiple coats to dry film thickness of 8 mils.

Items not physically damaged, but which have insufficient or deteriorating zinc coatings, and items damaged in shipment or prior to installation, shall be removed from the project site for repair by the hot-dip zinc coating method.

****END OF SECTION****

SECTION 05911

MECHANICAL ZINC COATING

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies mechanically applied zinc coating. This coating shall be used on steel fasteners including bolts, screws, nuts and washers. Anchor bolts are coated as specified in Section 05910. Electroplated corrosion protection is not an acceptable substitute for mechanical zinc coating.

1.02 QUALITY ASSURANCE

A. ZINC COATING THICKNESS:

Coating thickness shall be Class 50 as specified in ASTM B695.

B. REFERENCES:

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|------------------|---|
| ASTM A153-82 | Zinc Coating (Hot-Dip) on Iron and Steel Hardware |
| ASTM B695-83 | Coatings of Zinc Mechanically Deposited on Iron and Steel |

PART 2--PRODUCTS

2.01 MATERIALS

The coating material shall be as specified in ASTM A153.

2.02 PRODUCT DATA

In accordance with paragraph 00710-4.02, information shall be provided that describes materials and method of coating used.

PART 3--EXECUTION

3.01 FIELD REPAIR

Damaged surfaces of zinc coated metals shall be repaired as specified in Section 05910.

****END OF SECTION****

DIVISION 6
WOOD AND PLASTICS

| <u>Section</u> | <u>Title</u> |
|----------------|------------------------|
| 06100 | ROUGH CARPENTRY |
| 06200 | FINISH CARPENTRY |
| 06410 | ARCHITECTURAL CASEWORK |

SECTION 06100

ROUGH CARPENTRY

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Miscellaneous wood framing, including wood stud wall at Reception.
- B. Blocking for wall finishes and exterior wall insulation.
- C. Blocking for roofing system insulation and related metal flashings.
- D. Blocking and cants for roof-mounted mechanical items.
- E. Preservative treatment.
- F. Concealed wood blocking for support of washroom accessories wall cabinets and door wall stops.
- G. Roughsawn exposed framing for Entry canopies.

1.02 RELATED WORK

- A. Section 06200 - Finish Carpentry.
- B. Section 08700 - Finish Hardware.
- C. Section 09260 - Gypsum Drywall Systems: Gypsum Board.

1.03 REFERENCES

- A. FS TT-W-550 - Wood Preservative, Chromated Copper Arsenate Mixture.
- B. FS TT-W-570 - Wood Preservative, Pentachlorophenol.
- C. NFPA - national Design Specification for Stress Grade Lumber and Its Fastening.
- D. PS 1 - Construction and Industrial Plywood.
- E. PS 20 - American Softwood Lumber Standard.

1.04 QUALITY ASSURANCE

- A. Lumber: Identify with grade stamp of an agency certified by NFPA.

1.04 B.

B. Fire retardant treatment to conform to requirements of Underwriters' Laboratories (UL).

1.05 REGULATORY REQUIREMENTS

A. Conform to applicable code for fire retardant treatment of wood surfaces for flame/fuel/smoke ratings.

1.06 PRODUCT DATA

A. Submit product data under provisions of Section 01300.

B. Identify preservative properties, method of treatment, expected service life.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Lumber: PS 20, graded in accordance with NFPA Grading Rules; maximum moisture content of 19 percent; WCDF species

1. Structural Lumber, Beams and Joists and Ledgers: $f_b = 1450$ psi, $F_v = 95$ psi, $E = 1,500,000$ psi, S4S, dry for repetitive use.

2. Studs, Blocking and Minor Framing: $f_b = 1200$ psi, $F_v = 95$ psi, $E = 1,500,000$ psi, S4S, dry.

3. Beams (solid wood): WCDF, $f_b = 1450$ psi, $F_v = 95$ psi, $E = 1,500,000$ psi, S4S, dry.

4. Decking: WCDF, tongue and groove, $f_b = 1450$ psi, $F_v = 95$ psi, $E = 1,500,000$ psi.

B. Plywood: PS 1; sheathing standard grade, exterior glue quality, WCDF face veneer. 5/8 inch 40/20. Exposure - I.

1. Plywood: U.S. Products Standard PSI-74. Each panel identified with the D.F.P.A. grade trademark of the American Plywood Association. Plywood thickness shall be as indicated on the drawings, plywood used for structural purposes shall have an identification index appropriate for the support spacing.

2. Form Material: See concrete Formwork Section. Plywood, B-B Plyform, Class 1, Douglas Fir exterior structural, mill oiled, green edge sealed in accord with U.S. Products Standard PS-1-56.

2.02 ACCESSORIES

A. Nails, Spikes, and Staples: Galvanized for exterior locations, high humidity locations, and treated wood; plain finish for other interior locations; size and type to suit application.

2.02 B.

B. Bolts, Nuts, Washers, Lags, and Screws: Medium carbon steel; size and type to suit application; galvanized for exterior locations, high humidity locations, and treated wood; plain finish for other interior locations.

C. Fasteners: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolts or power activated type for anchorage to steel.

2.03 WOOD TREATMENT MATERIALS

A. Fire Retardant: Chemically treated and pressure impregnated; capable of providing a maximum flame spread development rating of 20. Provide fire-retardant lumber for the following uses: Miscellaneous wood blocking used in walls and ceilings in non-combustible construction.

B. Wood Preservative: Wolmanized Wood, Wood Life or Copper Napthanate. Comply with applicable requirements of American Wood Preservers Institute. Mark each piece of lumber with the AWPI quality mark for compliance with the specified requirements. Provide preservative treated lumber for the following usages: Wood plates at stud walls, roof blocking, roof-mounted curbs, support timber and blocking for rooftop mechanical or ventilation units and insulation stops.

2.04 SHOP TREATMENT OF WOOD MATERIALS

A. Shop pressure treat wood materials requiring UL fire rating, pressure impregnated preservatives to FS TT-W-571, Table 3.

B. Provide UL approved identification on fire resistant treated materials.

C. Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.

D. Kiln dry wood after pressure treatment to maximum 19 percent moisture content.

2.05 BUILDING PAPER

A. ASTM D-226. 15-lb. asphalt saturated felt.

PART 3 - EXECUTION

3.01 SITE TREATMENT OF WOOD MATERIALS

A. Brush or spray apply one coat of preservative treatment for wood in contact with cementitious materials, roofing and related metal flashings.

3.01 B.

B. Apply preservative treatment in accordance with manufacturer's instructions. Redry to 19 percent moisture content.

C. Treat site-sawn ends. Allow preservative to cure prior to placing members.

D. Prime paint surfaces in contact with cementitious materials.

3.02 INSTALLATION

A. Install miscellaneous bearing and non-bearing stud walls, blocking, furring, nailing strips and framing.

B. Studs - Provide mid-height blocking.

C. Install members true, plumb, and level. Secure in place.

D. Space miscellaneous framing and furring at 16 inches maximum o.c.

E. Construct members of continuous pieces of longest possible lengths.

F. Framing - General: Provide at all partitions and miscellaneous framing indicated by the drawings or required to accomplish the work indicated thereon. Cut framing square on bearings, closely fitted and accurately set to the required lines and levels rigidly secured in place. Nail size and spacing shall be sufficient to develop maximum strength without splitting the members. use framing anchors where necessary to properly develop strength at connection and as detailed.

G. Blocking: Provide blocking of sizes and types indicated on the drawings or as required to accomplish the work required by the contract. Blocking and nailers shall be bolted to steel where wood to steel conditions exist.

H. Nailers and Grounds: Provide nailers and grounds as indicated on the drawings or as required for proper leveling of plaster and similar materials, or for the attachment of finish materials.

1. Provide grounds or solid blocking in all hollow type partitions where required for door stops and other applied equipment or finishes and/or future framing. Coordinate with hardware schedule, toilet accessories, toilet partitions, mirrors, etc.

I. Temporary Supports: Provide wood centering, bracing, safety rails, and other temporary supports of whatever nature required to properly and safely execute the work.

3.03 GENERAL

A. Do not notch, drill, or otherwise cut joists, beams or load bearing studs without prior approval of Structural Engineer or Architect.

3.03 B.

B. Nailing Schedule:

| <u>Connection</u> | <u>Nailing</u> ¹ |
|--|------------------------------------|
| Joist to sill or girder, toenail | 3-8d |
| Bridging to joist, toenail each end | 2-8d |
| Sole plate to joist or blocking, face nail | 16d @ 16" o.d. |
| Top plate to stud, end nail | 2-16d |
| Stud to sole plate | 4-8, toenail or 2-16d, end nail |
| Double studs, face nail | 16d @ 24" o.c. |
| Doubled top plates, face nail | 16d @ 16" o.c. |
| Top plates, laps and intersections, face nail | 2-16d |
| Continuous header, two pieces | 16d @ 16" o.c. along each edge |
| Ceiling joists to plate, toenail | 3-8d |
| Continuous header to stud, toenail | 4-8d |
| Rafter to plate, toenail | 3-8d |
| Built-up corner studs | 16d @ 24" o.c. |
| 2" planks | 2-16d at each bearing |
| Plywood and particleboard ⁴ : | |
| Subfloor, roof and wall sheathing (to framing) | |
| 19/32"-3/4" | 8d ² or 6d ⁴ |

¹ Common or box nails may be used except where otherwise stated.

² Common.

³ Deformed shank.

⁴ Nails spaced at 6 inches on center at edges, 12 inches at intermediate supports (10 inches at intermediate supports for floors), except 6 inches at all supports where spans are 48 inches or more.

****END OF SECTION****

SECTION 06200

FINISH CARPENTRY

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Finish carpentry items, other than shop fabricated work, with hardware and attachment accessories.

B. Refer to schedule at end of this section.

1.02 RELATED WORK

A. Section 06100 - Rough Carpentry.

B. Section 06181 - Glue Laminated Structural Units.

C. Section 06410 - Architectural Casework.

D. Section 08210 - Wood Doors.

E. Section 09900 - Painting.

1.03 QUALITY ASSURANCE

A. Perform finish carpentry work in accordance with AWI Quality Standards, custom grade.

B. Fire retardant treatment to conform to requirements of Underwriters' Laboratories (UL).

C. "Quality Standards" of Architectural Woodwork Institute apply and by reference are hereby made part of this specification. Any reference to premium, custom or economy in this specification defined in the latest edition of AWI Quality Standards.

1.04 REFERENCES

A. AWI: Quality Standards.

B. FS MM-L-736: Lumber - Hardwood.

C. PS 1: Construction and Industrial Plywood

D. PS 20: American Softwood Lumber Standard.

E. PS 58: Basic Hardwood.

3.04 C.

C. Erect all items of finish carpentry as indicated.

D. Locker room benches shall use countersunk stainless steel screws finished with Redwood plugs.

E. Cedar Paneling - Install horizontally with construction adhesive, in accordance with manufacturer's instructions; blind nail to wood studs through gypsum wallboard with 6d finish nails.

3.05 PREPARATION FOR FINISHING

A. Sand work smooth and set exposed nails and screws. Apply wood filler in exposed nail and screw indentations.

3.06 SCHEDULE

A. Running and standing trim as detailed.

B. Entry door frame as detailed.

C. Locker Room Redwood benches.

D. Cedar Paneling at Administration.

E. Doors:

1. Hang and set all doors plumb and accurately aligned with frame and stops.

2. Provide uniform 1/16 inch to 1/8 inch edge clearance at jambs and heads and 1/2 inch bottom clearance except at undercut doors as required in Section 08211. Bevel lock stiles a standard 1/8 inch in 2 inches or as required to match hardware. Ease all edges. Install specified hardware to provide free swinging doors that close easily and latch securely, free from rattling.

3. Make lock cutouts with proper templates or jigs, using manufacturer's recommended methods, cut mortises accurately to size and depth with minimum clearance, patching not permitted, doors and frames incorrectly prepared for hardware replaced.

4. Install weatherstripping and other specialty hardware on doors where indicated.

END OF SECTION

SECTION 06410

ARCHITECTURAL CASEWORK

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Shop fabricated cabinetwork and finish carpentry items, complete with hardware and accessories, shop finished where required.

1.02 RELATED WORK

A. Section 06200 - Finish Carpentry.

B. Section 09900 - Painting.

1.03 QUALITY ASSURANCE

A. Perform carpentry work in accordance with the recommendations of the Millwork Standards of the Architectural Woodwork Institute (AWI).

B. Manufacturer provide evidence of successful workmanship with five years experience.

1.04 REFERENCE STANDARDS

A. FS L-P-508F - Plastic Sheet, Laminated, Decorative, and Non-Decorative.

B. FS MMM-A-130A - Adhesive, Contact.

C. PS 1 - Construction and Industrial Plywood.

D. PS 20 - American Softwood Lumber Standard.

E. PS 51 - Hardwood and Decorative Plywood.

F. PS 58 - Basic Hardwood.

G. NFPA National Forest Products Association National Design Specification for Stress Grade Lumber and its Fastening.

1.05 SUBMITTALS

A. Submit shop drawings of all cabinetwork in accordance with Section 01300. Scale sufficient to show detail.

B. Indicate materials and wood species, component profiles, fastening, jointing details, finishes, and accessories to 1-1/2 inch scale.

1.06 SAMPLES

A. Submit items of manufacturer's standard hardware for selection if not otherwise specified.

B. Laminated Plastic: Provide full set of current color chips showing color and pattern selections from manufacturer's standard palette.

1.07 DELIVERY AND STORAGE

A. Do not deliver carpentry items until site conditions are adequate to receive the work. Protect items from weather while in transit.

B. Store indoors, in ventilated areas with constant but minimum temperature of 16°C. and maximum relative humidity of 25 to 55%.

1.08 FIELD DIMENSIONS

A. Woodwork manufacturer is responsible for details and dimensions not controlled by job conditions and show on his shop drawings all required field measurements beyond his control. Contractor and woodwork manufacturer cooperate to establish and maintain these field dimensions.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All Architectural Casework shall conform to AWI standards for plastic laminate faced, custom grade cabinetwork as indicated on drawings.

B. Provide and install all items as listed in schedule at end of this section, location as indicated on drawings, complete in all respects to function as intended.

2.02 LUMBER PRODUCTS

A. Softwood Lumber: PS 20; and graded in accordance with the requirements of AWI; maximum moisture content of 6% for interior work.

B. Hardwood Lumber: Graded in accordance with the requirements of AWI; maximum moisture content of 6%. Red Oak.

2.03 SHEET MATERIALS

A. Softwood Plywood: PS 1; graded in accordance with AWI; core material of veneer.

B. Douglas Fir Plywood: Graded in accordance with AWI; core material of veneer. Cores for laminated plastic. Particle boards not approved.

2.03 C.

C. Hardwood Plywood: Red Oak veneer quarter sliced, core material softwood plywood.

2.04 FINISH MATERIALS

A. Plastic Laminate: General purpose type; minimum 1/16 inch for horizontal surfaces, 1/32 inch thick for vertical surfaces. Self edging minimum 1/32 inch thick.

B. Plastic Laminate Backing: High pressure paper base laminate without a decorative finish; minimum .020 inch thick.

C. Cabinet Drawer Liner: Minimum 1/32 inch thick.

D. Adhesive: Type recommended by millwork manufacturer to suit application.

E. Hardboard: Tempered hardboard product conforming to PS 58, surfaced one side, thickness as shown or specified, use 1/4" thickness where thickness is not otherwise shown.

2.05 ACCESSORIES

A. Nails: Size and type to suit application.

B. Bolts, Nuts, Washers, Lags, Pins and Screws: Of size and type to suit application.

2.06 CABINET HARDWARE

A. Cabinet Hinges: Stanley #1586, fast spun pin, steel, concealed leaves.

B. Cabinet Pulls: Stanley #4484, aluminum, satin anodized.

C. Shelf Standards and Rests: Knappe & Vogt, #255 NP nickel for plastic laminate cabinetry; standards with #256 rests.

D. Cabinet and Drawer Locks: Best, removable core cam lock, six-tumbler keying. Key cabinets in each room alike and different keying between rooms.

E. Draw-Bolt Joint Fasteners: K&V No. 516, Tite-Joint Fasteners or prior approved equal. Keying and installation under Section 08700, Hardware.

F. Drawer Slides: Full extension Knappe & Vogt, #1440, for side-mounting rated at 100 pound load.

2.07 FABRICATION

A. Fabricate cabinetwork and finish carpentry items in accordance with recommendations of AWI and to extent indicated in Schedule of Items located at end of this Section. When necessary to cut and fit on site, make material with ample allowance for cutting. Provide trim for scribing and site cutting.

B. Fit shelves, doors and exposed edges with 3/8 inch matching hardwood edging. Use full length pieces only for hardwood plywood cabinet construction. Use matching plastic laminate self-edged for plastic laminate-faced cabinet work and shelving.

C. Cabinetwork Doors: Minimum 3/4 inch thick and of type construction indicated in Schedule.

D. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Corners and joints: Hairline; slightly bevel arrises.

E. Cap exposed plastic laminate edges with material of same finish and pattern. Mechanically fasten splashbacks to countertops with steel brackets at 16 inches o.c.

F. Do not use exposed fastening devices or nails. Arrange neatly.

G. Shop assemble cabinetwork and finish carpentry items for delivery to site in sizes easily handled and to ensure passage through building openings.

2.08 PREPARATION FOR FINISHING

A. Sand work smooth and set exposed nails and screws. Apply wood filler in exposed nail and screw indentations and leave ready to receive site applied finishes. On items to receive transparent finishes, use wood filler which matches surrounding surfaces and of types recommended for applied finishes.

B. Seal, stain and varnish concealed and semi-concealed surfaces. Brush apply only.

C. Seal internal surfaces of drawers.

D. Prime paint surfaces in contact with cementitious materials.

E. Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes, and other fixtures and fittings. Verify locations of cutouts from on-site dimensions. Prime paint contact surfaces of cutouts.

PART 3 - EXECUTION

3.01 WORKMANSHIP

A. Install woodwork straight, plumb, level in true alignment, closely fitted. Apply mouldings and trim with mitered corners and mitered or coped angles. Securely attach finish carpentry items to prepared wood grounds or blocking or other suitably prepared solid surfaces. Form joints to minimize shrinkage effects and dress to hairline tolerances.

B. Back Painting: All surfaces of all trim and casework not exposed to view at any time and abut walls or floors thoroughly backpainted with one heavy coat sealer or other finishing material approved by Architect. Backpainting shop applied.

C. Tops requiring more than one sheet plastic have plastic prematched to minimize color variation and be fabricated from longest sheet lengths available. Joints neatly and tightly fitted and secured with "Tite-Joint" fasteners 12 inches o.c. throughout entire project.

D. Cut-Outs: Provide as required for electrical outlets, telephones, mechanical and similar items. Cut accurately and neatly, without damage to casework, so items may be installed with tight joints all around.

E. Junction of countertop and backsplash coved; end splash shall have square butt joints.

F. Interior face of hinged doors and interior side of drawer fronts covered with a finished cabinet liner. All four edges of doors and drawer fronts covered with same material as exposed. Shelf edging may be extruded barbed tee shape vinyl, black in color.

G. Adjust doors and drawers to operate freely and without bind.

H. Adjustable shelf standards to be let into wood panel sides.

I. All exposed faces of shelving or base cabinet units to receive laminated plastic in colors as selected.

J. All concealed surfaces within cabinets behind doors to receive cabinet liner material.

K. All open shelving to have plastic laminate surfaces on shelves and interior of case.

L. Install plastic laminate, neatly scribed with tight fitting joints at all plastic laminate multi-colored pattern surfaces.

3.02

3.02 INSTALLATION

- A. Set and secure cabinetwork and finish carpentry items in place rigid, plumb and square.
- B. Use purpose designed fixture attachments for wall mounted components.
- C. Use threaded steel concealed joint fasteners to align and secure adjoining counter tops.
- D. Permanently fix cabinet to floor using appropriate angles and anchorages.
- E. Carefully scribe cabinetwork which is against other building materials, leaving gaps of 1/32 inch maximum. Do not use additional overlay trim for this purpose.
- F. Install and adjust cabinet hardware to ensure smooth and correct operation. Cabinet locks installed under Section 08700, Hardware.

3.03 SHOP ASSEMBLY

- A. Insofar as practicable, assemble all items under Shop Conditions. Where items are fabricated in sections to facilitate handling and access to finish spaces, make provisions for joining sections in field. Such joints consistent with finish appearance of work.

3.04 SCHEDULE OF ITEMS

- A. Cabinet and Drawer Units: As shown on drawings.
- B. Drawers: Custom grade construction with plastic laminated drawer faces. Install drawer extension guides.
- C. Shelving:
 - 1. Adjustable Shelving: Custom grade self edged plastic laminate over sides 3/4 inch; back 1/4 inch and shelves 1 inch thick plywood. Provide with fixed top and bottom shelf with 2x4 floor frame providing toe space. Install specified shelf supports let into side panels. Coordinate with electrical for installation of convenience outlets in toe space.

END OF SECTION

DIVISION 7
THERMAL AND MOISTURE PROTECTION

| <u>Section</u> | <u>Title</u> |
|----------------|--|
| 07100 | WATERPROOFING AND MOISTUREPROOFING |
| 07121 | LIQUID WATERPROOFING-MASONRY AND CONCRETE WALLS |
| 07210 | BUILDING INSULATION |
| 07514 | BUILT-UP ROOFING AND ROOF INSULATION |
| 07532 | MEMBRANE ROOFING |
| 07550 | CLAY ROOFING TILES |
| 07600 | WALL FLASHING AND SHEET METAL |
| 07831 | ROOF HATCHES |
| 07900 | SEALANTS |
| 07905 | PREFORMED JOINT FILLERS |

SECTION 07100

WATERPROOFING AND MOISTUREPROOFING

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies waterproofing and moistureproofing of concrete surfaces.

PART 2--PRODUCTS

2.01 MATERIALS

A. WATERPROOFING COATING:

Waterproofing coating shall be coal tar epoxy resin. Acceptable products are Koppers Bitumastic 300-M, Porter Maxi Build II, or equal.

B. MOISTUREPROOFING COATING:

Moistureproofing coating shall be coal tar solution. Acceptable products are Koppers Bitumastic 50, Porter Tarmastic 100, or equal.

C. WATERPROOFING MEMBRANE:

1. MEMBRANE: Waterproofing membrane shall be Bituthene as manufactured by W. R. Grace and Company, Jiffy Seal as manufactured by Protecto Wrap Co., or equal. Volclay Panels or Bentonize bentonite system are acceptable alternates except where membrane is required between concrete slabs or where there is concrete over waterproofing membrane.

2. PROTECTIVE BOARD: Protective board shall be 1/2-inch asphalt impregnated celotex insulation board.

D. MOISTUREPROOFING UNDERLAY:

1. PLASTIC MEMBRANE: Plastic membrane for moistureproofing underlay shall be polyethylene film with a thickness of 6 mils.

2. PRESSURE SENSITIVE TAPE: Pressure sensitive tape shall be 2-inch wide polyethylene tape.

3.01 A.1.

PART 3--EXECUTION

3.01 CONSTRUCTION

A. WATERPROOFING COATING:

1. LOCATION: Waterproofing coating shall be applied to the water side of walls and bottoms of channels or tanks which are common with rooms, tunnels or galleries to be occupied by equipment, piping, conduit, or personnel.

2. SURFACE PREPARATION: New concrete to be waterproofed shall have aged at least 28 days and allowed to dry to a moisture content recommended by the coating manufacturer. Loose concrete and laitance shall be removed from new concrete surfaces by sandblasting. Voids and cracks shall be repaired as specified in Section 03300.

3. APPLICATION: Prime coat shall be thinned and applied at the rate of approximately 200 to 300 square feet per gallon depending on surface condition. Finish coats shall be applied at the rate of 100 square feet per gallon. Final coat shall be black. Total dry film thickness shall be minimum 20 mils. Drying time between coats shall be as recommended by the coating manufacturer.

B. MOISTUREPROOFING COATING:

1. LOCATION: Moistureproofing coating shall be applied to earth side of outside concrete walls which are below grade and are common with rooms, tunnels or galleries to be occupied by equipment, piping or personnel. Moistureproofing coating is not required for walls to be provided with waterproofing membrane or for walls which are poured directly against an excavated surface.

2. SURFACE PREPARATION: Preparation of concrete shall conform to paragraph 07100-3.01 A.2.

Masonry surfaces shall be allowed to age for at least 28 days. Holes or other joint defects shall be filled with mortar and repointed. Loose or splattered mortar shall be removed by scrapping and chipping. Masonry surfaces shall be cleaned with clear water by washing and scrubbing. Muriatic acid shall not be used. After cleaning, masonry surfaces shall be sealed or filled with sealer or block filler compatible with the specified primer.

3. APPLICATION: Each prime and finish coat shall be applied at the rate of 70 square feet per gallon. The number of finish coats shall be sufficient to produce a dry film thickness of at least 15 mils. Drying time between coats shall be as recommended by the coating manufacturer.

3.01 C.1.

C. WATERPROOFING MEMBRANE:

1. LOCATION: Waterproofing membrane shall be applied to surfaces as specified.

2. SURFACE PREPARATION: Concrete surfaces to receive waterproofing membrane shall be clean, dry and free of voids, spalled areas, loose aggregate, and sharp protrusions, with no coarse aggregate visible.

3. APPLICATION: Waterproofing membrane shall be applied in accordance with the manufacturer's recommendations. Surfaces shall be clean and primed prior to application of the membrane. The manufacturer's representative shall be present during initial application to certify that the Contractor's procedures comply with manufacturer's specifications.

Pipes or conduits entering structures shall be watertight. The protective board shall be placed directly against the membrane prior to backfilling. Where the membrane is turned up from the base of the walls, at angles in walls, and at any other place where the membrane may be subjected to unusual strain, strips consisting of two additional plies of membrane shall be applied.

D. MOISTUREPROOFING UNDERLAY:

1. LOCATION: Unless otherwise specified, moistureproofing underlay shall be provided under concrete floors or floating slabs-on-grade including those deposited on drain rock.

2. SURFACE PREPARATION: Backfilled surfaces to receive moistureproofing underlay shall be leveled off and smoothed over to minimize contact with sharp edges.

3. APPLICATION: At joints, moistureproofing membrane shall be lapped 6 inches and sealed with pressure sensitive tape. Where pipes and conduits pass through the membrane, they shall be wrapped tightly with separate sheets of membrane which shall then be sealed with tape to the main membrane. Reinforcing steel or wire mesh shall be supported by chairs with flat bases to protect the membrane.

END OF SECTION

SECTION 07121

LIQUID WATERPROOFING-MASONRY AND CONCRETE WALLS

PART 1--GENERAL

1.01 DESCRIPTION

A. SCOPE:

This section provides specifications for liquid waterproofing coatings for all exterior building masonry and interior concrete walls exposed to view and occupied by equipment or personnel.

B. TYPE:

The liquid waterproofing coatings shall be a penetrating sealant suitable for effective sealing of low and medium density masonry walls and concrete.

1.02 QUALITY ASSURANCE

Not less than 72 hours prior to starting work, Contractor shall arrange for material manufacturer to inspect masonry and concrete, and certify its suitability to receive waterproofing.

PART 2--PRODUCTS

2.01 LIQUID WATERPROOFING

Liquid waterproofing shall be VIP Umbrella #9500. On surfaces other than low and medium density concrete masonry units, VIP Umbrella #9100 shall be used.

2.02 PRODUCT DATA

Upon completion of the liquid waterproofing work, the manufacturer and the applicator shall furnish to the Construction Manager a certificate of inspection and compliance indicating that the completed work meets all the requirements of these specifications and the manufacturer's printed instructions.

In addition to the requirements of Section 01300, the Contractor shall submit to the Construction Manager for review the liquid waterproofing manufacturer's written warranty against defects in materials and workmanship. The warranty shall cover a time period of 5 years after the date of final acceptance of the project.

3.01

PART 3--EXECUTION

3.01 APPLICATION

Materials shall be applied in strict accordance with manufacturer's specifications. Vertical and horizontal passes shall be made to entirely cover and saturate all surfaces from every angle.

A minimum of two coats of VIP Umbrella #9100 shall be applied prior to testing. A minimum of one coat of VIP Umbrella #9500 shall be applied by spraying (two coats if applied by rolling) prior to testing.

3.02 PROTECTION

Surfaces adjacent to masonry concrete to be waterproofed shall be masked prior to application. All damage to adjacent surfaces shall be repaired to the satisfaction of the Construction Manager.

3.03 WATER TEST

Ten days after completion of this work, the applicator, under the manufacturer's supervision, shall test a representative wall area, designated by the Construction Manager.

A water hose with a garden type nozzle shall be used, so located that the water strikes the wall at a 45-degree downward angle. Water shall be sprayed continuously for 3 hours for 8-inch thick wall, and 4 hours for 12-inch thick wall.

Should the inside face of the wall show traces of moisture, another coat of waterproofing shall be applied to the entire job, in accordance with the specified requirements, at no additional expense to the Owner.

****END OF SECTION****

SECTION 07210

BUILDING INSULATION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Fiberglass batt roofing insulation.
- B. Loose masonry fill insulation at exterior masonry walls.
- C. Applied 1-1/2 inch styrene/metal furring insulating system.

1.02 WORK SPECIFIED ELSEWHERE

- A. Section 09500 - Acoustical Treatment.
- B. Section 07514 - Roof Insulation.

1.03 QUALITY ASSURANCE

A. Materials specified and shown on drawings by brand name are to ascertain a standard of quality and to establish performance, size and thickness characteristics.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials to project in manufacturer's original unopened packaging with identification labels intact, showing manufacturer, brand name, thermal values.

B. Store materials in area protected from weather, moisture, open flame or sparks.

C. Remove all damaged material from site.

1.05 SCHEDULING

A. Do not install until surfaces to which insulation is applied are thoroughly dry.

B. Coordinate installation with other trades whose work is affected.

C. Do not install insulation until construction has progressed to point that inclement weather will not damage or wet insulation material.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Fiberglass Batt Roof Insulation:

1. Unfaced fiberglass: Thermal resistance of R-30 (9 inch) fiberglass rolls over entire building except at Work Shop and Engine Generator Room.

B. Masonry Fill Insulation:

1. Provide masonry fill insulation at west, north and east exterior masonry wall voids, and interior masonry wall between Work Shop, Engine Generator Room and balance of building, using Zonolite Masonry Fill Insulation, or Therm-O-Rock Industries, Inc., Silicone Treated Perlite Loose Fill Insulation.

C. Styrene/Metal Furring Wall Insulation System: 1-1/2 inch thickness, nominal 1.0 lb./cu.ft. density expanded polystyrene board, pregrooved to receive "U"-shaped, 1-5/8 inch wide, 25 gage metal furring channels.

1. All locations indicated at gypsum board finished exterior walls.

PART 3 - EXECUTION

3.01 PREPARATION

A. Verify adjacent materials are dry and ready to receive installation of insulation.

B. Verify that mechanical and electrical services within walls have been installed and tested.

C. Verify that insulation boards are unbroken and free from damage.

3.02 INSTALLATION

A. Fiberglass Building Insulation:

1. Install in strict accord with manufacturer's printed instructions.

2. Insulation fit tightly in all framing spaces in stud wall systems, above masonry perimeter wall where indicated on drawings. Insulate areas between joists and outside headers, behind electrical outlets and piping and other areas in such a way as to form a complete insulating blanket around conditioned areas of structures.

3. Fully insulate all small areas between closely spaced framing members.

4. Do all end matching of insulation neatly with all ends fitting snugly or overlapped, dependent upon type of insulation.

3.02 A.5.

5. Cut insulation material around pipes, conduits and outlet boxes as necessary to maintain integrity of insulation, providing full integral insulated surface.

6. Where pipes are located in stud spaces to receive insulation, place insulation between exterior wall and pipe, compressing insulation if necessary. (All fluid carrying pipes shall have insulation around or between pipe and exterior wall surfaces.)

7. No insulation materials covered until Architect's inspector has approved all insulation materials.

8. Support roof insulation against deck with "chicken wire"-type wire mesh at interior side of insulation over entire area being insulated and fasten securely to metal joists.

B. Masonry Fill Insulation:

1. All ungrouted concrete masonry unit cells, provide granular masonry fill at exterior and walls and where indicated or specified.

2. Ensure cells are free of grout and mortar droppings and that all cleanouts have been plugged and all conduits, pipes, etc., projecting through walls have been properly caulked, prior to pouring insulation.

3. Install granular insulation in cells as walls are erected.

4. Completely fill spaces. Place in lifts and rod to eliminate air pockets. Do not exceed 6 foot pouring height. Place prior to covering cores with bond beams or lintels.

5. Place temporary signs in rooms which face insulated walls warning workers to use caution to prevent loss of insulation if cutting into walls.

