FALLS TOWNSHIP WATERFRONT PARK - PHASE II

as part of the implementation of the

PENNSYLVANIA COASTAL ZONE MANAGEMENT PROGRAM

29 September 1982

PREPARED FOR:

TOWNSHIP OF FALLS

PREPARED BY:

UNIPLAN
350 Alexander Street
Princeton, New Jersey 08540

609-924-6789

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F37
1982

Coordinated through
Environmental Resources
Resources Management
Management Office
Zone

QH91.75.P4F37 1982

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FALLS TOWNSHIP WATERFRONT PARK - PHASE II

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FALLS TOWNSHIP WATERFRONT PARK - PHASE II

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ADVERTISEMENT FOR BIDS

The Township of Falls, Pennsylvania, will receive sealed proposals for the Falls Township Waterfront Park in the Township of Falls, Pennsylvania.

1. Date: Time: 4:00 P.M. E.S.T.

2. Location: Falls Township Municipal Building, 285 Yardley Avenue, Fallsington, Pennsylvania.

3. No bids will be received or considered by telephone or telegraph.

4. Opening: 8:00 P.M. E.S.T.

5. Pre-Bid Conference - Date: at 10:00 A.M. E.S.T.
at the Falls Township Municipal Building.

Proposals will be publicly opened and read by the Township of Falls at 8:00 p.m. E.S.T. The award will be made to the lowest responsible bidder based upon the base bid together with selected alternates as the Falls Township's interests may appear.

The bid documents for the project may be obtained at the Architect's office: UNIPLAN, 350 Alexander Street, Princeton, New Jersey, 08540, and at the Falls Township Municipal Building, 285 Yardley Avenue, Fallsington, Pennsylvania by depositing $40.00 for each set in the form of cash or check made payable to UNIPLAN.

All documents requested to be forwarded to bidders will be at the bidder's expense and will be shipped via the best mode available.

Deposits will be refunded to bidders upon the return of the bid documents in good condition within thirty (30) days after the bid opening date. Refunds to non-bidders will not be made after the bid opening.

For the convenience of bidders, sets of drawings and specifications will be on file in the Architect's office, and at the Falls Township Municipal Building, 285 Yardley Avenue, Fallsington, Pennsylvania.

Each bidder must submit the following documents along with the Form of Proposal

1. A certified check or cashiers check payable to the Owner in the amount of ten (10%) percent of the bid amount, or a Bid Bond in the same amount.

2. Non-Collusion Affidavit

3. Separate certificate of a Surety Company stating that it will provide bidder with the Performance and Payment Bonds required by these documents in the event a contract is awarded to the bidder.

4. Contractor's Qualification Statement.

Proposals shall only be submitted on the form of proposal provided and shall be based only on the materials, construction and equipment described in the specifications and/or on the drawings.

No changes in price or terms and conditions will be considered after the bids have been opened.

This project is being funded through a grant made available to Falls Township from the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U. S. Department of Commerce and therefore, federal prevailing wage rates, equal employment opportunity and other federal contract standards shall apply.

The Township of Falls reserves the right to reject any and all Proposals or any parts thereof, to waive informalities in the bidding and to accept Proposals deemed most favorable to the interests of the Township after all bids have been examined and evaluated.

Interested Contractors are requested to notify the Architects, UNIPLAN, as soon as possible so that the necessary documents may be made available for their use.

The agent or representative for the Owner shall be the Architects, UNIPLAN.

END OF ADVERTISEMENT FOR BIDS

THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A701

Instructions to Bidders

1978 EDITION

Use only with the 1976 Edition of AIA Document A201, General Conditions of the Contract for Construction

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INSTRUCTIONS TO BIDDERS

ARTICLE 1
DEFINITIONS

1.1 Bidding Documents include the Advertisement or Invitation to Bid, Instructions to Bidders, the bid form, other sample bidding and contract forms and the proposed Contract Documents including any Addenda issued prior to receipt of bids. The Contract Documents proposed for the Work consist of the Owner-Contractor Agreement, the Conditions of the Contract (General, Supplementary and other Conditions), the Drawings, the Specifications and all Addenda issued prior to and all Modifications issued after execution of the Contract.

1.2 All definitions set forth in the General Conditions of the Contract for Construction, AIA Document A201, or in other Contract Documents are applicable to the Bidding Documents.

1.3 Addenda are written or graphic instruments issued by the Architect prior to the execution of the Contract which modify or interpret the Bidding Documents by addition, deletions, clarifications or corrections.

1.4 A Bid is a complete and properly signed proposal to do the Work or designated portion thereof for the sums stipulated therein, submitted in accordance with the Bidding Documents.

1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which work may be added or from which work may be deleted for sums stated in Alternate Bids.

1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials or services as described in the Bidding Documents or in the proposed Contract Documents.

1.8 A Bidder is a person or entity who submits a Bid.

1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials or labor for a portion of the Work.

ARTICLE 2
BIDDER'S REPRESENTATIONS

2.1 Each Bidder by making his Bid represents that:

2.1.1 He has read and understands the Bidding Documents and his Bid is made in accordance therewith.

2.1.2 He has visited the site, has familiarized himself with the local conditions under which the Work is to be performed and has correlated his observations with the requirements of the proposed Contract Documents.

2.1.3 His Bid is based upon the materials, systems and equipment required by the Bidding Documents without exception.

ARTICLE 3
BIDDING DOCUMENTS

3.1 COPIES

3.1.1 Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the Advertisement or Invitation to Bid in the number and for the deposit sum, if any, stated therein. The deposit will be refunded to Bidders who submit a bona fide Bid and return the Bidding Documents in good condition within ten days after receipt of Bids. The cost of replacement of any missing or damaged documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the Bidding Documents and his deposit will be refunded.

3.1.2 Bidding Documents will not be issued directly to Sub-bidders or others unless specifically offered in the Advertisement or Invitation to Bid.

3.1.3 Bidders shall use complete sets of Bidding Documents in preparing Bids; neither the Owner nor the Architect assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

3.1.4 The Owner or the Architect in making copies of the Bidding Documents available on the above terms do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

3.2.1 Bidders and Sub-bidders shall promptly notify the Architect of any ambiguity, inconsistency or error which they may discover upon examination of the Bidding Documents or of the site and local conditions.

3.2.2 Bidders and Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request which shall reach the Architect at least seven days prior to the date for receipt of Bids.

3.2.3 Any interpretation, correction or change of the Bidding Documents will be made by Addendum. Interpretations, corrections or changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections and changes.

3.3 SUBSTITUTIONS

3.3.1 The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.

3.3.2 No substitution will be considered prior to receipt of Bids unless written request for approval has been re-

ceived by the Architect at least ten days prior to the date for receipt of Bids. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including drawings, cuts, performance and test data and any other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or other Work that incorporation of the substitute would require shall be included. The burden of proof of the merit of the proposed substitute is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

3.3.3 If the Architect approves any proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

3.3.4 No substitutions will be considered after the Contract award unless specifically provided in the Contract Documents.

3.4 ADDENDA

3.4.1 Addenda will be mailed or delivered to all who are known by the Architect to have received a complete set of Bidding Documents.

3.4.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

3.4.3 No Addenda will be issued later than four days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

3.4.4 Each Bidder shall ascertain prior to submitting his bid that he has received all Addenda issued, and he shall acknowledge their receipt in his Bid.

ARTICLE 4

BIDDING PROCEDURE

4.1 FORM AND STYLE OF BIDS

4.1.1 Bids shall be submitted on forms identical to the form included with the Bidding Documents, in the quantity required by Article 9.

4.1.2 All blanks on the bid form shall be filled in by typewriter or manually in ink.

4.1.3 Where so indicated by the makeup of the bid form, sums shall be expressed in both words and figures, and in case of discrepancy between the two, the amount written in words shall govern.

4.1.4 Any interlineation, alteration or erasure must be initialed by the signer of the Bid.

4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change."

4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of his bid security, state his refusal to accept award of less than the combination of Bids he so stipulates. The Bidder shall make no additional stipulations on the bid form nor qualify his Bid in any other manner.

4.1.7 Each copy of the Bid shall include the legal name of the Bidder and a statement that the Bidder is a sole proprietor, a partnership, a corporation, or some other legal entity. Each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached certifying the agent's authority to bind the Bidder.

4.2 BID SECURITY

4.2.1 If so stipulated in the Advertisement or Invitation to Bid, each Bid shall be accompanied by a bid security in the form and amount required by Article 9 pledging that the Bidder will enter into a contract with the Owner on the terms stated in his Bid and will, if required, furnish bonds as described hereunder in Article 7 covering the faithful performance of the Contract and the payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. The amount of the bid security shall not be forfeited to the Owner in the event the Owner fails to comply with Subparagraph 6.2.1.

4.2.2 If a surety bond is required it shall be written on AIA Document A310, Bid Bond, and the attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of his power of attorney.

4.2.3 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until either (a) the Contract has been executed and bonds, if required, have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn, or (c) all Bids have been rejected.

4.3 SUBMISSION OF BIDS

4.3.1 All copies of the Bid, the bid security, if any, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

4.3.2 Bids shall be deposited at the designated location prior to the time and date for receipt of Bids indicated in the Advertisement or Invitation to Bid, or any extension thereof made by Addendum. Bids received after the time and date for receipt of Bids will be returned unopened.

4.3.3 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

4.3.4 Oral, telephonic or telegraphic Bids are invalid and will not receive consideration.

4.4 MODIFICATION OR WITHDRAWAL OF BID

4.4.1 A Bid may not be modified, withdrawn or canceled by the Bidder during the stipulated time period following the time and date designated for the receipt of Bids, and each Bidder so agrees in submitting his Bid.

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4.4.2 Prior to the time and date designated for receipt of Bids, any Bid submitted may be modified or withdrawn by notice to the party receiving Bids at the place designated for receipt of Bids. Such notice shall be in writing over the signature of the Bidder or by telegram: if by telegram, written confirmation over the signature of the Bidder shall be mailed and postmarked on or before the date and time set for receipt of Bids, and it shall be so worded as not to reveal the amount of the original Bid.

4.4.3 Withdrawn Bids may be resubmitted up to the time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

4.4.4 Bid security, if any is required, shall be in an amount sufficient for the Bid as modified or resubmitted.

ARTICLE 5

CONSIDERATION OF BIDS

5.1 OPENING OF BIDS

5.1.1 Unless stated otherwise in the Advertisement or Invitation to Bid, the properly identified Bids received on time will be opened publicly and will be read aloud. An abstract of the Base Bids and Alternate Bids, if any, will be made available to Bidders. When it has been stated that Bids will be opened privately, an abstract of the same information may, at the discretion of the Owner, be made available to the Bidders within a reasonable time.

5.2 REJECTION OF BIDS

5.2.1 The Owner shall have the right to reject any or all Bids and to reject a Bid not accompanied by any required bid security or by other data required by the Bidding Documents, or to reject a Bid which is in any way incomplete or irregular.

5.3 ACCEPTANCE OF BID (AWARD)

5.3.1 It is the intent of the Owner to award a Contract to the lowest responsible Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Owner shall have the right to waive any informality or irregularity in any Bid or Bids received and to accept the Bid or Bids which, in his judgment, is in his own best interests.

5.3.2 The Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in Article 9, and to determine the low Bidder on the basis of the sum of the Base Bid and the Alternates accepted.

ARTICLE 6

POST BID INFORMATION

6.1 CONTRACTOR'S QUALIFICATION STATEMENT

6.1.1 Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request, a properly executed AIA Document A305, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted as a prerequisite to the issuance of Bidding Documents.

6.2 OWNER'S FINANCIAL CAPABILITY

6.2.1 The Owner shall, at the request of the Bidder to whom award of a Contract is under consideration and no later than seven days prior to the expiration of the time for withdrawal of Bids, furnish to the Bidder reasonable evidence that the Owner has made financial arrangements to fulfill the Contract obligations. Unless such reasonable evidence is furnished, the Bidder will not be required to execute the Owner-Contractor Agreement.

6.3 SUBMITTALS

6.3.1 The Bidder shall, within seven days of notification of selection for the award of a Contract for the Work, submit the following information to the Architect:

.1 a designation of the Work to be performed by the Bidder with his own forces;

.2 the proprietary names and the suppliers of principal items or systems of materials and equipment proposed for the Work;

.3 a list of names of the Subcontractors or other persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and the Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

6.3.3 Prior to the award of the Contract, the Architect will notify the Bidder in writing if either the Owner or the Architect, after due investigation, has reasonable objection to any such proposed person or entity. If the Owner or Architect has reasonable objection to any such proposed person or entity, the Bidder may, at his option, (1) withdraw his Bid, or (2) submit an acceptable substitute person or entity with an adjustment in his bid price to cover the difference in cost occasioned by such substitution. The Owner may, at his discretion, accept the adjusted bid price or he may disqualify the Bidder. In the event of either withdrawal or disqualification under this Subparagraph, bid security will not be forfeited, notwithstanding the provisions of Paragraph 4.4.1.

6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and the Architect have made no reasonable objection under the provisions of Subparagraph 6.3.3 must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and the Architect.

ARTICLE 7

PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

7.1 BOND REQUIREMENTS

7.1.1 Prior to execution of the Contract, if required in Article 9 hereinafter, the Bidder shall furnish bonds covering the faithful performance of the Contract and the payment of all obligations arising thereunder in such form and amount as the Owner may prescribe. Bonds may be secured through the Bidder's usual sources. If the furnish-

ing of such bonds is stipulated hereinafter in Article 9, the cost shall be included in the Bid.

7.1.2 If the Owner has reserved the right to require that bonds be furnished subsequent to the execution of the Contract, the cost shall be adjusted as provided in the Contract Documents.

7.1.3 If the Owner requires that bonds be obtained from other than the Bidder's usual source, any change in cost will be adjusted as provided in the Contract Documents.

7.2 TIME OF DELIVERY AND FORM OF BONDS

7.2.1 The Bidder shall deliver the required bonds to the Owner not later than the date of execution of the Contract, or if the Work is to be commenced prior thereto in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

7.2.2 Unless otherwise required in Article 9, the bonds shall be written on AIA Document A311, Performance Bond and Labor and Material Payment Bond.

7.2.3 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of his power of attorney.

ARTICLE 8

FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

8.1 FORM TO BE USED

8.1.1 Unless otherwise required in the Bidding Documents, the Agreement for the Work will be written on AIA Document A101, Standard Form of Agreement Between Owner and Contractor, where the basis of payment is a Stipulated Sum.

ARTICLE 9

SUPPLEMENTARY INSTRUCTIONS

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FALLS TOWNSHIP WATERFRONT PARK - PHASE II

FORM OF PROPOSAL FOR SINGLE LUMP SUM BID

PROPOSAL OF _____

FOR THE FALLS TOWNSHIP WATERFRONT PARK - PHASE II FOR THE TOWNSHIP OF FALLS, BUCKS COUNTY, PENNSYLVANIA

TO: The Township of Falls
285 Yardley Avenue
Fallsington, Pennsylvania 19054

Gentlemen:

Having carefully read and examined the Instructions to Bidders and the Specifications and Drawings titled "Falls Township Waterfront Park - Phase II" and having inspected the premises and conditions affecting the work, the Undersigned proposes to furnish everything called for by the said documents, for the sum of:

_____ Dollars

($) for the Base Bid Work

UNIT PRICES

See Section 2H1 - Water Well

Cost of drilling, developing and testing (per foot) $_____

Cost per foot of each size casing (in place) $_____

Cost per foot of grouting (in place) $_____

Cost per foot of well screen (in place) $_____

Cost per hour of test pumping $_____

If he be notified of the acceptance of this proposal within forty five (45) calendar days of the time set for the opening of bids, the Undersigned agrees to execute a Contract for the above work, for the above stated compensation, and in the alloted time.

The Undersigned further agrees, if awarded the Contract, to execute and deliver to the Owner at the time of signing the Contract, a surety bond in the amount equal to the total sum and in a stipulated form. The sufficiency and legality of the bond shall be determined by the counsel of the Owner, whose opinion will be final.

Bidder acknowledges receipt of the following Addenda:

Addendum Number	Date of Addendum
_____	_____
_____	_____
_____	_____

PROPOSAL OF _____

FOR THE FALLS TOWNSHIP WATERFRONT PARK - PHASE II FOR THE TOWNSHIP OF FALLS, BUCKS COUNTY, PENNSYLVANIA

We propose that all work will be substantially complete within two hundred twenty (220) calendar days following the date of contract signing or receipt of Notice to Proceed whichever is first.

Attached hereto is an affidavit in proof that the undersigned has not entered into any collusion with any person in respect to this proposal or any other proposal or the submitting of proposals for the contract for which this proposal is submitted. Also attached is a Statement of Bidder's Qualifications.

The Bidder represents that he (has) (has not), participated in a previous contract or subcontract subject to either the Equal Opportunity Clause herein or the clause originally contained in Section 301 of Executive Order No. 10925; that he (has) (has not) filed all required compliance reports; and has representation indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained prior to subcontract awards. The Bidder further represents that he will, if required, submit, and require proposed subcontractors to submit, a compliance report prior to the award of the contract or subcontract. (The above representations need not be submitted in connection with contracts or subcontracts which are exempt from the clause).

DATED: _____

SIGNED: (All signatures are to be in longhand)

Signature of Bidder: _____

By: _____ Tel.No. _____

Address of Bidder: _____

END OF PROPOSAL

THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A305

Contractor's Qualification Statement

Required in advance of consideration of application to bid or as a qualification statement in advance of award of contract. Approved and recommended by The American Institute of Architects and The Associated General Contractors of America.

The Undersigned certifies under oath the truth and correctness of all statements and of all answers to questions made hereinafter.

SUBMITTED TO:

Corporation ☐
Partnership ☐
Individual ☐
Joint Venture ☐
Other

SUBMITTED BY:
NAME:
ADDRESS:
PRINCIPAL OFFICE:

(Note: Attach Separate Sheets As Required)

1.0 How many years has your organization been in business as a general contractor?
2.0 How many years has your organization been in business under its present business name?
3.0 If a corporation answer the following:
3.1 Date of incorporation:
3.2 State of incorporation:
3.3 President's name:
3.4 Vice-president's name(s):

3.5 Secy's or Clerk's name:
3.6 Treasurer's name:

4.0 If individual or partnership answer the following:

4.1 Date of organization:

4.2 Name and address of all partners. (State whether general or limited partnership.):

5.0 If other than corporation or partnership, describe organization and name principals:

6.0 We normally perform % of the work with our own forces. List trades below:

7.0 Have you ever failed to complete any work awarded to you? If so, note when, where, and why:

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8.0 Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a construction contract? If so, state circumstances:

9.0 List name of project, owner, architect, contract amount, percent complete and scheduled completion of the major construction projects your organization has in process on this date:

10.0 List the name of project, owner, architect, contract amount, date of completion, percent of work with own forces of the major projects your organization has completed in the past five years:

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11.0 List the construction experience of the principal individuals of your organization:

12.0 List states and categories in which your organization is legally qualified to do business:

13.0 Trade References:

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14.0 Bank References:

15.0 Name of Bonding Company and name and address of agent:

16.0 Attach Statement of Financial Conditions, including Contractor's latest regular dated financial statement or balance sheet which must contain the following items:

Current Assets: (Cash, joint venture accounts, accounts receivable, notes receivable, accrued interest on notes, deposits, and materials and prepaid expenses), net fixed assets and other assets.

Current Liabilities: (Accounts payable, notes payable, accrued interest on notes, provision for income taxes, advances received from owners, accrued salaries, accrued payroll taxes), other liabilities, and capital (capital stock, authorized and outstanding shares par values, earned surplus).

Date of statement or balance sheet:

Name of firm preparing statement:

17.0 Dated at

this day of 19 .

Name of Organization:

By:
Title:

18.0

M being duly sworn deposes and says that he (she) is

the of , Contractor(s)

and that answers to the foregoing questions and all statements therein contained are true and correct.

Subscribed and sworn before me this day of 19

Notary Public:

My Commission Expires:

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THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A310

Bid Bond

KNOW ALL MEN BY THESE PRESENTS, that we

as Principal, hereinafter called the Principal, and

a corporation duly organized under the laws of the State of
as Surety, hereinafter called the Surety, are held and firmly bound unto

as Obligee, hereinafter called the Obligee, in the sum of

Dollars ($),
for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this day of 19

(Witness)	(Principal)	(Seal)
	(Title)	
(Witness)	(Surety)	(Seal)
	(Title)	

FALLS TOWNSHIP WATERFRONT PARK - PHASE II

NON-COLLUSION AFFIDAVIT

Project: Falls Township Waterfront Park - Phase II
Falls Township, Pennsylvania

Bid Due
Date:_____

STATE OF PENNSYLVANIA
TOWNSHIP OF FALLS

SS:

I_____of the City of _____ in the County of _____and the State of _____ of full age, being duly sworn according to law on my oath depose and say that: I am _____ of the Firm of _____ the Bidder making the Bid for the above named Project, and that I executed the said Bid with full authority so to do; that said Bidder has not, directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free, competitive bidding in connection with the above named Project; and that all statements contained in said Bid, and in this affidavit are true and correct, and made with full knowledge that the Township of Falls relies upon the truth of the said statements in awarding the Contract for the said Project.

_____

Subscribed and Sworn to
before me this day
of 19 .

_____
Notary Public of
My Commission expires , 19 .

CERTIFICATION OF BIDDER REGARDING EQUAL EMPLOYMENT OPPORTUNITY

INSTRUCTIONS

This certification is required pursuant to Executive Order 11246 (30 F. R. 12319-25). The implementing rules and regulations provide that any bidder or prospective contractor, or any of their proposed subcontractors, shall state as an initial part of the bid or negotiations of the contract whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; and, if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicates that the bidder has not filed a compliance report due under applicable instructions, such bidder shall be required to submit a compliance report within seven calendar days after bid opening. No contract shall be awarded unless such report is submitted.

CERTIFICATION BY BIDDER

Bidder's Name: _____

Address and Zip Code: _____

_____

1. Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause.
   Yes ☐ No ☐ *(If answer is yes, identify the most recent contract.)*

2. Compliance reports were required to be filed in connection with such contract or subcontract.
   Yes ☐ No ☐ *(If answer is yes, identify the most recent contract.)*

3. Bidder has filed all compliance reports due under applicable instructions, including SF-100.
   Yes ☐ No ☐ None Required ☐

4. If answer to item 3 is "No," please explain in detail on reverse side of this certification.

Certification – The information above is true and complete to the best of my knowledge and belief.

_____
Name and Title of Signer (Please Type)

_____ _____
Signature *Date*

CERTIFICATION BY PROPOSED SUBCONTRACTOR REGARDING EQUAL EMPLOYMENT OPPORTUNITY

NAME OF PRIME CONTRACTOR _____ PROJECT NO. _____

INSTRUCTIONS

This certification is required pursuant to Executive Order 11246 (30 F.R. 12319-25). The implementing rules and regulations provide that any bidder or prospective contractor, or any of their proposed subcontractors, shall state as an initial part of the bid or negotiations of the contract whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; and, if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicates that the subcontractor has not filed a compliance report due under applicable instructions, such subcontractor shall be required to submit a compliance report before the owner approves the subcontract or permits work to begin under the subcontract.

SUBCONTRACTOR'S CERTIFICATION

Subcontractor's Name: _____

Address: _____

_____

1. Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause.
   Yes ☐ No ☐
2. Compliance reports were required to be filed in connection with such contract or subcontract.
   Yes ☐ No ☐
3. Bidder has filed all compliance reports due under applicable instructions, including SF-100.
   Yes ☐ No ☐ None Required ☐
4. If answer to item 3 is "No," please explain in detail on reverse side of this certification.

Certification – The information above is true and complete to the best of my knowledge and belief.

_____
NAME AND TITLE OF SIGNER *(Please Type)*

_____ _____
SIGNATURE DATE

THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A311

Performance Bond

KNOW ALL MEN BY THESE PRESENTS: that

(Here insert full name and address or legal title of Contractor)

as Principal, hereinafter called Contractor, and,

(Here insert full name and address or legal title of Surety)

as Surety, hereinafter called Surety, are held and firmly bound unto

(Here insert full name and address or legal title of Owner)

as Obligee, hereinafter called Owner, in the amount of

Dollars ($),

for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

Contractor has by written agreement dated 19 , entered into a contract with Owner for

in accordance with Drawings and Specifications prepared by

(Here insert full name and address or legal title of Architect)

which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the Owner.

Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly

1) Complete the Contract in accordance with its terms and conditions, or

2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the Owner elects, upon determination by the Owner and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and Owner, and make available as Work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by Owner to Contractor under the Contract and any amendments thereto, less the amount properly paid by Owner to Contractor.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators or successors of the Owner.

Signed and sealed this day of 19

(Witness) (Principal) (Seal)

(Title)

(Witness) (Surety) (Seal)

(Title)

THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A311

Labor and Material Payment Bond

THIS BOND IS ISSUED SIMULTANEOUSLY WITH PERFORMANCE BOND IN FAVOR OF THE OWNER CONDITIONED ON THE FULL AND FAITHFUL PERFORMANCE OF THE CONTRACT

KNOW ALL MEN BY THESE PRESENTS: that

(Here insert full name and address or legal title of Contractor)

as Principal, hereinafter called Principal, and,

(Here insert full name and address or legal title of Surety)

as Surety, hereinafter called Surety, are held and firmly bound unto

(Here insert full name and address or legal title of Owner)

as Obligee, hereinafter called Owner, for the use and benefit of claimants as hereinbelow defined, in the amount of

(Here insert a sum equal to at least one-half of the contract price) Dollars ($),

for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

Principal has by written agreement dated 19 , entered into a contract with Owner for

in accordance with Drawings and Specifications prepared by

(Here insert full name and address or legal title of Architect)

which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

2. The above named Principal and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any costs or expenses of any such suit.

3. No suit or action shall be commenced hereunder by any claimant:

a) Unless claimant, other than one having a direct contract with the Principal, shall have given written notice to any two of the following: the Principal, the Owner, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, Owner or Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer.

b) After the expiration of one (1) year following the date on which Principal ceased Work on said Contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

c) Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the state in which the Project, or any part thereof, is situated, or in the United States District Court for the district in which the Project, or any part thereof, is situated, and not elsewhere.

4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

Signed and sealed this day of 19

(Witness) (Principal) (Seal)

(Title)

(Witness) (Surety) (Seal)

(Title)

THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A101

Standard Form of Agreement Between Owner and Contractor

where the basis of payment is a

STIPULATED SUM

1977 EDITION

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS COMPLETION OR MODIFICATION

Use only with the 1976 Edition of AIA Document A201, General Conditions of the Contract for Construction.

This document has been approved and endorsed by The Associated General Contractors of America.

AGREEMENT

made as of the day of in the year of Nineteen Hundred and

BETWEEN the Owner:

and the Contractor:

The Project:

The Architect:

The Owner and the Contractor agree as set forth below.

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ARTICLE 1

THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, the Conditions of the Contract (General, Supplementary and other Conditions), the Drawings, the Specifications, all Addenda issued prior to and all Modifications issued after execution of this Agreement. These form the Contract, and all are as fully a part of the Contract as if attached to this Agreement or repeated herein. An enumeration of the Contract Documents appears in Article 7.

ARTICLE 2

THE WORK

The Contractor shall perform all the Work required by the Contract Documents for
(Here insert the caption descriptive of the Work as used on other Contract Documents.)

ARTICLE 3

TIME OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

The Work to be performed under this Contract shall be commenced

and, subject to authorized adjustments, Substantial Completion shall be achieved not later than

(Here insert any special provisions for liquidated damages relating to failure to complete on time.)

ARTICLE 4

CONTRACT SUM

The Owner shall pay the Contractor in current funds for the performance of the Work, subject to additions and deductions by Change Order as provided in the Contract Documents, the Contract Sum of

The Contract Sum is determined as follows:

(State here the base bid or other lump sum amount, accepted alternates, and unit prices, as applicable.)

ARTICLE 5

PROGRESS PAYMENTS

Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided in the Contract Documents for the period ending the last day of the month as follows:

Not later than five (5) day following the end of the period covered by the Application for Payment percent (%) of the portion of the Contract Sum properly allocable to labor, materials and equipment incorporated in the Work and percent (%) of the portion of the Contract Sum properly allocable to materials and equipment suitably stored at the site or at some other location agreed upon in writing, for the period covered by the Application for Payment, less the aggregate of previous payments made by the Owner, and upon Substantial Completion of the entire Work, a sum sufficient to increase the total payments to percent (%) of the Contract Sum, less such amounts as the Architect shall determine for all incomplete Work and unsettled claims as provided in the Contract Documents.

(If not covered elsewhere in the Contract Documents, here insert any provision for limiting or reducing the amount retained after the Work reaches a certain stage of completion.)

Progress payments shall be made in accordance with the provisions of the latest revision of Pennsylvania Act 317, Section 5.

Section 5. Contract provision for retainage.

A public contract may include a provision for the retainage of a portion of the amount due the contractor to insure the proper performance of the contract, except that the sum or sums withheld by the contracting body from the contractor shall not exceed 10% of the amount due the contractor until 50% of the contract is completed. The sum or sums withheld by the contracting body from the contractor after the contract is 50% completed shall not exceed 5% of the amount due the contractor on the remaining work: provided, however, that in the event a dispute arises between the contracting body and any prime contractor, which dispute is based upon increased costs claimed by one prime contractor occasioned by delays or other actions of another prime contractor, additional retainage in the sum of one and one-half times the amount of any possible liability may be withheld until such time as a final resolution is agreed to by all parties directly or indirectly involved, unless the contractor causing the additional claim furnishes a bond satisfactory to the contracting body to indemnify such contracting body against the claim. However, all such moneys retained by the contracting body may be withheld from the contractor until substantial completion of the contract.

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate entered below, or in the absence thereof, at the legal rate prevailing at the place of the Project.

(Here insert any rate of interest agreed upon.)

(Any special requirements under the Uniform Commercial Code or other statutes governing the Owner's business and other stipulations as to the Owner's principal places of business, the location of the Project and governmental restrictions affecting the validity of this provision. Specific legal advice should be obtained with respect to deletions, modifications, additions or other requirements such as interest rates or time of payments.)

ARTICLE 6

FINAL PAYMENT

Final payment, constituting the entire unpaid balance of the Contract Sum, shall be paid by the Owner to the Contractor when the Work has been completed, the Contract fully performed, and a final Certificate for Payment has been issued by the Architect.

And as per Section 7 of Pennsylvania Act 317 Laws 1978:

Section 7. Final payment under contract.

A public contract containing a provision for retainage as provided in section 5 shall contain a provision that the contractor shall be paid in full, except as provided in section 5 within 30 days following the date of substantial completion, less only 1 and 1/2 times such amount as is required to complete any then remaining, uncompleted, minor items, which amount shall be certified by the architect or engineer and upon receipt by the contracting body of any guarantee bonds which may be required, in accordance with the contract documents, to insure proper workmanship for a designated period of time. The certificate given by the architect or engineer shall list in detail each and every uncompleted item and a reasonable cost of completion. Final payment of any amount so withheld for the completion of the minor items shall be paid forthwith upon completion of the items in the certificate of the engineer or architect.

ARTICLE 7

MISCELLANEOUS PROVISIONS

7.1 Terms used in this Agreement which are defined in the Conditions of the Contract shall have the meanings designated in those Conditions.

7.2 The Contract Documents which constitute the entire agreement between the Owner and the Contractor, are listed in Article 1 and, except for Modifications issued after execution of this Agreement, are enumerated as follows:

(Attached to the Agreement, the Conditions of the Contract (General, Supplementary, and other Conditions), the Drawings, the Specifications, and any Addenda as accepted alternates, showing page or sheet numbers in all cases and dates where applicable.)

All federal contract requirements as specified in the bid documents.

This Agreement entered into as of the day and year first written above.

OWNER CONTRACTOR

FALLS TOWNSHIP WATERFRONT PARK - PHASE II

FINAL RELEASE AND INDEMNITY AGREEMENT

WHEREAS, Pursuant to contract made for construction of the Falls Township Waterfront Park - Phase II on _____ by and between the Township of Falls, Pennsylvania, hereinafter called the Owner, and _____, hereinafter called the Contractor, final payment is about to be made.

NOW, THEREFORE, in consideration of the premises and of the sum of

_____

lawful money of the United States, being the full and entire sum due upon the completion of the Contract aforesaid to the said Contractor in hand paid by Owner, receipt of which is hereby acknowledged, said Contractor does hereby remise, release, and forever discharge the Owner of and from any and all manner of actions, suits, debts, dues, sums of money, accounts, reckonings, bonds, bills, covenants, controversies, agreements, promises, claims and demands whatsoever in law or in equity which the said Contractor has or may have for or on account of or in connection with the Contract aforesaid.

The Contractor further agrees to indemnify and hold harmless the Owner, its officers, agents (including the Architect and his agents) and servants from loss, expense, damage or injury as a result of claims arising out of or in connection with the execution of the work provided for in said Contract, including any claim made by any laborer, Contractor or materials man that may have furnished labor or material directly or indirectly to the Contractor or by reason of any action brought or judgement recovered by such laborer, Contractor or material man.

IN WITNESS WHEREOF, the Contractor has caused its name to be hereunto subscribed and its

seal to be hereunto affixed this _____ day of _____

Nineteen Hundred and _____.

ATTEST

_____
(Corporate Title of Contractor)

(Seal) By _____
(President)

_____
(Secretary)

THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A201

General Conditions of the Contract for Construction

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS MODIFICATION

1976 EDITION

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11. INSURANCE
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14. TERMINATION OF THE CONTRACT

This document has been approved and endorsed by The Associated General Contractors of America.

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GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1

CONTRACT DOCUMENTS

1.1 DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Owner-Contractor Agreement, the Conditions of the Contract (General, Supplementary and other Conditions), the Drawings, the Specifications, and all Addenda issued prior to and all Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a written interpretation issued by the Architect pursuant to Subparagraph 2.2.8, or (4) a written order for a minor change in the Work issued by the Architect pursuant to Paragraph 12.4. The Contract Documents do not include Bidding Documents such as the Advertisement or Invitation to Bid, the Instructions to Bidders, sample forms, the Contractor's Bid or portions of Addenda relating to any of these, or any other documents, unless specifically enumerated in the Owner-Contractor Agreement.

1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. This Contract represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification as defined in Subparagraph 1.1.1. The Contract Documents shall not be construed to create any contractual relationship of any kind between the Architect and the Contractor, but the Architect shall be entitled to performance of obligations intended for his benefit, and to enforcement thereof. Nothing contained in the Contract Documents shall create any contractual relationship between the Owner or the Architect and any Subcontractor or Sub-subcontractor.

1.1.3 THE WORK

The Work comprises the completed construction required by the Contract Documents and includes all labor necessary to produce such construction, and all materials and equipment incorporated or to be incorporated in such construction.

1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part.

1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 The Contract Documents shall be signed in not less than triplicate by the Owner and Contractor. If either the Owner or the Contractor or both do not sign the Conditions of the Contract, Drawings, Specifications, or any of the other Contract Documents, the Architect shall identify such Documents.

1.2.2 By executing the Contract, the Contractor represents that he has visited the site, familiarized himself with the local conditions under which the Work is to be performed, and correlated his observations with the requirements of the Contract Documents.

1.2.3 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work. The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all. Work not covered in the Contract Documents will not be required unless it is consistent therewith and is reasonably inferable therefrom as being necessary to produce the intended results. Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings.

1.2.4 The organization of the Specifications into divisions, sections and articles, and the arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

1.3 OWNERSHIP AND USE OF DOCUMENTS

1.3.1 All Drawings, Specifications and copies thereof furnished by the Architect are and shall remain his property. They are to be used only with respect to this Project and are not to be used on any other project. With the exception of one contract set for each party to the Contract, such documents are to be returned or suitably accounted for to the Architect on request at the completion of the Work. Submission or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's common law copyright or other reserved rights.

ARTICLE 2

ARCHITECT

2.1 DEFINITION

2.1.1 The Architect is the person lawfully licensed to practice architecture, or an entity lawfully practicing architecture identified as such in the Owner-Contractor Agreement, and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Architect means the Architect or his authorized representative.

2.2 ADMINISTRATION OF THE CONTRACT

2.2.1 The Architect will provide administration of the Contract as hereinafter described.

2.2.2 The Architect will be the Owner's representative during construction and until final payment is due. The Architect will advise and consult with the Owner. The Owner's instructions to the Contractor shall be forwarded

through the Architect. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument in accordance with Subparagraph 2.2.18.

2.2.3 The Architect will visit the site at intervals appropriate to the stage of construction to familiarize himself generally with the progress and quality of the Work and to determine in general if the Work is proceeding in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of his on-site observations as an architect, he will keep the Owner informed of the progress of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work of the Contractor.

2.2.4 The Architect will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and he will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Architect will not be responsible for or have control or charge over the acts or omissions of the Contractor, Subcontractors, or any of their agents or employees, or any other persons performing any of the Work.

2.2.5 The Architect shall at all times have access to the Work wherever it is in preparation and progress. The Contractor shall provide facilities for such access so the Architect may perform his functions under the Contract Documents.

2.2.6 Based on the Architect's observations and an evaluation of the Contractor's Applications for Payment, the Architect will determine the amounts owing to the Contractor and will issue Certificates for Payment in such amounts, as provided in Paragraph 9.4.

2.2.7 The Architect will be the interpreter of the requirements of the Contract Documents and the judge of the performance thereunder by both the Owner and Contractor.

2.2.8 The Architect will render interpretations necessary for the proper execution or progress of the Work, with reasonable promptness and in accordance with any time limit agreed upon. Either party to the Contract may make written request to the Architect for such interpretations.

2.2.9 Claims, disputes and other matters in question between the Contractor and the Owner relating to the execution or progress of the Work or the interpretation of the Contract Documents shall be referred initially to the Architect for decision which he will render in writing within a reasonable time.

2.2.10 All interpretations and decisions of the Architect shall be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. In his capacity as interpreter and judge, he will endeavor to secure faithful performance by both the Owner and the Contractor, will not show partiality to either, and will not be liable for the result of any interpretation or decision rendered in good faith in such capacity.

2.2.11 The Architect's decisions in matters relating to artistic effect will be final if consistent with the intent of the Contract Documents.

2.2.12 Any claim, dispute or other matter in question between the Contractor and the Owner referred to the Architect, except those relating to artistic effect as provided in Subparagraph 2.2.11 and except those which have been waived by the making or acceptance of final payment as provided in Subparagraphs 9.9.4 and 9.9.5, shall be subject to arbitration upon the written demand of either party. However, no demand for arbitration of any such claim, dispute or other matter may be made until the earlier of (1) the date on which the Architect has rendered a written decision, or (2) the tenth day after the parties have presented their evidence to the Architect or have been given a reasonable opportunity to do so, if the Architect has not rendered his written decision by that date. When such a written decision of the Architect states (1) that the decision is final but subject to appeal, and (2) that any demand for arbitration of a claim, dispute or other matter covered by such decision must be made within thirty days after the date on which the party making the demand receives the written decision, failure to demand arbitration within said thirty days' period will result in the Architect's decision becoming final and binding upon the Owner and the Contractor. If the Architect renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but will not supersede any arbitration proceedings unless the decision is acceptable to all parties concerned.

2.2.13 The Architect will have authority to reject Work which does not conform to the Contract Documents. Whenever, in his opinion, he considers it necessary or advisable for the implementation of the intent of the Contract Documents, he will have authority to require special inspection or testing of the Work in accordance with Subparagraph 7.7.2 whether or not such Work be then fabricated, installed or completed. However, neither the Architect's authority to act under this Subparagraph 2.2.13, nor any decision made by him in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the Architect to the Contractor, any Subcontractor, any of their agents or employees, or any other person performing any of the Work.

2.2.14 The Architect will review and approve or take other appropriate action upon Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for conformance with the design concept of the Work and with the information given in the Contract Documents. Such action shall be taken with reasonable promptness so as to cause no delay. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

2.2.15 The Architect will prepare Change Orders in accordance with Article 12, and will have authority to order minor changes in the Work as provided in Subparagraph 12.4.1.

2.2.16 The Architect will conduct inspections to determine the dates of Substantial Completion and final completion, will receive and forward to the Owner for the Owner's review written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon compliance with the requirements of Paragraph 9.9.

2.2.17 If the Owner and Architect agree, the Architect will provide one or more Project Representatives to assist the Architect in carrying out his responsibilities at the site. The duties, responsibilities and limitations of authority of any such Project Representative shall be as set forth in an exhibit to be incorporated in the Contract Documents.

2.2.18 The duties, responsibilities and limitations of authority of the Architect as the Owner's representative during construction as set forth in the Contract Documents will not be modified or extended without written consent of the Owner, the Contractor and the Architect.

2.2.19 In case of the termination of the employment of the Architect, the Owner shall appoint an architect against whom the Contractor makes no reasonable objection whose status under the Contract Documents shall be that of the former architect. Any dispute in connection with such appointment shall be subject to arbitration.

ARTICLE 3

OWNER

3.1 DEFINITION

3.1.1 The Owner is the person or entity identified as such in the Owner-Contractor Agreement and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Owner means the Owner or his authorized representative.

3.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

3.2.1 The Owner shall, at the request of the Contractor, at the time of execution of the Owner-Contractor Agreement furnish to the Contractor reasonable evidence that he has made financial arrangements to fulfill his obligations under the Contract. Unless such reasonable evidence is furnished, the Contractor is not required to execute the Owner-Contractor Agreement or to commence the Work.

3.2.2 The Owner shall furnish all surveys describing the physical characteristics, legal limitations and utility location for the site of the Project, and a legal description of the site.

3.2.3 Except as provided in Subparagraph 4.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for the construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

3.2.4 Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness to avoid delay in the orderly progress of the Work.

3.2.5 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, all copies of Drawings and Specifications reasonably necessary for the execution of the Work.

3.2.6 The Owner shall forward all instructions to the Contractor through the Architect.

3.2.7 The foregoing are in addition to other duties and responsibilities of the Owner enumerated herein and especially those in respect to Work by Owner or by Separate Contractors, Payments and Completion, and Insurance in Articles 6, 9 and 11 respectively.

3.3 OWNER'S RIGHT TO STOP THE WORK

3.3.1 If the Contractor fails to correct defective Work as required by Paragraph 13.2 or persistently fails to carry out the Work in accordance with the Contract Documents, the Owner, by a written order signed personally or by an agent specifically so empowered by the Owner in writing, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the Owner to stop the Work shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3.

3.4 OWNER'S RIGHT TO CARRY OUT THE WORK

3.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within seven days after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, after seven days following receipt by the Contractor of an additional written notice and without prejudice to any other remedy he may have, make good such deficiencies. In such case an appropriate Change Order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and the amount charged to the Contractor are both subject to the prior approval of the Architect. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

ARTICLE 4

CONTRACTOR

4.1 DEFINITION

4.1.1 The Contractor is the person or entity identified as such in the Owner-Contractor Agreement and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Contractor means the Contractor or his authorized representative.

4.2 REVIEW OF CONTRACT DOCUMENTS

4.2.1 The Contractor shall carefully study and compare the Contract Documents and shall at once report to the Architect any error, inconsistency or omission he may discover. The Contractor shall not be liable to the Owner or

the Architect for any damage resulting from any such errors, inconsistencies or omissions in the Contract Documents. The Contractor shall perform no portion of the Work at any time without Contract Documents or, where required, approved Shop Drawings, Product Data or Samples for such portion of the Work.

4.3 SUPERVISION AND CONSTRUCTION PROCEDURES

4.3.1 The Contractor shall supervise and direct the Work, using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract.

4.3.2 The Contractor shall be responsible to the Owner for the acts and omissions of his employees, Subcontractors and their agents and employees, and other persons performing any of the Work under a contract with the Contractor.

4.3.3 The Contractor shall not be relieved from his obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of the Architect in his administration of the Contract, or by inspections, tests or approvals required or performed under Paragraph 7.7 by persons other than the Contractor.

4.4 LABOR AND MATERIALS

4.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

4.4.2 The Contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the Work any unfit person or anyone not skilled in the task assigned to him.

4.5 WARRANTY

4.5.1 The Contractor warrants to the Owner and the Architect that all materials and equipment furnished under this Contract will be new unless otherwise specified, and that all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty is not limited by the provisions of Paragraph 13.2.

4.6 TAXES

4.6.1 The Contractor shall pay all sales, consumer, use and other similar taxes for the Work or portions thereof provided by the Contractor which are legally enacted at the time bids are received, whether or not yet effective.

4.7 PERMITS, FEES AND NOTICES

4.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and for all other permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required at the time the bids are received.

4.7.2 The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the Work.

4.7.3 It is not the responsibility of the Contractor to make certain that the Contract Documents are in accordance with applicable laws, statutes, building codes and regulations. If the Contractor observes that any of the Contract Documents are at variance therewith in any respect, he shall promptly notify the Architect in writing, and any necessary changes shall be accomplished by appropriate Modification.

4.7.4 If the Contractor performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Architect, he shall assume full responsibility therefor and shall bear all costs attributable thereto.

4.8 ALLOWANCES

4.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by these allowances shall be supplied for such amounts and by such persons as the Owner may direct, but the Contractor will not be required to employ persons against whom he makes a reasonable objection.

4.8.2 Unless otherwise provided in the Contract Documents:

.1 these allowances shall cover the cost to the Contractor, less any applicable trade discount, of the materials and equipment required by the allowance delivered at the site, and all applicable taxes;

.2 the Contractor's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the original allowance shall be included in the Contract Sum and not in the allowance;

.3 whenever the cost is more than or less than the allowance, the Contract Sum shall be adjusted accordingly by Change Order, the amount of which will recognize changes, if any, in handling costs on the site, labor, installation costs, overhead, profit and other expenses.

4.9 SUPERINTENDENT

4.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during the progress of the Work. The superintendent shall represent the Contractor and all communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case.

4.10 PROGRESS SCHEDULE

4.10.1 The Contractor, immediately after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information an estimated progress sched-

ule for the Work. The progress schedule shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

4.11 DOCUMENTS AND SAMPLES AT THE SITE

4.11.1 The Contractor shall maintain at the site for the Owner one record copy of all Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record all changes made during construction, and approved Shop Drawings, Product Data and Samples. These shall be available to the Architect and shall be delivered to him for the Owner upon completion of the Work.

4.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

4.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or any Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

4.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate a material, product or system for some portion of the Work.

4.12.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

4.12.4 The Contractor shall review, approve and submit, with reasonable promptness and in such sequence as to cause no delay in the Work or in the work of the Owner or any separate contractor, all Shop Drawings, Product Data and Samples required by the Contract Documents.

4.12.5 By approving and submitting Shop Drawings, Product Data and Samples, the Contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

4.12.6 The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data or Samples under Subparagraph 2.2.14 unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submission and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the Shop Drawings, Product Data or Samples by the Architect's approval thereof.

4.12.7 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data or Samples, to revisions other than those requested by the Architect on previous submittals.

4.12.8 No portion of the Work requiring submission of a Shop Drawing, Product Data or Sample shall be commenced until the submittal has been approved by the Architect as provided in Subparagraph 2.2.14. All such portions of the Work shall be in accordance with approved submittals.

4.13 USE OF SITE

4.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with any materials or equipment.

