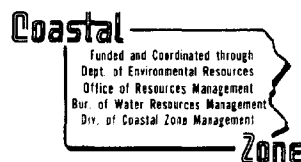


JAMES ARMSTONG MEMORIAL PARK
AND NATURE RESERVE
FINAL REPORT

JUNE 1987

BENSALEM TOWNSHIP, PA
PA COASTAL ZONE MANAGEMENT PROGRAM

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JAMES ARMSTRONG MEMORIAL PARK

AND

NATURE RESERVE

FINAL REPORT - As part of the implementation of the
PENNSYLVANIA COASTAL ZONE MANAGEMENT
PROGRAM

PREPARED FOR:

THE PENNA. DEPARTMENT OF ENVIRONMENTAL RESOURCES

PREPARED BY:

EDWARD ZIELANSKI, DIRECTOR
BENSALEM TOWNSHIP PARKS AND RECREATION
3800 HULMEVILLE ROAD
BENSALEM, PA 19020

JUNE 1987

The preparation of this report was financed through the Pennsylvania Coastal Zone Management Program under provisions of the Federal Coastal Zone Management Act of 1972, (as amended), administered by the Coastal Zone Management Office, Office of Resources Management, Pennsylvania Department of Environmental Resources.

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I. INTRODUCTION

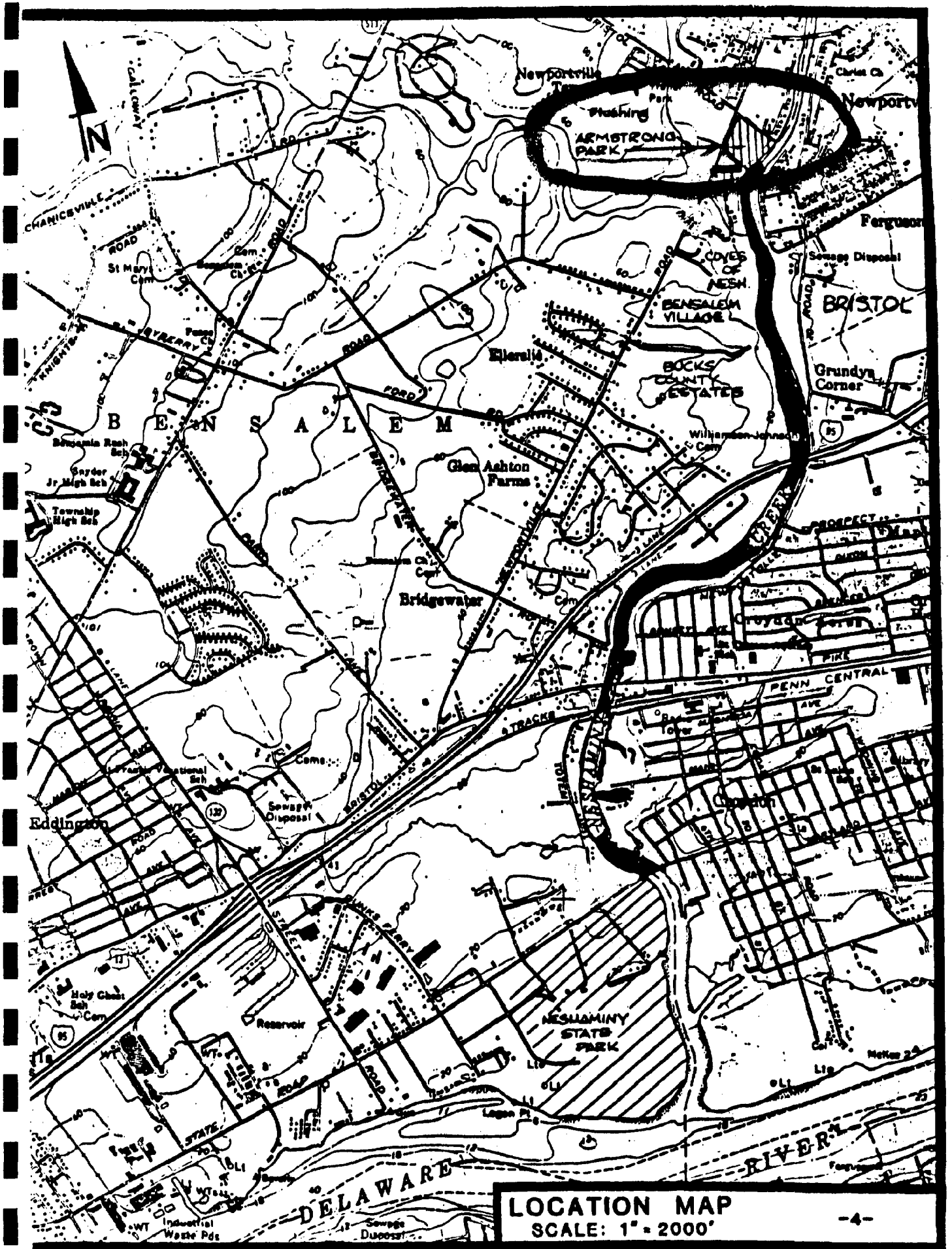
The proposed James Armstrong Memorial Park and Nature Reserve project is located along the west side of the Neshaminy Creek in Bensalem Township, Bucks County, Pennsylvania. Bensalem Township is a Coastal Zone Community, as determined by the Pennsylvania Department of Environmental Resources, Coastal Zone Management Program, due its frontage along the Delaware River as well as its frontage on the Neshaminy Creek, a tributary to the Delaware River. This area is within the Delaware Estuary and, therefore, is affected by tidal movement.

The Coastal Zone Management Program has determined recreation to be an important land use within the Delaware Estuary Coastal Zone. The Coastal Zone Management Program and Final Environmental Impact Statement has indicated that pressures for additional recreational sites are expected to increase in the future as travel becomes increasingly more expensive and as water quality in the Delaware Estuary improves in response to Federal, State and local programs and investments.

Bensalem Township recognizes that there is a growing demand for access to the water fronts of the Neshaminy Creek and the waterfront of the Delaware River. People seek access not only for traditional recreational pursuits such as boating and fishing, but increasingly for more passive forms of recreation such as walking, picknicking, or just viewing the water.

The James Armstrong Memorial Park and Nature Reserve is located on the west side embankment of the Neshaminy Creek, in the east section of Bensalem Township. The site is 19.9 acres in size and owned by Bensalem Township. Construction activities will further the CZM funded James Armstrong Memorial Park Master Plan Study completed July, 1981. See

location map, page 3 for more detail.



LOCATION MAP
SCALE: 1" = 2000'

RECREATION FACILITIES

Bensalem in its continual evaluation of recreational needs, examined the presence of other waterfront access recreational sites in the vicinity, in formulating a development plan for the James Armstrong Park area.

The only site offering public access and recreational activities is the Neshaminy State Park, located on the Delaware River about three (3) miles east of the James Armstrong Park area. No interference exists with this other area as the State Park is more suited to a regional park than that for a community park.

Within the James Armstrong Park service area, there is a new building surge of single family dwelling units, in progress and recently completed (approximately 350 units). Proposals for another 300-500 units have been submitted to the Township for consideration.

Given this information, Bensalem has undertaken a revision of the Phasing of this project for the purpose of having the construction performed in such a manner, so there will be a more immediate and responsive use of this recreational area.

PARK DEVELOPMENT

The proposed development of the James Armstrong Memorial Park area is comprehensive, extensive and expensive. The possibility of obtaining funds to do the entire project at once is extremely limited at best. As previously mentioned, a revision of the phasing of this project was developed. Along with this, the Township made great efforts to have the private sector contribute to and participate in the proposed construction as developed by the revised Phase II plan. Also, the Township government, in its quest to proceed with this project, committed a significantly larger funding level than was originally anticipated.

By virtue of the cooperation of the many parties to this project, this project has begun movement in a positive manner.

PHASE I

The Township has advertised and received bids on Phase I of this project. Those bids have been reviewed by the project engineer. The selected contractor's documents will be forwarded to the Department for their approval. This will include any permits required and the task list to be completed. Bids were awarded on July 27th, 1987. It is anticipated that work to be completed under Phase I will include the following: Clearing and grubbing of the site which includes stump and vegetation removal in the manner specified. Also, trimming of trees and the addition of top soil where necessary. Example: Along creek and "free play" area. Seeding is to be done with the proper fertilization,

along with earthwork along creek embankment and the installation of a canoe launch after receiving the proper permits, of which applications have been submitted.

Site amenities to be included are picnic tables, bollards, benches, one red cedar gate, bicycle rack, footbridge, grills, etc. Parking and access road improvements are also scheduled.

It is anticipated that Phase I will be completed by the end of 1987 without delay.

PHASE II

The second phase of this project includes expanded recreational activities. This work includes the construction of a Tot Lot, and horseshoe courts. It is anticipated that this phase can be completed in 2-3 years, as funds become available.

PHASE III

The major items slated for construction in Phase III are an ice skating berm, warming shed and improved planting of the creek banks. This phase is expected to be completed in 3-5 years, with proper funding assistance.

CONCLUSION

As previously stated, Bensalem Township is constantly searching for ways to enhance the recreational opportunities for its residents.

We firmly believe that the completion of Phase I of the James Armstrong Memorial Park will provide the basis for the continued development of a first class recreational facility. That continued development, through the completion of Phase II and Phase III will provide an expanded array of recreational activities. Those activities, such as hiking, picnicking, fishing or just enjoying nature, are just a few examples of the pleasurable educational and recreational experiences that will ultimately be created by the continued development of the James Armstrong Memorial Park.

CONSTRUCTION SPECIFICATIONS

JAMES ARMSTRONG MEMORIAL PARK
AND
NATURE RESERVE

PHASE I

AS PART OF THE IMPLEMENTATION OF THE
PENNSYLVANIA COASTAL ZONE MANAGEMENT PROGRAM

PREPARED FOR:

BENSALEM TOWNSHIP BOARD OF SUPERVISORS
BENSALEM TOWNSHIP, PENNSYLVANIA

PREPARED BY:

CARROLL ENGINEERING CORPORATION
SUITE 100
949 EASTON ROAD
WARRINGTON, PENNSYLVANIA 18976

JUNE 1987

CEC #86-1617 (1806.2)

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INSTRUCTIONS TO BIDDERS

1. RECEIPT AND OPENING OF BIDS

The Bensalem Township Board of Supervisors (herein called the "Owner") invites bids on the forms attached hereto. All blanks on these forms must be appropriately filled in. Bids will be received by the Owner in their offices, at 3800 Hulmeville Road, on July 8, 1987.

Proposals shall be enclosed in opaque sealed envelopes plainly marked "**James Armstrong Memorial Park and Nature Reserve - Phase I**" and with the name and address of the Bidder. Bids may be forwarded by Registered Mail. If mailed, the sealed envelope containing the proposal and marked as directed above, must be enclosed in another envelope properly addressed for mailing.

The Owner may consider non-responsive any bid not prepared and submitted in accordance with the provisions hereto, and may waive any informalities in or reject any and all bids. Any bid received after the time and date specified shall not be considered.

2. WITHDRAWAL OF BIDS

No bid may be withdrawn within twenty-four (24) hours prior to the bid opening.

3. PREPARATION OF BIDS

Bidders will have been assumed to have carefully examined the Notice to Contractors, the Instructions to Bidders, the Specifications, the form of Proposal, and the Plans for the work, all attached hereto, and to have carefully investigated physical conditions at the site and character of the work to be done and to have inquired fully into the difficulties of construction of the work before preparing their proposal. The Owner will not be responsible for failure of the Contractor to properly estimate such difficulties and costs, or for overlooking any of the requirements of this Agreement.

4. INTENT OF CONTRACT DOCUMENTS

The intent of the Contract Documents is to obtain a complete job, satisfactory to the Engineer. It shall be understood that the Bidder has satisfied himself as to the full requirements of the Contract, and has based his Proposal upon such understanding. Compensation for all work and materials required to complete the Contract shall be considered included in the prices bid for the items listed in the Proposal.

5. ADDENDA AND INTERPRETATIONS

No interpretations of the meaning of the Contract Documents will be made to any prospective bidder orally. Every request for such interpretation should be in writing addressed to Carroll Engineering Corporation, Consulting Engineers, and to be given consideration must be received at least seven (7) days prior to the date fixed for the opening of the bids. Any and all such interpretations and any supplemental instructions will be given in the form of written addenda to the specifications which will be mailed by Registered Mail to all prospective bidders (at the respective address furnished for such purposes) not later than three (3) days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addenda or interpretations shall not relieve said bidder from any obligations under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

6. CONDITIONS OF WORK

Each bidder must inform himself fully of the conditions relating to the construction and labor under which the work will be performed; failure to do so will not relieve the successful bidder of his obligation to furnish all material and labor necessary to carry out the provisions of the Contract Documents and to complete the contemplated work for the consideration set forth in his bid.

At the time of the opening of bids, each bidder will be presumed to have inspected physical conditions at the site and to have read and to be thoroughly familiar with the Contract Documents (including all addenda); the failure or omission of any bidder to receive or examine any form, instrument, or document shall in no way relieve any bidder from any obligation in respect of his bid.

Where borings, test piles or existing underground and overhead structure locations are shown, they are for the information of the Owner; their correctness is not guaranteed or warranted by the Owner, and in no event is this information to be considered as a part of the Contract. If this information is used by a bidder in preparing his proposal, he must assume all risks resulting from conditions differing from the approximation shown.

Bidders are notified that it is obligatory upon them to obtain by their own means, information which they may require as to the existing physical conditions, and in particular as to subsurface and ground water conditions. Bids for excavation are based on unclassified material.

7. TIME FOR COMPLETING WORK AND LIQUIDATED DAMAGES

The time for completion of work under this contract shall be ninety (90) days from notice to proceed. All bidders are notified that time is of the essence of this Contract. The successful bidder

will be required to so prosecute the work as to insure its completion within the above number of calendar days set forth. It is mutually agreed that damages to the Owner for failure of the successful bidder to fully complete the work under this Contract on or before the above-stated date shall be One Hundred Dollars (\$100.00) for each calendar day after said date that shall elapse before the work is fully completed, which amount shall in no event be considered as a penalty, but as liquidated damages due the Owner because of said delay. The Owner may retain the amount thereof from any monies which otherwise would be payable hereunder to the successful bidder.

8. QUALIFICATIONS OF BIDDERS

The Owner will make such investigations as it deems necessary to determine the ability and competency of the Bidder to perform the work in the manner and within the time limit stipulated, and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request, such as evidence to the resources to fulfill the conditions of the Contract and Specifications. The Owner reserves the right to reject any bids received if the investigation fails to satisfy the Owner that such a bidder is properly qualified to carry out the obligations of the contract and to complete the work as specified.