C. Install styrene/metal furring system at exterior walls under gypsum wallboard at locations indicated.

1. Installation shall be in accordance with manufacturer's written instructions.

2. Provide miscellaneous corner studs and sheet metal furring as required to provide rigid support for gypsum board.

END OF SECTION

SECTION 07514

BUILT-UP ROOFING AND ROOF INSULATION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Roof Insulation and Taping.
- B. Base Sheet Installation.
- C. Single-ply Roofing with Base Flashings.

1.02 RELATED WORK

- A. Section 06100 - Rough Carpentry: Wood Nailers.
- B. Section 07600 - Flashing and Sheet Metal: Weather Protection to Base Flashings, Facias.
- C. Section 07900 - Caulking and Sealants.

1.03 SYSTEM DESCRIPTION

- A. Clean all deck surfaces to manufacturer's specifications.
- B. Install all wood nailers, edge blocking, grounds, etc., to provide for insulation stops and valley sheet metal.
- C. Install 1-1/16 inch fiberglass insulation over steel with "Glasfast" type fasteners, using one (1) fastener per 4 sq. ft., in strict conformance with manufacturer's printed installation instructions. Install tapered insulation crickets over continuous insulation sheet.
- D. Install base plies over insulation.
- E. Torch-apply single-ply roofing.
- F. Install S.P. flashings and install new sheet metal, counter-flashings and metal edge trim.
- G. Apply emulsion coating.
- H. Apply aluminum coating.

1.04 APPLICATOR QUALIFICATIONS

- A. Applicator: Company specializing in built-up bituminous roof application with ten (10) years experience; approved by roofing materials manufacturers.

1.04 B.

B. Roofing Contractor shall be a manufacturer's approved roofing contractor of system chosen.

1.05 REGULATORY REQUIREMENTS

A. Underwriters' Laboratories, Inc. (UL): Class A Fire Hazard Classification.

B. Factory Mutual Engineering Corporation (FM): Roof Assembly Classification, FM Construction Bulletin 1-28, Class I Construction.

1.05 SUBMITTALS

A. Submit shop drawings and data in accordance with Section 01300.

B. Submit manufacturer's certification materials meet or exceed specified requirements.

C. Submit installation instructions.

D. Submit product data for membrane and base flashing materials.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site in accordance with Section 01600.

B. Deliver materials in manufacturer's original containers, dry, undamaged, seals and labels intact.

C. Store materials in weather protected environment, clear of ground and moisture.

D. Stand roll materials on end.

1.08 ENVIRONMENTAL REQUIREMENTS

A. Do not apply roofing membrane during inclement weather or when air temperature may fall below 40°F.

B. Do not apply roofing membrane to damp or frozen deck surface.

C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

1.09 PRE-INSTALLATION CONFERENCE

A. Convene a pre-construction conference one week prior to commencing work of this Section to discuss application procedures and any other inconsistencies of the actual project conditions.

1.09 B.

B. Require attendance of Parties directly affecting work of this Section.

C. Review installation procedures and coordination required with related work.

1.10 WARRANTY

A. Provide a manufacturer's 10-year written guarantee for single-ply roofing systems prior to acceptance of work which covers repairs required to maintain roof, including flashing in watertight, weathertight condition. Guarantee limited to ordinary wear and tear by the elements or defects due to faulty materials and workmanship. Make all repairs at no expense to Owner.

B. Warranty: Cover damage to work resulting from failure to resist penetration of moisture.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Name brands specified herein are to provide a standard of quality and are not intended to limit competition. Other manufacturers will be considered under the provisions for prior approval procedures in Division 1 - General Requirements.

1. Single Ply:
 - a. Owens-Corning.

B. Roofing Systems:

1. Single-Ply: Torch apply Derbigum SP roofing system in conformance with Owens-Corning Fiberglas Specifications and installation procedures.

2.02 SHEET METALS

A. Base Sheet: Perma Ply No. 28, manufactured by Owens-Corning Fiberglas.

B. Single-ply Membrane: Derbigum SP, manufactured by Owens-Corning Fiberglas.

C. Flashing: Derbigum flashings, manufactured by Owens-Corning Fiberglas.

2.03 BITUMINOUS MATERIALS

A. Asphalt Bitumen: ASTM D312, Type IV, steep.

B. Emulsion: Flintkote FM-100T emulsion conforming to ASTM D-1227, Type 1.

2.03 C.

C. Aluminum Coating: Fibrated, ASTM D-2824 Type II, Federal Specification TT-C-1079B.

D. Primer: Asphalt primer conforming to ASTM D-41.

E. Plastic Cement: Asphalt plastic cement conforming to Federal Specifications SS-C-153, Type I.

2.04 INSULATION

A. Fiberglass Insulation: Federal Specifications HH-I-526 and ASTM C726C; glass fiber rigid board; 1-1/16 inch thick, R=4.17; square edges; top surface-coated with asphalt and kraft paper. Manufactured by Owens-Corning Fiberglas.

B. Tapered Fiberglass Crickets; Owens-Corning "Siborooft" tapered insulation.

2.05 ACCESSORIES

A. Insulation Joint Tape: Glass fiber; reinforced; 6 inch wide, manufactured by Owens-Corning Fiberglas.

B. Mechanical Fasteners for Insulation: Owens-Corning "Glasfast", appropriate to purpose intended and approved by Factory Mutual; length required for thickness of material.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify deck is clean and smooth; free of depressions, waves or projections.

B. Verify roof openings, curbs, pipes, sleeves, ducts or vents through roof are solidly set; wood nailing strips and reglets are in place; verify deck is supported and secured.

C. Verify deck surfaces are dry and free of moisture.

D. Beginning installation means acceptance of substrate.

3.02 PROTECTION

A. Protect building surfaces against damage from roofing work.

B. Assure interior of building will be protected from infiltration of water at close of each day.

C. Assure interiors of all buildings will be protected from infiltration of hot bitumen.

3.03 INSULATION

- A. Verify steel deck is completely clean and dry.
- B. Install insulation over deck with all joints in alignment in both directions; mechanically attach deck with appropriate recommended Glasfast fasteners, using one fastener per 4 square feet.
- C. Install Siborroof tapered insulation crickets at locations indicated.
- D. Install perimeter nailers at all locations indicated.
- E. Edges of insulation boards mitered at edges and elsewhere to prevent open joints or irregular surfaces. Edges butted to provide moderate contact but not deformed.
- F. Tape all joints of insulation in accordance with insulation manufacturer's instructions, applied at rate of not less than 15 lbs./100 sq.ft. of tape. Tape end laps minimum of 4 inches.
- G. At end of each day, apply glaze coat of hot bitumen and two plies felt over insulation left exposed.
- H. Wet Insulation: Built-up roofing shall not be applied over wet insulation.

3.04 MEMBRANE PROTECTION

- A. Application of Base Plies: Embed one layer of Perma Ply No. 28 base sheet with 2 inch side and end laps into a uniform solid mopping of hot steep asphalt, using 25 lbs./100 sq.ft. Broom onto insulation to provide a smooth application.
 1. Extend base sheet up vertical surface and nail base sheet as recommended by manufacturer for full height of vertical surface indicated.
- B. Application of Derbigum SP: Unroll Derbigum SP membrane. Set membrane in place with 3 inch side laps and 4 inch end laps. Reroll membrane. Apply heat to underside of Derbigum membrane and fully adhere heated portion of roll to base ply. After membrane is fully adhered to substrate, check all side and end laps with hot trowel to ensure all laps are fully adhered. All areas where full adhesion has not been obtained must be reheated and troweled into place so total adhesion of entire lap is accomplished. Round edge of lap off with hot trowel to provide a smooth seam.
- C. Flashings shall conform to Owens-Corning manufacturer's recommended flashing details to provide weathertight, watertight installation.
- D. Vertical Walls: Extend deck membrane up vertical surface minimum of 8 inches. Overlap continuous strip of Derbigum SP 4 inches above deck membrane, and extend down and over deck surface minimum of 6 inches and torch on. Provide metal counterflashing and install over flashing.

3.07 E.

E. Provide equipment, curbs, etc., to details recommended by roofing manufacturer and extend up under metal counterflashings and torch on down over and lap onto deck membrane.

F. Emulsion Coatings: Surfaces to receive emulsion must be clean and dry. Spray entire roof membrane, using not less than 3 gallons per square. Spray toward laps. Apply when surface and air temperatures are moderate.

G. Aluminum Coating: Uniformly apply coating at a rate of not less than one (1) gallon per square.

H. Caution:

1. Since Derbigum SP is applied using an open flame from a propane torch, Contractor must exercise care and observe appropriate fire safety precautions such as fire extinguishers on the roof where operations are taking place.

2. Special care exercised around combustible materials, such as wood and plastic piping, which may traverse roof and at vertical application.

3.07 CLEANING

A. Remove bituminous markings from finished surfaces. In areas where finished surfaces are soiled by asphalt or any other source of soiling caused by work of this Section, consult manufacturer of surfaces for cleaning advice and conform to their instructions.

END OF SECTION

SECTION 07532

MEMBRANE ROOFING

PART 1--GENERAL

1.01 DESCRIPTION

This section provides specifications for all membrane roofing.

1.02 QUALITY ASSURANCE

A. QUALIFICATION OF INSTALLERS:

Installation of membrane roofing shall be done only by competent and skilled roofers completely familiar with the products and the manufacturer's currently recommended methods of installation.

B. CERTIFICATION:

Before roofing application is begun, the Contractor and a representative of the roofing manufacturer shall examine the roof to determine its suitability. Any defects shall be corrected before proceeding.

The Contractor shall provide the Owner with a 10-year manufacturer's standard bonded warranty for roofing, with flashing endorsement, provided by a surety approved by the Owner.

In addition to the warranty contained in the General Requirements, the roof, including flashings except actual sheet metal, shall be warranted watertight and free of defects in material and workmanship for a period of 2 years after the date of acceptance. An affidavit, signed by an authorized representative of the manufacturer of roofing, shall be furnished, stating that all roofing on the work complies with the requirements of this specification, and that all materials were applied in quantities and in the manner specified, and that the entire roof and roof flashings have been correctly laid in accordance with the intent of the specifications. This warranty shall be furnished by the Contractor and countersigned by the roofing applicator.

1.03 DELIVERY AND STORAGE

All material shall be delivered to the job site in unopened packages or containers or in individual units, all bearing the manufacturer's name and identification of type and quality. Roll goods shall be stored on end in a dry area protected from sun and weather. Roll goods shall be handled with care to avoid damaging or deforming the roofing membrane.

2.01

PART 2--PRODUCTS

2.01 GENERAL

All components shall be products compatible with roof system and certified by the manufacturer as compatible.

2.02 MEMBRANE

Membrane roofing of 0.045 inch thickness and measuring 40 feet by 100 feet (or the longest sheet possible as determined by job condition) shall be EPDM (Ethylene Propylene Diene Monomer) compounded elastomer conforming to the following minimum physical properties:

| <u>Property</u> | <u>Test Method</u> | <u>Specification</u> |
|--|---|------------------------------------|
| Color | | Grey |
| Specific gravity | ASTM D297 | 1.18 + 0.03 |
| Tensile strength, minimum, psi | ASTM D412 | 1,400 |
| Elongation, minimum, percent | ASTM D412 | 300 |
| Tear resistance, die C, minimum, pounds/inch | ASTM D624 | 125 |
| Shore A hardness (5-second reading) | ASTM D2240 | 60 + 10 |
| Ozone resistance | ASTM D1149 7 days/100 pphm/ 104°F/50 percent ext. | No cracks |
| Heat aging (accelerated), psi percent | ASTM D573 7 days/240°F | Ten. min. 1,200 Elong. min. 210 |
| Brittleness temperature, degrees F | ASTM D746 | -75 |
| Permeability, water vapor, perm-mils | ASTM E96 Proc. BW | 2.0 |

2.03 RELATED MATERIALS

The following materials are required in addition to the membrane:

1. Flashing, elastoform 0.060 inch thick, furnished by the membrane manufacturer.
2. Bonding adhesive, compatible with materials to which the membrane is to be bonded, furnished by the membrane manufacturer.
3. Splicing cement, furnished by membrane manufacturer.
4. Lap sealant, compatible with materials with which it is used shall be trowel or gun consistency, furnished by the membrane manufacturer.
5. Water cutoff mastic, compatible with materials with which it is used, furnished by membrane manufacturer.
6. Molded pipe flashing, compatible with materials with which it is used, furnished by membrane manufacturer.
7. Nite seal, compatible with materials with which it is used, furnished by membrane manufacturer.
8. Pourable sealer, compatible with materials with which it is used, furnished by membrane manufacturer.
9. Rubber nailing strips (RNS) and fasteners, extruded nailing strips and fasteners furnished by membrane manufacturer.
10. Wood nailers, pressure treated with salt preservatives.
11. Ballast, 1-1/2-inch river washed gravel.

2.04 PRODUCT DATA

The bonded warranty specified shall be delivered to the Owner upon completion of the work covered by this section.

PART 3--EXECUTION

3.01 SUBSTRATE

Contractor shall be responsible for providing proper substrate to receive the roofing system. Maximum slope of substrate shall be 2 inches in 12 inches. Substrate preparation shall be the

3.01

responsibility of the Contractor. Roofing subcontractor shall notify Contractor in writing of defects in the substrate, and work shall not proceed until defects have been corrected. Wherever possible, the roofing shall be installed starting at the high point of the roof and working to the lowest point.

3.02 INSTALLATION

A. MEMBRANE:

1. Position roofing membrane over approved substrate without stretching.
2. Allow membrane to relax approximately 1/2 hour prior to splicing and flashing.
3. Position adjoining sheets in same manner, lapping edges a minimum of 3 inches.

B. SPLICING:

1. Fold top sheet back about 12 inches. Clean both mating surfaces at splice area using clean rags with Heptane, unleaded or white gas.
2. Apply splicing cement to both mating surfaces using a 3- or 4-inch- by 1/2-inch-thick paint brush at a rate of approximately 175 lineal feet of 3-inch splice area per gallon. Brush cement on smooth in a circular motion obtaining 100 percent coverage. Do not allow to glob or puddle. Allow cement to dry until tacky but not string or stick to a dry finger touch.
3. Roll top sheet toward splice area until the cemented area is nearly touching cement on bottom sheet along entire length of splice. Allow top sheet to fall freely into place avoiding stretching and wrinkling.
4. Roll splice with a 2-inch-wide steel roller, using positive pressure, toward the outer edge of splice.
5. Solvent clean the splice edge, extending at least 1 inch onto top and bottom membranes.
6. Apply bead of lap sealant completely covering the splice edge. Feather the lap sealant with a specially preformed putty knife or trowel. Complete lap sealant application on all splices by the end of each working day.

3.02 C.

C. PERIMETER NAILING:

Nailers shall be installed at the perimeter of each roof level, curb flashing, skylights, expansion joints and similar penetrations as follows:

1. Rubber nailing strips: RNS shall be mechanically fastened through membrane, into roof deck.
 - a. Top of mechanical fasteners shall be set flush with the top surface of the RNS. Space mechanical fasteners a maximum 12 inches on center starting 1 inch from the end of RNS.
 - b. Cut ends of the RNS on a 45-degree angle to eliminate a sharp offset at this point.
 - c. Where the use of the RNS interferes with the flow of the surface water, it will be stopped, separated by a 6-inch space, then started again.
 - d. After mechanically fastening the RNS, it will be sealed with a 6-inch-wide strip of flashing using N-100 cement and lap sealant on all edges.
2. Wood nailer: Shall be installed at the gravel stop perimeter of each roof level and shall be pressure-treated with salt preservatives.

Wood nailers shall be anchored to resist a force of 75 pounds per lineal foot in any direction. The thickness of the nailer shall be such that the top of the nailer is flush with the surface to which the membrane is to be applied.

D. FLASHING:

Perimeter flashing and flashing around vents, skylights, etc., shall be done with flashing using the longest pieces practicable.

1. Complete splice between flashing and main roof sheet before bonding flashing to vertical surface. Splice shall extend at least 3 inches beyond the fasteners which attach the membrane to the horizontal surface.
 - a. Apply bonding adhesive to both flashing and surface to which it is being bonded at a rate covering approximately 60 square feet of finished surface.

3.02 D.1.b.

- b. After the bonding adhesive has dried to the point where it does not string or stick to a dry finger, roll the flashing into the adhesive. Care must be taken to assure that the flashing does not bridge where there is any change of direction (for example, where the parapet meets the roof deck).
 - c. Nail installed flashing at top of flashing every 12 inches on center, maximum, under metal counter-flashing or cap.
2. Flash all penetrants (pipes, conduits, etc.) passing through the membrane.
 - a. Flash pipe with molded pipe flashings where installation is possible.
 - b. Where molded pipe flashings cannot be installed, use field fabricated pipe seals.
 - c. In reroofing, remove existing lead pipe flashing.
 3. Expansion joints: see manufacturer's standard details.
 4. Seal clusters of pipes and unusual shaped penetrations with 2-inch minimum pourable sealer. Use pitch pocket type seal as shown in standard details.
 5. Roof drains:
 - a. In reroofing, remove existing lead flashing and cement in preparation for water cut-off mastic and membrane seal.
 - b. Taper insulation around drain to provide a smooth transition from roof surface to drain clamping ring.
 - c. Seal between membrane and drain base shall be water cut-off mastic as shown in manufacturer's standard details.

E. DAILY SEAL:

Care should be exercised to ensure that the water does not flow beneath any completed sections of roof. Temporarily seal loose edge of membrane with night seal when weather is threatening.

1. Mix the two components thoroughly according to the instructions on the label.

3.02 E.2.

2. On the existing BUR, remove gravel. Surface shall be clean and dry.
3. Apply the night seal at a rate of 100 lineal feet per gallon (on smooth surface), 12 inches back from edge of sheet onto exposed substrate surface. If necessary, use a trowel to spread material in order to achieve complete seal. Onto existing built-up roof surface, this coverage will be reduced according to surface preparation.
4. After embedding membrane in night seal, check for continuous contact; then weight the edge, providing continuous pressure over the length of the cutoff. The recommended weight for the continuous pressure is a 10-foot length of 2-1/2-inch lay flat tubing filled with dry sand.
5. When work is resumed, pull sheet free before continuing installation.

F. BALLAST REQUIREMENT:

1. Ballast shall be sufficient to provide protection against wind uplift. Weight per square foot shall not be less than 10 pounds per square foot.
2. All ballast shall be loose-laid gravel, smooth paving blocks or concrete blocks. Should blocks with abrasive surfaces be used, a protection layer of premolded protection board or similar material must be used.
3. All local available 1-1/2-inch river washed gravel shall be accepted with the following restrictions: 50 percent must be retained by a 3/4-inch screen, 95 percent retained by a 1/2-inch screen and 98 percent retained by a 1/4-inch screen. Use ASTM C136 method of sizing gravel.

G. ROOF WALKWAYS:

Smooth surface paver blocks shall be installed as described:

1. Paver blocks shall be loose laid and weigh 60 pounds or less per block.
2. Should blocks with abrasive surfaces be used, a protection layer of premolded protection board or similar material must be used.

END OF SECTION

SECTION 07550

CLAY ROOFING TILES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Formed clay roofing tiles.
- B. Fasteners, flashings, and nailers.

1.02 RELATED WORK

- A. Section 06100 - Rough Carpentry.
- B. Section 07600 - Flashing and Sheet Metal.

1.03 REFERENCES

- A. ASTM C56 - Structural Clay Non-Load-Bearing Tile.
- B. ASTM D2822 - Asphalt Roof Cement.

1.04 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in forming clay roof tiles with minimum three years experience.
- B. Conform to NRCA - Steep Roofing Manual.

1.05 SUBMITTALS

- A. Submit product data under provisions of Section 01300.
- B. Include tile properties, configurations, jointing methods and locations, fastening methods and locations, and installation details.
- C. Submit two full size tile samples under provisions of Section 01300, illustrating color to be used.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and protect products and protect clay tiles from damage in accordance with manufacturer's storage instructions.

PART 2 - PRODUCTS

2.01 ACCEPTANCE MANUFACTURERS

- A. United States Tile Co.
- B. Luna Clay Tile Co.
- C. Gladding, McBeam & Co.

2.02 ROOFING MATERIALS

A. Clay tiles: ASTM C56, Two Piece Mission style; 18 inch x 8-1/2 - 7-1/2 inches nominal size; holes drilled before firing; special shapes to suit valley, ridge, eave, including eave closure pieces and other conditions; flash fired.

2.03 FLASHING MATERIALS

A. Wire Anchor System: 12 gauge galvanized steel twisted wire with a loop found every 6 inches; "Tyle-Tye" with 16 gauge galvanized steel tie wire as manufactured by Newport Fastener.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify that single ply system is completely installed and weather tight and that roof surfaces are dry, sound, flat, and ready to accept fasteners.

B. Verify sheet metal gutters, flashing and accessories are installed and/or coordinated with the clay tile roofing.

C. Coordinate installation of roof mounted components, or work projecting or penetrating through roof. Verify roof openings are prepared prior to installing work of this Section.

D. Beginning of installation means acceptance of substrate.

3.02 WIRE ANCHOR INSTALLATION

A. Install twisted wire anchors at 11-1/2 inches o.c. by anchoring the loops in the twisted wire to the roof purlins.

3.03 ROOF TILE INSTALLATION

A. Each top and pan roof tile shall be anchored to the twisted wire with one loop of 16 gauge tie wire, screwed with a double twist.

3.03 B.

- B. Install in accordance with manufacturer's instructions.
- C. Rake tiles shall be nailed with 11 gauge nails which penetrate into the wood ground a minimum of 1 inch and set in cement mortar.
- D. All tile coming in contact with mortar shall be immersed sufficiently to make correct bond.
- E. Layout roof tile on 11-1/2 inch centers with a maximum of 15 inch exposure.
- F. Complete installation to provide weathertight service.

****END OF SECTION****

SECTION 07600

WALL FLASHING AND SHEET METAL

PART 1--GENERAL

1.01 DESCRIPTION

This section provides specifications for all flashing and sheet metal not specifically described in other sections of these specifications but required to prevent penetration of water through the exterior shells of the buildings.

1.02 QUALITY ASSURANCE

The Contractor shall comply with pertinent recommendations of "Architectural Sheet Metal Manual," latest revision, by Sheet Metal and Air Conditioning Contractors National Association as a minimum standard, and to normal good practice in the area, except where in conflict with these specifications, which shall govern.

PART 2--PRODUCTS

2.01 SHEET METAL

Except on aluminum standing seam roof, sheet metal shall be hot-dip galvanized steel conforming to ASTM A525, with weight of zinc coating not less than 1 ounce per square foot of sheet. All sheet metal shall be 24 gage, except where noted.

2.02 NAILS, SCREWS, BOLTS, RIVETS AND FASTENERS

Material shall be aluminum for aluminum sheet metal and hot-dip galvanized for galvanized metal.

2.03 PRODUCT DATA

In accordance with paragraph 00710-4.02, the following information shall be provided.

1. Installation details.

PART 3--EXECUTION

3.01 SURFACE CONDITIONS

A. INSPECTION

The Contractor shall verify that surfaces to be covered are smooth, clean and free from holes. All projecting nails shall be driven flush. The Contractor shall verify that the installed work of other trades is complete to the point that this work may properly commence.

3.01 B.

B. DISCREPANCIES:

The Construction Manager shall be notified immediately of any discrepancies, and the Contractor shall not proceed with any installation or fabrication in the areas of discrepancies until they have been resolved.

3.02 WORKMANSHIP

A. GENERAL:

All sheet metal shall be accurately formed to the dimensions and shapes required, finishing all molded and broken surfaces with true, sharp and straight lines and angles, and, where intercepting other members, coping to an accurate fit and soldering securely.

Plane surfaces shall be free from waves and buckles.

Unless otherwise specifically permitted by the Construction Manager, all exposed edges shall be turned back 1/2 inch.

B. EXPANSION:

All sheet metal shall be formed, fabricated and installed to adequately provide for expansion and contraction in the finished work.

C. WEATHERPROOFING:

All work shall be finished watertight and weathertight where required. All miters and fascia shall be heliarc welded to form a watertight integral unit.

All lock seam work shall be made flat and true to line and sweated full of solder.

All lock seams and lap seams, when soldered, shall be at least 1/2 inch wide.

Where lap seams are not soldered, lap shall be made according to pitch, but in no case less than 3 inches.

All flat and lap seams shall be made in the direction of flow.

Metal flashing not otherwise dimensioned shall turn up at least 4 inches against abutting vertical surfaces and extend at least 4 inches onto the roof.

3.02 D.

D. JOINTS:

All parts shall be joined with rivets or sheet metal screws where necessary for strength or stiffness.

Suitable watertight expansion joints shall be provided for all runs of more than 40 feet except where closer spacing is indicated on the drawings or required for proper installation.

E. FASTENING:

Whenever possible, metal shall be secured by means of clips or cleats without nailing through the metal.

In general, all nails, rivets and screws shall be spaced not more than 8 inches apart and, where exposed to the weather, lead washers shall be used.

For nailing into wood, 11-gage barbed roofing nails long enough to penetrate $3/4$ inch shall be used.

For fastening into concrete, drilled plug holes and plugs shall be used, and penetration shall be 1 inch.

3.03 EMBEDMENT

All metal in connection with roofs shall be embedded in a solid bed of sealant, using materials and methods described in Section 07900 of these specifications.

3.04 SOLDERING

A. GENERAL:

All joint materials shall be thoroughly cleaned and tinned before soldering. All soldering shall be performed slowly with seams well heated and completely filled with solder. All exposed soldering on finish surfaces shall be made neat, full flowing and smooth.

B. CLEANING:

Sheet metal shall be cleaned as each section is completed. After soldering, flux shall be neutralized by washing thoroughly with a soda solution and rinsing with clear water. Care shall be taken to avoid staining adjacent work.

3.05 TESTING

The Contractor shall demonstrate by hose or standing water testing that all flashing and sheet metal work is completely watertight.

3.06

3.06 DIVERTERS:

Sheet metal diverters shall be formed as indicated and given a baked enamel finish in color selected by the Construction Manager.

****END OF SECTION****

SECTION 07831

ROOF HATCHES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Prefabricated roof hatch, complete with integral support curb, operable hardware and counterflashings.

B. Coordinate with installation of roofing and related metal flashings.

1.02 RELATED WORK

A. Section 07600: Flashing roof hatch to roof system.

1.03 SHOP DRAWINGS

A. Submit shop drawings in accordance with Section 01300.

B. Clearly indicate general construction, configurations, jointing methods and locations when applicable, fastening methods and installation details.

1.04 GUARANTEE/WARRANTY

A. Provide written guarantee in accordance with Section 01700.

B. Manufacturer shall guarantee against defects in material or workmanship for a period of five (5) years.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Roof Hatch Manufacturer and Type: Roof scuttle Type S. manufactured by Bilco.

B. Other Acceptable Manufacturers:

1. Inryco-Milcor.
2. Dur-Red.
3. Babcock-Davis.
4. Naturalite, Inc.

D. Substitutions: Items of same function and performance are acceptable in conformance with Section 01600.

2.02

2.02 ROOF HATCH

A. Type S roof scuttle for ladder access size 2'-0" x 3'-0", galvanized steel construction (report 2.02 A).

2.03 FABRICATION

A. Fabricate roof hatch weathertight and free of visual distortions and defects.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install roof hatch in accordance with manufacturer's recommendations. Coordinate with installation of roofing system and related flashings. Provide weathertight installation.

B. Apply bituminous paint on metal surfaces of roof smoke vent to be in contact with cementitious materials and dissimilar metals.

C. Contractor test for proper operation after installation by fusing like and providing a replacement fusible link.

END OF SECTION

SECTION 07900

SEALANTS

PART 1--GENERAL

1.01 SCOPE

This section specifies sealants for general construction.

1.02 REFERENCES

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|--------------------------|--|
| FEDSPEC TT-S-00230C-1970 | Sealing Compound: Elastomeric Type, Single Component |
| FEDPSEC TT-S-00227E-1970 | Sealing Compound: Elastomeric Type, Multi-Component |

PART 2--PRODUCTS

2.01 POLYURETHANE SEALANT

A. ACCEPTABLE PRODUCTS:

Acceptable products shall be Sikaflex by Sika Chemical Corporation, Vulkem by Mameco International, or Rubber Calk by Products Research and Chemical Corporation.

B. GENERAL:

Polyurethane sealants shall conform to FEDSPEC TT-S-0230C for one-component systems and FEDSPEC TT-S-00227E for two-component systems. Polyurethane sealant shall be one of the following two types.

1. SELF-LEVELING. Self-leveling polyurethane sealant shall be Type I, Class A as specified by the FEDSPECS referenced above.

2. NONSAG. Nonsag polyurethane sealant shall be Type II, Class A as specified by the FEDSPECS referenced above.

2.01 C.

C. PRIMER:

Primer shall be as recommended by the sealant manufacturer.

D. BACKER ROD OR BACKER TAPE:

Backer rod shall be open cell polyethylene or polyurethane foam. Rod shall be cylindrical unless otherwise specified. Backer tape shall be polyethylene or polyurethane with adhesive on one side.

2.02 MASTIC SEALANT

A. GENERAL:

Mastic joint sealant shall consist of a blend of refined asphalts, resins and plasticizing compounds, reinforced with fiber. Sealant shall be compatible with joint fillers and shall be pressure grade. Mastic sealant shall be IGAS by Sika Chemical Corporation, or equal.

B. PRIMER:

Primer shall be as recommended by the mastic sealant manufacturer.

2.03 PRODUCT DATA

The following information shall be provided in accordance with paragraph 00710-4.02:

1. Manufacturer's product data showing conformance to the specified products.
2. Manufacturer's recommendations for storage, handling and application of sealants and primers.

PART 3--EXECUTION

3.01 GENERAL

Sealants and primers shall be applied according to the sealant manufacturer's recommendations. Polyurethane sealants shall be used on all expansion joints and specified construction joints.

Joints and spaces to be sealed shall be clean, dry and free of dust, loose mortar, concrete and plaster. Additional preparation of joints and spaces shall be provided in accordance with manufacturer's recommendations. Primer shall be applied only to the surfaces that will be covered by the sealant.

3.02 A.

3.02 POLYURETHANE SEALANTS

A. GENERAL:

Nonsag polyurethane sealants shall be used on vertical joints. Self-leveling polyurethane sealants shall be used on horizontal joints.

B. JOINT DIMENSIONS:

Unless otherwise specified, joints and spaces to be filled shall be constructed to the following criteria. Joints and spaces shall have a minimum width of 1/4 inch and a maximum width of 1 inch. The depth of the sealant shall be one-half the width of the joint, but in no case less than 1/4 inch deep. Sealant depth shall be measured at the point of smallest cross section. When joints exceed the depth requirements, backing rod shall be inserted to provide the joint depth specified. If the joint sealant depth is within the specified tolerances, backer tape shall be placed in the bottom of the joint.

3.03 MASTIC SEALANT

A. JOINT DIMENSIONS:

Joints to be sealed shall be 2 inches deep, 1 inch wide at the top, and 3/4 inch wide at the base.

END OF SECTION

SECTION 07905

PREFORMED JOINT FILLERS

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies preformed joint fillers for use in expansion joints.

1.02 REFERENCES

This section contains references to the following documents. They are a part of this section as specified and modified. In case of a conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|------------------|--|
| ASTM D994-82 | Preformed Expansion Joint Filler for Concrete (Bituminous Type) |
| ASTM D1752-84 | Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction |

PART 2--PRODUCTS

2.01 PREFORMED ASPHALT FIBERBOARD

Preformed asphalt fiberboard joint filler shall be in accordance with ASTM D994 and shall be 1/2 inch thick unless otherwise specified.

2.02 PREFORMED RESIN-BONDED CORK

Preformed resin-bonded cork joint filler shall be in accordance with ASTM D1752, Type II. Cork joint filler thickness shall match the specified joint width.

2.03 PRODUCT DATA

The following information shall be provided in accordance with paragraph 00710-4.02:

1. Manufacturer's recommendations for handling and installation of the material.

3.01

PART 3--EXECUTION

3.01 GENERAL

Preformed joint fillers shall be placed into position before the concrete is poured. Where it is necessary for the filler to be fixed to existing concrete or other building materials, a suitable adhesive recommended by the filler manufacturer shall be used. Filler surfaces shall be clean and dry prior to the placement of the concrete.

3.02 PREFORMED ASPHALT FIBERBOARD

Preformed asphalt fiberboard joint fillers shall be used for expansion joints in concrete sidewalks, curbs, and roadways.

3.03 PREFORMED RESIN-BONDED CORK

Preformed resin-bonded cork joint filler shall be used for expansion joints in concrete structures. The expansion joint shall be sealed with backer rod and sealant as specified in Section 07900.

END OF SECTION

DIVISION 8
DOORS AND WINDOWS

| <u>Section</u> | <u>Title</u> |
|----------------|--|
| 08100 | METAL DOORS AND FRAMES |
| 08115 | HOLLOW METAL DOORS AND PRESSED STEEL FRAMES |
| 08210 | WOOD DOORS |
| 08305 | ACCESS DOORS |
| 08331 | OVERHEAD COILING DOORS |
| 08520 | ALUMINUM WINDOWS |
| 08700 | HARDWARE |
| 08850 | GLASS AND GLAZING |

SECTION 08100

METAL DOORS AND FRAMES

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 08200 - Wood Doors.
- B. Section 08700 - Finish Hardware.
- C. Section 08850 - Glass and Glazing.