4.14 CUTTING AND PATCHING OF WORK

4.14.1 The Contractor shall be responsible for all cutting, fitting or patching that may be required to complete the Work or to make its several parts fit together properly.

4.14.2 The Contractor shall not damage or endanger any portion of the Work or the work of the Owner or any separate contractors by cutting, patching or otherwise altering any work, or by excavation. The Contractor shall not cut or otherwise alter the work of the Owner or any separate contractor except with the written consent of the Owner and of such separate contractor. The Contractor shall not unreasonably withhold from the Owner or any separate contractor his consent to cutting or otherwise altering the Work.

4.15 CLEANING UP

4.15.1 The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. At the completion of the Work he shall remove all his waste materials and rubbish from and about the Project as well as all his tools, construction equipment, machinery and surplus materials.

4.15.2 If the Contractor fails to clean up at the completion of the Work, the Owner may do so as provided in Paragraph 3.4 and the cost thereof shall be charged to the Contractor.

4.16 COMMUNICATIONS

4.16.1 The Contractor shall forward all communications to the Owner through the Architect.

4.17 ROYALTIES AND PATENTS

4.17.1 The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof, except that the Owner shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified, but if the Contractor has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Architect.

4.18 INDEMNIFICATION

4.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner and the Architect and their agents and employees from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom,

and (2) is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Paragraph 4.18.

4.18.2 In any and all claims against the Owner or the Architect or any of their agents or employees by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Paragraph 4.18 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' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

4.18.3 The obligations of the Contractor under this Paragraph 4.18 shall not extend to the liability of the Architect, his agents or employees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the Architect, his agents or employees provided such giving or failure to give is the primary cause of the injury or damage.

ARTICLE 5

SUBCONTRACTORS

5.1 DEFINITION

5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform any of the Work at the site. The term Subcontractor is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Subcontractor or his authorized representative. The term Subcontractor does not include any separate contractor or his subcontractors.

5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform any of the Work at the site. The term Sub-subcontractor is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Sub-subcontractor or an authorized representative thereof.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Unless otherwise required by the Contract Documents or the Bidding Documents, the Contractor, as soon as practicable after the award of the Contract, shall furnish to the Owner and the Architect in writing the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work. The Architect will promptly reply to the Contractor in writing stating whether or not the Owner or the Architect, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Architect to reply promptly shall constitute notice of no reasonable objection.

5.2.2 The Contractor shall not contract with any such proposed person or entity to whom the Owner or the Architect has made reasonable objection under the provisions of Subparagraph 5.2.1. The Contractor shall not be required to contract with anyone to whom he has a reasonable objection.

5.2.3 If the Owner or the Architect has reasonable objection to any such proposed person or entity, the Contractor shall submit a substitute to whom the Owner or the Architect has no reasonable objection, and the Contract Sum shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate Change Order shall be issued; however, no increase in the Contract Sum shall be allowed for any such substitution unless the Contractor has acted promptly and responsively in submitting names as required by Subparagraph 5.2.1.

5.2.4 The Contractor shall make no substitution for any Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

5.3 SUBCONTRACTUAL RELATIONS

5.3.1 By an appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these Documents, assumes toward the Owner and the Architect. Said agreement shall preserve and protect the rights of the Owner and the Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that the subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the Contractor-Subcontractor agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by these Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with his Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the Subcontract, copies of the Contract Documents to which the Subcontractor will be bound by this Paragraph 5.3, and identify to the Subcontractor any terms and conditions of the proposed Subcontract which may be at variance with the Contract Documents. Each Subcontractor shall similarly make copies of such Documents available to his Sub-subcontractors

ARTICLE 6

WORK BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM WORK AND TO AWARD SEPARATE CONTRACTS

6.1.1 The Owner reserves the right to perform work related to the Project with his own forces, and to award

separate contracts in connection with other portions of the Project or other work on the site under these or similar Conditions of the Contract. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, he shall make such claim as provided elsewhere in the Contract Documents.

6.1.2 When separate contracts are awarded for different portions of the Project or other work on the site, the term Contractor in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

6.1.3 The Owner will provide for the coordination of the work of his own forces and of each separate contractor with the Work of the Contractor, who shall cooperate therewith as provided in Paragraph 6.2.

6.2 MUTUAL RESPONSIBILITY

6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall connect and coordinate his Work with theirs as required by the Contract Documents.

6.2.2 If any part of the Contractor's Work depends for proper execution or results upon the work of the Owner or any separate contractor, the Contractor shall, prior to proceeding with the Work, promptly report to the Architect any apparent discrepancies or defects in such other work that render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acceptance of the Owner's or separate contractors' work as fit and proper to receive his Work, except as to defects which may subsequently become apparent in such work by others.

6.2.3 Any costs caused by defective or ill-timed work shall be borne by the party responsible therefor.

6.2.4 Should the Contractor wrongfully cause damage to the work or property of the Owner, or to other work on the site, the Contractor shall promptly remedy such damage as provided in Subparagraph 10.2.5.

6.2.5 Should the Contractor wrongfully cause damage to the work or property of any separate contractor, the Contractor shall upon due notice promptly attempt to settle with such other contractor by agreement, or otherwise to resolve the dispute. If such separate contractor sues or initiates an arbitration proceeding against the Owner on account of any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor who shall defend such proceedings at the Owner's expense, and if any judgment or award against the Owner arises therefrom the Contractor shall pay or satisfy it and shall reimburse the Owner for all attorneys' fees and court or arbitration costs which the Owner has incurred.

6.3 OWNER'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises between the Contractor and separate contractors as to their responsibility for cleaning up as required by Paragraph 4.15, the Owner may clean up and charge the cost thereof to the contractors responsible therefor as the Architect shall determine to be just.

ARTICLE 7

MISCELLANEOUS PROVISIONS

7.1 GOVERNING LAW

7.1.1 The Contract shall be governed by the law of the place where the Project is located.

7.2 SUCCESSORS AND ASSIGNS

7.2.1 The Owner and the Contractor each binds himself, his partners, successors, assigns and legal representatives to the other party hereto and to the partners, successors, assigns and legal representatives of such other party in respect to all covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any moneys due or to become due to him hereunder, without the previous written consent of the Owner.

7.3 WRITTEN NOTICE

7.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or member of the firm or entity or to an officer of the corporation for whom it was intended, or if delivered at or sent by registered or certified mail to the last business address known to him who gives the notice.

7.4 CLAIMS FOR DAMAGES

7.4.1 Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the other party or of any of his employees, agents or others for whose acts he is legally liable, claim shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.

7.5 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

7.5.1 The Owner shall have the right to require the Contractor to furnish bonds covering the faithful performance of the Contract and the payment of all obligations arising thereunder if and as required in the Bidding Documents or in the Contract Documents.

7.6 RIGHTS AND REMEDIES

7.6.1 The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

7.6.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

7.7 TESTS

7.7.1 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any portion of the Work to be inspected, tested or approved, the Contractor shall give the Architect timely notice of its readiness so the Architect may observe such inspection, testing or approval. The Contractor shall bear all costs of such inspections, tests or approvals conducted by public authorities. Unless otherwise provided, the Owner shall bear all costs of other inspections, tests or approvals.

7.7.2 If the Architect determines that any Work requires special inspection, testing, or approval which Subparagraph 7.7.1 does not include, he will, upon written authorization from the Owner, instruct the Contractor to order such special inspection, testing or approval, and the Contractor shall give notice as provided in Subparagraph 7.7.1. If such special inspection or testing reveals a failure of the Work to comply with the requirements of the Contract Documents, the Contractor shall bear all costs thereof, including compensation for the Architect's additional services made necessary by such failure; otherwise the Owner shall bear such costs, and an appropriate Change Order shall be issued.

7.7.3 Required certificates of inspection, testing or approval shall be secured by the Contractor and promptly delivered by him to the Architect.

7.7.4 If the Architect is to observe the inspections, tests or approvals required by the Contract Documents, he will do so promptly and, where practicable, at the source of supply.

7.8 INTEREST

7.8.1 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing at the place of the Project.

7.9 ARBITRATION

7.9.1 All claims, disputes and other matters in question between the Contractor and the Owner arising out of, or relating to, the Contract Documents or the breach thereof, except as provided in Subparagraph 2.2.11 with respect to the Architect's decisions on matters relating to artistic effect, and except for claims which have been waived by the making or acceptance of final payment as provided by Subparagraphs 9.9.4 and 9.9.5, shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining unless the parties mutually agree otherwise. No arbitration arising out of or relating to the Contract Documents shall include, by consolidation, joinder or in any other manner, the Architect, his employees or consultants except by written consent containing a specific reference to the Owner-Contractor Agreement and signed by the Architect, the Owner, the Contractor and any other person sought to be joined. No arbitration shall include by consolidation, joinder or in any other manner, parties other than the Owner, the Contractor and any other persons substantially involved in a common question of fact or law, whose presence is required if complete relief is to be accorded in the arbitration. No person other than the Owner or Contractor shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Any consent to arbitration involving an additional person or persons shall not constitute consent to arbitration of any dispute not described therein or with any person not named or described therein. The foregoing agreement to arbitrate and any other agreement to arbitrate with an additional person or persons duly consented to by the parties to the Owner-Contractor Agreement shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

7.9.2 Notice of the demand for arbitration shall be filed in writing with the other party to the Owner-Contractor Agreement and with the American Arbitration Association, and a copy shall be filed with the Architect. The demand for arbitration shall be made within the time limits specified in Subparagraph 2.2.12 where applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

7.9.3 Unless otherwise agreed in writing, the Contractor shall carry on the Work and maintain its progress during any arbitration proceedings, and the Owner shall continue to make payments to the Contractor in accordance with the Contract Documents.

ARTICLE 8

TIME

8.1 DEFINITIONS

8.1.1 Unless otherwise provided, the Contract Time is the period of time allotted in the Contract Documents for Substantial Completion of the Work as defined in Subparagraph 8.1.3, including authorized adjustments thereto.

8.1.2 The date of commencement of the Work is the date established in a notice to proceed. If there is no notice to proceed, it shall be the date of the Owner-Contractor Agreement or such other date as may be established therein.

8.1.3 The Date of Substantial Completion of the Work or designated portion thereof is the Date certified by the Architect when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner can occupy or utilize the Work or designated portion thereof for the use for which it is intended.

8.1.4 The term day as used in the Contract Documents shall mean calendar day unless otherwise specifically designated.

8.2 PROGRESS AND COMPLETION

8.2.1 All time limits stated in the Contract Documents are of the essence of the Contract.

8.2.2 The Contractor shall begin the Work on the date of commencement as defined in Subparagraph 8.1.2. He shall carry the Work forward expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 If the Contractor is delayed at any time in the progress of the Work by any act or neglect of the Owner or the Architect, or by any employee of either, or by any separate contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in transportation, adverse weather conditions not reasonably anticipatable, unavoidable casualties, or any causes beyond the Contractor's control, or by delay authorized by the Owner pending arbitration, or by any other cause which the Architect determines may justify the delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

8.3.2 Any claim for extension of time shall be made in writing to the Architect not more than twenty days after the commencement of the delay; otherwise it shall be waived. In the case of a continuing delay only one claim is necessary. The Contractor shall provide an estimate of the probable effect of such delay on the progress of the Work.

8.3.3 If no agreement is made stating the dates upon which interpretations as provided in Subparagraph 2.2.8 shall be furnished, then no claim for delay shall be allowed on account of failure to furnish such interpretations until fifteen days after written request is made for them, and not then unless such claim is reasonable.

8.3.4 This Paragraph 8.3 does not exclude the recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9

PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

9.1.1 The Contract Sum is stated in the Owner-Contractor Agreement and, including authorized adjustments thereto, is the total amount payable by the Owner to the Contractor for the performance of the Work under the Contract Documents.

9.2 SCHEDULE OF VALUES

9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to the various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used only as a basis for the Contractor's Applications for Payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 At least ten days before the date for each progress payment established in the Owner-Contractor Agreement, the Contractor shall submit to the Architect an itemized Application for Payment, notarized if required, supported by such data substantiating the Contractor's right to payment as the Owner or the Architect may require, and reflecting retainage, if any, as provided elsewhere in the Contract Documents.

9.3.2 Unless otherwise provided in the Contract Documents, payments will be made on account of materials or equipment not incorporated in the Work but delivered and suitably stored at the site and, if approved in advance by the Owner, payments may similarly be made for materials or equipment suitably stored at some other location agreed upon in writing. Payments for materials or equipment stored on or off the site shall be conditioned upon submission by the Contractor of bills of sale or such other procedures satisfactory to the Owner to establish the Owner's title to such materials or equipment or otherwise protect the Owner's interest, including applicable insurance and transportation to the site for those materials and equipment stored off the site.

9.3.3 The Contractor warrants that title to all Work, materials and equipment covered by an Application for Payment will pass to the Owner either by incorporation in the construction or upon the receipt of payment by the Contractor, whichever occurs first, free and clear of all liens, claims, security interests or encumbrances, hereinafter referred to in this Article 9 as "liens"; and that no Work, materials or equipment covered by an Application for Payment will have been acquired by the Contractor, or by any other person performing Work at the site or furnishing materials and equipment for the Project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person.

9.4 CERTIFICATES FOR PAYMENT

9.4.1 The Architect will, within seven days after the receipt of the Contractor's Application for Payment, either issue a Certificate for Payment to the Owner, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor in writing his reasons for withholding a Certificate as provided in Subparagraph 9.6.1.

9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on his observations at the site as provided in Subparagraph 2.2.3 and the data comprising the Application for Payment, that the Work has progressed to the point indicated; that, to the best of his knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to the results of any subsequent tests required by or performed under the Contract Documents, to minor deviations from the Contract Documents correctable prior to completion, and to any specific qualifications stated in his Certificate); and that the Contractor is entitled to payment in the amount certified. However, by issuing a Certificate for Payment, the Architect shall not thereby be deemed to represent that he has made exhaustive or continuous on-site inspections to check the quality or quantity of the Work or that he has reviewed the construction means, methods, techniques,

sequences or procedures, or that he has made any examination to ascertain how or for what purpose the Contractor has used the moneys previously paid on account of the Contract Sum.

9.5 PROGRESS PAYMENTS

9.5.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents.

9.5.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's Work, the amount to which said Subcontractor is entitled, reflecting the percentage actually retained, if any, from payments to the Contractor on account of such Subcontractor's Work. The Contractor shall, by an appropriate agreement with each Subcontractor, require each Subcontractor to make payments to his Subsubcontractors in similar manner.

9.5.3 The Architect may, on request and at his discretion, furnish to any Subcontractor, if practicable, information regarding the percentages of completion or the amounts applied for by the Contractor and the action taken thereon by the Architect on account of Work done by such Subcontractor.

9.5.4 Neither the Owner nor the Architect shall have any obligation to pay or to see to the payment of any moneys to any Subcontractor except as may otherwise be required by law.

9.5.5 No Certificate for a progress payment, nor any progress payment, nor any partial or entire use or occupancy of the Project by the Owner, shall constitute an acceptance of any Work not in accordance with the Contract Documents.

9.6 PAYMENTS WITHHELD

9.6.1 The Architect may decline to certify payment and may withhold his Certificate in whole or in part, to the extent necessary reasonably to protect the Owner, if in his opinion he is unable to make representations to the Owner as provided in Subparagraph 9.4.2. If the Architect is unable to make representations to the Owner as provided in Subparagraph 9.4.2 and to certify payment in the amount of the Application, he will notify the Contractor as provided in Subparagraph 9.4.1. If the Contractor and the Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which he is able to make such representations to the Owner. The Architect may also decline to certify payment or, because of subsequently discovered evidence or subsequent observations, he may nullify the whole or any part of any Certificate for Payment previously issued, to such extent as may be necessary in his opinion to protect the Owner from loss because of:

.1 defective Work not remedied,

.2 third party claims filed or reasonable evidence indicating probable filing of such claims,

.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment,

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum,

.5 damage to the Owner or another contractor,

.6 reasonable evidence that the Work will not be completed within the Contract Time, or

.7 persistent failure to carry out the Work in accordance with the Contract Documents.

9.6.2 When the above grounds in Subparagraph 9.6.1 are removed, payment shall be made for amounts withheld because of them.

9.7 FAILURE OF PAYMENT

9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents any amount certified by the Architect or awarded by arbitration, then the Contractor may, upon seven additional days' written notice to the Owner and the Architect, stop the Work until payment of the amount owing has been received. The Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, which shall be effected by appropriate Change Order in accordance with Paragraph 12.3.

9.8 SUBSTANTIAL COMPLETION

9.8.1 When the Contractor considers that the Work, or a designated portion thereof which is acceptable to the Owner, is substantially complete as defined in Subparagraph 8.1.3, the Contractor shall prepare for submission to the Architect a list of items to be completed or corrected. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. When the Architect on the basis of an inspection determines that the Work or designated portion thereof is substantially complete, he will then prepare a Certificate of Substantial Completion which shall establish the Date of Substantial Completion, shall state the responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work, and insurance, and shall fix the time within which the Contractor shall complete the items listed therein. Warranties required by the Contract Documents shall commence on the Date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and the Contractor for their written acceptance of the responsibilities assigned to them in such Certificate.

9.8.2 Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Architect, the Owner shall make payment, reflecting adjustment in retainage, if any, for such Work or portion thereof, as provided in the Contract Documents.

9.9 FINAL COMPLETION AND FINAL PAYMENT

9.9.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will

promptly make such inspection and, when he finds the Work acceptable under the Contract Documents and the Contract fully performed, he will promptly issue a final Certificate for Payment stating that to the best of his knowledge, information and belief, and on the basis of his observations and inspections, the Work has been completed in accordance with the terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor, and noted in said final Certificate, is due and payable. The Architect's final Certificate for Payment will constitute a further representation that the conditions precedent to the Contractor's being entitled to final payment as set forth in Subparagraph 9.9.2 have been fulfilled.

9.9.2 Neither the final payment nor the remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or his property might in any way be responsible, have been paid or otherwise satisfied, (2) consent of surety, if any, to final payment and (3), if required by the Owner, other data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens arising out of the Contract, to the extent and in such form as may be designated by the Owner. If any Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify him against any such lien. If any such lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all moneys that the latter may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

9.9.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by the issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than the retainage stipulated in the Contract Documents, and if bonds have been furnished as provided in Paragraph 7.5, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

9.9.4 The making of final payment shall constitute a waiver of all claims by the Owner except those arising from:

.1 unsettled liens,
.2 faulty or defective Work appearing after Substantial Completion,
.3 failure of the Work to comply with the requirements of the Contract Documents, or
.4 terms of any special warranties required by the Contract Documents.

9.9.5 The acceptance of final payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of the final Application for Payment.

ARTICLE 10

PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to:

.1 all employees on the Work and all other persons who may be affected thereby;
.2 all the Work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of his Subcontractors or Sub-subcontractors; and
.3 other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

10.2.2 The Contractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the safety of persons or property or their protection from damage, injury or loss.

10.2.3 The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent utilities.

10.2.4 When the use or storage of explosives or other hazardous materials or equipment is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.

10.2.5 The Contractor shall promptly remedy all damage or loss (other than damage or loss insured under Paragraph 11.3) to any property referred to in Clauses 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, any Subcontractor, any Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible under Clauses 10.2.1.2 and 10.2.1.3, except damage or loss attributable to the acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to his obligations under Paragraph 4.18.

10.2.6 The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and the Architect.

10.2.7 The Contractor shall not load or permit any part of the Work to be loaded so as to endanger its safety.

10.3 EMERGENCIES

10.3.1 In any emergency affecting the safety of persons or property, the Contractor shall act, at his discretion, to prevent threatened damage, injury or loss. Any additional compensation or extension of time claimed by the Contractor on account of emergency work shall be determined as provided in Article 12 for Changes in the Work.

ARTICLE 11

INSURANCE

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 The Contractor shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the Contractor's operations under the Contract, whether such operations be by himself or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 claims under workers' or workmen's compensation, disability benefit and other similar employee benefit acts;

.2 claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;

.3 claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;

.4 claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or (2) by any other person;

.5 claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; and

.6 claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than any limits of liability specified in the Contract Documents, or required by law, whichever is greater.

11.1.3 The insurance required by Subparagraph 11.1.1 shall include contractual liability insurance applicable to the Contractor's obligations under Paragraph 4.18.

11.1.4 Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These Certificates shall contain a provision that coverages afforded under the policies will not be cancelled until at least thirty days' prior written notice has been given to the Owner.

11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Owner shall be responsible for purchasing and maintaining his own liability insurance and, at his option, may purchase and maintain such insurance as will protect him against claims which may arise from operations under the Contract.

11.3 PROPERTY INSURANCE

11.3.1 Unless otherwise provided, the Owner shall purchase and maintain property insurance upon the entire Work at the site to the full insurable value thereof. This insurance shall include the interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work and shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss or damage including, without duplication of coverage, theft, vandalism and malicious mischief. If the Owner does not intend to purchase such insurance for the full insurable value of the entire Work, he shall inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance which will protect the interests of himself, his Subcontractors and the Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by failure of the Owner to purchase or maintain such insurance and to so notify the Contractor, then the Owner shall bear all reasonable costs properly attributable thereto. If not covered under the all risk insurance or otherwise provided in the Contract Documents, the Contractor shall effect and maintain similar property insurance on portions of the Work stored off the site or in transit when such portions of the Work are to be included in an Application for Payment under Subparagraph 9.3.2.

11.3.2 The Owner shall purchase and maintain such boiler and machinery insurance as may be required by the Contract Documents or by law. This insurance shall include the interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work.

11.3.3 Any loss insured under Subparagraph 11.3.1 is to be adjusted with the Owner and made payable to the Owner as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgagee clause and of Subparagraph 11.3.8. The Contractor shall pay each Subcontractor a just share of any insurance moneys received by the Contractor, and by appropriate agreement, written where legally required for validity, shall require each Subcontractor to make payments to his Sub-subcontractors in similar manner.

11.3.4 The Owner shall file a copy of all policies with the Contractor before an exposure to loss may occur.

11.3.5 If the Contractor requests in writing that insurance for risks other than those described in Subparagraphs 11.3.1 and 11.3.2 or other special hazards be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

11.3.6 The Owner and Contractor waive all rights against (1) each other and the Subcontractors, Sub-subcontractors, agents and employees each of the other, and (2) the Architect and separate contractors, if any, and their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other perils to the extent covered by insurance obtained pursuant to this Paragraph 11.3 or any other property insurance applicable to the Work, except such rights as they may have to the proceeds of such insurance held by the Owner as trustee. The foregoing waiver afforded the Architect, his agents and employees shall not extend to the liability imposed by Subparagraph 4.18.3. The Owner or the Contractor, as appropriate, shall require of the Architect, separate contractors, Subcontractors and Sub-subcontractors by appropriate agreements, written where legally required for validity, similar waivers each in favor of all other parties enumerated in this Subparagraph 11.3.6.

11.3.7 If required in writing by any party in interest, the Owner as trustee shall, upon the occurrence of an insured loss, give bond for the proper performance of his duties. He shall deposit in a separate account any money so received, and he shall distribute it in accordance with such agreement as the parties in interest may reach, or in accordance with an award by arbitration in which case the procedure shall be as provided in Paragraph 7.9. If after such loss no other special agreement is made, replacement of damaged work shall be covered by an appropriate Change Order.

11.3.8 The Owner as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within five days after the occurrence of loss to the Owner's exercise of this power, and if such objection be made, arbitrators shall be chosen as provided in Paragraph 7.9. The Owner as trustee shall, in that case, make settlement with the insurers in accordance with the directions of such arbitrators. If distribution of the insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

11.3.9 If the Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion thereof, such occupancy or use shall not commence prior to a time mutually agreed to by the Owner and Contractor and to which the insurance company or companies providing the property insurance have consented by endorsement to the policy or policies. This insurance shall not be cancelled or lapsed on account of such partial occupancy or use. Consent of the Contractor and of the insurance company or companies to such occupancy or use shall not be unreasonably withheld.

11.4 LOSS OF USE INSURANCE

11.4.1 The Owner, at his option, may purchase and maintain such insurance as will insure him against loss of use of his property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of his property, including consequential losses due to fire or other hazards however caused, to the extent covered by insurance under this Paragraph 11.4.

ARTICLE 12

CHANGES IN THE WORK

12.1 CHANGE ORDERS

12.1.1 A Change Order is a written order to the Contractor signed by the Owner and the Architect, issued after execution of the Contract, authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time may be changed only by Change Order. A Change Order signed by the Contractor indicates his agreement therewith, including the adjustment in the Contract Sum or the Contract Time.

12.1.2 The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and the Contract Time being adjusted accordingly. All such changes in the Work shall be authorized by Change Order, and shall be performed under the applicable conditions of the Contract Documents.

12.1.3 The cost or credit to the Owner resulting from a change in the Work shall be determined in one or more of the following ways:

- .1 by mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 by unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 by cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 by the method provided in Subparagraph 12.1.4.

12.1.4 If none of the methods set forth in Clauses 12.1.3.1, 12.1.3.2 or 12.1.3.3 is agreed upon, the Contractor, provided he receives a written order signed by the Owner, shall promptly proceed with the Work involved. The cost of such Work shall then be determined by the Architect on the basis of the reasonable expenditures and savings of those performing the Work attributable to the change, including, in the case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. In such case, and also under Clauses 12.1.3.3 and 12.1.3.4 above, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data for inclusion in a Change Order. Unless otherwise provided in the Contract Documents, cost shall be limited to the following: cost of materials, including sales tax and cost of delivery; cost of labor, including social security, old age and unemployment insurance, and fringe benefits required by agreement or custom; workers' or workmen's compensation insurance; bond premiums; rental value of equipment and machinery; and the additional costs of supervision and field office personnel directly attributable to the change. Pending final determination of cost to the Owner, payments on account shall be made on the Architect's Certificate for Payment. The amount of credit to be allowed by the Contractor to the Owner for any deletion

or change which results in a net decrease in the Contract Sum will be the amount of the actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in any one change, the allowance for overhead and profit shall be figured on the basis of the net increase, if any, with respect to that change.

12.1.5 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if the quantities originally contemplated are so changed in a proposed Change Order that application of the agreed unit prices to the quantities of Work proposed will cause substantial inequity to the Owner or the Contractor, the applicable unit prices shall be equitably adjusted.

12.2 CONCEALED CONDITIONS

12.2.1 Should concealed conditions encountered in the performance of the Work below the surface of the ground or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the Contract Documents, or should unknown physical conditions below the surface of the ground or should concealed or unknown conditions in an existing structure of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract, be encountered, the Contract Sum shall be equitably adjusted by Change Order upon claim by either party made within twenty days after the first observance of the conditions.

12.3 CLAIMS FOR ADDITIONAL COST

12.3.1 If the Contractor wishes to make a claim for an increase in the Contract Sum, he shall give the Architect written notice thereof within twenty days after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor before proceeding to execute the Work, except in an emergency endangering life or property in which case the Contractor shall proceed in accordance with Paragraph 10.3. No such claim shall be valid unless so made. If the Owner and the Contractor cannot agree on the amount of the adjustment in the Contract Sum, it shall be determined by the Architect. Any change in the Contract Sum resulting from such claim shall be authorized by Change Order.

12.3.2 If the Contractor claims that additional cost is involved because of, but not limited to, (1) any written interpretation pursuant to Subparagraph 2.2.8, (2) any order by the Owner to stop the Work pursuant to Paragraph 3.3 where the Contractor was not at fault, (3) any written order for a minor change in the Work issued pursuant to Paragraph 12.4, or (4) failure of payment by the Owner pursuant to Paragraph 9.7, the Contractor shall make such claim as provided in Subparagraph 12.3.1.

12.4 MINOR CHANGES IN THE WORK

12.4.1 The Architect will have authority to order minor changes in the Work not involving an adjustment in the Contract Sum or an extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order, and shall be binding on the Owner and the Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 13

UNCOVERING AND CORRECTION OF WORK

13.1 UNCOVERING OF WORK

13.1.1 If any portion of the Work should be covered contrary to the request of the Architect or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect, be uncovered for his observation and shall be replaced at the Contractor's expense.

13.1.2 If any other portion of the Work has been covered which the Architect has not specifically requested to observe prior to being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work be found in accordance with the Contract Documents, the cost of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work be found not in accordance with the Contract Documents, the Contractor shall pay such costs unless it be found that this condition was caused by the Owner or a separate contractor as provided in Article 6, in which event the Owner shall be responsible for the payment of such costs.

13.2 CORRECTION OF WORK

13.2.1 The Contractor shall promptly correct all Work rejected by the Architect as defective or as failing to conform to the Contract Documents whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting such rejected Work, including compensation for the Architect's additional services made necessary thereby.

13.2.2 If, within one year after the Date of Substantial Completion of the Work or designated portion thereof or within one year after acceptance by the Owner of designated equipment or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be defective or not in accordance with the Contract Documents, the Contractor shall correct it promptly after receipt of a written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. This obligation shall survive termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

13.2.3 The Contractor shall remove from the site all portions of the Work which are defective or non-conforming and which have not been corrected under Subparagraphs 4.5.1, 13.2.1 and 13.2.2, unless removal is waived by the Owner.

13.2.4 If the Contractor fails to correct defective or non-conforming Work as provided in Subparagraphs 4.5.1, 13.2.1 and 13.2.2, the Owner may correct it in accordance with Paragraph 3.4.

13.2.5 If the Contractor does not proceed with the correction of such defective or non-conforming Work within a reasonable time fixed by written notice from the Architect, the Owner may remove it and may store the materials or equipment at the expense of the Contractor. If the Contractor does not pay the cost of such removal and storage within ten days thereafter, the Owner may upon ten additional days' written notice sell such Work at auction or at private sale and shall account for the net proceeds thereof, after deducting all the costs that should have been borne by the Contractor, including compensation for the Architect's additional services made necessary thereby. If such proceeds of sale do not cover all costs which the Contractor should have borne, the difference shall be charged to the Contractor and an appropriate Change Order shall be issued. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

13.2.6 The Contractor shall bear the cost of making good all work of the Owner or separate contractors destroyed or damaged by such correction or removal.

13.2.7 Nothing contained in this Paragraph 13.2 shall be construed to establish a period of limitation with respect to any other obligation which the Contractor might have under the Contract Documents, including Paragraph 4.5 hereof. The establishment of the time period of one year after the Date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any warranty required by the Contract Documents relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which his obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to his obligations other than specifically to correct the Work.

13.3 ACCEPTANCE OF DEFECTIVE OR NON-CONFORMING WORK

13.3.1 If the Owner prefers to accept defective or non-conforming Work, he may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect a reduction in the Contract Sum where appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 14

TERMINATION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 If the Work is stopped for a period of thirty days under an order of any court or other public authority having jurisdiction, or as a result of an act of government, such as a declaration of a national emergency making materials unavailable, through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing any of the Work under a contract with the Contractor, or if the Work should be stopped for a period of thirty days by the Contractor because the Architect has not issued a Certificate for Payment as provided in Paragraph 9.7 or because the Owner has not made payment thereon as provided in Paragraph 9.7, then the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner payment for all Work executed and for any proven loss sustained upon any materials, equipment, tools, construction equipment and machinery, including reasonable profit and damages.

14.2 TERMINATION BY THE OWNER

14.2.1 If the Contractor is adjudged a bankrupt, or if he makes a general assignment for the benefit of his creditors, or if a receiver is appointed on account of his insolvency, or if he persistently or repeatedly refuses or fails, except in cases for which extension of time is provided, to supply enough properly skilled workmen or proper materials, or if he fails to make prompt payment to Subcontractors or for materials or labor, or persistently disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, or otherwise is guilty of a substantial violation of a provision of the Contract Documents, then the Owner, upon certification by the Architect that sufficient cause exists to justify such action, may, without prejudice to any right or remedy and after giving the Contractor and his surety, if any, seven days' written notice, terminate the employment of the Contractor and take possession of the site and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor and may finish the Work by whatever method he may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the Work is finished.

14.2.2 If the unpaid balance of the Contract Sum exceeds the costs of finishing the Work, including compensation for the Architect's additional services made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or to the Owner, as the case may be, shall be certified by the Architect, upon application, in the manner provided in Paragraph 9.4, and this obligation for payment shall survive the termination of the Contract.

SUPPLEMENTARY GENERAL CONDITIONS

GENERAL

The Supplementary General Conditions contain changes and additions to the AIA General Conditions. Where any part of the AIA General Conditions is modified or voided by the Supplementary Conditions, the unaltered portions of the provision shall remain in effect.

Following is a list of subparagraphs added, modified or voided:

1.1	2.2.9	4.10.1	5.2.3	8.2.3	11.1.6	12.1.3	18.1	24.1
1.1.1	4.4	4.12	5.2.4	8 .3	11.1.7	15.1	19.1	
1.1.5	4.4.3	4.12.9	7.5	8.3.2	11.1.8	15.1.1	20.1	
1.1.6	4.7	5.2	7.5.2	11.1	11.1.9	15.1.2	21.1	
1.3	4.7.5	5.2.1	7.7	11.1.4	11.1.10	15.1.3	22.1	
1.3.1	4.10	5.2.2	8.2	11.1.5	12.1	17.1	23.1	

1.1 DEFINITIONS

Revise first sentence of paragraph 1.1.1 as set forth below:

The Contract Documents consist of the Agreement, the Conditions of the Contract (General, Supplementary, and Other Conditions), Performance Bond, Labor and Materials Payment Bond, the Drawings, the Specifications, all Addenda issued prior to execution of the Agreement and all Modifications thereto.

Add the following sentence to paragraph 1.1.1.

Following are the Drawings which form a part of this Contract, as set forth in paragraph 1.1.1 of the General Conditions.

List of Drawings

T-1	Title Sheet
L-1	Site Plan
L-2	Site Utilities & Details
A-1	Plans and Schedules
A-2	Elevations
A-3	Sections
A-4	Wall Sections/Details
A-5	Details
A-6	Bathroom Plans/Elevation
S-1	Foundation Plan/Details
S-2	Framing Plans
P-1	Plumbing Plan and Schedules
M-1	Mechanical and Electrical Plans and Schedules

1.1.5 The term "provide" means furnish and install all materials and equipment incorporated in construction, or to be incorporated in construction, required by the Contract Documents and includes all labor necessary to produce such construction.

1.1.6 The term "Owner" refers to the Township of Falls, Pennsylvania.

1.3 Copies Furnished and Ownership

Add the following paragraph 1.3.1:

The Owner will furnish ten (10) sets of Drawings and Specifications to the Contractor without charge, which are to be returned to the Architect or suitably accounted for upon request.

In addition the Owner will furnish each Contractor, without charge, three copies of additional details or supplemental instructions issued during the course of construction. Additional copies of any documents shall be paid for by the Contractor requesting same.

2.2 Administration of the Contract

Add the following sentences to 2.2.9:

This shall be a condition precedent to arbitration of any claim. Should the architect fail to render a written decision the provision of 2.2.12 shall govern.

4.4 Labor and Materials

Add the following paragraphs:

4.4.3 It is the intent of these specifications to establish standards of quality and style of materials, equipment and products to be installed in this project. Within a period of 45 days after the Contract has been awarded, if the Contractor desires he may submit to use materials or equipment or products other than those specified provided that the proposed substitution materials, equipment and products are in no ways inferior in quality and style to those specified; it shall be the burden and obligation of the Contractor to demonstrate the lack of substantial differences in quality and style between the proposed substitute items and those specifed. The Contractor shall so request and state in a separate statement and provide a list of porposed substitutions (manufacturer brand name, catalog number, etc.) and state what the difference each will make (addition, deduction, no change) in the Contract price (which Contract price shall be based solely on strict adherence to Contract Specifications in all respects). He shall also submit data showing that proposed substitution are not diffrerent from the specified types, or wherein they do differ. Bidders are instructed to pay particular attention to the true intent of these paragraphs. While there is not any intent to limit competition, it must be recognized that in instances where particular items or groups of items are specifically mentioned that it is the intent that competition be restricted to the specified level of quality. The term "equal" is not necessarily limited to the physical or technical properties of the product or material but is construed to encompass the finish, color, texture and other pertinent architectural qualities in like regard. Failure to satisfy in any one respect may be sufficient cause for rejection of substitute materials.

Where such substitution alters the design or space requirements indicated in the Contract, the Contractor shall include, absorb and list all items of cost for the revised design and construction, including cost of all allied trades involved. Under no circumstances will either the Architects or the Owner be liable for delays to the work incurred through Contractor's requests to have substitute materials approved. If testing is required the time thus expended shall be the sole responsibility of the Contractor, regardless of whether final judgement results in rejection or approval of the proposed substitution.

Acceptance or rejection of the proposed substitution shall rest with the Owner based on the recommendations of the Architect. If requested, Contractor shall submit for inspection, samples of both the specified and proposed substitute items. No extra costs resulting from a substitution proposed by the Contractor shall evolve upon the Owner, the Architects or another Contractor.

4.7 Permits and Fees:

Add the following paragraph 4.7.5:

4.7.5 The Contractor shall secure the complete approval of all authorities having jurisdiction and if necessary shall furnish all drawings and documents for such approval. He shall deliver photostatic copies of all permits and receipts for payment thereof to the Architect.

4.10 Progress Schedule

Add the following sentence to paragraph 4.10.1:

The progress schedule shall be revised and updated when requested by the Owner or the Architect.

4.12 Shop Drawings and Samples:

Add the following paragraphs:

4.12.9 The Contractor shall keep one (1) copy of the approved shop and setting drawings at the project site. No work covered by shop and setting drawings shall proceed without (1) receipt by the Contractor of the Architect's or the respective Engineer's approval of said drawings and (2) distribution by the Contractor to the Owner's representative of required copies of said approved drawings.

5.2 Award of Subcontracts and Other Contracts for Portions of the Work

Delete paragraphs 5.2.1, 5.2.2, 5.2.3 and 5.2.4 and substitute the following:

5.2.1 The Contrator shall not award any work to any subcontractor without prior approval of the Architect. Such approval need not be given until the Contractor submits to the Architect a written statement concerning the proposed award to the subcontractor, which statement shall contain all information that the Architect may require.

7.5 Performance Bond and Labor and Materials Bond

Add the following paragraph:

7.5.2 The Contractor shall be required to provide simultaneously, Performance Labor and Materials Payment Bond in the amount of one hundred percent (100%) of the contract price covering the faithful performance of the contract and the payment of all obligations arising thereunder. The bonds shall be executed in the form specified herein.

7.7 Tests

Add the following paragraph 7.7.5:

7.7.5 All material and workmanship shall be subject to inspection and tests by the Owner during construction and at all other times and places, to the extent practicable.

8.2 Progress and Completion

Add the following paragraph 8.2.3:

It is the intent of the Owner to issue "Notice to Proceed" to the successful bidders as soon as possible after receipt of bids. Contractor shall commence work not more than ten (10) calendar days after receipt of such Notice. Such Notice shall be contingent upon successful bidder's satisfactory completion and execution of Agreement, Bond, Insurances and other Security forms required. Inasmuch as the performance of this Contract and completion of the work are for the purpose of enabling the Owner to proceed with the construction of a greatly needed improvement in accordance with a pre-determined program, all provisions relating to the time of performance and completion of the work are the essence of this Contract, and it is hereby understood and mutually agreed, between Contractor and Owner, that the date of beginning, rate of progress and time of completion of the work required hereunder are essential conditions of the Contract. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time specified herein for completion of the work, is a reasonable time for completion of same. The Contractor agrees that the work will be performed in an orderly and organized manner and at such a rate of progress as will insure Substantial Completion of the entire work within a period of two hundred twenty (220) consecutive calendar days, such period to commence upon receipt of Notice to Proceed."

8.3 Delays and Extension of Time

Delete paragraph 8.3.2 and add the new paragrah 8.3.2:

No extension of time shall be made for any one or more delays unless within five (5) days after the beginning of such delays a written request for additional time shall be filed with the Architect. In case of a continuing cause of delay only one request is necessary.

The Contractor shall neither make or assert a claim for damage against the Owner by reason of any delays herein mentioned, including without limitation, delays arising out of change orders, and agrees that his sole claim in the event of any such delays is limited to extension of time for completion of the work. The Contractor's inability to secure sufficient manpower for the performance of the Contract shall not constitute a basis for an extension of time.

11.1 Contractor's Liability Insurance

Add the following sentences and paragraphs:

11.1.4 Add the following sentence at the end: "and shall certify that the Township of Falls and the County of Bucks are additional named insured on all policies."

11.1.5 The Contractor shall not commence work under this Contract until he has obtained all the insurance required hereunder and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his subcontract until all insurance required of the subcontractors has been so obtained and approved.

The following paragraphs list that insurance policies be extended to cover all work done by all of the Contractor's subcontractors.

11.1.6 The insurance required is as specified below and in the amount indicated:

1. Workmen's Compensation and Employer's Liability Insurance
   a. Statutory: Amounts and coverage as required by law of the place of the work.

2. Comprehensive General Liability Insurance
   a. Public Liability: Including Premises, Products, Completed Operations and Contractural
      Bodily Injury Liability
      $ 500,000.00 each person
      $1,500,000.00 each occurance

3. Comprehensive Automobile Liability Insurance, including owned, non-owned, and hired vehicles
   a. 250,000.00 each person
      $1,000,000.00 each occurance

   b. Property Damage Liability
      $100,000.00 each occurance

11.1.7 Contractor shall maintain Completed Operations Insurance for a period of two (2) years after final acceptance of the Contract.

11.1.8 Bodily injury and property damage coverage under both Comprehensive General and Comprehensive Automobile Insurance policies shall include the "Occurance" basis wording which means an event or continuous or repeated exposure to conditions which unexpectedly causes injury during the policy period.

11.1.9 Comprehensive General Liability policies shall include Standard Broad Form property damage endorsement for the Contractor, his subcontractors and any and all other tradesmen engaged on the project.

11.1.10 Each Contractor agrees to assist in every manner possible in the reporting and investigating of any accident, and upon request, to cooperate with all interested insurance carriers in the handling of any claim by securing and giving evidence and obtaining the attendance of witnesses as required for any claim or suit.

12.1 Change Orders

Revise paragraph 12.1.3.3 to read as follows:

12.1.3.3 By cost and a fixed precentage fee as stated below, the cost shall consist of:

1. For subcontracted work:
   Subcontractor's billings, plus 5% of subcontractor's billing for overhead and profit.
2. For Contractor's direct work:
   The net amount of Contractor's direct cost, labor (including payroll taxes, insurance and all other related payroll costs), materials, equipment, transportation and taxes, plus 15% for overhead and profit.

3. The addition of 1 and 2 above, where both apply.

THE FOLLOWING NEW PARAGRAPHS ARE ADDED TO THE AIA GENERAL CONDITIONS:

15.1 Guarantees and Correction of Work

15.1.1 "General Guarantees" The Contractor guarantees all of the work, performed under his Contract, including such change orders as may be executed, for a minimum period of one (1) year from the date of Final Acceptance of the work as follows:

Against all faulty of imperfect materials, and against all imperfect, careless and unskilled workmanship.

The completed work shall resist damage successfully by exposure to foreseeable weather, and damage by intrusion of foreseeable wind, wind-borne water, and surface drainage.

Against defacements, such as uncontrolled cracking, spalling, delamination and peeling of finish surface such as concrete and masonry.

General and Manufacturer's and Subcontractor's guarantees shall cover a longer period when and if so stipulated in respective Specification Sections.

15.1.2 "Manufacturer's and Subcontractor's Guarantees" In addition to the General Guarantees, the Contractor shall comply with and furnish any and all guarantees of whatever nature referred to in respective Specifications Section.

As a condition precedent to his right of final payment, Contractor shall deliver to the Owner two (2) copies of all manufacturer's guarantees, service contracts, and other guarantees.

In each section of the work in which a guarantee is required, the Contractor shall require each subcontractor to execute a satisfactory written guarantee in which the Contractor and the Owner are named as beneficiaries.

15.1.3 "Contractor's Continuing Responsibilities and Obligations" The guarantee obligations assumed by the Contractor under this Contract shall not be held or taken to be in any way impaired because of the Specification, indication or approval by or on behalf of the Owner of any article, materials, means, methods, arrangements, combinations or things used or to be used in the construction, performance and completion of the work or any part thereof.

No acceptance or use of the work or any part thereof, nor any failure to use the same, nor any repairs, adjustments or corrections made by the Owner due to the Contractor's failure to comply with any of his obligations under the Contract, shall impair in any way the Contractor's responsibility under this Contract.

The specific contractural liability period of one year, for correction of observed defects in materials and workmanship not otherwise guaranteed for longer periods, shall not be construed to waive the Owner's rights under the Pennsylvania Statue of Limitations.

17.1 Meetings

Progress Meetings shall be held at least once each month at the job site at a regular time and day set by the Architect. The frequency may be changed by the Architect to suit current conditions. The Contractor, those of his subcontractors concerned with current progress or with scheduling of future progress, the Owner and the Architect shall each be represented at these Progress Meetings by persons familar with the details of the work and authorized to conclude matters relative to work progress, establishment of progress sche-

dules, etc., as may be necessary to expedite completion of the work. The Contractor and his subcontractors attending these meetings shall present complete and definitive reports as to the status of their respective work, conditions of product and equipment, manufacture, labor availability, productivity and cooperation, shipping data, time of completion of sequences of the work, and any other information bearing upon the execution of the Contract or subcontract. For the Owner's convenience, the Architect will chair the Meetings, will keep accurate minutes and will reproduce and promptly distribute a sufficient number of copies to all concerned. The Architect will, on behalf of the Owner, keep the Contractor informed of current change orders and field orders.

18.1 Subsurface Conditions

Bidders may interpret for themselves the conditions underlying the surface of the project within the contract depths indicated on the drawings. If additional information is deemed necessary by the Bidder, it shall be his sole responsiblity to make such other investigation as he deems necessary to satisfy his requirements.

Should unforeseen conditions be encountered the Contractor shall immediately give notice to the Architect of such condition. The Architect shall promptly investigate the condition(s) and render an immediate decision in writing, setting forth such action as may be necessary to correct or remove the condition, setting forth such action as may be necessary to correct or remove the condition.

19.1 Use of Completed Parts

The Owner shall have the right, with the written agreement of the Contractor, to make use of any completed or partially completed portion of the work, whether or not the time may have expired for completion but such use shall not be deemed an acceptance of the work so taken or used, or any portion thereof. Prior, however, to the Owner taking possession, an inspection shall be made by the Architect of the portions to be occupied to determine if same is in conformity with the contract and the Contractor will not be liable for any subsequent damage due to occupancy of the completed portion occupied.

20.1 Assignment

All contracts are personal and the assignment by the Contractor of this Contract or any interest therein of any monies due or to become due by reason of the terms hereof or subletting any part of the work without prior written consent of the Owner shall be void.

21.1 Materials and Labor

Contractor agrees to pay for all materials, skill, labor and instrumentalities used in or in connection with the performance of this contract when and as bills or claims therefore become due and to save harmless and indemnify and protect the premises and Owner from and against any such claims and the Owner may retain monies for such indemnification.

22.1 Strikes, Etc.

The Owner assumes no obligation toward Contractor, directly or indirectly caused or arising from strikes, lockouts, action of the elements, changes in prices, costs or taxes, or other factors beyond the direct and full control of the Owner.