In addition to the financial qualifications, the Bidder may be required to prove to the satisfaction of the Owner that he has within the two year period prior to the submission of this bid, successfully completed a contract for similar work in an amount of not less than seventy-five per cent (75%) of the amount of the proposed Contract.

In determining bidder responsibility for this work, attention will be given to the method of construction which the bidder plans to follow, the available experienced and skilled men which he plans to use in the prosecution of the work; the type of equipment and material he plans to install; and he shall be prepared to furnish this information, in writing, at the Owner's request.

9. BID SECURITY

Each bid must be accompanied by a certified check of the bidder, or a bid bond, duly executed by the bidder as principal and having as surety thereon a surety company approved by the Owner, in an amount not less than ten percent (10%) of the amount of the base bid. Such checks, or bid bonds, will be returned to all except the three lowest formal bidders within the seven (7) days after the formal opening of the bids. The remaining checks, or bid bonds will be returned to the three lowest bidders within forty-eight (48) hours after the Owner and the accepted bidder have executed the contract, or if no contract has been so executed, within ninety (90) days after the date of the opening of bids, or upon demand of the bidder at any time thereafter so long as he has not been notified of the acceptance of his bid.

10. CONTRACT

The bidder to whom the Contracts are awarded shall, within ten (10) days after the official notice of acceptance of their bids, execute a contract in quintuplicate, then submit same with said bond to the Owner to the attention of the Chairman of the Board of Supervisors. The time for such submittal may be extended at the election of the Owner and for the sole benefit of the the Owner. Failure or refusal of the bidder to do so will be considered as an abandonment of the Contract and bid security posted with any proposal shall be forfeited to and become the property of the Owner in an amount not to exceed the difference between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid.

11. PERFORMANCE BOND

Simultaneously with his delivery of the executed Contract, the successful bidder must deliver to the Owner an executed bond in the amount of **one hundred percent (100%)** of the accepted bid as security for the faithful performance of his Contract and for the payment of all persons performing labor or furnishing materials in connection therewith and payment and maintenance bond prepared in the form of bonds attached hereto and for one year's maintenance and having as security thereon such surety company or companies as are acceptable to the Owner and as are authorized to transact business in this State.

Alterations made in the terms of the Specifications, agreement of quantities of work shall in no way violate the bond. Bonds shall be executed by an insurance or surety company licensed to operate in the State and satisfactory to the Owner, and the bond shall remain in full force and effect for a period of one (1) year after formal acceptance of the completed work, as a guarantee against defective workmanship and/or materials and equipment.

12. BASIS OF AWARD

The Contract will be awarded on the basis of competitive bids to the responsible bidder submitting the lowest responsive bid.

13. REJECTION OF BIDS

The owner reserves the right to reject any or all bids or to accept any bid should it deem it to be for its best interest to do so. Bids which are incomplete, conditional, or obscure, or which contain additions not called for, erasures, alterations or irregularities of any kind, may be rejected as nonresponsive. The right to reject or accept bids shall be solely for the benefit of the Owner and shall create no right, entitlement or expectation in any bidder.

14. PROGRESS PAYMENTS

The Engineer will prepare progress estimates at or about the last day of each month either by direct estimation or by measurements, or by a combination of both, of work done by the Contractor during the previous month. Ninety per cent (90%) of such estimate shall be due the Contractor as payment after the issuance of a construction certificate. The balance of ten per cent (10%) of the progress estimate shall be withheld until the final acceptance of the completed work. Payment will be made by the Owner on or before the time specified in the Agreement.

15. TRADE NAMES

Wherever trade names are used either in the plans or in the specifications, it is understood that such names and designations indicate a type or kind of material and/or equipment. Approved equal in kind, type, and/or quality will be accepted at the discretion of the Owner. The Contractor shall submit manufacturers' specifications, etc., sufficient for the Engineer to determine equivalency of material and/or equipment.

16. POWER OF ATTORNEY

Attorneys in fact who execute contract bonds must file with each bond a certified copy of their power of attorney to sign said bonds.

17. PERMITS

The Contractor shall be required to determine the necessity for and obtain all necessary permits from the municipality or other public authorities, and shall give all notices required by law or municipal ordinances. The charge or fees for any permits issued by the Owner will be assumed by the Owner but any other fees shall be borne by the Contractor.

18. PROGRESS SCHEDULE

Within ten (10) days after the award of the Contract to him, the Contractor shall submit a proposed program of operation, showing clearly how he proposes to conduct the work so as to bring about the completion of his work within the time limit specified. This program shall outline the proposed sequence of operations, the rates of progress and the dates when his work will be sufficiently finished to permit the installation of the work under other contracts. The work under this contract shall be so scheduled that as structures are completed, they can be placed in use or operation with a minimum of delay. The program shall be subject to the approval of the Owner and shall be updated by the Contractor at any time during performance of the Contract should the Owner determine that the Contractor's actual progress does not correspond to that projected in the then-existing progress schedule.

19. OTHER CONTRACTS

Bidders are advised that work other than the work covered under their contract may be in progress at the site of the work during the performance of the work covered by these documents. Accordingly, bidders are warned that coordination of construction activities at the site must be such as to avoid interference. UNDER NO CIRCUMSTANCES SHALL THE OWNER OR ENGINEER BE HELD RESPONSIBLE TO THE CONTRACTOR FOR DELAYS OR EXTRA WORK OCCASIONED BY INTERFERENCE OF OTHER CONTRACTORS.

20. DISCREPANCIES IN BID

In the event there is a discrepancy between the unit price and the extended totals, the unit price shall supercede. In the event there is a discrepancy between the unit prices and/or lump sums expressed in figures and words, the unit prices and/or lump sums written in words shall supercede those expressed in figures.

21. ESTIMATED QUANTITIES

The quantities given in the Proposal and attached to the specifications are approximate only, being given as a basis for the uniform comparison of bids, and the Owner does not expressly or by implication warrant that the actual amount of work will correspond therewith. In the event actual work quantities differ from estimated quantities, the Bidder's attention is directed to Instructions to Bidders Section 22, "QUANTITY VARIATIONS".

22. QUANTITY VARIATIONS

Where the quantity of work shown for an item in the bid schedule, including any modification thereof, is estimated, no adjustment of the contract price nor of the performance time shall be made for overruns or underruns which are within twenty-five (25%) per cent of the estimated quantity of any such item.

For overruns of more than twenty-five (25%) per cent, the Engineer shall re-estimate the quantity for the item, establish an equitable contract price for the overrun of more than twenty-five (25%) per cent, adjust contract performance time equitably, and modify the Contract in writing accordingly; this clause to thereafter be applicable to the total re-estimated item quantity.

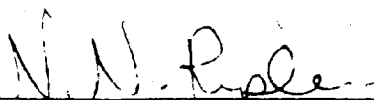
For underruns of more than twenty-five (25%) per cent, the Engineer shall determine the quantity for the item, establish an equitable contract price therefore, adjust contract performance time equitably and modify the Contract in writing accordingly.

It shall be the single and sole responsibility of the Contractor to ensure that its activities comply with applicable safety requirements. Neither the Engineer nor the Owner shall owe any duty under

this Contract or otherwise to the Contractor or its agents, employees or guests to inspect the work or otherwise ensure compliance by the Contractor with applicable safety requirements. No increases in the contract price or extensions in contract completion time shall be given by the Owner as the consequence of the Contractor's failure to so comply.

NOTE:

Each clause of these specifications is to be followed wherever it may apply throughout the work, irrespective of the section or subdivision of the specifications in which the clause may appear.



Secretary
N. N. Ripley

Date: July 8, 1987

CONTRACTOR'S QUALIFICATION STATEMENT

(To be submitted with bid)

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

TO:

Submitted by: T. L. Ripley, Sr. Corporation X
Name: Greenway Services, Inc. Partnership _____
Address: Box 221 Horsham, PA 19044 Individual _____
Principle Office: 3535 Bristol Rd., Chalfont, PA 18914 Joint Venture _____
Other _____

1.0 How many years has your organization been in business as a contractor? 8

2.0 How many years has your organization been in business under its present business name? 8

3.0 If a corporation, answer the following:

3.1 Date of incorporation: August, 1980

3.2 State of incorporation: Delaware

3.3 President's name: T. L. Ripley, Sr.

3.4 Vice-President's name(s): S. A. Cataldo

3.5 Secretary or Clerk's name: N. N. Ripley

3.6 Treasurer's name: N. N. Ripley

3.7 List name and address of all parties holding greater than ten percent (10%) interest in the corporation:

T. L. Ripley, Sr.

S. A. Cataldo

N. N. Ripley

COS-1

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)

N/A

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

N/A

6.0 We normally perform 100 % of the work with our own forces.
List trades below:

General Contracting

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

NO

- 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.

NO

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

Turf treatment	Glassboro State College	\$35,000	50%
Fertilization	NJ Dept. of Trans.	\$46,000	50%
Liming	NJ Dept. of Trans.	\$35,000	50%
Turf treatment	Lenape School District	\$26,000	25%

12.0 List the categories in which your organization is legally qualified to do business in Pennsylvania:

Pesticide application

Dept. of Trans. Classification Code A-C-M & Y

13.0 Trade References:

14.0 Bank References:

Horizon Financial

735 Davisville Road

Southampton, PA 18966

Nancy Clark 355-9537

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

First Indemity of America Insurance Co.

Universal Service Agency, Inc.

501 Office Center Dr.

Suite 128

Ft. Washington, PA 19034

16.0 Dated at _____
this _____ day of _____, 19____.

Name of Organization: Greenway Services, Inc.

Box 221

Horsham, PA 19044

By: _____

S. A. Cataldo

Title: _____

Vice President

17.0 I, _____, 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: _____

BID FORM

DATE: 7/8/87

Proposal of Greenway Services, Inc. (hereinafter called "Bidder"), organized and existing under the laws of the State of Delaware, doing business as a corporation *.

To: Bensalem Township Board of Supervisors (hereinafter called "Owner").

Gentlemen:

The Bidder, in compliance with your invitation for bids for **James Armstrong Memorial Park and Nature Reserve, Phase I**, in Bensalem Township, has examined the specifications with related documents, and being familiar with all of the conditions surrounding the requirements of the proposed project, including the availability of materials and labor, hereby proposes to furnish all labor, materials and supplies, and to construct the items in accordance with the contract documents, within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this proposal is part.

Bidder acknowledges receipt of the following addendum:

None

*Insert "a corporation", "a partnership", or "an individual", as applicable.

Bidder agrees to furnish all labor, materials and equipment, perform the whole of the work, and to submit to all conditions as represented, intended or implied, both particularly and generally, by the plans, specifications, standards, contract requirements, forms of agreement, and this proposal, at the prices herein stated; and agree that each item bid shall be complete in itself and that the Bensalem Township Board of Supervisors may increase or diminish the amount of work thereunder, or omit the item in its entirety: (Amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)

Driveway stone base and asphalt paving to be installed and constructed by others. Contract options as herein described may be constructed at the Owner's option.

CONTRACT ITEMS

<u>Item No.</u>	<u>Approximate Quantity</u>	<u>Units</u>	<u>Items & Unit Prices Bid (Prices in Words)</u>	<u>Unit Price</u>	<u>Total Price</u>
1		L.S.	Remove and dispose of objectionable material (old tires and debris), abandoned utility poles, and existing bollards (approximately 8 poles, 8 bollards)	1,000.00	\$ 1,000.00
2		L.S.	Temporary erosion control facilities, clearing and grubbing	10,000	10,000.00

BF-2

Item No.	Approximate Quantity	Units	Items & Unit Prices Bid (Prices in Words)	Unit Price	Total Price
3		L.S.	Earthwork, including driveway and parking areas, embankment site grading	4,500.00	\$ 4,500.00
4		L.S.	Storm system, including 90 L.F. 24" fully coated C.M.P. and end sections, 540 L.F. channel at min. 1.61' depth, 700 S.F. of 8" rip-rap		
5		L.S.	Selectively thin and clear wooded areas for picnic areas	5,840.00	5,840.00
6	5	Ac.	Seeding	3,000.00	3,000.00
				1,200/a	6,000.00

BP-3

<u>Item No.</u>	<u>Approximate Quantity</u>	<u>Units</u>	<u>Items & Unit Prices Bid (Prices in Words)</u>	<u>Unit Price</u>	<u>Total Price</u>
7	1,500	L.F.	Wood chip hiking trail		
				2.00/l.f.	\$ 3,000.00
8	2	Ea.	Footbridges, including concrete footings		
				2,750/eac.	5,500.00
9	156	Ea.	Bollards		
				25.00/ea.	3,900.00
10	6	Ea.	Picnic tables		
				335.00/ea.	2,010.00
11	5	Ea.	Benches, including con- crete anchoring		
				350.00/ea.	1,750.00

BF-4

<u>Item No.</u>	<u>Approximate Quantity</u>	<u>Units</u>	<u>Items & Unit Prices Bid (Prices in Words)</u>	<u>Unit Price</u>	<u>Total Price</u>
12	5	Ea.	Litter receptacles with cans, including concrete anchoring	\$280/ea.	\$ 1,400.00
13	4	Ea.	Grills, including concrete anchoring	225/ea.	900.00
14	2	Ea.	Bicycle racks	550/ea.	1,000.00
15	1	Ea.	Swing gate, including concrete anchoring	\$1,300/ea.	1,300.00

BP-5

<u>Item No.</u>	<u>Approximate Quantity</u>	<u>Units</u>	<u>Items & Unit Prices Bid (Prices in Words)</u>	<u>Unit Price</u>	<u>Total Price</u>
16		L.S.	Signs (10 total)		
				\$2,500/L.S.	\$ 2,500
			Contract Items - Total Amount of Bid	\$	\$53,600

OPTIONAL ITEMS (AT OWNER'S OPTION)

<u>Optional Item</u>	<u>Approximate Quantity</u>	<u>Units</u>	<u>Items & Unit Prices Bid (Prices in Words)</u>	<u>Unit Price</u>	<u>Total Price</u>
A.		L.S.	Fishing pier repair and railing including railing for existing walls		
				\$ 14,750	\$14,750.00
B.		L.S.	Concrete canoe launch		
				4,000	4,000.00
			Optional Items - Total Amount of Bid	\$	\$18,750.00

BF-6

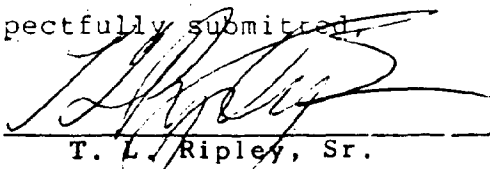
The aforementioned unit prices shall include all labor, materials, bailing, shoring, excavation and removal, overhead, profit, insurance, etc. to cover the finished work of the several kinds called for.