1.02 SHOP DRAWINGS

- A. As per AIA General Conditions, Division 1 - General Requirements.
- B. Shop drawings indicate location of each door and frame, elevation, each type door and frame, details of construction, method of assembly, location of anchors for frames and thicknesses of metal.

1.03 DELIVERY AND STORAGE

- A. Provide protection during shipment, welded unit type frames provided with temporary steel spreaders at bottom of each frame. Materials delivered to site in undamaged condition, stored out of contact with ground and under a weathertight covering, permitting good air circulation. Abraded, scarred or rusty areas cleaned and touched up with paint used for shop painting.

1.04 SHOP FINISH

- A. Doors and frames to be bonderized and baked on prime coat on exterior surfaces.
- B. Inaccessible surface coated with rust inhibitive paint before assembly.
- C. Primer smooth surface, ready to receive finish coats, no runs, oversprays, dust or other defects allowed.

1.05 WORKMANSHIP

- A. Finished items rigid, neat in appearance, free from defects, warp or buckle. Molded members sharp in detail, straight, true. Corner joints coped or mitered, well formed and in true alignment. Exposed welded joints to be dressed smooth.

1.06 PREPARATION FOR HARDWARE

A. Doors and frames prepared for hardware in conformance with templates provided under Section 08700 and requirements of American National Standards Institute (ANSI) A115.2, A115.4 and A123.1. Cutting, reinforcing, drilling and tapping of doors and frames done at factory, except drilling and tapping for surface applied hardware done in field when hardware is applied. In addition to plaster guards required for strike reinforcement in referenced American National Standards, plaster guards shall be provided on door frames for hinge reinforcements.

PART 2 - PRODUCTS

2.01 FRAMES (Profile as detailed for doors and windows)

- A. Pressed steel, 14 gauge, cold rolled, pickled, annealed steel unit type welded construction.
- B. Hairline corners, mitered, welded and ground smooth.
- C. Mortised, reinforced, drilled and tapped to receive hardware.
 1. Hinge Reinforcement: 3/16 inch plates.
 2. All other Reinforcements: 12 gauge steel.
 3. Use 12 gauge steel reinforcing plates at closers or brackets.
 4. Spot weld 24 gauge galvanized steel plaster guards over hardware reinforcing plates at mortised hardware locations.
 5. Drill and tap holes for field application of mortised type hardware as per templates.
 6. Do no factory drilling and tapping for surface applied hardware; however, provide suitable reinforcements.
- D. Standard floor clips or 2 inch jamb extensions as indicated.
- E. Provide sound deadening material applied to interior of frame at all locations other than at masonry walls, grout solid frames solid at all masonry walls.
- F. Lock side of frame prepared for three rubber mutes, single doors.
- G. Provide fixed insert anchors welded to face and flange returns, 12 inches down from top and 24 inches on center.
- H. Fire Rated Frames: All frames for fire-rated doors shall bear Underwriters' Laboratories label, same as rating for doors. Place U.L. labels where visible when frames are in installed position. Refer to Drawings for class requirements. Provide glazed opening frames with fire label as indicated.

2.01 I.

I. Provide solid drip cap mounted on head of frames over all exterior outswinging doors.

J. Provide weather or sound insulation strips to frames where indicated by hardware schedule.

K. Provide fixed mullions where indicated.

L. Glass Mouldings and Stops: Where specified and/or scheduled provide loose stops of 20 gauge steel, with mitered corner joints, secured to frames by cadmium or zinc plated countersunk screws.

M. Removable mullions are included in Section 08700, Finish Hardware ONLY.

2.02 DOORS - HOLLOW METAL

A. 1-3/4 inch thickness, flush type, sizes as indicated.

B. Full flush formed 16 gauge cold rolled steel.

C. Vertical truss type steel channel stiffeners, spot welded to each inside face, full height, not more than 6 inches apart.

D. Joints at door edges continuously welded automatically by gas shield arc process. Arc welding and filling of seams not acceptable.

E. Top, bottom and side channels welded flush and smooth minimum 3 inches on center.

F. Sound deadening material of an approved type applied to inside of face of door to eliminate metallic reverberation incidental to normal door operation.

G. Mortised, reinforced, drilled and tapped to receive hinges, lock faces, dead bolts, door closers and finish hardware.

H. Hinge Plate Reinforcing: 7 gauge steel.

I. All other Reinforcement: 12 gauge steel.

J. Glazing Stops: Rolled steel channel shape, mitered corners, prepared for countersunk-style tamperproof screws.

2.03 FIRE RATED DOORS

A. Fabricate fire rated hollow metal doors of materials in accordance with requirements of Underwriters' Laboratories (UL) and Factory Mutual (FM). Place UL labels where visible when in installed position. Refer to drawings for class requirements.

2.03 B.

B. Hardware: Butts and all hardware in accordance with UL requirements to provide a complete rated assembly in conformance with Class as scheduled.

1. Installation, hardware and operational characteristics shall conform to NFPA Standards No. 80, all other details or specifications not withstanding.

C. 1-3/4 inch thickness, flush type, sizes as indicated.

1. Full flush formed 16 gauge cold rolled steel.

2. Vertical truss type steel channel stiffeners, spot welded to each inside face, full height, not more than 6 inches apart.

3. Top, bottom and side channels welded flush and smooth minimum 3 inches on center.

4. Joints at door edges continuously welded automatically by gas shield arc process. Arc welding and filling of seams not acceptable.

5. Core: Solid mineral fiber slab.

6. Mortised, reinforced, drilled and tapped to receive hinges, lock faces, dead bolts, door closers and finish hardware:

Hinge plate reinforcing: 7 gauge steel.

All other reinforcement: 12 gauge steel.

2.05 GENERAL

A. Provide astragals for double doors, where removable center mullions are not provided. Provide in accordance with UL requirements for labelled doors.

B. Fill surface depressions with metallic paste filler and grind to smooth uniform finish.

C. Chemically treat surfaces and apply one coat of primer.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Frames installed plumb, rigid and in true alignment and anchored with proper clearance in accordance with SDI-100.

B. Install temporary spreaders until wall at frame is complete and frame securely anchored in final position.

C. Wall anchors on door frames installed as above and at approximately hinge and strike levels.

D. Doors installed in conjunction with hardware application.

E. Weatherstripping installed at exterior door openings to provide weathertight installation. Protect from damage until final acceptance.

3.01 F.

F. Soundproofing installed at doors indicated. Protect from damage until final acceptance.

G. Install hardware in a neat workmanlike manner; use only skilled mechanics; keep hardware free from scratches, dents or other defacements.

H. After installation, touch up scratched or damaged surfaces. Use type of primer identical to that used for shop coat.

I. Solid grout all frames in masonry walls.

J. Provide sound deadening insulation at all other hollow metal frames, not otherwise grouted.

K. Ensure conformance to all applicable codes for fire rated door/frame assemblies.

****END OF SECTION****

SECTION 08115

HOLLOW METAL DOORS AND PRESSED STEEL FRAMES

PART 1 - GENERAL

1.01 DESCRIPTION

A. SCOPE:

This section provides specifications for hollow metal doors and pressed steel frames.

B. TYPE:

The doors shall be flush slab type. The frames shall have welded, mitered corners and integral stops.

1.02 QUALITY ASSURANCE

The doors and frames shall meet the performance test requirements of ANSI A151.1, and be prepared for hardware in accordance with the requirements of the applicable ANSI Standards of the A115 Series.

1.03 SUBMITTALS

Submittals shall comply with applicable paragraphs of Sections 00710 and 01300. The Contractor shall submit shop drawings showing cross sections and installation details to the Construction Manager for his review.

In addition to the requirements of Sections 00710 and 01300, the Contractor shall submit to the Construction Manager for his review, the manufacturer's written warranty against defects in materials and workmanship. The warranty shall cover a time period of two years after the date of final acceptance of the project.

PART 2 - PRODUCTS

2.01 DOORS

A. MATERIALS AND FABRICATION:

The doors shall be fabricated from two formed sheets of commercial quality 18-gage roller leveled carbon steel sheets. The inside shall be reinforced with 20-gage minimum vertical channels, running full height of the door at approximately 6 inches on center and spot.

2.01 A.

welded at 4 inches on center. The top and bottom shall be closed and reinforced with 18-gage channel members for the full width of the door. All door edges shall be spot welded at two centers for the full height of the door or reinforced with channels. To eliminate metallic ring, only rock mineral wool, cellular asbestos fire retardant insulation, or equivalent materials that are standard with the manufacturer, shall be used on the interior of the doors. There shall be no exposed seams on the edge or faces of the doors.

B. HARDWARE REINFORCEMENT:

The doors shall be mortised and reinforced in accordance with templates furnished by the hardware supplier. The doors shall be drilled and tapped for mortise hardware. Suitable reinforcement for surface applied hardware shall be provided. Drilling and tapping for surface applied hardware will be done in the field. Reinforcement for hinges shall be 9-gage flat bar, drilled and tapped. Reinforcement for hinges shall be 9-gage flat bar, drilled and tapped. Reinforcement for surface applied items shall be 14 gage.

C. CLEARANCES:

The lock edges and meeting stiles of pairs of doors shall be beveled 1/8 inch in 2 inches. At lock and hinge stiles and at top rails, clearances shall be 1/8 inch. Floor and threshold clearances shall be 1/4 inch, unless otherwise shown.

D. ASTRAGALS:

Full height astragals that are standard with the manufacturer shall be provided on exterior pairs of doors.

2.02 FRAMES

A. MATERIALS AND FABRICATION:

Frames shall be of 16-gage cold or hot rolled prime carbon steel sheet, free of defects impairing strength, durability, or appearance. The corners shall be mitered and welded, with exposed joints ground smooth to a true plane, flush with surface of base metal. All surfaces shall be free of warp, wave, buckle or other defects. All edges, angles, and corners shall be square, clean, and sharp.

B. REINFORCEMENT:

The frames shall be mortised and reinforced to receive all hardware, drilled, and tapped in accordance with templates furnished by the hardware supplier, and punched to receive rubber silencers. Plaster guards of 3/16-gage steel shall be spot welded over hardware

2.02 B.

reinforcing plates at mortise hardware locations. A hinge reinforcement, using 2-inch flat steel bar, shall be welded to frames at each hinge cutout, and drilled and tapped. Reinforcing plates of 12-gage steel shall be spot welded to frames at lock, latch, and other hardware locations, including closures and brackets. Surface applied hardware locations shall be reinforced with 14-gage steel material. Where door openings exceed 42 inches in width, head members shall be reinforced with 12-gage steel channel for the full width of the head-frame.

C. ANCHORS:

The anchors shall be of 14-gage steel, spot welded to inside of the frames, fixed or adjustable as required by wall conditions. Spacing shall not exceed 24 inches on center at jambs and head. Floor clips of 14-gage steel shall be spot welded to each jamb, and punched for anchorage to the floor. A steel spreader at the bottom of each frame shall be provided.

2.03 FINISH

After assembly, door edges shall be ground smooth, and filled flush with mineral filler to conceal seams. The doors and frames shall be thoroughly cleaned, rinsed, and phosphate coated on exposed surfaces. The doors and frames shall be given one shop coat of baked-on rust-inhibitive metal primer not less than 1 mil dry film thickness.

2.04 LABELED OPENINGS

Where labeled openings are scheduled or required, doors and frames shall be constructed in strict accordance with the requirements of Underwriters Laboratories, with attached labels for the required classification.

PART 3 - EXECUTION

3.01 INSTALLATION

The frames shall be erected in position, plumbed and securely braced, and attached to the floor with clip angles. Adjustable masonry anchors shall be provided, with sufficient adjustment to permit placing anchors in masonry joints without bending. Horizontal spreaders shall be installed to keep jambs from bowing in as frames are being filled with grout or mortar.

3.02

3.02 CALKING

Where drawings require frames to be installed with calking, weathertight and watertight construction shall be provided. Both materials and workmanship shall conform to the requirements of Section 07900 of these specifications.

3.03 PAINTING

Painting shall be as specified in Section 09900.

****END OF SECTION****

SECTION 08210

WOOD DOORS

PART 1 - GENERAL

1.01 RELATED WORK

- A. Section 06200 - Finish Carpentry.
- B. Section 08100 - Hollow Metal Doors and Frames.
- C. Section 08700 - Finish Hardware.
- D. Section 08850 - Glass and Glazing.

1.02 DELIVERY AND STORAGE OF MATERIALS

A. Carefully stack doors laid flat and level on three 2x4's, one at center and one 12 inches from each end, in a dry, clean, well-ventilated space.

B. Package all doors in heavy cardboard cartons for protection. Do not remove doors from cartons until ready to be hung.

1.03 REFERENCE STANDARDS

- A. AWI Quality Standards of Architectural Woodwork Institute.

1.04 SHOP DRAWINGS AND PRODUCT DATA

A. Submit shop drawings and product data in accordance with Section 01300.

B. Indicate general construction, jointing methods, hardware locations.

1.05 SAMPLES

A. Submit samples in accordance with Section 01300.

B. Provide 12x12 inch sized samples of door finish and available standard prefinished colors.

1.06 GUARANTEE/WARRANTY

A. Provide written guarantee in accordance with Section 01700.

B. Guarantee: Provide for replacing, including cost of rehangng and refinishing, at no cost to Owner, wood doors exhibiting defects in materials or workmanship including warp and delamination within minimum period

1.06 B.

of five (5) years from date of completion of the work for all exterior doors. Interior solid core doors guarantee: extended to life of installation and include cost of rehanging and refinishing.

1.07 QUALITY ASSURANCE

A. All doors to meet or exceed NWMA I.S 1-66, "Hardwood Veneered Flush Doors", Paragraph 4.2.1.1 and Commercial Standard CS-171.

PART 2 - PRODUCTS

2.01 INTERIOR

A. Wood flake or particleboard core flush doors with both faces of standard thickness, premium grade, plain-sliced Red Oak, with stained prefinished factory finish, color as selected by Construction Manager, as manufactured by Weyerhaeuser Company, Fenestra, Buell, Cal-Wood, or prior approved equal.

2.02 FIRE RATED DOORS

A. All doors indicated to have a fire rated classification shall be Weyerhaeuser Fire Doors bearing U. L. labels designating rating as manufactured and guaranteed by the Weyerhaeuser Company, and shall meet all requirements as per NFPA 80.

B. All 20-minute rated doors, shall be Timblend Core of face veneers as scheduled.

C. No wood doors over 20-minute rating allowed. (See Section 08100, Metal Doors and Frames.)

2.03 EXTERIOR ENTRY DOOR

A. Door shall be Model 1127, artcrafted mahogany panel door, as manufactured by Aztec Door Company, 1-3/4 inch thick, size as shown on drawings.

2.04 FABRICATION

A. Fabricate doors in accord with AWI Quality Standards.

B. Bevel strike edge of single acting swing doors 1/8 inch in 2 inches.

C. Shop mortise, bore and prepare doors to receive hardware from templates provided by Section 08700.

D. Light Openings

1. Factory primed hollow metal through bolted, U. L. approved opening surround frames of sizes scheduled for all 20 minute doors.

2.04 D.2.

2. All door openings factory cut with frames shipped with doors on same bill of lading.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install all doors completely and accurately with all finish hardware.

B. Hang doors with clearance of not more than 3/32 inch at each side and at head, clearance at bottom 1/2 inch, 1/4 inch at all acoustical rated doors, at Music, Counselors and Offices, or as required for threshold. Mortise, drill or otherwise work doors for finish hardware as scheduled, allowing for proper clearances in opening and closing doors.

C. Install all fire rated doors in complete conformance with NFPA 80.

D. Install finish hardware in a neat, workmanlike manner in accordance with Hardware Schedule, using only mechanics skilled in this type work. Keep all hardware free from scratches, dents or other defacements. Hardware to be furnished under Section 08700, Finish Hardware.

E. Field apply factory stain finishes supplied with doors at tops, edges and bottoms after fitting door. Remove all hardware prior to finishing and reinstall after finishing as required.

F. Warp in excess of 3/32 inch in 7'-0" shall be considered a defect and cause for rejection.

G. Remove protective wrappings.

END OF SECTION

SECTION 08305

ACCESS DOORS

PART 1 _ GENERAL

1.01 WORK INCLUDED

- A. Equipment access doors.

1.02 RELATED WORK

- A. Division 15: Air Conditioning and Plumbing.
- B. Division 16: Electrical.

1.03 SHOP DRAWINGS

- A. Submit Shop Drawings and Product Data in accordance with Section 01300.

1.04 ACCEPTABLE MANUFACTURERS

- A. Bilco.
- B. Inryco/Milcor.
- C. Dur-Red.
- D. Babcock-Davis.

1.05 GUARANTEE

- A. Manufacturer guarantee against defects in workmanship and materials for a period of five (5) years.

PART 2 - PRODUCTS

2.01 FLUSH PANEL ACCESS DOORS

A. Provide access panels of size indicated on drawings, of styles as indicated below for condition of use. Contractor to verify all sizes to assure that adequate access space is provided to service equipment or to remove components of mechanical, plumbing and electrical equipment which may require periodic servicing. All access panels indicated are as manufactured by Inryco/Milcor to establish a standard of quality.

B. Schedule of Use (Stainless steel panel access doors at all locations within "wet" areas; i.e., laboratories, toilet rooms.):

- 1. Fire Rated Access - Provide U.L. label as required for condition of use.

2.01 B.2.

2. Drywall - Flush panel, Style D. W.
3. Masonry - Flush panel, Style M - standard.
4. Tile - Flush panel, Style M - stainless steel.
5. Acoustical Ceilings - Style AP for plaster, Style AT for tile.
6. Suspended Drywall Ceilings Fire Resistive - Style ATR.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install access doors at all locations whether indicated or not as required to facilitate access to equipment, valves and concealed mechanical and plumbing components.

B. Install in strict conformance with manufacturers printed instructions within floor, wall or ceiling surfaces as indicated.

C. Contractor shall coordinate with all trades, i.e., mechanical, plumbing and electrical to provide access panels at all locations for all valve, etc. so that all equipment is totally accessible, and of sizes commensurate with requirements of access. Place in an unobtrusive location as possible.

****END OF SECTION****

SECTION 08331

OVERHEAD COILING DOORS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Standard overhead coiling doors, manually chain operated.

1.02 REFERENCE STANDARDS

- A. FS QQ-S-775 - Steel Sheets, Carbon, Zinc-coated (Galvanized) by the Hot-dip Process.

1.03 SHOP DRAWINGS AND PRODUCT DATA

- A. Submit shop drawings and product data in accordance with Section 01300.

1.04 DELIVERY OF MATERIALS

- A. Deliver doors in manufacturer's packaging complete with installation instructions.

- B. Indicate pertinent dimensioning, general construction, component connections and details, anchorage methods, hardware locations, and installation details.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Exterior Door: Cookson Type FC, No. 5 slat, with end locks and wind locks, chain operated, "Weatherbar" door.

- B. Other Acceptable Manufacturers:

1. Cornell.
2. Kinnear.
3. Mahon.
4. Overhead Door Co.
5. Pacific Rolling Doors.
6. J. G. Wilson Corp.

2.02 OVERHEAD COILING DOORS

- A. Operation: Hand continuous chain lift.

- B. Finish: Galvanized steel with phosphate coating for paint bond.

2.03 COMPONENTS

A. Curtain: Maximum 20 gauge galvanized steel, FS QQ-S-775 Type 1, Class D, 2-1/2 inches wide x required length interlocking flat slats. Ends of alternate slats fitted with endlocks to act as wearing surface in guides and to prevent lateral movement; bottom fitted with angles and bottom bar weather protection of neoprene loop astragal to provide reinforcement and positive contact with floor when curtain is closed. Labelled in accordance with requirements indicated on Drawings. Doors designed to resist 20 psf wind pressure.

B. Curtain Guides: Formed steel angles of required sizes and configurations.

C. Roller Shaft (counterbalance): Steel pipe and helical steel spring system capable of producing sufficient torque to assure easy operation of curtain from any position; adjustable spring tension.

D. Housing: 24 gauge minimum galvanized steel internally reinforced to maintain rigidity and form.

E. Weatherstripping: Water and rot proof, resilient type; located along jamb edges, bottom of curtain, and within housing, at both interior and exterior doors.

F. Hardware: Secured by keeper with provision for padlocking hand chain.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install overhead coiling doors in accordance with manufacturer's recommendations.

B. Fit, align, and adjust complete door assemblies level and plumb, and to provide smooth operation.

END OF SECTION

SECTION 08520

ALUMINUM WINDOWS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Extruded aluminum windows with fixed sash.
- B. Perimeter sealant.

1.02 SYSTEM DESCRIPTION

- A. Fixed and horizontal rolling windows with a 2-7/16 inch frame depth, non-thermal break, accommodate 1/2 inch thick insulating glass.

1.03 WORK SPECIFIED ELSEWHERE

- A. Section 07900 - Caulking and Sealants.
- B. Section 08850 - Glass and Glazing.

1.04 SHOP DRAWINGS AND PRODUCT DATA

- A. Submit shop drawings and product data in accordance with Section 01300.

- B. Verify wall openings and component dimensions for each window prior to fabrication; wall opening tolerances required; anchorage and fasteners; affected related work; installation requirements.

- C. Submit manufacturer's installation instructions in accordance with Section 01600.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver and handle window units in accordance with Section 01600.

- B. Store and protect window units in accordance with Section 01600.

- C. Provide wrapping to protect prefabricated aluminum surfaces.

1.06 WARRANTY

- A. Warranty: Cover complete window system for failure to meet specified requirements.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. EFCO Style 330 is specified herein to establish a standard of quality only. Other manufacturers may be approved through prior approval procedures as outlined in Division 1.

B. Pittsburgh Plate Glass Industries.

C. Arcadia.

D. Superlite.

E. Kawneer.

2.02 MATERIALS

A. Frame - 2-7/16 inch deep x 2-11/16 inch profile, non-thermally broken, flush glass stops of snap on type.

B. Air infiltrating @ 1.56 psf; less than 10 cfm/ft.

C. Water resistance: At 3.33 psf, no leakage.

D. Uniform structural load: 50 psf.

E. Screens: Extruded frame with stainless steel cloth.

F. Finish - all exposed surfaces to be medium bronze anodized coating.

2.03 FABRICATION

A. Fabricate windows allowing for minimum clearances and shim spacing around perimeter of assembly.

B. Rigidly fit joints and corners. Accurately fit and secure corners tight. Make corner joints flush, hairline, and weatherproof. Seal corner joints with sealant.

C. Develop drainage holes with moisture pattern to exterior.

D. Prepare components to receive anchor devices. Fabricate anchorage items.

2.04 FINISHES

A. Exposed Aluminum Surfaces: Medium anodized bronze.

2.04 B.

B. Apply one (1) coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.

2.05 GLAZING

A. Units shall be "wet glazed" with a snap-in aluminum extruded glazing bead and PVC bulb on interior of glass. Exterior of glass shall be set in a continuous bead of liquid backed compound as manufactured by Schnee-Morehead or equal.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify wall openings and adjoining air and vapor seal materials are ready to receive work of this Section.

B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

A. Install window frames, glass and glazing in accordance with manufacturer's instructions.

B. Use anchorage devices to securely attach frame to structure.

C. Align window frame plumb and level, free of warp or twist. Maintain dimensional tolerances, aligning with adjacent work.

3.03 CLEANING

A. Remove protective material from prefinished aluminum surfaces.

B. Wash down exposed surfaces using a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

C. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

END OF SECTION

SECTION 08700

HARDWARE

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Hardware for new interior and exterior doors.
- B. Thresholds and weatherstripping.
- C. Door stops.
- D. Installation of locks and keying for new cabinet components.
- E. Key cabinet.

1.02 RELATED WORK

- A. Section 06100 - Rough Carpentry.
- B. Section 06200 - Finish Carpentry.
- C. Section 06410 - Cabinetwork.
- D. Section 08100 - Metal Doors and Frames.
- E. Section 08210 - Wood Doors.
- F. Section 10521 - Fire Extinguishers and Cabinets.
- G. Section 16000 - Electrical.

1.03 QUALITY ASSURANCE

A. Except as hereinafter specified, hardware shall be supplied in material specified.

1.04 SUBMITTALS

A. Submit shop drawings and product data in accordance with Section 01300.

B. Indicate locations and mounting heights of each type of hardware.

C. Submit to Construction Manager for approval a complete schedule of hardware per requirements of Submittals Section. Identify each item by manufacturer's number, description, finish and function. Identify each item as to its location in building.

1.09 OMISSIONS

A. In case of any omission or error in Hardware Schedule, Contractor shall furnish hardware identical to that supplied for similar openings.

1.10 COMPATIBILITY

A. As much hardware as possible, and all items that are similar in appearance and function, shall be products of one manufacturer.

1.11 PACKAGING AND MARKING

A. Package each item separately, complete with necessary screws, keys, instruction, templates if necessary for spotting tools. Mark each container to correspond on approved Hardware Schedule.

1.12 OPERATION AND MAINTENANCE DATA

A. Provide Construction Manager with manufacturer's parts list and maintenance instructions for each type of hardware supplied and necessary wrenches and tools required for proper maintenance of hardware.

PART 2 PRODUCTS

2.01 HARDWARE

A. Provide items as required for complete installation to function as intended for all new doors. Following are hardware items which have been requested by the District to conform with their intended standardization requirements. Deviations will be considered with approval of Owner.

2.02 LOCKSETS

A. Corbin "Security Bolt" 977L-Sacramento Design.

2.03 KEYING

A. All new locksets keyed to requirements of Owner. All locks set to new Grand Master key system. Furnish keys for each lockset. Provide new keyway. Generally all locks shall be keyed differently, except within individual groups which shall be keyed alike.

1. Provide new master key with 8 masters and 3 pass keys per door.

2. A list, in two copies, of proposed key combination, including masters and grandmaster, furnished to office of Construction Manager for approval. This list submitted by hardware manufacturer prior to manufacture of locksets. List so generated that a definite and clear-cut portion is uniquely assigned to a given building area and arranged in a sequential order and be possible to readily ascertain the following:

a. Which combinations are used.

2.05 STOPS

A. Furnished for all exterior doors including where overhead door holders are specified. Wall type, to be furnished for all interior doors where possible and all walls shall have grounds built in for stop backing. Finish for all stops as indicated.

2.06 KICKPLATES

A. Furnished for all doors at classrooms, toilet rooms, main entry, etc., where high use indicates protection requirements.

2.07 BUTTS

A. Lawrence heavy-duty 4-1/2 inch x 4-1/2 inch, 1-1/2 pair furnished for each leaf with NRP (non-removable pin) as required.

2.08 WEATHERSTRIPPING/ACOUSTIC SEALS

A. As manufactured by Pemko Manufacturing Co., series as listed. Zero and Reese approved equal. Pemko 290AV or to suit condition of use.

2.09 SILENCERS

A. Provide rubber silencers for all metal frames, two for pair of doors each leaf, three for single door.

2.10 DOOR BOTTOMS

A. Pemko 216AV or to suit condition of use.

2.11 THRESHOLDS

A. Pemko 271A or to suit condition of use.

2.12 SPECIAL NOTE

A. All items of finish hardware as finally selected. Any substitute item(s) furnished, regardless of approval, shall meet all features of that item(s) specified in regard to quality, function, finish, features and design. Any item(s) furnished not meeting above must be replaced with item(s) that does meet the specified item(s).

Hardware Set No. 7:

| | | | |
|--------|--------------|-------------------|----|
| 1½ pr. | butts | BB4901-26D-4½x4½ | L |
| 1 ea. | passage | 977L-710 US26D | L |
| 1 ea. | closer | 120 SBL SN | LB |
| 1 ea. | kick plate | 37-12"x2" LDW 630 | B |
| 1 ea. | stop | WC9 626 | B |
| 1 rl. | smoke gasket | 588D | P |

Hardware Set No. 8:

| | | | |
|--------|------------|-------------------|---|
| 1½ pr. | butts | BB4901-26D-4½x4½ | L |
| 1 ea. | closer | 120 SBL SNB | C |
| 1 ea. | push plate | 5035-G 630 | B |
| 1 ea. | pull plate | 606-E 630 | B |
| 1 ea. | kick plate | 37-12"x2" LDW 630 | B |
| 1 ea. | stop | WC9X 626 | B |
| 3 ea. | silencer | 33 | C |

Hardware Set No. 9:

| | | | |
|-------|------------|--------------------|---|
| 3 pr. | butts | BB4951-26D-4½x4½ | L |
| 2 ea. | closer | P120B SBL SNB | C |
| 2 ea. | push plate | 5035-E 630 | B |
| 2 ea. | pull plate | 606-E 630 | B |
| 2 ea. | kick plate | 37-12"x1½" LDW 630 | B |
| 2 ea. | stop | WC9X 626 | B |
| 1 st. | gasket | 375AR | P |
| 2 ea. | astragal | 293AW | P |
| 2 ea. | silencer | 33 | C |

Hardware Set No. 10:

| | | | |
|--------|--------------|------------------|---|
| 1½ pr. | butts | BB4901-26D-4½x4½ | L |
| 1 ea. | lock | 977L-757 US26D | C |
| 1 ea. | closer | 120 SBL SNB | C |
| 1 ea. | stop | F8061X | B |
| 1 rl. | smoke gasket | 588D | P |

Hardware Set No. 11:

| | | | |
|--------|--------------|------------------|---|
| 1½ pr. | butts | BB4901-26D-4½x4½ | L |
| 1 ea. | lock | 977L-751 26D | C |
| 1 ea. | closer | 120 SBL SNB | C |
| 1 ea. | stop | WC9X 626 | B |
| 1 rl. | smoke gasket | 588D | P |

Hardware Set No. 12:

| | | | |
|--------|----------|----------------|---|
| 1½ pr. | butts | 4981-26D-4½x4½ | L |
| 1 ea. | lock | 977L-751 26D | C |
| 1 ea. | stop | WC9X 626 | B |
| 3 ea. | silencer | 33 | C |

SECTION 08850

GLASS AND GLAZING

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 08100 - Metal Doors and Frames.
- B. Section 08520 - Aluminum Windows.
- C. Section 08210 - Wood Doors.
- D. Section 10800 - Toilet Accessories.

1.02 QUALITY ASSURANCE

- A. Installation in accordance with latest FGMA Glazing Manual.
- B. Install glass and glazing to meet requirements of Consumer Product Safety Commission Standard for Architectural Glazing, Arizona State Safety and Glazing Law requirements and all other applicable codes.

1.03 SUBMITTALS

- A. Manufacturer's descriptive literature of glass and glazing materials and recommended installation and cleaning instructions.

1.04 PRODUCT DELIVERY AND STORAGE:

- A. Deliver all glazing materials with manufacturer's labels intact and do not remove until glass has been installed and prior to final cleaning.
- B. Keep glazing materials free from contamination by materials capable of staining.
- C. Deliver glazing compounds and sealants in manufacturer's unopened labeled containers.

1.05 ENVIRONMENTAL

- A. Perform glazing when ambient temperature above 40° F. and on dry surfaces only.

1.06 GUARANTEE

- A. Guarantee all glazing products as per manufacturer's standard guarantee.
- B. Guarantee against defects in materials and workmanship for two (2) years.

3.01 B.

B. Install glass in all metal frames as indicated using specified glazing compound, bed and back bed all lites.

C. No exposed fastenings of any kind allowed.

D. Upon completion of building, all glass shall be washed and cleaned.

3.02 GLAZING SCHEDULE

A. Tempered Glass - All interior glazing and door sidelights not otherwise scheduled.

B. Wire Glass - Corridor windows and rated doors.

C. Insulating Glass - All exterior windows.

****END OF SECTION****

DIVISION 9

FINISHES

| <u>Section</u> | <u>Title</u> |
|----------------|-------------------------------|
| 09111 | METAL STUD FRAMING SYSTEM |
| 09205 | METAL FURRING |
| 09221 | CEMENT PLASTER |
| 09260 | GYPSUM DRYWALL |
| 09310 | CERAMIC TILE |
| 09500 | ACOUSTICAL TREATMENT |
| 09511 | SUSPENDED ACOUSTICAL CEILINGS |
| 09650 | RESILIENT FLOORING |
| 09688 | CARPETING GLUE DOWN |
| 09876 | PLASTIC LINING FOR STRUCTURES |
| 09900 | COATING SYSTEMS |
| 09952 | VINYL WALLCOVERING |

SECTION 09111

METAL STUD FRAMING SYSTEM

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Top and bottom runners, studs, internal bracing, and blocking.

1.02 RELATED WORK

- A. Section 09205 - Metal Furring.
- B. Section 09260 - Gypsum Drywallboard.