23.1 Protection

The Contractor will be responsible for breaking or otherwise damaging the facilities or premises; and any expense for repair or restoration thereof must be paid by the Contract, or the amount necessary therefore will be deducted from any money due or to become due under the Contract.

24.1 Employment Practices

The parties do hereby agree that the provisions of the H.U.D. dealing with discrimination in employment on public contracts, and the Rules and Regulations promulgated pursuant thereunto, are hereby made a part of this Contract and are binding upon the parties by reference hereto.

END OF SECTION SGC.

FALLS TOWNSHIP WATERFRONT PARK - PHASE II

NON DISCRIMINATION CLAUSE:

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

1. The contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscriminating clause.

2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

3. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of the Executive Order No. 11246 of September 24,1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

5. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor, for purposes of investigation to ascertain compliance with such rules, regulations and orders.

6. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, or terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

7. The contractor will include the provisions of Paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or order of the Secretary of Labor issued pursuant to Section204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with repsect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a sub-

contractor or vendor as a result of such direction by the contracting agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States."

END OF NON-DISCRIMINATION CLAUSE

FALLS TOWNSHIP WATERFRONT PARK - PHASE II

ANTI-POLLUTION MEASURES

Act No. 247 of the General Assembly of Pennsylvania, effective November 25, 1972, requires that the Township advise bidders on public works construction contracts of the federal and state statutes, rules, and regulations dealing with the prevention of the environment pollution and the preservation of public natural resources that apply to the project on which bids are being received.

The bidder shall thoroughly acquaint himself with the terms of the statutes, rules, and regulations enumerated in this special requirement, and shall include in the bid prices all costs of complying with the terms of the listed statutes, rules, and regulations. No separate or additional payment will be made for such compliance.

The bidder shall determine what, if any, local ordinances, codes, and regulations apply to his work. He shall comply with all such ordinances, codes and regulations.

All those submitting bids agree that if awarded a contract, to construct all or any part of the project, they will undertake additional work which may be required by the enactment of new or the amendment of existing statutes, rules, or regulations occurring after the submission of the bid, and pertaining to the prevention of environment pollution and the preservation of public natural resources.

If additional work is required by the enactment of new or the amendment of existing statutes, rules or regulations, the Owner is authorized to issue a change order setting forth the additional work that must be undertaken and such change order shall not invalidate the previously awarded contract. The awarding authority reserves the right to contract with another party with regard to the additional work required by the enactment of new or the amendment of existing statutes, rules and regulations occurring after the submission of the bids.

The Contractor will be required to comply with the following acts and regulations, as amended. This list is comprised of three parts: Part I listing Pennsylvania's statutes and the rules and regulations promulgated thereunder which are administered by the Department of Environmental Resources, Part II listing federal statutes in alphabetical order withg the regulations promulgated thereunder, and Part III listing other relevant Pennsylvania laws.

END OF ANTI-POLLUTION MEASURES

(2-76)

~~U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT~~
~~COMMUNITY DEVELOPMENT~~

FEDERAL LABOR STANDARDS PROVISIONS

1. APPLICABILITY

The Project or Program to which the work covered by this Contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

2. MINIMUM WAGE RATES FOR LABORERS AND MECHANICS

All laborers and mechanics employed upon the work covered by this Contract shall be paid unconditionally and not less often than once each week, and without subsequent deduction or rebate on any account (except such payroll deductions as are made mandatory by law and such other payroll deductions as are permitted by the applicable regulations issued by the Secretary of Labor, United States Department of Labor, pursuant to the Anti-Kickback Act hereinafter identified), the full amount due at time of payment computed at wage rates not less than those contained in the wage determination decision of said Secretary of Labor (a copy of which is attached and herein incorporated by reference), regardless of any contractual relationship which may be alleged to exist between the Contractor or any subcontractor and such laborers and mechanics. All laborers and mechanics employed upon such work shall be paid in cash, except that payment may be by check if the employer provides or secures satisfactory facilities approved by the Local Public Agency or Public Body for the cashing of the same without cost or expense to the employee. For the purpose of this clause, contributions made or costs reasonably anticipated 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 Section 5.5(a)(1)(iv) of Title 29, Code of Federal Regulations. Also for the purpose of this clause, regular contributions made or costs incurred for more than a weekly period under plans, funds, or programs, but covering the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

3. UNDERPAYMENTS OF WAGES OR SALARIES

In case of underpayment of wages by the Contractor or by any subcontractor to laborers or mechanics employed by the Contractor or subcontractor upon the work covered by this Contract, the Local Public Agency or Public Body in addition to such other rights as may be afforded it under this Contract shall withhold from the Contractor, out of any payments due the Contractor, so much thereof as the Local Public

INSERTS TO FOLLOW AT TIME OF BIDDING

FALLS TOWNSHIP WATERFRONT PARK - PHASE II

SECTION 1A - GENERAL REQUIREMENTS

GENERAL

Applicable provisions of the Contract, including General and Supplementary Conditions apply to the work in this section.

TEMPORARY TOILET FACILITIES:

The Contractor shall provide suitable temporary toilets, at an approved location on the site, prior to the start of any field work, and complying with State and local laws and Board of Health requirements.

Toilets shall be rented from a commercial service organization. Toilets shall be of the portable chemical type with screened enclosures with door, each having a urinal and water closet, and mounted on skids. One unit shall be provided for each 30 employees. Each unit shall be serviced by the commercial service organization, at least twice a week, including removal of waste matter, sterilizing, recharging tank, refilling tissue holders, and thorough cleaning and scrubbing of entire interior which shall be maintained in respectable condition.

Remove units from site at completion of work when directed by Architect.

TEMPORARY STAGING, FALSEWORK, SHORING, BRACING, PROTECTIVE ENCLOSURES, DERRICKS, CRANES:

The Contractor (and each subcontractor entering upon the work) shall arrange to furnish, install, erect, maintain, protect, dismantle and remove such temporary construction named above, for his own use during the project construction; wherever possible, for economy of time and effort, Contractor (and subcontrators) shall collaborate to avoid repetitious or redundant erection of temporary construction. The Contractor shall assume complete responsibility for stability, safety, wind and fire resistance, warning lights, signs, and operating signals and procedures and shall conform to all national safety standards, and Federal, State and Local laws and requirements.

TEMPORARY LIGHT AND POWER

The Contractor shall furnish all labor, materials and equipment required to provide a system of temporary light and power for construction and paid for by him except as noted hereinafter. Provide the necessary distributing facilities and meter. The Contractor shall pay for the cost of electrical power for the work.

TEMPORARY DRAINAGE OF WASTE, GROUND AND STORM WATER:

Disposal in safe and satisfactory manner, by pumping and bailing and by conveying system to permit no standing water at any time on structure, temporary works, stored materials, or subgrade, is the responsibility of the Contractor. He shall at all time protect and safeguard the safety, stability and integrity of temporary works, construction, structure, equipment and materials.

If another Subcontractor excavates below the level of excavations required by the Contractor, the Subcontractor shall provide whatever pumping, bailing or conveying may be required to keep his excavation dry; Contractors shall de-water their own trenches.

ACCESS ROUTE AND TRAFFIC CONTROL

The Contractor shall be responsible for maintaining access to the site. Access to site shall recognize traffic safety standards and shall be kept passable in all weather during process of the work. The Contractor shall cooperate with the Owner to protect and limit unauthorized access to the construction area.

The Contractor shall be responsible for restoring all areas and existing municipal roads disturbed during the progress of the work to their original condition.

STORAGE SHEDS, TOOL SHEDS, SHOPS, EMPLOYEES' SHEDS

Each Subcontractor shall provide and maintain for his own use, and as each deems necessary, suitable and safe temporary storage, tool shops, employees sheds, for proper protection, storage, work and shelter respectively, maintain properly, remove them at completion of work. Locations shall be as directed by the Contractor, with the consent of the Owner.

TEMPORARY SIGNS:

No manufacturer's names or signs shall be permitted on the site.

PROJECT SIGN:

The Contractor shall erect a sign at the project site identifying the project and indicating that the Government is participating in the development of the project.

A four foot by eight foot sign, well braced and supported by 4 x 4 treated posts shall be created at a prominent location approved by Falls Township and the Architect. Sign boards may be constructed from Exterior Grade B-C plywood, sanded both sides, with the 8 foot dimension horizontal. Lettering shall be in fast blue block letters of 4" and 3" minimum size. Engage an experienced sign painter to paint graphics required.

The sign will incorporate the following:

FALLS TOWNSHIP WATERFRONT PARK

FOR

THE FALLS TOWNSHIP BOARD OF SUPERVISORS

funded by

OFFICE OF COASTAL ZONE MANAGEMENT

U.S. DEPARTMENT OF COMMERCE

UNIPLAN architects, engineers and planners

CONTRACTOR

A sign layout will be submitted to the Owner and Architect for approval before execution.

STAKING OUT:

Before site clearing earthwork and site grading operations are started, the Contractor shall have the site completely staked out by an approved Engineer or Surveyor.

ENVIRONMENTAL PROTECTION PROCEDURES:

Provide facilities, establish procedures, and conduct construction activities in a manner which will ensure compliance with Owner's environmental impact statement and other regulations controlling construction activities at project site. Designate one person, the Construction Superintendent or other, to enforce strict discipline on activities related to generation of wastes, pollution of air/water/soil, generation of noise, and similar harmful and deleterious effects which might violate regulations or reasonably irritate persons at or in vicinity of project site.

END OF SECTION 1A.

SECTION 1E - PROJECT CLOSEOUT

GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary Conditions and other General Requirements sections, apply to the work specified in this section.

DESCRIPTION OF REQUIREMENTS:

Definitions: Closeout is hereby defined to include general requirements near the end of Contract Time, in preparation for final acceptance, final payment, normal termination of contract, occupancy by Owner and similar actions evidencing completion of the work. Specific requirements for individual units of work are specified in sections of Diviison 2 through 16. Special requirements for mechanical and electrical work are specified in 15A- and 16A-Series sections, respectively. Time of closeout is directly related to "Substantial Completion", and therefore may be either a single time period for entire work or a series of time periods for individual parts of the work which have been certified as substantially complete at different dates. That time variation (if any) shall be applicable to other provisions of this section, regardless of whether resulting from "phased completion" originally specified by the contract documents or subsequently agreed upon by Owner and Contractor.

PREREQUISITES TO SUBSTANTIAL COMPLETION:

General: Prior to requesting Architect's inspection for certification of substantial completion, as required by General Conditions (for either the entire work or portions thereof), complete the following and list known exceptions in request:

In progress payment request coincident with or first following date claimed as "substantially complete", or list incomplete items, value of incompletion, and reasons for being incomplete. Include supporting documentation for completion.

Submit statement showing accounting of change orders to the Contract Sum.

Advise Owner of pending insurance change-over requirements.

Submit specific warranties, workmanship/maintenance bonds, maintenance agreements, final certifications and similar documents.

Obtain and submit releases enabling Owner's full and unrestricted use of the work and access to services and utilities, including (where required) occupancy permits, operating certificates, and similar releases.

Deliver spare parts, extra stocks of materials, and similar physical items to Owner.

Make final change-over of locks and transmit keys to Owner, and advise Owner's personnel to change-over in security provisions.

Complete start-up testing of systems, and instructions of Owner's operating/ maintenance personnel. Discontinue (or change over) and remove from project site temporary facilities and services, along with construction tools and facilities, mock-ups, and similar elements.

Complete final cleaning up requirements.

Touch-up and otherwise repair and restore marred exposed finishes.

At time of substantial completion on last major portion of the work, place legal notice in local newspaper, to effect that Contract has been fulfilled and project is being closed out. Comply with governing regulations for local registration and posting of notice.

Inspection Procedures: Upon receipt of Contractor's request, Architect will either proceed with inspection or advise Contractor of prerequisites not fulfilled. Following initial inspection, Architect will either prepare certificate of substantial completion, or advise Contractor of work which must be performed prior to issuance of certificate; and repeat inspection when requested and assured that work has been substantially complete. Results of complete inspection will form initial "punch-list" for final acceptance. All "punch-list" work is to completed within 60 days of issuance of the certificate of substantial completion. The State Department of Education shall also perform a final inspection of the facility to insure state law has been satisfied. The comments of these inspections shall became an integral part of the punch-list.

PREREQUISITES TO FINAL ACCEPTANCE:

General: Prior to requesting Architect's final inspection for certification of final acceptance and final payment, as required by General Conditions, complete the following and list known exceptions (if any) in request:

Submit final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

Submit certified copy of Architect's final punch-list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by Architect.

Submit final meter readings for utilities, measured record of stored fuel, and similar data as of time of substantial completion or when Owner took possession of and responsibility for corresponding elements of the work.

Submit record drawings, maintenance manuals, damage or settlement survey, property survey, and similar final record information.

Submit specific warranties, workmanship/maintenance bond, maintenance agreements, final certifications and similar documents.

Complete final cleaning up requirements, including touch-up of marred surfaces.

Submit consent of surety.

Submit final liquidated damages settlement statement, acceptable to Owner.

Revise and submit evidence of final insurance coverage complying with insurace requirements.

Reinspection Procedure: Upon receipt of Contractor's notice that work has been complete, including punch-list items resulting from earlier inspections, and excepting incomplete items delayed because of acceptable circumstances, Architect will reinspect work. Upon completion of reinspection, Architect will either prepare certificate of final acceptance of advise Contractor of work not completed or obligations not fulfilled as required for final acceptance. If necessary, procedure will be repeated. If necessary the State Department of Education will also reinspect the work.

RECORD DOCUMENT SUBMITTALS:

General: Specific requirements for record documents are indicated in individual sections of these specifications. Other requirements are indicated in General Conditions, with additional provisions indicated in 15- and 16-Series sections for mechanical and electrical work, respectively. Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for Architect's reference during normal working hours.

Record Drawings: Maintain a white-print set (blue-line or black-line) of contract drawings and shop drawngs in clean, undamaged condition, with mark-up of actual installations which vary substantially from the work as originally shown. Mark whichever drawing is most capable of showing "field" condition fully and accurately; however, where shop drawings are used for mark-up, record a cross-reference at corresponding location on contract drawings. Mark with red erasable pencil and, where feasible, use other colors to distinguish between variations in separate categories of work. Mark-up new information which is recognized to be of importance to Owner, but was for some reason not shown on either contract drawings or shop drawings. Give particular attention to concealed work, which would be difficult to measure and record at a later date. Note related change order numbers where applicable. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on cover of each set.

Maintenance Manuals: Organize maintenance-and-operating manual information into suitable sets of manageable size, and bind into individual binders properly identified and indexed (thumb-tabbed); examples: Elevators, Food Serving Equipment, Finish Floor Maintenance, Lawn and Plant Maintenance, Roof Maintenance, Swimming Pool System. Include emergency instructins, spare parts listing, warranties, wiring diagrams, recommended "turn-around" cycles, inspection procedures, shop drawings, product data, and similar applicable information. Bind each manual of each set in a heavy-duty 2", 3-ring vinyl-covered binder, and include pocket folders for folded sheet information. Mark identification on both front and spine of each binder.

CLOSEOUT PROCEDURES:

General Operating/Maintenance Instructions: Arrange for each installer of work requiring continuing maintenance (by Owner) or operation, to meet with Owner's personnel, at project site, to provide basic instructions needed for proper operation and maintenance of entire work. Include instructions by manufacturer's representatives where installers are not expert in the required procedures. Review maintenance manuals, record documentation, tools, spare parts and materials, lubricants, fuels, indentification system, control sequences, hazards, cleaning and similar procedures and facilities. For operational equipment, demonstrate start-up, shut-down, emergency operations, noise and vibration adjustments, safety, economy/efficiency adjustments, and similar operations. Review maintenance and operations in relationwith appplicable warranties, agreements to maintain, bonds, and similar continuing committments. Instruct the Owner on maintenance and preservation of live plant materials and lawns.

FINAL CLEANING:

General: General cleaning during progress of work is specified in General Conditions. Provide final cleaning of the work, at time indicated, consisting of cleaning each surface of unit of work to normal "clean" condition expected for a first-class building cleaning and maintenance program. Comply with manufacturers' instructions for cleaning operations. The following are examples, but not by way of limitation, of cleaning levels required:

Remove labels which are not required as permanent labels.

Clean transparent materials, including mirrors and window/door glass, to a polished condition, removing substances which are noticable as vision-obscuring materials. Replace broken glass.

Clean exposed exterior and interior hard-surfaced finishes, including metals, masonry, stone, concrete, painted surfaces, plastics, tile, wood, special coatings, and similar surfaces, to a dirt-free condition, free of dust, stains, films and similar noticeable distracting substances. Except as otherwise indicated; avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.

Wipe surfaces of mechanical and electrical equipment clean, including elevator equipment and similar equipment in addition to that specified in Division 15 and 16; remove excess lubrication and other substances.

Remove debris and surface dust from limited-access spaces including roofs, plenums, shafts, trenches, equipment vaults, manholes, and similar spaces.

Vacuum clean carpeted surfaces and similar soft surfaces.

Clean plumbing fixtures to a sanitary condition, free of stains including those resulting from water exposure.

Clean food service equipment to a condition of sanitation ready and acceptable for intended food service use.

Clean light fixtures and lamps so as to function with full efficiency.

Clean project site (yard and grounds), including landscape, development areas, of litter and foreign substances. Sweep paved areas to a broom-clean condition; remove stains, petro-chemical spills and ther foreign deposits. Rake grounds which are neither planted nor paved, to a smooth, even-textured surface.

Pest Control: Engage an experienced exterminator to make a final inspection of project, and to rid project of rodents, insects, and other pests. Comply with governing regulations and applicable health and safety standards.

Removal of Protection: Except as otherwise indicated or requested by Architect, remove temporary protection devices and facilities which were installed during course of the work to protect previously completed work during remainder of construction period.

Compliances: Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at site, or bury debris or excess materials on Owner's property, or discharge volatile or other harmful or dangerous materials into drainage systems; remove waste materials from site and dispose of in a lawful manner.

Where extra materials of value remaining after completion of associated work have become Owner's property, dispose of these to Owner's best advantage as directed.

CONTINUING INSPECTIONS:

General: Except as otherwise required by specific warranties, agreements to maintain, workmanship/maintenance bonds, and similar continuing commitments, comply with Owner's requests to participate in inspections at end of each time period of such continuing commitments. Participate in general inspection of the work approximately one year beyond date of substantial completion. (Referred to as the eleven month inspection)

END OF SECTION 1E

SECTION 2A1 - SITE CLEARING

GENERAL

RELATED DOCUMENTS:

The general provisions of the contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of clearing is within the limits of the grading lines and all areas noted on the drawing. It includes clearing, grubbing and removal of all trees, shrubs, brush, stumps, wood, slashings and other debris and materials of every name and nature not required to remain as part of the finished work.

EXECUTION

GENERAL:

Before clearing operations are started, the site shall be completely staked out by an engineer or surveyor for the Architect's approval of layout and for his designation of trees to remain. The Contractor shall then notify the Architect to dispatch his representative to designate trees and/or shrubs to be left standing. The Contractor shall supply suitable tags of a permanent nature for identification and marking of those plants to remain.

Removal of trees and shrubs shall include grubbing and excavating necessary to take out their entire root systems. All materials to be removed shall be disposed of away from the site as immediately as possible. They shall not be allowed to accumulate excessively.

Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.

DISPOSAL OF WASTE MATERIALS:

All materials resulting from clearing and grubbing shall be disposed of off the site in a manner conforming to applicable laws and regulations. Disposal by burning is strictly prohibited. Contractor shall obtain all necessary permits for disposal of materials to be cleared from the site.

END OF SECTION 2A1.

SECTION 2B0 - EXCAVATING, FILLING AND GRADING

GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of excavation, filling and grading is shown on the drawings.

Excavation for septic system is included as part of this work.

Preparation of subgrade for building slabs, walks, and pavements is included as part of this work.

Backfilling of trenches within the building lines is included as part of this work.

Offsite fill as required.

Related Work Specified Elsewhere:

Site Clearing: Section 2A1.
Bituminous Paving: Section 2P1.
Septic System: Section 2J2
Concrete for Structures: Section 3A0.

QUALITY ASSURANCE:

Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.

Testing and Inspection Service:

Employ, at Contractor's expense, a testing laboratory acceptable to Architect to perform soil testing and inspection service for quality control testing during earthwork operation.

SUBMITTALS:

Test Reports-Excavating, filling, and Grading:

Submit 2 copies of the following reports directly to the Architect from the testing services, with copy to the Contractor:

Test reports on borrow material

Verification of each footing subgrade.

Field density test reports.

One optimum moisture-maximum density curve for each type of soil encountered.

Report of actual unconfined compressive strength and/or results of bearing tests of each strata tested.

JOB CONDITIONS:

Site Information: Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that Owner will not be responsible for interpretations or conclusions drawn therefrom by Contractor. Data are made available for the convenience of Contractor.

Additional test borings and other exploratory operations may be made by Contractor at no cost to Owner.

Existing Utilities: Locate existing underground utilities in the areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations.

Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult the Utility Owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

Use of Explosives:

The use of explosives is not permitted.

Protection of Persons and Property:

Attention is directed to the General Conditions and General Requirements clauses relating to protection of work, persons and property, as well as the requirements below.

Barricade open excavations occurring as part of this work and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction.

Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

PRODUCTS

SOIL MATERIALS:

Definitions:

Satisfactory soil materials are defined as those complying with American Association of State Highway and Transportation Officials (AASHTO) M145, soil classification Groups A-1, A-2-4, A-2-5, A-3.

Unsatisfactory soil materials are those defined in AASHTO M145 soil classification Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7; also peat and other highly organic soils.

Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, crushed slag, natural or crushed sand, as acceptable to the Architect.

Drainage Fill: Washed, uniformly graded mixture of crushed stone, or crushed or uncrushed gravel, with 100% passing a 1-1/2" sieve and not more than 5% passing a No. 4 sieve.

Backfill and Fill Materials: Satisfactory soil materials free of clay, rock or gravel larger than 2" in any dimension, debris, waste, frozen materials, vegetable and other deleterious matter.

EXECUTION

INSPECTION:

Examine the areas and conditions under which excavating, filling, and grading are to be performed and notify the Contractor, in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

EXCAVATION:

Excavation consists of removal and disposal of material encountered when establishing required grade elevations.

Excavation Classifications: The following classifications of excavation will be made when unanticipated rock excavation is encountered in the work:

Do not perform such work until material to be excavated has been cross-sectioned and classified by Architect. Such excavation will be paid on basis of contract conditions relative to changes in work.

Earth excavation includes removal and disposal of pavements and other obstructions visible on ground surface, underground structures and utilities indicated to be demolished and removed, material of any classification indicated in data on subsurface conditions, and other materials encountered that are not classified as rock excavation or unauthorized excavation.

Rock excavation consists of removal and disposal of materials encountered that cannot be excavated with a 3/4 cubic yard capacity power shovel without drilling and blasting, or continuous use of a ripper or other special equipment, except such materials that are classified as earth excavation.

Typical of materials classified as rock are boulders 1/2 cu. yd. or more in volume, solid rock, rock in ledges, and rock-hard cementitious aggregate deposits.

Intermittent drilling performed to increase production and not necessary to permit excavation of material encountered will be classified as earth excavation.

Rock payment lines are limited to the following:

Two feet ouside of concrete work for which forms are required, except footings.

One foot outside the perimeter of footings.

In pipe trenches, 6" below invert elevation of pipe and 2 feet wider than the inside diameter of pipe, but not less than 3 feet minimum trench width.

Neat outside dimensions of concrete work where no forms are required.

Under slabs on grade, 6" below the bottom of concrete slab.

Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Architect. Unauthorized excavation, as well as remedial work directed by the Architect, shall be at the Contractor's expense.

Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending the indicated bottom elevation of the footing or base to the excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable to Architect.

Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Architect.

Additional Excavation: When excavation has reached required subgrade elevations, notify the Architect who will make an inspection of conditions.

If unsuitable bearing materials are encountered at the required subgrade elevations, carry excavations deeper and replace the excavated material as directed by the Architect.

Removal of unsuitable material and its replacement as directed will be paid on the basis of contract conditions relative to changes in work.

Stability of Excavations: Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.

Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

Shoring and Bracing: Provide materials for shoring and bracing, such as sheet piling, uprights, stringers and cross-braces, in good serviceable condition.

Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction.

Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.

Dewatering: Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.

Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

Convey water removed from excavations and rain water to collecting or run-off areas. Establish and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.

Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.

Locate and retain soil materials away from edge of excavations.

Dispose of excess soil material and waste materials as herein specified.

Excavation for Structures: Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.

In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive concrete.

Excavation for Pavements: Cut surface under pavements to comply with cross-sections, elevations and grades as shown.

Excavation for Trenches: Dig trenches to the uniform width required for the particular item to be installed, sufficiently wide to provide ample working room.

Excavate trenches to the depth indicated or required. Carry the depth of trenches for piping to establish the indicated flow lines and invert elevations. Beyond the building perimeter, keep bottoms of trenches sufficiently below finish grade to avoid freeze-ups.

Where rock is encountered, carry the excavation 6" below the required elevation and backfill with a 6" layer of crushed stone or gravel prior to installing pipe.

Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for the entire body of the pipe.

Backfill trenches with concrete where trench excavations pass within 18" of column or wall footings and which are carried below the bottom of such footings, or which pass under wall footings. Place concrete to the level of the bottom of adjacent footing.

Concrete is specified in Section 3A0.

Do not backfill trenches until tests and inspections have been made and backfilling authorized by the Architect. Use care in backfilling to avoid damage or displacement of pipe systems.

Cold Weather Protection: Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.

COMPACTION:

General: Control soil compaction during construction providing minimum percentage of density specified for each area classification.

Percentage of Maximum Density Requirement:

Compact soil to not less than the following percentages of maximum dry density for soils which exhibit a well-defined moisture density relationship determined in accordance with ASTM D 1557; and not less than the following percentages of relative density, determined

in accordance with ASTM D 2049, for soils which will not exhibit a well-defined moisture-density relationship.

Structures: Compact top 12" of subgrade and each layer of backfill or fill material at 95% maximum dry density or 90% relative dry density.

Building Slabs and Steps: Compact top 12" of subgrade and each layer of backfill or fill material at 95% maximum dry density or 90% relatively dry density.

Lawn or Unpaved Areas: Compact top 6" of subgrade and each layer of backfill or fill material at 90% maximum dry density.

Walkways: Compact top 6" of subgrade and each layer of backfill or fill material at 95% maximum dry density or 90% relative dry density.

Pavements: Compact top 12" of subgrade and each layer of backfill or fill material at 95% maximum dry density or 90% relative dry density for cohesive soil material.

Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operation.

Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

BACKFILL AND FILL:

General: Place acceptable soil material in layers to required subgrade elevations, for each area classification listed below.

In excavations, use satisfactory excavated or borrow material.

Under grassed areas, use satisfactory excavated or borrow material.

Under walks and pavement, use subbase material, or satisfactory excavated or borrow material, or combination or both.

Under steps, use subbase material.

Backfill excavations as promptly as work permits, but not until completion of the following:

Acceptance by Architect of construction below finish grade including, where applicable, dampproofing.

Inspection, testing, approval, and recording locations of underground utilities.

Removal of concrete formwork.

Removal of trash and debris.

Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow strip, or break-up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.

When existing ground surface has a density less than that specified under "Compaction" for the particular area classification, break up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to required depth and percentage of maximum density.

Placement and Compaction: Place backfill and fill materials in layers not more than 8" in loose depth for material compacted by heavy compaction equipment, and not more than 4" in loose depth for material compacted by hand-operated tampers.

Before compaction, moisten or aerate each layer as necessary to provide the optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

Place backfill and fill materials evenly adjacent to structures, to required elevations. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around structure to approximately same elevation in each lift.

GRADING:

General: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerance, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding. Finish surfaces free from irregular surface changes, and as follows:

> Lawn or Unpaved Areas: Finish areas to receive topsoil to within not more than 0.10' above or below the required subgrade elevations.
>
> Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 0.10' above or below the required subgrade elevation.
>
> Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 1/2" above or below the required subgrade elevation.

Grading Surface of Fill Under Building Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 1/2" when tested with a 10' straightedge.

Compaction:

After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

PAVEMENT SUBBASE COURSE:

General: Subbase course consists of placing subbase material, in layers of specified thickness, over subgrade surface to support a pavement base course.

See other Division 2 sections for paving specifications.

Grade Control: During construction, maintain lines and grades including crown and cross-slope of subbase course.

Shoulders: Place shoulders along edges of subbase course to prevent lateral movement. Construct shoulders of acceptable soil materials, placed in such quantity to compact to thickness of each subbase course layer. Compact and roll at least a 12" width of shoulder simultaneously with compacting and rolling of each layer of subbase course.

Placing: Place subbase course material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting subbase material during placement operations.

When a compacted subbase course is shown to be 6" thick or less, place material in a single layer. When shown to be more than 6" thick, place material in equal layers, except no single layer more than 6" or less than 3" in thickness when compacted.

FIELD QUALITY CONTROL

Quality Control Testing During Construction: Allow testing service to inspect and approve subgrades and fill layers before further construction work is performed.

Perform field density tests in accordance with ASTM D 1556 (sand cone method) or ASTM D 2167 (rubber balloon method), as applicable.

Footing Subgrade: For each strata of soil on which footings will be placed, conduct at least one test to verify required design bearing capacities. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested strata, when acceptable to Architect.

Paved Areas and Building Slab subgrade: Make at least one field density test of subgrade for every 2000 sq. ft. of paved area or building slab, but in no case less than 3 tests. In each compacted fill layer, make one field density test for every 2000 sq. ft. of overlaying building or paved area, but in no case less than 3 tests.

If, in the opinion of Architect, based on testing service reports and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense.

MAINTENANCE:

Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

DISPOSAL OF EXCESS AND WASTE MATERIALS:

Removal to Designated Areas on Owner's Property:

Transport acceptable excess excavated material to designated soil storage areas on the Owner's property. Stockpile soil or spread as directed by Architect.

Removal from Owner's Property:

Remove waste materials, including unacceptable excavated material, trash and debris, and dispose of it off the Owner's property.

END OF SECTION 2B0

SECTION 2H1 - WATER WELL

GENERAL

RELATED DOCUMENTS:

The general provisions of the contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

Provide well with producing capacity of approximately 20 gallons of water per minute.

Water well work is based on the following criteria:

Drill well to a depth of 300 feet.

Place 6-inch diameter casing full depth of drilling.

Minimum 3-inch thick cement grout to a depth of not less than 25-feet from grade.

Well screen to extend not less than 10-feet from end of casing.

Water well work includes the following:

Applications and permits for drilling and developing well.

Drilling pilot hole.

Drilling for final water well depth.

Placing and grouting well casing.

Development of well.

Testing and disinfection.

QUALITY ASSURANCE:

Protecting Water Quality: Take precautions to prevent contaminated water or water having undesirable physical or chemical characteristics from entering stratus from which well is to draw its supply. Prevent contaminated water, gasoline, etc., from entering well either through opening or by seepage through ground surface.

If well becomes contaminated or water having undesirable physical or chemical characteristics enters well due to neglect, provide casings, seals, sterilizing agents or other materials to eliminate contamination or shut off undesirable water. Provide remedial work at no cost to Owner.

Exercise care in performance of work to prevent breakdown or caving in of strata overlaying that from which water is to drawn. Develop, pump or bail well until water pumped from well is substantially free from sand.

Protect work to prevent either tampering with well or entrance of foreign matter. Upon completion, provide temporary well cap.

Driller's Requirements: Experienced foreman or driller to be constantly in control of well site and who has authority to take orders from Architect and, upon request, furnish well drilling information desired by Architect.

ABANDONMENT OF DRILLING:

If it becomes necessary to abandon drilling operation before completion of water producing well, follow regulations for abandonment of well as required by local authorities having jurisdiction.

Should abandonment of drilling be necessary due to poor workmanship or negligence on part of Contractor, no compensation will be allowed.

Should abandonment of drilling be necessary due to inadequate supply of good quality water, or for such other reason that Architect deems to be no fault of Contractor, compensation for work will be based on unit prices in Contract.

SUBMITTALS:

Samples, Records and Reports: Take samples of substrata formation at ten foot intervals and at changes in formation throughout entire depth of well. Carefully preserve samples at site in glass jars properly labeled for indentification.

Furnish samples of water-bearing formation to qualified testing laboratory and well screen manufacturer for mechanical sieve analysis.

Provide Architect with the following information for record purposes:

Casings: Diameter, thickness, weight per foot of length, depth below grade.

Screen: Diameter, opening size.

Pumping Test: Static water level, maximum safe yield, drawdown at maximum yield.

Log: Formation log indicating strata encountered.

Alignment: Certification that well is aligned and plumb within specified tolerances.

Provide Architect with bacteriological, physical and chemical analysis of water from finished well. Make analysis, certified by an approved testing laboratory, in accordance with local authority requirements, including the following:

Bacteriological Evaluation:

Coliform:

Provide testing and report results for either multitube fermentation technique or membrane filler technique.

Physical and Chemical:

Color	pH	Sulfate (as S04)
Odor	ALk. to pH 4	CO2
Turbidity	Nitrate (as NO3)	CO2
Total Solids	Fluoride	Iron
Chloride	Total Hardness	Manganese

PRODUCTS

CASING:

Provide permanent seamless and welded carbon steel pipe casing for well complying with ANSI/ASTM A 589, Type IV, size, wall thickness and weight per lineal foot as indicated.

Joints may be welded or threaded coupling.

Provide galvanized pipe complying with ANSI/ASTM A 120.

GROUT:

Cement: ANSI/ASTM C 150, Type to suit project conditions.

Water: Potable

WELL SCREEN:

Construct screen of AISI type 302/304 stainless steel, continuous slot type, fabricated by welding. Provide V-shaped openings, widening inwardly. For joints connecting screen sections, use butt-type stainless steel coupling rings. Provide screen with necessary fittings to close bottom and to provide tight seal between top of screen and well casing.

EXECUTION

WELL CONSTRUCTION:

Drill a pilot hole, minimum 4" diameter, to design depth and collect samples of formation for record and for analysis to select final screen and well depth. Provide information to Architect on static level of ground water, level of water for various pumping rates, and depth to water bearing strata. Architect will advise as to final well casing and grouting depth.

Enlarge pilot hole and install permanent casing, screen and grout. Provide first section of casing with hardened steel driving shoe of standard commercial quality having an outside diameter slightly larger than casing couplings where threaded couplings are used.

Mix grout with proportions of one cubic foot of cement (94 lb. sack) with 5 to 6 gallons of water. Bentonite clay may be added in amounts of 3 to 5 pounds per cubic foot of cement. If bentonite clay is added, water may be increased to 6.5 gallons per cu. ft. of cement.

Place grout continuously to insure entire filling of annular space in one operation. Drilling operations or other work in well will not be permitted within 72 hours after grouting of casing. If quick-setting cement is used this period may be reduced to 24 hours.

Provide permanent casing with a temporary well cap. Top of casing 36" above existing grade, unless otherwise indicated.

DEVELOPMENT:

Develop well by such methods as will effectively extract from water-bearing formation maximum practical quantity of sand, drilling mud and other fine materials in order to bring well to a maximum yield per foot of drawdown and to a sand-free condition. Perform work in a manner that does not cause settlement and disturbance of strata above water bearing formation nor disturb seal effected around well casing, reducing sanitary protection otherwise afforded by such seal.

Continue development of well until water pumped from well at maximum testing pumping rate is clear and free from sand. Water shall be considered sand-free when no samples, taken during test pumping, contain more than 2 parts per million of sand by weight.

TESTING FOR PLUMBNESS AND ALIGNMENT:

Set casing and liners round, plumb and true to line. Tests for plumbness and alignment must be made after construction of well and before its acceptance. Additional tests, however, may be made during performance of work.

Test plumbness and alignment by lowering into well, to depth of lowest anticipated pump setting, a section of pipe 40 feet long. Provide outer diameter of plumb not less than 1/2" smaller than diameter of that part of casing or hole being tested.

TESTING FOR YIELD AND DRAWDOWN:

After well has been constructed and cleaned out and depth of well accurately measured, conduct final pumping test.

Provide a Bailer or air ejection test as a preliminary determination of expected yield. make preliminary tests at depths where evidence is found of sufficient quantity of water to satisfy desired yield. Provide two preliminary tests as part of this work.

Provide a variable capacity test pump with minimum capacity of maximum expected yield at a total head equal to drawdown in well, plus head loss in pump column and discharge pipe.

Provide necessary discharge piping for pumping unit to conduct water to a point of disposal so as to avoid a nuisance or endanger adjacent property. Provide and maintain equipment of adequate size and type for measuring flow of water, such as a weir box, orifice or water meter. Measure elevation to water level in well.

Provide labor, motive power, and other necessary materials, equipment and supplies required to operate pumping unit. Final testing shall consist of 8 hours of continuous pumping after maximum drawdown has been reached. After completion of final test, remove by bailing, sand pumping or other methods, sand, stones or other foreign materials that may become deposited in well.

After test pump and auxiliary equipment have been installed, make arrangements for conducting pumping test and notify Architect three days prior to starting test. Note water level elevations, referred to an assigned datum in well, test pump started and adjusted to required pumping rate. Record readings of water level in well and pumping rate at 30 minute intervals. When drawdown in well is 5 feet above top of suction screen after designated time, record maximum yield of well. Upon completion of pumping test, record returning water levels in well for a sufficient period, at time intervals so that a curve of recovery rate of well may be plotted.

DISINFECTION:

Use disinfection procedures as required by governing authorities. Clean the completed, tested and developed well of foreign substances. Swab casing thoroughly using alkalis, if necessary, to remove foreign substances.

Disinfect well with chlorine solution of sufficient strength to provide a minimum of 100 parts per million chlorine to water within well. Introduce solution into well using gravity, pump or drop feeder. Allow a contact period of 24 hours and then pump well until chlorine residual is less than 0.2 parts per million.

UNIT PRICES:

Following unit price items shall goven additions to or deductions from quantities included in lump sum Base Bid for work under this section and quantities actually incorporated in project. Insert unit prices on Proposal Form, in spaces provided.

Cost of drilling, developing and testing (per foot).

Cost per foot of each size casing (in place.)

Cost per foot of grouting (in place.)

Cost per foot of well screen (as specified in place.)

Cost per hour of test pumping.

END OF SECTION 2H1.

SECTION 2J1 - STORM DRAINAGE SYSTEM INCLUDING EXCAVATION AND BACKFILL

GENERAL

RELATED DOCUMENTS:

The general provisions of the contract, including General, Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of work includes furnishing and installation of drain pipes, manholes, and catchbasins.

Catchbasins, manholes and drain pipes shall be of the sizes, quantity and at locations shown.

TESTING:

Upon completion of fabrication and before any enclosing in any day, furnish all fees, materials and labor to test all piping and joints for leaks in a manner acceptable to the authorities having jurisdiction.

All tests shall be maintained for a length of time adequate for careful check but not less than one 12 hour test.

All tests shall be made in the presence of a representative of the Architect, and the Owner, as required. Give not less than 5 days notice to these parties before making tests. Test structures by filling with water at least 12 hours. All leaks shall be corrected with new materials. Pay for and make good for all damage to work and materials resulting from tests.

SHOP DRAWINGS:

After receiving approval on the equipment manufacturers submit for approval, without delay and previous to purchase or fabrication, six (6) copies of each of the detailed, dimensioned drawings of the following:

All drainage pipe.

Cast iron frame and grates for catchbasins and yard drains.

Cleanouts

Approval of shop drawings shall not be considered as a guarantee of measurements of installation conditions. Where drawings are approved, said approval does not mean that drawings have been checked in detail. Said approval does not in any way relieve the Contractor from his responsibility nor necessity of furnishing materials or performed work required by the contract drawings and specifications.

AS-BUILT DRAWINGS:

As work progresses, record on one plan all changes and deviations from contract drawings in sizes, lines and grade. Record and relate final location of lines by offset distances in feet and tenth, to surface improvements such as building curbs or edges of walls, make measurements to locate definitely all lines.

At completion, submit the above required information on a tracing to the Architect and obtain his written approval. Drawings shall be of the same size and scale as the contract drawings. After approval of the drawings by the Architect, the tracing shall be turned over to the Architect for his records.

PRODUCTS:

MATERIALS AND APPLICATION SYSTEMS:

Catchbasins and yard drains shall be built of heavy weight solid concrete block units equal to "Multiplex" with 1/2" coat of Portland cement mortar and 1:2 mix on interior, with cast iron frames and grates as detailed and conforming to ASTM A48-64, Class 30-B, or as detailed. Frame and cover or grate shall be grouted at elevations shown. Brick for collars shall conform to AAS110 Spec. M91, Grade NA.

Exterior of all concrete and masonry structures shall receive two (2) coats of heavy duty pitch equal to Koppers Bitumastic No. 50 applied at the rate of one gallon per 80 square feet. No concrete shall be placed on water or in wet ground. Cement mortar for masonry joints shall consist of 1 part Portland cement, 1 part lime and 6 parts mason's sand.

Concrete blocks for catchbasins and yard drains shall be laid with shove joints completely filled with mortar. Horizontal joints shall not exceed 3/4". Vertical joint 1/4" on their interior face. Strike interior joints smooth with face of the wall.

Contractor has options of using precast reinforced concrete catchbasins, yard drains, etc. in lieu of masonry units. Precast concrete catchbasins shall consist of vertical precast reinforced concrete in accordance with ASTM C-478 and poured in place bases as detailed. In precast structures, joints shall be sealed with round continuous rubber ring gaskets in accordance with ASTM C-361. Submit shop drawings indicating all structure characteristics including dimensions as being equal to or greater than dimensions indicated on the drawings.

Set castings at exact finished grades as shown on the drawings. Grating is to be set temporarily at subgrade in order to keep the site dry.

Storm drainage shall be reinforced concrete pipe (extra strength, meeting ASTM Specification C-76-T, Class IV). Joint tolerance must comply with ASTM C-361.

EXECUTION:

INSTALLATION OF STRUCTURES AND PIPING:

All trench and pit excavation, removal and backfilling required for this section of the work, includes all required shoring, bracing and pumping, protection for safety and property, cutting, repairing and repaving.

Support all piping in perfect alignment so as to permit complete drainage.

Cover, cap or otherwise protect open ends of all piping, and conduits during construction to prevent damage and entry of foreign matter.

Promptly install drains and piping after excavation or cutting for same has been done. No piping shall be permanently closed up or covered before the examination and the approval of same by the Architect.

Under no circumstances lay piping or install appurtenances in water. Provide all labor and equipment necessary to remove water continuously from all excavated areas including trenches and structures and maintain "dry" conditions at all times until concrete work and backfilling are complete.

Exercise care to protect the roots of trees to remain. Within the branch spread of such trees, perform all trenching by hand. Open the trench only when the utility can be installed immediately; prune injured roots cleanly; backfill as soon as possible. Perform all this work under the direction of the Architect.

Backfill materials shall contain no roots, no clay, no debris and no stones above 3" diameter.

Excavation shall not be opened for more than 100 feet in advance of the piping laying, nor left unfilled more than 100 feet in the rear of the piping laying. Piping shall be inspected and approved before backfilling of trenches.

Trench widths shall be at least pipe diameter plus 24 inches.

All piping shall be laid on a 6" layer of compacted granular material. After piping is installed, backfill with additional granular material for a height of 60% of the pipe diameter.

The previous paragraph's description of granular material bedding and backfilling may be waived if, in the Architect's opinion, the excavation is in good bearing soil. In such case, the piping shall be laid on a flat bottom trench.

Granular material shall consist of hard, durable crushed stone or gravel. It shall be free of any significant amount of flat, laminate elongated pieces and shall be devoid of all shells, clay, linestone or other deletrious material. Size and graduations shall be 1/4" to 1/2" with 75% less than 3/4.

Pipe laying shall commence at the lowest point in the systems and lay the pipe with the upgrade. Test pipe for soundness and clean interior and joint surfaces before lowering the pipe into the trench. Lay pipe in straight lines and on uniform grades between points where changes in alignment or grade are shown. Bed the pipe barrel uniformly. Check the line and invert grade of each pipe from a top line carried on batter boards not over 25 feet apart. Fit the pipe to form a smooth uniform invert. Keep a stopper in the pipe mouth when laying pipe is not in progress.

Backfilling: Backfill trenches only after piping has been successfully inspected tested and locations of pipe and appurtenances have been recorded. No backfilling shall be done before receiving authorization from the Architect or his representative.

Backfill by hand around pipe for a depth of 6" above the pipe; tamp firmly in layers not exceeding 6" in thickness, taking care not to disturb the pipe. Compact the remainder of the backfill thoroughly with a rammer of suitable weight or with an approved mechanical tamper, provided that under the pavements, walls and other surfacing the backfill shall be tamped solidly in layers not thicker than 9" to a minimum of 95% density at optimum moisture content as determined and controlled by the American Association of State Highway Officials Standard Method T-180, or by equivalent American Society for Testing and Materials Standard Method D-1557, latest edition.

Uncut or backfill areas in locations to be landscaped and not otherwise specified above shall be compacted to not less than 90% of the referenced density test, or as required to prevent noticeable sinkage or settlement. Where, in the Architect's opinion, the excavated material is unsuitable, granular material shall be used as backfill.

Where rock is encountered, it shall be removed as directed by the Architect.

Where rock occurs in the bottom of the trench, it shall be excavated below the bottom of the pipe sufficiently to permit at least 6" depth of suitable earth or fill which shall be tamped and formed to fit the pipe as hereinafter described.

Adjusting existing rims of catchbasins, manholes, etc. shall be as directed and approved by the Architect.

Restore all surfaces disturbed or damaged during installation of work.

Puddling with water will not be permitted for consolidating fill or backfill; it shall be sprinkled if dry or turned and spread out to dry if soaked, as needed to attain the optimum moisture content specified.

Install piping passing through concrete or masonry walls within watertight cast iron or wrought iron sleeves.

Cover, cap or otherwise protect open ends of all piping during construction to prevent damage and entry of foreign matter.

Promptly install drains and piping after excavating or cutting for same has been done. No piping shall be permanently closed up, furred in or covered before the examination and approval of same by Architect.

Under the Plumbing Section, leader drains will be installed and terminated 5'-0" outside the building. The Contractor shall install drain pipe connection and approved clean-outs to the storm water drains of the type and sizes shown on the drawings.

MAINTENANCE AND CLEANING:

Flush and clean all storm sewers included within the work of this section. Use water in sufficient volume to obtain free flow through each line. Remove all obstructions and correct all defects discovered. Remove all silt and trash from basins and manholes. Piping and structure must be kept reasonably clean throughout progress of project work. In addition, they must be cleaned again just prior to final acceptance of the work.

END OF SECTION 2J1.

SECTION 2J2 - SEPTIC SYSTEM

GENERAL

RELATED DOCUMENTS:

The general provisions of the contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of septic system work is shown on drawings.

Septic system work includes but is not limited to the following:

Septic tank

Distribution box

Drainage field

Comply with requirements of applicable Division 2 sections for excavations and backfilling required in connection with septic system.

QUALITY ASSURANCE:

Installer Qualifications: Not less than two years experience installing septic systems.

Requirements of Regulatory Agencies: Comply with requirements of local regulatory agencies having jurisdiction and National Standard Plumbing Code (NSPC).