Bidder understands that the Owner reserves the right to reject any or all bids at the Owner's discretion.

The Bidder agrees that this bid shall be in full effect, remain open and may not be withdrawn for a period of sixty (60) calendar days after the scheduled closing time for receiving bids.

Within ten (10) days of receipt of written notice of the acceptance of this bid by the Owner, Bidder will execute the formal Contract attached and deliver a Surety Bond or Bonds as required in the General Conditions.

Respectfully submitted,

By: 

T. L. Ripley, Sr.

Company Name: Greenway Services, Inc.

Business Address: Box 221

Horsham, PA 19044

Telephone: 215-343-0110

(Seal - if bid is by a corporation)

FORM OF GUARANTY

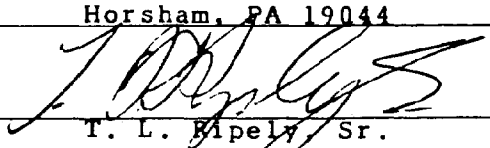
Accompanying this Proposal is a Bid Bond in the amount of
10% of amount of bid Dollars _____ as bid
security.

The undersigned hereby certifies that this Proposal is genuine, and not sham or collusive, or submitted in the interest or on behalf of any person, firm or corporation not herein named, and has not induced any other persons to refrain from bidding, and has not in any way sought by collusion to secure for himself an advantage over any other bidder.

Firm Name: Greenway Services, Inc.

Address: Box 221

Horsham, PA 19044

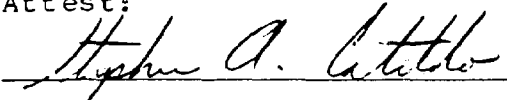
By: 

T. L. Ripely, Sr.

Title: President

Official Seal

Attest:



HOLD HARMLESS CLAUSE

The contractor shall indemnify and save harmless the Township from and against all losses, claims, demands, payments, suits, actions, recoveries, and judgments of every nature and description brought against or recoverable from the Township of Bensalem by reason of any act or omission of the contractor, his agents, employees, assigns, and any entity acting in the contractor's behalf and on the contractor's direction in the execution of the work or in consequence of any negligence or carelessness connected with the execution of any work and any activities directly or indirectly incidental thereto. This specifically includes any negligence or carelessness of the contractor in failing to review all plans, specifications, and other documents published by the Township of Bensalem in connection with the preparation and award of the contract.

The contractor shall assume all risk and bear any loss or injury to the property or any person which is caused by the negligence of the contractor including his negligent failure to notify the Township of Bensalem of any dangerous condition requiring Township action, during the period including periods when the contractor is not present on the site but during the progress

of work provided for in the contract until the same shall have been completed and accepted. The contractor shall also assume all responsibility for any and all loss by reason of the contractor's negligence or violation of any local, State, or Federal law, regulation, practice, or order. The contractor shall give to the Township authorities and all other appropriate authorities all required notices relating to the work for which the contract was let including all notices of any dangerous condition.

The contractor in executing this agreement represents to the Township of Bensalem that the contents of this hold harmless clause has been communicated to any subcontractors or employees and that this representation is made in behalf of both himself and all persons or organizations acting in contractor's behalf including any subcontractors.

FIRM NAME

PRESIDENT

SECRETARY

ATTEST: _____

AGREEMENT

THIS AGREEMENT made this day of , 19 , by and between , hereinafter "Owner", and , hereinafter "Contractor".

GENERAL PROVISIONS:

The Contractor shall:

- (a) have charge of and be responsible for the entire work for which he has contracted until its final completion and acceptance by the Owner;
- (b) be held liable for any defects which may appear in the material he has furnished or in his work for a period of one (1) year after final acceptance by the Owner;
- (c) be solely liable for any damage occasioned by his work to the property of the Owner and others; and
- (d) upon conclusion, clean up the ground worked over.

RESPONSIBILITIES OF CONTRACTOR:

The Contractor agrees to pay for all materials furnished and services rendered for the performance of the Contract and that any person or corporation furnishing materials or rendering services to the Contractor as though such person or corporation were expressly named herein, provided the action is brought within one (1) year after the time the cause of the action accrued.

The Contractor shall defend, indemnify and save harmless the Owner and Engineer, their officers, employees and agents from and against any and all claims, demands, suits, judgements, costs and expenses of any kind arising out of the work to be performed hereunder and resulting in any injury (including death) to any person or damage to any property (including loss of use) caused by any act or failure to act by the Contractor, its officers, employees, agents or guest.

It is also agreed and understood that acceptance of final payment by the Contractor shall be considered as a release in full of any claim against the Owner out of, or by reason of, the work done and materials furnished under this Contract.

The Contractor shall cooperate with the Owner in carrying on the work, without interrupting any service to the public.

BONDS AND INSURANCE CERTIFICATES:

The Contract will not become effective until the Owners have received satisfactory performance and material payment bonds and maintenance bonds executed by responsible surety companies licensed to do business in the Commonwealth of Pennsylvania and acceptable to the Owners, together with insurance certificates in respect of the insurance required by the specifications under policies issued by companies authorized to do business in Pennsylvania and acceptable to the Owners.

The Contractor will insure the structures and improvements against loss in windstorm and aircraft perils, etc., as stipulated under insurance in "General Conditions", with a responsible insurance company or companies authorized and qualified to do business under the laws of the Commonwealth of Pennsylvania. Such policies shall be for 100% of the insurable value of the Contract at all times. Policies shall be written in the name of (), and the Contractor, "as their respective interests may appear", subject to 100% co-insurance.

The Contractor shall hold the Department of Environmental Resources harmless from any and all claims, demands and actions based upon or arising out of any services performed by any of its employees, agents and contractors under this Agreement, and shall defend any and all actions brought against the Department of Environmental Resources based upon such claims or demands. It is understood and agreed that the Contractor's standard liability insurance policies protect, or shall be endorsed to protect, the Department of Environmental Resources from claims of bodily injury or of property damage arising out of any services performed by the Contractor or its employees, agents or subcontractors under this Agreement.

STARTING AND PROSECUTION OF WORK:

The Bidder agrees to begin the work within seven (7) consecutive calendar days after receipt of Notice to Proceed, and to prosecute it expeditiously to a conclusion, using an adequate number of competent men, suitable equipment and machinery at all times and working each working day that weather conditions permit. In event that the work is not completed within ninety (90) working days after receipt of formal notice from the Engineer hereinafter referred to, to start work, the Owners may retain, as liquidated damages for delay only, \$100.00 for each day from the expiration of such period to and including the day of completion.

WORK INCLUDED IN THE CONTRACT:

The Contract shall consist of furnishing all labor, superintendence, materials, equipment, tools and other facilities, and all things necessary and proper for performance of the work as shown on the plans and described in these specifications prepared by the Engineer and the advertisement for Bids.

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 bidding 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.

MATERIALS TO BE FURNISHED BY THE OWNERS:

No material will be furnished by the Owners.

WORK TO BE DONE BY THE OWNERS:

No work will be done by the Owners in connection with the Contract.

PAYMENTS:

In consideration of the Contractor faithfully complying with the terms and stipulations of the Contract, the Owners covenant and agree to pay said Contractor the sum set forth in the proposal of said Contractor, and also pay for any extra work that may be agreed upon in writing, and said prices shall be full compensation under the terms of the Contract.

Monthly estimates will be prepared by the Contractor, and approved by the Engineer, of the value of the work done as of the last day of each month, while work is being carried on under this Contract, and payment of the estimated value of said work will be made on or about the twenty-fifth day of the following month.

Payment of the remaining balance of the Contract price will be made within thirty (30) days of the satisfactory completion and acceptance by the Owner of the work.

IN WITNESS WHEREOF: Owner has, by Resolution, authorized the corporate seal of the Bensalem Township Board of Supervisors to be affixed and the Contractor has caused his seal to be affixed and the Contract signed by duly authorized officials, the day and year first shown above.

TOTAL AMOUNT OF BID _____

IN WITNESS WHEREOF: The parties hereto have caused the signature of their proper officers and seals to be affixed thereto:

Attest:

Secretary

By: _____
Owner

Date: _____

Attest:

By: _____
Contractor

Date: _____

Approved:

Consulting Engineer

PAYMENT BOND

KNOW ALL MEN, that we _____
as Principal, and _____, as Surety,
are held unto _____
_____, and its suc-
cessors and assigns (hereinafter called the Obligee), in the sum of
_____ Dollars
(\$ _____), lawful money of the United States, for the payment of
which sum truly to be made we bind ourselves and each of our respective
heirs, personal representatives, successors and assigns, jointly and
severally, by these presents, this _____ day of _____, 19__.

WHEREAS, the Principal has entered into a written agreement with
the Obligee dated as of _____, 19__, for performance of the
_____ Contract work in connection with the construction of
_____ (which Agreement, together
with the plans and specifications therefore (including all related
drawings and documents), and such alterations as may be made in such
plans and specifications as therein provided, are hereby made a part
hereof as fully as if set out herein, and shall together be hereinafter
referred to as the "Contract"): and it was a condition of the award of
said Contractor that this bond be furnished.

THEREFORE, THE CONDITION OF THIS OBLIGATION is that if the Princi-
pal and all of the Principal's sub-contractors shall promptly make pay-
ment for all material furnished and labor supplied or performed in the
prosecution of the work under the Contract, whether or not said ma-
terial or labor enter into and become component parts of said work,
then this obligation shall be void; but otherwise it shall remain in

full force. "Labor" and "materials", as used in this bond, shall include public utility services and reasonable rentals of equipment, but only for periods when the equipment rented is actually used at the site of the work.

The Principal and Surety, for value received, hereby agree that no change, extension of time, alteration or addition to the terms of any Contract Documents or to the work to be performed thereunder nor any forbearance by either the Obligee or the Principal to the other, shall in any way affect the obligation of either of them on this bond, and they hereby waive notice of any such change, extension of time, alteration or addition.

The Principal and Surety further acknowledge and agree that this bond is furnished pursuant to requirements of the Public Works Contractors' Bond Law of 1967, solely for the protection of claimants supplying labor or material to the Principal or any of the Principal's subcontractors in the prosecution of the work under the Contract, and that this bond is subject to all provisions of said Law as fully as though said provisions were set forth herein at length. They also agree that any claimant entitled under the said Law to sue on this bond may use a copy of this obligation, certified by the Obligee, for the purpose of establishing his, or its or their claim without requiring production in court of an executed original, and that action by one or more claimants shall not bar any subsequent or concurrent action/s by the same or other claimant/s. However, the Obligee shall in no event be liable for payment of any costs or expenses of any claimant's suit.

Both Principal and Surety acknowledge that all references herein to the Principal in singular form shall include the plural, as may be appropriate to the Principal.

IN WITNESS WHEREOF, the Principal and Surety, intending to be legally bound, have executed this bond the day and year aforementioned.

Principal

By: _____
Attorney-in-fact
Surety

PERFORMANCE BOND

KNOW ALL MEN, that we _____
as Principal, and _____
as Surety, are held and firmly bound unto _____

and its successors and assigns (hereinafter called the Obligee), in the
just sum of:

_____ Dollars
(\$ _____) for faithful performance of the Contract

as specified below:

in lawful money of the United States, for payment of which sum truly to
be made, we find ourselves and each of our respective heirs, personal
representatives, successors and assigns, jointly and severally, firmly
by these presents, this ____ day of _____, 19__.

WHEREAS, the Principal has entered into a written agreement with
the Obligee, dated as of _____, for performance of
_____ Contract in connection with Obligee (which agree
ment together with the specifications therefore [including all related
drawings and documents] and such alterations as may be made in such
specifications as therein provided, are hereby made a part hereof as
fully as if set out herein, and shall together be hereinafter referred
to as the "Contract"); and it was a condition of the award of said
Contract that this bond be furnished.

THEREFORE, THE CONDITIONS OF THE ABOVE OBLIGATIONS ARE:

That, if the Principal shall faithfully perform the Contract (including any alterations or additions thereto) in accordance with the specifications and conditions of the Contract, and satisfy all claims and demands to persons or property, or for wrongful death in the performance thereof, and shall fully indemnify and save harmless the Obligee from any and all costs and damage which the Obligee may suffer, and fully reimburse and repay the Obligee any and all outlay and expense which it may incur, by reasons of any such default, then this part of the Obligation shall be void, but otherwise it shall remain in full force.

The Surety, for value received, hereby agrees that no change, extension of time, alterations or additions to the terms of any of the Contract Documents or to the items to be provided thereunder not any forbearance by either the Obligee or the Principal to the other, shall in any way affect its obligation on this bond, and it hereby waives notice of any such change, extension of time, alteration or addition.

Both Principal and Surety acknowledge that all references herein to the Principal, in singular form, shall include the plural, as may be appropriate to the Principal.

IN WITNESS WHEREOF, the Principal and Surety, intending to be
legally bound, have executed this bond the day and year aforementioned.

Principal

By: _____
Attorney-in-fact
Surety

PFB-3

(1-87) 86-1617 (1806.22)

MAINTENANCE BOND

KNOW ALL MEN, that we _____
as Principal, and _____
as Surety, are held and firmly bound unto _____ Bensalem Township

_____ and its successors and assigns (hereinafter called the Obligee), in
several just sums of

_____ Dollars

(\$ _____) for maintenance as specified below:

in lawful money of the United States, for payment of which sum truly to
be made, we find ourselves and each of our respective heirs, personal
representatives, successors and assigns, jointly and severally, firmly
by these presents, this _____ day of _____, 19__.

WHEREAS, the Principal has entered into a written agreement with
the Obligee, dated as of _____, for performance of _____
Contract work in connection with construction of _____
together with the plans and specifications therefore [including all
related drawings and documents] and such alterations as may be made in
such plans and specifications as therein provided, are hereby made a
part hereof as fully as if set out herein, and shall together be here-
inafter referred to as the "Contract"); and it was a condition of the
award of said Contract that this bond be furnished.

THEREFORE, THE CONDITIONS OF THE ABOVE OBLIGATIONS ARE:

That, if the Principal shall remedy without cost to the Obligee any defects which may develop during a period of one (1) year from the date of completion and acceptance of the work performed under the Contract, provided that such defects in the judgement of the Obligee or its successor, are caused by defective or inferior materials or workmanship, then this part of the obligation shall be void, but otherwise it shall remain in full force. However, the Principal agrees that the foregoing one-year limitation shall apply to the Surety only and shall not relieve the Principal of any liability otherwise provided by law or by the Contract Documents.