1.03 REFERENCES

- A. ASTM C645 - Non-Loadbearing Steel Studs, Runners, and Rigid Furring Channels.
- B. ASTM C754 - Installation of Steel Framing Members to Receive Screw-Attached Gypsum Wallboard, Backing Board, or Water-Resistant Backing Board.
- C. GA 203 - Installation of Screw-Type Steel Framing Members to Receive Gypsum Board.

1.04 QUALITY ASSURANCE

- A. Perform the work in accordance with GA 203 and ASTM C754.
- B. Maintain one copy of each document onsite.

1.05 COORDINATION

- A. Necessary coordination of subcontractors to supply and/or erect framing indicated under other sections to be the responsibility of the General Contractor.

1.06 DELIVERY AND STORAGE OF MATERIALS

- A. Deliver all manufactured materials in the original packages, containers and bundles bearing the name of the manufacturer and brand. Store off the ground under watertight cover and away from sweating walls and other damp surfaces until ready for use. Remove damaged or deteriorated materials from the premises.

1.07 SCAFFOLDING

A. Provide all necessary scaffolding and similar items constructed and maintained in strict accord with applicable laws and ordinances so as not to interfere with or obstruct the work of other trades and be removed as soon as various parts of the work are completed.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Studs: ASTM C645, non-load bearing rolled steel, galvanized, channel shaped, widths indicated, 20 and 25 gauge thick, punched for utility access, hot dipped galvanized.

B. Runners: Of same material and finish as studs, bent leg retainer notched at 2 inch centers to receive studs with provision for crimp locking to stud.

C. Furring and Bracing Members: Of same material and finish as studs, thickness to suit purpose.

D. Blocking & Grounds: Construction grade softwood or 6 inch wide, 20 gage flat straps of galvanized iron, screwed to stud face.

E. Steel Stud Columns: Tack weld at minimum 4 inches o.c., both sides, flange to flange, forming a box column not less than 20 gauge studs.

F. Metal Runners: Standard, galvanized, sizes indicated, conforming to ASTM C645.

PART 3 EXECUTION

3.01 ERECTION

A. Secure top and bottom runners at 24 inches o.c. or as indicated. Align to configuration required.

1. Provide acoustic sealant under runner tracks in two continuous beads at floor and ceiling for all acoustical sound retarding partitions.

2. The runner tracks accurately aligned and secured to construction as detailed. Where suspended ceilings occur, runner track wire tied to ceiling members at 16 inches o.c., using 18 gauge tie wire unless otherwise noted. Use concrete stub nail or power driven anchors to concrete slabs at 24 inches o.c.

B. Install studs vertically at 16 inches o.c. and not more than 2 inches from abutting construction, each side of openings, and at corners. Secure each stud to runner track with two attachment screws, both at top and

3.01 B.

bottom, and screw studs to runner tracks on each side to provide secure stud attachment. Frame all corners with a stud approximately 2 inches from each side of internal angle in addition to steel stud column.

C. Fit runners under and above openings, secure intermediate studs at spacing of wall studs.

D. Brace stud framing system and make rigid.

E. Coordinate erection of studs with installation of service utilities. Align stud web openings.

F. Coordinate installation of bucks, anchors, blocking, electrical and mechanical work to be placed in or behind stud framing. Screw strap galvanized iron sheet over minimum of 3 studs. Coordination of this work with various trades and equipment will be required of General Contractor.

G. Coordinate erection of stud system with requirements of door and window frame supports or attachments.

H. Stud splicing permissible.

I. Maintain clearance under structural building members to avoid deflection transfer to non-load bearing studs. Provide compressible materials as detailed. Provide extended leg ceiling runners where indicated.

J. Blocking: Secure wood blocking to studs. Secure steel channels to studs, Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware and door stops.

K. At vertical door bucks, place stud column continuously from floor to ceiling. With steel bucks, provide a welded column, welded together to form a box from floor to structure above at each jamb.

L. Secure floor anchor clips to concrete floor by Ramset with two anchors in each side of jamb clip. Jamb anchor clips in steel door bucks, welded in each jamb at top approximately 12 inches and 27 inches down from the top and 18 inches up from the bottom. Provide runner track at head of buck to receive studs over openings. Turn runner up 4 inches on each side and wire-tie to stud struts. Place a 3/4 inch cold rolled channel reinforcement inside partition above door opening. Saddle-tie this channel to each vertical stud it crosses. Secure studs to jamb anchors by engaging in notches and wire-tying with a double strand of not lighter than 18 gauge tie wire, or if anchors are supplied for bolting, bolt into position.

M. Stiffen partitions more than 10 feet long or 9 feet high with furring channels placed horizontally not more than 4'-6" apart vertically, or as indicated. Wire permanently to inside of partition.

N. Provide for installation of piping, ducts, etc., and reinforce as required.

3.01 O.

O. Provide steel stud columns made up of double 20-gage studs welded at 12 inches o.c. at corners, all openings and unsupported wall ends, and extend to ceiling or roof structure above and anchor securely. Weld metal jamb to stud columns.

P. Provide 20-gage steel studs at all interior partitions scheduled to receive ceramic tile as a finished material.

3.02 TOLERANCES

A. Install members to provide surface plane with maximum variation of 1/8 inch in 10 feet in any direction and conform to configurations detailed.

END OF SECTION

SECTION 09205

METAL FURRING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Metal furring for gypsum drywall ceilings.
- B. Install access panels within metal furring system where indicated.

1.02 RELATED WORK

- A. Section 07210 - Building Insulation: Styrene/Metal Furring.
- B. Section 08100 - Metal Doors and Frames: Supply and installation requirements for hollow metal frames.
- C. Section 09111 - Metal Stud Framing System: Metal Stud Partitions for Drywalling and Plaster.
- D. Section 09260 - Gypsum Drywall.

1.03 REFERENCE STANDARDS

- A. ANSI A42.4 - Interior Lathing and Furring.

PART 2 PRODUCTS

2.01 FURRING MATERIALS

- A. Furring Channels: Minimum 16 gauge galvanized sheet steel; 3/4 inch deep; standard width; lengths as required.
- B. Fastening and Anchorage Devices: Approved devices of type and size to suit application and to rigidly secure furring members in place.

2.02 CEILING FURRING MATERIALS

- A. Main Carrying Channel: Minimum 16 gauge galvanized sheet steel; 1-1/2 inch x 3/4 inch size; lengths as required.
- B. Furring Channels (Drywall): (HAT) face width 1-3/8 inch, furring depth 7/8 inch; length 12'-0", galvanized sheet metal as manufactured by U.S.G.
- C. Hangers: Galvanized steel, of size and type to suit application and to rigidly secure ceiling system in place with maximum deflection of 1/360; No. 8 W&M gauge, Class I, Prestraightened.

2.02 D.

D. Tie Wire: No. 18 gauge.

E. Lateral Bracing: Minimum 16 gauge cold rolled steel channels with galvanized coating; 3/4 inch x 3/8 inch size; maximum practical lengths.

F. Anchorage and Fastening Device: Approved devices of type and size to suit application and to rigidly secure ceiling furring members in place.

2.03 LATHING MATERIALS AND ACCESSORIES

A. Metal Lath:

1. Walls - Flat diamond mesh, expanded metal, cut from copper-bearing steel sheets, coated with rust-inhibitive paint after cutting or cut from zinc-coated steel sheets weighing not less than 3.4 lbs. per sq.yd.

B. Inside Corner Mesh: Minimum 26 gage steel with galvanized or rust-inhibiting coating, perforated or expanded flanges or clips shaped so as to permit complete embedding in plaster, minimum 2 inch x 2 inch size.

C. Anchorages: Tie wires, nails, screws and other approved metal supports, of type and size to suit application and to rigidly secure lathing materials in place, galvanized, rust-inhibitive coated.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

A. Erect metal furring as required for gypsum and drywall in accordance with ANSI A42.4, unless indicated otherwise herein.

B. Install members true to lines and levels and to provide surface flatness with maximum variation of 1/8 inch in 10 feet in any direction.

3.02 ACCESS PANELS

A. Install metal access panels and rigidly secure in place.

B. Coordinate installation of bucks, anchors, blocking, electrical and mechanical work which is to be placed in or behind wall framing. Allow such items to be installed after framing is complete.

3.03 SUSPENDED CEILINGS

A. General: Suspension system consist of 1-1/2 inch runner channels and HAT channels for drywall, suspended by hanger wires, furred accurately level to heights and/or shapes detailed.

3.03 B.

B. Furring - Vertical:

1. In areas indicated, provide not less than 1-1/2 inch runner channels horizontally spaced on not over 4 foot centers and furring channels vertically spaced on not over 16 inch centers for drywall ceilings.

2. Securely fasten vertical channel studs to soffit above or in the joists or to a suspended ceiling. Channels, pencil rods, cornerite, or special types of ceiling runners may be used provided they hold tops of studs securely in line. Ends of channel studs may be bent and nailed directly to floor or stud ends may be set in hole cut in top of concrete floors or into special types of metal floor runners. Where two piece studs are used splice within 2 feet of ceiling by lapping not less than 8 inches with flanges interlocked and securely wired near each end of splice. Single piece studs of such length they will not bow when erected.

3. Align runner tracks accurately to partition layout at both floor and ceiling. Secure to concrete slabs with 1/2 inch concrete stub nails at 3 foot intervals or wire to runner furring channels of ceilings. Secure each stud to runner tracks with two attachment shoes at both top and bottom, each wired or crimped to stud.

4. Horizontal bracing attachments for furring braces consist of nails secured to light gauge framing. Space horizontal braces not to exceed 2 feet on centers, horizontally, and in accordance with spacing of horizontal stiffeners, vertically, and project a proper distance from face of wall to permit ties to be made. Securely tie horizontal stiffeners to horizontal braces or anchors with 3 loops of tie wire.

5. Horizontal stiffeners for all vertical furring not less than 1-1/2 inch cold rolled channels, spaced as specified. Upper and lower stiffeners not more than 6 inches from floor and ceiling, respectively. All stiffeners at least 1/4 inch clear from face of wall.

6. Saddle tie studs for vertical furring to horizontal stiffeners with 3 loops of tie wire at each crossing and securely anchor to floor and ceiling construction. Where furring is a considerable distance from face of wall, provide channel braces to wall approximately 2 feet on centers.

C. Furring - Horizontal:

1. Except where otherwise indicated, provide 1-1/2 inch main runner channels spaced on 4 foot centers. Locate a main runner within 6 inches of wall to support ends of cross furring and locate hangers to support ends of main runners.

2. Provide 7/8 inch HAT channels at maximum of 16 inches o.c. wire tied to bottom flanges of steel joists for attachment of 5/8 inch fire rated gypsum board to provide fire protection for structure.

3. When main runners are spliced overlap ends not less than 12 inches (with flanges of channels interlocked) and securely tie near each end of splice with two loops of tie wire.

4. Securely saddle tie cross furring to main runners by not less than No. 18 gauge galvanized wire at each crossing or by No. 9 gauge wire hairpin clips or equivalent clips or attachments. When furring members are spliced ends overlapped not less than 8 inches (with flanges of channels interlocked) and securely tie near each end of splice with 2 loops of tie wire.

3.03 C.5.

5. All wire hangers of such length that lower ends of hangers may be saddle tied or wrapped around runners so as to prevent turning or twisting of runners. Space hanger wires on 3 foot centers, with one #8 hanger wire for each 12 square foot of ceiling. For steel beams, joists, or other steel construction, hangers wrapped around, inserted through or clipped or bolted to steel structural supports so as to develop full strength of hangers.

D. Install ceiling furring at heights indicated on drawings. Erect after above-ceiling work is complete. Coordinate the location of hangers with other work.

E. Securely fix carrying channels to hangers to prevent turning or twisting and to develop full strength of hangers.

F. Reinforce openings in ceiling suspension system, which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24 inches past each end of openings.

G. Laterally brace suspension system where required.

H. Install metal access panels. Rigidly secure in place. Follow manufacturer's printed instructions for installation requirements.

3.04 FURRING FOR FIRE RATINGS

A. Install furring indicated in drawings as required for fire resistance ratings. Install in accordance with UL Design Requirements.

3.05 LATHING MATERIALS

A. Apply metal lath taut with long dimension perpendicular to supports. Place projections of lath against supports.

B. Lap ends minimum 2 inches. Adequately secure end laps with tie wire where they occur between supports.

C. Lap sides of diamond mesh lath minimum 1-1/2 inches. Nest outside ribs of rib lath together.

D. Securely attach metal lath to metal supports using two strands of 18-gage tie wire (four wires total) at maximum 6 inches on center.

E. Continuously reinforce all internal angles with Cornerite, except where metal lath forms angle reinforcement. Fasten Cornerite at extreme edges only.

F. Place 4 inch wide x 12 inch long strips of metal lath diagonally at corners of all openings. Secure rigidly in place.

SECTION 09221

CEMENT PLASTER

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Portland cement plaster for walls and tile sub-finish.
- B. Exterior cement plaster (stucco).

1.02 RELATED WORK

- A. Section 04340: Reinforced Unit Masonry.
- B. Section 09205: Metal Furring and Lathing.
- C. Section 09900: Painting.

1.03 QUALITY ASSURANCE

A. Applicator Qualifications: Application of cement plaster on at least three projects equal in scope to this work.

B. Allowable Tolerances: Maximum deviation from true plane 1/8 inch in 10 feet as measured by straight edge placed at any location on surface.

- C. Job Mock-Up:
- 1. 2 foot x 2 foot sample panel of same plaster materials as for project.
 - 2. Show texture and workmanship of finished work.
 - 3. Do not proceed with work until sample stucco finish is reviewed by Architect/Engineer.
 - 4. Maintain sample panel on project site for duration of project for comparison purposes.
 - 5. Remove upon project completion, or when directed by Architect/Engineer.

1.04 SUBMITTALS

A. Manufacturer's certificate that materials meet specification requirements.

B. Manufacturer's written recommendations, proportion mixes, and installation instructions for factory prepared finish materials.

1.05

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver manufactured materials in original unopened packages or containers, with manufacturer's label intact and legible.

B. Keep cement and lime dry, stored off ground, under cover, and away from damp surfaces.

C. Remove wet and deteriorated materials from project site.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Cold weather requirements:

1. Do not use frozen materials in cement plaster mixes.
2. Do not apply cement plaster to frozen surfaces or surfaces containing frost.
3. Do not apply cement plaster when ambient temperature is less than 40°F.

B. Hot weather requirements: Protect cement plaster from uneven and excessive evaporation during hot, dry weather.

1.07 PROTECTION

A. Protect finished surfaces installed prior to plastering by covering with plastic sheets.

B. Maintain protection in place until completion of work.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cement:

1. Portland Cement: ASTM C150, Type II.
2. Masonry Cement: ASTM C91.
3. Plastic Cement: ASTM C150, Type I cement with added plasticizers not exceeding 12% total volume of cement.

B. Special Finishing Hydrated Lime: ASTM C206, Type S.

C. Aggregates:

1. ASTM C144.
2. Gradation:
 - a. Base coat:

2.01 C.2.a.

| U. S. Standard Sieve | Percent Retained by Weight (±2%) | |
|-------------------------|-------------------------------------|---------|
| | Minimum | Maximum |
| No. 4 (4.75 mm) | -- | 0 |
| No. 8 (2.36 mm) | 0 | 10 |
| No. 16 (1.18 mm) | 10 | 40 |
| No. 30 (600 μm) | 30 | 65 |
| No. 50 (300 μm) | 70 | 90 |
| No. 100 (150 μm) | 95 | 100 |

D. Water: Clear and free from substances harmful to plaster.

E. Bonding Compound:

1. ASTM C631, nonoxidizing, noncrystallizing. Marine Bond No. 5 or approved equal.
2. Unaffected by reapplication of moisture.

2.02 MIXES

A. Mixing:

1. General:
 - a. Accurately proportion materials for each plaster batch with measuring devices of known volume.
 - b. Size batches for complete use within maximum of one hour after mixing.
 - c. Retemper plaster stiffened from evaporation, but do not use or retemper partially hydrated cement plaster.
 - d. Do not use frozen, caked or lumping materials, and remove such materials from job site immediately.
 - e. Mix factory prepared cement plaster in accordance with manufacturer's written instructions.
 - f. Use moist, loose sand in mix proportions.
 - g. Withhold 10% of mixing water until mixing is almost complete, then add as needed to produce necessary consistency.
2. Mechanical Mixing:
 - a. Clean mixer of set or hardened materials before loading for new batch.
 - b. Maintain mixer in continuous operation while adding materials.
 - c. Conform to mixing sequence, cycle of operations, and time recommended by manufacturer of plaster materials.
3. Hand Mixing: Do not hand mix unless authorized by Architect/Engineer.

B. Mixing Proportions:

1. 1st Base Coat: 1 part portland cement, 1/12 part lime, 3 parts sand.
2. 2nd Base Coat: 1 part portland cement, 1/12 part lime, 4 parts sand.
3. Finish Coat: 1 part portland cement, 1 part lime, 4 parts sand.

2.02 C.

C. Contractor may submit recommendation and requests for variations to mix design based on local custom and experience.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify that surfaces to be plastered are free of dust, loose particles, oil, and other foreign matter which would affect bond of plaster coats.

B. Examine construction, grounds and accessories to insure that finished plaster surfaces will be true to line, level and plumb, without requiring additional thickness of plaster.

C. Verify that concrete surfaces are rough or prepared in a manner to provide bond for plaster.

3.02 PREPARATION

A. Wet absorptive base with fine fog spray of clean water to produce uniform moist condition.

B. Apply bond coat to concrete base and moist cure for minimum of 24 hours before applying first coat of cement plaster.

C. Apply bonding agent as recommended by manufacturer's instructions.

3.03 APPLICATION

A. Application of cement plaster on metal lath using a three-coat system:

1. Apply two base coats to minimum thickness of 3/8 inch each. Moist cure and allow coats to dry for minimum period of 48 hours.

2. Allow base coats to cure for minimum of 7 days prior to application of finish coat.

3. Dampen base coats evenly, to ensure uniform suction and apply the finish coat. Apply finish coat to thickness sufficient to secure required texture but not less than 1/8 inch in accord with manufacturers instructions.

4. Maintain surface flatness with maximum variation of 1/8 inch in 10 feet.

5. Construct control joints at maximum of 12 foot centers to divide areas into panels not exceeding 125 square feet.

6. provide surfaces with steel trowel finish.

7. Avoid overwork of surface. Delay trowelling as long as possible to avoid drawing excess fines to surface.

3.03 B.

B. Application of cement plaster on concrete masonry units using a two-coat system.

1. Apply one base coat of a minimum thickness of 3/8 inch each. Moist cure and allow coats to dry for a minimum period of 48 hours.

2. Dampen base coat evenly, to ensure uniform suction and apply the finish coat. Apply finish coat to thickness sufficient to secure required texture but not less than 1/8 inch in accord with manufacturer's instructions.

3. Maintain surface flatness with maximum variation of 1/8 inch in 10 feet.

4. Construct control joints at maximum of 12 foot centers to divide areas into panels not exceeding 125 square feet.

6. Provide surfaces with steel trowel finish.

7. Avoid overwork of surface. Delay trowelling as long as possible to avoid drawing excess fines to surface.

3.04 FINISH TEXTURES

A. Exterior cement plaster (stucco) shall be a heavy skip trowel.

B. Interior:

1. Float finish under ceramic tile.

2. Hand trowel finish where exposed.

3.05 CURING

A. Maintain moist conditions by fine fog spray.

B. Cure base coats minimum of 48 hours after application.

C. Cure finish coat for minimum of 7 days.

3.06 ADJUST AND CLEAN

A. Patching:

1. Upon completion point-up plaster around trim and other locations where plaster meets dissimilar materials.

2. Cut out and patch defective or damaged plaster.

B. Cleaning:

1. Remove plaster and protective materials from expansion beads, perimeter beads, and adjacent surfaces.

2. Remove stains from plaster surfaces that would adversely affect subsequent finishes.

END OF SECTION

SECTION 09260

GYP SUM DRYWALL

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Gypsum wallboard installation at walls and ceilings where indicated.
- B. Finishing, taping, spackling and sanding.

1.02 RELATED WORK

- A. Section 06100 - Rough Carpentry.
- B. Section 07570 - Single-Ply Roofing System.
- C. Section 09111 - Metal Studs and Framing.
- D. Section 09205 - Metal Furring.
- E. Section 09310 - Ceramic Tile.
- F. Section 09500 - Acoustic Treatment.
- G. Section 09900 - Painting.

1.03 DELIVERY AND STORAGE OF MATERIALS

- A. Deliver all manufactured materials in original packages, containers and bundles bearing name of manufacturer and brand. Store off ground under watertight cover and away from sweating walls and other damp surfaces until ready for use. Remove damaged or deteriorated materials from premises.

1.04 ENVIRONMENTAL CONDITIONS

- A. During cold weather maintain temperature of area receiving wallboard at range of 55°F to 70°F 24 hours before, during and after gypsum wallboard and joint treatment application.
- B. Ventilation: Provide ventilation during and following adhesive and joint application. Use temporary air circulators for enclosed areas lacking natural ventilation, protect from drafts during hot, dry weather and allow additional drying time when slow drying conditions exist for joint treatment.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Manufactured by U. S. Gypsum specified as standard, National Gypsum, Celotex or Blue Diamond will be acceptable for all materials specified under this Section.

2.02 FIRE-RATED WALLS AND CEILINGS (SEE DRAWINGS FOR LOCATIONS)

A. Gypsum Wallboard: 5/8 inch sheetrock firecode gypsum panels, where indicated, special mineral core, UL labeled, one (1) hour fire rated, tapered edges, 48 inches wide, lengths as long as practicable, conforming to ASTM C36.

B. Water-Resistant Wallboard: 5/8 inch thick special mineral fire-rated core, tapered edges 48 inches wide, lengths as long as practicable, conforming to ASTM C630 with green treated manila paper.

C. W/R Sealant as recommended by wallboard manufacturer.

2.03 FASTENERS

A. Screws:

1. Metal Framing: Self-tapping with special wide head, appropriate length, Type S for sheet metal, Type W for wood application. One inch for single layer applications and 1-5/8 inch for double layer applications.

2.04 METAL ACCESSORIES

A. Corner Beads: 1-1/4 inch x 1-1/4 inch hot dipped galvanized with 1/8 inch upset.

B. Metal Edge Trim: U-shaped channel and L-shaped angle, hot dipped galvanized with 1/8 inch upset corner for taping and joint compound materials.

2.05 MISCELLANEOUS

A. Joint Treatment: Perf-A-Tape reinforcing tape, compounds, and finishing as per ASTM C475.

B. Finishing Material: USG Texture II latex material.

C. Adhesive: USG.

D. Sheetrock W/R Primer: USG vinyl paste adhesive.

3.01 C.

C. Metal Accessories: Apply true, even and straight at external angles, corners and against other materials where exposed and as shown.

D. Scribe wallboard at masonry and as required around obstructions.

E. Screws: Power driven at 12 inches o.c., except as noted on drawings, with positive clutch production model, adjustable screw depth control head, No. 2 Phillips bit, 1500 rpm.

3.02 SINGLE LAYER DRYWALL ERECTION

A. Apply gypsum boards with long dimension parallel or perpendicular to framing. Use maximum practical lengths to minimize end joints. Position boards so all abutting ends and edges (except edges with perpendicular application) will be located in center of stud flanges. Plan direction of board installation so lead edge or end of board is attached to open end of stud flange first. Be certain joints are neatly fitted and staggered on opposite sides of partition so they occur on different studs. Cut boards to fit neatly around all outlets and switch boxes.

B. For parallel single-layer application, fasten panels with 1 inch USG Type S screws spaced maximum 12 inches o.c. in field and 8 inches o.c. along long abutting edges, unless otherwise noted. Stagger screws on abutting edges or ends.

C. For perpendicular single-layer application, fasten boards with 1 inch USG Type S screws spaced maximum 12 inches o.c. in field of board and 12 inches o.c. along abutting end joints unless otherwise noted.

3.03 WATER RESISTIVE GYPSUM PANEL ERECTION

A. Install appropriate blocking, headers or supports for plumbing fixtures and to receive recessed fixtures or similar items. When framing is spaced more than 16 inches o.c., or when ceramic tile over 5/16 inch thick will be used, install suitable blocking between studs. Place blocking at midpoint between base and ceiling. Blocking is not required on studs spaced 16 inches o.c. or less.

B. Precut panels to required sizes and make necessary cutouts. Before installing panels, apply Sheetrock W/R Sealant to all cut or exposed panel edges at utility holes and joints, including those at wall intersections.

C. Install Sheetrock W/R panels horizontally with long (paper-bound) edges abutting top of spacer strip. Fasten panels with nails 8 inches o.c. maximum, or screws 12 inches o.c. maximum. Exception: Where ceramic tile more than 5/16 inch thick will be used, space screws 8 inches o.c. maximum.

2.05 D.

D. For double-layer applications, both face and base layer must consist of Sheetrock W/R Panels.

PART 3 - EXECUTION

3.01 GENERAL

A. ANSI Standard A-97.1 and GA216 insofar as any portion is applicable is hereby made a direct part of this specification as though repeated herein.

B. Check framing for accurate spacing and alignment and verify that spacing of framing members does not exceed maximum allowable for thickness of wallboard used. Do not proceed until deficiencies have been corrected.

E. Treat all fastener heads with Sheetrock W/R Sealant.

3.04 INSTALLATION OF SOUND BLANKETS (See also Acoustic Materials and Building Insulation).

A. Install blankets to completely fill height of stud cavity. If necessary to tightly fill height cut stock-length blankets with serrated knife for insertion in void. Tightly butt ends and sides of blankets within cavity. Cut small pieces of blankets for narrow stud spaces next to door openings or at partition intersections. Fit blankets carefully behind electrical outlets, bracing, fixture attachments, toilet accessories, etc.

B. Sound Attenuation Blankets: Using a pistol-type hand stapler, attach blanket to back of gypsum board at each corner at least 2 inches in from edges and in center of blanket. Use staples with a 9/16 inch leg applied through a minimum 2 inch square heavy paper washer, or staple over a 6d nail laid flat on blanket. Either method prevents staple from pulling through blanket.

3.05 SEALANT APPLICATION (CAULKING) ACOUSTICAL

A. All perimeters must be sealed with acoustical sealant as must penetrations for electrical outlets, plumbing, heating and air conditioning ducts, telephone, etc.

B. Partition Perimeter: Cut gypsum boards for loose fit around partition perimeter. Leave a groove no more than 1/8" wide. Apply a 1/4 inch minimum round bead of sealant to each side of runners, including those used at partition intersections with dissimilar wall construction. Immediately install boards, squeezing sealant into firm contact with adjacent surfaces. Fasten boards in normal manner.

C. Control Joints: Apply sealant beneath control joint to reduce path for sound transmission through joint.

3.05 D.

D. Partition Intersections: Seal intersections with sound-isolating partitions that are extended to reduce sound flanking paths.

E. Openings: Apply sealant around all cutouts such as at electrical boxes, plumbing, heating ducts and cold-air returns to seal opening. Caulk sides and backs of electrical boxes to seal them.

3.06 FINISHING

A. Reinforce ceiling angles and inside corner angles with tape folded to conform to adjoining surfaces and to form a straight, true angle. Apply thin uniform layer of compound, approximately 3" wide, under and over tape in angle joint to be reinforced. Center tape over all joints to be reinforced and seal into compound, leaving sufficient compound under tape to provide proper bond. Apply skim coat of compound immediately after embedding surface. Clean excess compound from wallboard surface. After drying, cover embedding compounds with an additional coat of compounds.

B. Allow joints to dry thoroughly (minimum of 24 hours) between each application of compound.

C. All joints have tape embedded, filled and finished using specified compound.

D. Cover fill coat with compound spread evenly over and slightly beyond tapered edge of board, feathered at edges, with a smooth uniform slight crown over joint. All dimples at fastener heads receive three coats of compound in succession as used in joints.

E. Conceal flanges of all metal corner reinforcing by at least two coats of compound. When completed compound extend approximately 8" to 10" on either side of exposed metal nosing.

F. Sand all coats as necessary after each application of compound has dried. Final coat and subsequent sanding shall leave all wallboard and treated areas uniformly smooth to receive finish treatment.

G. All joints, whether exposed to view or not, taped and finished except at backing board for acoustic ceilings.

H. All exposed wallboard, except as noted, to receive a light skip trowel or knock-down finish texture with USG Texture II of a uniform appearance. All exposed wallboard in the toilet rooms and laboratories to receive a smooth finish.

3.07 ADJUST AND CLEAN

A. At completion of drywall installation, remove all rubbish, excess material and equipment, leaving premises neat and clean and free of droppings and spatter.

3.07 B.

B. Screw Pop: Repair by driving new screw approximately 1-1/2 inches from screw pop and reseal. When face paper is punctured, drive new screw 1-1/2 inches from defective fastening and remove defective fastening. Fill damaged surface with compound.

C. Ridging: Do not repair ridging until condition has fully developed, approximately six months after installation or one heating season. Sand ridges reinforcing tape without cutting tape. Fill concave area of both sides of ridge with topping compound. After fill is dry, blend in topping compound over repaired area.

D. Fill all cracks with compound and finish smooth and flush.

END OF SECTION

SECTION 09310

CERAMIC TILE

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Tile at toilet room floors and walls.
- B. Tile at shower room floor and walls.
- C. Marble thresholds.
- D. Quarry tile and entry walks and waiting area.
- E. Exterior facia tile.

1.02 RELATED WORK

- A. Section 03300 - Cast-in-Place Concrete.
- B. Section 04340 - Reinforced Unit Masonry.
- C. Section 07900 - Caulking and Sealants.
- D. Section 09111 - Metal Stud Framing System.
- E. Section 09260 - Gypsum Drywall.

1.03 SAMPLES

- A. Submit two (2) sets color samples each type tile for color selection by Architect.

1.04 SHOP DRAWINGS AND PRODUCT DATA

- A. Furnish Master Grade Certificate for all tile before installation, bearing Certificate Mark of TCA, signed by manufacturer and tile subcontractor, stating type and quality of materials.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to site in original sealed containers, labels legible and intact, identifying brand name and contents. File cartons grade sealed by manufacturer in accordance with ANSI A137 and grade seals unbroken. Adhesive, grout and mortar containers must bear hallmark certifying compliance with referenced standards.

1.05 A.

B. Store materials under cover in manner to prevent damage or contamination. Contaminated material removed from site immediately.

1.06 ENVIRONMENTAL CONDITIONS

A. Comply with minimum temperature recommendations of manufacturer for bonding and grouting materials in other than Portland cement mortar.

B. Set and grout tile in portland cement mortar when ambient temperature is 50°F and rising.

C. Protect adjoining work surfaces before tile work begins.

1.07 REPLACEMENT

A. Deliver to Owner's representative minimum of one-half carton each size, type and color tile from same run as replacement and furnish signed receipt from Owner to Construction Manager prior to final payment.

1.08 GUARANTEE

A. Provide in writing an unconditional guarantee tile will adhere to surfaces for a period of two (2) years under normal conditions from date of project completion.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. All tile specified herein by brand name is manufactured by the American Olean Tile Company to establish a standard of quality only. Other manufacturers are acceptable, and will be considered in accord with the prior approval provisions as outlined in Division 1 - General Requirements.

B. Monarch.

C. Dallas.

2.02 FLOOR AND BASE TILE - TOILET ROOMS, WAITING AND TRIM AT ENTRY WALKS

A. Quarry Tile: 8 inch x 8 inch x 1/2 inch nominal size as manufactured by American Olean Tile Company. Colors as selected by Construction Manager from standard 13 earthtones.

B. Trim Shapes: Coves and caps as required for 6 inch high thin set base.

2.03 WALL TILE - TOILET ROOMS AND SHOWER ROOM WALLS

A. Bright and matte, 6 inch x 6 inch x 5/16 inch, on smooth surface, glazed, cushioned edge, as manufactured by American Olean Tile Co.; colors as selected by Construction Manager.

2.03 A.1.

1. Trim Shapes - Coves, edges and caps as required.

2.04 FLOOR AND BASE TILE - SHOWER ROOMS

A. Ceramic Mosaic Tile: 2 inch x 2 inch x 1/4 inch nominal size as manufactured by American Olean Tile Company. Color as selected from Price Range A.

2.05 EXTERIOR FACIA TRIM

A. Quarry Naturals - 6 inch x 12-3/8 inch x 1/2 inch, Lock-Bak, as manufactured by American-Olean Tile Company. Colors as selected by Construction Manager.

2.06 MISCELLANEOUS

A. Marble Thresholds: Grade A, first quality, free from cracks, defects, stains, etc., uniform in tone and coloring, white honed Italian marble, double bevel as detailed.