SUBMITTALS:

Product Data: Submit product data and installation instructions for septic system components.

Maintenance Data: Submit septic system manufacturer's recommendations for periodic maintenance.

PRODUCTS

SEPTIC TANK:

Provide precast reinforced concrete septic tank, of size and capacity shown on drawings.

DISTRIBUTION BOX:

Provide precast reinforced concrete distribution box, of size and configuration as shown on drawings. Construct of same materials as septic tank, unless otherwise indicated.

Comply with requirements of NSPC.

DRAINAGE FIELD:

Furnish drainage pipe complete with bends, adapters, couplings, collars, and joint materials, to suit project.

Drains: Perforated polyvinyl chloride pipe, ANSI/ASTM D 2729.

Filter Material: Washed, crushed stone or gravel, graded from 2-1/2" to 3/4", ANSI/ASTM D 448, Size 24.

EXECUTION

INSPECTION

Installer must examine areas to receive septic system to verify complete excavation to elevations and slopes indicated.

INSTALLATION:

Filtering Material: Place supporting layer of filtering material over compacted trench base to compacted depth as indicated, or if not indicated, to a compacted depth not less than 6" below botton of pipe.

Laying Drain Pipe: Lay drain pipe solidly bedded in filtering material. Provide full bearing for each pipe section throughout its length, to true grades and alignment, and continuous slope in direction of flow.

Lay perforated pipe with perforations down and joints tightly closed in accordance with pipe manufacturer's recommendations. Provide collars and couplings as required.

After drain lines have been installed, place additional filtering material around sides and top to compacted depth as indicated or, if not indicated, to a compound depth of 8" above top of pipe.

Testing Drain Lines: Test or check drain lines before backfilling to assure free flow. Remove obstructions, replace damaged components, and retest system until satisfactory.

Backfill: Immediately backfill trench with excavated soil, mounding but not compacting soil above original grade. Do not permit construction equipment on backfilled trenches.

END OF SECTION 2J2.

SECTION 2P2 - BITUMINOUS CONCRETE PAVING

GENERAL

RELATED DOCUMENTS:

The general provisions of the contract, including General and Supplementary Conditions and General, Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of the bituminous concrete paving is shown on the drawings.

The following are included as part of this work:

Subgrade for roads and parking areas.
Bituminous roads and parking areas.
Road and parking painted lines and markings.

QUALITY ASSURANCE:

Codes and Standards:

Bituminous concrete paving materials and placement methods covered in this section shall conform to the Commonwealth of Pennsylvania, Department of Transportation (PennDOT), Specifications Form 408. All work shall comply with any other applicable PennDOT standards and regulations. Where "Engineer" is mentioned in the PennDOT specification, it shall mean "Architect". Paragraphs entitled "Basis of Payment" PennDOT specification shall not apply.

PRODUCTS AND EXECUTION:

General:

All work shall be installed under the requirements of applicable sections as specified herein.

Protect paving against traffic until surface has properly cured. Provide temporary barriers, warning lights and other protection as necessary. Remove when no longer required subject to Architect's approval.

SUBGRADE PREPARATION:

Alter and refine and grade as necessary to bring subgrade, after compaction, to required grades and sections as shown on the drawings. Extend this refinement 12 inches horizontally beyond edges of the paving.

Add water to filled areas to provide optimum moisture content and tamp or roll. Remove spongy and otherwise unsuitable material and replace with approved material. Loosen exceptionally hard material and recompact to density of the entire subgrade.

Compaction shall be done wherever possible with a roller weighing approximately seven to ten tons. Where compaction cannot be accomplished by rolling, hand tampers shall be used.

Penn DOT Specification Section 210 shall apply.

PAVING MATERIALS:

The bituminous concrete mixture shall be hot-mixed, hot-laid asphaltic concrete. The mixture shall be produced in an approved plant meeting the requirements of ASTM Designation D-995 of either the batch type or continuous mix type, capable of maintaining a satisfactory product.

The mixture shall be transported to the site of placing in clean, tight vehicles. The loads shall be covered with tarpaulins while in transit to maintain temperature of the mixture and protect it from the elements.

The material shall be uniformly spread over the entire area by means of a self-propelled paving machine.

All work shall meet the applicable requirements of Specifications Form 408, Section 400, Bituminous Pavements; Section 401 - Plant Mix Pavements.

All paving shall be placed to continuous wood or metal forms at edge and/or edges mechanically cut to provide true line and shape. The mixture shall be placed to provide specified surface course thickness at edges.

If forms are used, they shall be removed when the material has cured, and the area brought to grade with new topsoil and seeding.

PAVING INSTALLATION:

Crushed Aggregate Base Course: Provide a crushed aggregate base course laid in courses fully choked and rolled to the compacted thickness indicated on the drawings. Crushed aggregate base course shall comply with PennDOT Specifications Form 408, Section 310.

Bituminous Concrete Base Course (Black Base): Provide a base course of hot-mixed, hot-laid bituminous concrete over specified stone aggregate base course, in strict conformance with PennDOT Specification Form 408, Section 305, Bituminous Concrete Base Course and compacted to thickness indicated on the drawings.

Bituminous Concrete Paving: Provide a bituminous concrete surface course conforming the PennDOT Specification Form 408, Section 420, Bituminous Concrete Surface Course, ID-2A. Bituminous concrete surface source shall consist of a binder course and a wearing course constructed on specified base course.

Binder course shall be ID-2A, 1-1/2 inches in thickness after compaction by not less than a 10 ton roller.

Wearing course shall be ID-2A, 1 inch in thickness after compaction by not less than a 10 ton roller.

Surface course shall have a total thickness of 2-1/2 inches and weigh not less than 275 lbs. per sq.yd. after compaction.

When wearing course does not follow base course work promptly, before applying wearing course repair any damage to base course and apply tack coat to base course. Tack coat shall conform to AASHO M-140, Type RS-1, rapid-setting type, and be applied at .05 to .07 gal./sq.yd.

ROAD AND PARKING PAINTED LINES AND MARKINGS

Paint shall be chlorinated rubber-alkyd type FS TT-P-115, Type III.

Paint 4-inch wide parking stripes and road markings as shown on the drawings.

Apply by brush or zone marking equipment, one coat. Lines shall be carefully laid out and edges shall be even and true.

END OF SECTION 2P2

SECTION 2V3 - LAWNS

GENERAL

RELATED DOCUMENTS:

The general provisions of the contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of work includes spreading of topsoil from stockpiles, furnishing of ground limestone, phosphate and potash, fertilizer and provision of maintenance.

GUARANTEE:

All seeded areas shall be guaranteed for a period of one (1) year. See section 2V7 for additional information regarding guarantee of plant materials.

JOB CONDITIONS:

Prior to the commencement of the seeding operation a site inspection shall be made by the Owner's Representative, Architect, General Contractor and Seeding Contractor. A letter of acceptance of the site shall be received by the General Contractor from the Seeding Contractor prior to commencement of the seeding operation.

All rough grades and drainage swales shall be established to an acceptable elevation of +1". All materials furnished in accordance with the requirements of this specification shall be delivered where applicable in sealed, unbroken bags bearing the brand and maker's named, and shall be stored on platforms and be properly covered to protect them from the weather and damage.

Seeding may be accomplished between March 15th and May 15th, or between August 1st and October 1st. Any seeding time other than the above specified period must have prior approval of the Architect.

SUBMITTALS:

Contractor shall pay for and submit to Architect for approval, a certified analysis of all fertilizer and seed used on this project and in addition, furnish all weight and/or load slips for materials delivered to the job site. This requirement will be strictly adhered to. Do not sow seed until Architect has approved the analysis.

PRODUCTS

GENERAL:

When construction work is finished and after rough grading has settled and been approved, sticks, stones, or foreign material 2 inches or greater shall be removed from the subgrade. The surface shall be harrowed and otherwise loosened to a depth of 3". Larger stones and boulders shall be removed or buried 18" below finished grade in areas where no trees are to be planted.

Topsoil shall be spread from the stockpiles over all areas within Contract Limit Lines, previously stripped of topsoil, so that after natural settlement it will conform smoothly to the lines, grades and elevations shown.

After spreading topsoil, all large stiff clods, hard lumps, roots, litter, other foreign matter and stones larger than 1" in greatest dimension shall be raked up from the topsoil areas and removed from the premises. All topsoiled areas shall be raked to a smooth, uniform surface.

Additional topsoil required to complete work shall be supplied at no extra cost to the Owner. All additional topsoil shall consist of natural fertile agricultural soil of good texture, free from subsoil and from an area free from roots, sods, rubbish, Japanese Beetles and other dangerous insect larvae. Topsoil shall have come from arable areas with good normal drainage and shall contain no toxic substances which may be harmful to plant growth. The source of additional topsoil shall be approved in writing by the Architect. Topsoil shall contain at least 3% decayed organic matter (humus). Placement of topsoil shall be performed only when it can be followed within a reasonable time by the seeding operation.

MATERIALS:

LIME:

Shall be raw ground limestone with not less than 90% total carbonates, 98% passing in a 20 mesh sieve, and a maximum of 40% of content passing a 100 mesh sieve.

PHOSPHATE AND POTASH: Shall be commercially produced grade, containing not less than 20% phospheric acid and 20% potash with a formula of 0-20-20.

FERTILIZER: Fertilizer for lawn areas shall be ureaform type (50% nitrogen shall be from ureaform source), having an analysis of 10% nitrogen, 6% phosphorus and 4% potassium. Fertilizer shall be uniform in composition, dry and free flowing material suitable for application with standard fertilizer equipment. Fertilizer shall be delivered in bags or suitable containers, each fully labeled with the manufacturer's guaranteed anaylsis. Fertilizer which has become damaged or caked will be deemed unsuitable for use, and unacceptable by the Architect.

LAWN SEED: Furnish grass seed for permanent lawn mixture. Seed shall be fresh recleaned new seed of the latest crop, delivered in standard sized original packages, unopened, bearing guaranteed analysis, name of vendor and mixed in the following proportions:

Percentage by Weight	Type	Percent Purity	Percent Germination	Maximum Weed Content
50%	Pennstar Kentucky Bluegrass	98%	85%	0.5%
40%	Jamestown Red Fescue	95%	85%	0.5%
10%	Manhatten Ryegrass	98%	85%	0.5%

MULCH: Mulch shall be a known wood cellulose paper fiber mulch, such as that produced by the Weyerhauser Company or approved equal.

EXECUTION

Examine all areas marked Seed to insure that they have been brought to proper elevations and that all underground work has been completed as required by the Contract Documents.

The rough grade must be approved by the Architect before finish grading begins. Seeding Contractor shall notify the General Contractor in writing, of his acceptance of the site in its rough graded conditions.

Specified lime shall be spread uniformly over the designated areas at the rate of 2,200 pounds per acre or 50 pounds per 1000 sq. ft. Ground limestone shall be incorporated at the time of seeding and sodding. Phosphate and potash specified shall be spread at the rate of 1100 pounds per acre, or 25 pounds per 1000 sq. ft., by approved distributor or other suitable device.

After application of the lime, phosphate and postash, and prior to ureaform fertilizer, the areas to be seeded shall be thoroughly loosened with a double disc or other suitable device, to a depth of not less than 4 inches. Any surface irregularities shall be corrected in order to prevent pockets or low area formations which will allow water to stand.

Clean surface of stones, sticks, roots or other substances which will interfere with turf development or subsequent mowing operations.

The ureaform fertilizer shall be distributed uniformly over the lawn areas at a rate of 1100 pounds per acre, or 25 pounds per 1000 sq. ft.

Seed shall be distributed with wheelbarrow seeder, drill or suitable methods at the rate of 3 pounds per 1000 sq. ft., 130 pounds per acre.

Seed shall be divided into two equal portions and the seeding made in dual passes over the area, the second pass being at right angles to the first. Areas shall be firmed after seeding by light rolling or cultipacking unless a cultipacker seeder is employed.

All seeded areas shall be mulched with known wood cellulose paper fibre mulch, installed by properly equipped hydromulcher and performed by an experienced operator. The fibre mulch shall be evenly spread over the entire area at the rate of 1400 pounds of fibre mulch per acre.

MAINTENANCE:

The Contractor shall properly water, mow and otherwise maintain all seeded areas to the satisfaction of the Architect until final acceptance. Prior to final approval of the work, any areas which shall have been damaged from erosion, washout, or other causes or fail to show a uniform stand shall be repaired by filling with topsoil rolled at the Contractor's expense. Reseeding shall be repeated until all areas are satisfactorily covered with grass. Mow grass to a height of 1-1/2" to 2" as directed by the Architect. Contractor shall be responsible for a minimum of two mowings.

During the installation and the germination of the seeded section, the Contractor shall irrigate these areas. After the seed has germinated and after the last mowing, the subsequent water application shall be the responsibility of the Owner.

The water will be supplied and paid for by the Owner, however, temporary irrigation equipment shall be supplied by the Contractor if the Owner has not provided same.

END OF SECTION 2V3.

SECTION 2V7 - TREES

GENERAL

RELATED DOCUMENTS:

The general provisions of the contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of work includes the furnishing and planting of trees as shown on the drawings, also fertilizing, providing topsoil and peatmoss, mulching, spraying with anti-dessicant, wrapping, staking or guying, pruning, maintenance, final clean-up and guarantee.

GUARANTEE OF PLANTING:

Prior to the expiration of a one-year period from the date of final acceptance the Contractor shall replace at his expense and in accordance with the drawings and these specifications all plant materials furnished and planted under this contract which are dead or, in the opinion of the Architect, are in an unhealthy or disfigured condition due to defective workanship, dead branches, or other valid cause.

All other material that is removed for the purpose of replacement of plant material under guarantee shall be replaced as originally detailed and is to be part of this guarantee.

PRODUCTS:

Plant names shall agree with nomenclature of "Standarized Plant Names" as adopted by the American Joint Committee on Horticultural Nomenclature, current edition, size and grading standards shall conform to those of the American Association of Nurserymen unless otherwise specified. No substitutions shall be permitted except by written permission of the Architect.

The quality of all plants shall be typical of their species or variety. They shall have normal, well-developed branches and vigorous root systems. They shall be free of fibrous defects, disfiguring knots, sun-scaled injuries, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestations. All plants shall be nursery grown unless otherwise stated; they shall have been growing under the same climatic conditions as the locations of this project for at least two years prior to the date of planting on this project. Plants held in cold storage will be rejected. If collected plants are allowed and selected, they shall be taken from a subgrade favorable to good root development. All collected materials shall be clean, sound stock, free from decaying stumps. The time of planting shall be determined by the Architect.

For measurement purposes, a plant shall be dimensioned as it stands in its natural position. Trees shall be calipered 6 inches above ground. Stock furnished shall be a fair average of the minium and maximum sizes specified. Large plants cut back to sizes specified will not be accepted.

In preparing plants for moving, all precautions in good nursery practice shall be taken and workmanship that fails to meet the highest standards shall be rejected. All plants shall be dug to retain as many fibrous roots as possible. The size of the ball of balled and

burlapped, and balled and platformed plants shall be at least 12" in diameter for every inch of the maximum caliper size specified. The ball shall be solid ball of earth, securely held in place by burlap and stout rope. Oversize or exceptionally heavy plants are acceptable if the size of ball or spread of the roots is proportionately increased. Loose, broken or fabricated balls of earth will be rejected. Balled and platformed plants shall be securely tied with stout rope to sturdy platforms equal in size to the diameter of the upper half of the ball of earth.

For delivery, all plants shall be packed, transported and handled with utmost care to insure protection against injury. Each shipment shall be certified by State and Federal authorities to be free from disease and infestation. Any inspection certificate required by law to this effect shall accompany each shipment invoice or order of stock. On arrival, the certificate shall be filed with the Architect. Balled and burlapped plants shall be set on the ground and the balls covered with moist soil. Until planted, all plant material shall be properly maintained to the satisfaction of the Architect.

All plants are subject to inspection and approval at point of origin before or after award of contract. No plant material shall be planted until inspected and approved. Any rejected plant material shall be immediately removed from the site and replaced with acceptable plant material at no extra cost.

Plant materials shall be planted at such times as are approved by the Architect. Beds of topsoil previously spread in accordance with these specifications shall be reworked until they are friable, free from mortar and debris, accurate to line and grade and otherwise suitable for planting operations.

EXECUTION:

Planting of trees shall be in pits twice as wide as the diameter of the ball and 6" deeper than the depth of the ball or root system.

Plant pits shall have vertical sides unless otherwise directed. Subsoil from planting excavations shall be removed from site.

Plants shall be planted plumb at the same level at which they have grown unless otherwise specified on the drawings. The balls of earth of balled and burlapped plants shall not be loosened or otherwise damaged during planting operations. All large and fleshly roots which are bruised or broken shall be pruned with a clean cut before planting. The burlap shall be cut away from upper half of ball and remaining burlap adjusted to prevent formation of air pockets. Soil shall be firmed at 6 to 8 inch intervals and thoroughly settled with water.

Backfill shall be one part peat, three parts topsoil mixture. To the topsoil used in backfilling tree pits, thoroughly incorporate commercial raw bonemeal as follows:

5 pounds for major trees 2 to 3 inches in caliper.

Trees and plant areas shall be mulched with 3" thick layer of an approved prepared Pine Bark Mulch (medium size) and fertilizer as directed by the Architect with commercial fertilizer. They shall be cultivated and raked over and they shall be left in a clean, orderly condition with shallow basins or "saucers" at least as large as the holes in which the trees and plants have been planted. Submit samples of the bark mulch for approval.

All trees shall be staked or guyed securely in accordance with standard practice. Care shall be taken so that stakes and guy wires will not create pedestrian or vehicular hazards. Stakes for supporting trees shall be 2" x 2" x 8' No. 1 sound Douglas Fir, or 8' long cedar posts with bark. Wire shall be No. 10 gauge, pliable, galvanized. Hose shall be new 2 ply reinforced garden hose. Use black color throughout the project.

Each tree shall be pruned to preserve the natural shape and character of the plant. In general, at least 1/3 of the wood of deciduous plants shall be removed by thinning the branches, but no leaders shall be cut.

All soft wood or sucker growth and all broken, dead, or badly bruised branches shall be removed with clean cuts.

All pruning cuts shall be made with sharp tools and shall be sharp tools and shall be sharp and clean. Pruning cuts over 3/4" diameter shall be painted with approved tree surgery paint, immediately after they are made.

Immediately after planting and staking, all plant material shall be sprayed with an approved anti-dessicant, using an approved power sprayer for applying an adequate film over trunks, branches and leaves. Anti-dessicants shall be used in strict accordance with manufacturer's instructions and shall be delivered to the site in manufacturer's sealed containers.

Tree trunks shall be securely wrapped after spraying with a 6" new burlap bandage, securely tied at the top and bottom and at 2' intervals along the trunk of the tree, or krinklekraft paper 30.30.30 from the bottom to height of the lowest branches. Provide 50% overlap with wrapping material.

All plants shall be thoroughly watered during and after planting operations as weather conditions require for the entire maintenance period. Due care shall be exercised to avoid "washing out" of the mulched soil. Minimum watering is considered as one soaking per week.

All planted trees and all planting areas within the limits of this contract shall be maintained until all work under contract is approved and accepted by the Architect.

Maintenance shall include watering, weeding, cultivating and pruning; adjustment and repair of stakes, anchors and wires, repair of minor washouts and gullies and other horticultural operations necessary for the proper growth of plants and maintaining a neat appearance of all work under contract. Weeds shall not be allowed to attain a growth over 6" before being removed.

The Architect's abstaining from disapproval of work in the course of operations, or during the inspection of the work shall not be interpreted as acceptance of the work not in conformance with these specifications. Improper work and/or materials shall be corrected whenever discovered.

FINAL CLEAN-UP:

The Contractor shall clean up and remove from the site all his rubbish and surplus material as fast as it accumulates and shall not permit it to be scattered about the building or site. If he fails to attend to this clean-up promptly and satisfactorily, the Owner shall have the right to employ others for the work and charge to cost of such employment against his obligations to the Contractor.

MAINTENANCE:

The Contractor will be held responsible for the maintenance of all work and parts thereof prior to final acceptance.

Maintenance shall include watering of seeded areas, mowing, weeding, cleaning up, edging, repairs of washouts and gullies, repairs to protecting fences, necessary work of maintenance.

After final acceptance by Owner, the Contractor will not thereafter be required to do any of the above listed work, except that nothing contained herein shall release the Contractor from his obligations under the Contract.

END OF SECTION 2V7.

SECTION 3A0 - CONCRETE WORK

RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

Furnish all labor, materials, tools and equipment required to perform the work of this section as shown on the drawings and/or specified herein. In general, the work shall include but not necessarily be limited to the following:

Footings and Foundations, concrete piers and footings on earth.

Building into concrete of all embedded items, furnished by this section and all other trades.

Grouting of base plates.

RELATED WORK SPECIFIED UNDER OTHER SECTIONS:

The Contractor will be required to coordinate the related work of other sections with the work of this section and be responsible for the timely and expeditious performance of same.

TECHNICAL SPECIFICATIONS:

The current issue of ACI 301, "Specifications for Structural Concrete for Buildings" is a part of this specification and applicable to the entire project. A minimum of one (1) copy of the ACI Field Reference Manual (Publication SP-15) containing ACI 301 shall be in the project field office at all times for reference by the Architect and Owner's Representatives. The publication is available from:

American Concrete Institute
PO Box 19150
Redford Station
Detroit, Michigan 48219

The following requirements shall be inserted, added or substituted as revised items into the designated sections of ACI 301 Specifications.

1.5 The following standards and recommendations are considered mandatory for purposes of this Specifications and all workmanship and procedures shall comply with them when applicable.

ACI 211.1, ACI 221.2, ACI 212, ACI 214, ACI 302, ACI 614, ACI 304, ACI 605, ACI 306, ACI 308, ACI 609, ACI 315, ACI 318, ACI 347, AWS, D12.1, CRSI Recommended Practice for Placing Reinforcing Bars.

2.2.1.2 All concrete shall contain the water-reducing set controlling admixture "Pozzolith" by Masters Builders Company or "Eucon WR-75" by Euclid Chemical Company or approved equal, exceeding the requirements of ASTM C494, of type and quantity as by the manufacturer. The Manufacturer shall provide a qualified concrete technician at no cost to the Owner, to assist in the proportioning of concrete for optimum use of the admixture.

3.7.1 The use of admixtures containing chloride or other chloride salts in excess of 2% by weight of cement is prohibited.

3.8 Each class and type of concrete shall require a separate submission for proportioning of ingredients. The brand of aggregates shall be stated in the mix proportions and shall not be changed during the duration of the project without specific approval by the Architect. The General Contractor shall provide at his own expense preliminary mix proportions and test results which shall be submitted to the Architect for approval. The name of the testing laboratory shall be submitted to the Architect for approval.

5.1.1 Reinforcing Bar Shop drawing shall contain elevations of all concrete walls, drawn to scale of at least 1/4 inch to the foot, which shall show the top and bottom level of walls as well as reinforcing.

8.3.4 All concrete shall be consolidated using mechanical vibrators.

Concrete Materials: Cement shall be "Type I" ASTM C150 one brand from one source. Fine and course aggregate shall conform to the Specifications for Concrete Aggregate ASTM C33.

Water shall be clean, free of deleterious material which would impair strength or bond.

TYPES OF CONCRETE:

Structural Concrete: All concrete shall be stone concrete having an ultimate strength of 3000 PSI at 28 days.

Submit concrete mix design reports for each type and class of concrete to the Architect for review and approval.

MISCELLANEOUS MATERIALS:

Grout shall be non-shrinking grout equal to "Embeco" from Masters Builders Company.

Furnish and install wedge type inserts as specified herein. Wedge inserts shall be malleable iron, 3/4" bolt type, with a rated working load capacity of 4500 lbs. type HW-340, Hohmann and Barnard or approved equal.

Furnish and install dovetail slots, reglets, anchors and rods, required to be built into the work of this section, as shown on the drawings, and required to complete the work of other trades.

All concrete exposed to weather in the finished building shall contain an approved air-entraining admixture conforming to ASTM C260.

All concrete surfaces not covered by additional finish shall receive an application of "Mastercron" by Masters Builder Co., "Surflex" by Euclid Chemical Co. or equal. Such application shall be performed at a rate not less than 1/2 pounds per square foot.

High chairs, bolsters and other supports, where concrete surfaces are exposed to view and legs of supports are in contact with formwork, shall have plastic tipped legs.

FORMWORK:

Provide chamfers at all corners where indicated on drawings.

CONTROL OF DRYING SHRINKAGE:

Proportions of ingredients for concrete shall be such as to minimize the effects of shrinkage.

Provide hard aggregates with high density and modulus of elasticity and with moderate porosity or absorption. Test data for these properties shall be submitted.

Water cement ratio shall be as low as practicable.

Curing practices shall be such that shrinkage will be held to a minimum.

END OF SECTION 3A0.

SECTION 5J1 - MISCELLANEOUS METAL, GENERAL

GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

Miscellaneous metal work, includes fabricated iron and steel shapes, plates, bars, strips, tubes, pipes and castings which are not a part of the structural steel or other metal systems in other sections of these specifications.

The types of miscellaneous metal items include, but are not limited to the following:

Carpenter's iron work
Ladders and ship ladders
Loose steel lintels
Shelf angles
Miscellaneous framing, bracing, and supports for window wall framing, folding doors and walls, smoke door supports, and exterior soffit.
Miscellaneous steel trim
Pipe railing, handrails and supports
Steel pan stairs

Provide all fasteners, anchorages, inserts, etc. for the proper completion of all work specified herein.

QUALITY ASSURANCE

Codes and Standards:

Comply with the provisions of the following codes, standards and specifications, except as otherwise shown and specified.

AISC "Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings", including "Commentary of the AISC Specification".

AISI "Specifications for the Design fo Cold-Formed Steel Structural Members".

AWS "Code for Welding in Building Construction"

ASTM A6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Uses.

Qualifications for Welding Work:

Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure."

Field Measurements:

Take field measurements prior to preparation of shop drawings and fabrication, where possible, to ensure proper fitting of the work. However do not delay job progress; allow for trimming and fitting wherever the taking of field measurements before fabrication might delay the work.

Inserts and Anchorages:

Furnish inserts and anchoring devices which must be set in concrete or built into masonry for the installation of miscellaneous metal work. Provide setting drawings, templates, instructions and directions for installation of anchorage devices. Coordinate delivery with other work to avoid delay.

See concrete and masonry sections of these specifications for installation of inserts and anchorage devices.

Shop Assembly:

Preassemble items in the shop to the greatest extent possible, so as to minimize field splicing and assembly of units at the project site. Disassemble units only to the extent necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinate installation.

SUBMITTALS:

Manufacturer's Data; Miscellaneous Metal:

For information only, submit 2 copies of manufacturer's specifications, load tables, dimension diagrams, anchor details and installation instructions for products to be used in the fabrication of miscellaneous metal work, including paint products. Indicate by transmittal that copy of instructions has been distributed to the Installer.

Shop Drawings, Miscellaneous Metal:

Submit shop drawings for the fabrications and erection of all assemblies of miscellaneous metal work which are not completely shown by the manufacturer's data sheets. Include plans and elevations at not less than 1" to 1'-0" scale, and include details of sections and connections at not less than 3" to 1'-0" scale. Show anchorage and accessory items.

PRODUCTS

MATERIALS:

Metal Surfaces, General:

For the fabrications of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating and application of surface finishes including zinc coatings.

Steel Plates, Shapes and Bars: (Except plates to be bent or cold-formed) ASTM A36.

Steel Plates to be Bent of Cold-Formed: ASTM A 283, Grade C.

Steel Bars and Bar-Size Shapes: ASTM A 306, Grade 65, or ASTM A 36.

Steel Tubing: (Hot-formed, welded or seamless), ASTM A 501.

Hot-Rolled Carbon Steel Bars: ASTM A 575, grade as selected by the fabricator.

Cold-Finished Steel Bars: ASTM A 108, grade as selected by fabricator.

Hot-Rolled Carbon Steel Sheets and Strips: ASTM A 568 and ASTM A 569; pickled and oiled.

Cold-Rolled Carbon Steel Sheets: ASTM A336

Galvanized Carbon Steel Sheets: ASTM A 526, with ASTM A 525, G90 zinc coating.

Cold-Drawn Steel Tubing: ASTM A 512, sink drawn, butt welded, cold welded, cold finished and stress relieved.

Gray Iron Castings: ASTM A 48, Class 30.

Malleable Iron Castings: ASTM A 47, grade as selected

Steel Pipe: ASTM A 53; type as selected; Grade A; black finish unless galvanizing is required; standard weight (Schedule 40) unless other shown or specified.

ANCHORS:

Threaded Type Concrete Inserts (TCI): Galvanized castings, internally threaded to receive 3/4" diameter machine bolts; either malleable iron complying with ASTM A 47 or cast steel complying with ASTM A27; hot dip galvanized in compliance with ASTM A 153.

Wedge Type Concrete Inserts (WCI): Galvanized box type ferrous castings and galvanized anchors attached to concrete reinforcing rods, designed to accept 3/4" diameter bolts having special wedge-shaped heads; either malleable iron complying with ASTM A 47 or cast steel complying with ASTM A 27; hot dip galvanized in compliance with ASTM A 153.

Provide carbon steel bolts having special wedge-shaped heads, nuts, washers and shims; all galvanized in compliance with ASTM A 153.

Slotted Type Concrete Inserts (SCI): Galvanized 1/8" thick pressed steel plate complying with ASTM A 283; box-type welded construction with slot designed to receive 3/4" diameter square head bolt and with knockout cover; hot-dip galvanized in compliance with ASTM A 386.

Masonry Anchorage Devices: Expansion shields FS FF-S-325.

FASTENERS:

General: Provide zinc coated fasteners with galvanizing complying with ASTM A 153, for exterior use or where built into exterior walls. Select fasteners for the type, grade and class required for the installation of miscellaneous metal items.

Standard Bolts and Nuts: ASTM A 307, Grade A, regular hexagon head.

Lag Bolts: FS FF-B-561, square head type.

Machine Screws: FS FF-S-02, cadmium plated steel.

Plain Washers: FS FF-W-92, round, general assembly grade carbon steel.

Lock Washers: FS FF-W-84, helical spring type carbon steel.

PAINT:

Metal Primer Paint:

Rust-inhibitive alkaline primer #85-555 Azeron Primer as manufactured by TNEMEC Co., Inc. or approved equal.

Primer paint selected must be compatible with the required finish coats of paint. Coordinate selection of metal primer with finish paint requirements specified in Division 9 of these Specifications.

Galvanizing Repair Paint shall be #90-93 as manufactured by TNEMEC Co., Inc. or approved equal, for touch-up and repair of galvanized steel.

FABRICATION, GENERAL

Workmanship: Use materials of the size and thicknesses shown, or if not shown, of the required size and thickness to produce adequate strength and durability in the finished product for the intended use. Work to the dimensions shown or accepted on shop drawings, using proven details of fabrication and support.

Use the type of materials shown or specified for the various components of work.

Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32" unless otherwise shown. Form bent metal corners to the smallest radius possible without causing grain separation or otherwise impairing the work.

Weld corners and seams contiuously and in accordance with the recommendations of AWS. Grind exposed welds smooth and flush, to match and blend with adjoining surfaces.

Form exposed connections with hairlines joints which are flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of the type shown or, if not shown, use Phillips flathead (countersunk) screws or bolts.

Provide for anchorage of the type shown, coordinated with the supporting structure and the progress schedule. Fabricate and space anchoring devices as shown and as required to provide adequate support for the intended use of the work.

Cut, reinforce, drill and tap miscellaneous metal work as may be required to receive finish hardware and similar items of work.

Use hot-rolled steel bars for work fabricated from bar stock, unless work is indicated to be fabricated from cold-finished or cold-rolled stock.

Galvanizing: Provide zinc coating for those items shown on the drawings or specified to be galvanized, using the hot-dip process after fabrication.

ASTM A 153 for galvanizing of iron and steel hardware.

ASTM A 123 for galvanizing of rolled, pressed and forged steel shapes, plates, bars and strips 1/8" thick and heavier.

ASTM A 386 for galvanizing of assembled steel products.

Shop Painting:

Shop paint miscellaneous metal work, except those members or portions of members to be embedded in concrete or masonry, surfaces and edges to be field welded and galvanized surfaces, unless otherwise indicated.

Remove scale, rust and other deleterious materials before the shop coat of paint is applied. Clean off heavy rust and loose mill scale in accordance with SSPC SP-2 "Hand Tool Cleaning", or SSPC SP-3 "Power Tool Cleanng" or SSPC SP-7 "Brush-Off Blast Cleaning". Remove oil, grease and similar contaminants in accordance with SSPC SP-1 "Solvent Cleaning".

Apply one shop coat of metal primer paint to fabricated metal items, except apply 2 coats of paint to surfaces which are inaccessible after assembly or erection. Change color of second coat to distinguish it from the first.

Immediately after surface preparation, brush or spray on metal primer paint, applied in accordance with the manufacturer's instructions and at a rate to provide uniform dry film thickness of 2.0 mils for each coat. Use painting methods which will result in full coverage of joints, corners, edges and all exposed surfaces.

MISCELLANEOUS METAL ITEMS:

Carpenter's Iron Work:

Furnish bent or otherwise fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware are specified in Division 6 sections.

Manufacture or fabricate items of sizes,shapes and dimensions required. Furnish malleable iron washers for heads and nuts which bear on wood structural connections; elsewhere furnish steel washers.

Ladders and Ship Ladders:

Fabricate ladders for the locations shown, with dimensions, spacing details and anchorages as required. Comply with the requirements of ANSI A14.3.

Provide 1/2" x 2-1/2" continuous structural steel flat bar side rails with eased edges, spaced 18" apart.

Provide 3/4" square twisted solid structural steel bar rungs, spaced 12" o.c.

Fit rungs into punched holes in centerline of side rails, plug weld and ground smooth on outer rail faces.

Support each ladder at top and bottom and at intermediate points spaced not more than 5'-0" o.c. Use welded or bolted steel brackets, designed for adequate support and anchorage, and to hold the ladder 6" clear of the wall surface and other obstructing construction. Extend rails 42" above top rung, and return rails to wall or structure unless other secure handholds are provided. If the adjacent structure does not extent above the top rung, goose-neck the extended rails back to the structure to provide secure ladder access.

Provide sloping ladders (ship's ladder) where indicated. Fabricate of open type construction with structural steel channel or steel plate stringers, pipe handrails and open steel grating treads, unless otherwise indicated. Provide all necessary brackets and fittings for installation.

Steel Shelf Angles:

Provide structural steel shelf angles of sizes shown for attachment to steel framing. Provide horizontal slotted holes to receive 3/4" bolts, spaced not more than 6" from ends and not more than 24" o.c., unless otherwise shown.

Galvanize shelf angles to be installed in exterior cavity wall.

Miscellaneous Framing and Supports:

Provide miscellaneous steel framing and supports where shown on the drawings as required to complete the work.

Fabricate miscellaneous units to the sizes, shapes and profiles shown or, if not shown, of the required dimensions to receive adjacent grating, plates, doors or other work to be retained by the framing. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars, of all welded construction using mitered corners, welded brackets, and splice plates and a minimum number of joints for field connection. Cut, drill, and tap units to receive hardware and similar items to be anchored to the work.

Equip units with integrally welded anchor straps for casting into poured concrete or building into masonry wherever possible. Furnish inserts if units must be installed after concrete is poured. (See concrete sections for installation of inserts). Except as otherwise shown, space anchors 2'-0" o.c. and provide minimum anchor units of 1-1/4' x 1/4" x 8" straps.

Galvanize exterior miscellaneous frames and supports.

Miscellaneous Steel Trim:

Provide shapes and sizes as required for the profiles shown. Except as otherwise noted, fabricate units from structural steel shapes and plates and steel bars, with contiuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings and anchorages as required for coordination of assembly and installation with other work.

Galvanize exterior miscellaneous steel trim.

Provide steel pipe railings, consisting of top rail, intermediate rail and posts, and handrails at walls. Unless otherwise shown, provide 1-1/2" nominal size, standard weight, carbon steel pipe complying with ASTM A 53, Type E or Type S, Grade A.

Join posts, rails and corners by one of the following methods:

Flush type steel railing fittings, welded and ground smooth with railing splice locks secured with 3/8" hexagonal-recessed-head set screws.

Mitered and welded joints made by fitting post to top rail and intermediate rail to post, mitering corners, groove welding joints, and grinding smooth. Butt railing splices and reinforce a tight fitting interior sleeve not less than 6" long.

Railings may be bent at corners instead of joining, provided the bends are uniformly formed in jogs, with cylindrical cross section of pipe maintained throughout the entire bend.

Adjust railings prior to securing in place to insure proper matching at butting joints and correct alignment throughout their length. Space posts as shown on the drawings. Plumb posts in each direction. Secure railing system as shown on the drawings.

Galvanize exterior railings, including pipe, fittings, brackets, fasteners, and other ferrous metal components.

Steel Pan Stairs:

Construct stair units to conform to sizes and arrangements as shown. Construct entire assembly to support a minimum live load of 100 lbs. per sq. ft., unless otherwise shown. Provide all metal framing, hangers, columns, struts, clips, brackets, bearing plates and other components as required for the support of stairs and platforms. Erect stair work to line, plumb, square and true with runs registering level with floor and platform levels.

Provide brackets and bearing surfaces as detailed and as required to anchor and contain the stairs on the supporting structure.

Fabricate strings of structural steel channels, or plates, or a combination thereof, as shown. Provide closures for exposed ends of strings.

Construct platforms of structural steel channel headers and miscellaneous framing members, as shown. Bolt framing members to strings and headers.

Form metal pans of 0.1046" thick structural steel sheets (12 gauge), complying with ASTM A 245 or ASTM A 570, Grade B. Shape pans to conform to the configuration shown.

Construct riser and subtread metal pans with steel angle supporting brackets, of size shown, welded to strings. Secure metal pans to brackets with rivets or welds.

Secure subplatform metal pans to platform frame with welds.

EXECUTION:

INSPECTION:

Installer must examine the areas and conditions under which miscellaneous metal items are to be installed. Notify the Contractor in writing of conditions detrimental to the proper

and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

PREPARATION:

Furnish setting drawings, diagrams, templates, instructions and directions for the installation of anchorages, such as concrete inserts, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate the delivery of such items to the project.

INSTALLATION:

Fastening to In-Place Construction:

Provide anchorage devices and fasteners where necessary for securing miscellaneous metal items to in-place construction, including threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required.

Cutting, Fitting and Placement:

Perform cutting, drilling and fitting required for the installation of the miscellaneous metal items. Set the work accurately in location, alignment and elevation, plumb. level, true and free of rach, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry of similar construction.

Fit-exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have ben hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.

Field Welding:

Comply with AWS Code for the procedures of manual shielded metal-arc welding, the appearance and quality of welds made, and the methods used in correcting welding work.

Touch-Up Painting:

Cleaning and touch-up painting of field welds, bolts connections and abraded areas of the shop paint on miscellaneous metal is specified in Division 9 of these specifications.

END OF SECTION 5J1

SECTION 6E1 - CARPENTRY, GENERAL

GENERAL:

RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of "Carpentry" work is shown on drawings and in schedules. Materials and installation requirements for other work, commonly assigned to carpentry trade, are specified in other sections of these specifications.

The types of carpentry work specified in this section include (but are not necessarily limited to) the following:

Wood furring.

Wood grounds, nailers, blocking and sleepers.

Wood framing.

Wood sheathing.

Wood subflooring.

Miscellaneous wood framing:

Exterior wood-product panels.

Roof framing with trusses and plywood sheathing.

All fasteners and miscellaneous accessories required to complete this work.

Additional miscellaneous carpentry items include but are not limited to the following:

Door installation as specified in Division 8.

Hardware installation as specified in Division 8.

Carpentry formwork as specified in Division 3.

Installation of all inserts, supports and hangers into concrete formwork not installed by other trades.

QUALITY ASSURANCE:

Lumber Standard: Comply with PS 20 for each indicated use, including moisture content and actual sizes related to the indicated nominal sizes, except as otherwise indicated.

Plywood Standard: Comply with PS 1, except as otherwise indicated for each use.

Factory-mark each piece of lumber and plywood with type, grade, mill and grading agency identification; except omit marking from surfaces to receive transparent finish, and submit mill certificate that material has been inspected and graded in accordance with requirements if it cannot be marked on a concealed surface.

Certificate of inspection and grading by a recognized grading agency, approved by American Lumber Standards Committee, may be submitted with each shipment, in lieu of factory-marking, at Contractor's option.

Shop fabricate carpentry work to the greatest extent possible, using equipment and workmanship control methods which will result in work of better quality than feasible for on-site fabrication.

SUBMITTALS:

Wood Treatment Data, Carpentry, General:

For information only, submit of chemical treatment manufacturer's instructions for proper use of each type of treated material.

Pressure Treatment: For each type specified, include certification by treating plant stating chemicals and process used, net amount of salts retained and conformance with applicable standards.

For water-borne preservatives, include statement that moisture content of treated materials was reduced to a maximum of 15% prior to shipment to project site.

Fire-Retardant Treatment: Include certification by treating plant that treatment material complies with governing regulations, and treatment will not bleed through finished surfaces.

PRODUCT HANDLING:

Keep carpentry materials dry during delivery, storage and handling. Store lumber and plywood in stacks with provisions for air circulation within stacks. Protect bottom of stacks against contact with damp surfaces. Protect exposed materials against weather.

Do not store dressed or treated lumber of plywood outdoors.

Store materials for which a maximum moisture content is specified, only in areas where relative humidity has been reduced to a level where specified moisture content can be maintained with a tolerance of plus or minus 1%.

JOB CONDITIONS:

Time delivery and installation of carpentry work to avoid delaying other trades whose work is dependent on or affected by carpentry work, and to comply with protection and storage requirement.

Advise Contractor of heating or cooling requirements for installation areas, and for maintaining required ambient conditions during and after installation.

Correlate location of furring, nailers, blocking, grounds and similar supports so that attached work will comply with design requirements.

PRODUCTS

MATERIALS

Framing Lumber:

Light Framing: For framing 2" to 4" thick and not exceeding 4" width, provide:

Construction grade, any species.

Structural Framing: For framing 2" to 4" thick and more than 4" width, provide the following grade and species:

Select Structural Grade for all exposed structure including truss members, columns, etc.

No. 1 Grade for all concealed structure.

Douglas Fir complying with the following:

Fiber stress rating (bending) of 1500 psi (Fb), and modulus of elasticity of 1,500,000 psi.

Board Lumber:

General: Where lumber less than 2" in nominal thickness is shown or specified, provide boards dressed S4S.

Exposed Boards: Where boards will be exposed in the finished work, provide the following:

Moisture Content: 15% maximum, mark boards "MC-15" or "K-D".

For transparent finish (or natural finish), where shown or scheduled, provide the following:

Select Heart Boards, Douglas Fir.

No. 1 Grade T & G Douglas Fir for roof decking.

For paint finish, where shown or scheduled, provide the following:

No. 1 Boards, Douglas Fir

Concealed Boards: Where boards will be concealed by other work, provide the following unless otherwise indicated:

Moisture Content: 15% maximum, mark boards "MC-15" or "K-D".

Species and Grade: Provide the following:

Southern Pine (SPIB) No. 2 Boards.

Miscellaneous Lumber:

Provide wood for support or attachment of other work such as cant strips, bucks, nailers, blocking, furring, grounds, stripping and similar members. Provide lumber of sizes shown or specified, worked to shapes shown, and as follows:

Moisture Content: 15% maximum for lumber items not specified to receive wood preservative treatment.

Grade: Construction Grade light framing size lumber of any species, or board size lumber, as required. Provide Construction Grade boards (RIS or WCLIB) or No. 2 boards (SPIB or WWPA).

Plywood Exposed to Exterior:

Smooth Surface for Paint Finish: A-C/EXT-APA with a face exposed.

Concealed Plywood:

Plywood Concealed by Applied Exterior Finish: C-D/INT-APA with exterior glue.

Interior Concealed Plywood (Pwd): C-D PLUGGED/INT-APA.

Electrical Panels: For backing panels of electrical and communication equipment, provide C-D/INT-APA with exterior glue, fire-retardant treated.

Plywood Underlayment: UNDERLAYMENT/INT-APA with Exterior glue, touch-sanded.

Particleboard:

Particleboard Underlayment: 40 pcf minimum average density, complying with CS 236 and National Particleboard Associations' "Physical Property Specification for Mat Formed Wood Particleboard for Floor Underlayment."

Anchorage and Fastening Materials:

Select proper type, size, material and finish for each application. Comply with the following:

Nails and Staples: FS FF-N-105.

Wood Screws: FS FF-S-111.

Bolts and Studs: FS FF-B-575.

Nuts: FS FF-N-836.

Washers: FS FF-W-92.

Lag Screws or Lag Bolts: FS FF-B-561.

Concrete Anchoring Devices: For expansion shields, nails and drive screws, comply with FS FF-S-325.

Toggle Bolts: FS FF-B-588.

Bar or Strap Anchors: ASTM A 575 carbon steel bars.

PRESERVATIVE TREATED WOOD:

General: Treat lumber and plywood, where indicated as "Trt-Wd" or "Treated", to comply with applicable requirements of American Wood Preservers Bureau, available from AWPI. Mark each treated item to comply with AWPB Quality Mark requirements.

Pressure treat the following items with water-borne preservatives for above ground use, complying with AWPB LP-2:

Wood cants, nailers, blocking stripping and similar members in connection with roofing, flashing, vapor barriers and waterproofing.

Wood sills, sleepers, blocking, furring, stripping and similar concealed members in contact with masonry or concrete or below grade.

Exposed interior woodwork shown or scheduled as "Trt-Wd" or "treated", and wood members less than 18" above grade.

Kiln-dry wood to a maximum moisture content of 15%, stamped "DRY", after treatment.

FIRE-RETARDANT TREATED WOOD:

Where "Fire Retardant" lumber or plywood is indicated, comply with AWPA standards C20 and C27 for pressure impregnation with fire-retardant chemicals to achieve a flame spread rating of not more than 25 when tested in accordance with UL Test 723 or ASTM E 84.

Where transparent or paint finish is shown or scheduled for "Fire Retardant" wood, use a fire-retardant treatment which will not bleed through or adversely affect bond of finish.

Complete fabrication prior to treatment, wherever possible, to minimize cutting and jointing after treatment.

Coat surfaces cut after treatment with a heavy brush coat of the same fire-retardant chemical.

Kiln-dry lumber to a maximum moisture content of 15% and plywood to a maximum moisture content of 15%, after treatment.

Inspect each piece of lumber and plywood after drying; do not use twisted warped, bowed or otherwise damaged or defective pieces.

Provide UL label on each piece of fire-retardant treated lumber and plywood.

EXECUTION

INSPECTION:

Installer must examine substrates and supporting structure and conditions under which carpentry work is to be installed, and notify the Contractor in writing of conditions detrimental to work. Do not preceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

INSTALLATION:

General:

Discard units of material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned or too small to fabricate work with a minimum of joints or optimum jointing arrangement.

Fit carpentry work to other work. Scribe and cope for accurate fit.

Set carpentry work accurately to required levels and lines with members plumb and true.