The Surety, for value received, hereby agrees that no change, extension of time, alterations or additions to the terms of any of the Contract Documents or to the work to be performed thereunder not any forbearance by either the Obligee or the Principal to the other, shall in any way affect its obligation on this bond, and it hereby waives notice of any such change, extension of time, alteration or addition.

Both Principal and Surety acknowledge that all references herein to the Principal, in singular form, shall include the plural, as may be appropriate to the Principal.

IN WITNESS WHEREOF, the Principal and Surety, intending to be
legally bound, have executed this bond the day and year aforementioned.

Principal

By: _____
Attorney-in-fact
Surety

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GENERAL CONDITIONS

1. "OWNER" DEFINED

Wherever the word "Owner" is used in these Specifications, it shall be understood to mean the Bensalem Township Board of Supervisors, or its representative.

2. "ENGINEER" DEFINED

Wherever the word "Engineer" is used in these specifications, it shall be understood to mean a Professional Engineer or engineering corporation designated and hired by the Owner, with defined responsibilities related to the construction of James Armstrong Memorial Park and Nature Reserve, Phase 1.

3. "CONTRACTOR" DEFINED

Wherever the word "Contractor" is used in these Specifications, it shall be understood to mean the person, firm or corporation to whom the execution of any part of the work herein contemplated shall be awarded by the Owner.

4. SPECIFICATIONS AND DRAWINGS - COMPREHENSIVE

All of the contemplated installation and each and every part thereof, shall be subject to all of the requirements - throughout these specifications - which the Engineer may deem pertinent. All of the installations to be furnished and all of the work to be done by the Contractor shall strictly conform to these specifications, to the general and detailed drawings made for the work and forming part thereof, and to such further drawings as may be furnished to the Contractor by the Engineer at anytime during the progress of the work and prior to its entire completion.

5. PRECEDENCE

The drawings and specifications are intended to be consistent with each other but should there be any discrepancy, the specifications shall take precedence. Technical specifications shall take precedence over general specifications or conditions. The Contractor shall closely examine the specifications and drawings prior to commencing work under this Agreement and shall inform the Engineer of discrepancies therein. Except in the case of apparent clerical error or inaccuracy, the figures and notes on the drawings shall take precedence over measurements by scale. Should the Contractor observe any apparent discrepancy between any point, line or elevation and these specifications or the drawings, it shall be the duty of the Contractor to immediately report the same to the Engineer.

6. SPECIFICATIONS AND DRAWINGS ON THE JOB

The Contractor or the representatives of the Contractor shall always have on hand on the job site a copy of the specifications, drawings, and approved shop drawings for ready reference of the Engineer.

7. SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

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

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.

The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Engineer's review of Shop Drawings, Product Data or Samples unless the Contractor has specifically informed the Engineer in writing of such deviation at the time of submission and the Engineer has reviewed 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 Engineer's review thereof.

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 Engineer on previous submittals.

No portion of the Work requiring submission of a Shop Drawing, Product Data or Sample shall be commenced until the submittal has been reviewed by the Engineer.

8. ENGINEER'S REVIEW

The review of the Engineer of drawings or other data furnished by the Contractor shall in no way relieve the Contractor from responsibility for the correctness thereof, or for the accurate and satisfactory execution of the Contract.

9. LOCATION

The entire installation during its progress shall be accurately located in plan and elevation as shown on the drawings, or specified or as located, staked out, marked, or otherwise directed by the Engineer. When directed to do so by the Engineer, the Contractor shall provide and have at hand on the job site, all necessary stakes, straight edges, levels, chalk lines, sounding rods, augers, and all other implements and materials which the Engineer

or his representative may desire to use in the location or measurement of the work by the Contractor and in making any tests thereof. The Contractor shall furnish such man or men as the Engineer or his representative may desire to assist in laying out, measuring up, all or any portions of the work of the Contractor, and in making any tests thereof.

10. STAKES AND MARKS

The Contractor shall place distinct marks at or near all points where any and all buried or concealed appliances or fittings are located, or at such other points where it may be important to preserve or which might be difficult to find without such marks. After the stakes or other marks have been set by the Engineer, they shall be under the care of the Contractor and if any stake or any mark shall be disturbed or removed, except when authorized by the Engineer, the cost of replacing the said stake or mark shall be paid by the Contractor.

11. LEGAL REQUIREMENTS

The Contractors shall conform to all general, state and local legal requirements having to do with the installation, and shall protect and defend the Owner against any claim for any accident or damage resulting from any violation thereof by the Contractor. The Contractor shall, without additional expense to the Owner, obtain all required licenses and permits.

12. LIENS

Contractor, for itself, its subcontractors and all parties acting through or under it, covenants and agrees that no mechanics' claims or liens shall be filed or maintained by it, them or any of them against the work and the lot of ground appurtenant thereto for or on account of the work done or materials furnished by it, them or any of them, under this Contract or otherwise, for, towards, in or about the work; and the Contractor, for itself, its subcontractors, and others under it, hereby expressly waives and relinquishes the right to have, file or maintain any mechanics' lien or claim against the work, and the lot of ground appurtenant thereto, and further agrees that this waiver of the right of lien shall be an independent covenant and shall operate and be effective as well with respect to work and labor done and materials furnished under any supplemental Contract, verbal or written, or Contract for extra work, as to work and labor done and materials furnished under this Contract. Before the final payment is made to the Contractor, he shall, if required by the Owners, furnish the Owners with a complete Release of Liens, or other acceptable evidence that all payments have been made in full for all labor and materials used in the work. In case any lien, stop notice or claim for work, labor or materials done, performed, or delivered and used in the prosecution of the work herein provided for shall be filed (whether in

strictly legal form or otherwise) then, in that case, the Owners may retain from any moneys due the Contractor a sum equal to the amount of said claim or notice, until such time as the Contractor shall furnish a receipt or release therefrom or thereof.

13. PATENT INFRINGEMENTS

The Contractor shall protect and defend the Owner against any claim for royalty, bonus, license or other expense or cost or damage, by reason of the introduction or use of any patented invention, arrangement or appliance, whether or not included in the requirements of these specifications or shown on the drawings herein referred to, which invention, arrangement or appliance may enter into or form part of the permanent work, or be used in connection with the construction thereof.

14. GENERAL RISKS

The Contractor shall assume all risks whatsoever as to all damages from the natural elements, fire, flood, trespass, and from any and all other causes, and shall protect accordingly all materials both before and after installation.

15. NON-INTERFERENCE

The Contractor shall, in such manner as the Engineer may require, so arrange the execution of the work as not to unnecessarily interfere with the execution of any other work which may be in progress, or with the operation of the existing plant.

16. STORAGE LOCATIONS

All materials delivered for the work, or excavated or otherwise disturbed, and which are not subject to immediate removal, shall be stored or placed where and as the Engineer may direct or approve, and so as to interfere as little as possible with public or other safety and convenience, and with the simultaneous prosecution of any other work.

17. TEMPORARY PASSAGEWAYS

The Contractor shall provide and maintain such safe and adequate temporary passageways as the Engineer, or other authorities may direct or approve.

18. WATER COURSES

The Contractor shall provide for, and maintain the flow of any surface or underground water courses which may be encountered during the prosecution of the work.

19. PROTECTION OF WORK AND PROPERTY

The Contractor shall provide adequate signs, lights, barricades and other devices necessary or appropriate to warn the public of the work being performed hereunder and shall undertake such measures necessary to prevent any injury to the public or to the property of the Owners or others. The Contractors shall not interfere with or interrupt the Owners' current operations and shall coordinate with the Owners' current operations and shall coordinate with the Owners' employees in connection therewith.

20. PROTECTION OF THE PUBLIC

In all cases where any of the operations of the Contractor, including the temporary storage or placing of material, appliances of plant, might endanger travel or traffic on any public highway or any other thoroughfare, of persons, animals, and vehicles, sufficient barricades shall be placed and maintained during daylight, and be provided with conspicuous red flags at all points of danger, and not over fifty (50) feet apart along all lines of danger, and bright red lantern lights shall be substituted for the said flags and shall be kept continuously lighted and displayed from sunset until sunrise.

21. NO TRESPASS

Before entering upon or in any way disturbing any public, corporation or private property, the Contractor shall give sufficient notice to the responsible official or to the Owner thereof, and shall conform to all of the reasonable requirements of such official or Owner.

22. THE PROPERTY OF THE OWNER

In obtaining free of charge and making use of any materials which the Owner may permit the Contractor to so obtain from the property of the Owner, by excavation or otherwise, the Contractor shall not only conform to all requirements herein but also to all of the wishes of the Owner.

23. PROTECTION OF THE SUSPENDED WORK

During all hours of the day and night when active work is suspended, including Sundays, the Contractor shall provide such watchmen, or take such other precautions, as may be necessary to prevent injurious trespass upon, and the entire safety of all of the materials and finished work, for the protection of all of which the Contractor shall be responsible until it is finally accepted.

24. REPAIR AND RESTORATION

The Contractor shall care for, repair, restore and make good any structure or surface or things on or in any private, corporation or public property, which may in any way be disturbed, injured, or destroyed by, or in consequence of, the work of the Contractor.

25. REFUSE MATERIAL AND FINISH

The Contractor shall promptly remove, during the progress of the work, to the satisfaction of the Engineer, all false works, rubbish, and waste materials which may accumulate on any private or public property on account of the work, and the whole work and its vicinity shall be neatly finished and made clean and tidy in every particular before it will be accepted by the Owner.

26. GENERAL RESPONSIBILITY OF CONTRACTOR

To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner and Engineer 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.

In any and all claims against the Owner or the Engineer 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 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 benefits acts or other employee benefit acts.

27. MATERIALS, PLANT AND LABOR

The Contractor shall furnish all of the materials, in the rough or finished, of whatsoever kind, which may be required or desirable to completely execute the Contract. The Contractor shall furnish all of the tools, and other working plant and construction materials

and appliances, of whatsoever kind, which may be required or desirable to completely execute the Contract. The Contractor shall furnish all of the skilled and other labor which may be required or desirable to completely execute the Contract.

28. SKILLED LABOR

All work shall be done by tradesmen specially skilled in the parts of the work to which they may be assigned.

29. LOCAL LABOR

In the employment of labor, the Contractor shall give a just preference to the residents of the general neighborhood of the proposed installations, but shall not be required to continue the employment of such local labor when more efficient labor can be obtained from elsewhere.

This paragraph shall not alter or abridge the Contractor's responsibility to comply with federal, state or local laws or regulations concerning the employment of resident labor or affirmative action requirements of any authority.

30. HAULING

The Contractor shall furnish all vehicles, and drivers and other helpers, which may be required for all transportation incident to the entire work, and the Contractor shall make any roadways which may be required, and shall restore the lines of said roadways to their original condition, upon the completion of the work.

31. REJECTION OF MATERIALS OR WORKMANSHIP

All materials and workmanship may be rejected by the Engineer if, in his opinion, they do not conform, in general and in detail, to these specifications and to the drawings, or to any drawings, descriptions and samples which the Contractor may furnish, when bidding or thereafter.

32. ORDER OF EXECUTION

All of the materials shall be delivered, and all of the different parts of the work shall be executed, at the time and in the order and sequence which may be designated or approved by the Engineer.

33. CONTRACTOR TO PROMPTLY UNLOAD AND CARE FOR SHIPMENTS

As soon as any shipment, which the Contractor is required to unload, arrives at the railroad station, or elsewhere, it shall be under the care of the Contractor, who shall thenceforward be responsible for its safety, and who shall be liable for any demurrage or other costs on account of failure to immediately remove from the railroad station, or other point of delivery, any shipments which may be acceptable under these specifications.

34. EMERGENCY WORK

Should any emergency occur, which, in the opinion of the Engineer, should demand it, the execution of the Contract shall be prosecuted with extraordinary vigor, additional shifts of men shall be employed, and the work shall be accelerated as the Engineer shall require. If such acceleration causes an increase in the Contractor's cost of performance of this work, the Contractor may request a Change Order in accordance with the "Changes Clause" of the Contract.

35. IN CASE OF TARDINESS

Upon the refusal, neglect or failure of the Contractor to deliver any portion of the material, or to do or complete any part of the work, when, within the time named in the Contract, the Engineer shall order the same to be delivered or completed, the Engineer may order such portion or portions of the material elsewhere, and employ such labor as he may require to do the said work, and charge the cost thereof to the account of the Contractor.

36. MATERIALS AND WORKMANSHIP

All materials, patterns, shapes, dimensions, workmanship, methods and finish, in general and in detail, shall be such as shall be ordered or approved by the Engineer, and the Engineer shall be the sole and final judge of the quality and fitness thereof.

37. INSPECTIONS AND TESTS

The Engineer, or his representative, shall be afforded all opportunities, and all convenient facilities that may be requested to inspect and test all materials and appliances, in the shops, on the ground, or elsewhere, and the Contractor shall subject each and all of the installations to such tests as shall satisfy the Engineer that all of these specifications have been complied with, before the installations shall be eligible to final acceptance. Any or all such inspections or tests shall be for the sole benefit of the Owner and shall be for the purpose of ascertaining whether the work complies with Contract requirements as set forth herein. Such observations shall not create or constitute a duty on the part of the Engineer to the Contractor, its agents, employees or guests to perform such observations. The Contractor shall at all times be solely responsible for compliance with job safety requirements as set forth herein.

38. INSPECTION NOT ACCEPTANCE

No materials or workmanship will be considered as accepted, which may be found to be defective in manufacture, construction or execution, or deficient in any of the requirements of these specifications, in consequence of any negligence of any inspector or

subordinate engineer to point out said defect or deficiency, during or subsequent to manufacture, and during the entire progress of the work; and the Contractor will be required to correct any imperfect work, remedy, and make good or replace any defective material, whenever discovered, before the final acceptance of the work and before the release of the Surety of the Contractor.

39. CONTRACTOR TO PAY FOR REPAIRS

All materials used and all plant and labor furnished for the replacing or making good of any defective materials or workmanship shall be at the expense of the Contractor, with no extra allowance therefore by the Owner.

40. REMOVAL AND REPLACEMENT OF DEFECTIVE MATERIAL

Should the Contractor fail to promptly make good, to the satisfaction of the Engineer, any defect, or fail to remove from the work any material which the Engineer shall pronounce imperfect, the Engineer may employ workmen to remedy such defect or to remove such materials, and may order such other material elsewhere as may be required to replace that which is removed, and the cost of all such labor and material shall be charged to the account of the Contractor.