2.07 ADHESIVE MATERIALS

A. Latex - Portland cement mortar conform with ANSI A118.4.

2.08 MORTAR BED

A. Dry-set mortar conform with ANSI A118.1.

2.09 GROUT

A. Commercial portland cement grout.

B. Latex portland cement.

C. Color as selected by Architect.

2.10 WATER

A. Clear, fresh, potable without injurious amounts of oils, acids, alkali, salts and organic matter.

2.11 REINFORCING

A. 2 inch x 2 inch x 16/16 gage wire mesh.

PART 3 EXECUTION

3.01 GENERAL

A. Surfaces to receive applications of materials clean, free of dirt, dust, oil, grease and other objectionable matter.

3.01 B.

B. Tile installed with respective surfaces in true even planes to elevations and grades shown. Each tile brought to true and level plane by using beating block and test of plane distortion made with straightedge. Positive beat-in of each tile required to establish proper bond. Tiles out of true plane or misplaced removed and reset.

C. Tile laid from centerlines of each space outward and adjustments made along walls and partitions so as to symmetrize pattern with no cuts less than one-half tile width.

D. Joints between tiles uniform width as specified for tile installed and parallel over entire area. Fractional changes in dimensions without varying uniformity of joint width will be permitted.

E. Tile cut with a suitable cutting tool and rough edges rubbed smooth. Cut-tile misfits replaced with properly cut tile.

F. Installation of tile deferred until hangers, door bucks and electrical, mechanical and plumbing work to be in or behind tile have been installed and satisfactory protection of adjoining work provided.

G. Stops, returns, trimmers, caps and special shapes provided as required for sills, jambs, recesses, offsets, external corners and other conditions to provide complete and neatly finished installation.

H. Setting Tile: Joints straight, level, perpendicular and of even width not exceeding 1/16 inch. Wainscots built of full courses that may extend to a greater height but in no case lower than height shown. Vertical joints maintained plumb for entire height of tile work. Damaged or defective tile replaced.

I. Mortar Bed: 1 part Portland cement and 6 parts damp sand applied directly over concrete subfloor.

J. Bond Coat: Portland cement paste.

K. Provide continuous expansion joint complete with backer rod and sealant between base cove and floor tile, where tile abuts other materials and at all joints within structural floor, including cold and construction joints.

3.02 FLOORS

A. Install ceramic mosaic floor tile and quarry tile as per Tile Council of America, Inc., Specification F112, and per ANSI A108.1, for cement mortar bonded installation with minimum mortar bed of 1-1/4 inch at slabs on grade.

B. Slab depression accurate with screeded finish, free of cracks and oil films, curing compounds. Slope provided in sub-floor slab. Variation in slab to be no more than 1/4 inch in 10'-0" from required plane.

3.02 C.

C. Provide expansion joint where all floors abut restraining surfaces at perimeter walls, curbs, columns, pipes, etc., and at all joints within structural floor, including cold and construction joints, and caulk.

D. Install marble threshold between ceramic tile floor and adjacent surfaces.

3.03 WALLS

A. Typical usage in Toilets, Showers and Facia: Install ceramic or quarry natural tile, 6 inch x 6 inch, as per Tile Council of America, Inc., Specification W241 and ANSI A108.5 in dry-set or latex-Portland cement mortar on mortar bed Specification W241 and ANSI A108.5 at metal studs, or Specification W211 and ANSI A108.1 on masonry walls.

B. Install base and provide continuous expansion joint between base cove and wall tile or textured tile and caulk as indicated.

3.04 SHOWER RECEPTORS

A. Slab-on-Grade: Install ceramic tile, 6 inch x 6 inch at walls, and 2 inch x 2 inch mosaic floors, per Tile Council of America, Inc., Specification B414 and ANSI A108.1, on mortar-setting bed and Specification W241 for stud walls and Specification W221 at masonry walls.

3.05 SETTING TILE

A. Tile not soaked. Spread bond coat on surface not more than 30 minutes before covering with tile; dry-set mortar combed with a 1/4" square notched trowel not more than 5 minutes before tile is set. Beat in and level tile as specified. Joints uniform and constructed according to requirements specified.

3.06 GROUTING

A. Wall tile set in dry-set mortar grouted with dry-set grout, mixed and applied in strict accord with grout manufacturer's instructions. Joints tooled slightly concave, excess mortar cut off and wiped from face of tile. Interstices or depressions left in mortar joints after grout has been cleaned from surface roughened at once and filled to spring line of cushion edge before mortar begins to harden.

3.07 CLEANING AND PROTECTION

A. Wipe tile clean after grouting and protect against other trades with heavy non-staining construction paper. Acid not used for cleaning of tile. Damp cure all tile for three (3) days minimum.

END OF SECTION

SECTION 09500

ACOUSTICAL TREATMENT

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Installation of Sound Blankets within Partitions and Ceilings.
- B. Applied Unfaced Insulation in Mechanical Equipment Rooms.

1.02 RELATED WORK

- A. Section 07210 - Building Insulation.
- B. Section 09250 - Gypsum Drywall.
- C. Section 09511 - Acoustical Ceilings.

1.03 ENVIRONMENTAL CONDITIONS

- A. Maintain uniform temperature in area where materials are to be installed in range of 55°F to 70°F.
- B. Ensure materials to which acoustical treatment is to be applied are completely dry and free of materials that would affect bond.

1.04 SAMPLES

- A. Submit two (2) sets samples each type of acoustical material for selection.

1.05 REPLACEMENT

- A. Provide Owner with one (1%) percent each type acoustic material and trim supplied for replacement and maintenance. Provide signed receipt from Owner as proof of delivery. Receipt is requirement for final payment.

1.06 DELIVERY AND STORAGE

- A. Deliver acoustical units to site in manufacturer's original unopened containers with brand name and type clearly marked thereon. Carefully handle all materials and store under cover in dry, weathertight enclosures to prevent intrusion of foreign materials or damage by water or dampness.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

2.01 A.

A. Brand names indicated are to provide a standard of quality only and are not intended to limit competition. Substitutions may be made, in compliance with the prior approval provisions as indicated in Division 1 - General Requirements.

2.02 ACOUSTIC PANELS (UTILITY)

A. Rigid board type insulation, 24 inch x 48 inch x 2 inch thickness, Type 703, 3 lbs. per cu. ft. density, as manufactured by Owens Corning Fiberglas Co.

2.03 PARTITION ACOUSTIC BLANKETS

A. Unfaced, 3-5/8 inch, R-13 fiberglass insulation as manufactured by Owens Corning Fiberglas Co.

2.04 ACCESSORIES

A. Adhesives - For acoustical tile and panels, Webtex No. 200, as manufactured by W. F. Webster Cement Co., or as recommended by acoustical unit manufacturer.

B. Stic-Klips - Type "N" for rigid board type insulation with Type "S" adhesive.

C. Sealant - "Acoustic Sealant" as manufactured by United States Gypsum Co.

D. Edge Channels - At all exposed edges of acoustic tile terminate with adhesive applied plastic edge channel. Color to be white. Thickness to match acoustic tile and/or panel thickness.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine surfaces scheduled to receive attached acoustical material for unevenness, irregularities and dampness, oils, form residues or materials that would affect bond capabilities of adhesives or quality and execution of work.

3.02 ACOUSTIC PANELS (UTILITY) INSTALLATION

A. At Equipment Rooms and other indicated areas In Auditorium install type and thickness of rigid insulation as indicated using adhesive and Stic-Klips, with speed washers. Apply klips with Type S adhesive, providing six klips for each 24 inch x 48 inch board. Impale insulation and secure in place with speed washers. Cut off pointed ends of klips to within 1/4 inch of speed washers. Abut insulation edges tightly and stagger vertical joints to form regular bond pattern.

3.03

3.03 SOUND RETARDING PARTITIONS INSTALLATION

A. At partitions indicated install sound attenuation blankets between metal studs weaving between staggered metal studs. Press blankets firmly in place, tightly butting ends and sides of blankets, leaving no voids.

B. At partitions indicated to be sound retarding, caulk all edges, joints and perimeters of partitions with acoustic sealant.

3.04 CLEAN-UP

A. Clean soiled or discolored acoustic tile surfaces after installation. Remove and replace damaged or improperly installed units.

END OF SECTION

SECTION 09511

SUSPENDED ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Suspended metal grid ceiling system.
- B. Acoustical panels.
- C. Perimeter trim.

1.02 RELATED WORK

- A. Section 08305 - Access Doors.
- B. Section 15010 - Air Conditioning: Air diffusion devices in ceiling system.
- C. Section 16000 - Electrical: Light fixtures in ceiling system.

1.03 SYSTEM DESCRIPTION

- A. Installed System where indicated: Conform to UL rating for ceiling and roof assembly. Primarily corridors and means of egress.

1.04 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacture of ceiling suspension system and ceiling panels with three years minimum experience.
- B. Installer: Company with three years minimum experience, approved by manufacturer.

1.05 REGULATORY REQUIREMENTS

- A. Conform to applicable code for fire rated assembly combustibility requirements for materials.

1.06 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01300.
- B. Indicate on shop drawings, grid layout and related dimensioning, junctions with other work or ceiling finishes, interrelation of mechanical and electrical items related to system.
- C. Provide product data on metal grid system components, acoustic units.

1.06 D.

D. Submit samples under provisions of Section 01300.

E. Submit two samples full size 12x12 inch in size, illustrating material and finish of acoustic units.

F. Submit two samples each, 6 inches long, of suspension system main runner, cross runner, and edge trim.

G. Submit manufacturer's installation instructions under provisions of Section 01300.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Maintain uniform temperature of minimum 60 degrees F and humidity of 20 to 40 percent prior to, during and after installation.

1.10 SEQUENCING/SCHEDULING

A. Do not install acoustical ceilings until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Schedule installation of acoustic units after interior wet work is dry.

1.11 EXTRA STOCK

A. Provide extra quantity of acoustic units under provisions of Section 01700.

B. Provide one (1) carton of extra panels to Owner.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - SUSPENSION SYSTEM

A. Donn Corporation.

B. Chicago Metallic.

C. Conwed.

D. Substitutions under provisions of Section 01600.

2.02 SUSPENSION SYSTEM MATERIALS

A. Standard Grid: ASTM C635, intermediate non-fire rated exposed T-components die cut and interlocking.

B. Accessories: Stabilizer bars, hold-down clips, splices, edge moldings as required for suspended grid system.

2.02 C.

C. Grid Materials: Commercial quality cold rolled steel with galvanized coating or cold rolled aluminum.

D. Grid Finish: Color as selected.

E. Support Channels and Hangers: Galvanized steel; size and type to suite application, to rigidly secure acoustic ceiling system including integral mechanical and electrical components with maximum deflection of 1/360.

2.03 ACCEPTABLE MANUFACTURERS - ACOUSTIC UNITS

A. Armstrong.

B. Gold Bond.

C. Conwed.

D. Substitutions: Under provisions of Section 01600.

2.04 ACOUSTIC PANELS

A. Non-rated 2x2 grid ceilings: Armstrong, minatex, tegular, 24 inch x 24 inch x 5/8 inch, lay-in panel, Item 778, NRC .50-.60, LR-4 flame spread 0-25.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify that existing conditions are ready to receive work.

B. Verify that layout of hangers will not interfere with other work.

C. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

A. Install system in accordance with manufacturer's instructions and as supplemented in this Section.

B. Install system capable of supporting imposed loads to a deflection of 1/360 maximum.

C. Install after major above ceiling work is complete. coordinate the location of hangers with other work.

3.02 D.

D. Supply hangers or inserts for installation to Section 05310 with instructions for their correct placement. If metal deck is not supplied with hanger tabs, coordinate the installation of hanger clips during steel deck erection. Provide additional hangers and inserts as required.

E. Hang system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

G. Center system on room axis leaving equal border units according to reflected plan.

H. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 6 inches of each corner; or support components independently.

I. Do not eccentrically load system, or product rotation of runners.

J. Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths. Miter corners. Provide edge moldings at junctions with other interruptions. Field rabbett panel edge. Where round obstructions occur, provide preformed closers to match edge molding.

K. Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.

L. Lay directional patterned units one way with pattern parallel to longest room axis. Fit border neatly against abutting surfaces.

M. Install acoustic units level, in uniform plane, and free from twist, warp and dents.

N. Install hold-down clips to retain panels tight to grid system within 20 ft. of an exterior door, for fire rated ceilings, and at Gymnasium ceiling.

3.03 TOLERANCES

A. Variation from Flat and Level Surface: 1/8 inch in 10 ft.

B. Variation from Plumb of Grid Members Caused by Eccentric Loads: Two degrees maximum.

END OF SECTION

SECTION 09650

RESILIENT FLOORING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Preparation of substrate surfaces.
- B. Application of vinyl composition tile.
- C. Application of vinyl conductive flooring.
- D. Application of rubber base.
- E. Cleaning of all surfaces and areas of work.

1.02 RELATED WORK

- A. Section 03300 - Cast-In-Place Concrete: Finish trowelling of floor slab.
- B. Section 09688 - Carpet Glue Down.

1.03 SAMPLES

- A. Submit complete palette of manufacturers standard color samples in accordance with Section 01300.
- B. Include duplicate 12 inch x 12 inch sized samples of each flooring material, color and pattern selected.
- C. Include duplicate standard samples of base, nosing, edge strips, selected.

1.04 DELIVERY AND STORAGE OF MATERIALS

- A. Deliver materials to the job in manufacturer's original unopened containers with brand name, style, color and run number clearly marked thereon. Do not open containers or remove markings until materials are inspected and accepted.
- B. Store materials in original containers at not less than 70°F (21°C) and 90°F (32°C) for not less than 24 hours before and 48 hours after installation.

1.05 EXTRA MATERIAL

- A. Deliver 100 square feet of each color and pattern of floor material required for project, for maintenance use.

1.05 B.

B. Deliver 1 carton of base material for each size, color and pattern, and 2 pieces edge strips for maintenance use.

C. Clearly identify each box/roll.

D. Provide signed receipt from Owner as proof of Delivery.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Brand names are used as a basis of quality and pattern and are not intended to limit competition. Items of same function and performance are acceptable in conformance with conditions for prior approved equal per Division 1 - General Requirements.

2.02 FLOOR COVERING MATERIALS

A. Vinyl Composition Tile (VCT: "Imperial Modern Series" as manufactured by Armstrong 12"x12"x1/8" gauge. Color as selected by Architect from standard palette.

B. Vinyl Conductive Flooring: Anti-static sheet H.D. 2.00mm, 88 oz./sq.yd. "Unifloor Select Super PVC" as manufactured by Datwyler or "Anti Stat" as manufactured by Tarkett. Colors selected from standard palette of colors.

2.03 BASE

A. Base: Conforming to FS SS-W-40, Type I rubber; top set coved, and straight (at carpets), 4 inch high, 1/8 inch thick including premolded end stops and external corners, colors as selected by Architect from standard color palette, manufactured by Burke or Johnson Rubber Company.

2.04 ACCESSORIES/ADHESIVES/SEALERS

A. Reducer Strips: (Carpet), undercut type, vinyl thickness to match, glue-down type carpet, color as selected by Architect, "Imperial Reducer" as manufactured by Mercer Plastics Co.

B. Reducer Strips: (Tile), 1 inch, vinyl, color as selected by Architect, Stock No. 63, as manufactured by Mercer Plastics Co.

C. Tile and Carpet Joiner: Undercut type, vinyl, color as selected by Architect, Stock No. 15, as manufactured by Mercer Plastics Co. (Verify carpet thickness).

D. Sub-Floor Filler: White premix latex, mix with water to produce cementitious paste.

E. Primers and Adhesives: Waterproof, of types recommended by resilient flooring manufacturer for specific material.

2.04 F.

F. Sealer and Wax: Type recommended by resilient flooring material manufacturer for material type and location.

PART 3 - EXECUTION

3.01 SITE AND SUBSTRATE CONDITIONS

- A. Ensure floor surfaces are smooth and flat with maximum variation of 1/8 inch in 10 feet.
- B. Ensure concrete floors are dry (maximum 7% moisture content) and exhibit negative alkalinity, carbonization or dusting.
- C. Maintain minimum 70°F (21°C) air temperature at flooring installation area for 3 days prior to, during, and for 24 hours after installation.
- D. Store flooring materials in area of application. Allow 3 days for material to reach equal temperature as area.

3.02 LEVELING

- A. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- B. Clean floor and apply, trowel and float filler to leave smooth, flat hard surface. Prohibit traffic until filler is cured.

3.03 INSTALLATION - VINYL COMPOSITION TILE

- A. Clean substrate. Spread cement evenly in quantity recommended by manufacturer to ensure adhesion over entire area of installation. Spread only enough adhesive to permit installation of flooring before initial set.
- B. Install with minimum tile width 1/2 full size at room or area perimeter to square grid pattern with all joints aligned, with pattern grain of tile all in one direction and parallel to length of room.
- C. Terminate resilient flooring at centerline of door openings where adjacent floor finish is dissimilar.
- D. Install reducer strips at unprotected or exposed edges where flooring terminates.
- E. Provide tile/carpet joiner and reducers where required.
- F. Scribe flooring to walls, columns, cabinets, floor outlets and other appurtenances to produce tight joints.

3.04 INSTALLATION - ANTI STATIC SHEET

A. Follow manufacturer's printed instructions to provide an integrated antistatic floor and base system, using conductive adhesives as approved by manufacturer. Provide heat-welded seams, using tools and techniques of manufacturer (must be strictly adhered to). All seams grooved to 70% depth in V-groove pattern and hot air seam welded, using Datwyler conductive welding rods.

3.05 INSTALLATION - BASE

A. Install cove base at all "hard" surface floor areas.

B. Install straight base (carpet base) at all areas to receive carpet prior to placement of carpet.

C. Fit joints tight and vertical. Maintain minimum measurement of 18 inches between joints.

D. Miter internal corners. Use premolded sections for external corners and exposed ends.

E. Install base on solid backing. Adhere tightly to wall and floor surfaces.

F. Scribe and fit to door frames and other obstructions.

G. Install straight and level to variation of plus or minus 1/8 inch over 10 feet.

3.06 INSTALLATION - MISCELLANEOUS ACCESSORIES

A. Carpet Reducer Strips and Miscellaneous Accessories

1. Install at all carpet edges in transition from carpet to other flooring material.

2. Provide uniform joining pattern with smooth unobtrusive joint to stair nosings.

3.07 PROTECTION

A. Prohibit traffic from floor finish for 48 hours after installation.

3.08 CLEAN-UP

A. Remove excess adhesive from floor, base and wall surfaces without damage.

3.08 B.

B. Clean, seal and wax floor and base surfaces in accordance with manufacturer's recommendations.

C. Do not wax antistatic sheet floor materials, and clean only per manufacturer's printed instructions.

****END OF SECTION****

SECTION 09688

CARPETING GLUE DOWN

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Prepare surfaces to receive carpeting.
- B. Apply glue down carpeting on floor, risers and base surfaces where indicated, complete with required accessories. See Section 09650.
- C. Install edge strips where carpeting terminates at other floor finishes. See Section 09650.

1.02 RELATED WORK

- A. Section 03300: Finish trowelling of concrete floor slabs.
- B. Sections 08700: Thresholds for door openings.

1.03 REFERENCE STANDARDS

- A. FS DDD-C-0095 - Carpet and Rugs, Wool, Nylon, Acrylic, Modacrylic, Polyester, Polypropylene.

1.04 QUALITY ASSURANCE

- A. By Manufacturer:
 - 1. Furnish roll numbers and other information which will enable identification of certified carpet. Inspect all carpet after manufacture for manufacturing defects.
 - 2. Inspect surfaces to receive carpet. Recommend accessory materials; consult with installer for proper installation procedures. Guarantee secondary backing for life of installation. Guarantee shall cover full value of replacement and installation of carpet.
 - 3. Approve the installing carpet contractor.
- B. By Installer:
 - 1. Review manufacturer's recommendations and recommend in writing to Architect variations required to assure installation guarantee.
 - 2. Guarantee installation to hold carpet firmly and tightly in place without seam openings, wrinkling, creeping, edge loosening, or seam raveling for two (2) years minimum. Guarantee shall cover full value of installation and material requiring replacement due to installation defects.
 - 3. Provide to Owner a seven (7) year wear guarantee from manufacturing defects by the manufacturer.

1.05 SUBMITTALS

A. Manufacturer's certification that register number of rolls furnished was manufactured in accord with specification requirements, and that all carpet is from the same run.

B. Within thirty (30) days after award of contract, submit manufacturer's acknowledgement of receipt of order and preliminary seaming diagrams. A final seaming diagram will be submitted prior to carpet installation and shall reflect field conditions and be approved by Owner.

C. Upon shipment of carpet, manufacturer provide separate certificate of flame spread rating for carpet in shipment.

1.06 DELIVERY AND STORAGE

A. All carpet delivered to job site in original mill wrappings.

B. Each roll to have its register number properly marked on each bale.

C. Store under cover in dry, well ventilated spaces as soon as delivered to job site.

D. Protect from damage, dirt, stains and moisture.

1.07 OVERAGE AND SCRAPS

A. Scraps and trimmings over 3' in any one dimension neatly packaged in small quantities and delivered to the Owner at project. Include as overage one (1) piece of carpet of each color not less than twenty-four (24) feet by carpet width.

1.08 TESTING

A. Provide in bid price cost for testing, by an Owner-approved independent testing laboratory, the cost of testing one sample of each color and type of carpet to be used on the project, cut directly from rolls of carpet to be incorporated into the project.

B. Testing shall be for the following, with copies forwarded direct to the Owner from the testing laboratory:

1. Yarn face weight
2. Yarn density
3. Gauge
4. Stitches per inch
5. Tuft bind
6. Back delamination
7. Weight density factor

1.09 JOB ENVIRONMENT

A. Do not commence with carpet installation until painting and finishing work is complete and ceilings and overhead work tested, approved and completed.

B. Maintain room temperature at minimum 60°F for at least 24 hours prior to installation and relative humidity at approximately that at which the area is to be maintained.

C. Provide sufficient lighting.

1.10 GUARANTEE

A. Carpet material and installation guaranteed for a minimum of two (2) years from date of installation against defects in material and workmanship, against wear, edge ravel, wrinkling, creeping, seam raveling or opening, if carpet is properly maintained.

B. In addition, manufacturer shall provide five (5) year guarantee that carpet maintain specified levels of static control.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Brand names indicated are to provide a standard of quality only and are not intended to limit competition. Other manufacturers must meet the same quality standards as specified and be prior approved as per procedures outlined in Division 1 - General Requirements.

2.02 MATERIALS

| | | |
|---------|--|---|
| Mohawk: | A. Carpet - "Supertron" woven level loop, as manufactured by | |
| | 1. Yarn | Antron III |
| | 2. Ply | 4 |
| | 3. Dye Method | Solution |
| | 4. Pile Heights | .230 |
| | 5. Pile Weight | 30 oz./Sq. Yd. |
| | 6. Backing | Synthetic |
| | 7. Total Weight | 70 oz./Sq. Yd. |
| | 8. Width | 12' |
| | 9. Weave | Woven Interlock |
| | 10. Tuft Bind | 40 lbs. |
| | 11. Flammability Rating | Steiner Tunnel Test ASTM-E-84 Class B Rating |
| | 12. Flame Spread | 50 Fuel Contribution: 30 |
| | Smoke Density | 50 |
| | 13. Color | As selected by Architect. |
| | 14. Maximum Electro- static Charge | 3 KV at 20% R.H. |

3.01 B.

B. Adhesive and Concrete Primer: Type recommended by carpet manufacturer to suit application and expected service. Peel-up type.

C. Edge Strips: As per Section 09650.

PART 3 - EXECUTION

3.01 PREPARATION OF SURFACES

A. Clean floors of dust, dirt, solvents, oil, grease, paint, plaster and other substances detrimental to proper performance of adhesive and carpet. Allow floors to thoroughly dry.

B. Ensure floors are level, with maximum surface variation of 1/4 inch in 10 feet noncumulative.

C. Ensure concrete floors are free from scaling and irregularities and exhibit neutrality relative to acidity and alkalinity.

D. Use an approved cementitious filler to patch cracks, small holes and for levelling.

3.02 INSTALLATION

A. Manufacturer's recommended procedure for installation must be strictly followed. Only workmen skilled in the installation of carpet shall be employed for this work.

B. Unsatisfactory installation resulting from work performed not in accordance with manufacturer's recommendations shall be the responsibility of the floor covering installer and may result in the removal and reinstallation of carpet at his expense.

C. Seam Diagram: Install carpet in accord with Owner-approved seam diagram prepared by carpet installer. Diagram shall show location of all seams and location and types of all carpet, metal and accessories. Seam layout provide minimum total seam length with minimum head seams. Head seams not to be located in heavy traffic areas.

1. Color patterns for carpeting shall also be indicated showing location of seams coordinated with pattern.

D. Examine carpet rolls before cutting, for correct material, color, pattern as per approved samples.

E. Cut and fit sections of carpet, at least two (2) strips for each space being covered, prior to application of adhesive. Cement the edges of the backing together in accordance with manufacturer's instructions, remove adhesive from face immediately upon exposure.

3.02 F.

- F. Lay out rolls of carpet full for Architect/Engineer's approval.
- G. Check matching of carpet before cutting and ensure there is no visible variation between dye lots.
- H. Cut carpet, where required, in manner to allow proper seam and pattern match. Ensure cuts are straight and true and unfrayed.
- I. Where possible and practical, locate seams in areas of least amount of traffic.
- J. Join seams in recommended manner so as not to detract from the appearance of the carpet installation and decrease its life expectancy. Ensure seams are straight, not overlapped or peaked and free of gaps.
- K. Vacuum clean substrate. Spread adhesive in quantity recommended by manufacturer after primer application to ensure proper adhesion over full area of installation. Apply only enough adhesive to permit proper adhesion of carpet before initial set.
- L. Lay carpet on floors with the run of the pile in same direction of anticipated traffic. Lay carpet on stairs with run of the pile in opposite direction of anticipated traffic to avoid peeking of backing at nosing.
- M. Do not change run of pile in any one room or from one room to next where continuous through a wall opening.
- N. Cut and fit carpet neatly around projections through floor and to walls and other vertical surfaces.
- O. Fit carpet snugly to walls or other vertical surfaces where no base is scheduled, leaving no gaps.
- P. Do not place heavy objects such as furniture on carpeted surfaces for minimum of 24 hours or until adhesive is set.
- Q. Entire carpet installation is to be laid tight and flat to subfloor, well fastened at edges and present a uniform pleasing appearance. Ensure monolithic color, pattern and texture match within any one area.
- R. Install edging strips where carpet terminates at other floor coverings. Use full length pieces only. Butt tight to vertical surfaces. Where splicing cannot be avoided, butt ends tight and flush.
- S. Install stair nosings full width of tread, in one continuous piece where indicated. Adhere over center surface and fit accurately and securely. Adhere carpet tight to treads and risers. Butt carpet on treads and risers tight to nosings.

3.03 CLEANING AND PROTECTION

A. Protect carpet as required during remainder of construction period, so that carpet will be in undamaged and unsoiled condition at time of acceptance. Use non-staining cover material for protective cover.

B. Remove all excess material under 3'-0" square and all other debris. Clean all adhesive spots on carpet with solvent recommended for this use by manufacturer. Remove all loose pieces of face yarn with sharp scissors. Vacuum entire carpet surface.

C. Protect all walls and trim from carpet adhesive and remove all such soilings from surface immediately.

3.04 MAINTENANCE

A. Carpet manufacturer furnish to Owner three (3) printed copies of "Care, Cleaning and Maintenance", recommended for fiber floor covering installed.

B. At completion of installation, manufacturer to conduct a maintenance seminar, with Owner's maintenance personnel, in order to physically instruct maintenance procedures as outlined and indicated in printed manufacturer's data.

END OF SECTION

SECTION 09876

PLASTIC LINING FOR STRUCTURES

PART 1--GENERAL

1.01 DESCRIPTION

A. SCOPE:

This section specifies material, design criteria, and labor required to furnish and install polyvinylchloride (PVC) liner for reinforced concrete structures. Plastic lining for reinforced concrete pipe is specified in Section 15056.

B. APPLICATION:

Where indicated on the drawings, the interior surfaces of structures shall be lined with cast-in-place PVC lining conforming to the requirements of this section.

1.02 QUALITY ASSURANCE

A. PERFORMANCE AND DESIGN REQUIREMENTS:

1. GENERAL: Materials furnished under this section shall be suitable for exposure to wastewater from a municipal collection system containing some industrial wastes. The wastewater may be expected to contain gross waste solids, vegetable parts, small sections of lumber, rocks, sand, silt, petroleum products, industrial solvents, and animal fats and oils. The wastewater will have a temperature of 45 degrees F to 95 degrees F and will have a pH which may range from 6 to 8. All lining shall be impermeable to sewage gases, sewage liquids, sewage treatment chemicals and shall be nonconductive to bacterial or fungus growth.

All materials, adhesives and incidentals necessary for proper application of plastic lining shall be furnished by the same manufacturer and shall be compatible with each other and with the adhesives employed.

2. DESIGN REQUIREMENTS:

a. GENERAL: The lining shall withstand a 40 psig back pressure applied to the under surface of the lining without losing anchorage or without rupture.

1.02 A.2.a.

All plastic liner sheets, joint, corner and welding strips shall have the following physical properties when tested at 77 ± 5 degrees F:

| <u>Property</u> | <u>Initial</u> | <u>After 112 days</u> |
|-------------------------|-----------------|---|
| Tensile strength | 2,200 psi min | 2,100 psi min |
| Elongation at breadth | 200 percent min | 200 percent min |
| Shore durometer, Type D | 1 sec 50-60 | ± 5 with respect to initial test result |
| Weight change | -- | ± 1.5 percent |

b. TESTING: All lining shall be factory checked electrically to ensure freedom from porosity and imperfections.

After the installation is complete, all surfaces covered with lining, including welds, shall be tested by the Construction Manager with an approved contractor-furnished electrical holiday or flow detector with the instruments to be set between 15,000 and 20,000 volts. All welds shall be physically tested by nondestructive proving methods.

Each transverse welding strip which extends to a lower edge of the liner will be tested by the Construction Manager. The welding strips shall extend 2 inches below the liner to provide a tab. A 10-pound pull shall be applied to each tab. The force shall be applied normal to the face of the structure by means of a spring balance. The liner adjoining the welding strip shall be held against the concrete during application of the force. The 10-pound pull shall be maintained if a weld failure develops, until no further separation occurs. Defective welds shall be retested after repairs have been made. Tabs shall be trimmed away neatly by the installer of the liner after the welding strip has passed inspection. Inspection shall be made within 2 days after joint has been completed in order to prevent tearing the projecting weld strip and consequent damage to the liner from equipment and materials used in or taken through the work.

Liner plate locking extensions embedded in concrete shall withstand a test pull of at least 100 pounds per linear inch applied perpendicular to the concrete surface for a period of 1 minute, without rupture of the locking extensions or withdrawal from embedment. This test shall be made at a temperature between 70 degrees F to 80 degrees F.

B. STANDARDS:

Tensile specimens shall be prepared and tested in accordance with ASTM D412 using die B.

PART 2--PRODUCTS

2.01 MATERIALS

Plastic lining shall be T-lock Amerplate as manufactured by Ameron Corporation, Brea, California, or Koroseal Lock-Rib as manufactured B. F. Goodrich Corporation, or equal. The lining material shall be PVC, white in color, compounded of inert synthetic resins, pigments and plasticizers to make permanently flexible sheets. The sheets shall be formed with T-rib extensions on one face for casting with the concrete and shall not rely upon an adhesive bond for adherence to the concrete surface.

Liner sheets shall be a nominal 0.065 inch in thickness. Locking extensions of the same material as that of the liner shall be integrally extruded with the sheet. Locking extensions shall be approximately 2.5 inches apart and shall be at least 0.375 inch high. Joint strips and welding strips shall have the same corrosion resistance as the sheet lining material but shall not have locking extensions. Liner sheets, including locking extensions, all joint, corner, and welding strips, shall be free of cracks, cleavages, or other defects adversely affecting the protective characteristics of the material. All lining shall have good impact resistance and shall have an elongation sufficient to bridge up to 1/4-inch settling cracks which may occur after installation without damage to the lining sheets.

2.02 PRODUCT DATA

In accordance with paragraph 00710-4.02, the following information shall be provided:

1. Physical property, chemical resistance, and quality control test data.

PART 3--EXECUTION

3.01 INSTALLATION

Plastic lining sheets shall be closely fitted and properly secured to the inner forms prior to any concreting operation. On vertical surfaces, liner sheets shall be placed so that locking ribs run vertically. Where liner sheets terminate on vertical surfaces, double termination ribs shall be in the horizontal direction. All joints shall be protected and made mortartight. During placement and consolidation of concrete, the Contractor shall exercise caution not to damage the lining and the joints. After all forms have been removed, nails, form ties and protruding wire or metal objects shall be cut back from the surface and holes

3.01

filled with grout and pointed flush, then weld strips applied. All work shall be done in strict conformance with the specifications, instructions and recommendations of the lining manufacturer. All pipes, conduits and sleeves passing through the lining shall be flashed as recommended by the manufacturer. All defective joints, wrinkles and areas which do not bond to concrete shall be repaired as directed by the Construction Manager.