Shim with metal or slate for bearing on concrete and masonry substrates. Where indicated, grout with 1:3 Portland cement-sand grout for full-bearing.

Securely attach carpentry work to substrates by anchoring and fastening as shown and as required by recognized standards.

Provide washers under bolt heads and nuts in contact with wood.

Nail plywood in accordance with recommendations of the American Plywood Association.

Countersink nail heads on exposed carpentry work and fill holes.

Fasteners: Use common wire nails, except as otherwise shown or specified herein. Use finishing nails for exposed work. Do not wax or lubricate fasteners that depend on friction for holding power. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required. Do not drive threaded friction type fasteners; turn into place. Tighten bolts and lag screws at installation and retighten as required for tight connections prior to closing in or at completion of work.

WOOD GROUNDS, NAILERS, BLOCKING AND SLEEPERS:

Provide wherever shown and where required for screening or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached or screened.

Coordinate location with other work; refer to shop drawings of such work, if any.

Attach to substrates securely with anchor bolts or other attachment devices as shown and as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry as work progresses, cutting to fit masonry unit size involved. Anchor to formwork before concrete placement.

Provide grounds of dressed, key-bevelled lumber not less than 1-1/2" wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required. Where indicated as permanent grounds, provide treated lumber.

Provide wood sleepers of size and spacing shown for support and attachment of flooring.

Avoid unneccessary penetrations of moisture barriers when installing wood sleepers.

FRAMING:

General: Comply with applicable recommendations of N.F.P.A. or applicable codes for the fabrication and installation of wood framing, sheathing and subflooring.

PLYWOOD:

General: Comply with recommendations of American Plywood Association (APA) for the fabrication and installation of plywood work. Provide thickness shown, or if not shown, provide as recommended by APA "Guide to Plywood Sheathing for Floors, Walls, and Roofs" for spacing of supports and types of substrates involved in work.

Provide plywood underlayment over other substrates where shown. Install underlayment just prior to laying of finish flooring. Stagger end joints between panels in relation to each other and all joints in relation to substrate jointing. Allow 1/32" space between panel ends and edges for expansion. Coordinate work with requirements of finish flooring.

Nail 6" o.c. at panel ends and edges and 8" o.c. each way in field of panel using 3d ring-shank nails for panels 1/2" and less and 4d ring-shank nails for thicker panels. In lieu of nailing, panels may be stapled 3" o.c. at panel ends and edges and 6" each way in field of panel using 18 gauge staples with 3/16" crown for 1/4" panels of 16 gauge with 3/8" crown for thicker panels, and of a length to penetrate not less than 5/8" or completely through subflooring.

Just prior to installation of finish flooring, fill damaged or open areas wider than 1/16", set nails 1/16" (staples 1/32"), but do not fill. Sand rough area at joints, nails (or staples) and in field of panel.

END OF SECTION 6E1.

SECTION 6G0 - ARCHITECTURAL WOODWORK

GENERAL

RELATED DOCUMENTS

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of each type of architectural woodwork is shown on drawings and in schedules.

Architectural woodwork is defined to include (in addition to items so designated on drawings) miscellaneous exposed wood members commonly known as "Finish Carpentry" or "Millwork", except where specified under another section of these specifications.

The types of architectural woodwork include, but are not necessarily limited to, the following:

Standing and running trim.

The work includes the following:

All interior and exterior trimwork and all other related finished woodwork.

RELATED WORK SPECIFIED ELSEWHERE:

Refer to 8G sections for factory-fabricated wood windows, not including standing-and-running trim to receive fixed glass.

Refer to 9L sections for wood flooring.

QUALITY ASSURANCE:

Subcontract the fabrication and installation of wood casework to a firm that has successfully produced casework similar to the quality specified and in the quantity shown for a period of not less than five years.

Quality Standards: Except as otherwise shown or specified, comply with specified provisions of the following:

Architectural Woodwork Institute (AWI)"Quality Standards".

Quality Marking: Mark each unit of architectural woodwork with mill's or Fabricator's identification and grade mark, located on surfaces which will not be exposed after installation.

Arrange for the fabrication and installation of architectural woodwork, with sequence matched wood veneers, to be produced by a single firm.

SUBMITTALS:

Product Data:

Submit manufacturer's specifications and installation instructions for each item of factory-fabricated woodwork.

Quality Certification: Submit manufacturer's (Fabricator's) certification, stating that the fabricated work meets the woodwork grade(s) specified.

Shop Drawings:

Submit shop drawings showing location of each item, dimensioned plans and elevations, large scale details, attachment devices and other components.

Indicate compliance with specified Standards and other specified requirements for materials and workmanship.

Samples:

Submit the following samples for each species and cut or pattern of architectural woodwork:

Wood for transparent finish; set of 3 pieces, 6" x 3/4" x 2'-0", finished on one side and one edge.

Samples will be reviewed for appearance and finish only. Compliance with other requirements is the exclusive responsibility of the Contractor.

PRODUCT DELIVERY, STORAGE AND HANDLING:

Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

Do not deliver woodwork, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, woodwork must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

JOB CONDITIONS:

Conditioning: Installer shall advise Contractor of temperature and humidity requirements for woodwork installation areas. Do not install woodwork until required temperature and relative humidity have been stabilized and will be maintained in installation areas.

Maintain temperature and humidity in installaiton area as required to maintain moisture content of installed woodwork within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. The fabricator of woodwork shall determine optimum moisture content and required temperature and humidity conditions.

Take field measurements prior to preparation of shop drawings and fabrication where possible to ensure proper fitting of the work. However, do not delay job progress; allow for trimming and fitting wherever the taking of field measurements before fabrication might delay the work.

PRODUCTS

BASIC MATERIALS AND FABRICATION METHODS:

General: Except as otherwise indicated, comply with following requirements for architectural woodwork not specifically indicated as prefabricated or prefinished standard products.

Wood Moisture Content: Provide kiln-dried (KD) lumber with an average content range of 6% to 11% for interior work. Maintain temperature and relative humidity during fabrication, storage and finishing operations so that moisture content values for woodwork at time of installation do not exceed the following:

Interor Wood Finish: 5%-10% for mild regions (as defined by AWI).

Wood for Transparent Finish: Provide species and grade or cut as follows, unless otherwise indicated:

Solid Wood: Douglas Fir, Select grade heart wood.

Wood for Painted Finish: Comply with quality standards for selection of species, grade and cut.

Quality Standards: For following types of architectural woodwork; comply with indicated standards as applicable:

Standing and Running Trim: AWI Section 300.

Miscellaneous Work: AWI Section 700.

Redesign and Construction Features: Comply with details shown for profile and construction of architectural woodwork; and, where not otherwise shown, comply with applicable Quality Standards, with alternate details as Fabricator's option.

Pre-Cut Openings: Fabricate architectural woodwork with pre-cut openings, wherever possible, to receive hardware, appliances, plumbing fixtures, electrical work and similar items. Locate openings accurately and use templates or roughing-in diagrams for proper size and shape. Smooth edges of cutouts and, where located in countertops and similar exposures, seal edges of cutouts with a water-resistant coating.

Measurement: Before proceeding with fabrication of woodwork required to be fitted to other construction, obtain measurements and verify dimensions and shop drawing details as required for accurate fit.

Where sequence of measuring substrates before fabrication would delay the project, proceed with fabrication (without field measurements) and provide ample borders and edges to allow for subsequent scribing and trimming of woodwork for accurate fit.

ARCHITECTURAL WOODWORK TYPES:

STANDING AND RUNNING TRIM:

Grade: Custom.

Fabricate wood trim and jambs (if any) to dimensions, profiles and details shown. Rout or groove reverse side (backed-out) of trim members to be applied to flat surfaces, except for members with ends exposed in finished work.

FINISH FOR ARCHITECTURAL WOODWORK:

General: The entire finish of architectural woodwork is work of this section, regardless of whether shop applied or applied after installation.

Shop Finishing: The extent to which the final finish is applied on architectural woodwork at the shop or factory prior to delivery is Contractor's option, except shop-apply at least prime/base coat to greatest extent possible prior to delivery.

Preparations for Finishing: Comply with AWI Quality Standards, Section 1500, for sanding, filling countersunk fasteners, back priming and similar preparations for finishing of architectural woodwork, as applicable to each unit of work.

Transparent Finish:

General Finish Standard: AWI Finish System No. 3, Premium Grade, open grain finish.

Shop Application: Stain and sealer as per paint schedule.

Final Finish: Sanding, followed by 2 coats of clear alkydurea conversion varnish, rubbed to medium sheen or as per paint schedule.

EXECUTION

INSPECTION

Examination: The Installer must examine substrates and conditions under which work is to be installed, and notify Contractor in writing of unsatisfactory conditions. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

PREPARATION:

Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.

Pre-Installation Meeting: Meet at project site prior to delivery of architectural woodwork and review coordination and environmental controls required for proper installation and ambient conditioning in areas to receive work. Include in meeting the Contractor, Architect and other Owner Representatives (if any), installers of architectural woodwork, wet work such as plastering, other finishes, painting, mechanical work and electrical work, and firms or persons responsible for continued operation (whether temporary or permanent) of HVAC system as required to maintain temperature and humidity conditions. Proceed with woodwork installation only when everyone concerned agrees that required ambient conditions can be properly maintained.

Deliver concrete inserts and similar anchoring devices to be built into substrates, well in advance of time substrates are to be built.

Prior to installation of architectural woodwork, examine shop fabricated work for completion, and complete work as required including back priming and removal of packing.

INSTALLATION:

Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level (including countertops); and with 1/16" maximum offset in flush adjoining surfaces, 1/8" maximum offsets in revealed adjoining surfaces.

Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to the greatest extent possible. Stagger joints in adjacent and related members. Cope at returns, miter at corners, and comply with Quality Standards for joinery.

Anchor woodwork to anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fasteners heads are required, use fine finishing nail for exposed nailings, countersunk and filled flush with woodwork, and matching final finish where transparent finish is indicated.

ADJUSTMENT, CLEANING, FINISHING AND PROTECTION:

Repair damaged and defective woodwork wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.

Clean hardware, lubricate and make final adjustments for proper operation.

Clean woodwork on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas.

Complete the finishing work specified as work of this section, to whatever extent no completed at shop or prior to installation of woodwork.

Protection: Installer of architectural woodwork shall advise Contractor of final protection and maintained conditions necessary to ensure that work will be without damage or deterioration at time of acceptance.

Cover completed work with 4-mil polyethylene film protective enclosure, applied in a manner which will allow easy removal and without damage to woodwork or adjoining work. Remove cover immediately before time of final acceptance.

END OF SECTION 6G0

SECTION 7G3 - ROOF DECK INSULATION

GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

Provide insulation work on roofs.

The application of roof insulation include the following:

Urethane rigid board insulation with 3/4" perlite backing, R = 14.3, 2½" total thickness.

QUALITY ASSURANCE:

Installer: Subcontract each type of insulation work in this section to the installer of the associated roofing or waterproofing, for undivided responsibility.

Fire and Insurance Ratings: Comply with fire-resistance ratings as shown, and as required by governing authorities and codes.

FM requirements for "Class I" construction.

Thermal Conductivity: The thicknesses shown are for the thermal conductivity (k-value at 75 degrees F.) specified for each material. Provide adjusted thicknesses as directed for the use of material having a different thermal conductivity.

SUBMITTALS:

Manufacturer's Data, Roof and Deck Insulation:

For information only, submit 2 copies of manufacturer's specifications and installation instructions for each type of insulation required. Include data substantiating that the materials comply with specified requirements. Indicate by copy of transmittal form that Installer has received copy of manufacturer's instruction.

PRODUCT HANDLING:

Protection from Deterioration: Do not allow insulation materials to become wet or soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling storage and protection during installation.

Protect plastic insulation from exposure to sunlight.

Fire-Hazard: Do not deliver insulation materials to the project site ahead of time of installation. Protect at all time against ignition. Complete installation and concealment of plastic materials as rapidly as possible in each area of work.

Do not overload the building structure with the storage of materials or use of equipment on the deck. Consult the Architect for allowable loading factors.

JOB CONDITIONS:

Do not proceed with installation of roof or deck insulation unless the materials, equipment and tradesmen required for the installation of the roofing or waterproofing membrane over the insulation are at the project site and ready to follow with this work immediately (same day) behind the insulation work. Do not install any more insulation each day than can be covered with waterproof membrane by the end of that working day.

Examination and Substrate: The Installer must examine the substrate and the conditions under which the insulation work is to be performed, and notify the Contractor in writing of any unsatisfactory conditions. Do not proceed with the insulation work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

MATERIALS:

Isocyanurate Plastic Board Roof Insulation:

Rigid, isocyanurate foam core board, fiberglass reinforced complying with FS HH-I-530A, with asphalt saturated asbestos facers integrally laminated (C Factor .06) R-Factor 16.7, manufacturer's standard sizes.

Products/Manufacturers: Provide the following or equal by a specified roof manufacturer.

Celotex Tempchek Plus

Substitutions must be approved prior to bidding.

Miscellaneous Materials:

Adhesive for Bonding Insulation: The type recommended by the insulation manufacturer for bonding edge joints between units and filling voids in the work.

Mastic Sealer: As recommended by insulation manufacturer for bonding edge joints between units and filling voids in the work.

Mechanical Anchors: Type and size as recommended by the insulation manufacturer for the type of deck used, and complying with fire and insurance rating requirements.

Building Paper: 6-lb. rosin sized paper.

Coated Base Sheet: ASTM D 2626, Type I (37 lbs. per square, asphalt coated).

EXECUTION:

Preparation of Substrate:

Prepare substrate as recommended by the insulation manufacturer.

INSTALLATION:

General:

Comply with manufacturer's instructions for the particular conditions of installation in each case. If printed instructions are not available or do not apply to the project conditions, consult the manufacturer's technical representative for specified recommedations before proceeding with the work.

Laying Insulation Units:

Apply a single layer of insulation of the required thickness, unless otherwise required to make up the total thickness. Stagger joints one direction as recommended by the manufacturer.

Set units in adhesive, applied in accordance with the requirements of applicable fire and insurance ratings, and applied in accordance with the recommendations of the manufacturers of both the insulation and adhesive.

PROTECTION:

Do not permit construction period traffic over completed insulation work, except as required for roofing and waterproofing.

Protect insulation work from exposure from moisture, damage and deterioration, primarily by prompt installation of roofing or waterproofing work shown to be placed over the insulation. Remove and replace insulation work which has become wet, damaged or deteriorated before proceeding with other work. Test for moisture content, by suitable means, wherever there is a possibility that exposed insulation work has acquired moisture in excess of the maximum content for optimum application of roofing or waterproofing.

PERFORMANCE:

It is required that roof insulation work withstand the uplift forces of wind, as defined by the roofing guarantee. Failures of the insulation work in bond or anchorage to the substrate, or between courses of insulation, or within the insulation will be considered failures of materials or workmanship under the guarantee.

END OF SECTION 7G3.

SECTION 7G7 - BUILDING INSULATION

GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of each type of general building insulation work is shown on the drawings.

The applications of building insulation include the following:

Concealed blanket-type building insulation.

QUALITY ASSURANCE:

Fire and Insurance Ratings: Comply with fire-resistance and flammability ratings as shown and specified; and comply with governing regulations as interpreted by authorities.

Thermal Conductivity: The thickness shown are for the thermal conductivity (k-value at 75 degrees F.) specified for each material. Provide adjusted thicknesses as directed for the equivalent use of material having a different thermal conductivity.

SUBMITTALS:

Manufacturer's Data, Building Insulation:

Submit manufacturer's specifications and installation instructions for each type of insulation required. Include data substantiating that materials comply with specified requirements.

PRODUCT HANDLING:

Protection from Deterioration: Do not allow insulation materials to become wet, soiled, or covered with ice or snow. Comply with manufacturer's reocmmendations for handling, storage and protection during installation.

JOB CONDITIONS:

Examination of Substrate: The Installer must examine the substrate and the conditions under which the insulation work is to be performed, and notify the Contractor in writing of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

PRODUCTS

MATERIALS:

Mineral/Glass Fiber Blanket/Batt Insulation:

Glass or other inorganic fibers, formed into flexible, resilient blankets or semi-rigid sheets; complying with FS HH-I-521, Type as indicated; density as indicated but not less than 1.0 lb. per cu.ft.; approximate thermal conductivity (k-value at 75 degrees F.) of 0.27; thicknesses as indicated or as required to yield the "R" values as indicated; manufacturer's standard lengths and widths as needed to coordinate with structural elements of spaces to be insulated.

Type III: Units with reflective vapor barrier facing of aluminum foil on one face (the warm side) rated 1.0 perm maximum; provide only highly permeable facing on cold side. Provide 1" flanges along edges of units, unless not required for attachment of units.

Provide unit 6" thick, R19.

Provide unit 9" thick, R30.

Provide units with foil facing which has been tested with a flame spread of 25 or less (ASTM E 84).

Miscellaneous Materials:

Adhesive for Bonding Insulation: The type recommended by the insulation manufacturer, and complying with fire-resistance requirements.

Mechanical Anchors: Type and size shown or, if not shown, as recommended by the insulation manufacturer for the type of application shown and condition of substrate.

INSTALLATION:

General:

Comply with manufacturer's instructions for the particular conditions of installation in each case; including method of support or anchorage to the substrate, as appropriate for each application indicated. If printed instructions are not available or do not apply to the project conditions, consult the manufacturer's technical representative for specific recommendations before proceeding with the work.

Extend insulation full thickness as shown over entire surface to be insulated. Cut and fill tightly around obstructions, and fill voids with insulation.

Apply to single layer of insulation of the thickness indicated or the required thickness for the thermal value indicated, unless otherwise shown or required to make up total thickness.

Unit-Type Building Insulation:

Apply insulation units of the type shown to the substrate by the method indicated. If not otherwise indicated and except for units resting on horizontal surfaces, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

Set vapor barrier faced units with vapor barrier to warm side of construction (usually toward inside), except as otherwise shown. Do not obstruct ventilation spaces, except for firestopping.

Tape Joints and ruptures in vapor barriers, using adhesive tape of type recommended by insulation manufacurer, and seal each continuous area of insulation to surrounding construction so as to ensure vapor-tight installation of the units.

Set reflectivity foil-faced units accurately with air space in front of foil as shown. Provide not less than 0.75" air space wherever possible.

END OF SECTION 7G7

SECTION 7J1 - SHINGLES

GENERAL

RELATED DOCUMENTS

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of the shingles is shown on the drawings and is hereby defined to include units employed as weather protection for walls as well as for roofs.

The types of shingle applications specified in this section include the following:

Wood shingle roofing.
Wood shingle siding.

SUBMITTALS:

Manufacturer's Data:

For information only, submit 2 copies of the manufacturer's technical data for each manufactured product, including certification that each product complies with the specified requirements.

Samples:

Submit full range of samples for color and texture selection. After selection, submit 2 full-size shingles for verification of each color/style/texture selected.

Mock-up: Construct 4' x 4' panel to serve as standard of quality.

Maintenance Stock: 2% of each type/color/texture shingle used in the work.

DELIVERY, STORAGE AND HANDLING:

Deliver materials in manufacturer's unopened, labeled containers.

Store materials to avoid water damage, and store rolled goods on end. Comply with manufacturer's recommendations for job-site storage and protection.

JOB CONDITIONS:

Substrate: Proceed with shingle work only after substrate construction and penetrating work have been completed.

Weather Conditions: Proceed with shingle work only when weather conditions are in compliance with manufacturer's recommendations and when substrate is completely dry.

SPECIFIED PRODUCT WARRANTY:

Provide shingle manufacturer's warranty on installed work, agreeing to pay for repair or replacement of defective shingles as necessary to eliminate leaks. Period of warranty is 20 years from date of substantial completion.

PRODUCTS

WOOD SHINGLE MATERIALS:

Wood Shingles: No. 1 Blue Label sawn and kiln-dried western red cedar shingles, 18" length.

Provide fire-retardant pressure treated units in packages bearing UL Class "C" label.

Class "B" Underlayment: Plastic coated steel foil, 2 mils thick, for installation on deck to comply with UL Class "B" labeled construction using Class "C" labeled wood shingles.

Asphalt-Saturated Felt: No. 30 minimum, asphalt saturated organic felt, unperforated, complying with ASTM D 226, 36" wide rolls.

Nails: Box or common nails, hot-dipped zinc coating or aluminum of sufficient length to penetrate at least 1/2" into roof sheathing.

Metal Flashing: Minimum 26-gauge stainless steel sheet job-formed to sizes and configurations shown or required.

EXECUTION

INSPECTION:

Installer of shingles must examine substrate and conditions under which shingling work is to be performed and must notify the Contractor in writing of unsatisfactory conditions. Do not proceed with the shingling work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

PREPARATION OF SUBSTRATE:

Clean substrate of any projections and substances detrimental to shingling work. Cover knotholes or other minor voids in substrate with sheet metal flashing secured with roofing nails.

Coordinate installation of shingles with flashing and other adjoining work to ensure proper sequencing. Do not install shingle roofing until all vent stacks and other penetrations through roofing have been installed and are securely fastened against movement.

INSTALLATION:

General: Comply with instructions and recommendations of shingle manufacturer, except to extent more stringent requirements are indicated.

Wood Shingles:

Class "B" Underlayment: Install foil underlayment in accordance with UL requirements for Class "B" construction.

Felt Underlayment: Lay 36" wide starter strip of roofing felt along lower edge before application of double starter course of shingles. Place 18" interlayment strip over upper portion of first course before applying second course, and repeat interleaving for subsequent courses.

Flashing: Install metal flashing and vent flashing as shown and in accordance with details and recommendations of the NRCA Steep Roofing Manual.

Double shingles at first course, projecting 1-1/2" beyond sheathing; space adjoining shingles 1/4" to 1/2" apart, nailing each shingle with two nails spaced 3/4" from edge and 1" above butt line of subsequent course; stagger joints minimum of 1-1/2" in succeeding courses.

EXTRA STOCK:

Provide minimum of 2% of installed quantity of each type/color/texture shingle used in the work. Provide in unopened clearly labeled containers.

END OF SECTION 7J1

SECTION 7P0 - FLASHING AND SHEET METAL

GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of each type of flashing and sheet metal work is shown on the drawings.

The following types of work are specified in this section:

Metal flashing and counter flashing

Metal expansion joints

SUBMITTALS

Manufacturer's Data, Flashing and Sheet Metal:

For information only, submit 2 copies of specifications, installation instructions and general recommendations by the manufacturer of flashing and sheet metal materials. Include published data or certified test data for each material showing compliance with the requirements. Indicate by transmittal form that one copy of each installation instruction has been distributed to the Installer.

Samples, Flashing and Sheet Metal:

Submit 3, 12" square samples of each specified metal which is to be exposed with a shop finish, as flashing, trim or rain drainage. Samples will be reviewed by Architect for color and texture only. Compliance with other requirements is the exclusive responsibility of the Contractor.

JOB CONDITIONS:

Do not proceed with the installation of flashing and sheet metal work until substrate construction, cant strips, blocking, reglets and other construction to receive the work is completed.

The Installer must examine the substrate and the conditions under which flashing and sheet metal work is to be performed, and notify the Contractor in writing of any unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

PRODUCTS

MATERIALS:

Metal Flashing (and Counter Flashing):

Stainless Steel Sheet: AISI Type 302/304 stainless sheet or strip, complying with ASTM A 167; dead soft, except as otherwise indicated; No. 2D conventional dull finish, 0.015" thick (24 gauge) except as otherwise indicated.

Miscellaneous Materials:

For metal work, provide the type solder and fasteners recommended by the producer of the metal sheets, for fabrication and installation.

Roofing Cement: FS SS-C-153, Type I, asphaltic base.

Bituminous Coating: FS TT-C-494, or Mil-C-18480, or SSPC Paint 12, cold-applied bituminous mastic, compounded for 15-mil dry film-thickness coating.

FABRICATED PRODUCTS:

Fabricated Metal Flashing and Trim:

Shop fabricate metal flashing, trim, expansion joints, and similar items to comply with profiles and sizes shown, and to comply with standard industry details as shown and to comply with standard industry details as shown by SMACNA in the "Architectural Sheet Metal Manual". Except as otherwise to form a hem on the concealed side of exposed edges. Comply with metal producers recommendations for tinning, soldering, and cleaning flux from metal. Except as otherwise indicated, fabricate work from the following metal:

Stainless steel sheet.

Metal Expansion Joints:

Manufacturer's standard fabricated units, including prefabricated corner and intersection units, constructed of a flexible center flashing strip, insulated inside with 1/2" thick closed cell flexible foam, anchored between metal flanges of the size and profile shown, fabricated in 10'-0" minimum lengths prepared for jointing, and including standard accessories for installation and jointing.

Center Strip: Neoprene elastic sheet flashing

Size: Provide units 4" wide between flanges.

Flanges: Lead coated copper sheet.

EXECUTION

GENERAL INSTALLATION REQUIREMENTS:

Comply with manufacturer's instructions and recommendations for handling and installation of flashing and sheet metal work.

Performance: Coordinate the work with other work for the correct sequencing of items which make up the entire system of weatherproofing, waterproofing and rain drainage. It is required that the flashing and sheet metal work be permanently watertight and not deteriorate in excess of manufacturer's published limitations.

INSTALLATION OF METAL WORK:

Comply with details and profiles as shown, and comply with SMACNA "Architectural Sheet Metal Manual" recommendations for installation of the work.

For non-moving seams provide soldered flat-lock seams, except as otherwise indicated. Comply with metal producers recommendations for tinning, soldering and cleaning the joints.

Provide for thermal expansion of all exposed sheet metal work exceeding 15'-0" running length, except as otherwise indicated.

Flashing and Trim: 10'0" maximum spacing, and located 2'-0" from corners and intersections.

Conceal fasteners and expansion provisions wherever possible. Fold back edges on concealed side of exposed edges, to form a hem.

Insert flashings into reglets as shown. Anchor by mechanical means, including driven wedges of lead or other compatible metal, spaced 2'-0". Seal the joint with sealant as indicated.

Refer to 7T Series sections for sealants.

Separate stainless steel work from dissimilar metals and from wood and cementitious materials. Separate with a course of polyethylene underlayment wherver possible. Apply a 15-mil dry film-thickness bituminous coating to either the substrate or stainless steel where underlayment cannot be used for separation.

Separate copper work from dissimilar metals by a 15 mil dry-film thickness bituminous coating, or by a heavy tinning of solder at spot-contacts.

Extruded Aluminum Work: Bed base members in roofing cement. Anchor and seal in accordance with manufacturer's instructions. Clean exposed surfaces promptly to prevent the start of non-uniform oxidation or electrolytic action.

Apply 15 mil dry-film thickness bituminous coating to concealed aluminum surfaces which will be in contact with cementitious surfaces, dissimilar metals, wood or other absorptive substrates.

END OF SECTION 7P0

SECTION 7T1 - SEALANTS, CAULKING AND JOINT FILLERS

GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of each type of sealant, caulking and joint filler work is indicated on the drawings, and by provisions of this section.

The required applications of sealants and caulking include, but are not necessarily limited to, the following general locations:

Flashing reglets and retainers.

Exterior wall joints.

Interior sound-sealed and air-sealed joints.

Flooring joints.

Isolation joints, between structure and other elements.

Joints at penetrations of walls, decks and floors by piping and other services and equipment.

Joints between items of equipment and other construction.

Glazing: Refer to 8A section for sealants and other compounds and gaskets required for installation of glass.

Joint Fillers: Refer to Section 3A0 for additional concrete joint filler requirements and Section 4A0 for additional masonry joint filler requirements.

QUALITY ASSURANCE:

Manufacturers: Firms with not less than 5 years of successful experience in production of types of sealants and caulking compounds required for this project.

Obtain elastomeric sealants from a manufacturer which will, upon request, send a qualified technical representative to project site, for purpose of advising installer on proper procedures for use of products.

Installer: A firm with a minimum of 5 years of successful experience in application of types of materials is required.

Prepare a mock-up installation of each major type and use of sealant. Install sealant between materials matching those used on project, complying with conditions similar in every respect to anticipated project conditions. Prepare mock-up well in advance of scheduled installation, so that nominal cure-time is allowed and final adjustments can be made, if necessary, before proceeding with installation.

SUBMITTALS:

Manufacturer's Data:

Submit manufacturer's specifications, recommendations and installation and instructions for each type of sealant, caulking compound and associated miscellaneous material required.

Samples:

Submit 3, 12" long samples of each color required (except black) for each type of sealant and caulking compound exposed to view. Install sample between 2 strips of material similar to or representative of typical surfaces where compound will be used, held apart to represent typical joint widths.

JOB CONDITIONS:

Pre-Installation Meeting: At Contractor's direction, Installer, sealant manufacturer's technical representative, and other trades involved in coordination with sealant work shall meet with Contractor at project site to review procedures and time schedule proposed for installation of sealants in coordination with other work. Review each major sealant application required on project.

Condition of Other Work: The Installer must examine joint surfaces, backing, and anchorage or units forming sealant rabbet, and conditions under which sealant work is to be performed, and notify Contractor in writing of conditions detrimental to proper completion of the work and performance by sealants. Do not proceed with sealant work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

Weather Conditions:

Do not proceed with installation of sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended temperature range for installation. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength. Where joint width is affected by ambient temperature variations, install elastomeric sealants only when temperatures are in lower third of the manufacturer's recommended installation temperature range, so that sealant will not be subjected to excessive elongation and bond stress at subsequent low temperatures. Coordinate time schedule with Contractor to avoid delay of project.

Statement of Non-Compliance:

Where it is necessary to proceed with installation of sealants or caulking compound under conditions which do not fully comply with requirements (because of time schedule or other reasons which Contractor determines to be crucial to project), prepare a written statement for Owner's record (with copy to Architect) indicating the nature of non-compliance, reasons for proceeding, precautionary measures taken to ensure best possible work, and names of individuals concurring with decision to proceed with installation.

SPECIAL PROJECT WARRANTY (GUARANTEE):

Sealant Warranty: Provide written warranty, signed by Contractor and Installer; agreeing to, within warranty period, replace/repair defective materials and workmanship defined to include: instance of significant leakage of water or air; failures in joint adhesion, material cohesion, abrasion resistance, weather resistance, extrusion-from-joint resistance, migra-

tion resistance, strain resistance, or general durability; failure to perform as required, and the general appearance of deterioration in any other manner not clearly specified in manufacturer's published product literature as an inherent characteristic of the sealant material. Warranty includes responsibility for removal and replacement of other work (if any) which conceals or obstructs the replacement of sealants. Warranty covers the following types of sealants on this project, for the following periods of time:

Elastomeric sealants of every type.

Warranty period is 10 years after date of substantial completion.

PRODUCTS

MATERIALS, GENERAL:

Colors: Provide black or other natural color where no other standard or custom color is available. Where material is not exposed to view, provide manufacturer's standard color which has best overall performance characteristics for application shown.

Provide manufacturer's standard colors as selected by Architect from manufacturer's standard colors.

Hardnesses shown and specified are intended to indicate general range necessary for overall performance. Consult manufacturer's technical representative to determine actual hardness recommended for conditions of installation and use.

Upon request, Architect will furnish information concerning anticipated joint movement related to actual joint width and installation temperature. Except as otherwise indicated or recommended, provide compounds within the following ranges of hardness (Shore A, fully cured, at 75°F.).

5 to 20 for high percentage of movement and minimum exposure to weather and abrasion (including no exposure to vandalism).

15 to 35 for moderate percentage of movement and moderate exposure to weather and abrasion.

30 to 60 for low percentage of movement and maximum exposure to weather and abrasion (including foot traffic on horizontal joints).

Modulus of Elasticity: For joints subject to movement, either thermal expansion or dynamic movement, select sealants from among available variations which have lowest modulus of elasticity which is consistent with exposure to abrasion or vandalism. For horizontal joints subject to traffic, select sealants with high modulus of elasticity as required to withstand indentation by stiletto heels. Comply with manufacturer's recommendations where no other requirements are indicated.

Compatibility: Before selection and purchase of each specified sealant, investigate its compatibility with joint surfaces, joint fillers and other materials in joint system. Provide only materials (manufacturer's recommnded variation of specified materials) which are known to be fully compatible with actual installation conditions, as shown by manufacturer's published data or certification.

TWO-COMPONENT ELASTOMERIC SEALANTS:

Two-Component Polysulfide Sealant: For exterior building joints.

Polysulfide-based, 2-part elastomeric sealant, complying with FSTT-S-00227, Class A, Type 2 (non-sag) unless Type I (self-leveling) recommended by manufacturer for application shown.

Provide two component polysulfide sealant bearing Thiokol Chemical Corp. seal of approval.

Provide one of the following products:

Versalostic Sealant; Applied Polymers of America, Inc.
Sonolastic Two-Part; Contech/Sonneborn.
DAP Flexiseal Two-Part; DAP, Inc.
Duralseal No. 1; Dural International Corp.
Euco Thiokol; Euclid Chemical Col.
Hornflex; A.C. Horn Co.
Synthacalk GC-5, Dynatrol II; Pecord Corp.
Thiocaulk; Steelcote Mfg. Co.
Lasto-Meric; Tremco, Inc.
Chem-Calk 200, 250; Woodmont Products, Inc.

Optional Sealant: At Contractor's option, provide "Dymeric" sealant by Tremco Mfg. Co. (3-component epoxidize urethane complying with FS TT-S-00227), in lieu of 2-component polysulfide sealant.

Nonporous-Bond Type Silicone Rubber Sealant: For joints where both bond surfaces are non-porous (metal, glass, plastic).

Acid-type silicone rubber based, one-part, non-sag, elastomeric sealant, complying with FS TT-S-001543, Class A; recommended by manufacturer for non-poruous exterior joint surfaces.

Provide one of the following products:

Silicone Rubber Sealant; Dow Corning Corp.
Silglaze, Const. 1200 Sealant; General Electric Co.
Rhodorsil Sealant 3B; Rhodia Inc. Chemicals Div.
Proglaze Construction Sealant; Tremco, Inc.

CAULKING COMPOUNDS:

Oleo-Resinous Caulking Compound: For all interior building joints except flooring joints and expansion joints.

Oil-based resinous caulking compound complying with FS TT-C-00598, non-staining, non-bleeding, paintable.

Provide one of the following products:

Kaukit; Contech/Sonneborn.
DAP Arch. Grade Caulk; DAP, Inc.
Vulcatex; A.C. Horn Co.

Pariflex; Parr, Inc.
200R2 Arch. Calking; Pecora Corp.
Chem-Calk 700; Woodmont Products, Inc.

JOINT FILLERS:

CELLULAR/FOAM EXPANSION JOINT FILLERS:

Closed-Cell Synthetic Rubber Joint Filler:

Provide expanded synthetic rubber complying with ASTM D 1056, Class SC-E (oil-resistant and medium swell), of 2 to 5 psi compression deflection (Grade SCE 41); except provide 13 to 17 psi compression deflection (Grade SCE 44) where filler is applied under sealant exposed to traffic.

Provide one of the following products:

Closed Cell Neoprene; D. S. Brown Co.
Neoprene SCE; Construction Gaskets INc.
Closed Cell E.P.D.M.;Fel-Pro Bldg. Prod. Inc.
Closed Cell Neoprene; Kirkhill Rubber Co.
FF1 Closed Cell Neoprene; Progress Unlimited, Inc.
Closed Cell Neoprene; Rubatex Corp.
Neoprene NN; Williams Products, Inc.

MISCELLANEOUS MATERIALS:

Joint Cleaner: Provide type of joint cleaning compound recommended by sealant or caulking compound manufacturer, for joint surfaces to be cleaned.

Joint Primer/Sealer: Provide type of joint primer/sealer recommended by sealant manufacturer, for joint surfaces to be primed or sealed.

Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.

Sealant Backer Rod: Compressible rod stock polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended for compatibility with sealant by the sealant manufacturer. Provide size and shape of rod which will control joint depth for sealant placement, break bond of sealant at bottom of joint, form optimum shape of sealant bead on back side, and provide a highly compressible backer to minimize possibility of sealant extrusion when joint is compressed.

Oakum Joint Filler:

Provide untreated hemp or jute fiber rope, free of oil, tar and other compounds which might stain surfaces, contaminate joint walls, or not be compatible with sealants.

Foamed-in-Place Joint Filler:

Urethane or similar one-part foamed-in-place compound of 2-5 pcf density, rigid or semi-rigid, 50% (min.) closed-cell content with 60% (min.) recovery from 50% compression;

recommended by manufacturer for filling and insulating joints of less than 10% total movement, concealed either by liquid sealants using filler as backing or by other work (not for direct exterior exposure).

EXECUTION

JOINT SURFACE PREPARATION:

Clean joint surfaces immediately before installation of sealant or caulking compound. Remove dirt, insecure coating, moisture and other substances which would interfere with bond of sealant or caulking compound.

For elastomeric sealants, do not proceed with installation of sealant over joint surfaces which have been painted, lacquered, waterproofed or treated with water repellent or other treatment or coating unless a laboratory test for durability (adhesion), in compliance with Paragraph 4.3.9 of FS TT-S-00227 has successfully demonstrated that sealant bond is not impaired by coating or treatment. If laboratory test has not been performed, or shows bond interference, remove coating or treatment from joint surfaces before installing sealant.

Roughen joint surfaces on vitreous coated and similar non-porous materials, where sealant manufacturer's data indicates lower bond strength than for porous surfaces. Rub with fine abrasive to produce a dull sheen.

INSTALLATION:

Comply with sealant manufacturer's printed instructions except where more stringent requirements are shown or specified and except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.

Prime or seal joint surfaces where shown or recommended by sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.

Install sealant backer rod for liquid sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown.

Install bond breaker tape where shown and where required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.

Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.

Install sealants to depths as shown or, if not shown, as recommended by sealant manufacturer but within the following general limitations, measured at center (thin) section of bead.

For joints sealed with non-elastomeric sealants and caulking compounds, fill joints to a depth in the range of 75% to 125% of joint width.

Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into voids of adjoining surfaces including exposed aggregate panels and similar rough textures. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces, by either primer/sealer of the sealant/caulking compound.

Remove excess and spillage of compounds promptly as the work progresses. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage, without damage to adjoining surfaces or finishes.

Polysulfide Sealant Installation: Comply with standards issued by Thiokol Chemical Corp., except where more stringent requirements have been shown or specified, or have been issued by sealant manufacturer as either requirements or recommendations.

CURE AND PROTECTION:

Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strenth and surface durability. Do not cure in a manner which would significantly alter material's modulus of elasticity or other characteristics.

Installer shall advise Contractor of procedures required for curing and protection of sealants and caulking compounds during construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at time of Owner's acceptance.

TEST FOR PERFORMANCE:

After nominal cure of exterior joint sealants which are exposed to weather, test for water leaks.

Repair sealant installation at leaks or, if leakage is excessive, replace sealant installation as directed.

Where nature of observed leakage indicates possibility of inadequate joint bond strenth, Architect will direct that additional testing be performed at a time when joints have been fully cured, followed by natural exposure through both extreme temperature, and returned to lowest range of temperature in which it is feasible to conduct testing. Repair or replace work as required. Perform testing at a reasonable time within 24 months of installation date, as directed.

END OF SECTION 7T1

SECTION 8A0 - GLASS AND GLAZING

GENERAL

RELATED DOCUMENTS:

The general provision of the Contract, including General and Supplementary Conditions and General Requirements apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of glass and glazing work is indicated on drawings, and by provisions of this section.

The types of work or locations requiring glass and glazing include (but are not necessarily limited to) the following:

Window units

Interior doors to be glazed.

Interior partitions to be glazed.

The types of glass required include the following:

Clear float (or plate) glass. - GL.

Color (tinted) float (or plate) glass. - TINT GL.

Clear mesh wire glass - W. GL.

Tempered float (or plate) glass - TEMP. GL.

Insulating glass - INSUL. GL.

QUALITY ASSURANCE:

Prime Glass Standard: Comply with FS DD-G-451.

Safety Glass Standards: Comply with the following as applicable:

Consumer Product Safety Commission 16 CFR 1201.

Industry Standards ANSI Z97.1.

Sound Transmission Test Standard: Comply with ASTM E 90.

Insulating Glass Seal Standard: Comply with proposed standard ASTM E6-P3, Test Methods P1 and P2.

Manufacturers: Provide each type of glass from a single manufacturer with not less than 5 years of successful experience in the production of materials similar to those required.

Provide one of the following:

ASG Industries
C-E GLass Div.
Fourco Glass Co.
Libbey-Owens-Ford Co.
PPG Industries, Inc.

Installer (Glazier): Firm with not less than 5 years of successful experience in glazing work similar to required work.

SUBMITTALS:

Manufacturer's Data, Glass and Glazing:

Submit manufacturer's product specifications, including documentation of compliance with requirements, and instructions for handling, storing, installing, cleaning and protecting each type of glass and glazing material.

Samples, Glass and Glazing Materials:

Submit 2 samples of each type of glass and glazing material required, except for single-pane clear glass (including annealed, tempered and laminated). Submit 12" square glass samples, and 12" lengths ofinstalled (mocked-up) glazing materials.

Submit insulating glass samples with completed edge-seal construction. (hermetic seal need not be maintained in sample).

PRODUCT HANDLING:

Comply with manufacturer's instructions for shipping, handling, storing and protecting glass and glazing materials. Exercise exceptional care to prevent edge damage to glass, and damage/deterioration to coatings (if any) on glass.

JOB CONDITIONS:

Pre-Installation Meeting: Comply with General Requirements for pre-installation meeting of Glazier and other trades affected by glass installation.

Inspection: Glazier must examine framing and substrate work to receive glass and glazing materials, and conditions under which glass is to be installed, and notify Contractor in writing of conditions detrimental to proper completion of the work. Do not proceed with glazing until unsatisfactory conditions have been corrected in a manner acceptable to Glazier.

Weather: Do not proceed with glazing under adverse weather conditions. Install liquid sealants when temperatures are within lower or middle third of temperature range recommended by manufacturer.

PRODUCTS

PRIME GLASS:

Float/Plate Glass: Type I, Quality q3.

Inboard Glass: Clear

Outboard Glass: Bronze. Manufacturer's standard color; 56% to 59% light transmittance and 56% solar energy transmittance for 3/16".

Polished Wired Glass: TYpe III, Kind A, Form 1, Quality q11, clear and polished both faces.

Mesh: Type m3, square.

Fire Rating: Provide glass listed and labeled by UL for "fire resistance".

PROCESSED GLASS:

Tempered Glass: Provide glass of color and type indicated, which has been heat treated to strengthen glass in bending to not less than 4.5 times annealed strength.

FABRICATED UNITS:

Heat-Glare-Light-Reducing Insulating Glass: Provide 2 sheets of glass as follows: dry air or gas-filled space with -20°F dew point, with Class A sealant-type edge construction to maintain a hermetic seal; fabricated to provide the following overall performance characteristics:

5/8" Insulated Units:

Glass: Clear float glass, Quality q3, 3/16" thick.

Air Space: 1/4" thick.

Temper both sheets of glass in each unit indicated as "Safety Glass".

Warranty: Provide manufacturer's standard 10-year product warranty on maintained hermetic seal.

GLAZING SEALANTS AND COMPOUNDS:

General: Provide color of exposed sealant/compound indicated or if not otherwise indicated, as selected by Architect from manufacturer's standard colors, or black if no color is so selected. Comply with manufacturer's recommendations for selection of hardness, depending upon the location of each application, conditions at time of installation, and performance requirements as indicated. Select materials, and variations or modifications, carefully for compatibility with surfaces contacted in the installation.

2-Part Polysulfide Glazing Sealant: Elastomeric polysulfide sealant complying with FS TT-S-227, Class A, Type 2; specially compounded and tested to show minimum of 20 years' resistance to deterioration in normal glazing applications.

Optional Sealant: "Dymeric" by Tremco, Inc.

Butyl Rubber Glazing Tape: Partly-vulcanized, self-adhesive, non-staining, elastomeric butyl rubber tape. 98% solids, intended for 35% compression, no appreciable deterioration for 3000 hour test in Atlas Weatherometer; either plain or pre-shimmed as required for proper installation of glass.

Acrylic-Emulsion Glazing Sealant: Emulsion of acrylic, with or without latex rubber modification; compounded specifically for glazing; nonhardening, nonstaining and non-bleeding.

GLAZING GASKETS:

Molded Neoprene Glazing Gaskets: Molded or extruded neoprene gaskets of the profile and hardness required for watertight construction; comply with ASTM D 2000 designation 2BC 415 to 3BC 620, black.

MISCELLANEOUS GLAZING MATERIALS:

Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.

Setting Blocks: Neoprene, 70-90 durometer hardness, with proven compatibility with sealants used.

Spacers: Neoprene, 40-50 durometer hardness, with proven compatibility with sealants used.

Compressible Filler Rod: Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, proven to be compatible with sealants used, flexible and resilient, with 5-10 psi compression strength for 25% deflection.

EXECUTION

STANDARDS AND PERFORMANCE:

Watertight and airtight installation of each piece of glass is required, except as otherwise shown. Each installation must withstand normal temperature changes, wind loading, impact loading (for operating sash and doors), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and air-tight, deterioration of glazing materials and other defects in the work.

Protect glass from edge damage during handling and installation, and subsequent operation of glazed components of the work.

Glazing channel dimensions as shown are intended to provide for necessary bite on glass, minimum edge clearance and adequate sealant thicknesses, with reasonable tolerance. The Glazier is responsible for correct glass size for each opening, within tolerances and necessary dimensions.

Comply with combined recommendation of glass manufacturer and manufacturer of sealants and other materials used in glazing, except where more stringent requirements are shown or specified, and except where manufacturer's technical representatives direct otherwise.

Comply with "Glazing Manual" and other applicable publications by Flat Glass Marketing Association except as shown and specified otherwise, and except as specifically recommended otherwise by manufacturers of glass and glazing materials.

Inspect each piece of glass immediately before installation, and discard pieces which have significant edge damage or face imperfections.

Unify appearance of each series of lights by setting each piece to match others as nearly as possible. Inspect each piece and set with pattern, draw and bow oriented in the same direction as other piece.

Cut and install colored (tinted), heat-absorbing and coated glass as recommended in "Technical Services Report No. 104" (latest edition) by PPG Industries, or similar reports by other manufacturers.

Install polysulfide sealants as recommended by Thiokol chemical Corp., except as otherwise recommended by the sealant manufaturer.

Install insulating glass units to comply with recommendations by Sealed Insulating Glass Manufacturers Association, except as otherwise specifically indicated or recommended by glass and sealant manufacturers.

PREPARATION FOR GLAZING:

Clean glazing channel and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrate. Remove lacquer from metal surfaces where elastomeric sealants are used.

Apply primer or sealer to joint surfaces where recommended by sealant manufacturer.

GLAZING:

Install setting blocks of proper size in sill rabbet, located 1/4th of glass width from each corner. Set blocks in thin course of heel-bead compound, if any.

Provide spacers inside and out, or proper size and spacing, for glass sizes larger than 50 united inches, except where gaskets are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.

Voids and Filler Rods: Prevent exudation of sealant or compound by forming voids or installing filler rods in channel at heel of jambs and head (do not leave voids in the sill channels), except as otherwise indicated and depending on light size, thickness and type of glass, and complying with manufacturer's recommendations.