41. CONTRACTOR RESPONSIBILITY FOR EMPLOYEES

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

42. ONE YEAR'S RESPONSIBILITY

It shall be understood that the Contractor agrees to furnish such material and appliances, and to construct the whole work in such substantial and workmanlike manner, that it shall be continuously stable and efficient, and the Contractor shall promptly make good, or replace, any or all parts of the materials or installation, including all details, which may be found to be unstable or defective in any particular, ordinary wear and tear excepted, for a period of guarantee of one (1) year after the whole installation has been entirely completed, tested and accepted by the Owner.

43. ONE YEAR'S RESPONSIBILITY NOTWITHSTANDING INSPECTION

The acceptance, after inspection by the Engineer, or his representative, of any portion of the work or material, shall be subject to its freedom from the exhibition of any inherent or developed defect, or any failure to conform to these Specifications, between the time of its acceptance, and the expiration of the above named period of one (1) year.

44. ONE YEAR'S RESPONSIBILITY FOR DIMENSIONS

The acceptance by the Engineer of any of the dimensions proposed by the Contractor shall always be understood to be with the proviso, whether stated at the time of acceptance or not, that the said dimensions shall be proved to be adequate and proper at all times until the expiration of the above named period of one (1) year.

45. EXCELLENCE OF WHOLE - WHETHER OR NOT HEREIN SPECIFIED

It is understood that these specifications are intended to provide that all necessary and desirable materials and appliances shall be furnished by the Contractor, and that all of the same shall be of the best quality and kind, and that the whole work shall be done and entirely completed in a workmanlike and satisfactory manner, in all details, whether herein particularly specified or not.

46. EXTRA WORK

No claim shall be allowed, and no bill shall be paid for any extra work, unless said extra work shall have been done by special written agreement with the Owner entered into prior to the commencement of said work. If prices for such extra work are not included in the unit price bid, the Contractor shall agree to furnish the necessary materials and perform such labor as extra work, and shall agree to accept in full payment therefore the actual field cost of the material and labor plus fifteen (15) percent.

47. SUB-LETTING OF WORK

Assignment or sub-letting of the furnishing of any materials or of the execution of any part of the work shall be subject to approval by the Engineer. Unauthorized assignment or subletting of any or all of the Contract by the Contractor shall constitute a material breach of this Contract.

48. AUTHORITY OF ENGINEER'S ASSISTANTS

In the absence of the Engineer, any person whom he may designate as having charge of the work, or any part thereof, shall have and exercise all the powers of the said Engineer in all matters relating to the execution of the work herein specified, and the orders of said person shall be fully observed and obeyed.

49. TERMS OF PAYMENT FOR MACHINERY UNITS

The Contractor shall receive payment in three installments of the Contract price for furnishing and installing any machinery, as follows:

- a. Thirty-five (35) per cent thereof upon delivery of all of the machinery at the construction site.

- b. Thirty-five (35) per cent thereof when the erection, setting and connections thereof shall be entirely completed and the whole installation be finished in every particular.
- c. Thirty (30) per cent thereof when the whole installation shall have been tested and is in successful operation and is ready, as herein required, for approval and acceptance by the Engineer and by the Owner.

50. MONTHLY ESTIMATE

Unless otherwise expressly provided in the Contract, monthly payment will be made for all work and materials other than machinery, by the Owner to the Contractor, during the progress of the installation according to the following:

Up to fifty (50) percent completion - Ninety (90) percent of the contract value rendered by the Contractor to the Owner during the preceding month.

Fifty (50) percent completion to beneficial occupancy - Ninety-five (95) percent of the contract value rendered by the Contractor to the Owner during the preceding month.

Value rendered shall be determined by monthly estimates made by the Engineer and approved by the Owner. Increasing the percentage paid at the 50% completion point will be subject to the Engineer's determination of satisfactory and diligent performance by the Contractor.

When the Contract provides for the furnishing of materials only, the said estimates shall be based upon the quantity thereof, which has been delivered during the preceding month.

When the Contract provides for the furnishing of labor and the furnishing and installation of materials, the said monthly estimates shall be based upon the amount of labor performed and the quantity of materials delivered to the job site (including transportation costs) during the preceding month.

51. FINAL ESTIMATES

The balance will be paid by the Owner to the Contractor upon the satisfactory completion of the Contract obligation, the filing with the Owner by the Contractor of such satisfactory Release of Liens, or other assurance as is provided for in the following paragraph, and the approval and acceptance of all materials and work contractor for, by the Engineer and by the Owner.

52. RELEASE OF LIENS

Before the work shall be finally accepted and final payment be made, the Contractor shall furnish the Owner with a complete Release of Liens, or with such other evidence as shall be entirely satisfactory to the Owner that the finished work, including all materials therein incorporated and thereunto appertaining is, and will be, entirely free from any then present or future lien or claims.

53. SPECIFICATIONS NOT PROHIBITIVE

These Specifications are issued to bidders as a guide as to what is to be required, and it is not intended to ignore manufacturers' standards and patterns, and should any bidder wish to submit a proposal for an equivalent installation, other than that generally contemplated herein, which will be guaranteed under all of the general conditions and requirements herein specified, such a proposal will receive due consideration. The Contractor shall submit manufacturer's data, etc., as required by the Engineer to permit a thorough evaluation of the proposed equivalent installation.

54. ALTERNATE PROPOSALS

Bidders on more than one type or design shall present separate and distinct proposals and shall distinctively number the same, and each proposal must be accompanied by such drawings and descriptions as are required therein; and each drawing or document must be distinctly marked with the number of the proposal to which it belongs.

55. COMPARATIVE VALUE OF PROPOSAL

In comparing bids, consideration will be given not only to first cost of installation, but also to the cost of operation and maintenance, and to the suitability of the offering to conditions present and prospective.

56. CHANGES CLAUSE

The Owner may, at any time, by written order, and without notice to the sureties, make changes in the general scope of this Contract. If such changes cause an increase or decrease in the Contractor's cost of, or time required for, performance of the Contract, an adjustment shall be made and the Contract modified in writing accordingly. No claim by the Contractor for payment on account of any extra work shall be enforceable unless such extra work is covered by a written order signed by a duly-authorized representative of the Owner. However, nothing in this Contract shall be construed to excuse the Contractor from executing the Contract as amended.

57. TIME EXTENSIONS

The Contractor may at any time during the performance of the contract request in writing an extension of time in performance based upon delays caused by factors beyond the control of the contractor, such factors include labor stoppages (strikes), acts of God (natural disasters, unusually unseasonable weather), delays in delivery of materials caused by factors beyond the control of material suppliers and manufacturers. Written notice of expected delay and explanation therefore shall be made within ten (10) calendar days from the time the contractor is aware of the cause for delay even though the expected duration or effect of delay is not yet known. As soon as possible after the impact of the delay is determined, the contractor will submit in writing a request for extension of time for a specific number of calendar days with fully substantiated justification therefore. Such a request may entitle the contractor to an extension of time as recommended by the Engineer and as agreed to in writing by the Owner. Time extensions granted under these provisions are solely to relieve the contractor's liability for liquidated damages and will not justify an increase in the cost of the work.

58. NO DAMAGES FOR DELAY

The Contractor shall not be entitled to any claim for damages on account of hindrances or delays in performance of this contract from any cause whatsoever, including acts or failures to act on the part of the Owner or Engineer or their agents, employees or servants. The Contractor acknowledges and agrees that its sole remedy for any such delay in performance shall be an extension of contract completion time in accordance with the terms of Article 61, TIME EXTENSION.

59. TERMINATION BY OWNER FOR CAUSE

Without prejudice to any other legal or equitable right to remedy which it would otherwise possess hereunder, or as a matter of law, the Owner shall be entitled, by giving the Contractor five (5) days prior written notice, to terminate this Contract in its entirety at any time:

- (a) if the Contractor shall fail to prosecute the work, or any part thereof, with the diligence necessary to insure its progress and completion as set forth in this contract and addenda or change orders thereto and shall fail to take such steps to remedy such default within ten (10) days after written notice thereof from Owner as Owner shall direct; or
- (b) if the Contractor shall commit a substantial default under any of the terms, provisions, conditions or covenants contained in this contract and shall fail to take such steps to remedy such default within ten (10) days after written notice thereof from the Owner as Owner shall direct.

60. TERMINATION FOR OWNER'S CONVENIENCE

The performance of the work may be terminated at any time in whole or from time to time in part, by the Owner for its convenience. Any such termination shall be affected by delivery to the Contractor of a written notice ("Notice of Termination") specifying the extent to which performance of the work is terminated and the date upon which termination becomes effective.

After receipt of a Notice of Termination, and except as otherwise directed by the Owner, the Contractor shall, in good faith, and to the best of its ability, do all things necessary, in the light of such notice and of such requests in implementation thereof as the Owner may make to assure the efficient, proper closeout of the terminated work (including the protection of Owner's property). Among other things, the Contractor shall, except as otherwise directed or approved by the Owner:

- (a) stop the work on the date and to the extent specified in the Notice of Termination;
- (b) place no further orders or subcontracts for services, equipment or materials except as may be necessary for completion of such portion of the work as is not terminated;
- (c) terminate all orders and subcontracts to the extent they relate to the performance of work terminated by the Notice of Termination;
- (d) assign to Owner, in the manner and to the extent directed by it, all of the right, title and interest of the Contractor under the orders of subcontracts so terminated, in which case the Owner shall have the right to settle or pay any or all claims arising out of the termination of such orders and subcontracts;
- (e) with the approval of the Owner, settle all outstanding liabilities and all claims arising out of such termination or orders and subcontracts; and
- (f) deliver to the Owner, when and as directed by the Owner, all documents and all property which, if the work had been completed, the Contractor would be required to account for or deliver to the Owner, and transfer title to such property to the Owner to the extent not already transferred.

In the event of such termination, there shall be a reduction of the amount of this Contract to reflect the reduction in the work. No cost incurred after the effective date of the Notice of Termination shall be treated as a reimbursable cost unless it relates to carrying out the unterminated portion of the work or taking closeout measures.

61. WORKMEN'S COMPENSATION INSURANCE

The Contractor shall carry Workmen's Compensation Insurance during the life of the contract to insure his statutory liability to his employees in the State of Pennsylvania. Coverage shall not be less than \$100,000.00.

62. COMPREHENSIVE GENERAL LIABILITY AND PROPERTY DAMAGE

The Contractor shall carry the Comprehensive Form of General Liability and Property Damage Insurance during the life of the contract covering the risks itemized in the form of "Certificate of Insurance" provided or in this contract. The limits shall be not less than \$100,000/500,000 for bodily injury and \$100,000 for property damage. The Contractor shall carry general umbrella liability with a limit of not less than \$2,000,000.

The Contractor will insure the structures and improvements against loss or damage by explosion, collapse and underground hazards, fire, windstorm, aircraft perils (extended coverage perils), vandalism and malicious mischief, with a responsible insurance company or companies authorized and qualified to do business under the laws of the Commonwealth of Pennsylvania. Such policies shall be subject to the approval of the Township. Such insurances shall be for 100% of the insurable value of the Contract at all times. Policies shall be written in the name of the Township Engineer and Contractor "as their respective interests may appear", subject to 100% co-insurance.

63. COMPREHENSIVE AUTOMOBILE LIABILITY AND PROPERTY DAMAGE

The Contractor shall carry the Comprehensive Form of Automobile Liability and Property Damage Insurance during the life of the contract covering the risks itemized in the form for "Certificate of Insurance" provided for in this contract. The limits shall be not less than \$250,000/\$500,000 for bodily injury and \$100,000 for property damage.

64. UNEMPLOYMENT INSURANCE

The Contractor hereby agrees to accept exclusive liability for and shall hold the Owner harmless for all payroll taxes for contributions for unemployment insurance or old age pensions, or annuities, measured by wages, salaried or other remuneration paid to employees of said Contractor.

65. SITE ACCESSIBILITY

The Construction Contractor must provide that the representatives of the Federal Quality Administration and the State will have access to the work wherever it is in preparation or progress and that the Contractor will provide proper facilities for such access and inspection.

66. UTILITY SERVICES

Provision of all utility requirements, including sanitary facilities, water, and electricity, shall be the responsibility of the Contractor.

67. STEEL PRODUCTS PROCUREMENT ACT

- a. In obtaining materials for the execution of this contract, preference shall be given to domestic construction material by the contractor, subcontractors, materialmen and suppliers. An unmanufactured material shall be construed as a domestic construction materials if it has been mined or produced in the United States. A manufactured construction material shall be construed as a domestic construction material if it has been manufactured in the United States substantially from articles, materials or supplies mined, produced or manufactured in the United States.
- b. The Contractor shall comply with the Steel Product Procurement Act, Pennsylvania Act No. 3, 1978, including any revisions.

That is, only steel products as below defined shall be used in the performance of this contract.

Steel products shall mean products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed or processed by a combination of two or more operations from steel made in the United States by the open hearth, basic oxygen, electric furnace, Bessemer or other steel making process.

GENERAL

Description: The Contractor shall provide all labor, materials, equipment and services necessary for, and incidental to, the preparation of the site, protection, excavation, embankment, drainage, and grading as shown on the drawings and as herein specified.

The Contractor shall accept the site in the condition in which it exists at the time of award of the Contract.

The Engineer shall determine the suitability of materials that are to be used in the work and, should any materials encountered be unsatisfactory for the purpose intended, they shall be disposed of at a location approved by the Owner.

Lines and Grades: The Contractor shall provide the stake-out, including construction perimeter boundary.

The Contractor shall preserve and maintain in proper position all stakes, grade-boards, and lines, until authorized to remove same; and in case any such are disturbed by the Contractor's employees, or by his neglect to give them proper protection, those so disturbed shall be reset at the Contractor's expense. The Contractor shall furnish, when and as required, all necessary materials, labor and assistance for the setting of all stakes, grade-boards, lines, forms, etc. which may be required for the proper construction of the work.

Any work done without lines, levels and instructions, or without the supervision of any inspector, as required, will not be estimated or paid for except when such work is authorized by the Owner.

ENVIRONMENTAL PROTECTION

General

Description: The Contractor shall provide labor, equipment, tools, materials, and services needed to accomplish work as described herein.

Products

Materials: All materials shall be in accordance with the description herein.

Execution

Procedures: All work done shall conform to the Department of Environmental Resources' Regulations and to the Bucks County Soil Conservation Service specifications and requirements.

Requirements: The Contractor shall exercise care to preserve the natural landscape and shall conduct his construction operations so as to prevent any unnecessary destruction scarring or defacing of the natural surroundings in the vicinity of the work area.