END OF SECTION

SECTION 09900

COATING SYSTEMS

PART 1--GENERAL

1.01 DESCRIPTION

A. SCOPE:

This section specifies coating systems, surface preparations, and application requirements.

B. DEFINITIONS:

Specific coating terminology used in this section is in accordance with definitions contained in ASTM D16 and ASTM D3960 and the following definitions:

1. Dry Film Thickness (DFT): The thickness of one fully cured continuous application of coating.
2. Field Coat: The application or the completion of application of the coating system after installation of the surface at the site of the work.
3. Shop Coat: One or more coats applied in a shop or plant prior to shipment to the site of erection or fabrication, where the field or finishing coat is applied.
4. Tie Coat: An intermediate coat used to bond different types of paint coats. Coatings used to improve the adhesion of a succeeding coat.
5. Vinyl Acid Wash Coat: A coating supplied as one- or two-component systems on clean light alloy or ferrous surfaces, and on many nonferrous surfaces, to provide adhesion with the substrates, and for the application of subsequent coats of paint.
6. Photochemically Reactive Organic Material: Any organic material that will react with oxygen, excited oxygen, ozone or other free radicals generated by the action of sunlight on components in the atmosphere giving rise to secondary contaminants and reaction intermediates in the atmosphere which can have detrimental effects.
7. Volatile Organic Content: The portion of the coating that is a compound of carbon, is photochemically reactive, and evaporates during drying or curing, expressed in grams per liter or pounds per gallon.

1.01 B.

8. Touch-Up Painting: The application of a paint on small areas of painted surfaces to repair marks, scratches, and small areas where the coating has deteriorated to restore the coating film to an unbroken condition.

1.02 QUALITY ASSURANCE

A. REFERENCES:

This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

| <u>Reference</u> | <u>Title</u> |
|---|---|
| ANSI Z55.1-67 (1973) | Gray Finishes for Industrial Apparatus and Equipment |
| ASTM D16-84 | Standard Definitions of Terms Relating to PAINT, VARNISH, LACQUER, AND RELATED PRODUCTS |
| ASTM D2200-67 Reapproved 1980 (SSPC-Vis1-67T) | Pictorial Surface Preparation Standards for Painting Steel Surfaces |
| ASTM D3359-83 | Methods for Measuring Adhesion by Tape Test--Method A |
| F 595A-68 | Federal Standard Colors |
| SSPC-82 | Steel Structures Painting Council Specifications, Vol. 2 |

B. STANDARDIZATION:

Materials and supplies provided shall be the standard products of manufacturers. Materials in each coating system shall be the products of a single manufacturer.

The standard products of manufacturers other than those specified will be accepted when it is demonstrated to the Construction Manager that they are equal in composition, durability, usefulness, and convenience for the purpose intended. Requests for substitutions, in accordance with paragraph 00710-4.06, will be considered, provided the following minimum conditions are met:

1.02 B.

1. The proposed coating system shall use an equal or greater number of separate coats to achieve the required dry film thickness.
2. The proposed coating system shall use coatings of the same generic type as that specified.
3. Requests for substitution shall have directions for application and descriptive literature which includes generic type, percent solids by volume, volatile organic content (grams per liter), and information confirming that the substitution is equal to the specified coating system.
4. The Contractor shall provide a list of references where paint of the same generic type has been applied. The reference list shall give the project name, city, state, owner, phone number of owner, coating system reference and number, and year paint was applied.

1.03 DELIVERY AND STORAGE

Materials shall be delivered to the job site in their original, unopened containers. Each container shall bear the manufacturer's name, coating type, batch number, date of manufacture, storage life, and special directions.

Materials shall be stored in enclosed structures and shall be protected from weather and excessive heat or cold. Flammable materials shall be stored in accordance with state and local codes. Materials exceeding storage life recommended by the manufacturer shall be removed from the site.

1.04 SPARE SUPPLIES

The Contractor shall provide one unbroken gallon container of each color and type of paint and each type of solvent and thinner required by the specification. These spare paint supplies shall be stored as required in paragraph 09900-1.03 until delivery is requested by the Construction Manager.

PART 2--PRODUCTS

2.01 MATERIALS

The following list specifies the material requirements for coating systems. Coating systems are categorized by generic name followed by an identifying abbreviation. If an abbreviation has a suffix number, it is for the purpose of identifying subgroups within the coating system.

| <u>Coating system</u> | <u>Manufacturer</u> | <u>Product designation</u> | |
|-----------------------|---------------------|----------------------------|-----------------------|
| | | <u>Prime coat(s)</u> | <u>Finish coat(s)</u> |
| <u>Coal Tar Epoxy</u> | | | |
| CTE-1 and CTE-2 | Koppers | Bitumastic 300M | Bitumastic 300M |
| | Porter | Maxi Build II | Maxi Build II |
| | Glidden | 5270/5271 | 5270/5271 |
| | Tnemec | 46-H413 | 46-H413 |
| | Carboline | Carbomastic 18 | Carbomastic 18 |
| | Valspar | 64-R-3 | 64-J-5 |
| | Ameron | 78HB | 78HB |
| | Engard | 463 | 463 |
| | Napko | 538 | 538 |
| | Cook | 920-B-930 | 920-B-930 |
| <u>Epoxy</u> | | | |
| E-1 | Koppers | Hi Guard Epoxy | Glamor Glaze 200 |
| | Porter | Magna-Prime | 7510 Series |
| | Glidden | 5430 Series | 5430 Series |
| | Tnemec | Series 66 | Series 66 |
| | Carboline | D890 | D890 |
| | Valspar | 13-R-56 | 32-W-71 |
| | Ameron | Amerlock 400 | Amerlock 400 |
| | Engard | 480 | 480 |
| | Napko | Chemfast 547 | Chemfast 560 |
| | Cook | 920-Y-143 | 920-W-275 |
| E-2 | Koppers | Hi Guard Epoxy | Hi Guard Epoxy |
| | Porter | MCR-65 | MCR-65 |
| | Glidden | 5430 Series | 5430 Series |
| | Tnemec | Series 66 | Series 66 |
| | Carboline | D890 | D890 |
| | Valspar | 264-W-2 | 264-W-2 |
| | Ameron | Amerlock 400 | Amerlock 400 |
| | Engard | 480 | 480 |
| | Napko | Chemfast 100 | Chemfast 100 |
| | Cook | 920-W-A01 | 920-W-297 |
| E-3 | Koppers | Hi Guard Epoxy | Hi Guard Epoxy |
| | Porter | MCR-65 | MCR-65 |
| | Glidden | 5430 Series | 5430 Series |
| | Tnemec | Series 66 | Series 66 |
| | Carboline | D890 | D890 |
| | Valspar | 32-W-71 | 32 Series |
| | Ameron | Amerlock 400 | Amerlock 400 |
| | Engard | 480 | 480 |
| | Napko | Chemfast 100 | Chemfast 100 |
| | Cook | 920-W-965 | 920-W-965 |

| Coating system | Manufacturer | Product designation | |
|--------------------------|--------------|---------------------|------------------|
| | | Prime coat(s) | Finish coat(s) |
| <u>Epoxy (continued)</u> | | | |
| E-4 | Koppers | Hi Guard Epoxy | Hi Guard Epoxy |
| | Porter | MCR-65 | MCR-65 |
| | Glidden | 5430 Series | 5430 Series |
| | Tnemec | 54-660 | Series 66 |
| | Carboline | D890 | D890 |
| | Valspar | 32-W-71 | 32 Series |
| | Ameron | Amerlock 400 | Amerlock 400 |
| | Engard | 400 | 400 |
| | Napko | Chemfast 547 | Chemfast 560 |
| Cook | 331-W-077 | 920-W-275 | |
| E-5 | Koppers | Hi Guard Epoxy | Hi Guard Epoxy |
| | Porter | 7536 | 7530 |
| | Tnemec | 66-1211 | 66-AA90 |
| | Carboline | 191 | 191 |
| | Valspar | 32-W-9 | 32-D-7 |
| | Ameron | 395 | 395 |
| | Engard | 460 | 460 |
| | Napko | Chemfast 547 | Chemfast 547 |
| | Cook | 920-W-965 | 920-W-965 |
| E-6 | Koppers | Hi Guard Epoxy | Hi Guard Epoxy |
| | Porter | 7536 | 7530 |
| | Tnemec | 66-1255 | 66-AA90 |
| | Carboline | 191 | 191 |
| | Valspar | 32-W-71 | 32 Series |
| | Ameron | 395 | 395 |
| | Engard | 460 | 460 |
| | Napko | Chemfast 547 | Chemfast 547 |
| | Cook | 920-W-965 | 920-W-965 |
| E-7 | Koppers | Glamor Glaze 200 | Glamor Glaze 200 |
| | Porter | 7510 Series | 7510 Series |
| | Glidden | 5430 Series | 5430 Series |
| | Tnemec | Series 66 | Series 66 |
| | Carboline | D890 | 133 HB |
| | Valspar | 89-W-72 | 89 Series |
| | Ameron | Amerlock 400 | Amerlock 400 |
| | Engard | 400 | 400 |
| | Napko | Chemfast 560 | Chemfast 560 |
| Cook | 920-Y-143 | 920-W-297 | |
| E-8 | Koppers | Glamor Glaze 200 | Glamor Glaze 200 |
| | Glidden | 5433 | 5433 |
| | Ameron | 105 | 105 |
| | Napko | Chemfast 560 | Chemfast 560 |
| | Cook | 920-C-230 | 920-C-230 |

| <u>Coating system</u> | <u>Manufacturer</u> | <u>Product designation</u> | |
|--------------------------|---------------------|----------------------------|---------------------------|
| | | <u>Prime coat(s)</u> | <u>Finish coat(s)</u> |
| <u>Coal Tar Solution</u> | | | |
| CTS | Koppers | Bitumastic 50 | Bitumastic 50 |
| | Porter | Tarmastic 100 | Tarmastic 100 |
| | Tnemec | 47-461 | 47-461 |
| | Carboline | Carbomastic 18 | Carbomastic 18 |
| | Valspar | 35-J-10 | 35-J-10 |
| | Ameron | 78HB | 78HB |
| | Engard | 800 | 800 |
| <u>Grease</u> | | | |
| G | Koppers | | Inertol Grease |
| | Texaco | | Rust Inhibitive Grease |
| | Chevron | | E.P. Roller Grease |
| <u>High Heat</u> | | | |
| HH-1 | Koppers | P1500 | P1500 |
| | Porter | Zinc Lock 371 | Zinc Lock 371 |
| | Glidden | 5536/5537 | 5536/5537 |
| | Tnemec | 90E92 | 90E92 |
| | Carboline | Zinc 11 | Zinc 11 |
| | Valspar | 13-G-17 | 13-G-17 |
| | Ameron | Dimetcote 4 | Dimetcote 4 |
| | Engard | 519 | 519 |
| | Napko | Zincprime 5Z | Zincprime 5Z |
| | Cook | 411-A-200 | 411-A-200 |
| HH-2 | Koppers | Bitumastic High Heat Gray | Bitumastic High Heat Gray |
| | Porter | 1501 | 1501 |
| | Glidden | 5542 | 5542 |
| | Tnemec | 39-1030 | 39-1030 |
| | Carboline | 4631 | 4631 |
| | Valspar | 537-A-1 | 537-A-1 |
| | Ameron | 878 | 878 |
| | Engard | 240 | 240 |
| | Napko | HT-10 | HT-10 |
| | Cook | 100-A-518 | 100-A-518 |

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| <u>Coating system</u> | <u>Manufacturer</u> | <u>Product designation</u> | |
|-----------------------|---------------------|----------------------------|-----------------------|
| | | <u>Prime coat(s)</u> | <u>Finish coat(s)</u> |
| <u>Urethane</u> | | | |
| U | Koppers | Hi Guard Epoxy | 1122-B |
| | Porter | Magna-Prime | Hythane Super |
| | Glidden | 5430 Series | 10407/10168 |
| | Tnemec | Series 66 | 73 Color |
| | Carboline | D890 | 133 HB |
| | Valspar | 13-R-56 | 540 Series |
| | Ameron | Amerlock 400 | Amershield |
| | Engard | 480 | 428 HS |
| | Napko | Chemfast 547 | Prufthane 359 |
| | Cook | 920-Y-143 | 975 Series |
| <u>Latex</u> | | | |
| L-1 | Koppers | 620 | 620 |
| | Porter | 3400 | 3410 Series |
| | Glidden | 3700 Series | 3700 Series |
| | Tnemec | Series 7 | Series 7 |
| | Carboline | 550 DW | 550 DW |
| | Valspar | 79-W-81 | 79 Series |
| | Engard | 236 | 236 |
| | Napko | Prufclad 426 | Prufclad 426 |
| | Cook | 827 Series | 827 Series |
| | L-2 | Porter | 3400 |
| Glidden | | 6900 Series | 6900 Series |
| Tnemec | | Series 7 | Series 7 |
| Carboline | | 3300 | 3300 |
| Valspar | | 79-W-81 | 79 Series |
| Engard | | 230 | 230 |
| Napko | | Prufclad 426 | Prufclad 426 |
| Cook | | 827 Series | 827 Series |
| L-3 | Koppers | 620 | 620 |
| | Porter | 3400 | 3410 Series |
| | Glidden | 590 | 3700 Series |
| | Tnemec | Series 19 | Series 7 |
| | Valspar | 79-W-81 | 79 Series |
| | Engard | 126 HS | 236 |
| | Napko | Prufclad 426 | Prufclad 426 |
| | Cook | 391-N-167 | 827 Series |

2.01

| <u>Coating system</u> | <u>Manufacturer</u> | <u>Product designation</u> | |
|--------------------------|---------------------|----------------------------|--------------------------|
| | | <u>Prime coat(s)</u> | <u>Finish coat(s)</u> |
| <u>Latex (continued)</u> | | | |
| L-4 | Koppers | 620 | 620 |
| | Porter | 515 | 3410 Series |
| | Glidden | 555 | 3700 Series |
| | Tnemec | 36-603 | Series 7 |
| | Carboline | 8029 | GP 62 |
| | Valspar | 79-W-81 | 79 Series |
| | Engard | 236 | 236 |
| | Napko | Prufclad 426 | Prufclad 426 |
| | Cook | 383-W-307 | 827 Series |
| <u>Miscellaneous</u> | | | |
| M-1 | DENSO | System T-1 | System T-1 |
| M-2 | Koppers | Aluminum Epoxy Mastic | Aluminum Epoxy Mastic |
| | Porter | 7900 | 6510 |
| | Glidden | 5475/5476 | 5475/5476 |
| | Tnemec | 50-330 | Series 104 |
| | Carboline | Carbomastic 15 | Carbomastic 15 |
| | Valspar | 75-W-9 | 75-W-9 |
| | Ameron | Amerlock 400 | Amerlock 400 |
| | Engard | 473 | 473 |
| | Napko | Chemfast 547 | Chemfast 547 |
| | Cook | 920-W-354 | 920-W-354 |

2.02 PRODUCT DATA

Before materials are delivered to the job site, the Contractor shall provide the following information in accordance with paragraph 00710-4.02:

1. Manufacturer's standard product data and material safety data sheet for each primer and finish coating.
2. List of materials proposed to be used under this section.
3. Manufacturer's literature and written instructions for surface preparation, mixing and application of each primer and finish coating.

PART 3--EXECUTION

3.01 COATINGS

A. GENERAL:

Coating products shall not be used until the Construction Manager has inspected the materials and the coating manufacturer's technical representative has instructed the Contractor and Construction Manager in the surface preparation, mixing and application of each coating.

B. COATING SYSTEMS:

1. SHOP APPLIED PRIME COAT: Except as otherwise specified, prime coats may be shop- or field-applied. Shop-applied primer shall be compatible with the specified coating system and shall be applied at the minimum dry film thickness recommended by the manufacturer. Product data sheets identifying the shop primer used shall be provided to the on-site finish coat applicator. Adhesion tests shall be performed on the shop primer as specified in paragraph 09900-3.02 A. Damaged, deteriorated and poorly applied shop coatings that do not meet the requirements of this section shall be removed and the surfaces recoated. If the shop primer coat meets the requirements of this section, the field coating may consist of touching up the shop prime coat and then applying the finish coats to achieve the specified film thickness and continuity.

2. FIELD COATS: Field coats shall consist of one or more prime coats and one or more finish coats to build up the coating to the specified dry film thickness. Unless otherwise specified, finish coats shall not be applied until other work in the area is complete and until all previous coats have been inspected.

3.01 C.

C. COATING REQUIREMENTS:

1. EQUIPMENT, NONIMMERSED: All items of equipment, or parts of equipment which are not immersed in service, shall be shop primed and then finish coated in the field after installation with the specified or approved color. The methods, materials, application equipment and all other details of shop painting shall comply with these specifications. If the shop primer requires topcoating within a specified period of time, the equipment shall be finish coated in the shop and then touch-up painted after installation.

2. EQUIPMENT, IMMERSED: All items of equipment, or parts and surfaces of equipment which are immersed when in service, with the exception of pumps and valves shall have all surface preparation and coating work performed in the field.

3. STEEL WATER TANKS: The interior surfaces of steel water tanks or reservoirs shall have all surface preparation and coating work performed in the field.

4. STEEL PIPING: Steel piping shall be prepared in accordance with SSPC SP-6 (Commercial Blast Cleaning) and primed before installation.

3.02 PREPARATION

A. GENERAL:

Surfaces to be coated shall be clean and dry. Before applying coating or surface treatments, oil, grease, dirt, rust, loose mill scale, old weathered coatings, and other foreign substances shall be removed except as specified. Oil and grease shall be removed before mechanical cleaning is started. Where mechanical cleaning is accomplished by blast cleaning, the abrasive used shall be washed, graded and free of contaminants which might interfere with the adhesion of the coatings. The Contractor shall examine all surfaces to be coated and shall correct all surface defects before application of any coating.

Clean cloths and clean fluids shall be used in solvent cleaning. Cleaning and painting shall be scheduled so that dust and spray from the cleaning process will not fall on wet, newly painted surfaces. Hardware, hardware accessories, nameplates, data tags, machined surfaces, sprinkler heads, electrical fixtures, and similar uncoated items which are in contact with coated surfaces shall be removed or masked prior to surface preparation and painting operations. Following completion of coating, removed items shall be reinstalled. Equipment adjacent to walls shall be disconnected and moved to permit cleaning and painting of equipment and walls and, following painting, shall be replaced and reconnected.

3.02 A.

The Contractor shall perform an adhesion test in accordance with ASTM D3359 to demonstrate that (1) the shop coat adheres to the substrate, and (2) the specified field coatings adhere to the shop coat. Test results showing an adhesion rating of 5A on immersed surfaces and 4A or better on all other surfaces shall be considered acceptable. Where unacceptable test results are obtained, the Contractor shall be responsible for removing and reapplying the specified coatings at no expense to the Owner.

B. METALLIC SURFACES:

Metallic surfaces shall be prepared in accordance with applicable portions of surface preparation specifications of the Steel Structures Painting Council (SSPC) specified in each coating system. The solvent in solvent cleaning operations shall be as recommended by the manufacturer.

Preparation of metallic surfaces shall be based upon comparison with SSPC-Vis1-67T (ASTM D2200), and as described herein. To facilitate inspection, the Contractor shall, on the first day of sandblasting operations, sandblast metal panels to the standards specified. Plates shall measure a minimum of 8-1/2 inches by 11 inches. Panels meeting the requirements of the specifications shall be initialed by the Contractor and the Construction Manager and coated with a clear nonyellowing finish. One of these panels shall be prepared for each type of sandblasting and shall be used as the comparison standard throughout the project.

C. DETAILED SURFACE PREPARATION:

Surface preparations for each type of surface shall be in accordance with the specific requirements of each coating specification sheet (COATSPEC).

3.03 APPLICATION

A. WORKMANSHIP:

Coated surfaces shall be free from runs, drops, ridges, waves, laps, and brush marks. Coats shall be applied so as to produce an even film of uniform thickness completely coating corners and crevices. Painting shall be done in accordance with the requirements of SSPC Paint Application Specification No. 1.

The Contractor's equipment shall be designed for application of the materials specified. Compressors shall have suitable traps and filters to remove water and oils from the air. Spray equipment shall be equipped with mechanical agitators, pressure gages, and pressure regulators, and spray nozzles of the proper sizes.

3.03 A.

Each coat of paint shall be applied evenly and sharply cut to line. Care shall be exercised to avoid overspraying or spattering paint on surfaces not to be coated. Glass, hardware, floors, roofs, and other adjacent areas and installations shall be protected by taping, drop cloths, or other suitable measures.

B. PAINT PROPERTIES, MIXING AND THINNING:

Paint, when applied, shall provide a satisfactory film and smooth even surface, and glossy undercoats shall be lightly sanded to provide a surface suitable for the proper application and adhesion of subsequent coats. Paints shall be thoroughly stirred, strained, and kept at a uniform consistency during application. Coatings consisting of two or more components shall be mixed in accordance with the manufacturer's instructions. Where necessary to suit the conditions of the surface, temperature, weather and method of application, the paint may be thinned immediately prior to use. The volatile organic content (VOC) of the coating as applied shall comply with prevailing air pollution control regulations. Unless otherwise specified, paint shall not be reduced more than necessary to obtain the proper application characteristics. Thinner shall be as recommended by the coating manufacturer.

C. ATMOSPHERIC CONDITIONS:

Paints shall be applied only to surfaces that are dry, and only under conditions of evaporation rather than condensation. Paint shall not be applied during rainy, misty weather, or to surfaces upon which there is frost or moisture condensation. During damp weather, when the temperature of the surface to be coated is within 10 degrees F of the dew point, the surfaces shall be heated to prevent moisture condensation thereon. Bare metal surfaces, except those which may be warped by heat, may be dehydrated by flame-heating devices immediately prior to paint application. During painting, and for a period of at least 8 hours after the paint has been applied, the temperature of the surfaces to be painted, the painted surfaces, and the atmosphere in contact shall be maintained at or above 40 degrees F and 10 degrees F above the dew point. Paint, when applied, shall be approximately the same temperature as that of the surface on which it is applied. Fans or heaters shall be used inside enclosed areas where conditions causing condensation are severe.

D. PROTECTION OF COATED SURFACES:

Items which have been coated shall not be handled, worked on, or otherwise disturbed, until the paint is completely dry and hard. After delivery at the site of permanent erection or installation, shop-coated metalwork shall be repainted or retouched with specified paint when it is necessary to maintain the integrity of the film.

E. METHOD OF PAINT APPLICATION:

Where two or more coats are required, alternate coats shall contain sufficient compatible color additive to act as indicator of coverage, or the alternate coats shall be of contrasting colors. Color additives shall not contain lead, or any lead compound which may be destroyed or affected by hydrogen sulfide or any other corrosive gas.

Mechanical equipment, on which the manufacturer's coating is acceptable, shall be touch-up primed and painted with two coats of the specified coating system to match the color scheduled. Electrical and instrumentation equipment specified in Divisions 16 and 17 shall be painted as specified in paragraph 09900-3.03 H.

Paint shall not be applied to a surface until it has been prepared as specified. The primer or first coat shall be applied by brush to ferrous surfaces which are not blast-cleaned. All coats for blast-cleaned ferrous surfaces and subsequent coats for nonblast-cleaned ferrous surfaces may be either brush or spray applied. After the prime coat is dry, pinholes and holidays shall be marked, repaired in accordance with coating manufacturer's recommendations and retested before succeeding coats are applied. Unless otherwise specified, coats for concrete and masonry shall be brushed or rolled.

F. FILM THICKNESS AND CONTINUITY:

Coating system thickness is the total thickness of primer and finish coats.

The surface area covered per gallon of paint for various types of surfaces shall not exceed those recommended by the manufacturer. The first coat, herein referred to as the prime coat, on metal surfaces refers to the first full paint coat and not to any conditioners, vinyl acid wash coats, sealers or other pretreatment applications. Coatings shall be applied to the thickness specified, and in accordance with these specifications. Unless otherwise specified, the average total thickness (dry) of any completed protective coating system on exposed metal surfaces shall be not less than 1.25 mils per coat. The minimum thickness at any point shall not deviate more than 25 percent from the required average. Unless otherwise specified, no less than two coats shall be applied.

In testing for continuity of coating about welds, projections (such as bolts and nuts), and crevices, the Construction Manager will determine the minimum conductivity for smooth areas of like coating where the dry mil thickness has been accepted. This conductivity shall then be taken as the minimum required for these rough or irregular areas. Pinholes and holidays shall be repainted to the required coverage.

3.03 G.

G. SPECIAL REQUIREMENTS:

Before erection, Contractor shall apply all but the final finish coat to interior surfaces of roof plates, roof rafters and supports, pipe hangers, piping in contact with hangers, and all contact surfaces which are inaccessible after assembly. The final coat shall be applied after erection. Structural friction connections and high tensile bolts and nuts shall be painted after erection. Areas damaged during erection shall be hand-cleaned or power-tool cleaned and recoated with primer coat prior to the application of subsequent coats. Touch-up of all surfaces shall be performed after installation. All surfaces to be coated shall be clean and dry at the time of application. Except for those to be filled with grout, the underside of ungalvanized equipment bases and supports shall be coated with at least two coats of primer specified for system E-2 prior to setting the equipment in place.

Where specified, ferrous metal shall receive an inorganic zinc-rich coating containing 84 percent metallic zinc by weight in the applied dry film.

H. ELECTRICAL EQUIPMENT AND MATERIALS:

Electrical equipment and materials shall be coated by the manufacturer as specified below.

1. FINISH: Equipment shall be treated with zinc phosphate, bonderized or otherwise given a rust-preventive treatment. Equipment shall be primed, painted with enamel, and baked. Minimum dry film thickness shall be 3 mils.

Before final acceptance, the Contractor shall touch up any scratches on equipment with identical color paint. Finish shall be smooth, free of runs, and match existing finish. Prior to touching up scratches, Contractor shall fill them with an appropriate filler.

2. COLOR: Exterior color shall be ANSI 61, light gray. Interior shall be painted white. Nonmetallic electrical enclosures and equipment shall be the manufacturer's standard gray color.

I. SAFETY AND VENTILATION REQUIREMENTS:

Requirements for safety and ventilation shall be in accordance with SSPC Paint Application Guide No. 3.

3.04 CLEANUP

Upon completion of coating, the Contractor shall remove surplus materials, protective coverings, and accumulated rubbish, and thoroughly clean all surfaces and repair any overspray or other paint-related damage.

3.05 COATING SYSTEM SPECIFICATION SHEETS (COATSPEC)

Coating systems for different types of surfaces and general service conditions for which these systems are normally applied are specified on the following COATSPEC sheets. Surfaces shall be coated in accordance with the COATSPEC to the system thickness specified. Coating systems shall be as specified in paragraph 09900-3.06, Coating System Schedule. In case of conflict between the schedule and the COATSPECS, the requirements of the schedule shall prevail.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: CTE-1

Coating Material: Coal tar epoxy

Surface: Metal

Service Condition: Immersed, nonpotable; nonimmersed,
corrosive environment, color not required.

Surface Preparation:

Ferrous Metal: Ferrous metal surfaces shall be prepared
in accordance with SSPC SP-5 (White Metal
Blast Cleaning).

Shop primed surfaces which are to be
incorporated in the work shall be prepared
in the field by cleaning all surfaces in
accordance with SSPC SP-2 (Hand Tool
Cleaning). Damaged shop coated areas shall
be cleaned in accordance with SSPC SP-3
(Power Tool Cleaning) and recoated with the
primer specified. Shop epoxy primed
surfaces shall require light sandblasting
prior to receiving finish coats.

Nonferrous and
Galvanized Metal: Nonferrous and galvanized metal shall be
prepared in accordance with SSPC SP-1
(Solvent Cleaning).

Application: Field

General: Prime coat may be thinned and applied as
recommended by the manufacturer, provided
the coating as applied complies with
prevailing air pollution control regulations.

Drying time between coats shall be as
specified by the manufacturer for the site
conditions, but the maximum time shall
not exceed 24 hours. If this time is
exceeded, surface preparation shall
require solvent washing, light sandblasting,
or other procedures per manufacturer's
instructions.

3.05

Coating System

Identification: CTE-1 (continued)

Ferrous Metal: Prime coat shall be an epoxy primer compatible with the specified coal tar epoxy. Shop prime coat on nonimmersed surfaces shall be epoxy primer (applied in accordance with the written instructions of the coating system manufacturer).

Nonferrous and

Galvanized Metal: Nonferrous and galvanized metal, nonimmersed, shall be coated prior to the application of the prime coat with vinyl acid wash coating in accordance with the manufacturer's written instructions. Nonferrous and galvanized metal, immersed, shall not be painted.

System Thickness: 20 mils dry film.

Coatings:

Primer: One coat at manufacturer's recommended dry film thickness, black.

Finish: Two or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness, black.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
 Identification: CTE-2

Coating Material: Coal tar epoxy

Surface: Concrete or Masonry

Service Condition:(1) Immersed, nonpotable; nonimmersed,
 corrosive environment, color not required.

Surface Preparation:

Concrete: Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the coating manufacturer. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by sandblasting and chipping, and voids and cracks shall be repaired as specified in Section 03300.

Masonry: Masonry surfaces shall be allowed to age for at least 28 days. Holes or other joint defects shall be filled with mortar and repointed. Loose or splattered mortar shall be removed by scrapping and chipping. Masonry surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances. Muriatic acid shall not be used. After cleaning, masonry surfaces shall be sealed or filled with sealer or block filler compatible with the specified primer.

Application: Field

Sealer or filler shall dry a minimum of 48 hours prior to application of prime coat.

Prime coat shall be thinned and applied as recommended by the coating manufacturer, provided the coating as applied complies with prevailing air pollution control regulations.

Coating System
Identification:

CTE-2 (continued)

Drying time between coats shall be as specified by the manufacturer for the site conditions, but the maximum time shall not exceed 24 hours. If this time is exceeded, surface preparation shall require solvent washing, light sandblasting, or other procedures per manufacturer's instructions.

System Thickness:

20 mils dry film.

Coatings:

Primer:

One coat at manufacturer's recommended dry film thickness, black.

Finish:

Two or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness, black.

(1) Service condition includes waterproofing as specified in Section 07100. In case of conflict between the requirements of this section and those of Section 07100, the requirements of Section 07100 shall prevail.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: E-1

Coating Material: Epoxy

Surface: Metal

Service Condition: Interior; exterior, covered, not exposed to direct sunlight.

Surface Preparation:

General: Shop primed surfaces which are to be incorporated in the work shall be prepared in the field by cleaning all surfaces in accordance with SSPC SP-2 (Hand Tool Cleaning). Damaged shop coating shall be cleaned in accordance with SSPC SP-3 (Power Tool Cleaning) and recoated with the primer specified.

Ferrous Metal: Bare ferrous metal surfaces shall be prepared in accordance with SSPC SP-2 (Hand Tool Cleaning).

Ferrous metal with bleeding surfaces shall be cleaned in accordance with SSPC SP-1 (Solvent Cleaning) and sealed with two coats of sealer recommended by coating manufacturer, applied to a thickness of 1 mil per coat prior to application of the prime coat.

Nonferrous and Galvanized Metal: Nonferrous and galvanized metal shall be prepared in accordance with SSPC SP-1 (Solvent Cleaning).

Application: Field

General: Prime coat may be thinned and applied as recommended by the manufacturer, provided the coating as applied complies with prevailing air pollution control regulations.

Coating System

Identification: E-1 (continued)

Ferrous Metal: Prime coats shall be an epoxy primer compatible with the specified finish coats and applied in accordance with the written instructions of the coating system manufacturer.

Nonferrous and Galvanized Metal: Nonferrous and galvanized metal shall be coated prior to the application of the prime coat with a vinyl acid wash coating in accordance with the manufacturer's written instructions.

System Thickness: 10 mils dry film.

Coatings:

Primer: One coat at manufacturer's recommended dry film thickness.

Finish: One or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: E-2

Coating Material: Epoxy

Surface: Metal

Service Condition: Immersed, nonpotable; nonimmersed,
corrosive environment, color required.

Surface Preparation:

Ferrous Metal: Ferrous metal surfaces shall be prepared
in accordance with SSPC SP-5 (White Metal
Blast Cleaning).

Shop primed surfaces which are to be
incorporated in the work shall be prepared
in the field by cleaning all surfaces in
accordance with SSPC SP-2 (Hand Tool
Cleaning). Damaged shop coating
shall be cleaned in accordance with
SSPC SP-3 (Power Tool Cleaning) and
recoated with the primer specified.

Nonferrous and
Galvanized Metal: Nonferrous and galvanized metal shall be
prepared in accordance with SSPC SP-1
(Solvent Cleaning).

Application: Field

General: Prime coat may be thinned and applied as
recommended by the manufacturer, provided
the coating as applied complies with
prevailing air pollution control
regulations.

Ferrous Metal: Prime coat shall be an epoxy primer
compatible with the specified finish
coats.