Do not attempt to cut, seam, nip or abrade glass which is tempered or heat strengthened, including glass which is heat-treated as a result of a coating process.

Force sealants into channel to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

Tool exposed surfaces of glazing liquids and compounds to provide a substantial "wash" away from glass. Install pressurized tapes and gaskets to protrude slightly out of channel, so as to eliminate dirt and moisture pockets.

Clean and trim excess glazing materials from glass and stops or frames promptly after installation, and eliminate stains and discolorations.

Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when installation is subjected to movement. Anchor gasket to stop with matching ribs, or by proven adhesives, including embedment of gasket tail in cured heel bead.

Gasket Glazing: Miter cut and bond ends together at corners where gaskets are used for channel glazing, so that gaskets will not pull away from corners and result in voids or leaks in glazing system.

CURE, PROTECTION AND CLEANING:

Cure glazing sealants and compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability.

Protect exterior glass from breakage immediately upon installation, by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass.

Remove and replace glass which is broken, chipped, craked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.

Maintain glass in a reasonably clean condition during construction, so that it will not be damaged by corrosive action and will not contribute (by wash-off) to deterioration of glazing materials and other work. Comply with manufacturer's instructions.

Wash and polish glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Comply with glass manufacturer's recommendations for final cleaning.

END OF SECTION 8A0

SECTION 8G9 - WOOD WINDOWS

GENERAL

RELATED DOCUMENTS

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of each type (operation) of wood window unit, hereby defined to include wood units clad with other materials, is shown on drawings.

Applications of wood windows on project include the following:

Individual units set in conventional wall construction.

Continuous horizontal window strips, with mullions.

Wood Trim: Refer to sections of Division 6 for interior and exterior wood trim not specified as integral components of window units, (i.e. casings, moldings, stools, aprons, subsills, mullion covers and similar components.)

Glazing: Refer to "Glass and Glazing" section for glazing all window units, including those specified herein to be factory preglazed.

QUALITY ASSURANCE:

Manufacturer: Provide wood window units produced by a single fabricator, capable of showing prior successful production of units similar to those required.

Drawings are based on wood window units produced by Pella Window and Door Co. of Pella, IA

Provide wood window units in sizes noted on drawings, produced by Pella, one of the following, or approved equal:

Caradco W & D Division, Scovill; Rantoul, IL
Weather Shield Mfg., Inc.; Medford, WI

Performance and Testing: Provide windows which habe been tested and labeled for structural performance (ASTM E 330), air infiltration (ASTM E 283), and water penetration (ASTM E 331); and with results complying with NWMA Standard I.S.2-73 for Class "A" window units.

SUBMITTALS:

Product Data: Submit manufacturer's specifications, standard details, and recommendations for each type of wood window unit required.

Include manufacturer's certified test report, indicating that each type of unit has been tested and complies with requirements for performance as specified.

Shop Drawings: Submit shop drawings, including wall elevations at 1/4" scale, unit elevations at 3/4" scale, and half-size section details of every typical composite member, including glazing.

Samples:

Submit samples of specified finish, on 12" length of typical window member.

Architect reserves right to require additional sample submittals which will show fabrication techniques and workmanship, hardware and accessory designs.

PRODUCTS

MATERIALS:

Wood: Ponderosa Pine or other suitable fine-grained lumber which has been treated with water repellent preservative after machining and kiln-dried to a moisture content of 6 to 12 percent at time of fabrication.

Fasteners: Comply with NWMA requirements for fabrication and with manufacturer's recommendations and standard industry practices for type and size of installation fasteners.

For fabrication of wood windows, use zinc-coated or nonferrous nails and screws.

For installation of wood window units, use zinc-coated or nonferrous nails or screws.

For hardware and accessory installation use brass screws.

Compression Weatherstripping: Manufacturer's standard nonferrous spring metal or vinyl gasket, designed for permanently resilient sealing under bumper or wiper action, completely concealed when window sash is closed.

Wire Fabric (Insect): 18 x 14 mesh of 0.013" diameter aluminum wire, complying with FS RR-W-365, Type VII; except black anodized or "gun metal" coating on wire.

Insect Screens Frames: Manufacturer's standard formed aluminum or extruded aluminum frames, with anodized aluminum finish or baked-on organic coating; removable vinyl fabric-retainer spline.

Finish Color: As selected by Architect from manufacturer's standard colors.

Hardware: Manufacturer's standard design for operation indicated.

Provide solid bronze hardware, with plated steel or brass/bronze operating bars and rods.

Aluminum Cladding: Provide manufacturer's standard formed sheet and/or extruded aluminum cladding applied on exterior exposure of wood members, finished with baked-on acrylic coating in color selected by Architect from manufacturer's standards.

Glass and Glazing Materials: Refer to "Glass and Glazing" section for requirements applicable to wood window units.

WINDOW TYPES (OPERATIONS):

General: Following paragraphs define operating arrangement for sash (ventilators) in window units. Drawings show which panels of each unit are operable and which are fixed. Refer to NWMA I.S.2-73 for minimum operating requirements.

Fixed Wood Windows:

No operating hardware or equipment, other than accessory items, is required for fixed window units.

Awning Wood Windows:

Units containing swing-out projected sash requiring 2 balance support arms, pivots with friction shoes, cam latch or other standard latching hardware with lever handle or pull or, if located more than 6'0" above floor, provide remote control crank mechanism.

For projected units located less than 6'-0" above floor, provide manufacturer's standard under-screen roto-type or geared-lever operator and latch mechanism.

FABRICATION:

Sizes and Profiles: Conform to size and profile limitations as shown.

Scope of each window unit, except as otherwise indicated, includes sash or sashes, frame, stops, sill (including undersill or nosing), exterior casing and moldings, integral mullions and muntins, hardware and accessories.

Provide weatherstripping at perimeter of each operating sash.

Provide removable insect screen for each operating sash, with location determined by manufacturer except as otherwise indicated.

Preglaze wood window units at shop before delivery, except do not preglaze light sizes in excess of 100 united inches, and do not preglaze insulating glass which is either metal-bound or exposed-sealant-bound. Fused-glass edge insulating units may be preglazed.

Provide removable double glazing panels for each sash of window units (fixed and operating). Frame, preglaze, and attach to sash in accordance with fabricator's published standards.

Omit double glazing panels on sash indicated to be glazed with insulating glass.

Provide one pole operator and pole hanger for each room of project where pole-operated hardware is provided on window sash more than 6'-0" above floor. Provide tubular aluminum pole of proper length, with remote control crank and rubber cap at bottom.

EXECUTION

INSTALLATION:

Comply with manufacturer's instructions and recommendations for installation of wood window units, hardware, accessories, and other components of work.

Set units plumb, level, and true to line, without warp or rack of frames or sash. Provide proper support and anchor securely in place. Refer to Division 7 for joint fillers and sealants required for installation.

ADJUST AND CLEAN:

Adjust operating sash and hardware to provide smooth operation with tight, weatherproof closure. Lubricate hardware and moving parts.

Clean glass of window units promptly after installation; comply with requirements of "Glass and Glazing" section for cleaning and maintenance.

Institute protection required through remainder of construction period, to ensure that wood window units will be without damage or deterioration at time of acceptance.

END OF SECTION 8G9

SECTION 8J2 - HOLLOW METAL DOORS AND FRAMES

GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements apply to the work specified in the section.

DESCRIPTION OF WORK:

The extent of hollow metal doors and frames is shown on drawings and schedules.

QUALITY ASSURANCE:

Provide hollow metal doors and frames manufactured by a single firm specializing in production of this type of work, unless otherwise acceptable to Architect.

Fabricate side panels and transom panels to match doors in all respects unless otherwise indicated.

Provide doors and frames complying with the Steel Door Institute "Recommended Specifications, Standard Steel Doors and Frames" (SDI-100), and as herein specified.

Manufacturers offering products to comply with requirements for hollow metal doors and frames include the following:

Amweld Building Products Div.
Ceco Corp.
Curries Mfg. Inc.
Fenestra.
Mesker Industries, Inc.
Republic Builders Prod. Corp.
Steelcraft Mfg. Co.

Fire-Rated Assemblies:

Where fire-resistance classification is shown or scheduled for hollow metal doors and frames, provide fire-rated doors investigated and tested as a fire door assembly, complete with type of hardware to be used. Identify each fire door with recognized testing laboratory labels, indicating applicable fire rating of steel doors.

Construct and install assemblies to comply with NFPA Standard No. 80, and as herein specified.

Oversize Assemblies: Wherever hollow metal assemblies are larger than size limitations established by NFPA, provide manufacturer's certification that assembly has been constructed with materials and methods equivalent to labeled construction.

Temperature Rise Rating: At stairwell enclosures, provide doors which have a Temperature Rise Rating of not more than 450° F. maximum in 30 minutes of fire exposure.

SUBMITTALS:

Product Data: Hollow Metal Doors and Frames:

Submit manufacturer's product data for fabrication and installation instructions. Transmit one copy of instructions to Installer.

Shop Drawings: Hollow Metal Doors and Frames:

Submit shop drawings for fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.

Provide schedule of doors and frames using same reference numbers for details and openings as those on contract drawings.

Label Construction; Hollow Metal Doors and Frames:

Submit manufacturer's certification for oversize fire-rated doors and frames that each assembly has been constructed with materials and methods equivalent to requirements for labeled construction.

DELIVERY, STORAGE AND HANDLING:

Deliver hollow metal work cartoned or crated to provide protection during transit and job storage.

Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided finish items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damage items as directed.

Store doors and frames at building site under cover. Place units on at least 4" high wood sills or on the floors in a manner that will prevent rust and damage. Avoid use of non-vented plastic or canvas shelters which could create a humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide a 1/4" space between stacked doors to promote air circulation.

PRODUCTS

MATERIALS:

Hot-Rolled Steel Sheets and Strip:

Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568.

Cold-Rolled Steel Sheets:

Commercial quality carbon steel, complying with ASTM A 366 and ASTM A 568.

Galvanized Steel Sheets:

Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A 526, with ASTM A 525, G60 zinc coating, mill phosphatized.

Supports and Anchors:

Fabricate of not less than 18 gauge galvanized sheet steel.

Inserts, Bolts and Fasteners:

Manufacturer's standard units, except hot-dip galvanized items to be built into exterior walls, complying with ASTM A 153, Class C or D as applicable.

Shop-Applied Paint:

For steel surfaces, use rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints.

FABRICATION, GENERAL:

Fabricate hollow metal door and frame units to be rigid, neat in appearance and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory-assembled before shipment, to assure proper assembly at project site. Weld exposed joints coninuously, grind, dress, and make smooth, flush and invisible. Metallic filler to conceal manufacturing defects is not acceptable.

Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from only cold-rolled steel.

Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers and mouldings from either cold-rolled or hot-rolled steel (at fabricator's option).

Fabricate exterior doors, panels and frames from galvanized sheet steel.

Exposed Fasteners:

Provide countersunk flat Phillips heads for exposed screws and bolts. After installation of exposed fasteners fill head of exposed screws and bolts and grind smooth to render invisible.

Finish Hardware Preparation:

Prepare hollow metal units to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling and tapping in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A 115 "Specifications for Door and Frame Preparation."

Reinforce hollow metal units to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site.

Locate finish hardware as shown in Section 8S1 of the specifications and as shown on final shop drawings or, if not shown, in accordance with "Recommended Locations for Builder's Hardware", published by the Door and Hardware Institute.

Shop Painting:

Clean, treat and paint exposed surfaces of fabricated hollow metal units, including galvanized surfaces.

Clean steel surfaces of mill scale, rust, oil, grease, dirt and other foreign materials before the application of shop coat of paint.

Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive field-applied paint.

HOLLOW METAL DOORS:

Provide metal doors of types and styles indicated on drawings or schedules and complying with SDI-100 for minimum materials and construction requirements.

Exterior doors shall be Type III, Extra Heavy Duty, Style 3.

Interior doors shall be Type II, Heavy Duty, Style 2.

HOLLOW METAL FRAMES:

Provide metal frames of the types and styles indicated on drawings or schedules and complying with SDI-100 for minimum materials and construction requirements.

Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings, as shown on the drawings. Conceal fastenings, unless otherwise indicated.

Fabricate frames with mitered and welded corners full depth and width of frame.

Form exterior frames of hot dip galvanized steel, and either cold or hot-rolled sheet steel for interior.

Gauge: Not less than 14 gauge for exterior.

Gauge: Not less than 16 gauge for interior.

Finish Hardware Reinforcement:

Reinforce frames for required finish hardware, as follows:

Hinges and Pivots: Steel plate 3/16" thick x 1-1/2" wide x 6" longer than hinge, secured by not less than 6 spot-welds.

Strike Plate Clips: Steel plate 3/16" thick x 1-1/2" wide x 3" long.

Surface-Applied Closers: 12 gauge steel sheet, secured with not less than 6 spot-welds.

Mullions and Transom Bars:

Provide closed or tubular mullions and transom bars where indicated. Fasten mullions and transom bars at crossings and to jambs by butt welding. Reinforce joints between frame members with concealed clip angles or sleeves of same metal and thickness as frame.

Provide false head member to receive lower ceiling where frames extend to finish ceilings of different heights.

Head Reinforcing: Where installed in masonry, leave vertical mullions in frames open at the top so they can be filled with grout.

Jamb Anchors:

Furnish jamb anchors as required to secure frames to adjacent construction, formed of not less than 18 gauge galvanized steel.

Wood Stud Partitions: Insert type with notched clip to engage wood stud, welded to back of frames. Provide at least 4 anchors for each jamb for frames up to 7'-6" in height; 5 anchors up to 8'-0" jamb height; one additional anchor for each 24" or fraction thereof over 8'-0" height.

Floor Anchors:

Provide floor anchors for each jamb and mullion which extends to floor, formed of not less than 14 gauge galvanized steel sheet, as follows:

Wood Flooring System: Adjustable type with extension clips, allowing not less than 2" height adjustment. Terminate bottom of frames at finish floor surface.

Head Anchors:

Provide 2 anchors at head of frames exceeding 42" wide for frames mounted in wood stud walls.

Head Strut Supports:

Provide 3/8" x 2" vertical steel struts extending from top of frame at each jamb to supporting construction above. Bend top of struts to provide flush contact for securing to supporting construction above. Provide adjustable bolted anchorage to frame jamb members.

Structural Reinforcing Members:

Provide structural reinforcing members as a part of frame assembly, where indicated at mullions, transoms, or other locations which are to be built into frame.

Spreader Bars:

Provide removable spreader bar across bottom of frames, tack welded to jambs and mullions.

Rubber Door Silencers:

Drill stop to receive 3 silencers on single-door frames and 4 silencers on double-door frames. Install plastic plugs to keep holes clear during construction.

Plaster Guards:

Provide 26 gauge steel plaster guards or dust cover boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware installation.

STOPS AND MOLDINGS:

Provide stops and moldings around solid, glazed and louvered panels in hollow metal units and in frames to receive doors, where indicated.

Form fixed stops and moldings integral with frame, unless otherwise acceptable to the Architect. Provide fixed stops on inside of hollow metal units exposed to exterior and on corridor side of interior units, unless otherwise indicated.

Provide removable stops and molds at other locations, formed of not less than 20 gauge steel sheets; exterior, galvanized and interior cold-rolled. Secure with countersunk machine screws spaced uniformly not more than 12" o.c. Form corners with butted hairline joints.

Coordinate width of rabbet between fixed and removable stops with type of glass or panel and type of installation indicated.

Provide terminated stops on interior door frames, where shown on the drawings. Unless otherwise shown, terminate stops 6" above the finish floor with a 45 degree angle cut, and close open end of stop with steel sheet closure. Cover opening in extension of frame with a welded steel filler plate, with welds ground smooth.

EXECUTION

INSPECTION:

Installer must examine substrate and conditions under which steel doors and frames are to be installed and notify the Contractor in writing of any conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

INSTALLATION:

General:

Install hollow metal units and accessories in accordance with final shop drawings and manufacturer's data, and as herein specified.

Placing Frames:

Comply with the provisions of SDI-105 "Recommended Erection Instructions for Steel Frames", unless otherwise indicated.

Except for frames located at drywall installations, place frames prior to construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged.

Install fire-rated frames in accordance with NFPA Standard No. 80.

In wood stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In wood stud partitions, attach studs to wall anchors with tapping screws.

Door Installation:

Fit hollow metal doors accurately in their respective frames, within clearances specified in SDI-100.

Place fire-rated doors with clearances as specified in NFPA standard No. 80.

Finish hardware is specified in 8S-Series sections.

ADJUST AND CLEAN:

Final Adjustments:

Check and readjust operating finish hardware items in hollow metal work prior to final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including doors or frames which are warped, bowed or otherwise damage.

Prime Coat Touch-up:

Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

END OF SECTION 8J2.

SECTION 8S1 - FINISH HARDWARE

GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

Provide finish hardware as shown on the drawings and in schedules and as required. Finish hardware is hereby defined to include all items known commercially as Builders' Hardware, as required for swing doors, except special types of hardware specified in the same section as the door and door frame.

The hardware specified herein is intended to cover all necessary material required to fully complete the hardware requirements of the building. It is the intention and it shall be understood that the hardware herein specified shall be figured in sufficient quanitites to fill the requirements of the Contract drawings, even though every item necessary to do so is not herein specified, except for those items of hardware that are specially covered under other sections of the specifications.

If the hardware for any particular location is not specified herein, it shall be furnished of similar design and of quality equal to other items specified for similar locations. It shall be of suitable type and ample size and weight to perform the service required.

Where the furnished shape or size of the member taking hardware is such as to prevent the use of, or make unsuitable the exact type specified, suitable types shall be furnished having as nearly as practicable the same operation as that which is specified.

QUALITY ASSURANCE:

Supplier: Subcontract the furnishing of hardware, as specified by these specifications, only to a recognized builders' hardware supplier who has been furnishing hardware in the same area as the project for a period of not less than five years, and who has in his employment an experienced hardware consultant who is available at all reasonable times during the course of the work, for project hardware consultation to the Owner, Architect and Contractor.

Installer: Assign the installation of hardware to experienced tradesmen in compliance with trade union jurisdictions; either at the door and frame fabrication plant or at the project site, at Contractor's option except as otherwise indicated. It is assumed that the carpentry trade will install hardware items, except as otherwise required by the manufacturer, or otherwise directed by the Contractor, or otherwise specified.

Manufacturer: To the greatest extent possible, obtain each kind of hardware (latch and lock sets, hinges, closers, etc.) from only one manufacturer.

The numbers herein specified are taken from manufacturer's catalogues as specified on schedule. Material of equal quality from other manufacturers will be acceptable, provided a request in writing is made to the Architect at least ten days prior to bid date and if in the opinion of the Architect, the material requested for substitution is equal in quality and appearance to that specified and if it can be established that the substitution material will effect a saving in cost. Furnish samples of substitute hardware when requested by Architect.

Fire Rated Openings: Provide hardware for fire-rated openings in compliance with A.T.A. (NBFU) Pamphlet No. 80 and hardware which has been tested and listed by UL for the types and sizes of doors required, and complies with the requirements of the door and door frame labels.

Where panic exit devices are required on fire-rated doors, provide supplementary marking on door UL label indicating "Fire Door to be Equipped with Fire Exit Hardware" and provide UL label on exit device indicating "Fire Exit Hardware".

JOB CONDITIONS

Coordination: Coordinate hardware with other work. Tag each item or package separately, with identification related to the final hardware schedule, and include basic installation instructions in the package. Furnish hardware items of proper design for use on doors and frames of the thicknesses, profile, swing, security and similar requirements indicated, as necessary for proper installation and function, regardless of ommissions or conflicts in the information in the Contract Documents. Deliver individually packaged hardware items at the time and to the locations (shop or field) for installation, as directed by the Contractor.

Provide secure lock-up for hardware delivered to the project, but not yet installed. Control the handling and installtion of hardware items which are not immediately replaceable, so that the completion of the work will not be delayed by hardware losses, both before and after installation.

Hand of door: The drawings show the swing or hand of each door leaf (left, right, reverse, bevel, etc.). Furnish each item of hardware for proper installation and operation of the door swing as shown.

Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory prepared for the installation of hardware. Upon request, check the shop drawings of such other work, to confirm that adequate provisions will be made for the proper installation of hardware.

SUBMITTALS:

Samples, Finish Hardware:

Prior to submittal of the final hardware schedule and prior to delivery of hardware, submit one sample of each exposed hardware unit, finished as required, and tagged with full description for coordination with the schedule. Sample will be reviewed by the Architect for design, color and texture only. Compliance with other requirements is the exclusive responsibility of the Contractor.

Hardware Schedule, Finish Hardware:

Submit five (5) copies of the finish hardware schedule in the manner and format specified, complying with the actual construction progress schedule requirements (for each draft). Include a separate key schedule, showing clearly how the Owner's final instructions on keying of locks have been fulfilled. Hardware schedules are intended for coordination of the work. Review and acceptance by the Architect or Owner does not relieve the Contractor of his exclusive responsibility to fulfill the requirements as shown and specified.

Final Hardware Schedule: Based on all finish hardware requirements as indicated in the Contract Documents (including drawings, schedules and specifications) prepare a final hardware schedule organized into "hardware sets" indicating complete designation of every item required for each door or opening. Each door or opening shall be identified on the hardware schedule with Architect door reference number as shown on the drawings. Each "hardware set" on the hardware schedule shall be cross referenced to the Architect's hardware set number in the specifications. Furnish initial draft of schedule at the earliest possible date, in order to facilitate the fabrication of other work (such as hollow metal frames) which may be critical in the project construction schedule. Furnish final draft of schedule after samples, manufacturer's data sheets, coordination with shop drawings for other work, delivery schedules and similar information has been complete and accepted.

Manufacturer's Data, Finish Hardware:

For information only submit two (2) copies of manufacturer's data for each item of finish hardware. Include whatever information may be necessary to show compliance with requirements, and include parts and exposed finishes. Wherever needed, furnish templates to fabricators of other work which is to receive finish hardware. Indicate by transmittal that copy of applicable data has been distributed to the Installer.

MATERIALS

GENERAL:

Manufacturer's Name Plate: Do not use manufacturer's products which have manufacturer's name or trade name displayed in a visible location (omit removable nameplates), except in conjunction with required UL labels and as otherwise acceptable to the Architect.

Manufacturer's identification will be permitted on rim of lock cylinders only.

Base Metals: Produce hardware units of the basic metal and forming method indicated, using the manufacturer's standard metal alloy, composition, temper and hardness, but in no case of lesser (commercially recognized) quality than specified for the applicable hardware units by FS FF-H-106, FS FF-G-111, FS FF-H-116 and FS FF-H-121. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.

Fasteners: Manufacture hardware to conform to published templates, generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.

Furnish screws for installation, with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match the hardware finish or, if exposed in surfaces of other work, to match the finish of such other work as closely as possible including "prepared for paint" in surfaces to receive painted finish.

Tools for Maintenance: Furnish a complete set of specialized tools as needed for Owner's continued adjustment, maintenance, and removal and replacement of Builders' Hardware.

Match the finish of every hardware unit at each door or opening, to the greatest extent possible, and except as otherwise indicated. Redue difference in color and textures as much as commercially possible where the base metal or metal forming process is different

for individual units of hardware exposed at the same door or opening. In general, match all items to the manufacturer's standard finish for the latch and lockset (or push-pull units if not latchlock sets) for color and texture.

The Architect will be the sole judge of whether hardware units match the accepted samples and match each other satisfactorily. Units will be judged when held 2'-0" apart at 3'-0" distance.

The basic finish for all hardware shall be US32D Stainless Steel Satin on exterior and interior of building.

Locks:

All locks shall be the product of one manufacturer. Heavy duty cylindrical type supplied with ASA strike with lips of sufficient length to clear trim. Locks with any die cast parts are not acceptable.

Closers:

All door closers shall be of one manufacturer. They shall be hydraulically controlled and full rack and pinion in operation. The closer body shall be of high strength cast iron. Each closer must have adjustable general speed, latch speed, and back check control. The spring power of door closers used on exterior or vestibule doors must be adjustable. Necessary arms, brackets, and other door closer accessories must be available to suit the job conditions. The door closers are to be adjusted by a factory representative after all are installed on job. The door closers are to be guaranteed for five years against mechanical failure. Al surface mounted closers shall be through bolted to doors. All doors with closers except 8" label shall be set to operate at maximum pressure of 8 lbs. Electric hold open closers are to be tied into the building fire alarm system by Electrical Contractor, see Electrical drawings.

LOCK CYLINDERS AND KEYING:

General: Supplier will meet with Owner to finalize keying requirements and obtain final instructions in writing.

Review the keying system with the Owner and provide the type required (master or grandmaster.)

Equip locks with manufacturer's removable-core 6-pin tumbler cylinders.

Exterior cylinders shall be removable core type.

Metals: Construct lock cylinder parts from brass/bronze, stainless steel or nickel silver.

Comply with the Owner's instructions for masterkeying and, except as otherwise indicated, provide individual change key for each lock which is not designated to be keyed alike with a group of related locks.

Key Material: Provide keys of nickle silver only.

Key Quantity: Furnish 3 change keys for each lock, 5 master keys for each master system; and 5 grandmaster keys for each grandmaster system.

Deliver keys to Owner's representative.

Provide a key control system including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of the number of locks required for the project.

Stripping and Seals:

Provide stripping and seals for exterior doors as shown on the hardware schedule.

Continuity of stripping: Except as otherwise indicated, it is required that the stripping at each opening be continuous and without unnecessary interruption at door corners and hardware.

Provide spring-metal type weatherstripping at jambs and head, spring aluminum, 0.008" minimum thickness, of manufacturer's standard design and finish.

Provide spring-metal type threshold-contact weatherstripping at door bottom of spring stainless steel, 0.008" minimum thickness, of manufacturer's standard design and finish.

Provide meeting seals for pairs of doors with both leaves active with extruded aluminum stripping of 0.062" thick, bronze anodized, holding flexible stripping seals of black extruded neoprene wiper or sweep.

Manufacturers: Manufacturers of hardware are listed as follows:

Pivots - McKinney	Removable Mullion - Von Duprin
Butts - McKinney	Kick Plates - Brookline
Panic Sets - Von Duprin	Stops/Holders - H. B. Ives
Locksets - Russwin	Silencers - Brookline
Closures - LCN	Push Pulls - Brookline
Thresholds - Zero	Weatherstripping - Zero

HARDWARE SCHEDULE

Hardware Set #1 - Exterior Single H.M. Exit Door - each door to have:

1½ pair hinges	T4B 3386 4½ x 4½ NRP	US32D
1 exit device	33NL-TP x L.C.	US32D
1 cylinder	8291	US32D
1 closure	4040 CUSH-EDA	AL
1 threshold	564A x door width	AL
1 kick plate	8" x LDW less 2" x .050	US32D
1 set weatherstripping	312	AL

Hardware Set #2 - Exterior H.M. Service Door - each door to have:

1½ pair hinges	T4B 3386 4½ x 4½ NRP	US32D
1 lockset	5061 W33 Austin '8'	US32D
1 cylinder	8291	US32D
1 closure	4014H 180 CUSH	AL
1 kickplate	8" x LDW less 2" x .050	US32D
1 saddle	564A x door width	AL
1 set westherstripping	312	AL

Hardware Set #3 - Exterior H.M. Door - each door to have:

1½ pair hinges	T4B 3386 4½ x 4½ NRP	US32D
1 lockset	5061 W33 Austin '8'	US32D
1 closure	4114H CUSH	AL
1 cylinder	8291	US32D
1 kickplate	8" x LDW less 2" x .050	US32D
1 saddle	564A x door width	AL
1 set weatherstripping	312	AL

Hardware Set #4 - Exterior H.M. Door - each door to have:

1½ pair hinges	T4B 3386 4½ x 4½ NRP	US32D
1 lockset	1503 1/4 '8'	US32D
1 cylinder	8291	US32D
1 closure	4014 CUSH	AL
1 kickplate	8" x LDW less 2" x .050	US32D
1 push plate	58 6 x 20	US32D
1 pull plate	58 C808 6 x 20	US32D
3 silencers	#33	
1 wall stop	407½S	US32D

Hardware Set #5 - Interior H.M. Door - each door to have:

1½ pair hinges	T4B 3386 4½ x 4½ NRP	US32D
1 lockset	5056 W33 Austin '8'	US32D
1 cylinder	8291	US32D
1 kick plate	8" x LDW less 2" x .050	US32D

Hardware Set #6 - Interior H.M. Door - each door to have:

1½ pair hinges	T4B 3386 4½ x 4½ NRP	US32D
1 lockset	5061 W33 Austin '8'	US32D
1 cylinder	8291	US32D
1 closure	4014H CUSH	AL
1 kickplate	8" x LDW less 2" x .050	US32D

INSTALLATION:

Pre-Installation Meeting: Prior to installation of hardware at the project site conduct a general orientation meeting attended by the hardware installers, hardware suppliers, manufacturers' technical representatives, Architect, Owner's representative and Contractor. Compare the supplied hardware items with the accepted samples of finishes and designs (if any). Review the installation procedures related to the schedules of hardware, doors and frames. Establish hardware items for unusual provisions including special operational features, security devices, UL labels and similar considerations related to installation.

Install each hardware item in compliance with the manufacturer's instructions and recommendation. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, install each item completely and then remove and store in a secure place during the finish application. After completion of the finishes, re-install each time. Do not install surface mounted items until finishes have been completed on the substrate.

Adjust and check operating time of hardware and each door, to ensure proper operation or function of every unit. Lubricate moving parts with type lubricant recommended by manufacturer (graphite-type if no other recommended). Replace units which cannot be adjusted and lubricated to operate freely and smoothly as intended for the application made.

Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance or occupancy, and make a final check and adjustment of all hardware items in such space or area. Clean and relubricate operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

Instruct Owner's personnel in proper adjustment and maintenance of hardware and hardware finishes during the final adjustment of hardware.

Continued Maintenance Service: Approximately six months after the acceptance of hardware in each area, the Installer accompanied by the representative of the latch and lock manufacturer, shall return to the project to readjust every item of hardware to restore proper function of doors and hardware. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures. Clean and lubricate operational items wherver required. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

HARDWARE MOUNTING HEIGHTS:

Mount hardware units at the following locations on each door or door opening, except as otherwise specifically indicated, or required to comply with governing regulations, and except as may be otherwise directed by the Architect.

Lowest Hinge: 10" above floor to bottom of unit.

Highest Hinge: 5" below top of door to top of unit.

Intermediate Hinges: Equally spaced between lowest and highest hinge units.

Lock and Latch Sets: Knobs centered 38" above floor.

Dead Locks: Cylinder and Turn centered 60" above floor.

Door Pull: Pull center 45" above floor, also centered 5" from edge of door, unless style dimension necessitates another location.

Push Plate: Coordinated with matcning door pull, if any, otherwise centered 48" above floor; also centered 5" from door edge, unless style dimension style necessitates another location.

Horizontal Push/Pull Bar: Bar or unit centered 42" above floor.

Exit Device Bar or Plate: Operating bar or plate centered 42" above floor.

Bolts, Head and Sill: Operating device cenetred not more than 72" above floor.

Special Pulls and Other Special Units: Units mounted at height recommended by manufacturer.

END OF SECTION 8S1.

FALLS TOWNSHIP WATERFRONT PARK - PHASE II

SECTION 9D1 - GYPSUM DRYWALL

GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements apply to the work specified in this section.

DESCRIPTION OF WORK:

The types of work include:

Gypsum drywall directly applied to solid (continuous) substrates.
Gypsum drywall applied to wood framing and furring.
Drywall finishing (joint tape-and-compound treatment).

Wood Framing and Furring are specified in Division 6.

QUALITY ASSURANCE:

Fire-Resistance Rating: Where gypsum drywall systems with fire-resistance ratings are indicated or are required to comply with governing regulations, provide materials and installations identical with applicable assemblies which have been tested and listed by recognized authorities, including UL and AIA.

Comply with FM "Approval Guide" where applicable.

Manufacturer: Obtain gypsum board products from a single manufacturer, or from manufacturers recommended by the prime manufacturer of gypsum boards.

REFERENCES:

Gypsum Board Standard: Comply with applicable requirements of ANSI/ASTM C 840 for application and finishing of gypsum board, unless otherwise indicated.

Gypsum Board Terminology Standard: GA-505 by Gypsum Association.

SUBMITTALS:

Product Data: Submit manufacturer's product specifications and installation instructions for each gypsum drywall component, including other data as may be required to show compliance with these specifications.

PRODUCT HANDLING:

Deliver, identify, store and protect gymsum drywall materials to comply with referenced standards.

JOB CONDITIONS:

Environmental Conditions: Comply with referenced standards.

PRODUCTS

ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

Gypsum Board and Related Products:

The Celotex Corporation
The Flintkote Company
Georgia-Pacific Corp.
Gold Bond Building Products Div. National Gypsum Co.
United States Gypsum Co.

GYPSUM BOARD:

Gypsum Wallboard: ASTM C 36, of types, edge configuration and thickness indicated; in maximum lengths available to minimize end-to-end butt joints.

Type: Type X for fire-resistant rated assemblies and where indicated.

Edges: Tapered.

Thickness: 5/8", except where otherwise indicated.

Water Resistant Backing Board: ASTM C 630, with tapered edges and of type and thickness indicated; in maximum lengths available to minimize end-to-end butt joints.

Type: Type X for fire-resistant rated assemblies and where indicated.

Thickness: 5/8", except where otherwise indicated.

TRIM ACCESSORIES:

General: Provide manufacturer's standard trim accessories of types indicated for drywall work, formed of galvanized steel unless otherwise indicated, with either knurled and perforated or expanded flanges for nailing or stapling, and beaded for concealment of flanges in joint compound. Provide corner beads, L-type edge trim-beads, U-type edge trim-beads, special L-kerf-type edge trim-beads, and one-piece control joint beads.

Semi-Finishing Type: Manufacturer's standard trim units which are not to be finished with joint compound (non-beaded).

JOINT TREATMENT MATERIALS:

General: ASTM C 475; type recommended by the manufacturer for the application indicated, except as otherwise indicated.

Joint Tape: Perforated type.

Joint Compound: Ready-mixed vinyl-type for interior use.

Grade: 2 separate grades; one specifically for bedding tapes and filling depressions, and one for topping and sanding.

Joint Compound: On interior work provide chemical-hardening-type for bedding and filling, ready-mixed vinyl-type for topping.

Water-Resistant Joint Compound: Special water-resistant type for treatment of joints, fastener heads and cut edges of water-resistant backing board.

Available Product: Sheetrock Brand W/R Compound; United States Gypsum Co.

MISCELLANEOUS MATERIALS:

General: Provide auxiliary materials for gypsum drywall work of the type and grade recommended by the manufacturer of the gypsum board.

Laminating Adhesive: Special adhesive or joint compound specifically recommended for laminating gypsum boards.

Fastening Adhesive (for Wood): ASTM C 557.

Gypsum Board Screws: Comply with ASTM C 646.

Building Paper: No. 15 asphalt felt.

Acoustical Sealant: Water base type, non-drying, non-bleeding, non-staining type; permanently elastic, as recommended by gypsum board manufacturers for application indicated.

Sound Attenuation Blankets: FS HH-I-521, Type I; semi-rigid mineral fiber blanket without membrane; Class 25 flame spread, K value of 0.25; as indicated.

EXECUTION

INSTALLATION OF METAL SUPPORT SYSTEMS:

Do not bridge building expansion joints with support system, frame both sides of joints with furring and other support as indicated.

Screw furring members to wood framing as indicated.

Ceiling Support Suspension Systems:

Secure hangers to structural support by connecting directly to structure where possible, otherwise connect to inserts, clips or other anchorage devices or fasteners as indicated.

Space main runners 4'-0" o.c. and space hangers 4'-0" o.c. along runners, except as otherwise shown.

Level main runners to a tolerance of 1/4" in 12'-0", measured both lengthwise on each runner and transversely between parallel runners.

Wire-tie or clip furring members to main runners and to other structural supports as indicated.

Direct-Hung Metal Support System: Attach perimeter wall track or angle wherever support system meets vertical surfaces. Mechanically join support members to each other and butt-cut to fit into wall track.

Space furring member 16" o.c., except as otherwise indicated.

Install auxiliary framing at termination of drywall work, and at openings for light fixtures and similar work, as required for support of both the drywall construction and other work indicated for support thereon.

Wall/Partition Support Systems:

Install supplementary framing, blocking and bracing to support fixtures, equipment, services, heavy trim, furnishings and similar work which cannot be adequately supported on gypsum board alone.

Install runner tracks at floors, ceilings and structural walls and columns where gypsum drywall stud system abuts other work, except as otherwise indicated.

Extend partition stud system through ceilings and elsewhere as indicated to the structural support and substrate above the ceiling.

Space studs 16" o.c., except as otherwise indicated.

Frame openings other than door openings in same manner as required for door openings; and install framing below sills of openings to match framing required above door heads.

Space wall furring members 16" o.c., except as otherwise indicated.

Install supplementary framing, runners, furring, blocking and bracing at opening and terminations in the work, and at locations required to support fixtures, equipment, services, heavy trim, furnishings and similar work which cannot be adequately supported directly on gypsum board alone.

Install insulation and supplementary framing as indicated for wall/partitions support systems.

GENERAL GYPSUM BOARD INSTALLATION REQUIREMENTS:

Pre-Installation Conference: Meet at the project site with the installers of related work and review the coordination and sequencing of work to ensure that everything to be concealed by gypsum drywall has been accomplished, and that chases, access panels, openings, supplementary framing and blocking and similar provisions have been completed.

Install sound attenuation blankets as indicated, prior to gypsum board unless readily installed after board has been installed.

Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 1'-0" in alternate courses of board.

Install ceiling boards in the direction and manner which will minimize the number of end-butt joints, and which will avoid end joints in the central area of each ceiling. Stagger end joints at least 1'-0".

Install wall/partition boards vertically to avoid end-butt joints wherever possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.

Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force into place.

Locate either edge or end joints over supports, except in horizontal applications or where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.

Attach gypsum board to framing and blocking as required for additional support at openings and cutouts.

Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories.

Cover both faces of wood stud partition framing with gypsum board in concealed spaces (above ceilings, etc.).

Where sound-rated drywall work is indicated (STC rating), including double-layer work and work on resilient furring, seal the work at perimeters, control and expansion joints, openings and penetrations with a continuous bead of acoustical sealant including a bead at both faces of partitions. Comply with manufacturer's recommendations for location of beads, and close off sound-flanking paths around or through the work, including sealing of partitions above acoustical ceilings.

Space fasteners in gypsum boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.

METHODS OF GYPSUM DRYWALL APPLICATION:

Single-Layer Application: Install gypsum wallboard.

On ceilings apply gypsum board prior to wall/partition board application to the greatest extent possible.

On partition/walls apply gypsum board vertically (parallel), unless otherwise indicated, and provide sheet lengths which will minimize end joints.

On partitions/walls 8'-1" or less in height apply gypsum board horizontally (perpendicular); use maximum length sheets possible to minimize end joints.

Wall Tile Base: Where drywall is base for thin-set ceramic tile and similar rigid applied wall finishes, install gypsum backing board.

At showers, tubs and similar "wet" areas, install water-resistant backing board. Apply with un-cut long edge at bottom of work, and space 1/4" above fixture lips. Seal ends, cut-edges and penetrations of each piece with water-resistant compound before installation.

Double-layer Application: Install gypsum backing board for base layer and exposed gypsum board for face layer.

On ceilings apply base layer prior to base layer applications on walls/partitions; apply face layers in same sequence. Offset joints between layers at least 10". Apply base layers at right angles to supports unless otherwise indicated.

Provide 1/2" resilient channels at 16" o.c. between layers of drywall in accordance with UL design L505.

On partitions/walls apply base layer and face layers vertically (parallel) with joints of base layer over supports and face layer joints offset at least 10" with base layer joints.

Single-Layer Fastening Methods: Apply gypsum boards to supports as follows:

Fasten with screws.

Double-Layer Fastening Methods: Apply base layer of gypsum board and face layer to base layer as follows:

Fasten both base layers and face layers separately to supports with screws.

Direct-Bonding to Substrate: Where gypsum board is indicated to be directly adhered to a substrate (other than studs, joists, furring members or base layer of gypsum board), comply with gypsum board manufacturer's recommendations, and temporarily brace or fasten gypsum board until fastening adhesive has set.

Exterior Soffits and Ceilings: Install exterior gypsum board perpendicular to supports, with end joints staggered over supports. Install with 1/4" open space where boards abut other work. Seal cut edges of each piece with water-resistant sealant before installation, and seal edges at penetration, and other cut-outs in each sheet.

Fasten with zinc-coated screws.

INSTALLATION OF DRYWALL TRIM ACCESSORIES:

General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges by nailing or stapling in accordance with manufacturer's instructions and recommendations.

Install metal corner beads at external corners of drywall work.

Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, and except where plastic trim is indicated. Provide type with face flange to receive joint compound except where semi-finishing type is indicated. Install L-type trim where work is tightly abutted to other work, and install special kerf-type where other work is kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).

Install J-type semi-finishing trim where indicated, and where exterior gypsum board edges are not covered by applied moldings.

FINISHING OF DRYWALL:

General: Apply treatment at gypsum board joints (both directions), flanges of trim accessories, penetrations, fastener heads, surface defects and elsewhere as required to prepare work for decoration. Prefill open joints and rounded or beveled edges, if any, using type of compound recommended by manufacturer.

Apply joint tape at joints between gypsum boards, except where trim accessories are indicated.

Apply joint compound in 3 coats (not including prefill of openings in base), and sand between last 2 coats and after last coat.

Water-Resistant Gypsum Board Base for Ceramic Tile: Treat joints and fasteners to comply with directions of water-resistant joint compound manufacturer.

In areas to be tiled, treat fastener heads with water-resistant joint compound. Fill tapered edges in gypsum panels with water-resistant joint compound, embed joint tape firmly and wipe off excess compound; follow immediately with a second coat of water-resistant joint compound over taping coat, being careful not to crown the joint. Fold and embed tape in all interior angles to form true angle.

In areas not to be tiled, treat fastener heads and embed tape as indicated above using water-resistant joint compound but finish with 2 coats of joint compound used for regular gypsum board work.

Regular Gypsum Board Base for Ceramic Tile: In areas to be tiled using organic adhesive, tape joints and apply 4" wide coat of joint compound.

Partial Finishing: Omit third coat (if specified) and sanding on concealed drywall work which is indicated for drywall finishing or which requires finishing to achieve fire-resistance rating, sound rating or to act as air or smoke barrier.

PROTECTION OF WORK:

Installer shall advise Contractor of required procedures for protecting gypsum drywall work from damage and deterioration during remainder of construction period.

END OF SECTION 9D1

SECTION 9G0 - TILE WORK:

GENERAL

RELATED DOCUMENTS:

The general provisions of the contract, including the General and Supplementary Conditions and General Requirements apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of tile work is shown on drawings and in schedules. The work includes ceramic mosaic tile floors and bases.

QUALITY ASSURANCE:

Manufacturing Standards: Furnish tile conforming with Standard Grade requirements of ANSI A137.1.

When using setting and grouting materials manufactured under TCA license, include identification together with formula on each container.

Provide materials obtained from only one source for each type and color of tile.

Proprietary Materials: Handle, store, mix and apply proprietary setting and grouting materials in compliance with manufacturer's instructions.

SUBMITTALS:

Manufacturer's Data, Tile Work:

For information only, submit 2 copies of manufacturer's technical information and installation instructions for all materials required, except bulk materials. Include certification and other data as may be required to show compliance with these specifications. Transmit a copy of each instruction to the Installer.

Samples, Tile Work: Submit 3 samples of each type and color of tile required, not less than 12" square on plywood or hardboard backing, and grouted. Also, submit one full-size sample of each tile accessory. Submit samples of trim and other units if requested by Architect. Review will be for color, pattern and texture only. Compliance with all other requirements is the exclusive reponsibility of the Contractor.

DELIVERY AND STORAGE:

Deliver packaged material and store in original containers with seal unbroken and labels intact until time of use, in accordance with manufacturer's instructions.

PRODUCTS

Materials:

Ceramic Mosaic Tile: Size, color, and pattern as shown, all purpose edge units. Factory mount tile onto sheets with mesh, dot, net, or other backing method.

Type: Porcelain units, with water absorption not exceeding 0.5%.

Size: 2" x 2"

Color and Pattern: As selected by the Architect from manufacturer's complete range of standard and optional colors. The Architect shall select up to four (4) different ceramic mosaic colors and patterns for use in the building.

Trim Shapes: As required for complete installation, of same materials, size, color and finish of field tile.

Portland Cement Mortar and Grout Materials: Comply with ANSI A108.1, A108.2 and A108.3.

Commercial Cement Grout: Proprietary compound of portland cement and additives factory blended to decrease shrinkage and increase moisture resistance.

Products offered by manufacturers to comply with the requirements for modified portland cement grout include the following:

Hydroment Ceramic Tile Grout; Upco Chem./USM Corp.

L & M Acid-R Grout; L & M Surco Mfg. Inc.

Metal Edge Strip: Zinc alloy or stainless steel, 1/8" wide at top edge with integral provision for anchorage to mortar bed or subslab, unless otherwise shown.

EXECUTION

INSPECTION:

Installer must examine the areas and conditions under which tile work is to be installed and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

INSTALLATION:

General: Comply with ANSI standard installation specifications A108.1 through A108.7 except as otherwise shown. Maintain minimum temperature limits and installation practices as recommended by proprietary mortar and grout materials manufacturer.

Extend tile work into recesses and under equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown. Terminate work neatly at obstructions, edges and corners without disruption of pattern or joint alignments.

Comply with the manufacturer's instructions for mixing and installation of proprietary materials.

Neutralize and seal substrates in accordance with mortar or adhesive manufacturer's instructions.

Setting Beds: Provide setting beds as shown. If not shown, provide one of the following, subject to the specified limitations.

Use portland cement mortar setting beds for floor on substrates where thickness permits.

Jointing Patterns:

Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls and trim are the same size. Layout tile work and center tile fields both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise shown.

Placement: Comply with applicable requirements of the specified standards for installation.

Portland Cement mortar set quarry tile: ANSO A108.3.

Grout:

For ceramic mosaic tile and other non-absorptive tile with joints less than 1/8" wide, use one part portland cement to one part extra fine sand.

Expansion and Control Joints: Provide where shown and as detailed on drawings, or if not shown joints to be within 40 sq. ft. for ceramic tile and 600 sq. ft. for quarry tile.

Sealants for expansion and control joints are specified in the 7T-Series.

Metal Edge Strips: Provide where shown, and where exposed edge of ceramic tile flooring is to meet carpet, wood, or other resilient floor covering.

Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

Unglazed tile mat to be cleaned with acid solutions only when permitted by the tile and grout manufacturer's printed instructions, but not sooner than 14 days after installation. Protect metal surfaces, cast iron and vitreous plumbing fixtures from effects of acid cleaning. Flush the surface with clean water before and after cleaning.

Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded or otherwise defective tile work.

Protecton: When recommended by the tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with Kraft paper or other heavy covering during the construction period to prevent damage and wear.

Prohibit all foot and wheel traffic from using tiled floors at least 3 days, preferably 7 days.

Before final inspection, remove protective coverings and rinse neutral cleaner from all tile surfaces.