Graded areas are to be seeded within thirty (30) days following earth-moving procedures. If the time of the year is not conducive to permanent seeding, a temporary mulch and/or seeding should be used. See pages TS-6 to TS-13 "Landscaping" of this specification for accepted seed mixture for both temporary and permanent seeding.

Critical slopes shall be stabilized and protected from surface water runoff.

Erosion control devices, such as diversion or interceptor dikes, and hay bales, shall be used to provide temporary erosion control during construction.

All materials deposited on public thoroughfares shall be immediately removed.

Construction shall not impair surface drainage, constitute a potential erosion hazard or act as a source of sedimentation to any adjacent property or water course.

Air Pollution: All dust and dirt caused by construction activity shall be controlled. Such control shall be in compliance with state and local regulations.

CLEARING AND GRUBBING

General

Description: The Contractor shall clear the entire work area to be graded, including a sufficient area alongside of same to properly carry on the work, of all trees, down timber, snags, brush, rubbish, all other objectionable material, and other vegetation, except leaves, grass and weeds. All stumps and matted roots shall be grubbed.

Related Documents: Drawings and general provisions of Contract, including General and Supplementary Conditions of Specifications, apply to work specified in this section.

Protection: Streets, roads, adjacent properties and other works to remain shall be protected throughout the work area.

Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning and bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to be left standing.

Water trees and other vegetation to remain within limits of contract work as required to maintain their health during course of construction operations.

Provide protection for roots over one and one-half inch (1-1/2") diameter cut during construction operations. Coat cut faces with an emulsified asphalt, or other acceptable coating, formulated for use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out; cover with earth as soon as possible.

Replace trees which cannot be repaired and restored to full growth status, as determined by tree surgeon.

Restriction: The Contractor shall remove only the materials specified within the limits specified. If the Contractor removes extra material that is required on the Project, then all suitable material removed shall be replaced by the Contractor at his own expense. If the Contractor exceeds the clearing limits specified, he shall, if directed, restore such areas to their original condition.

Disposal of Trees and Shrubs: State and local code requirement shall control the disposal of trees and shrubs.

Execution

Clearing: Remove vegetation, improvements, or obstructions interfering with installation of new construction. Remove such items elsewhere on-site or premises as specifically indicated. Removal includes digging out stumps and roots.

Individual trees, groups of trees and other vegetation which may be designated within the work area not to be cleared shall be left standing and uninjured.

Stumps required to be removed shall be removed to a depth of eighteen inches (18"). The depth shall be measured from the existing ground surface or the proposed finished surface, whichever is lower.

Grubbing: The limits of grubbing shall coincide with the limits of clearing.

Remove all stumps, roots over four inches (4") in diameter, and matted roots within the limits of grubbing to a depth of eighteen inches (18").

Trimming of Trees: When required, and with the Engineer's approval, trees shall be trimmed to remove branches and roots which interfere with construction. Paint all cut branches and roots over two inches (2") in diameter with wound paint.

Disposal: Burning of materials on the site will not be permitted.

Dispose of removed and demolished items, including trash and debris, off the Owner's property, unless otherwise indicated.

Topsoil: Topsoil is defined as friable clay loam surface soil found in a depth of not less than 4". Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over two inches (2") in diameter, and without weeds, roots, and other objectionable material.

Topsoil Striping: To whatever depths encountered, in a manner to prevent intermingling with underlying subsoil or other objectionable material.

Remove heavy growths of grass from areas before stripping.

Where trees are indicated to be left standing, stop topsoil striping a sufficient distance to prevent damage to main root system.

Topsoil Stockpile: At readily accessible locations, construct storage piles to freely drain surface water. Cover storage piles, if required, to prevent wind-blown dust, or off-site at the Contractor's expense.

Excess Fill and Topsoil: Transport excess fill and topsoil materials only to approved "spoil" areas on Owner's property, or remove from the site as directed.

Removal of Other Obstructions: Fences, guard rails, buildings, foundations, or materials of any kind within the limits of the project area shall be removed carefully by the Contractor, wholly or in part, as required to complete the project, and shall be disposed of in "spoils area", or off-site at the Contractor's expense.

LANDSCAPING

General

Description: Landscaping shall include all labor, materials, services, equipment and accessories necessary to furnish and install all grassed areas and plantings, together with preparation of final sub-grade in all grass and planting areas, finish grading, and the spreading of stockpiled topsoil, as required. Seeding and planting should be completed in accordance with applicable specifications and applicable drawings. Planting and seeding operations shall be performed by personnel familiar with this work, and under the supervision of an experienced, qualified foreman.

Products

Materials: All materials shall be as specified herein, and grass seed shall be certified. Plant materials shall conform in all respects to the latest standard adopted by the American Association of Nurserymen, as set forth in the American Standard for Nursery Stock. Do not make substitutions. If specified landscape material is not obtainable, submit to the Engineer proof of non-availability and a proposal for use of equivalent material. When authorized, adjustment of contract amount will be made.

Execution

Restrictions: All areas to be seeded and planted shall be inspected by the Contractor before starting the work. Any defects such as incorrect grading, etc., shall be reported to the Engineer prior to beginning the work. The commencement of work by the Contractor shall indicate his acceptance of the areas to be seeded and planted, and he shall then assume full responsibility for the work of the section.

The Contractor shall examine all other sections of the Specifications and all Drawings for the relationship of the work under this section and the work of other trades.

Proceed with and complete landscape work as rapidly as portions of site become available, working within seasonal limitations for each kind of landscape work required.

Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned.

Clean-up: Any soil or similar material which has been brought onto paved areas by hauling operations or otherwise, shall be removed promptly, keeping those areas clean at all times.

Upon completion of work under this section, all excess stones, debris and soil resulting from work under this section, which have not previously been cleaned up, shall be cleaned up and removed from the site.

Installation of Plants

Requirements: Locations for all plants and outlines for planting beds are located on drawings and must be staked on the ground, and must be approved by the Engineer before any excavation is made. Adjustments in locations and outlines shall be made as directed. Install plants after final grades are established and prior to planting of lawns, unless otherwise acceptable to the Engineer. If plant installation occurs after lawn work, protect lawn areas and promptly repair damage to lawns resulting from planting operations.

Engineer reserves the right to inspect plant materials either at place of growth or at site before planting, for compliance with requirements for name, variety, size and quality.

Materials: Plants shall conform to the varieties specified in the plant list on the plans. Plants shall be true to the botanical names and standards of size, culture and quality for the highest grades and standards as adopted by the American Association of Nurserymen, Inc., in the American Standards for Nursery Stock. Plants shall be measured before pruning with branches in normal positions, and shall be free of insects, insect eggs, scale or disease. The trunk of each tree shall be a single trunk growing from a single unlimited crown of roots. Trunks shall be free from sun-scald, frost cracks and abrasions. No pruning wounds exceeding two inches (2") shall be present. Provide freshly dug plants. Do not prune prior to delivery. Do not bend or bind-tie trees or shrubs in such a manner as to damage bark, break branches or destroy natural shape. Provide protective covering during delivery.

Commercial Fertilizer - 5-10-5 - shall be provided at the time of planting and applied and mixed at a rate of not less than 0.25 lbs. per cu. ft. of soil backfill.

Peat moss and wood chips or shredded bark shall be provided and used as a top dress over planting beds and tree pits.

Installation: Deliver plant materials after preparations for planting have been completed, and plant immediately. If planting is delayed more than six (6) hours after delivery, set trees, shrubs and ground cover in shade, protect from weather and mechanical damage and keep roots moist.

Holes for trees shall be at least two feet (2') greater in diameter than the spread of the root systems.

All plant roots and earth balls must be kept damp and thoroughly protected from sun or drying winds at all times from the beginning of the digging operations, during transportation, and on the ground until the final operation of planting. The plants shall be placed in the center of the holes and at the same depth as they previously grew. Loam shall be backfilled in layers of not more than nine inches (9"), and each layer watered sufficiently to settle before the next layer is put in place. Loam shall be tamped under edges of balled plants. Enough topsoil shall be used to bring the surface to finish grade when settled. An earth berm shall have a diameter equal to the hole dug for the plant, a depth of not less than six inches (6").

Plants must be flooded with water twice within the first twenty-four (24) hours of the time of planting.

Trees up to two and one-half inches (2-1/2") in caliper shall be staked at the time of planting as shown on the Landscaping Plan. Wires shall not come into direct contact with the bark of the tree at any place, but shall be covered with pieces of rubber garden hose at points of contact, at a suitable height. Guys shall be kept taut at all time. Stakes for supporting trees shall be 2 x 3 x 8 feet hardwood, and creosoted one-third (1/3) of their length. Wire for fastening trees to stakes shall be two No. 12 galvanized wire. Hose to encase guy wire used for fastening trees to stakes shall be new or used 2-ply reinforced rubber garden hose.

Trees above two and one-half inches (2-1/2") in caliper, and evergreen trees over seven feet (7') in height, shall be braced in an upright position by three (3) guys of two (2) strands each of No. 12 gauge wire attached to anchors or anchor stakes. A turnbuckle shall be inserted in each guy so that the guy can be kept taut. Guys shall be placed around the trunk at a point higher than the lowest branches of the tree in such a manner that the branches will not be subject to undue strain. Wires shall be covered with rubber garden hose at points of contact. Anchor or anchor stakes shall be equally spaced about the tree pit and at a distance from the trunk not less than two-thirds (2/3) the height of the tree. The tops of anchor stakes shall be at least two inches (2") below finish grade.

Wrapping material for tree trunks shall be commercial tree wrapping tape. Wrap trunk from ground to the height of the second branches, tie securely at top, bottom, and at two intervals along the trunk with lightly tarred medium or coarse sisal yard twine.

Provide a two inch (2") mulch of peat moss. Top dress with a two inch (2") layer of wood chips or shredded bark applied over the entire area of each bed or tree pit.

Prune trees to remove damaged branches, improve natural shape, and thin out structure. Remove enough branches and twigs (not all end tips) to reduce foliage by one third.

Label at least one plant of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.

Temporary Cover on Critical Areas

Requirements: Provide short-term rapid cover for the control of a rapid runoff and erosion until permanent vegetation or other stabilization materials can be established.

Site Preparation:

- A. Install needed surface water control measures.
- B. Perform all cultural operations at right angles to the slope.
- C. Apply uniformly two (2) tons of ground limestone per acre (100 pounds per 1,000 square feet), or according to soil test.
- D. Apply uniformly 10-10-10 analysis fertilizer according to soil test or at the rate of 400 pounds per 1,000 square feet.
- E. Work in lime and fertilizer to a depth of four inches (4") using any suitable equipment.

Establishment:

- A. Seed mix shall be 90% Annual or Perennial Ryegrass, and 10% Pennlawn Red Fescue.
- B. Apply seed uniformly at a rate of 4 lbs. per 1000 square feet of the latest crop, by broadcasting. The dealer's guaranteed statement of the composition of the mixture shall be available at the site.
- C. Cover grass seed with one-quarter inch (1/4") of soil, with suitable equipment.

Spreading of Topsoil and Permanent Seeding

Requirements: Stockpiled topsoil shall be uniformly spread over all areas to receive grass seed. A minimum of four inches (4") of topsoil is required at finished depth. Provide topsoil, if needed, to supplement that which is available for reuse at the site. Provide clean, fertile, friable, natural loam obtained from a local site.

Admixtures: Commercial fertilizer shall conform to all applicable state laws. It shall be uniform in composition, dry and free flowing, and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Any

fertilizer which becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted. Use a high nitrogen content commercial fertilizer, containing 2% phosphorus, 2% potash, and nitrogen in sufficient quantity to supply not less than 1.0 lbs. of actual nitrogen per 1,000 sq. ft. of area.

Adjust the soil pH level to 6.0 - 7.0. In the absence of soil test, apply 100 lbs. of ground agriculture limestone per 1,000 square feet of area.

Water used in this work shall be furnished and/or paid for by the Contractor, and will be suitable for irrigation and free from ingredients harmful to plant life. Hose and other watering equipment required for the work shall be provided by the Contractor.

Seed: Seed mixtures shall be fresh, clean, new crop. Seed may be mixed by an approved method on the site, or may be mixed by the dealer. If the seed is mixed on the site, each variety shall be delivered in the original containers which shall bear the dealer's guaranteed statement of the composition of the mixture and the percentage of purity of each variety. The Dealer's Guarantee Statement shall be delivered to the Engineer.

Seed shall be composed of the following varieties which shall be mixed in the specified proportions and shall test to the minimum purity and germination specified.

<u>Name</u>	<u>Lbs./Acre</u>	<u>% Purity</u>	<u>% Germination</u>
Pennfine Perennial Ryegrass	65	98	90
Pennlawn Red Fescue	40	98	85
Merit Kentucky Bluegrass	20	98	80

Seeding Operations: Seeding operations shall be conducted under favorable weather conditions during the next season or seasons which are normal for such work, as determined by accepted practice in the locality of the project. At the option of and on the full responsibility of the Contractor, seeding operations may be conducted under unseasonable conditions without additional compensation.

All areas to be seeded are located on the plans.

Prior to spreading of topsoil, the subgrade shall be loosened and mixed to a depth of two inches (2") to four inches (4"), and all stones over two inches (2") in size, sticks, and rubbish removed. No heavy objects, except lawn rollers, shall be moved over the lawn areas after the subgrade soil has been prepared unless the subgrade soil is again graded as specified above, before topsoil is spread.

After the subgrade soil has been prepared, topsoil shall be spread evenly thereon and lightly compacted. No topsoil shall be spread in a frozen or muddy condition. After the topsoil has been spread, it shall be carefully prepared by scarifying or harrowing and hand-raking. All large stiff clods, lumps, brush roots, and stumps, litter and other foreign material, and stones over two inches (2") in diameter shall be removed from the aforesaid topsoil and disposed of by this Contractor. The areas shall also be free of smaller stones, in excessive quantities and as determined by the Engineer. The whole surface shall then be rolled with a hand roller weighing not more than one hundred (100) pounds per foot of width. During the rolling, all depressions caused by settlement or rolling shall be filled with topsoil and the surface shall be regraded and rolled until presenting a smooth and even finish up to the required grade, giving a total depth of four inches (4") of compacted topsoil. Areas where the topsoil has not been removed shall be cleared of brush, sticks, stones, leaves and rubbish. The topsoil shall then be scarified and smoothed. Allowance for settlement shall be made so that finished grade does not go below grades specified.

Immediately before any seed is to be sown, the topsoil shall be scarified as necessary, and shall be raked until the surface is smooth, friable, and of uniformly fine texture. Lawns shall be seeded evenly with a mechanical spreader at the rate indicated on the seed list, lightly raked and watered with a fine spray. The method of seeding may be varied at the discretion of the Contractor on his own responsibility to establish smooth, uniformly grassed areas. Take necessary precautions to keep area undisturbed until the grass germinates.