Coating System

Identification: E-2 (continued)

Nonferrous and

Galvanized Metal: Nonferrous and galvanized metal, nonimmersed, shall be coated prior to the application of the prime coat with a vinyl acid wash coating in accordance with the manufacturer's written instructions. Nonferrous and galvanized metal, immersed, shall not be painted.

System Thickness: 15 mils dry film.

Coatings:

Primer: One coat at manufacturer's recommended dry film thickness.

Finish: Two or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: E-3

Coating Material: Epoxy

Surface: Concrete

Service Condition: Immersed, nonpotable; nonimmersed,
corrosive environment, color required.

Surface Preparation:

Concrete: Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the coating manufacturer. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by sandblasting and chipping, and voids and cracks shall be repaired as specified in Section 03300.

Masonry: Masonry surfaces shall be allowed to age for at least 28 days. Holes or other joint defects shall be filled with mortar and repointed. Loose or splattered mortar shall be removed by scraping and chipping. Masonry surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances. Muriatic acid shall not be used. After cleaning, masonry surfaces shall be sealed or filled with a sealer or block filler compatible with the specified primer.

Application: Field

Sealer or filler shall dry a minimum of 48 hours prior to application of prime coat.

Prime coat shall be thinned and applied as recommended by the manufacturer, provided the coating as applied complies with prevailing air pollution control regulations.

3.05

Coating System
Identification:

E-3 (continued)

Drying time between coats shall be as recommended by coating manufacturer.

System Thickness:

15 mils dry film.

Coatings:

Primer:

One coat at manufacturer's recommended dry film thickness.

Finish:

Two or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: E-4

Coating Material: Epoxy

Surfaces: Concrete, masonry, plaster, gypsum board.

Service Condition: Interior

Surface Preparation:

Concrete: Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the coating manufacturer. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Loose concrete, form oils, surface hardeners, curing compounds and laitance shall be removed from surfaces, and voids and cracks shall be repaired as specified in Section 03300.

Masonry: Masonry surfaces shall be allowed to age for at least 28 days. Holes or other joint defects shall be filled with mortar and repointed. Loose or splattered mortar shall be removed by scrapping and chipping. Masonry surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances. Muriatic acid shall not be used. After cleaning, exterior masonry surfaces shall be sealed or filled with a sealer or block filler compatible with the specified primer.

Plaster: Plaster surfaces shall be dry and clean and free from grit, loose plaster, and surface irregularities. Cracks and holes shall be repaired with acceptable patching materials, keyed to existing surfaces, and sandpapered smooth. Surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances.

Application: Field

Sealer shall be a multiple component epoxy block filler and shall dry a minimum of 48 hours prior to primer application.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification:

E-4 (continued)

Prime coat shall be thinned and applied as recommended by coating manufacturer, provided the coating as applied complies with prevailing air pollution control regulations.

Drying time between coats shall be as recommended by coating manufacturer.

System Thickness:

10 mils dry film.

Coatings:

Primer:

One coat at manufacturer's recommended dry film thickness.

Finish:

One or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: E-5

Coating Material: Epoxy

Surface: Metal

Service Condition: Interior potable water tanks and reservoirs.

Surface Preparation:

Ferrous Metal: Ferrous metal surfaces shall be prepared in accordance with SSPC SP-5 (White Metal Blast Cleaning).

Shop primed surfaces which are to be incorporated in the work shall be prepared in the field by cleaning all surfaces in accordance with SSPC SP-2 (Hand Tool Cleaning). Damaged shop coating shall be cleaned in accordance with SSPC SP-3 (Power Tool Cleaning) and recoated with the primer specified.

Nonferrous and
Galvanized Metal: Nonferrous and galvanized metal shall be prepared in accordance with SSPC SP-1 (Solvent Cleaning).

Application: Field

General: Prime coat shall be thinned and applied as recommended by the manufacturer, provided the coating as applied complies with prevailing air pollution control regulations.

Ferrous Metal: Prime coat shall be an epoxy primer compatible with the specified finish coats.

Nonferrous and
Galvanized Metal: Nonferrous and galvanized metal above the high water elevation shall be coated prior to the application of the prime coat with a vinyl acid wash coating in accordance with manufacturer's written instructions.

3.05

Coating System
Identification:

E-5 (continued)

System Thickness:

10 mils dry film.

Coatings:

Primer:

One coat at the manufacturer's recommended dry film thickness.

Finish:

One or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: E-6

Coating Material: Epoxy

Surface: Concrete

Service Condition: Interior potable water tanks and reservoirs.

Surface Preparation:

Concrete: Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the coating manufacturer. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Except as otherwise specified, loose concrete, form oils, surface hardeners, curing compounds, and laitance shall be removed from surfaces by sandblasting and chipping, and voids and cracks shall be repaired as specified in Section 03300.

Masonry: Masonry surfaces shall be allowed to age for at least 28 days. Holes or other joint defects shall be filled with mortar and repointed. Loose or splattered mortar shall be removed by scraping and chipping. Masonry surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances. muriatic acid shall not be used. After cleaning, masonry surfaces shall be sealed or filled with a sealer or block filler compatible with the specified primer.

Application: Field

Sealer or filler shall dry a minimum of 48 hours prior to application of prime coat.

Prime coat shall be thinned and applied as recommended by the manufacturer, provided the coating as applied complies with prevailing air pollution control regulations.

Coating System
Identification:

E-6 (continued)

Drying time between prime coat and finish coat shall be as recommended by coating manufacturer.

System Thickness:

15 mils dry film.

Coatings:

Primer:

One coat at manufacturer's recommended dry film thickness.

Finish:

Two or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.05

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: E-7

Coating Material: Epoxy

Surface: Plastic

Service Condition: Interior; exterior covered, not exposed to direct sunlight.

Surface Preparation: Plastic shall be prepared in accordance with SSPC SP-1 (Solvent Cleaning). Contractor shall use a solvent compatible with the specified primer.

Application: Field

System Thickness: 5 mils dry film.

Coatings: One or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: E-8

Coating Material: Clear epoxy

Surface: Wood

Service Condition: Interior

Surface Preparation: Wood surfaces shall be cleaned of dirt, oil or other foreign substances with mineral spirits, scrapers, sandpaper or wire brush. Finished surfaces exposed to view shall be smoothed by planing or sandpapering. Millwork shall be sandpapered and given a coat of the specified exterior primer on all sides before installation. Built-in surfaces of window sills shall be double primed. Glazing rabbets and beads in exterior sash and doors shall be double primed. Small, dry, seasoned knots shall be surfaced scraped, sandpapered, and thoroughly cleaned and shall be given a thin coat of an acceptable knot sealer before application of the priming coat. Large, open, unseasoned knots, and beads or streaks of pitch shall be scraped off; however, if the pitch is still soft, it shall be removed with mineral spirits or turpentine, and the resinous area shall be coated with knot sealer. After priming, holes and imperfections shall be filled with putty or plastic wood, colored to match the finish coat, allowed to dry and sandpapered smooth.

Application: Field

Prime coat shall be thinned and applied as recommended by the manufacturer, provided the coating as applied complies with prevailing air pollution control regulations.

System Thickness: 4 mils

Coatings:

Primer: One coat at manufacturer's recommended dry film thickness.

Finish: One or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System

Identification: CTS

Coating Material: Coal tar solution

Surface: Metal or concrete

Service Condition: (1) Below grade (buried)

Surface Preparation:

Ferrous Metal: Ferrous metal surfaces shall be prepared in accordance with SSPC SP-7 (Brush-Off Blast Cleaning).

Nonferrous Metal: Galvanized metal, aluminum, copper, and brass surfaces shall be prepared in accordance with SSPC SP-1 (Solvent Cleaning) and painted with a vinyl acid wash coat in accordance with the coating manufacturer's written instructions.

Concrete: Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the coating manufacturer. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Except as otherwise specified, loose concrete and laitance shall be removed from surfaces by sand-blasting and chipping, and voids and cracks shall be repaired as specified in Section 03300.

Application: Field

System Thickness: 15 mils

Coating: Two or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

(1) Service condition includes moistureproofing as specified in Section 07100. In case of conflict between the requirements of this section and those of Section 07100, the requirements of Section 07100 shall prevail.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: G

Coating Material: Grease

Surface: Metal

Surface Preparation:

Ferrous Metal: Ferrous metal surfaces shall be prepared in accordance with SSPC SP-1 (Solvent Cleaning).

Application: Field

Coating shall be applied with stiff brush, hand swab, or airless spray gun.

System Thickness: 50 square feet per gallon

Coating: One coat of grease coating

3.05

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: HH-1

Coating Material: Inorganic zinc

Surface: Metal

Service Condition: Temperature to 750 degrees F.

Surface Preparation: Metal surfaces shall be prepared in accordance with SSPC SP-10 (Near White Metal Blast Cleaning).

Application: Field
Curing as required by coating manufacturer.

System Thickness: 3-1/2 mils dry film

Coating: Two or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.05

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: HH-2

Coating Material: Aluminum silicone, or equal

Surface: Metal

Service Condition: Temperature to 1000 degrees F.

Surface Preparation: Metal surfaces shall be prepared in accordance with SSPC SP-10 (Near White Metal Blast Cleaning).

Application: Field
Curing as required by coating manufacturer.

System Thickness: 3-1/2 mils dry film

Coating: Two or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.05

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System

Identification: U

Coating Material: Urethane

Surface: Metal

Service Condition: Exterior, exposed to direct sunlight.

Surface Preparation:

General: Shop primed surfaces which are to be incorporated in the work shall be prepared in the field by cleaning all surfaces in accordance with SSPC SP-2 (Hand Tool Cleaning). Damaged shop coated areas shall be cleaned in accordance with SSPC SP-3 (Power Tool Cleaning) and recoated with the primer specified.

Ferrous Metal: Bare ferrous metal surfaces shall be prepared in accordance with SSPC SP-6 (Commercial Blast Cleaning).

Ferrous metal with bleeding surfaces shall be cleaned in accordance with SSPC SP-1 (Solvent Cleaning) and sealed with two coats of sealer recommended by coating manufacturer, applied to a thickness of 1 mil per coat prior to application of the prime coat.

Nonferrous and

Galvanized Metal: Nonferrous and galvanized metal shall be prepared in accordance with SSPC SP-1 (Solvent Cleaning).

Application: Field

General: Prime coat may be thinned and applied as recommended by the manufacturer, provided the coating as applied complies with prevailing air pollution control regulations.

Ferrous Metal: Prime coats shall be an epoxy primer compatible for use with urethane finish coats and applied in accordance with written instructions of the coating system manufacturer.

Coating System
Identification: U (continued)

Nonferrous and
Galvanized Metal: Nonferrous and galvanized metal shall
be coated prior to the application of the
prime coat with a vinyl acid wash coating
in accordance with the manufacturer's
written instructions.

System Thickness: 7 mils dry film.

Coatings:

Primer: One coat at manufacturer's recommended
dry film thickness.

Finish: One or more coats at manufacturer's
recommended dry film thickness per coat
to the specified system thickness.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: L-1

Coating Material: Latex

Surfaces: Concrete, masonry, plaster, gypsum board.

Service Condition: Interior

Surface Preparation:

Concrete: Concrete surfaces shall be allowed to age for at least 28 days and allowed to dry to the moisture content recommended by the coating manufacturer. Moisture content may be tested by the Construction Manager with a Delmhorst Instrument Company moisture detector, or equal. Loose concrete and laitance shall be removed from surfaces, and voids and cracks shall be repaired as specified in Section 03300.

Masonry: Masonry surfaces shall be allowed to age for at least 28 days. Holes or other joint defects shall be filled with mortar and repointed. Loose or splattered mortar shall be removed by scraping and chipping. Masonry surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances. Muriatic acid shall not be used. After cleaning, masonry surfaces shall be filled with block filler compatible with the specified primer.

Plaster: Plaster surfaces shall be dry and clean and free from grit, loose plaster, and surface irregularities. Cracks and holes shall be repaired with acceptable patching materials, keyed to existing surfaces, and sandpapered smooth. Surfaces shall be cleaned with clear water by washing and scrubbing to remove foreign and deleterious substances.

Gypsum wallboard: Tape joints and spackled nail heads shall be sanded smooth and dusted. Seal with PVA sealer.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: L-1 (continued)

Application: Field

Sealer or filler shall dry a minimum of 48 hours prior to primer application.

Drying time between coats shall be as recommended by coating manufacturer.

System Thickness: 4 mils dry film.

Coatings:

Primer: One coat at manufacturer's recommended dry film thickness.

Finish: Two or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: L-2

Coating Material: Latex

Surface: PVC and CPVC pipe.

Service Condition: Exterior, direct sunlight exposure.

Surface Preparation: Plastic pipe shall be cleaned with solvent compatible with the specified primer and sanded to roughen surfaces.

Application: Field

System Thickness: 3 mils dry film.

Coatings:

Primer: One coat at manufacturer's recommended dry film thickness.

Finish: One or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: L-3

Coating Material: Latex

Surface: Metal

Service Condition: Interior

Surface Preparation:

1. Bare ferrous metal surfaces shall be prepared in accordance with SSPC SP-2 (Hand Tool Cleaning) unless specified otherwise.
2. Ferrous metal with bleeding surfaces shall be cleaned in accordance with SSPC SP-1 (Solvent Cleaning) and sealed with two coats of sealer recommended by coating manufacturer, applied to a thickness of 1 mil per coat prior to application of the above coating system.
3. Shop primed surfaces which are to be incorporated in the work shall be prepared in the field by cleaning all surfaces in accordance with SSPC SP-2 (Hand Tool Cleaning).
4. Galvanized or nonferrous surfaces shall be prepared in accordance with SSPC SP-1 (Solvent Cleaning) treated with a passivator as recommended by the coating system manufacturer.

Application: Field

System Thickness: 4 mils dry film.

Coatings:

Primer: One coat at manufacturer's recommended dry film thickness.

Finish: Two or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: L-4

Coating Material: Latex

Surface: Wood

Service Condition: Interior

Surface Preparation: Wood surfaces shall be cleaned of dirt, oil or other foreign substances with mineral spirits, scrapers, sandpaper or wire brush. Finished surfaces exposed to view shall be smoothed by planing or sandpapering. Millwork shall be sandpapered and given a coat of the specified primer on all sides before installation. Built-in surfaces of window sills shall be double primed. Glazing rabbets and beads in exterior sash and doors shall be double primed. Small, dry, seasoned knots shall be surfaced scraped, sandpapered, and thoroughly cleaned and shall be given a thin coat of an acceptable knot sealer before application of the priming coat. Large, open, unseasoned knots, and beads or streaks of pitch shall be scraped off; however, if the pitch is still soft, it shall be removed with mineral spirits or turpentine, and the resinous area shall be coated with knot sealer. After priming, holes and imperfections shall be filled with putty or plastic wood, colored to match the finish coat, allowed to dry and sandpapered smooth.

Application: Field

System Thickness: 4.0 mils dry film.

Coatings:

Primer: One coat at manufacturer's recommended dry film thickness.

Finish: Two or more coats at manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: M-1

Coating Material: DENSO Petrolatum products or equal.

Surfaces: Metal

Service Condition: Below grade (buried).

Surface Preparation: Remove loose scale, rust, dirt, excessive moisture, or frost from the surface in accordance with SSPC SP-2 (Hand Tool Cleaning).

Application: All surfaces shall be hand rubbed or brushed with DENSO PASTE over the entire surface. Joints with many irregular contours need careful and vigorous application of DENSO PASTE to ensure maximum protection of the metal throughout, leaving a liberal amount in the sharp angles only. For longitudinal applications with smooth contours, a brush or spray application of DENSO PRIMING PASTE may be substituted.

On irregular shaped surfaces, i.e., nuts, bolts, flanges, etc., Contractor shall apply DENSO MASTIC (PLAST) by hand in sufficient quantity to build an even contour over the entire surface. Contractor shall pay particular attention to ensure that all folds and air pockets within the mastic layer are thoroughly pressed out prior to subsequent application of DENSO TAPE. DENSO TAPE shall be spirally wrapped on the surface with an overlap of 55 percent. Contractor shall pay particular attention to apply sufficient tension to provide continuous adhesion without stretching the tape. On vertical applications, Contractor shall begin at the bottom and proceed upwards creating a weatherboard overlap.

System Thickness: According to manufacturer's written instructions.

Coating: Number and types of coating shall be in accordance with the manufacturer's written instructions.

3.05 COATING SYSTEM SPECIFICATION SHEET--COATSPEC

Coating System
Identification: M-2

Coating Material: Epoxy mastic or equal

Surface: Metal

Service Condition: Interior, corrosive environment, confined enclosures, minimal surface preparation.

Surface Preparation:

Ferrous Metal: All uncoated ferrous metal surfaces shall be prepared in accordance with SSPC SP-3 (Power Tool Cleaning), prior to assembly. Shop primed ferrous metal surfaces and fabricated assemblies shall be clean and dry prior to the application of field coats. Following assembly, Contractor shall smooth all welds and prominencies using power tools prior to the application of the field applied coatings.

Nonferrous and
Galvanized Metal: Nonferrous and galvanized metal shall be prepared in accordance with SSPC SP-1 (Solvent Cleaning).

Application: Field

General: Prior to the application of any field applied coatings, all welds, back-to-back angles, sharp or rough edges and weld splatter shall be brushed with the specified prime coat and allowed to cure overnight.

Nonferrous and
Galvanized Metal: Nonferrous and galvanized metal shall be coated prior to the application of the prime coat with a vinyl acid wash coating in accordance with the manufacturer's written instructions.

3.05

Coating System
Identification:

M-2 (continued)

System Thickness:

15 mils dry film.

Coatings:

Prime:

One coat of the manufacturer's recommended dry film thickness.

Finish:

One or more coats of manufacturer's recommended dry film thickness per coat to the specified system thickness.

3.06

3.06 COATING SYSTEMS SCHEDULE (FINISH SCHEDULE)

Specific coating systems, colors, and finishes for rooms, galleries, piping, equipment, and other items which are painted or have other architectural finishes are specified in the following coating system schedule. Unless otherwise specified in the coating system schedule, the word "interior" shall mean the inside of a building or structure, and the word "exterior" shall mean outside exposure to weather elements.

| <u>Location/ description</u> | <u>Surface</u> | <u>Coating system identification</u> | <u>Color</u> |
|----------------------------------|----------------|--|--------------|
|----------------------------------|----------------|--|--------------|

(See NOTES TO SPECIFIER)

END OF SECTION

3.06 COATING SYSTEMS SCHEDULE (FINISH SCHEDULE)

Specific coating systems, colors, and finishes for rooms, piping, equipment, and other items which are painted or have other architectural finishes are specified in the following coating system schedule. Unless otherwise specified in the coating system schedule, the word "interior" shall mean the inside of a building or structure, and the word "exterior" shall mean outside exposure to weather elements.

| <u>Location description</u> | <u>Surface</u> | <u>Coating system identification</u> | <u>Color</u> |
|--|--|--------------------------------------|-------------------------|
| General: all surfaces not specified by area or structure | (1) <u>Equipment and Metal Appurtenances</u> | | |
| | (a) Equipment, non-immersed, unless otherwise specified | | |
| | 1. Interior | E-1 | |
| | 2. Exterior | U | |
| | (b) Equipment, immersed, unless otherwise specified | E-5 | See Note 1 |
| | (c) High temperature equipment operabl at | | |
| | 1. 200 to 750° F | HH-1 | |
| | 2. Above 750° F to 1000° F | HH-2 | |
| | (d) Diffusers and grilles on coated surfaces, unless otherwise specified | | |
| | 1. Interior | E-1 | Match back-ground color |
| | 2. Exterior | U | Match back-ground color |
| | (e) Diffusers and grilles on uncoated surfaces, unless otherwise specified | | |
| | 1. Interior | E-1 | |
| | 2. Exterior | U | |

| <u>Location description</u> | <u>Surface</u> | <u>Coating system identification</u> | <u>Color</u> |
|--|-------------------------------|--------------------------------------|---|
| (f) Electrical switchgear panels, unit substations, motor control centers, power transformers, distribution centers, and relay panels; interior and exterior | | See paragraph 09900-3.03 H. | Standard Grey (outside); White (inside) |
| (g) Instrumentation panels, graphic indicating panels, indicating and transmitting field panels, unless otherwise specified | | | |
| | 1. Interior | See paragraph 09900-3.03 H. | Standard Grey (outside); White (inside) |
| | 2. Exterior | See paragraph 09900-3.03 H. | Standard Grey (outside); White (inside) |
| (2) <u>Conduit, Piping and Ductwork</u> | | | |
| (a) Ferrous, non-ferrous and galvanized piping, and appurtenant hangers and supports, non-immersed, unless otherwise specified. | | | |
| | 1. Interior | E-1 | |
| | 2. Exterior | U | |
| | 3. Stainless steel 304 piping | E-1 | |
| | 4. Stainless steel 316 piping | Uncoated | |
| (b) Ferrous piping, appurtenant and supports, immersed. | | E-5 | See Note 1 |

| <u>Location description</u> | <u>Surface</u> | <u>Coating system identification</u> | <u>Color</u> |
|---|-------------------------------|--------------------------------------|------------------------|
| (c) Conduit, outlet and junction boxes, lighting transformers, lighting communication and small power panels, control stations, piping, lagged ductwork, appurtenant hangers, clamps and supports on coated surfaces, unless otherwise specified | | | |
| | 1. Interior | E-1 | Match background color |
| | 2. Exterior | U | Match background color |
| (d) Conduit, outlet and junction boxes, lighting transformers, lighting, communication and small power panels, control stations, piping, lagged ductwork, appurtenant hangers, clamps and supports on uncoated surfaces, unless otherwise specified | | | |
| | 1. Interior | E-1 | |
| | 2. Exterior | U | |
| (e) Racked conduits and cable trays | | Uncoated | — |
| (f) Insulated pipe jacketing | | Uncoated | — |
| (g) Plastic, fiberglass and flexible conduit and piping | | | |
| | 1. Unless otherwise specified | Uncoated | — |

3.06

| <u>Location description</u> | <u>Surface</u> | <u>Coating system identification</u> | <u>Color</u> |
|--|----------------|--------------------------------------|-----------------------|
| 2. PVC and CPVC piping | | | |
| a. Exposed to direct sunlight | | L-2 | |
| b. Not exposed to direct sunlight | | E-7 | |
| (h) High temperature piping operable at | | | |
| 1. 200 to 750 degrees F | | HH-1 | FS26306 Grey |
| 2. Above 750 degrees F to 1,000 degrees F | | HH-2 | FS26306 Grey |
| (i) Exposed ductwork, unless otherwise specified | | Uncoated | -- |
| (3) <u>Concrete, Grout, Masonry, Plaster, and Drywall</u> | | | |
| (a) Immersed tank and channel walls and bottoms unless otherwise specified | | CTS (see Section 07100) | -- |
| (b) Outside concrete walls below grade common with dry area or room | | CTS (see Section 07100) | Black |
| (c) Walls and ceilings | | | |
| 1. Precast concrete or colored masonry | | Uncoated | -- |
| 2. Exterior, unless otherwise specified | | Uncoated | -- |
| 3. Interior, unless otherwise specified | | E-4 | FS23617 Beige |
| (d) Concrete equipment bases unless otherwise specified | | E-4 (see paragraph 09900-3.03 G.) | Match equipment color |
| (e) Floors unless otherwise specified | | See Section 03300 | -- |

| <u>Location description</u> | <u>Surface</u> | <u>Coating system identification</u> | <u>Color</u> |
|---|--------------------------------|--------------------------------------|------------------|
| (4) <u>Door and Door Frames</u> | | | |
| (a) Doors unless otherwise specified | | | |
| 1. Ferrous metal | | | |
| | a. Interior | E-1 | |
| | b. Exterior | U | |
| 2. Aluminum | | | |
| 3. Other | | | |
| | | Plastic laminate | |
| (b) Door frames unless otherwise specified | | | |
| 1. Adjacent wall coated | | | |
| | a. Interior | E-1 | Match wall color |
| | b. Exterior | U | Match wall color |
| 2. Adjacent wall uncoated | | | |
| | a. Interior | E-1 | |
| | b. Exterior | U | |
| 3. Aluminum | | | |
| | | Uncoated | — |
| (5) <u>Handrails, Gratings, Floor Plates, Manhole Covers, and Hatches</u> | | | |
| | (a) Unless otherwise specified | Uncoated | See Note 2 |
| (6) <u>Metal Stairs, Ladders, Platforms, and Supports Except Treads and Grating</u> | | | |
| | (a) Interior | E-1 | |
| | (b) Exterior | U | |

| <u>Location description</u> | <u>Surface</u> | <u>Coating system identification</u> | <u>Color</u> |
|--|---|--------------------------------------|--------------|
| (7) <u>Aluminum Flashing, Light Standards, Supports, and Louvers</u> | | | |
| | Interior and exterior, unless otherwise specified | Uncoated | — |
| (8) <u>Precast Concrete Metalwork</u> | | | |
| | Fasteners, anchors supports, etc. | U | Match wall |
| (9) <u>Other</u> | | | |
| (a) Fire hydrants | | U | FS21302 Red |
| (b) Flap gates | | CTE | |
| (c) Aluminum slide gates | | Uncoated | — |
| (d) Sluice gates | | | |
| 1. Gate | | CTE | |
| 2. Stem | | G | — |
| 3. Operator | | U | |
| (e) Tanks | | | |
| 1. Steel tanks unless otherwise specified | | | |
| a. Inside of tank | | See Section 11875 | — |
| b. Outside of tank | | | |
| 1) Interior | | E-1 | |
| 2) Exterior | | U | |
| 2. Potable steel water storage tanks | | | |
| a. Inside of tank | | E-5 | |
| b. Outside of tank | | U | |
| 3. Fiberglass tanks | | Uncoated | — |

3.06

Location
description

Surface

Coating system
identification

Color

(e) Pipe, ductwork, equipment and appurtenances; fiberglass, plastic, rubber, including flexible hose, conduit, and plastic coated tubing, in areas not exposed to view (metal hangers and supports are coated with E-1)

Uncoated

—

(f) Buried, sleeve-type and flanged pipe, couplings, valves, mechanical and electrical penetrations.

M-1

Manufacturer's
color

****END OF SECTION****

SECTION 09952

VINYL WALLCOVERING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Prepare surfaces to receive vinyl wallcovering.
- B. Adhesive apply wallcovering.

1.02 RELATED WORK

- A. Section 09250: Gypsum Drywall.

1.03 SAMPLES

- A. Submit one-half yard of full width sized sample of wall covering for approval by Construction Manager, indicating quality, color, texture and weight. Submit in accordance with Section 01300.

1.04 PRODUCT HANDLING

- A. Store wall covering in clean and dry area where temperatures are maintained at minimum 15° F (7° C) with normal humidity. Do not store in upright position.
- B. Take precautionary measure to prevent fire hazards with adhesives and solvents.
- C. Where toxic materials and both toxic and explosive solvents and adhesives are used, appropriate precautions and proper ventilation must be provided.

1.05 ENVIRONMENTAL CONDITIONS

- A. Maintain surfaces and materials at minimum 60° F (16° C) three days before and during application period.
- B. Ensure maximum surface moisture conforms to wall covering manufacturer's requirements and surface exhibits negative alkalinity.
- C. Provide a minimum of 15 candlepower lighting on surfaces to be covered.
- D. Provide adequate and continuous ventilation during work and after installation of wall covering.

1.06 MAINTENANCE INSTRUCTIONS

A. Provide Architect with 4 copies of maintenance instructions for each wall covering as per Division 1 - General Requirements.

B. Instructions to contain manufacturer's recommended cleaning materials and application methods, including precautions in use of cleaning materials which may be detrimental to surfaces if improperly applied.

1.07 REPLACEMENT MATERIAL

A. Provide one 30 yard roll of each color and design for Owner's replacement use, from same run as material supplied on project.

B. Turn over to Owner's representative as designated by Construction Manager and furnish copy of signed receipt prior to completion.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Manufacturer and pattern indicated is to provide a standard of quality and is not intended to preclude other manufacturers.

B. Submit for prior approval as per Division 1 - General Requirements.

C. Borden-Columbus Coated Fabrics.

D. Frazee Paint Company.

E. Collins and Aikman.

F. Sinclair Paint Company.

2.02 MATERIALS

A. Vinyl Wall Covering: "Tasco" pattern, 54 inches wide, colors selected by Construction Manager, manufactured by L. E. Carpenter and Co, conforming to following requirements:

1. Total Thickness: Minimum .025 inches average.
2. Total Weight: Minimum 16 oz./sq. yd. or 25 oz per lineal

yard.

3. Vinyl Finish Weight: Minimum 13 oz./sq. yd. and electronically fused to backing.

4. Maximum flame spread/fuel contributed/smoke developed:
20/5/5.

2.02 5.

5. Backing: Closely woven, pre-shrunk, mildew-proofed cotton fabric weighing not less than 3-6 oz./sq. yd.

B. Adhesive: Type recommended by wallcovering manufacturer to suit application, including primer/sealer.

PART 3 - EXECUTION

3.01 INSPECTION

A. Ensure surfaces to receive wallcovering are clean, true and free of irregularities. Inspect surfaces before commencing work and report defects in writing to Construction Manager.

B. Ensure wall surface flatness tolerance does not vary more than 1/8 inch in 10 feet, nor vary at a rate greater than 1/16 inch per running foot.

C. Schedule installation of wallcovering as late as possible to prevent damage during construction and movement of materials.

3.02 PREPARATION OF SURFACES

A. Fill nicks, gouges and other minor imperfections of gypsum wallboard or plaster surfaces with latex filler. Sand smooth flush with surface. Follow with prime coat of alkyd flat or oil base sealer or sealer recommended by wallcovering manufacturer.

B. Wash down painted surfaces with tri-sodium phosphate, rinse with clear water. Open up glossy surfaces with rough sandpaper for bond, then seal. Remove bleeding paint, flakey paint or wood stain. Prime surfaces to receive latex paints with one full coat of oil base sealer.

C. Remove rust, dirt and grease from metal surfaces. Prime with recommended metal primer.

D. Fill in nicks, gouges, and other minor imperfections of plywood surfaces with patching plastic. Follow with coat of alkyd flat or oil base sealer.

E. Remove all markings on walls such as crayons, ballpoint pens, etc.

3.03 APPLICATION

A. Handle and apply wall covering in accordance with manufacturer's recommendations.

B. Mix and apply adhesive in accordance with adhesive manufacturer's recommendations.

3.03 C.

C. Use fabric panels in exact order as cut from rolls. Use rolls in consecutive order as numbered by manufacturer. Do not reverse pattern.

D. Trim deeply textured patterns, or where patterns must be matched, on a flat work table.

E. Hang smooth, non-match patterns by applying strips on the wall, overlapping the edges and double cutting through both thicknesses.

F. Apply fabric secure, smooth, clean, and without wrinkles, gaps or overlaps. Eliminate air pockets and ensure full bond to wall surface.

G. Horizontal seams and cutting at corners are not acceptable. Cutting to be not less than 2 inches of an inside corner, and not less than 6 inches of an outside corner.

H. Fill in spaces above and below windows above doors and similar areas in sequence from roll.

I. Remove excess adhesive from each seam before proceeding to next. Wipe seam clean with dry cloth towel.

J. Install wallcovering before installation of plumbing, casings, bases, cabinets, hardware, etc.

K. Provide metal edge trim at all discontinuous vertical and horizontal edges where fabric does not abut, ceiling, base or other projecting material or surface.

3.04 CLEANING

A. Clean wallcoverings of adhesives, dust, dirt and other contaminants.

B. Remove debris and leave areas neat and clean.

C. Replace wall plates and accessories.

****END OF SECTION****

DIVISION 10

SPECIALTIES

| <u>Section</u> | <u>Title</u> |
|----------------|---------------------------------|
| 10100 | CHALKBOARDS AND TACKBOARDS |
| 10160 | SHOWER AND TOILET PARTITIONS |
| 10350 | FLAGPOLES |
| 10400 | IDENTIFYING DEVICES |
| 10441 | ACCIDENT PREVENTION SIGNS |
| 10508 | ATHLETIC LOCKERS |
| 10510 | LOCKERS AND LOCKER ROOM BENCHES |
| 10520 | FIRE EXTINGUISHERS |
| 10800 | TOILET AND BATH ACCESSORIES |

SECTION 10100

CHALKBOARDS AND TACKBOARDS

PART 1 _ GENERAL

1.01 WORK INCLUDED

- A. Liquid chalkboards, tackboards, trim and attachment hardware.
- B. Map hooks, projection screen hooks.
- C. Chalk rail.
- D. Tack strip.

1.02 RELATED WORK

- A. Section 04300 - Masonry: Masonry backup.
- B. Section 06100 - Rough Carpentry: Wood grounds.
- C. Section 06410 - Architectural Casework.
- D. Section 09250 - Gypsum Board System: Gypsum wallboard backup.

1.03 REFERENCES

- A. ASTM A424 - Steel sheets for porcelain enameling.
- B. ASTM A526 - Steel sheet, zinc-coated (galvanized) by the hot-dip process, commercial quality.
- C. ASTM B209 - Aluminum-alloy sheet and plate.
- D. ASTM B221 - Aluminum-alloy extruded bars, rods, wire, shapes, and tubes.