END OF SECTION 9G0.

SECTION 9N0 - RESILIENT FLOORING

GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of resilient flooring and accessories is shown on the drawings and in schedules.

The types of resilient flooring and accessories include the following:

Resilient tile flooring
Resilient base for walls
Resilient edge strips

QUALITY ASSURANCE

Wherever possible, provide resilient flooring and accessories produced by a single manufacturer.

SUBMITTALS:

Manufacturer's Data; Resilient Flooring:

For information only, submit 2 copies of manufacturer's technical data and installation instructions for each type of resilient flooring and accessory. Transmit a copy of each installation instruction to Installer.

Samples; Resilient Flooring:

Submit 3 sets of samples of each type, color and finish of resilient flooring and accessory required. Provide full-size tile units and 12" square samples of sheet flooring and 6" long sample of accessory. Include full range of flooring color and pattern variation. Sample submittals will be reviewed for color, texture and pattern only. Compliance with all other requirements is the exclusive responsibility of the Contractor.

Maintenance Instructions; Resilient Flooring:

Submit 2 copies of manufacturer's written instructions for recommended maintenance practices for each type of resilient flooring and accessories.

Replacement Material; Resilient Floors:

After completion of work, deliver replacement materials to the project site, as follows:

Tile flooring, not less than one box for each 50 boxes, or fraction thereof, for each type, size, and color installed.

Furnish replacement materials from the same manufactured lot as the materials installed.

JOB CONDITIONS:

Continuously heat areas to receive flooring to 70 degrees F. for at least 48 hours prior to installation, when project conditions are such that heating is required. Maintain 70 degrees F. temperature continuously during and after installation as recommended by flooring manufacturer, but for not less than 48 hours.

PRODUCTS

COLORS AND PATTERNS:

Provide colors and patterns as selected by Architect from manufacturer's complete range standard and optional colors and patterns for each type of resilient material. The Architect shall have the option to select up to four (4) different colors and patterns for use on the project of each type of resilient material.

TILE FLOORING:

Vinyl Asbestos Tile (VAT): FS SS-T-312, Type IV, 12" x 12" x 1/8" gage.

ACCESSORIES:

Resilient Base:

Provide vinyl base complying with FS SS-W-40, Type II, with matching end stops and preformed or molded corner units, as follows:

Height: 4"

Thickness: 1/8" gage.

Style: Standard top-set cove, use with tile floors.

Resilient Edge Strips: 1/8" thick, homogenous vinyl of rubber composition, tapered or bullnose edge, color to match flooring, or as selected by Architect from standard colors available; not less than 1" wide.

Metal Edge Strips: Of width shown and of required thickness to protect exposed edge of resilient flooring. Provide units of maximum available length, to minimize number of joints.

Material: Extruded aluminum with mill finish, unless otherwise shown.

Type: Butt type metal edge strips for concealed anchorage.

Adhesives (Cements): As recommended by flooring manufacturer to suit material and substrate conditions.

EXECUTION

INSPECTION:

Installer must examine the areas and conditions under which resilient flooring and accessories are to be installed and notify the Contractor in writing of conditions

detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

PREPARATION:

Prior to laying flooring, broom clean or vacuum surfaces to be covered and inspect subfloor. Start of flooring installation indicates acceptance of subfloor conditions and full responsibility for completed work.

Use leveling compound as recommended by flooring manufacturer for filling small cracks and depressions in subfloors.

INSTALLATION:

General:

Install flooring after finishing operations, including painting, have been completed and permanent heating system is operating. Moisture content of floor, building air temperature and relative humidity must be within limits recommended by flooring manufacturer.

Place flooring with adhesive cement in strict compliance with manufacturer's recommendations. Butt tightly to vertical surfaces, thresholds, nosings and edgings. Scribe around obstructions to produce neat joints, laid tight, even, and straight. Extend flooring into toe spaces, door reveals, and into closets and similar openings.

Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.

Install flooring on covers for telephone and electrical ducts, and other such items as occur within finished floor areas.

Maintain overall continuity of color and pattern with pieces of flooring installed in these covers. Tightly cement edges to perimeter of floor around covers and to covers.

Tightly cement flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections.

Tile Floor:

Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of the room are of equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Lay tile square to room axis, unless otherwise shown.

Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged. Cut tile neatly to and around all fixtures. Broken, cracked, chipped or deformed tile are not acceptable.

Lay tile with grain in tile running in the same direction.

Accessories:

Apply resilient base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in as long lengths as practicable, with preformed corner units, or fabricated from base materials with mitered or coped inside corners. Tightly bond base to backing throughout the length of each piece, with continuous contact at horizontal and vertical surfaces.

Apply butt type metal edge strips where shown on drawings, and prior to resilient flooring. Secure units with countersunk stainless steel anchors, complying with manufacturer's recommendations.

CLEANING AND PROTECTION:

Remove any excess adhesive or other surface blemishes, using neutral type cleaners as recommended by flooring manufacturer. Protect installed flooring from damage by covering.

Finishing: After completion of project and just prior to final inspection of work, thoroughly clean floors and accessories.

Apply wax and buff, with type of wax, number of coats and buffing procedures in compliance with flooring manufacturer's instructions.

END OF SECTION 9N0

SECTION 9L1 - WOOD FLOORING

GENERAL

RELATED DOCUMENTS:

The general provisions of the contract, including the General and Supplementary Conditions and General Requirements apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of wood flooring is shown on drawings and in schedules.

Types of wood flooring required include the following:

Wood strip flooring.

Wood substrates, including sleepers, are specified in Division 6.

QUALITY ASSURANCE:

Installer: Specialized wood flooring firm with not less than 3 years successful experience in installation of types specified, and acceptable to manufacturer of wood flooring.

General Standard: Comply with recommendations of National Oak Flooring Manufacturer's Association (NOFMA).

Manufacturer: Obtain flooring of each type from single manufacturer or source, to insure match of quality, color, pattern and texture.

SUBMITTALS:

Product Data: Submit manufacturer's specifications and instructions for each type of wood flooring, including installation, storage, and finishing recommendations.

Samples: Submit sets of range samples for each type of wood flooring, including finish on 75% of each sample.

Replacement Material: After completion of work, deliver to project site not less than 2% quantity of each wood flooring material installed.

DELIVERY AND STORAGE:

Moisture Content: At time of delivery, limit average moisture content of wood flooring to 12%, with 14% maximum for any piece.

Protect wood flooring materials from excessive moisture in shipment, storage, and handling. Deliver materials in unopened bundles and store in dry place with adequate air circulation.

JOB CONDITIONS:

Do not proceed with installation of wood flooring until spaces have been enclosed and are at approximate humidity condition planned for occupancy. Condition wood for 5 days prior to start of installation by placing in spaces to receive flooring and maintaining ambient temperature between 65°F and 70°F (18°C and 21°C) before, during, and after installation.

PRODUCTS

Materials:

Wood Strip Flooring:

Species, Grade, and Cut: Provide the following wood wherever strip type flooring is indicated:

Species: White Oak.
Grade: Select.
Cut: Plain Sawn.

Comply with NOFMA grading rules for above species, grade and cut.

Matching: Tongued-and-grooved and end-matched.

Back Channeling: Provide manufacturer's standard channeling on back face of each strip.

Thickness: 25/32".

Face Width: 3-1/4".

Lengths: Provide standard random length strips, complying with applicable grading rules.

Seasoning: Manufacture wood strip flooring from kiln-dried lumber.

Accessory Materials for Wood Flooring:

Asphalt Saturated Felt: 15 lb. type, ASTM D 226.

Fasteners: As recommended by manufacturer, but not less than recommended by NOFMA in "Installation Manual."

Stain: Penetrating type non-fading wood stain of color selected by Architect.

Floor Sealer: Penetrating type, pliable, wood-hardening finish/sealer.

Penetrating Seal #21 by Hillyard Chemical Co.

Penetrating Triple XXX Seal-O-San by Huntington Laboratories, Inc.

Or equivalent sealer as recommended by flooring manufacturer.

Floor Varnish: Alkyd resin varnish, specially compounded for floor finish; FS TT-V-109.

Floor Wax: Liquid, solvent-type, slip-resistant, FS P-W-158, Type 1, Class 2.

Cork Expansion Strip: Composition cork expansion strip FS HH-C-576, Type I-B, Class 2.

Wood Trim: Where indicated to match wood flooring, provide wood base board molding, and base shoe molding of same species and grade as wood flooring.

EXECUTION

INSPECTION:

Installer must examine substrates on which wood flooring will be installed and conditions under which work will be performed and must notify the Contractor in writing of conditions detrimental to the proper and timely completion and maintenance of wood flooring. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

INSTALLATION:

General: Comply with flooring manufacturer's instructions and recommendations, but not less than recommended by NOFMA in "Hardwood Flooring Installation Material" and by recommendations of APA, Inc. as applicable to type flooring required.

Pattern: Comply with direction for laying wood flooring, if not shown, as directed by Architect.

Expansion Space: Provide expansion space at walls and other obstructions and terminations of flooring, not less than 1/2" unless otherwise shown on drawings. Unless fully concealed by trim, fill expansion space with flush cork expansion strip.

Nail shoe molding or other trim to baseboard, rather than to flooring.

Laying Wood Strip Flooring:

Blind nail flooring to substrate in accordance with NOFMA recommendations.

Use only screw type flooring nails.

Felt Underlayment: Where strip flooring nailed directly to subflooring, install flooring over layer of asphalt saturated felt.

SANDING AND FINISHING:

Machine sand installed unfinished flooring to remove offsets and non-level conditions, ridges, cups, and sanding machine marks which would be visually noticeable after finishing. Use 3 grades of sandpaper, ending with 00 grade. Vacuum clean and immediately apply finish. Do not permit traffic on floor after sanding and until finish is completed. Cover sanded floor with building paper to provide access for application of first finish coats.

Apply stain to match approved sample.

Apply floor sealer (2 coats) in accordance with manufacturer's instructions, including machine buffing with steel wool, in-the-wet where recommended by manufacturer.

Apply floor varnish (3 coats) in accordance with manufacturer's instructions, buffing after each coat.

Wax and buff completed finish before permitting traffic.

PROTECTION:

Institute procedures required for protection of finished wood flooring during the remainder of construction period, so that flooring and finish will be without damage or deterioration at time of acceptance.

END OF SECTION 9L1.

SECTION 9T0 - PAINTING

GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of painting work is shown on the drawings and schedules, and as herein specified.

The work includes painting and finishing of interior and exterior exposed items and surfaces throughout the project, except as otherwise indicated.

Surface preparation, priming and coats of paint specified are in addition to shop priming and surface treatment specified under other sections. of the work.

The work includes field painting of exposed bare and covered pipes and ducts (including color coding), and of hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under the mechanical and electrical work, except as otherwise indicated.

"Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.

Paint all exposed surfaces whether or not colors are designated in "schedules" except where the natural finish of the material is specifically noted as a surface not to be painted. Where items or surfaces are to specifically mentioned, paint these the same as adjacent similar materials or areas. If color or finish is not designated, the Architect will select these from standard colors available for the materials systems specified.

PAINTING NOT INCLUDED:

The following categories of work are not included as part of the field-applied finish work, or are included in other sections of these specifications.

Shop Priming:

Unless otherwise specified, shop priming of ferrous metal items is included under the various sections for structural steel, miscellaneous metal, hollow metal work, and similar items. Also, for fabricated components such as architectural woodwork, wood casework, and shop-fabricated or factory built mechanical and electrical equipment or accessories.

Concealed Surfaces:

Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas and pipe spaces.

Finished Metal Surfaces:

Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, unless otherwise indicated.

Operating Parts and Labels:

Moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts will not require finish painting, unless otherwise indicated.

Do not paint over any code-required labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

SUBMITTALS:

Manufacturer's Data, Painting:

For information only, submit 2 copies of manufacturer's technical information including paint label analysis and application instructions for each material proposed for use. Transmit a copy of instructions for each material proposed for use. Transmit a copy of each manufacturer's instructions to the paint Applicator.

Samples, Painting:

Submit samples for Architect's review of color and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor. Provide a listing of the material and application for each coat of each fin ish sample.

On 12" x 12" hardboard, provide two samples of each color and material, with texture to simulate actual conditions. Resubmit each sample as requested until acceptable sheen, color, and texture is achieved.

On actual wood surfaces, provide two 4" x 8" samples of each natural and stained wood finish as required. Label and identify each as to location and application.

DELIVERY AND STORAGE:

Deliver all materials to the job site in original, new and unopened packages and containers bearing manufacturer's name and label, and the following information:

Name of title of material.
Fed. Spec. number, if applicable.
Manufacturer's stock number and date of manufacturer.
Manufacturer's name.
Contents by volume, for major pigment and vehicle constituents.
Thinning instructions.
Application instructions.
Color name and number.

JOB CONDITIONS:

Apply water-base paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 50 degrees F. and 90 degrees F. unless otherwise permitted by the paint manufacturer's printed instructions.

Apply solvent-thinned paints only when air temperature of surfaces to be painted and the surrounding air temperatures are between 45 degrees F. and 95 degrees F. unless otherwise permitted by the paint manufacturer's printed instructions.

Do not apply paint in snow, rain, fog or mist; or when the relative humidity exceeds 85%, or to damp or wet surfaces; unless otherwise permitted by the paint manufacturer's printed instructions.

Painting may be continued during inclement weather only if the areas and surfaces to be painted are enclosed and heated within the temperature limits specified by the paint manufacturer during applications and drying periods.

PRODUCTS

COLORS AND FINISHES:

Paint color surface treatments, and finishes, are indicated in the "schedules" of the contract documents.

Prior to beginning work, the Architect will furnish color chips for surfaces to be painted.

Use representative colors when preparing samples for review.

Color Pigments: Pure, non-fading, applicable types to suit the substates and services indicated.

Paint Coordination: Provide finish coats which are compatible with prime paints used. Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information on characteristics of finish materials proposed for use, to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and reprime as required. Notify the Architect in writing of any anticipated problems using specified coating systems with substrates primed by others.

MATERIAL QUALITY:

Provide the best quality grade of the various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying the manufacturer's identification as a standard, best-grade product will not be acceptable.

Proprietary names used to designate colors or materials are not intended to imply that products of the named manufacturers are required to the exclusion of equivalent products of other manufacturers.

Federal Specifications establish the minimum acceptable quality for paint materials. Provide a written certification from the paint manufacturer that materials provided meet or exceed these minimums.

Manufacturer's products which comply with the coating qualitative requirements of applicable Federal Specifications, yet differ in quantitative requirements, may be considered for use only when acceptable to the Architect. Furnish material data and manufacturer's certificate of performance to the Architect for any proposed substitutions.

Provide undercoat paint produced by the same manufactuer as the finish coats. Use only thinners approved by the paint manufacturer, and use only within recommended limits.

EXTERIOR PAINT SYSTEM:

Provide the following finish coating systems for the various substrates as shown on the finish schedule and herein specified.

Metals: Exterior metals requiring painting includes the following, but is not necessarily limited to the following:

Hollow metal doors and frames.
Handrails.
Metal facias, gutters and leaders.
All mechanical equipment on roof which is not factory finished.

Semi-Gloss Alkyd Enamel:

1st Coat, ferrous metals: Red lead pigmented primer (TT-P-86, Type III)
1st Coat, zinc coated metals; Zinc dust-zinc oxide primer (TT-P-641).
1st Coat, aluminum: Zinc chromate primer (TT-P-645)
2nd Coat, Semi-Gloss alkyd enamel (TT-E-529, Class A)
3rd Coat, Semi-Gloss alkyd enamel (TT-E-529, Class A)

Painted Wood: Exterior wood requiring painting includes the following, but not necessarily limited to the following:

Wood trim.
Wood soffits.

Flat Acrylic Emulsion:

1st Coat, Primer undercoat (TT-P-25)
2nd Coat, Acrylic emulsion (TT-P-19)
3rd Coat, Acrylic emulsion (TT-P-19)

Stained Shingles:

1st Coat, Semi-transparent stain
2nd coat, Semi-transparent stain

INTERIOR PAINT SYSTEMS

Provide the following finish coating systems for the various substrates as shown on the finish schedule and herein specified.

Gypsum Drywall: Apply to the following interior surfaces.

Gypsum drywall system walls, ceilings and soffits.

Flat Acrylic Emulsion:

1st Coat, gypsum drywall: Latex primer (TT-P-650)
2nd Coat, Acrylic emulsion (TT-P-19)
3rd Coat, Acrylic emulsion (TT-P-19)

Metals: Apply to the following interior surfaces:

Metal doors and frames.
Metal railing.
Miscellaneous metal surfaces and trim.
Exposed surfaces of metal louvers and grilles.
Exposed ductwork.
Exposed mechanical and electrical items.
Exposed piping.
Access doors and frames.

Semi-Gloss Enamel:

1st Coat, ferrous metals: Red lead primer (TT-P-86)
1st Coat, zinc coated metals: zinc dust-zinc oxide primer (TT-P-641)
2nd Coat, Enamel undercoater (TT-E-543)
3rd Coat, Semi-gloss enamel (TT-E-509)
Not less than 2.5 mils dry film thickness

Painted Woodwork: Apply to the following interior surfaces.

Wood trim.
Miscellaneous exposed woodwork and plywood.

Semi-Gloss:

1st Coat, Enamel undercoat (TT-E-543)
2nd Coat, Semi-gloss enamel (TT-E-509)
3rd Coat; Semi-gloss enamel (TT-E-509)

Natural Wood

All interior wood not indicated to receive paint finish, including but not necessarily limited to the following:

Wood trusses
Wood sills
Wood trim

Phenolic Tung Oil - Modified Linseed Oil:

1st coat, Benjamin Moore and Co. "088 Moorwood Penetrating Clear Wood Finish" or approved equal.
2nd Coat, same as 1st, to be applied, "Wet on Wet."

EXECUTION

INSPECTION:

Applicator must examine the areas and conditions under which painting work is to be applied and notify the Contractor in writing of conditions detrimental to the proper and

timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Applicator.

Starting of painting work will be construed as the Applicator's acceptance of the surfaces and conditions within any particular area.

Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to the formation of a durable paint film.

SURFACE PREPARATION:

General: Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified, for each particular substrate condition.

Remove all hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for the complete painting of the items and adjacent surfaces. Following completion of painting of each space or area, reinstall the removed items by workmen skilled in the trades involved.

Clean surfaces to be painted before applying paint or surface treatment. Remove oil and grease prior to mechanical cleaning. Program the cleaning and painting so that contaminants from the cleaning process will not fall onto wet, newly-painted surfaces.

Wood:

Clean wood surface to be painted of all dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view, and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer, before application of the priming coat. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.

Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends, faces, undersides, and backsides of such wood, including cabinets, counters, cases, paneling, etc.

Ferrous Metals:

Clean, ferrous surfaces, which are not galvanized or shop coated, of oil, grease, dirt, loose mills cale and other foreign substances by solvent or mechanical cleaning.

Touch-Up shop applied prime coats wherever damaged or bare, where required by other sections of these specifications. Clean and touch-up with the same type shop primer.

Galvanized Surfaces:

Clean free of oil and surface contaminants with an acceptable non-petroleum based solvent.

MATERIALS PREPARATION:

Mix and prepare painting materials in accordance with manufacturer's directions.

Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.

Stir materials before application to produce a mixture of uniform density, and stir as required, during the application of the materials. Do not stir surface film into the material. Remove the film and if necessary, strain the material before using.

APPLICATION:

General:

Apply paint in accordance with the manufacturer's directions. Use applicators and techniques best suited for the substrate and type of material being applied.

Apply additional coats when undercoats, stains or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance. Give special attention to insure that all surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.

Paint interior surfaces of ducts where visible through registers or grilles, with a flat, non-specular black paint.

Paint the back sides of access panels, and removable or hinged covers to match the exposed surfaces.

Finish exterior doors on tops, bottoms and side edges the same as the exterior faces, unless otherwise indicated.

Sand lightly between each succeeding enamel coat.

Omit the first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unelss otherwise indicated.

Scheduling Painting:

Apply the first-coat material to surfaces that have been cleaned, pretested or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and the application of another coat of paint does not cause lighting or loss of adhesion of the undercoat.

Minimum Coating Thickness:

Apply each material at not less than the manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.

CLEAN-UP AND PROTECTION:

Clean-up: During the progress of the work, remove from the site all discarded paint materials, rubbish, cans and rags at the end of each work day.

Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to the Architect.

Provide "Wet Paint" signs as required to protect newly painted finishes. Remove temporary wrappings provided by others for protection of their work, after completion of painting operations.

At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

END OF SECTION 9T0

SECTION 10A1 - METAL TOILET PARTITIONS

GENERAL

RELATED DOCUMENTS

The general provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of metal toilet partition work is shown on the drawings.

The types of metal toilet partitions include the following:

Overhead-braced partitions.

The work includes overhead braced shower partitions to be constructed of the same materials as the overhead braced toilet partitions.

QUALITY ASSURANCE:

Field Measurements:

When possible, take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting of the work. Otherwise, indicate field measurements on final shop drawings.

Inserts and Anchorages:

Furnish inserts and anchoring devices which must be built into other work for the installation of toilet partitions and related work. Coordinate delivery with other work to avoid delay.

Manufacturers offering products to comply with the requirements for metal toilet partitions include the following:

Global Steel Products Corp.
Knickerbocker Partition Corp.
Metpar Steel Products Corp.
Mills Metal Compartment Co.
Sanymetal Products Co.

SUBMITTALS:

Manufacturer's Data, Metal Toilet Partitions:

For information only, submit 2 copies of manufacturer's detailed technical data for materials, fabrication and installation. Include catalog cuts of hardware, anchors, fastenings, and accessories. Transmit copy of each instruction to the Installer.

Shop Drawings, Metal Toilet Partitions:

Submit shop drawings for the fabrication and erection of toilet partition assemblies which are not fully described in manufacturer's data. Show all anchorage and accessory items.

Submit setting drawings, templates, and instructions for the installation of anchorage devices built in other work.

Samples, Metal Toilet Partitions:

Submit 3 samples, of each required metal finish and color. Prepare samples on the same metal which will be used in the partition assemblies. Samples will be reviewed for color, texture and surface reflectivity only. Compliance with all other requirements is the exclusive responsibility of the Contractor.

PRODUCTS

MATERIALS:

Provide materials which have been selected for their surface flatness and smoothness. Exposed surfaces which exhibit pitting, seam marks, roller marks, stains, discoloration, or other surface imperfections on the finished units are not acceptable.

Steel Sheets for Baked Enamel Finish: ASTM A 591, Class C. galvanized-bonderized, of the following minimum thicknesses:

Pilasters (overhead braced): 0.0359" (20 gage).

Panels and Screens: 0.0359" (20 gage).

Doors: 0.0299" (22 gage).

Concealed Reinforcement for Anchorages: 0.1046" (12 gage).

Concealed Reinforcement for Tapping: 0.0747" (14 gage).

Door, Panel, Screen, and Pilaster Core: Manufacturer's standard sound-deadening, double-faced honeycomb, impregnated Kraft paper.

Pilaster Shoes: ASTM A 167, Type 302/304 stainless steel, as follows:

Height: 3", unless otherwise indicated.

Thickness: Not less than 0.0319" (20 gage).

Finish: To match hardware.

Stirrup Brackets: Manufacturer's standard design for attaching panels to walls and pilasters, as follows:

Chromium plated non-ferrous cast alloy, to match hardware finish.

Hardware and Accessories: Manufacturer's standard design, heavy duty operating hardware and accessories, as follows:

Chromium plated brass with polished finish.

Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or brass, finished to match hardware. Use theft-resistant (one-way) type heads and nuts for exposed anchorages.

For concealed anchors use hot-dip galvanized, cadmium-plated, or other rust-resistant protective-coated steel.

FABRICATION:

General: Furnish standard doors, panels, screens, and pilasters fabricated for the partition system, unless otherwise indicated.

Pressure laminate face sheets to core material with waterproof adhesive, with a continuous interlocking strip or with lapped and formed edges. Weld edges and corners, with exposed welds ground smooth.

Furnish units with cut-outs, drilled holes, and internal reinforcement to receive partition mounted hardware, accessories, and grab bars, as indicated.

Panel and Door Dimensions: Not less than 1" thick units, unless otherwise indicated.

Furnish 24" wide doors, unless otherwise indicated.

Furnish 32" wide (clear opening), swing out doors at stalls for use by the handicapped, unless otherwise indicated.

Furnish complete with anchorages and supporting framework for installation in other work.

Overhead-Braced Pilasters: Not less than 1-1/4" thick units, with galvanized steel floor supports and leveling bolts. Furnish floor supports as recommended by partition manufacturer to suit floor conditions. Fabriate overhead brace from a continuous extruded aluminum tube, fully enclosed anti-grip design with clear anodized finish, unless otherwise indicated. Set and secure the brace into the top of each pilaster. Furnish shoes at each pilaster.

Entrance Screens: Same construction and finish, supports and anchorages, and hardware and fasteners to match compartment units. Furnish door pulls, keepers, and push plates, unless otherwise shown.

Hardware: Furnish hardware for each compartment in the partition system, as follows:

Hinges: Cutout inset type, adjustable to hold door open at any angle up to 90 degrees; either gravity type, or spring-action cam type, or concealed torsion rod type, to suit manufacturer's standards.

Latch and Keeper: Recessed latch unit, with combination rubber-faced door strike and keeper, designed for easy emergency access.

Coat Hook: Manufacturer's standard unit, combination hook-bumper.

Door Pulls: Manufacturer's standard unit.

Push Plate: Surface mounted, for entrance screen unit door only.

Accessories: All units chromium-plated finish, unless otherwise indicated. Apply the following accessory units to partition panels and doors, one each compartment unless otherwise indicated.

Dual roll toilet paper holder.

Baked Enamel Finish: After fabrication and before applying enamel coating system, clean the galvanized steel surfaces to remove processing compounds, oils and other contaminants.

Prime the metal with a baked-on rust-inhibiting primer.

Apply two finish coats of thermosetting enamel, applied by the electrostatic process, and baked in accordance with the paint manufacturer's instructions.

Color: Four (4) of the manufacturer's standard and optional (custom) colors as selected by the Architect.

EXECUTION

INSPECTION:

Installer must examine the areas and conditions under which toilet partitions and related items are to be installed and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

INSTALLATION:

General: Install partitions rigid, straight, plumb and level, with the panels laid out as shown. Provide clearances of not more than 1/2" between pilasters and panels, and not more than 1" between panels and walls. Secure panels to walls with not less than two stirrup brackets attached near top and bottom of the panel. Secure panels to supporting walls with manufacturer's recommended anchoring devices, as shown on final shop drawings or in manufacturer's instructions.

Overhead-Braced Partitions: Secure pilaster to the supporting floor with the specified anchorage device. Level, plumb, and tighten the installation with the leveling device. Secure the overhead brace to face sheets with not less than two fasteners per face. Adjust tops of doors parallel with the overhead brace when doors are in the closed position.

Hardware Adjustments: Adjust and lubricate hardware for proper operation after installation.

Set hinges on in-swing doors to hold open approximately 30 degrees from the closed position when unlatched.

Set hinges on out-swing doors and entrance swing doors, if any, to return to the fully closed position.

Protection, Cleaning and Final Adjustments: Protect units so that there will be no indication of use or damage at the time of acceptance.

Perform final adjustments to pilaster leveling devices, door hardware, and other operating parts of the partition assembly just prior to final inspection. Clean exposed surfaces of partitions, hardware, fittings and accessories, and touch up minor scratches and other finish imperfections using materials and methods recommended by the partition manufacturer.

Replace damaged units which cannot be satisfactorily field repaired, as directed by Architect.

END OF SECTION 10A1.

SECTION 10B1 - TOILET ACCESSORIES

GENERAL

RELATED DOCUMENTS:

The general provisions of the contract, including General and Supplementary Conditions, and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

Provide toilet accessories as shown on the drawings and herein specified. Installation by appropriate trade.

The type of toilet accessories required include the following:

Paper towel dispenser and waste receptacles (PTD/WR)
Feminine napkin dispensers (FND)
Feminine napkin disposal units (FNDU)
Toilet tissue dispensers (TTD)
Grab bars (GB)
Liquid soap dispensers (SD)
Wall Mirror Units (MU)

QUALITY ASSURANCE:

Inserts and Anchorages:

Furnish inserts and anchoring devices which must be set into stud framing for the installation of toilet accessories. Provide setting drawings templates, instructions and directions for installation of anchorage devices. Coordinate delivery with other work to avoid delay.

Products:

Provide products of the same manufacturer for each type of accessory unit and for units exposed in the same areas, wherever possible.

Coordinate with the Architect for acceptable designs and finishes.

Stamped names or labels on exposed faces of units will not be permitted, except where otherwise specified.

Provide locks where specified, with the same keying for all accessory units in the project wherever possible.

Manufacturers offering products to comply with the requirements for the accessories include the following:

Accessory Specialties, Inc.
Bobrick Washroom Equip., Inc.
Bradley Corp.

SUBMITTALS:

Manufacturer's Data: Toilet Accessories:

For information only, submit 2 copies of manufacturer's specifications and installation instructions for each toilet accessory. Indicate by transmittal form that copy of installation instructions have been distributed to the Installer.

Samples, Toilet Accessories:

When requested, submit full-size samples of units to Architect for review of color and finishes. Acceptable samples will be returned and may be used in the work. Compliance with all other requirements is the exclusive repsonsibility of the Contractor.

PRODUCTS

MATERIALS:

Stainless Steel: AISI, Type 302/304.

Provide No. 4 polished finish, unless otherwise specified.

Brass: Cast or forged quality alloy, FS WW-P-541.

Sheet Steel: Cold rolled, commercial quality, ASTM A 366. Surface preparation and metal pretreatment as required for applied finish.

Chromium Plating: Nickel and chromium electro-deposited on metal, ASTM B456, Type SC 2.

Baked Enamel Finish: Factory applied, gloss white, baked acrylic enamel coating.

Galvanized Steel Mounting Devices: Hot-dip galvanized after fabrication ASTM A 386.

Mirror Glass: FS DD-G-451, Type I, Class 1, Quality q2, ¼" thick tempered, with silver coating, copper protective coating, and non-metallic paint coating.

PAPER TOWEL DISPENSERS (PTD):

General: Provide paper towel dispensers, as shown on the drawings. Unless otherwise shown or specified, provide recessed units.

PAPER TOWEL DISPENSER AND WASTE RECEPTACLE (PTD/WR):

General: Provide combination paper towel dispenser and waste receptacles as shown on the drawings. Fabricate units of not less than 0.031" thick stainless steel, all welded construction without mitered corners. Unless otherwise shown or specified, provide recessed units.

Recessed Paper Towel Dispenser and Waste Receptacles (PTD/WR-1): Size to dispense not less than 500 c-fold or 800 multi-fold paper towels with interchangeable paper drop. Fabricate dispensers to be recessed in a wall opening of 4" nominal depth. Hang dispenser doors with a concealed, full length stainless steel piano hinge, and provide a tumbler-lockset. Fabricate removable 8" deep, (extending 4" from wall), 12 gallon waste container with seamless exposed walls, continuous welded bottom pan, and hemmed edges. Provide heavy duty vinyl removable liner, secured to receptacle at not less than 4 points with grommet holes hung from stainless steel hooks.

Recessed Paper Towel Dispenser and Waste Receptacle (PTD/WR-2): Size to dispense 100 C-fold towels or 200 multi-fold paper towels with interchangeable paper drop. Fabricate to be recessed in a wall opening of 4" nominal depth. Hang dispenser doors with concealed, full length stainless steel piano hinge and provide tumbler lock set. Removeable 1.25 gallon stainless steel waste receptacle.

FEMININE NAPKIN DISPENSERS (FND):

General: Provide dual feminine napkin and tampon where shown on the drawings, size to dispense not less than 17 feminine napkins and 26 tampons, unless otherwise shown. Fabricate cabinets from not less than 0.031" thick stainless steel, with all welded construction, and doors of not less than 0.050" thick stainless steel with returned edges for maximum rigidity. Hang door with a full length stainless steel piano hinge, and provide a tumbler lockset. Brand name advertising will not be allowed. Provide the words "Napkins" and "Tampons" at coin slot controlling each dispensing mechanism. Provide recessed units for 4" nominal depth openings.

Operation: Provide the following for napkin and tampon dispensing operation:

10-cent coin operation, with locked coin box keyed separately from door and from other washroom accesories.

FEMININE NAPKIN DISPOSAL UNITS (FNDU):

General: Provide feminine napkin disposal units of sizes shown on the drawings. Provide one unit per female toilet; use partition mounted units wherever possible unless otherwise shown.

Fabricate disposal units from not less than 0.031" thick stainless steel.

Partition Mounted Feminine Napkin Disposal Units: Fabricate units for a semi-recessed installation for servicing 2 toilet compartments, with flange of one-piece seamless construction without mitered corners. Provide self closing doors equipped with a full length stainless steel piano hinge, and emboss doors with the words "Napkin Disposal" and "Push". Construct cabinet and receptacle of all-welded stainless steel. Provide a recessed stainless steel finger grip on one side for servicing receptacle.

TOILET TISSUE DISPENSERS (TTD):

General: Provide toilet tissue dispensers where shown on the drawings. Provide one dispenser per toilet. Mount to toilet partition where possible unless otherwise shown.

Double Roll Toilet Tissue Dispensers (TTP): Provide 18 gauge satin chrome plate steel, surface mounted units, concealed wall anchorage, accommodate two standard core tissue rolls, controlled delivery tension spring to prevent free un-rolling of paper, and locking mechanism to prevent removal of roll until entirely used.

GRAB BARS (GB):

General: Provide grab bars where shown on the drawings and as herein specified.

Stainless Steel Grab Bars: Provide stainless steel grab bars as follows:

Mounting: Exposed, with manufacturer's standard flanges and anchorages for type of installation.

Non-slip Gripping Surfaces: Peened, knurled or striated, manufacturer's standard.

Size: 1½" o.d., with wall thickness not less than 0.049", (18 gauge).

Style: Model No. B-6166.99 at handicapped toilet stalls and Model No. B-6106 x 48 at handicapped urinals as manufactured by Bobrick Washroom Equipment, Inc. or approved equal.

SOAP DISPENSERS (SD):

General: Provide recessed mounted soap dispensers, one per lavatory, unless otherwise shown or specified.

Recessed Liquid Soap Dispensers: Fabricate units of 22 gauge stainless steel welded construction seamless and burr free edges. Units to be recessed in 8-1/2" wide by 4-1/2" high wall opening. Soap vessel capacity of 46 oz., removable for filling by tumbler lock. Push in liquid soap valve.

METAL FRAMED MIRRORS:

Mirror Glass: ¼" thick, tempered safety glass with silvering, copper coating and protective organic coating complying with FS DD-M-411.

Backing: Resilient, non-absorbent filler material, with not less than 22 gauge galvanized steel backing plate, one piece construction, full height and width of mirror frame. Corrugated cardboard or other moisture absorbent filler material is not acceptable.

Construct metal backing with hanger slots for concealed "tamper proof" mounting. Provide manufacturer's standard hanger to engage with backing for concealed installation.

Stainless Steel Frames: AISI Type 302/304 with polished No. 4 finish as follows:

Use channel shapes for frames, not less than 18 gauge 0.049" stainless steel, with square corners, welded and ground smooth.

Utility Shelves: Provide shelf units where located and of size shown on drawings. Provide stainless steel shelves not less than 0.050" stainless steel, full length unit without seams, with not less than ½" edge face and all exposed edges rolled. Provide mounting brackets fabricated from not less than 16 gauge stainless steel, welded to shelf bottom. Locate brackets as recommended by shelf manufacturer.

EXECUTION:

INSPECTION:

Installer must examine the areas and conditions under which toilet accessories are to be installed. Notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

INSTALLATION:

Use concealed fastenings wherever possible.

Provide anchors, bolts and other necessary fasteners, and attach accessories securely to walls and partitions in locations as shown or directed.

Install concealed mounting devices and fasteners fabricated of the same material as the accessories or of galvanized steel.

Install exposed mounting devices and fasteners finished to match the accessories.

Provide theft-resistant fasteners for all accessory mountings.

Secure toilet room accessories to adjacent walls and partitions complying with the manufacturer's instructions for each item and each type of substrate construction, except that all fasteners shall be lead shielded expansion bolts, toggle bolts, or thru bolt fasteners with theft resistant heads. The use of plastic inserts is not permitted.

END OF SECTION 10B1.

SECTION 10E5 - CEILING ACCESS PANELS

GENERAL

RELATED DOCUMENTS:

The general provisions of the contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent, location and size of each type of access panel required is shown on the drawings and in the schedules.

QUALITY ASSURANCE:

Fire-Resistance Ratings: Wherever a fire-resistance classification is shown, or for construction where access panels are installed, provide access required door assembly with panel door, frame, hinge and latch from manufacturer listed in "Underwriters' Laboratories, Inc. "Classified Building Materials Index" for the rating shown.

Provide UL label on each access panel.

Provide raised knob-bolt operation with spring-loaded opener control mechanism.

Size Variations: Obtain Architect's acceptance of manufacturer's standard size units which may vary slightly from sizes shown or scheduled.

Manufacturers offering products to comply with the requirements for steel access panels and frames include the following:

Birmingham Ornamental Iron Co.
Karp Associates, Inc.
Milcor; Inland-Ryerson
Nystron, Inc.

Inserts and Anchorages:

Furnish inserts and anchoring devices which must be built into wood framing for installation of access panels. Provide setting drawings, templates, instructions and directions for installation of anchorage devices. Coordinate delivery with other work to avoid delay.

SUBMITTALS:

Manufacturer's Data, Access Panels:

For information only, submit 2 copies of manufacturer's specifications and installation instructions for each type of access panel required. Indicate by transmittal form that copy of each instruction has been distributed to the Installer.

PRODUCTS

MATERIALS AND FABRICATION:

General: Provide access panel assembly manufactured as an integral unit complete with all parts and ready for installation.

Steel Access Panels and Frames: Fabricate units of continuous welded steel construction, unless otherwise shown or specified. Grind welds smooth and flush with adjacent surfaces. Provide attachment devices and fasteners of the type required to secure access panels to the types of supports shown.

Frames: Fabricate from 16 gauge steel.

Provide frame with exposed flange not less than 1" wide around perimeter of frame for the following construction:

Drywall finish

For drywall applications, provide frames with exposed casing bead, welded to perimeter of frame to accept two layers of drywall.

Flush Panels: Fabricate from 14 gauge steel, with concealed spring hinges set to open to 175 degrees F. Provide removable pin type hinges of the quantity required to support the access panel sizes used in the work. Finish with manufacturer's factory-applied baked enamel prime coat applied over phosphate protective coating on steel.

Provide flush panel doors for the following types of access panels:

Exposed frame access panels

Locking Devices: Provide flush, screwdriver-operated cam locks of the number required to hold door in flush, smooth plane when closed.

Provide one cylinder lock per access door. Provide 2 keys per lock and key all locks alike, unless otherwise scheduled.

EXECUTION

INSPECTION:

Installer must examine the areas and conditions under which access panels are to be installed. Notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

INSTALLATION:

Comply with manufacturer's instructions for installation of access panels.

Coordinate installation with work of other trades.

Set frame accurately in position and securely attach to supports with face panels plumb or level in relation to adjacent finish surfaces.

Adjust hardware and panels after installation for proper operation.

Remove and replace panels or frames which are warped, bowed or otherwise damaged.

END OF SECTION 10E5.

SECTION 10F1 - FIREFIGHTING DEVICES

GENERAL

RELATED DOCUMENTS:

The general provisions of the contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

Provide firefighting devices as shown on the drawings.

QUALITY ASSURANCE:

Unless otherwise acceptable to the Architect, furnish firefighting devices and accessories by only one manufacturer.

Provide colors and finishes of materials for firefighting devices as shown on the drawings or, if not shown, as selected by the Architect from manufacturers standard colors.

Manufacturer's offering products to comply with the requirements for firefighting devices include the following:

W.D. Allen Mfg. Co.
Casco Products Corp.
Elkhart Brass Mfg. Co., Inc.
General Fire Extinguisher Corp.
J.L. Industries Div. of J.N. Johnson Co.
Larsens Mfg. Co.
Norris Industries
Potter-Roemer, Inc.
Seco Mfg. Co.

SUBMITTALS:

Manufacturer's Data; Firefighting Devices:

For information only, submit 2 copies of manufacturer's specifications and installation instructions for all firefighting devices required. Indicate by transmittal that copy of each instruction has been transmitted to the Installer.

PRODUCTS

FIRE EXTINGUISHERS:

Provide fire extinguishers for each extinguisher cabinet and other locations as shown on the drawings. Provide only new fire extinguishers which are approved and labelled by Underwriter's Laboratories.

Provide manufacturer's standard mounting brackets for extinguishers not located in cabinets. Secure to mounting surface in accordance with manufacturer's instructions. Locate where shown on drawings, if not clearly indicated, where directed by Architect.

Multi-Purpose Dry Chemical: 20 lbs. capacity, enameled steel container with pressure-indicating gauge, for Class A, B, and C fires.

FIRE EXTINGUISHER CABINETS:

General: Provide cabinets suitable for housing one standard 2-½ gallon size fire extinguisher, unless otherwise shown on the drawings, as follows:

Recessed and semi recessed: Trim with beveled or rounded edges in contact with wall surface. Provide square corners with approximately 1-¼" wide trim, unless otherwise shown.

Metal Gauge: Provide cabinets fabricated of the following minimum equivalent steel gauges.

Box: 20 gauge

Trim Frame: 18 gauge

Tubular Door Perimeter Frame: 20 gauge

Door Panel: 16 gauge

Construction: One-piece tubular door frames, mitered and welded. One-piece metal trim frame, to suit cabinet style required. Weld all joints and grind smooth. Provide manufacturer's standard steel box with white baked enamel interior finish and primed exterior finish.

Steel Doors and Trim: Manufacturer's standard, prime coat finished, finish steel door frame and trim, style as selected by the Architect.

Doors: One of the following types, as shown (provide full glass panel if not otherwise shown).

Full-Glass Panel: Wire plate glass with catch.

Door Hardware: Continuous type hinge permitting door to open 180 degrees. Provide either lever handle with cam action latch, or door pull and friction latch.

EXECUTION

INSPECTION:

Installer must examine the substrate and conditions under which the fire fighting devices are to be installed, and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

INSTALLATION:

Install in locations and mounting heights shown. Prepare recesses in walls as required. Securely fasten to structure, square and plumb, in accordance with manufacturer's instructions.

Wherever exact locations of surface-mounted units is not shown, locate as directed by Architect.

IDENTIFICATION:

After installation is completed, apply red letter decals spelling "FIRE EXTINGUISHER". Letter size, style and location as selected by the Architect.

END OF SECTION 10F1.

SECTION 10S1 - SPECIALTY SIGNS

GENERAL

RELATED DOCUMENTS:

The general provisions of the contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

The extent of specialty signs is shown on the drawings.

SUBMITTALS:

Manufacturer's Data, Specialty Signs:

For information only submit 2 copies of manufacturer's specifications and installation instructions for each type of sign required. Indicate by transmittal that copy of each instructions has been distributed to the Installer.

Samples, Specialty Signs:

Submit 3 samples of each color and finish of exposed materials and accessories required for specialty signs. Architect's review will be for color and texture only. Compliance with all other requirements is the exclusive of specialty sign materials.

Shop Drawings, Specialty Signs:

Submit shop drawings for fabrication and erection of specialty signs. Include plans, elevations and large scale details of sign wording and lettering layout. Show anchorages and accessory items. Provide location template drawings for items supported or anchored to permanent construction.

PRODUCTS

IDENTIFICATION SYSTEMS:

Provide the following signs and identification unless otherwise shown or specified:

Individual Room Identification: Surface mount signs of the type shown, on the wall at door entrances to each toilet room indicating to each toilet room indicating "MEN" and "WOMEN" and other rooms as shown in schedules.

ENGRAVED PLATES:

General: Fabricate adhesive backed sign plates of the size and thickness shown or specified. Precision engrave the required letters, numbers and figures with uniform margins, in the letter style and size shown or, if not shown, as selected by Architect from manufacturer's standards.

Manufacturers offering products to comply with the requirements for engraved sign plates include the following:

A.C. Davenport & Son Co.
Allen Marketing Products, Inc.
Andco Industries Corp.
Architectural Signing, Inc.
Armento Architectural Arts, Inc.
Best Mfg. Co.
Design-A-Sign Co., Inc.
Engraver's Dial & Nameplate Co.
Seaboard Sign and Display, Inc.
The Southwell Co.
Spencer Industries, Inc.
The Supershine Co.
Volmar Products Inc.
Maierjohan Wengler Inc.
Zax Corp.

Aluminum: Use manufacturer's standard aluminum alloy plate stock. Hand finish edges to provide sharp, well defined units.

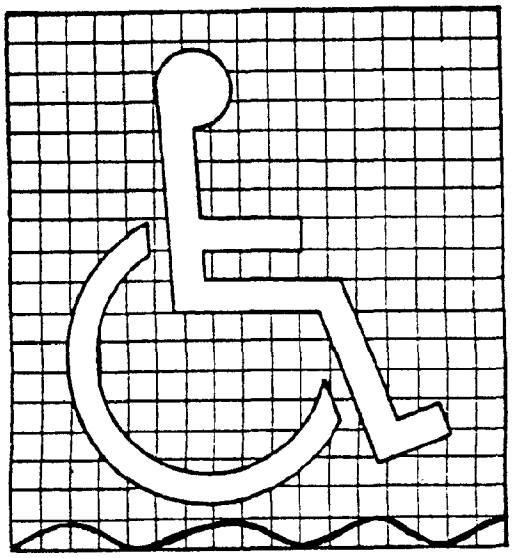
Provide satin anodized finish, AA-M31C21A31, unless otherwise indicated.

HANDICAPPED PERSONS SYMBOL ACCESSIBILITY:

The International Symbol of Accessbility shall be displayed in the following conditions.

A. At accessible entrances to a building or facility.
B. At entrances to accessible public toilet rooms if all public toilet rooms in a building are not accessible.
C. At the origins of accessible paths of travel to major publicly used spaces.
D. At parking spaces resevred for people who use wheelchairs and walking aids.
E. At elevators or wheelchair lifts provided for handicapped access.

The symbol shall be displayed as shown in Figure B.



B. Proportions

B. Display Conditions

1. Normal Size
2. Normal Color - Azure Blue & White
   Fed. Std. 595A- Color #15180
3. Alternate Color - Black & White

C. Standard 12" x 18" rust proof aluminum signs for exterior use can be obtained from Jersey Cape Diagnostic, Training and Opportunity Center, Inc., Box 31 Ocean View, New Jersey, 08230, Telephone (609) 398-1397, a non-profit organization employing the handicapped. Other sources of such signs may be obtained by telephone from Mrs. Evelyn Dolan (609) 292-0056.

INSPECTION:

Installer must examine the substrates and conditions which the specialty signs are to be installed and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until satisfactory conditions have been corrected in a manner acceptable to the Installer.

INSTALLATION:

Install sign units and components at the locations shown or scheduled, securely mounted with concealed fasteners, unless otherwise shown. Attach signs to substrates in accordance with the manufacturer's instructions, unless otherwise shown.