Mulch shall be spread uniformly over all seeded areas at the rate of two (2) bales of straw per one thousand (1,000) square feet. Water mulch and seed bed thoroughly and immediately after completion of mulching. Soil shall be moistened to a depth of not less than four inches (4").

Maintenance and Guarantee

General: Maintenance shall begin immediately after the installation of each plant and each seeded area, and shall continue in accordance with the Maintenance Requirements. The guarantee period shall begin after Certification of Acceptability by the Engineer.

Maintenance Requirements: The Contractor shall be held responsible for maintenance of seeded areas including watering, weeding, sowing, cutting, and replanting as necessary for at least sixty (60) days after sowing, and as much longer as is necessary to establish uniform stand of the specified grasses, and until certification of acceptability. No bare spots will be allowed. After germination has started, all areas and parts of areas which fail to show a uniform stand of grass, for any reason whatsoever, shall be reseeded repeatedly until all areas are covered with a satisfactory growth of grass. At the time of cutting, keep mower blades not less than two

and one-half inches (2-1/2") high. The maintenance period shall continue after seeding and until the lawns are certified acceptable by the Engineer. The date of certification shall not be earlier than the date of "substantial completion" of the entire work of this contract. Submit typewritten instructions recommending procedures to be established by the Owner for maintenance of landscape work for one (1) full year. Submit prior to expiration of required maintenance period(s). Submit in binder to the Engineer.

New planting shall be protected and maintained until the end of the grass maintenance period, or if installed after the grass maintenance period, until installation of planting is certified acceptable by the Engineer. Maintenance shall include watering, mulching, tightening, and repairing of guys, replacement of sick or dead plants, resetting plants to proper grades or upright position, and restoration of the planting saucer, and all other care needed for proper growth of the plants. If planting is done after seeding preparation, proper protection to seeded areas shall be provided, and any damage resulting from planting operations repaired promptly.

Planting areas and plants shall be protected against trespassing and damage of any kind. If any plants become damaged or injuries occur, they shall be repaired or replaced as directed by the Engineer.

Damage resulting from erosion, gulleys, washouts or other causes shall be repaired by filling with topsoil, tamping, refertilizing, and reseeding by the Contractor at his own expense if such damage occurs prior to certification of acceptability of grass and planting by the Engineer.

The Contractor's responsibility for maintenance shall cease at the time of certification of acceptability by the Engineer. During the guarantee period, the Contractor shall be held responsible for making replacements, but no maintenance will be required.

Certification of Acceptability: Inspection of the work of lawns and planting to determine completion of the work under this section will be made at the conclusion of the maintenance period, and upon written notice requesting such inspection submitted by the Contractor at least five (5) days prior to the anticipated date. The condition of grass and plantings will be noted and determination made by the Engineer whether maintenance shall continue in any part.

After inspection by the Engineer, the Contractor will be notified in writing by the Engineer of acceptability of all work of this section, or if there are any deficiencies of the requirements for completion of the work. Grass maintenance or other work remaining to be done shall be subject to reinspection before being certified acceptable.

Guarantee: Plants shall be guaranteed for one (1) year after certification of acceptability by the Engineer, and shall be alive and in satisfactory growth at the end of the guarantee period, except for damage resulting from causes beyond the responsibility of the Contractor.

Remove and replace trees, shrubs, or other plants found to be dead or in unhealthy condition during guarantee period. Make replacements during growing season following the end of the guarantee period. Replace plants which are in doubtful condition at the end of the warranty period; unless, in the opinion of the Engineer, it is advisable to extend the guarantee period for the full-growing season.

At the end of the guarantee period, inspection will be made by the Engineer upon written notice requesting such inspection submitted by the Contractor at least ten (10) days before the anticipated date of expiration of guarantee period. Any plant required under this Contract that is dead or not in satisfactory health, as determined by the Engineer, shall be removed from the site. These and any plants missing due to the Contractor's negligence, shall be replaced as soon as conditions permit, but during the normal planting season. In case of any question regarding the condition and satisfactory establishment of a rejected plant, the Contractor may elect to allow such a plant to remain through another complete growing season, at which time the rejected plant, if found to be dead, in an unhealthy or badly impaired condition, shall be replaced.

Another inspection will be conducted at the end of the extended guarantee period, if any, to determine acceptance or rejection.

All replacements shall be plants of the same kind, size, and root as specified under "Installation of Plants". The cost shall be borne by the Contractor.

EARTHWORK

General

Description: The Contractor shall excavate, sheet, store, dewater, backfill and compact all excavations, and shall make all fills that may be necessary for constructing the work under this project. The above shall also include all excavation and backfill. The Contractor shall furnish all labor, materials and equipment necessary for completion of the work.

Existing Utilities: The Contractor shall comply with PA Act 287, and contact all utility companies to verify the location of facilities. Contact shall be made three (3) working days prior to construction. A list of utility companies operating in this area follows:

Bucks County Water and Sewer Authority	Neshaminy Manor Center Building "G" Doylestown, PA 18901	215-343-2800
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Should uncharted, or incorrectly charted piping or other utilities be encountered during excavation, consult 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.

Unclassified Excavation: All excavation, of every description and in whatever substance encountered, shall be performed to the dimensions and elevations shown on the Drawings. The Contractor will be allowed no extra compensation for unusual materials encountered, unless provisions for extra compensation are so noted in the Specifications.

Rock Excavation: Rock excavation will be accomplished on a unit price basis. No extra will be allowed for rock excavation until the rock has been properly measured. "Rock excavation" shall be interpreted as meaning material which cannot be loosened, if trenching is being done by hand, and if trenching is done by machine, "rock excavation" shall mean any material which cannot be removed from its original bed by the trenching machine in use. In brief, it is material which requires drilling and blasting to remove it from its original bed, including ledgerrock, concrete or masonry structures and all boulders exceeding one-half (1/2) cubic yard in volume.

Execution

General Excavation: The Contractor shall proceed with caution in any excavation and shall use every means possible to determine the location and extent of underground structures, utilities, conduits, etc., prior to excavation, and to protect such facilities from damage or displacement during excavation. The Contractor shall be held strictly

responsible for the repair and/or replacement of any structure, pipeline or other facility above or below the ground, which may be damaged in any way by his operations.

All excavated materials shall be segregated into suitable and unsuitable material. Only suitable materials shall be used for backfilling. Unsuitable materials shall be promptly removed from the site by the Contractor.

The Contractor shall keep all excavations free from water, at his own expense, while structural work is in progress, and to such extent as may be necessary while excavation work alone is being carried on. He shall build all dams and other devices necessary for this purpose, and provide and operate pumps of sufficient capacity for dewatering the excavations. He shall provide for the disposal of the water removed from excavations, in such manner as shall not cause injury to the public health, to public or private property, or to any portion of the work completed or in progress, or any impediment to the use of the streets by the public.

Excavated Classifications: The following classifications of excavation will be made when unanticipated rock excavation is encountered in work. Do not perform such work until material to be excavated has been cross-sectioned and classified by the Engineer. Such excavation will be paid on the 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 requiring use of special equipment, except such materials that are classified as earth excavation.

Typical of materials classified as rock are boulders 1/2 cubic yard or more in volume, solid rock, rock in ledges, and rockhard cementitious aggregate deposits.

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

Rock Payment Lines: Limited to the following:

Two feet (2') outside of concrete work for which forms are required, except footings.

One foot (1') outside perimeter of footings.

In pipe trenches, six inches (6") below invert elevation of pipe and 2 feet (2') wider than inside diameter of pipe, but not less than three feet (3') minimum trench width.

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

Under slabs or grade six inches (6") below bottom of concrete slab.

Unauthorized Excavation: Consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Owner. Unauthorized excavation, as well as remedial work directed by Engineer shall be at Contractor's expense.

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

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

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

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 rainwater 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.

Removal and Storage of Topsoil Materials: On all areas where grading is to be performed, the topsoil shall be carefully removed, stored and, after backfilling and/or grading is completed, areas uncovered shall be restored to such a condition as is designated in this Specification. The loss of topsoil through inefficient stripping or improper storage shall in no way relieve the Contractor from providing topsoil where directed and as required by these Specifications.

Site Grading: The Contractor shall grade the entire project area to the slopes and elevations as indicated on the general site plan for finish grade contours. Grading shall be held to a tolerance of 2/10 foot, except that this tolerance shall not be allowed in the direction which will retard drainage.

Unless otherwise shown on the Drawings, all surfaces shall be restored to their original condition. Surfaces shall be graded to drain away from all new structures. Topsoil shall be placed over all disturbed areas and shall be seeded or sodded as required.

Driveway and Parking Lot Grading: Driveways and parking areas shall be graded and boxed out as shown on the plans. Areas to be paved shall be proof rolled by the Contractor. Placement of stone and asphalt paving shall be done by others.

Excavation for Trenches: The Contractor shall make all necessary excavations to the lines, slope and levels shown on the drawings and as required for the pipe laying and/or installation of pipe appurtenances.

The banks of the excavations shall be generally sloped as required to prevent slides or cave-ins. Where rock formations are encountered and the earth is stable, the sides may be cut vertically, or nearly so, consistent with normal safe practice for excavating the material encountered.

Trenches shall be excavated true to line so that a clear space not less than six inches (6") or more than eight inches (8") in width is provided on each side of the barrel of the pipe. Bell holes shall be excavated to ensure pipe resting for its entire length upon the bottom of the trench. Where, in the opinion of the Engineer, damage is liable to result from withdrawing sheathing, the sheathing shall be left in place and the contract price adjusted accordingly. Care shall be taken not to excavate below the depths specified.

In earth excavation, the bottom of the trench shall be shaped so as to conform as nearly as possible to the outside of the pipe, particular care being taken to recess the bottom of the trench in such a manner as to relieve the bell of all load. Where the bottom of the trench shall, by mistake of the Contractor, have been taken out to a greater depth than above specified, it shall be refilled to the proper grade, using crushed stone, at the expense of the Contractor. Refilling with earth to bring the bottom of the trench to the proper grade will not be permitted.

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

Trenching Machines: Trenching machines may be used. No trenching machines shall be used on private property unless the Contractor obtains permission from the Owner for their use. The Contractor will be held responsible for all damages done to private property and to state, city, borough, town, county, or township highways, or to any underground or overhead structures now on private property.

Length of Open Trench: No greater length of trench shall be left open, in advance of completed structure placed therein, than shall be authorized or directed. The Engineer shall be empowered at any time, to require backfilling of open trenches over completed pipe lines, if in their judgement, such action is necessary even though to accomplish said backfilling he may be compelled to temporarily stop excavation or other work. If work is stopped on any trench, for any reason except by order of the Engineer, and excavation is left open for an unreasonable length of time in advance of construction, the Contractor shall, if so directed, backfill such trench, and shall not again open said trench until he is ready to complete structure herein. If the Contractor refuses or fails to backfill such trench completely within forty-eight (48) hours, the Engineer shall be authorized to do the work and charge the expense thereof to the Contractor.

Trenching Regulations: In open trenching on state or city highways, the Contractor shall be governed by the conditions, restrictions and regulations made by the PA Department of Transportation. All such regulations shall be in addition to the ones set down in these specifications.

Stockpiling of Backfilling Materials: The Contractor shall stockpile all excavated backfill materials and shall maintain these stockpiles until required for backfilling. Care shall be taken by the Contractor to prevent erosion. Excess materials not used for backfilling and grading shall be promptly removed from the project site.

Backfilling: The Contractor shall backfill all excavations as promptly as is consistent with non-injury to pipe or structures, except that no backfilling shall be performed without the permission of the Engineer. Where excavations are in paved areas or areas to be paved, a suitable pavement base shall be provided as directed by these Specifications.

Backfilling shall not be performed until the completion of the following:

Acceptance of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.

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

Removal of concrete formwork.

Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Cut off temporary sheet piling driven below bottom of structures, and remove in manner to prevent settlement of the structure or utilities, or leave in place if required.

Removal of trash and debris.

Permanent or temporary horizontal bracing is in place on horizontally supported walls.

Backfill materials shall be suitable materials excavated in the course of construction, or other materials deemed suitable by the Engineer. The material shall be free from cinders, ashes, refuse, boulders, rocks, stone, organic materials or other material which, in the opinion of the Engineer, is unsuitable. Frozen materials shall not be used in the backfill. Backfilling shall not be placed upon frozen material.

All backfilling shall be done in horizontal layers not to exceed eight inches (8") of uniform, loose thickness. Layers shall not exceed four inches (4") where hand-tamping equipment will be used.

Backfill of Trenches: Immediately after a section of the piping is laid, sufficient backfill material shall be placed along each side of the pipe to hold pipe to line and grade.

Backfilling and tamping shall be started immediately after preliminary alignment inspection is made, and shall continue without interruption to completion.

When the trench opening is under a state roadway, all requirements for trench restoration are dictated by the PA Department of Transportation.

When the trench opening is within an existing roadway, other than a state road, or a road shoulder, the backfill shall be made with 2B modified stone.

The compaction of backfill to the specified density may be accomplished with the use of any type of compaction equipment approved by the Engineer. The compaction equipment may include any approved type of hand, air, mechanical, or vibrating equipment, or combination thereof. All backfill material shall be distributed evenly and of such thickness as may be satisfactorily compacted consistently with the type of compaction equipment being used for the work. Each layer of loose material has been added to that previously tamped. The compaction of backfill material will be accomplished in four inch (4") to six inch (6") lifts.

When rock is encountered, stones of not more than six inches (6") in their largest dimension may be used in the backfill from a distance of one foot (1') above the top of the pipe to the top of the trench. The stones shall be mixed with earth in an amount of not over 25% of the backfill. Stones of larger size or in greater quantity shall not be used unless otherwise specified.

In roads, streets and surface areas, the Contractor shall immediately, upon completion of the tamping, place and roll the full amount of stone base as hereinafter directed and as specified for resurfacing.

In any event, the placing of the stone base and the completion of cleanup shall be completed within a period of twenty-four (24) hours after the laying of the pipe.

As the trenches are filled in and the work completed, the Contractor shall cart away or remove all surplus material, without compensation, to such a point as may be designated as a "Spoils Area", or off-site if not suitable for burial.

When the trenches do not furnish sufficient material of suitable quality for refilling, the Contractor shall procure and supply such deficiency without extra charge.

Any settlement of backfill is the complete responsibility of the pipe laying contractor, and all finished grades shall be constructed to the proper grades for good surface drainage, surfacing, resurfacing, repaving or laying of concrete walkways. Ponding will not be permitted.