1.04 SUBMITTALS

- A. Submit shop drawings under provisions of Section 01300.
- B. Clearly indicate board sizes and layout, method of attachment, accessories, trim profiles details and finish.
- C. Submit manufacturer's installation instructions under provisions of Section.
- D. Submit samples under provisions of Section 01300.
- E. Provide sample chalkboard and tackboard minimum size 12x12 inch with aluminum trim, map rail, and chalk rail in standard colors and finish.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver materials to site until areas in which they are to be installed are ready to receive them.

B. Deliver materials to site in protective covering in a manner to protect their finishes.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Carolina Chalkboard Company.
- B. Claridge Products and Equipment, Inc.
- C. Greensteel, Inc.
- D. Tri-Adco Manufacturing Company.
- E. Substitutions under provisions of Section 01600.

2.02 MATERIALS

- A. Plywood: PS 1.
- B. Steel sheet for porcelain enameling: ASTM A424.
- C. Aluminum Extrusions: ASTM B221.
- D. Cork, vinyl fabric, fastener, and related components: Standard with the manufacturer.

2.03 FABRICATION

- A. Chalkboards:
 - 1. Liquid chalk surface (LCS) chalkboards, No. 32 LCS White, 24 gauge, porcelain enamel steel chalkboards over 7/16 inch hardboard, with aluminum foil backing sheet 24-115-F, as manufactured by the Claridge Products and Equipment Company or prior approved equal. Pressure bonded, color as selected from manufacturers standard palette.
- B. Tackboards:
 - 1. Fabriccork vinyl with 1/2 inch duracore backing, burlap pattern in manufacturer's standard colors as manufactured by Claridge Products and Equipment company or prior approved equal, sizes as indicated with trim edges as specified below.

C. Accessories: Economy sections as manufactured by Claridge Products and Equipment Company as follows:

1. Perimeter Trim: No. 210 Oak.
2. Chalk Trough: No. 210 Oak.
3. Map Rail/Head Trim: No. 181 with continuous cork insert.
 - a. Display Hooks: No. 51C at 24 inches o.c.
 - b. Roller Brackets: No. 51 R. B., 2 per chalkboard.

PART 3 - EXECUTION

3.01 CONDITION OF SURFACES

A. Dry and free of substances which might impair application of chalk or tackboards.

B. Do not apply until plaster or backup surfaces thoroughly dry.

3.02 INSTALLATION

A. Securely mount chalkboards and tackboards in accordance with manufacturer's instructions, where indicated.

B. To provide a smooth writing surface between chalkboards provide chalk surfaced H-batten joint.

C. Keep perimeter lines straight, plumb and level, in plane of wall. Install complete with all trim in strict accord with manufacturer's printed instructions. All members of each panel, including plywood backing, tackboards and trim, full length without joints.

D. Ensure proper grounds have been provided at all stud or furred masonry walls.

E. Fit butted joints tightly and in same plane on both sides of joint.

F. Overlap tackboard minimum of 1/4 inch with aluminum frame. Fit aluminum frames to precise hairline joints without rough edges.

3.03 CLEANING AND BREAK-IN

A. Contractor shall at finish of installation clean tackboard, chalkboards, and trim in strict accord with manufacturer's printed instructions.

B. On completion of installation, properly break in chalkboard surfaces in conformance with manufacturers printed instructions.

END OF SECTION

SECTION 10160

SHOWER AND TOILET PARTITIONS

PART 1 _ GENERAL

1.01 WORK INCLUDED

- A. Overhead braced baked enamel metal toilet partitions.
- B. Attachment hardware.

1.02 RELATED WORK

- A. Section 10800 - Toilet and Bath Accessories.

1.03 REFERENCES

- A. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- B. ASTM A414 - Steel Sheets for porcelain enameling.

1.04 SHOP DRAWINGS AND PRODUCT DATA

- A. Submit shop drawings and product data in accordance with Section 01300.
- B. Provide location template drawings for bolt hole locations in supporting members for attachments of partitions.
- C. Indicate partition layouts, swing of doors, elevations, anchorage and mounting details, components, hardware, finishes and relevant dimensions.

1.05 SAMPLES

- A. Submit samples in accordance with Section 01300.
- B. Provide sample of standard panel colors.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Metpar Steel Products Corp.
- B. Global Steel Products Corp.
- C. Sany Metal Products Co.

2.01 D.

D. Substitutions: Items of same function and performance are acceptable in accordance with Section 01600.

2.02 TOILET PARTITIONS

A. Global: Embassy overhead braced flush 1" thick panels.

B. Pilasters and Wall Posts:

1. 1-1/4 inch thick constructed of 2 sheets of 20 gauge bondenized galvanized steel with a sound deadening honeycomb core, with type 302, 18-8 #4 satin finish stainless steel shoes and accessories.
2. Pilasters with full width head rail channel support construction of 18.8 (Type 302), 18 gauge stainless steel, satin finish.
3. Edged with interlocking 20 gauge oval shaped molding.

C. Panels and Doors:

1. 1 inch thick constructed of 2 sheets of 20 gauge bondenized galvanized steel formed and cemented to a honeycomb core under pressure.
2. Molding shall be 20 gauge interlocking on all sides with corners welded and ground smooth.
3. Provide doors to size and swing as indicated with 2'-8" wide door minimum at handicapped stalls.

D. Headrail and Returns:

1. Stainless steel channel of 18.8 (Type 302) stainless steel, 18 gauge.

E. Hardware and Toilet Accessories:

1. Hinges, door latches, keeper, coat hook, wall and panel fittings of 18.8 (Type 302) heavy gauge stainless steel with vandalproof stainless steel screws for all hardware.
2. Holes for Hardware: Pre-drilled at factory and furnished with threaded stainless steel inserts.
3. See Section 10810, Toilet Accessories, for coordination and factory drilled or coped openings for partition mounted toilet accessories.
4. Provide cushioned door stops on outside of all outswinging toilet partition doors.

F. Operation:

1. Balanced hinge doors to hold door partially open when unoccupied.
2. Sliding door latch into keeper locks door from inside of compartment.

G. Colors:

1. Maximum of two (2) colors per each toilet room or separate compartment of toilet compartments.
2. Colors selected from manufacturer's standard color palette by Construction Manager.

2.03 SCREENS

A. Wall hung, Global WHGSA Series. Panels 42 inches high x 18 inches deep x 1-1/4 inch thick of 20 gauge bondenized galvanized steel bonded under pressure to a honeycomb core with integrally formed reinforced wall flanges.

PART 3 - EXECUTION

3.01 INSPECTION

A. Check areas scheduled to receive partitions for correct dimensions, plumbness of walls and soundness of wall surfaces that would affect installation of holding brackets.

B. Verify spacing of plumbing fixtures to assure compatibility with installation of partitions.

3.02 ERECTION

A. Install partitions rigidly, straight, plumb and level in strict accord with manufacturer's printed instructions.

3.03 ADJUST AND CLEAN

A. Adjust and lubricate hardware for proper operation after installation.

B. Set hinges on inward swing doors to hold doors open approximately 30° from closed position when unlatched.

C. Set hinges on outward swing doors to hold doors open approximately 10° from closed position when unlatched.

D. Perform final adjustments to leveling devices and hardware.

E. Clean exposed surfaces and partitions, hardware fittings and accessories.

F. Remove packing cartons and trash from premises.

END OF SECTION

SECTION 10350

FLAGPOLES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. 50 foot tapered aluminum ground set flagpole, with all required accessories installed in concrete foundation complete.

1.02 RELATED WORK

A. Section 02200 - Earthwork.

B. Section 03300 - Cast-In-Place Concrete.

1.03 APPLICABLE PUBLICATIONS: Publications listed below form a part of this specification to extent referenced. Publications are referred to in text by basic designation only.

A. American Society for Testing and Materials (ASTM) Publication: A53 Welded and Seamless Steel Pipe.

B. The Aluminum Association (AA) Publication: Standards of Anodized Architectural Aluminum (1979). Designation System for Aluminum Finishes (1979).

1.04 DESIGN CRITERIA: Flagpole, bases and anchorage devices designed to resist 90 mph wind velocity minimum, unflagged.

1.05 SUBMITTALS

A. Shop drawings of flagpole and base include general layout, dimensions, finishes, foundation and base, jointing, anchoring and support systems, cleats, finials and base collar.

B. Samples: 2 inch by 4 inch finish samples of actual finish.

C. Manufacturer's Data: Furnish copies of manufacturer's specifications and installation instructions.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Spiral wrap flagpole with heavy kraft paper, wood strip and steel band or polyethylene wrap and pack tube prior to shipment. Delivery in original wrappings and in one piece.

B. Store in original wrapping in area protected from weather, moisture and damage.

PART 2 - PRODUCTS

2.01 FLAGPOLE

A. Provide flagpole as complete unit, furnished by single acceptable manufacturer, including accessories, bases and anchorage devices.

B. Ground set cone tapered aluminum tube flagpole, 33 foot tapered section, .188 wall thickness, 8 inch butt diameter. Exposed height 50 feet with overall height of 55 feet.

C. Material: Aluminum, seamless extruded aluminum tubing of 6063-T6 alloy, cone tapered, seamless uniform, straight line tapered sections above cylindrical butt section with uniform conical taper, tensile strength 35,000 psi minimum, heat treated, age hardened.

D. Finish: Fine satin, clear anodized finish conforming to Aluminum Association AA-M2 1C21A41.

E. Ground-set, provide 16 gage minimum galvanized corrugated steel tube or 12 gage rolled steel tube, sized to suit flagpole and installation. Furnish complete with welded steel bottom base and support plate, lightning ground spike and steel centering wedges, all welded construction. Provide loose hardwood wedges at top for plumbing pole after erection. Galvanized steel parts after assembly including foundation tube.

2.02 FLAGPOLE FITTINGS:

A. Flashing Collar: Standard tapered top, cast aluminum, finish match pole.

B. Truck: Cast aluminum, ball bearing, non-fouling, revolving, double truck assembly with 2-1/2 inch, approximate, diameter sheaves.

C. Ball: 8 inch diameter, flush seam, 14 gage, spun aluminum, match pole finish.

D. Halyards: Nylon or polypropylene, No. 10, 5/16 inch diameter with plastic covered metal snap hooks for two flags.

E. Cleats: Two required, 9 inch long die cast aluminum with tamper-proof stainless steel socket head bolts.

PART 3 - EXECUTION

3.01 INSPECTION: Verify foundations for proper depth and size of sleeve.

3.02 PREPARATION: Paint all portions of flagpole below grade with heavy coat bituminous paint.

3.03

3.03 **INSTALLATION:** Install flagpole base assembly and all fittings in compliance with acceptable shop drawings and manufacturer's instructions, in plumb, vertical position.

- A. Provide positive lightning ground.
- B. Test and adjust installed fittings for smooth operation of halyards.

****END OF SECTION****

SECTION 10400
IDENTIFYING DEVICES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Building Identification Letters.
- B. Door Signs, Directional Signs and Informational Signs Interior.

1.02 SAMPLES

- A. Submit samples in accordance with Section 01300.
- B. Provide one full size sample of door signs and directional signs of type, style specified.
- C. Provide actual color samples of manufacturer's standard color palette for Construction Manager's selection.

1.03 SHOP DRAWINGS AND PRODUCT DATA

- A. Submit shop drawings as per Section 01300.
- B. Provide spacing diagram for building identification letters.
- C. Provide listing of sign types, lettering locations to be attached with overall dimension of each sign.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Package separately or in like groups of names, labelled as to names enclosed. Include installation templates, hardware or adhesive specified and installation instructions.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS FOR BUILDING IDENTIFICATION LETTERS

- A. Matthews Sign Co.
- B. United States Bronze Sign Co.
- C. Southwell Sign Co.
- D. Substitutions: Items of same function and performance are acceptable in conformance with Division 1, General Requirements, for prior approval procedures.

2.02 BUILDING IDENTIFICATION LETTERS

A. Provide, including installation, building or wall identification sign which is to be mounted on a surface to be determined by Owner. Exact building titles to be verified by Owner. Preliminary copy is "City of Avondale Wase Water Treatment Facility" "00000".

B. Ribbon style, aluminum with bronze duranodic finish, flush concealed mounting to stucco.

- | | |
|------------------|--------------|
| 1. Height | 12 inches |
| 2. Stroke | 3/4 inch |
| 3. Depth | 2-1/2 inches |
| 4. Average width | 8 inches |

2.03 DOOR SIGNS, DIRECTIONAL AND INFORMATION SIGNS

A. Signs as manufactured by Mohawk are specified to provide a standard of quality.

B. Prior approved manufacturers:

1. Best.
2. Zax.

C. Substitutions: Items of same function and performance may be acceptable in conformance with Section 00100 for prior approval procedures.

D. Comply with HEW and ANSI A117.1 for letter size, engraving depth, etc., for accessibility to the visually handicapped, all signs to be of self extinguishing materials.

E. Door Signs:

1. Mohawk: Series 100-A engraved signs in E.S. plastic.
2. Design Number: M-202 series (3-11/32" high).
3. Frame Finish: Aluminum Duranodic Bronze.
4. Letter Form: Optima.
5. Insert Mounting: Scotchmount - permanent.
6. Frame Mounting: Mechanical.

F. Door Sign Schedule: Provide indicated room names at specified locations. (Verify room numbers with Architect before fabrication.)

| <u>Location</u> | <u>Copy</u> |
|-----------------|----------------------|
| Door 1 | Entrance |
| Door 2 | Staff Only |
| Door 19 | Operations |
| Door 20, 21 | Administrator |
| Door 5, 18 | Workshop |
| Door 7, 17 | Motor Control Center |
| Door 8, 22 | Laboratory |
| Door 23 | Storage |
| Door 24 | Office |
| Door 6, 25 | Generator |
| Door 16 | Training |

2.03 F.

Door 15
Door 10
Door 13

Janitor
Women
Men

2.04 TRAFFIC SIGNS

A. Stop Signs - Red and white octagonal signs in accordance with the Manual on Uniform Traffic Control Devices and Arizona Department of Transportation.

B. Handicap Parking Signs - Printed with universal handicap symbol; painted in white with blue background, 12 inch x 18 inch, 16-gauge bonderized zinc-coated steel with U-channel posts.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install all identifying devices after doors and surfaces are painted and finished, in locations directed by Construction Manager.

B. Install centered and level, in line, in accordance with manufacturer's recommendations.

C. Clean and polish, remove excess adhesive.

****END OF SECTION****

SECTION 10441

ACCIDENT PREVENTION SIGNS

PART 1--GENERAL

1.01 DESCRIPTION

This section specifies informational and accident prevention signs.

1.02 QUALITY ASSURANCE

A. OPERATING AND DESIGN REQUIREMENTS:

1. GENERAL: Accident prevention signs shall conform as to design with OSHA Section 1919.145 of Subpart J, Part 1910, Chapter XVII, Title 29 of the Code of Federal Regulations. Exit signs shall conform with Section 1910.37(g) of the OSHA Safety and Health Standard for General Industry, and Article 10, Section 10.113 of the Uniform Fire Code.

Number and placement of exit signs shall be as indicated in the schedule in Part 3 of this section. Where applicable, exit signs shall comply with local fire regulations.

2. DESIGN REQUIREMENTS:

a. SIZE: Sign size shall be as follows:

- A - 14 inch x 20 inch
- B - 10 inch x 14 inch
- C - 7 inch x 10 inch

b. TYPE: The sign type shall be as follows:

| <u>Type</u> | <u>Message</u> |
|-------------|--|
| I | AUTOMATIC EQUIPMENT |
| II | 480 VOLTS |
| III | NONPOTABLE WATER DO NOT DRINK |
| IV | DANGER - DO NOT ENTER EQUIPMENT IN MOTION |
| V | HIGH VOLTAGE |

1.02 A.2.b.

| | |
|------|--|
| VI | EXIT |
| VII | FIRE EXTINGUISHER |
| VIII | DANGER - TOXIC GASES IN USE |
| IX | DANGER - DO NOT SMOKE |
| X | RADIOACTIVE |
| XI | LOCK OUT SWITCH BEFORE WORKING ON EQUIPMENT |
| XII | RESTRICTED AREA - AUTHORIZED PERSONNEL ONLY |

PART 2--PRODUCTS

2.01 GENERAL

Sign lettering shall be single stroke and shall contrast in color with the background and match existing plant signs. For those messages for which there are international symbols, the international symbols shall be used. Chain-mounted signs shall have lettering on both sides where indicated by an asterisk.

2.02 MATERIALS

Signs shall be 0.060-inch-thick fiberglass with embedded fade-proof legends. Signs attached to concrete walls shall be fastened with 1/4-inch stainless steel expansion anchors. Signs attached to free-standing columns shall be fastened with four 1/4-inch stainless steel bolts and nuts. Signs attached to metal shall be fastened with stainless steel sheet metal screws.

PART 3--EXECUTION

Final locations of all signs shall be subject to the approval of the Construction Manager. Signs shall be distributed as follows:

| <u>Location</u> | <u>Number</u> | <u>Size</u> | <u>Type</u> | <u>Mount</u> | <u>Note</u> |
|-------------------------------|---------------|-------------|-------------|--------------|-------------|
| Headworks | | | | | |
| Raw sewage pumping station | 1 | C | I | Post | (1) |
| Mechanical bar screen | 1 | C | I | Post | (2) |
| Grit pump | 1 | C | I | Wall | (3) |
| Oxidation channel blower area | 1 | C | I | Post | (4) |

| <u>Location</u> | <u>Number</u> | <u>Size</u> | <u>Type</u> | <u>Mount</u> | <u>Note</u> |
|--------------------------|---------------|-------------|-------------|--------------|-------------|
| Chlorine building | 3 | B | VIII | Wall | (5) |
| Effluent pumping station | 1 | C | I | Post | (6) |
| 3W pumping station | 1 | C | I | Post | (7) |
| Waste sludge thickener | 1 | C | I | Post | (8) |
| MCC room 1 B II wall | 1 | B | XI | Wall | |
| | 1 | B | XII | Door | |
| LPG storage tank | 2 | B | IX | Post | (9) |
| Engine generator room | 1 | C | I | Wall | |
| | 1 | C | II | Wall | |
| | 1 | C | XII | Door | |
| Miscellaneous | | C | VI | Door | (10) |
| | | B | III | | (11) |
| | | C | VII | Wall | (12) |

NOTES:

- (1) Locate by pumps P1111 and P1112.
- (2) Locate by SCR1211.
- (3) Locate by P1310.
- (4) Locate at entrance to blower enclosure.
- (5) Locate on wall adjacent to each entrance to the chlorine building.
- (6) Locate adjacent to the effluent pumping station.
- (7) Locate adjacent to eh 3W pumping station.
- (8) Locate adjacent to sludge pumps P7131 and P7132.
- (9) Locate one sign just east and the other just west of the LPG tank.
- (10) Mount one sign on the interior of each door of the operations building and the chlorine building. On double doors, mount sign on active leaf only.

- (11) Locate one sign at each utility station with 3W service. Post mounted stations have a location for sign mounting. Sign mounting shall be consistent with utility station mounting.
- (12) Locate one sign next to each fire extinguisher.

****END OF SECTION****

SECTION 10508
ATHLETIC LOCKERS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Locker units with hinged doors, metal bases, tops and filler panels.
- B. Hardware for attachment and erection.
- C. Operating hardware such as hooks, latches and locking device openings.

1.02 RELATED WORK

- A. Section 06100 - Rough Carpentry.
- B. Section 06200 - Finish Carpentry.

1.03 SHOP DRAWINGS AND PRODUCT DATA

- A. Submit shop drawings and product data in accordance with Section 01300, Submittals.

1.04 SAMPLES AND COLORS

- A. Submit samples of metal, grilles, etc., showing colors on actual base material in accordance with Section 01300, Submittals.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Debourgh Manufacturing Company.
- B. Art Metal Products.

2.02 MATERIALS - LOCKERS

- A. Lockers shall be fully welded factory assembled steel athletic lockers with solid louvered doors, solid sides and expanded mesh partitions and backs of the following types:

1. Men's and Women's Locker Room - 12 x 16 x 60.

- B. Doors: 14-gage solid steel, two (2) bends at each edge, 6 inch louvers top and bottom with three (3) hinges per door.

- C. Sides and Intermediate Partitions: One piece solid, louvered 14 gage metal panels securely welded in place at 6 inch o.c.

2.02

D. Latching: Unbreakable steel handle welded securely to a three point cremme type latching mechanism. Latching rods 3/8 inch diameter engage locker top and bottom with a 3/16 inch thick center latch-engaging locker joint, compatible for pad locks.

E. Finish: Before enamel is applied, the surfaces of the steel shall be thoroughly level phosphatized and sealed for maximum rust resistance. All parts shall then be finished with a heavy coat of enamel. Enamel shall be baked on. Color selected by Architect from 24 available colors.

F. Equipment: Lockers shall have one double prong back hook and two single prong wall hooks with a shelf approximately 9 inches below top of locker.

G. Number Plates: Each locker shall have a polished aluminum number plate with black numerals not less than 1/2 inch high. Plates to be attached with split rivets. Numbers to be in sequence in each room, starting from "101" and "201".

I. Tops and Bases:

1. All lockers to have solid 20 gage tops.
2. All bases to be prepared for attachment to wood subframe.
3. Provide end panels and filler panels as required.

PART 3 EXECUTION

3.01 PREPARATION

A. Verify bases are properly sized and located.

3.02 INSTALLATION

A. Install lockers secure, plumb, square, and in line. Set on prepared base provided.

B. Anchor lockers with appropriate anchor devices to suit materials encountered.

C. Bolt adjoining locker units together to provide rigid installation.

D. Install end panels, filler panels, sloped tops to completely close off openings.

END OF SECTION

SECTION 10510

LOCKERS AND LOCKER ROOM BENCHES

PART 1 - GENERAL

1.01 DESCRIPTION

A. SCOPE:

This section provides specifications for all steel lockers and wood locker room benches.

B. TYPE:

All lockers shall be of the single person type vented to the ceiling plenum.

1.02 QUALITY ASSURANCE:

A. GENERAL:

Lockers shall be fabricated in the enclosed single tier style with a sloped top.

B. DIMENSIONS:

Lockers shall be 72 inches high with other dimensions as shown on the drawings.

C. LOCKER FINISH:

After fabrication, all steel surfaces shall be cleaned of all oil and grease, phosphatized to inhibit corrosion, and finished with a prime coat and two coats of baked-on enamel in the selected color.

1.03 SUBMITTALS

A. PRODUCT DATA:

Submittals shall comply with Section 01300.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. DOORS:

1. GENERAL: Doors and door frames shall be No. 16 U.S. standard gage cold rolled and leveled sheet steel reinforced or stiffened to prevent distortion.

2. LOCKING DEVICES: The locking devices shall be the positive, automatic, prelocking type which permit the lockers to be locked while the doors are open, then closed without unlocking. The locking bars shall be enclosed, tamperproof and equipped with three locking points. Rubber silencers shall be used to prevent metal-to-metal contact in the locking devices or otherwise to minimize noise generated by opening and closing the doors. The handles shall be of die cast nonferrous metal with provisions for padlocks and have a padlock strike.

3. HINGES: Each door shall have at least three 2-inch wide tight pin style hinges.

4. NUMBER PLATES: Metal number plates with etched or stamped consecutive numbers at least 1/2 inch in height shall be mounted on the doors.

5. LOUVERS: Doors shall be louvered at the bottom only. Louvers shall be at least 6 inches wide and extend out 1/4 inch from the face of the door. At least six louvers shall be provided in the louver bank.

B. BODY:

The body of each locker, consisting of upright sheets, backs, tops, bottoms and shelves, shall be fabricated of not lighter than No. 24-gage mild cold rolled steel free from imperfections. Bolts and nuts shall be zinc-plated. The top of each locker shall be perforated with 1/4-inch holes on 1-inch centers each way.

C. TRIM ANGLES:

Trim angles shall be provided to cover the gap at the ends and across the top of each locker section at junctions with walls. Trim angles shall be 3 inches wide and not less than 18-gage steel.

D. BASE:

Lockers shall be designed for installation on a concrete curb.

E. ACCESSORIES

1. HAT SHELF: Each locker shall have one hat shelf with a reinforced or stiffened front edge located approximately 9 inches below the top of the locker. The shelf shall be perforated with 1/4-inch holes on 1-inch centers each way.

2. HOOKS: Each locker compartment shall have one double prong ceiling hook and three single prong wall hooks (one on each wall). All hooks shall be steel, have ball points and be attached with two bolts or rivets.

F. LOCKER ROOM BENCHES:

Locker room benches shall be 1-1/2 inch thick by 9-1/2 inches wide by the length indicated on the drawings, of any suitable species of hardwood. Benches shall be mounted on 1-1/4-inch-diameter pipe legs as indicated.

The seat board shall be finished with one coat of penetrating sealer and three coats of high gloss polyurethane varnish. Legs shall be given the same finish as that applied to the lockers.

END OF SECTION

SECTION 10520

FIRE EXTINGUISHERS

PART 1--GENERAL

1.01 DESCRIPTION

A. SCOPE:

This section specifies fire extinguishers.

B. TYPE:

Fire extinguishers shall be of the multipurpose dry chemical, 5-pound ABC type, or Halon 5-pound type 1211, as specified.

1.02 QUALITY ASSURANCE

The multipurpose dry chemical fire extinguishers shall be UL and ULC rated at 4A-40-B:C. The Halon fire extinguishers shall be UL and ULC rated at 10-B:C.

All fire extinguishers shall comply with Underwriters Laboratory Standard 299, shall bear Factory Mutual Certification Underwriters Laboratories Certification, and shall be listed by the state fire marshall.

Distribution and installation of all fire extinguishers shall be in conformance with NFPA No. 10, Standard of the Installation of Portable Fire Extinguishers.

The Contractor shall provide to the Construction Manager verification from the City of Avondale Fire Department that installation of the extinguishers is satisfactory.

PART 2--EXECUTION

2.01 INSTALLATION

The fire extinguishers shall be installed as shown on the drawings, or described in this section. The Halon extinguishers shall be installed in the motor control center building, and the multipurpose dry chemical extinguishers shall be installed in all other locations.

2.01

| <u>Location</u> | <u>No. of Extinguishers</u> |
|---|-----------------------------|
| Motor control center (inside at doors) | 2 (Halon) |
| Chlorine room (inside at single doors) | 2 |
| Operations building | |
| Laboratory | 1 |
| Lunch room | 1 |
| Inside door at main entrance | 1 |

END OF SECTION

SECTION 10800

TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Toilet and bath accessories listed herein.
- B. Rough-in frames supplied to other sections.
- C. Attachment hardware.

1.02 PRODUCT DATA

- A. Submit manufacturer's product data in accordance with Section 01300, Submittals.
- B. Data to illustrate each accessory at large scale and show installation method.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Do not deliver accessories to site until rooms in which they are to be installed are ready to receive them.
- B. Pack accessories individually in a manner to protect accessory and its finish.
- C. Remove protective covers at final clean up of installation.

1.04 PROTECTION

- A. Protect adjacent or adjoining finished surfaces and work from damage during installation of work of this Section.

1.05 GUARANTEES

- A. Guarantee all mirrors for ten (10) years against silver spoilage in addition to one year guarantee on all accessories.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Manufacturer: Equipment listed is manufactured by Bobrick Washroom Equipment.

2.01 B.

B. Bradley Corporation.

C. Substitutions: Items of same function and performance are acceptable in conformance with prior approval procedures as described in Division One - General Requirements.

2.02 MATERIALS

A. Sheet Steel: ASTM A366, cold rolled stretcher levelled; 1.25 oz./sq. ft. (38 g/square meter) galvanized coating.

B. Stainless Steel Sheet: ASTM A167, commercial grade, 22 gage (0.80 mm).

C. Stainless Steel Tubing: ASTM A269, commercial grade, seamless welded.

D. Adhesive: Epoxy type contact cement.

E. Fasteners, Screws and Bolts: Hot dip galvanized. Expansion Shields: Fiber, lead or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FINISHES

A. Stainless Steel: No. 4 stain luster polished finish.

B. Shop primed ferrous metals: Pretreat and clean, spray apply one coat primer and bake.

C. Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats baked porcelain enamel.

2.04 FABRICATION

A. Weld and grind smooth joints of fabricated components.

B. Form exposed surfaces from one sheet of stock, free of joints.

C. Provide steel anchor plates and anchor components for installation on building finishes.

D. Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.

E. Back paint components where contact is made with building finishes to prevent electrolysis.

F. Hot dip galvanize ferrous metal anchors and fastening devices.

2.04 G.

G. Shop assemble components and package complete with anchors and fittings.

PART 3 - EXECUTION

3.01 INSPECTION

A. Check openings scheduled to receive recessed units for correct dimensions, plumbness of blocking or frames and preparation that would affect installation of accessories.

B. Check areas to receive surface-mounted units for conditions which would affect quality and execution of work.

C. Verify spacing of plumbing fixtures and toilet partitions that affect installation of accessories.

D. Do not begin installation of washroom accessories until openings and surfaces are acceptable.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to jobsite at appropriate time for building-in. Provide templates and rough-in measurements as required.

B. Before starting work notify Construction Manager in writing of any conflicts detrimental to installation or operation of units.

3.03 INSTALLATION

A. Install fixtures, accessories and items in accordance with manufacturer's printed instructions.

B. Install true, plumb and level, securely and rigidly anchored to substrate.

C. Use tamper-proof fasteners.

D. Drill holes to correct size and application that is concealed by item with 1/4 inch tolerance.

E. Mount recessed accessories into wall openings with wood screws through cabinet sides into wood blocking or sheet metal screws into metal frames.

F. Mount surface-mounted accessories to backup with toggle bolts or to grounds provided by others, plumb and align.

G. Lock grab bars to concealed mounting plate installed in wall.

3.03 H.

H. Adjust and Clean:

1. Adjust accessories for proper operation.
2. After completion of installation, clean and polish all exposed surfaces.
3. Deliver keys and instruction sheets to Owner via Construction Manager.

3.04 SCHEDULE OF ACCESSORIES

A. Paper Towel Dispenser/Disposer (Recessed Mounted): Model B-3944, stainless steel, capable of dispensing 6000 C-fold or 800 multi-fold paper towels. Door with tumbler lock and piano hinge. Receptacle is 12-gallon, 4 inches deep and extends 4 inches from wall.

B. Paper Towel Dispenser (Surface Mounted): Model B-262, stainless steel, dispenses 400 C-fold paper towels, tumbler lock and piano hinge.

C. Liquid Soap Dispenser System: Model B-930, recessed tank with B-870 combination union and shut-off with B-8665 liquid soap valve with 4" spout. Coordinate installation with Plumbing Contractor.

D. Feminine Napkin Disposal: Model B-354, stainless steel, partition mounted disposal, servicing two toilet compartments, with self-closing doors, with service entrance from one side only, lettered with "Napkin Disposal", "Push", on each door.

E. Recessed Multi-Roll Toilet Tissue Dispenser: Model B-388, stainless steel for dispensing two rolls of standard toilet tissue. Extra roll drops into place after bottom roll used up.

F. Partition-mounted Multi-Roll Toilet Tissue Dispenser: Model B-386, stainless steel, serving two toilet compartments, by mounting into partition. Compartments same as B-388 above.

G. Recessed Combination Soap and Grab: Model 4390 (or B 439), stainless steel polished finish, with plated steel mounting clamp for installation in stud partition (or CMU).

H. Robe Hooks: Model B-671, stainless steel, with concealed 16 gauge mounting bracket which locks to stainless steel wall plate with stainless steel set screw.

I. Mirrors: B-290 Series, sizes as indicated on drawings with one-piece channel frame, 1/2 inch x 1/2 inch x 1/2 inch, with bright polished stainless steel finish and mitered corners. Mirror No. 1 quality, 1/4 inch float/plate glass electrolytically copper plated, guaranteed against silver spoilage for ten (10) years. Mirror edge and back protected by shock absorbing material. Back galvanized steel. concealed wall hanger locking into place with theft-resistant screws.

3.04 K.

J. Grab Bars: At locations indicated on plans, provide Series B-6237 for wheelchair compartments. Grab bars minimum 1-1/2 inches outside diameter x 18 gauge wall, Type 304 stainless steel tubing with polished surface. Flanges 11 gauge stainless steel, 3 inch diameter and provided with four (4) vandal-proof set screws for locking to concealed fastening plate. Provide Series 2562 mounting assembly to stud walls, Series 2582 to toilet partitions, Series 2572 for masonry construction.

K. Shower Curtain Assemblies: B-6107 heavy-duty stainless steel shower curtain rod, 20-gage, 1 inch diameter, B-204-2, 42 inch x 72 inch vinyl shower curtain with nickel plated brass grommets at 6 inches along top and B-204-1, Type 304, stainless steel shower curtain hooks.

****END OF SECTION****