Install, level, plumb and at the proper height. Cooperate with other trades for installation of sign units to finish surfaces. Repair or replace damaged units as directed by the Architect.

END OF SECTION 10S.

SECTION 10S3 - DEDICATORY PLAQUE

GENERAL

RELATED DOCUMENTS:

The general provisions of the contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

DESCRIPTION OF WORK:

Provide and install a cast bronze plaque, not to exceed 900 sq. in., on an interior wall at a location to be determined by the Architect. The plaque design shall be supplied by the Architect.

DESIGN: The Architect shall provide design drawings, excluding completion date, following naming of the project by the School Board. The Owner reserves the right to select either raised or engraved lettering and logos, or a combination thereof.

SUBMITTALS:

Manufacturer's Data: Submit two (2) copies of manufacturer's literature, specifications, installation instructions for approval. Include data or samples of standard and special tablet letter styles, standard borders and background surface textures and finishes for selection by Architect.

Shop Drawings: Submit shop drawings including a full-size pattern "rubbing" and details for approval prior to casting.

PRODUCTS

GENERAL:

Fabricate cast metal plaque of the size, shape and thickness shown. Provide units free of pits, scale, and sand holes or other defects, with the required raised ltters, numbers, and characters. Hand tool and buff to provide clean, sharp figures with bright finish. Provide background texture and finish as shown, or if not shown, as selected by the Architect from manufacturer's standards. Protect the exposed surfaces with 2 coats of clean, non-yellowing lacquer.

Raised lettering and logos, if any, shall be cast as an integral part of the bronze tablet. Engraved lettering and logos, if any, shall be filled with black enamel.

Use Architectural Bronze (85-5-5-5) alloy unless otherwise acceptable to the Architect.

Provide treaded rods on back of tablet for concealed fastening into grout or cement-filled holes.

Manufacturers offering products to comply with the requirements for dedicatory plaques include:

Architectural Bronze and Aluminum Corp.
Jas. H. Matthews, Inc.
Spencer Industries, Inc.
United States Bronze Sign Co., Inc.

EXECUTION

INSTALLATION:

Follow manufacturer's instructions for concealed method of fastening threaded rods mounted on back of tablet in grout or cement-filled holes in masonry wall.

END OF SECTION 10S3.

FALLS TOWNSHIP WATERFRONT PARK - PHASE II

SECTION 15A - PLUMBING

RELATED DOCUMENTS

The general provisions of the contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

WORK INCLUDED

The Contractor shall furnish all labor, materials, equipment, apparatus, tools, excavation and backfilling, paving, transportation, flashing and counterflashing, cutting and patching, storage, permits, certificates, drawings, temporary work and all other items of work necessary or required to make the Plumbing installation complete in every respect, guaranteed to be substantial, safe and ready for use and operation by the Owner.

The work shall include but is not necessarily limited to the folowing items, in view of the general understanding that a complete installation is intended:

All plumbing work inside and outside the building including complete sanitary waste system, storm drainage system, hot and cold water system and furnishing and installing all plumbing fixtures.

Connections and running of pipe to well system. (Refer to Division 2, Section 2H1.)

Furnishing and installing hot water heater.

Connections to all equipment furnished by Plumbing Contractor and to all equipment requiring plumbing, furnished by other Contractors or by Owner.

Flashing and counterflashing of all piping, drains, and other installations furnished by Plumber which pass through roof.

Sterilization and testing.

Temporary water supply for construction.

CODES AND PERMITS

All work under this contractor shall be in accordance with the latest edition of the BOCA Plumbing Code, all local, state and government codes and requirements, except where requirements of the drawings and these specifications are more stringent. Work shall be subject to inspection by the State Inspector and shall meet with his approval, as well as that of the Architect.

This Contractor shall secure all permits required for his work, shall pay all fees and other costs required, and shall obtain certificates of approval and deliver to the Owner.

MATERIAL

Cast Iron Bell and Spigot Soil Pipe shall be sound cylindrical, smooth, grey iron, free from cracks, sand holes and other defects, of uniform thickness and of the grade known as extra heavy, tested to 50 pounds hydrostatic pressure. All pipe and fittings shall bear the C-I insignia of the Cast Iron Soil Pipe Institute and words Extra Heavy.

Copper tubing shall be type "L", "K" and "DWV" hard drawn with sweat fittings.

Fittings: All fittings shall be Crane, Chase, Grinnell or approved equal of weights, materials and finish corresponding to those of the piping or as specified.

Escutcheons and Sleeves: Cast Iron escutcheons with chromium plate finish shall be provided wherever pipes pass through the floors, ceilings, walls and partitions. Caulk and seal around all pipes that pass through walls and ceilings to eliminate noise transmission and insure fire-proofing.

Valves: Shall be Kennedy, Crane, Powell, Jenkins or approved equal and shall have cast or stamped on the body the name and/or distinguishing symbol of the manufacturer and shall be rated for 125 pounds working pressure, minimum.

FIXTURES

The Contractor shall furnish and install the fixtures as hereafter specified and as shown on the drawings, together with all required fittings, supports, valves cocks, traps, etc., and shall make necessary supply, drain, soil and vent connections.

Furnish and install one hose-bibb beneath lavatories in each Toilet Room. These shall be chromium plated brass, lockshield style, loose compression type hose bibbs as manufactured by Sterling Faucet Company, or approved equal.

Deliver four (4) hydrant and four (4) hose bibb keys to the Architect.

SANITARY DRAINAGE

Complete systems of soil, waste and vent piping shall be provided to all fixtures and equipment.

Soil waste and vent lines 3" and larger shall be extra heavy cast iron; under 3" may be type DWV copper above the floor only. Vents shall be flashed and counterflashed where they open through roof with seamless 6 lb. lead roof flashing extending 12" beyond the vent in all directions. Roofing is to be made water-tight.

Cleanouts shall be installed at all changes in direction of sanitary sewer lines and minimum 50' horizontally.

Heavy wrought iron clamps shall be provided for the support of the vertical piping at each floor. All horizontal runs of cast iron piping shall have at least one support located directly in back of hub for each section of piping and fitting and at intervals of not more than five feet.

STORM DRAINAGE

Storm drainage piping outside the building may be either cast iron, as specified for sanitary drainage, or reinforced concrete piping.

EXCAVATION AND BACKFILL

All necessary excavation and backfill within and outside the building shall be included for installing the work under this section. Trenches shall be carefully excavated to the required depth, and the bottom graded and compacted to secure the maximum pitch in the

piping. The work shall be properly protected and shoring provided where necessary. Hand excavation shall be provided for bells of cast iron piping. If trenches are over excavated, clean sand shall be installed to proper level and tamped firmly prior to pipe installation.

After piping is tested, all trenches shall be backfilled with one foot of clean sand which shall be firmly tamped around the pipe, the remainder of the backfill shall be moistened and tamped in one foot layers to the grade required. No cinders or ashes are to be used on backfill.

All work shall be in accordance with the Site Work section of the specifications for General Construction in addition to the foregoing.

HOT AND COLD WATER PIPING

Install cold water and hot water supply lines to all fixtures requiring same.

All branch supplies to each fixture or piece of equipment and all branch lines to each group of fixtures shall be valved. Block valves shall be installed to allow future maintenance on lines without complete shutdown of the system.

All water lines shall be graded uniformly so that entire system can be drained, with drain valves at all low points.

All hot and cold water piping 3" in diameter and smaller run above grade within the building shall be type "L" hard drawn copper tubing. Piping below grade shall be type "K".

All copper tubing shall be soldered using wrought copper fittings. Piping within building not under slabs shall be joined using hard solder (95-5). Piping buried outside of building shall be joined using silver solder.

Water hammer arrestors shall be used on all lines and shall be J. R. Smith Hydratrol units size 5020 on cold water lines in each toilet room, size 5005 in hot water lines in each toilet room and on hot and cold lines elsewhere.

Lines shall be connected within the building to the existing lines, where shown and all new lines shall be equipped with gate valves at the point of connection to existing lines.

PIPING JOINTS

Lead and Oakum Joints: All joints in bell and spigot cast iron pipe shall be made with picked oakum and molten lead, and shall be made water and gas tight. Twelve ounces of fine, soft pig lead shall be used at each joint for each inch in diameter of the pipe. Connections between lead and cast iron pipe shall be made with brass ferrules caulked into the iron pipe hub as previously specified. Lead pipe shall be attached to the ferrule by means of a wiped joint.

Copper tubing: Tubing shall be cut square, and burrs shall be removed. Both inside of fittings and outside of tubing shall be well cleaned with steel wool before sweating. Care shall be taken to prevent annealing of fittings and hard-drawn tubing when making connections. Installation shall be made by competent workmen in accordance with manufacturer's recommendations. Mitering of joints for elbows and notching of straight runs of pipe will not be permitted. Joints for soldered fittings shall be made with a non-corrosive paste flux and solid string or wire solder 95-5. Cored solder will not be permitted. Swing joints shall be provided on all branch connections to mains to provide for

expansion and contraction of tubing. Joints on copper tubing 2" and larger shall be made using a ring burner. Piping under slabs and buried outside of building shall be joined using a silver solder.

PIPING ALIGNMENT

All piping shall be run true, level and plumb except for pitch required for drainage. Where pipes are exposed they shall be carefully coordinated with other piping, electrical conduits and building structure.

All piping shall be run concealed and insulated in finished spaces unless otherwise noted. Priority shall be given to ductwork in all locations and piping shall be routed as required to accomplish this.

CONNECTIONS TO EQUIPMENT NOT FURNISHED UNDER PLUMBING CONTRACT

Make connections for all plumbing services including required fittings and trim and accessories with standard finish, for items of equipment provided by other trades, Owner or others as required. Coordinate work with the work of the trades supplying the equipment. Exposed piping, fittings, valves and accessories shall be chrome plated.

Equipment furnished by others for installation by Plumbing Contractor shall be installed in accordance with shop drawings supplied by party furnishing equipment.

WET PIPE TESTS

All piping systems, (including water supply, drainage and venting) shall be tested to the full satisfaction of the Architect, Plumbing Inspector, and other governmental inspectors. Partial tests of sections shall be made if necessary to avoid delay in construction. All defects disclosed shall be remedied by replacement of defective parts.

Testing equipment shall be provided by this Contractor.

Water test shall be applied on all drainage and vent piping. In addition, a smoke test shall be applied to the sanitary system after the fixtures are set.

Pressure test of 100 psig shall be applied to the hot and cold water piping for a period of 6 hours with a maximum drop allowable of 3 psig, with all low pressure equipment isolated.

STERILIZATION

The Contractor shall disinfect the lines by chlorination after the lines have been tested for leakage, flushed and before they have been connected to the system. Chlorinated water shall be retained in the pipe line long enough to destroy all non-spore forming bacteria. This period shall be at least 12 hours. After the chlorine-trated water has been retained for the required time, the chlorine residual of the pipe extremities and at other representative points shall be at least 50 ppm at a pH of 6 to 6.5. During the chlorination period valves and hydrants shall be operated to insure contact with all surfaces. At the end of the contract period, all chlorinated water shall be thoroughly flushed from the pipe line through its extremities. Two samples shall be taken on consecutive days and delivered to an approved testing laboratory for bacteriological analysis. Should either sample show evidence of contamination, the entire disinfection procedure shall be repeated without cost. All disinfecting procedures, unless otherwise specified, shall be in accordance with

the American Water Works Association Designation C601-54, "Standard Procedure for Disinfecting Water Mains." After connection and chlorination of the building piping system by plumbing contractor, all lines shall be flushed to a maximum residual chlorination of .2 ppm.

SHOP DRAWINGS

The Contractor shall submit to the Architect for his written approval prior to beginning this work, manufacturer's specification sheets and shop drawings on each piece of equipment proposed to be furnished and installed.

Note that shop drawings are required even though contractor intends to use specified equipment.

WATER HEATER

Furnish and install, where indicatd on the drawings, Electric Hot Water Heater of the manufacturer's size, type and capacity noted. Unit shall be equipped with all safety devices and controls required by ASME, N.F.P.A. and Governmental authority. All relief valves shall be piped to floor drains.

Unit shall be factory assembled and tested and shall be complete with insulated tank, heating elements, and relief valves. Insulation shall meet Boca Basic Unit Energy Code requirements.

Units shall be complete, requiring only electric, cold water, hot water and hot water return connections.

VALVE SCHEDULE

Furnish and mount on wall, where directed, a framed, glass covered, typewritten schedule of all principal valves. Each valve shall be brass tagged. Schedule shall list valve location, use, normal position (open or closed) and valve numbers.

INITIAL START-UP

At the time of initial start-up of the system, Contractor shall:

Lubricate all equipment.

Check all valves, seals and glands for leaks and loss of operation.

OPERATING AND MAINTENANCE INSTRUCTIONS

The Contractor shall furnish the Architect with four bound sets of complete operating and maintenance instructions covering the entire Plumbing System.

The Contractor shall instruct the Owner's representative in proper operation and maintenance procedures.

THERMOMETERS AND GAUGES

Install thermometers on the entering C.W. line and both leaving H. W. lines. Thermometers shall be adjustable angle, aluminum body type with acrylic face, equipped with separable wells, with 7" minimum face. Manufacturer shall be Trerice or approved equal. They shall be selected to have operating temperature at approximately mid-scale.

Install gauge on the C.W. lines entering the building. Gauge shall be minimum of 6" face diameter equipped with hydraulic needle valves and shall be positive pressure type. These shall be Trerice 600 series or approved equal. Working pressure shall be mid-scale.

PIPE INSULATION

All cold water lines above the floor shall be insulated with heavy density sectional fiberglass pipe insulation with ASJ-SSL Jacket as manufacctured by Owens-Corning Fiberglass Company or approved equal. Thickness shall be 1/2". Fittings shall be insulated with pre-molded pipe-fitting insulation with Zeston jacket.

All hot water piping and hot water recirculating piping shall be insulated with the same material, except that thickness shall be 1".

CLEANING AND ADJUSTING

On completion of the work and at such time as directed by the Architect, the Contractor shall remove the protective coverings from all fixtures, equipment, etc. Fixtures shall be washed and metal parts polished, equipment shall be cleaned and oiled, traps and piping shall be flushed and cleaned of all dirt and sludge. Flush valves and faucets shall be tested for drips and adjusted for quiet operation.

END OF SECTION 15A

SECTION 15B - HEATING, VENTILATING AND AIR CONDITIONING

RELATED DOCUMENTS

The General Provisions of the contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

WORK INCLUDED

The Contractor shall furnish all labor, materials, equipment, apparatus, tools, excavation and backfilling, transportation, flashing and counterflashing, cutting and patching, storage, permits, certificates, drawings, temporary work and all other items of work necessary or required to make the installation complete in every respect, guaranteed to be substantial, safe and ready for use and operation by the Owner.

The work shall include but is not necessarily limited to the folowing items:

Heating, ventilating and air conditioning systems, including packaged heat pump units, ductwork, dampers, diffusers, registers, condensate drain piping, and insulation.

Air exhaust systems, including exhaust fans, dampers, registers, ductwork and controls.

CODES, PERMITS AND CERTIFICATES

All work shall be in installed in compliance with all applicable codes and regulations, including governmental, A.S.M.E., BOCA, N.F.P.A. and the utility company.

Contractor shall obtain and pay for all permits and certificates required for the installation and acceptance of all work.

All work shall be inspected by the code administering authority. Certificates of approval shall be delivered to the Architect prior to final approval.

All material for which label service is available shall bear the label of the Underwriter's Laboratories, Inc.

SHOP DRAWINGS

The Contractor shall submit to the Architect for his written approval prior to beginning this work, manufacturer's specification sheets and shop drawings on each piece of equipment proposed to be furnished and installed, plus the following construction or installation drawings, diagrams, and details.

Automatic temperature controls.
Wiring diagrams.
Ductwork layouts.
Duct construction details.
Foundation and support details.

Note that shop drawings must be submitted on all equipment even though Contractor intends to use specified equipment.

PACKAGED HEAT PUMP UNITS

Furnish and install packaged heat pump units where indicated. Units shall be of size, type, capacity and manufacture noted.

Units shall be complete with cabinets, supplementary electric heater packages, drain pans, fans, motors, filters, and vibration isolators, mounting curbs, defrost timers, outdoor thermostats, indoor thermostats and sub-bases, plenum sections, economizer packages, and all equipment standard or required to form complete operating packages requiring only connection of electrical power, thermostat wiring and ductwork.

NOISE CONTROL

All motorized units shall be installed on approved spring-type vibration isolators with a minimum deflection of 1".

All ductwork shall be attached to heat pump units and exhaust fans by heavy fireproof, flexible connections with sufficient slack to prevent transmission of vibration. Ducts shall be sound insulated on the inside, thickness as noted, type as called out under "Insulation' elsewhere in these specifications.

FANS

Furnish and install all fans, where indicated on the drawings, of the size, type, capacity, and manufacture indicated.

Exhaust fans shall be complete with backdraft dampers, bird screens, vibration eliminators, ductwork, etc.

HANGERS

Furnish and install all hangers necessary for the proper installation of this work.

Hangers for ducts shall be twisted 1" wide, 14 gauge galvanized steel, spaced not over 8' on centers and shall be secured to the building structural members by the use of bolts or clamps. Closer centers shall be used where recommended by ASHRAE.

DUCTWORK

Material shall be galvanized iron sheet except for range hood exhaust. Gauge, type of joint, connection and bracing shall be in accordance with current recommendations published by the ASHRAE for low pressure. Vibrating, rattling, noisy or leaking ducts will not be acceptable. Formed, double skin type turning vanes shall be installed in all 90° elbows. Flat sides of all ducts shall be cross-broken. Connections to all motorized equipment shall be made with heavy asbestos cloth connectors.

DAMPERS

Furnish and install all dampers as indicated on the drawings and as specified herein.

All ducts shall be provided with volume control dampers where indicated. These shall be not less than 14 gauge galvanized steel, with center shaft, bronze bearings, external handle quadrant position indicator and locking device. These shall be Young regulators or approved equal.

MAKE-UP AIR UNITS

Furnish and install make-up air unit where indicated. The unit shall work in conjunction with the future kitchen range hood exhaust and shall be interlocked to start and stop with it.

Heating element in the unit shall be thermostatically controlled to maintain discharge air at or close to room temperature. Thermostat shall be furnished with the unit.

ACCESS DOORS

Furnish and install access doors in the ductwork for adjustment of all dampers and cleaning of ducts, fans, etc. Doors shall be 2' x 2' where possible, and as close thereto in other locations as space allows.

Access doors shall be of the double skin type with heavy brass hinges, forged brass sash locks, asbestos gaskets and handles. Space between the double skin shall be filled with 3/4" thickness of fiberglass insulation. Frames shall have angle protection or extended collars for covering so arranged that access doors will open when covering is applied.

GRILLES, REGISTERS & DIFFUSERS

All grilles, registers and diffusers shall be as manufactured by Carnes, and shall be of the size and type indicated on the drawings. Extruded aluminum units shall have brushed aluminum anodized finish, with color as selected by the Architect. Steel units shall have a baked white enamel finish.

INSULATION

All ductwork shall be lined with 1" thick spray-coated Fiberglass duct insulation. This shall be Ultralite #300 as manufactured by Certaineed, or approved equal. Insulation shall be attached to clean sheet metal prior to fabrication with quick-tacking fire-retardant adhesive. Coated side shall face the air stream. All seams, joints and butted edges shall be coated with adhesive. Where duct width exceeds 12" add Stick-Klips for each 1.0 sq. ft. of surface.

FOUNDATION AND SUPPORTS

Furnish and install as indicated and/or as may be necessary for the proper installation of all equipment furnished, all foundations and supports.

Heat pump units shall be mounted to factory-furnished mounts as per manufacturer's installation standards.

Small fans within the building shall be hung from the building structure with vibration isolating hangers.

All structural members shall be furnished by the Contractor.

DUCT CLEANING

After the complete installation of the ventilating ducts, the Contractor shall clean the entire system of all rubbish, plaster, dirt, etc., before any grilles, outlets or registers are installed.

INITIAL START-UP

At the time of initial start-up of the system, Contractor shall:

Lubricate all equipment.

Check all valves, seals and glands for leaks and loss of operation.

Check all motors for proper rotation and operating temperature.

Check all equipment for vibrationless operation.

Contractor shall also mount a brief outline of operating maintenance instructions for each piece of equipment where directed. These shall be laminated in plastic.

INSTRUCTION

Contractor shall instruct the Owner's representative in proper operation and maintenance procedures, with two four hour periods at the times designated by the Owner.

SERVICE

The Contractor shall provide service on the entire system for a period of one year from date of final acceptance of the system. This service shall include all items of labor and material required, including refrigerant and oil. Cost of this service shall be included in the contract price. A written service contract shall be provided.

ELECTRICAL WORK

The electrical subcontractor shall provide disconnect switches, starters, with on-off automatic switches, and field wiring (including interlock as well as power) for all equipment except for starters specifically required to be furnished with equipment.

The heat pump equipment shall be interlocked through the factory-furnished controls to provide full heating, cooling and economizer operation.

Electrical subcontractor shall do all wiring for temperature controls in accordance with wiring diagrams furnished by the HVAC subcontractor and approved by the Architect and mount all electric thermostats and instruments. HVAC subcontractor shall be responsible for proper operation.

TESTING AND ADJUSTING

After the various portions of the work are completed, the Contractor shall make the following tests in the presence of an authorized representative of the Architect, who shall be given adequate notice, by the Contractor, of the latter's readiness to make such tests. The Contractor shall furnish all instruments, test equipment and personnel required for carrying out the various tests.

Duct Systems:

The mechanical subcontractor shall operate the various fan and blower systems and shall do all adjusting and balancing as required to deliver the air quantities shown at each supply grille, outlet and register and at each exhaust or return air grille or register.

He shall also adjust all air handling equipment to perform with the least possible noise and vibration consistent with its duty. After all adjustments have been made, a final test shall be made and the air volumes tabulated and four certified copies of same shall be turned over to the Architect.

The Contractor shall make such additional tests as required to obtain the following information:

Amperage input to each phase of each motor.
RPM of each fan or blower.
CFM capacity of each fan or blower.
Outlet velocity of each fan or blower.
Face velocity of coils.
Dry bulb temperature of air supply under design conditions.
Wetbulb temperature of air supply under design conditions.
Such other tests as may be required to indicate fulfillment of these specifications.
The results of these tests shall be tabulated and four certified copies delivered to the Architect.

END OF SECTION 15B

SECTION 16A - ELECTRICAL

RELATED DOCUMENTS

The General Provisions of the contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

WORK INCLUDED

The Contractor shall furnish all labor, materials, equipment, apparatus, tools, excavation and backfilling, paving, transportation, flashing and counterflashing, cutting and patching, storage, permits, certificates, drawings, temporary work and all other items of work necessary or required to make the installation complete in every respect, guaranteed to be substantial, safe and ready for use and operation by the Owner.

The work shall include but is not necessarily limited to the folowing items:

Installation of Main Service.
Panels for distribution, power and lighting.
Connections to equipment requiring same.
Lighting fixtures, lamps, switches, receptacles, cover plates and related devices.
Wiring for power, lighting and electrical control systems.
Starters and disconnects for electrically operated equipment.
Fire alarm system.
Conduit system for telephones.
Emergency lighting system.
Clean up.
Testing.

CODES, PERMITS AND CERTIFICATES

Except as otherwise required by governmental authority, all work shall be in accordance with the National Electrical Code, BOCA, and the electric utility company requirements.

Contractor shall obtain and pay for all permits and certificates required for the installation and acceptance of all work.

All work shall be inspected by the code administering authority. Certificates of approval shall be delivered to the Architect prior to final approval.

All material for which label service is available shall bear the label of the Underwriter's Laboratories, Inc.

SERVICE

Primary:

Install primary conduit and cable from the location designated by the Utility Company, underground to the transformer pad, and up through the pad.

Primary conduit to be schedule 40 heavy wall PVC under grass areas and rigid galvanized steel under paved areas.

Install conduit 4'-0" minimum below finish grade. Long radius sweeps shall be made at all changes in direction.

Provide and install yellow tape identifying high voltage line continuously at 6" below finish grade over conduit.

Provide transformer pad for Utility Company transformer as required.

Provide and install 34KV conductors in conduit as shown on drawings.

Installation to be in accordance with Utility Company requirements and shall be subject to their inspection as well as that of the Architect.

Secondary:

Install a complete main underground service of rigid schedule 40 PVC conduits and conductors in an underground duct bank, as indicated on drawings and as specified herein for 208/120V, 3 Ø, 4-wire service. Conduits through the pad and the building floor shall be rigid galvanized steel with long radius sweeps.

Install and connect conduits to switchgear and all service equipment. Conduit shall terminate in accordance with Utility Company requirements.

Install cable allowing sufficient spare cable for final connection to transformer and make final connections to all service equipment.

Cable bends shall not exceed the recommendations of the cable manufacturer and the IPDEA as a minimum, but in no case shall radius of bend be less than 10 times the outside diameter of cable.

All conduit connections shall be sealed water-tight and each conduit shall be sealed water-tight at each end with duct seal.

INSTALLATION

No cable or group of cables shall be pulled into underground conduit system until it is dry.

Before pulling in cables, Contractor shall insure cleanliness and dryness of the conduit by pulling a mandrel and swab through. If swab becomes wet during first pull, operation shall be repeated until swab is both dry and clean after being pulled through conduit to be activated.

Provide complete grounding system in strict accordance with the Code requirements.

A yellow tape identifying electrical lines below shall be installed above the conduits, 6" below grade.

TELEPHONE SYSTEM

Furnish and install required underground telephone service conduit and in-floor distribution conduits. Provide backboards for mounting of terminal boxes, 110V. outlets at box locations and ground wire connected to building ground system. Make such adjustments in both location of pull boxes and the entrance level of conduits as are necessary in order to avoid interference with electrical lines and other trades equipment.

Leave installed in each underground telephone conduit run, a #6 galvanized steel wire for the use of the telephone company. No other conductors shall occupy these conduits.

Service conduit from street shall be constructed and installed as required for power service conduit.

For each wall mounted telephone outlet, provide a 4" x 4" outlet box with single device cover and stainless steel plate equipped with a 1-1/4" high x5/8" wide slot in the bottom. For each floor mounted telephone outlet, provide a watertight adjustable floor box with bronze cover plate.

Note that wall boxes must be recessed. Floor boxes shall be as specified for receptacles.

From each telephone outlet box, run a 1" conduit to the nearest telephone backboard. All conduits shall be EMT with compression couplings.

PANELBOARDS AND CIRCUIT BREAKERS

Lighting and power panels shall be installed where shown on drawings. They shall be General Electric or approved equal, of the size, type and capacity shown on drawings. They shall be automatic circuit breaker panelboards complete with enclosing cabinets, and shall conform to the following specifications:

All automatic circuit breakers shall be quick-make and quick-break on manual operation, trip-free, with inverse time characteristics secured through the use of a bimetallic tripping element supplemented by a magnetic trip. Automatic tripping on overload or short-circuits shall be clearly indicated by the operating handle assuming a neutral position midway between the manual "ON" and "OFF" positions.

All circuit breakers shall be bolted on. Plug-in breakers are not acceptable.

All multi-pole breakers shall be so designed that an overload in one pole automatically causes all poles to open.

All single-pole breakers shall be so arranged and connected to the main bus that any three adjacent breaker poles are connected to phase A. B and C respectively, and that same relationship of phase sequence maintained. The main phase bus and the phase to which each single-pole breaker is connected shall be clearly indicated.

The mounting pan on which circuit breaker, busses, etc., are mounted shall be rigid construction to insure against damage. All screws and bolts used for making copper connections shall be equipped with approved lock washers to prevent loosening. Riveted bus connection will not be acceptable. Bus bars shall be copper.

Complete panelboard assembly shall be so designed that any individual breaker can be removed without disturbing adjacent units or without loosening or removing supplemental insulation supplied as a means of obtaining clearance and other requirements of the Underwriter's Laboratories. Bus bars shall be fastened to bases and shall not depend upon breakers for support.

All main and branch circuit connections shall have copper based on 1,000 amps per square inch copper density with contact surfaces not more than 200 amps per inch.

Cabinet boxes shall be made of commercial hot galvanzed sheet steel. Box gauges shall conform to the Underwriter's Laboratories requirements, except that in no case shall material lighter than 14 gauge be used. The box shall be provided with angle support for the panel.

Panelboard fronts shall be made of cold rolled sheet steel with gauges as required by the Underwriter's Laboratories. All materials shall be properly cleaned and trim shall be finished with one prime coat and at least one coat of gray lacquer. Trim shall be provided with angle support which engages the flange of box and shall be fastened to the boxes by means of approved clamps. All trim shall have doors equipped with flush-type combination lock and catch, two milled type keys being supplied with each lock. All locks shall be keyed alike.

Each panelboard shall be provided with a metal frame for insertion of a directory on the inside of the door. Provide typewritten directory in frame indicating full use of each branch circuit and circuits designated as spares. Cover directory with heavy transparent cover.

Individual circuit breakers shall be as specified above for panel mounted breakers, but shall be enclosed in NEMA-1 enclosure unless otherwise noted.

WIRING FOR POWER, LIGHTING AND CONTROL

All wiring in Mechanical Room and where otherwise adjacent to the heating equipment or other heat producing equipment shall be THHN 600 volts, copper All other wiring shall be type THW 600 volts, copper, unless otherwise indicated. No wiring for lighting or power shall be smaller than #12 AWG.

No wiring shall be run exposed, unless specifically permitted, except in the Mechanical Room.

All feeders to branch circuit panels and main service equipment shall be run in EMT. Indoor wiring shall be carried in Schedule 40 PVC conduit, with copper ground conductor, where run in floor slab. Indoor wiring which is run exposed or in walls, shall be carried in electrical metallic tubing. All wiring above hung ceilings shall be run in EMT or as BX cable, supported from structure above as per code.

All EMT shall have compression fittings.

Where flexibility is required as for motors, the final run shall be made in neoprene jacketed flexible metal conduit.

All wiring to outdoor fixtures and to equipment at grade shall be run underground in Schedule 40 PVC conduit, 24" below grade, with ground wire run with circuit conductors.

Locations of indoor junction boxes and pull boxes shall be as approved. Junction boxes and pull boxes shall not be exposed in finished spaces, and where necessary Contractor shall re-route conduits or make other approved arrangements to avoid same.

No wire shall be pulled until all conduits and pull boxes are permanently in place. No fish wire or strings shall be inserted before conduit is installed. Cables pulled with pulling compounds other than permitted by the National Electrical Code or listed in the Underwriter's Laboratories Electrical Equipment List shall be removed, the conduits swabbed, and new cable pulled at the Contractor's expense.

No more than three 2-wire, 1 Ø, 120 volt circuits will be permitted in one conduit and these shall be of alternate phases. Only one 208 volt circuit will be permitted in one conduit.

Cable splices shall be made with solderless connectors such as 3M "Scotchlock" or Burndy "Servit" covered with plastic tape such as #33 in dry locations and Scotch #88 in wet locations.

No conduit shall be run closer that 6" to hot water pipes. No cabinets or conduits shall be installed directly under water or drain lines.

All feeders and mains shall be tagged in every pull box and gutter space through which they pass, showing circuit and phase (for example "A-3, ØB"). In addition, phase color coding shall be employed for all wire 12 AWG or 10 AWG.

CONDUIT ALIGNMENT

When conduit is exposed it shall run parallel to or at right angles to walls and ceilings. Except where required for equipment connections, it shall be run as close as possible to corners of walls and ceilings.

Conduit runs shall be carefully coordinated with piping and the building structure, and shall run concealed in finished spaces. Priority shall be given to ductwork in all locations, and conduit shall be routed as required to acccomplish this.

LIGHTING FIXTURES AND LAMPS

Lamps and lighting fixtures of types and sizes indicated on the drawings shall be furnished and installed complete. All fixtures shall bear the Underwriter's Laboratories, Inc. label of approval.

Lamps of the proper type, wattage and voltage rating shall be furnished and installed in each fixture. Lamps shall be as manufactured by G.E., Westinghouse or Sylvania, with exact lamp used where indicated.

Fixtures shall be of the type indicated. Manufacturer's catalog numbers establish appearance, design, light distribution characteristics, brightness characteristics, metal gauge, quality, finish and materials of construction. Similar fixtures of different manufacture will be acceptable if approved by the Architect as being equal, or better, in all of the above criteria.

Accessories such as strips, yokes, mounting plates, frames, nipples or brackets shall be provided for proper installation. All plastic parts shall be virgin acrylic unless otherwise noted.

Fixture Support: Recessed fixtures shall be suspended from the building structure above. Surface and pendant mounted fixtures shall be secured to the building structure.

Fluorescent fixtures shall have high power factor, (CBM certified by ETL) ballasts, and shall be designed and approved for 120 volt operation unless otherwise indicated. Fixtures shall be of rapid start type needing no starters except where otherwise noted on the drawings. All ballasts shall be equipped with class "P" internal overload protection. All ballasts shall have a sound rating of "A". Contractor shall examine all fixture ballasts before installation and tighten all ballast mounting screws to insure good contact with enclosures. Where installed outdoors ballasts shall be low-ambient rated at $0^{O}F$. Where indicated, ballasts shall be remotely mounted in approved ballast boxes which shall be secured to the building structure.

Mercury and metallic vapor fixtures shall have high power factor, constant wattage ballasts. Where installed outdoors, ballasts shall also be low-ambient rated at minus 20°F. All ballasts in indoor units shall be encapsulated and shall be guaranteed for low sound rating consistent with this application.

SWITCHES AND RECEPTACLES

All switches for lighting shall be Leviton 20A specification grade of the following types:

Single pole, toggle	1221
Single pole, key	1221-L
3 way, toggle	1223
3 way, key	1223-L

Exact location of all outlets and switches in finished rooms shall be obtained from Architect and from scale drawings of interior details and finish and final readjustment made to outlets to give proper centering. Outlets shall be 8" A.F.F. in carpeted areas, 18" in non-carpeted areas, or at counter-height or other height where specifically noted.

Locations indicated for local wall switches are subject to modification. In case of local wall switches to be set at or near doors, definite locations shall be on side of door opposite hinge.

Where more than one switch is located at the same place in a room, they shall be ganged under one switch plate.

Receptacles for 120 volt attachment plugs shall be Leviton 5362, 125 volt, 3 wire grounding type, with grounding pole connected to the grounding system, except where otherwise noted or specified.

Switch and receptacle plates shall be Leviton 88000 series smooth urea, standard size.

Heavy duty special type receptacles shall be Leviton or Hubbell, of the size and type required to suit equipment plugs.

Ground fault receptacles shall be Leviton 6194-W and shall be installed flush-mounted. Where installed outside, they shall be equipped with 6196 horizontal cover plates and shall be mounted horizontally. All receptacles installed outside the building, in the toilet rooms, and mechanical room shall be ground fault type.

Each outdoor lighting circuit shall be switched by an individual clock switch installed adjacent to the panel serving the circuit. Clock motors shall be operated by unswitched lines taken from spare circuit breakers. Each clock switch shall be Paragon 4213-00SZ Astro-Dial type.

Contractor shall furnish one Leviton 6185 GFI Circuit Tester in 6182 case to the Owner.

MOTOR CONTROL, CONTROL WIRING AND DISCONNECTS

Contractor shall furnish motor starters and disconnects for all equipment furnished under all sections of the Contract and for equipment furnished by Owner, except where these are specifically required to be furnished with the equipment.

Starters and disconnects shall be installed where shown on drawings. Where not shown, location shall be as directed. In no case shall this equipment be installed on finished walls. Surface type equipment may be used in Mechanical Room.

Contractor shall include all necessary auxiliary contacts and accessory equipment to accomplish the functions indicated either in the specifications and drawings for the electrical work or in specifications and drawings describing the work to be performed by others.

Contractor shall mount starters and disconnects securely, install connections between starters and disconnects, and connect to motors. The work shall be complete so that equipment is ready for starting.

Motor starters, except where otherwise noted, shall be magnetic across-the-line type with thermal overload elements in all phases, and low voltage protection. Starters for ordinary service shall be in NEMA Type 1 enclosures and shall be General Electric 200 line for voltage, number of the poles and horsepower. In all cases, operating coil shall be wired between one phase leg and neutral. Heaters shall be carefully selected to suit motor current for voltage indicated. Provide hand-off-auto switches and pilot lights for all starters. All motor starters shall be wired for manual reset.

Power leads to all motorized equipment shall have at least 60 inches of looped neoprene jacketed armored flexible conduit from junction box at end of conduit to motorized equipment. Under no circumstances shall conduit terminate in or be fastened to motorized equipment.

Disconnect switches for ordinary service shall be in NEMA Type 1 enclosures, and shall be General Electric Heavy Duty type QMW non-fused safety switch or approved equal. For outdoor locations enclosures shall be NEMA 4 watertight stainless steel.

Refer to HVAC specifications for work therein to be provided by this Contractor.

CONNECTIONS TO EQUIPMENT

Make conncections to all equipment shown on drawings or otherwise specified as included in the project whether indicated to be furnished by Contractor, Owner others or similar designation.

These connections shall include disconnect switches where required by code and other incidental items of electrical equipment.

Equipment shall include, but is not necessarily limited to the following major groups:

Heating, ventilating and air conditioning equipment.

Those controls which are electrically operated.

Plumbing equipment.

Kitchen.

EMERGENCY LIGHTING SYSTEM

Furnish and install where indicated on the drawings, nickel-cadmium emergency battery packs, complete with trickle-chargers, high-rate chargers, voltmeters, test switches and indicating lights, on-off switches, low voltage protective cut-offs, heavy steel cabinets, and all accessories required.

These shall be of the size, type, capacity and manufacturer indicated.

Furnish and install remote-mounted fixtures with lamps where indicated on drawings.

TEMPORARY ELECTRIC

The Contractor shall provide and pay all charges incidental to obtaining a temporary electric service for the use of all Contractors. This may be connected to new building service after installation.

All temporary wiring shall be performed in accordance with the requirements of the NFPA. A temporary certificate of inspection shall be obtained and delivered to the Architect.

The Electrical Contractor shall furnish and install 1-phase, 100A, 3-wire, 120/240-volt temporary light and power feeder on poles and insulators, in an approved manner to location of addition. The Electrical Contractor shall furnish and install an approved weatherproof service housing cabinet complete with hinged doors and lock, together with necessary service switch, metering devices and circuit breakers for temporary feeder distribution. The metering devices shall be left ready to receive the meters, etc., of the electric company. This Contractor shall arrange for their installation.

The Electrical Contractor shall furnish and install the following:

One lamp of proper size in each temporary lighting fixture in the construction field office.

One 100 watt lamp in each temporary lighting socket in the building, with quantity and spacing as required for the required lighting levels.

The Electrical Contractor shall provide, install and retain possession of temporary power circuits from the main temporary power panel to and including 2 temporary power load centers. Each temporary power load center shall consist of a 2-pole main circuit breaker rated 60 amp, two 2-pole 30 amp circuit breakers and six 20 amp, 1 pole circuit breakers, all with matching receptacles, all connected and mounted in a common panel. The load centers shall be suitable for outdoor installation.

The Electrical Contractor shall provide, at the temporary power panel, circuit breakers sized to protect the supply lines to each temporary power loac-center.

The temporary light and power system shall be progressively modified as required for the advancement of the work of the various Contractors and in such a manner as will not restrain or interfere with the progress of construction.

The Electrical Contractor shall supply all wiring, supports, and labor incidental to and necessary for establishing and maintaining power at the load-centers, and as required for relocating the load centers and supply circuits.

Electrical Contractor shall provide and maintain continuation of power supply beyond the temporary-power load-centers, including plugs, portable outlets, lamp fixtures, replacement lamps and other incidental items when required.

The General Contractor will pay for all electrical energy for the entire period of construction.

The Electrical Contractor shall provide and maintain temporary electric service throughout the course of this project during normal working hours, including lunch hour, for each and every workday for each and every trade. If work is performed by any Contractor requiring the use of temporary power and lighting beyond normal working hours, he shall make arrangements with the Electrical Contractor and shall reimburse the Electrical Contractor for all additional costs involved and shall bear all expenses at no cost to Owner.

All 20A, 1-P circuit breakers shall be protected by ground fault circuit interrupters. These shall be UL approved.

All extension cords shall be UL rated for use in wet conditions and shall be three-wire grounded type.

SHOP DRAWINGS

The Contractor shall submit to the Architect for his written approval prior to beginning this work, manufacturer's specification sheets and shop drawings for each piece of equipment proposed to be furnished and installed, plus installation drawings of the Main service entrance layouts.

Note that shop drawings must be submitted on all equipment even though Contractor intends to use specified equipment.

CLEAN-UP

All fixtures shall be properly cleaned and lamped, all broken or cracked glassware and plastic shall be replaced, all debris so far as this Contract is concerned shall be removed from the premises before work will be accepted.

TESTING

Contractor shall demonstrate upon request, the proper functioning of electrically operated equipment and the insulation value of conductors as demonstrated by "Megger" test. Upon the discovery of faulty installations, repair defective work and by further test show the elimination of same.

All equipment and systems shall be tested to the satisfaction of the Architect and Engineer to prove compliance with the specifications. Any equipment which fails to perform properly shall be adjusted. If it still fails to perform properly, it shall be removed and replaced with satisfactory equipment.

OPERATING AND MAINTENANCE INSTRUCTIONS

Contractor shall give complete operating and maintenance instructions to Owner and shall mount under glass adjacent to all major items of equipment a description in brief form of the principal items for operating and maintaining such equipment, plus a wiring diagram for each system.

FIRE ALARM SYSTEM

GENERAL

Furnish and install a complete comprehensive automatic fire alarm and detection system in all areas of the building. This shall be Fire Control Instruments FC-72-3, zoned for each area indicated.

System shall comprise a totally coordinated functioning, electrically supervised, closed circuit fire alarm and smoke detection system as described herein and as indicated on the drawings. The control panels shall be modular in design with major circuit functions contained on solid state plug-in units.

System Operation and Description

Operation of any manual station or actuation of any automatic detector in the system shall cause the sounding of a selectable coded signal and flash the associated supervised red zone lamp on the control panel.

The signals shall continue to indicate the alarm until the initiating device has been restored to normal and the system reset button depressed or until the signal silence switch at the control panel is operated. Trouble suppression must be provided during all alarm conditions.

The system shall be electrically supervised against opens and grounds on the wiring to the alarm initiating and indication devices. An open or ground in the system shall cause a zone trouble lamp to light and a trouble buzzer to sound continuously until the system is restored to normal or until the signal is silenced by means of the trouble silence switch at the control panel. In addition auxiliary SPDT common trouble contacts shall operate. All wiring between fire alarm control panels and outlying units must be 100% failsafe, Class "A", 4 conductor.

When the trouble silence switch is in the "silenced" position a red pilot light shall be illuminated to show that the trouble signal has been silenced. When the systems are restored to normal supervisory operation, the trouble signal shall again sound and shall be silenced only by restoring the cut off switch to its normal position, thereby extinguishing the pilot light.

Open or grounded circuits in the system shall not cause the sounding of a false alarm.

The initiating zone trouble shall be indicated by the steady illumination of an individual zone lamp on the main panel, plus duplicates at the entrance. If main AC power fails to the system, the battery stand-by power shall automatically be transferred to the system for continuous and uninterrupted supervisory operation for a period of 24 hours and still be able to sound a three-minute alarm.

The alarm signals may be silenced at anytime by depressing the signal silence button located on the control panel.

System shall be capable of transmitting the signal to the local Fire Department in accordance with Department regulations, with both transmitting and receiving equipment furnished and installed by this Contractor.

EQUIPMENT

Control Units

System controls shall be housed in a cabinet with a full viewing window. All annunciator indications and operating instructions shall be clearly visible. The door shall be complete with a lock and two keys. Opening the cabinet door shall provide access to all operating controls, but not expose live electrical connections.

The control panels shall be of modular construction. Each individual function shall be on a replaceable plug-in panel or module to accomoddate functional changes when required. All plug-in modules and panel connectors shall be supervised so as to give a trouble signal if removed or disconnected. All alarm initiating and alarm indicating circuits extending from the fire alarm control unit shall be energy limited in accordance with the requirements for limited energy circuits described in Paragraph 2154 of NFPA Pamphlet 72A.

The control unit shall contain the following functions and modules:

Alarm Receiver

Audible and Visual Signal Control

Common Control to include:

Lamp supervision, test
Reset.
Manual signal silencing.
Remote station transmission equipment.

Master Power Supply, to include:

24 Volt DC Power.
Power-on Indication.
Trouble Indication.
Ground Detection.

Standby Power shall be batteries, series connected with sufficient amp. hour capacity to operate the system under alarm conditions with AC power disconnected for 24 hours and at the end of this period operate the alarm devices for three consecutive minutes. The batteries shall be the sealed maintenance-free type with expected life in excess of ten years. A fully automatic battery charger shall be provided which shall be capable of restoring 90% of a dead battery's capacity within 24 hours. The battery shall be protected against excessive discharge by automatically disconnecting the battery from the system when the voltage of the battery drops to 60%. A trouble signal shall sound when the batteries are disconnected from the system, or the batteries drop below 85% of their capacity. An ampmeter indicating the rate of charge and a voltmeter indicating battery potential shall be provided on the control panel.

Auxiliary Relay Panel.

Fire Drill Control.

Auxiliary Breaker Panel.

Alarm Initiating Devices

MS-5 Manual Fire Alarm Station.

Thermo detectors shall be D-240-501 (135° fixed and rate of rise) except in Vestibules, Mechanical Room and other areas subject to rapid temperature changes, they shall be Model 503 (136° fixed element.)

Smoke detectors shall be D-200.

Alarm Indicating Devices

S-300 Model AV-32F shall have audible horn and flashing fire lights, and shall be complete with back boxes.

Annunciators shall be furnished at the entrance of the building as well as at main panel. These shall be R2A-4, with adjacent RTI trouble indicators.

Wiring

All wiring shall be code-approved, in conduit or Wiremold where exposed and of the same approved type as used for electric light and power wiring. The sizes of the different wires shall be those specified by the manufacturer. Color code shall be used where specified. All wires shall be tagged at all junction points and shall test free from grounds, opens, shorts, feedback, etc. All testing shall be performed by the manufacturer, who shall certify to its trouble-free completion.

Final connections between equipment and the wiring system shall be made directly by a representative of the manufacturer. Complete As-Built Wiring Diagrams must be submitted prior to final payment.

All wiring shall be looped for complete supervision. No "tee-wiring" will be permitted.

Tests

All portions, functions, operations, and equipment of the systems shall be tested, including, but not limited to, all manual stations, automatic detectors, smoke detectors, and signals. Notify the Architect, Owner and Fire Marshal of readiness for such tests and perform them at the time directed.

The system shall be considered ready for such testing only after all necessary preliminary tests have been made and all differences and defects found have been corrected to the satisfaction of the equipment manufacturer's representative.

MAINTENANCE AND SERVICE

he manufacturer shall furnish to the Owner a one (1) year Contract, effective from date acceptance, for maintenance and inspection service of the manufacturer's equipment h a minimum of two inspections during the contract year. 50% of the installation shall ested at each inspection, with the other 50% at the next inspection. Cost of service act shall be included with the installation cost, and shall include all parts, labor, ortation, etc.

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