After backfill has become or has been made sufficiently compact, the Contractor shall substantially and neatly grade the entire disturbed area and, after one (1) week, resurface or repave and return to original condition the entire area which has been disturbed by said Contractor.

The Contractor shall be responsible for all settlement for a period of one (1) year after acceptance by the Owner, and shall establish a time and method for repair within twenty-four (24) hours after notice is received of a settlement condition.

Maintenance of Backfill Excavation: The Contractor shall, at his own expense, maintain all backfilled excavation in proper condition until the end of the guarantee period. All depressions appearing in the backfilled excavations shall be promptly refilled regardless of the extent of seeding performed. The Contractor shall be responsible for any injury or damage which may result from improper maintenance of any backfilled excavation at any time during the guarantee period.

Shoring: Trenches shall, at all times, be properly and adequately sheeted and braced to prevent accidents, caving of the sides of the trench, or breaking of the ground outside of the lines of the trenches proper. Underground structures of all types shall be protected by the Contractor, who shall use all necessary shoring, bracing or other appliances for the protection of same. Care must be taken not to injure in any way water mains, water service pipes, drain pipes, sanitary sewers, gas mains, oil mains, electric conduits, or other structures encountered on the lines of the work.

In case of accident to any structures, the Owner of the structures shall be notified immediately so that the proper steps may be taken to repair any and all damage done. Any damage done to such structures shall be repaired by the Contractor, or, if not done promptly by him, the Architect may make such repairs at the expense of the Contractor.

The Contractor shall comply with all applicable provisions of "REGULATIONS FOR EXCAVATING AND CONSTRUCTION" of the Commonwealth of Pennsylvania, Department of Labor and Industry, particularly those requirements relating to shoring, bracing, and sheet piling.

Compaction: 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.

Lawn or Unpaved Areas - Compact to six inches (6") of subgrade and each layer of backfill or fill material at 90% maximum dry density.

Pavements - Compact top twelve inches (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 layers 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 operations.

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.

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 surface steeper than one (1) vertical to four (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 particular area classification, break up ground surface, pulverize, moisture-condition to optimum moisture content, and compact to required depth and percentage of maximum density.

Pavement Sub-base Course: Sub-base course consists of placing sub-base material, in layers of specified thickness, over subgrade surface to support a pavement base course.

During construction, maintain lines and grades including crown and cross-slope of sub-base course.

Place shoulders along edges of sub-base course to prevent lateral movement. Construct shoulders of acceptable soil materials, placed in such quantity to compact to thickness of each sub-base course layer.

Compact and roll at least a twelve inch (12") width of shoulder simultaneously with compacting and rolling of each layer of sub-base course.

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

When a compacted sub-base course is shown to be six inches (6") thick or less, place material in a single layer. When shown to be more than six inches (6") thick, place material in equal layers, except no single layer more than six inches (6") or less than three inches (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).

Footings 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, to the satisfaction of the testing agency.

Foundation Wall Backfill: Take at least two (2) field density tests, at locations and elevations as directed.

If, in the opinion of the Engineer, 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.

Disposal of Excess and Waste Materials: Transport acceptable excess excavated material to designated soil storage areas on Owner's property. Stockpile soil or spread as directed by Engineer.

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

STORM SYSTEM

General

Description: The Contractor shall provide labor, equipment, tools, materials, and services needed to accomplish work as described herein and as shown or called out on the drawings.

Comply: Comply with the requirements of applicable pages TS-14 to TS-24 - Earthwork, for excavation and backfilling required in connection with sewer collection system work.

Products

Corrugated Metal Pipe: The corrugated metal pipe used for this project shall be minimum 16 gauge, fully bituminous coated, and shall be furnished and placed in accordance with the details shown on the drawings and Section 707, "Culverts and Underdrain Pipe (Metal)" of the Pennsylvania Department of Transportation's Form 408 Specifications dated 1976.

End Sections - Corrugated Metal: The corrugated metal end sections shall be constructed at the locations and in accordance with the details shown on the drawings. The specifications governing the end section construction are noted in Section 616 "End Sections and Slope Pipe Fittings" of the Pennsylvania Department of Transportation Specification, Form 408.

Rip-Rap: Rocks shall be placed to the prescribed outline and thicknesses as shown on the drawings or outlined in this specification.

Rock fragments shall be dense, sound, and resistant to abrasion, and shall be free of cracks, seams, and other defects which would tend to increase unduly their destruction by water and frost action.

Execution

Pipe Laying: All requirements for excavation and backfilling shall be governed by pages TS-14 to TS-24 - Earthwork.

Previously to being lowered into trench, each pipe shall be carefully inspected and those not meeting specifications shall be rejected and removed from the work. No pipe shall be laid except in the presence of the Engineer or his authorized inspector. The Engineer may order the removal and relaying of any pipe not so laid.

In addition to the inspection to be made by the Engineer, the Contractor shall examine all pipe and fittings before placing in the trench. Any pieces which show evidence of cracks or fractures shall be rejected by him. Such inspection shall carry with it the responsibility on the part of the Contractor for the removal at his own

expense of all pipe appurtenances incorporated in the work and which, under tests, are found to be defective.

Pipe shall be laid so that when completed, the interior bore will conform accurately to grades and alignment indicated by the contract documents.

Suitable tools and appliances for safe and convenient handling and laying of pipe and fittings shall be used. Extra care shall be exercised to prevent damage to pipe lining and coating.

The Contractor shall use all care possible to prevent filtration and other pollution of all streams and waters during and after construction.

The Contractor shall clean up and construct work to final grades, and stabilize surfaces as directed on plans or specified in those specifications.

STRUCTURAL CONCRETE

General

Description: The work to be performed includes, but is not limited to, the requirements for all plain and reinforced concrete structures or items indicated on the Drawings or as specified. More specifically, this includes the furnishing and installing of all plain and reinforced concrete structures or items indicated on the Drawings or as specified. More specifically, this includes the furnishing and installing of all Portland cement work for footings, walls, slabs, etc., complete, including all related and necessary form work and all items set or embedded in the concrete footings, walls and slabs.

Strength: All concrete to be used shall have a 28-day design minimum compressive strength of 3000 psi.

General Requirements: All concrete materials, methods of mixing, conveying, curing, placing, reinforcement, and the making and removal of forms shall conform to the latest edition of the following codes and standards:

"Building Code Requirements for Reinforced Concrete"
(ACI-318) latest edition

"Specifications for Structural Concrete for Buildings"
(ACI-301)

"Manual of Standard Practice for Detailing Reinforced
Concrete Structures" (ACI-315)

Design and Control of Concrete Mixtures - Tenth Edition
Portland Cement Association

"Recommended Practice for Winter Concreting" (ACI-604)

"Recommended Practice for Concrete Formwork" (ACI-347)

"Recommended Practice for Placing Reinforcing Bars" (CRSI)
Latest Edition

A.S.T.M. Specifications with particular reference to materials,
testing and methods

Manual of Concrete Inspection (ACI)

Latest Local Building Code

In the event of discrepancies between the various references, the most stringent requirements shall govern.

Shop Drawings: Shop drawings are required for all reinforcement and shall be submitted in accordance with the GENERAL CONDITIONS, and the latest revision of the ACI "Manual of Standard Practice for Detailing Concrete Structures".

Protecting Work:

- A. The walls of the various structures will not stand lateral pressure until the supporting members are placed and cured. Basement walls shall be braced against lateral pressure until top slab is placed and cured sufficiently to support the walls. Backfill must be placed so that lifts are at equal elevation at the same time. The Contractor shall be responsible for any damage resulting from earth filling, trapped water or other causes which may affect the stability of the walls during the progress of the work.
- B. Every precaution shall be taken by the Contractor to protect finished surfaces from stains or abrasions. No fire shall be permitted in direct contact with any concrete at any time. Concrete surfaces or edges likely to be injured shall be properly protected by leaving the forms in place or by erecting covers satisfactory to the Engineer.
- C. As soon as floor surfaces have sufficiently set, they shall be suitably protected and kept wet for a period of at least two (2) weeks. The moist-protective material shall be left in place until completion of the work, at which time it shall be removed. Where ordered by the Engineer, a floor protection of planking shall be provided which shall remain in place until all work under the Contract has been completed, or until the planking is ordered removed by the Engineer.

Products

Mixing Requirements:

- A. All concrete shall be mixed and certified at the plant and shall conform to ASTM-C94, "Specifications for Ready-Mixed Concrete".
- B. Certification shall be made by an approved testing laboratory regularly engaged in this type of work.
- C. Certification shall include the preparation of a delivery ticket for each truckload of concrete; such tickets shall be kept in the field office of the Contractor, and shall be available for inspection by the Engineer or his representatives. Design strength and slump shall be included in the information shown on the delivery ticket.
- D. The mixing equipment shall be capable of combining the aggregates, cement and water within the specified time hereinafter stated into a thoroughly mixed and uniform mass, and of discharging the mixture without segregation.

- E. The mixing of concrete shall be done in a batch mixer of approved type which will ensure a uniform distribution of the materials throughout the mass. The equipment at the mixing plant shall be so constructed that all materials (including the water) entering the drum can be accurately proportioned and be under control. The entire batch shall be discharged before recharging. The mixing of each batch shall continue for at least two minutes, during which time the drum shall rotate at the peripheral speed of about 200 feet per minute. The mixing periods shall be measured from the time when all of the solid materials are in the mixer drum, provided all the mixing water shall be introduced before one-fourth of the mixing time has elapsed. Mixing periods shall not exceed ten minutes.
- F. Additional requirements for mixing shall conform to latest edition of ACI Standard 318, "Building Code Requirements for Reinforced Concrete", Chapter 5.
- G. Hand mixing will not be permitted unless authorized by the Engineer. When hand mixing is authorized, it shall be done on a watertight platform and in such a manner as to ensure a uniform distribution of the materials throughout the mass. Mixing shall be continued until a homogeneous mixture of the required consistency is obtained.

Cement:

- A. Cement shall be an approved standard brand of Portland cement complying with the requirements of ASTM designation C-150, Type 1, Portland Cement, and all amendments thereto.
- B. Cement shall be stored in a weathertight structure with the floor raised not less than one (1) foot from the ground. It shall be stacked in such a manner as to permit easy access for proper inspection and identification of each shipment. Cement that has hardened or partially set shall be removed from the site.

Aggregate:

- A. Fine aggregate shall consist of sand or stone screenings conforming to ASTM C-33.
- B. Coarse aggregate shall conform to ASTM C-33 and shall consist of crushed stone, or gravel having clean, hard, strong, durable, uncoated particles free from injurious amounts of soft, friable, thin elongated or laminated pieces, alkali, organic or other deleterious matter. Normal maximum size of coarse aggregate shall not be larger than:

- 1. $1/5$ the narrowest dimension between sides of forms, nor

2. $1/3$ the depth of slabs, nor
3. $3/4$ the minimum clear spacing between individual reinforcing bars or wires, bundles of bars, or prestressing tendons or ducts.

These limitations may be waived if, in the judgement of the Engineer, workability and methods of consolidation are such that concrete can be placed without honeycomb or voids.

Admixtures:

- A. Admixtures to be used in concrete shall be subject to prior approval by the Engineer.
- B. An admixture shall be shown capable of maintaining essentially the same composition and performance throughout the work as the product used in establishing concrete proportions in accordance with Section 4.2 of ACI Standard 318, "Building Code Requirements for Reinforced Concrete".
- C. Admixtures containing chloride ions shall not be used in prestressed concrete or in concrete containing aluminum embedments if their use will produce a deleterious concentration of chloride ion in the mixing water.
- D. Air-entraining admixtures shall conform to "Specification for Air-entraining Admixtures for Concrete" (ASTM C 260).
- E. Water-reducing admixtures, retarding admixtures, accelerating admixtures, water-reducing and retarding admixtures, and water-reducing and accelerating admixtures shall conform to "Specification for Chemical Admixtures for Concrete" (ASTM C 494).
- F. Fly ash or other pozzolans used as admixtures shall conform to "Specification for Fly Ash and Raw or Calcined Natural Pozzolans for Use in Portland Cement Concrete" (ASTM C 618).

Water: Water used in mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalis, salts, organic materials, or other substances that may be deleterious to concrete or reinforcement.

Reinforcing Bars: Reinforcing bars shall be new, intermediate grade billet steel, deformed, of domestic manufacture and in accordance with ASTM Designation A-615, Grade 60. Bars shall be of the sizes, shapes, laps, spacings, and clearances as shown on the Drawings and detailed in accordance with the applicable provisions of ACI 318.

Reinforcing Deformed Steel Wire: Deformed steel wire reinforcing shall conform to ASTM Designation A-496 Grade 60, detailed in accordance with ACI 318, and shall be in sheets, not rolls.

Metal Accessories: Metal accessories shall include spacers, bolsters, chairs, tie bars, support bars, and all other items necessary for the proper support and location of the reinforcement and forms. All metal accessories shall be approved by the Engineer. Only approved metal support accessories shall be employed. Where concrete will be exposed finish, use galvanized accessories.

Fishing Pier Concrete and Stone Surfaces: After the removal of the fishing pier materials as identified on the drawings, and prior to the application of any materials, all remaining concrete surfaces and stone surfaces to receive a concrete overlay shall be cleaned free of all rust, dirt, dust, any corrosion products, mold and mildew. Also, remove all loose and/or deteriorated concrete and/or mortar from these surfaces to a depth of at least one-quarter inch (1/4"). To prepare these surfaces, sandblasting and other approved appropriate mechanical means may be used in accordance with the concrete surfacing manufacturer's complete instructions.

All loose and/or deteriorated mortar joints on the stone walls are to be removed to a depth of at least one-quarter inch (1/4") by approved appropriate mechanical means, in accordance with the concrete surfacing manufacturer's complete instructions.

One approved manufacturer must be used for all of the concrete and stone repair materials used, including patching, grouting, surface bonding, sealing, protection, and cover. Also, the surface preparations, storage, mixing, application, finishing and clean-up of the materials used must be in accordance with this specification and the approved manufacturer's complete instructions.

The standard of quality shall be the following products with their respective usages, as manufactured by the Sika Corporation, P. O. Box 297, Lyndhurst, NJ 07071 (201-933-8800), or approved equal:

1. Hole, chip, crack and mortar joint repair - Sikatop 122 repair mortar.
2. Grouting reinforcing steel into vertical holes - Sikadur 32 Hi-Mid Grout.
3. Grouting reinforcing steel into horizontal holes - Sikadur 31 Hi-Mod Gel Grout.
4. Bonding existing stone and/or concrete surfaces to new concrete - Sikadur 32 bonding agent.
5. Covering of all original concrete surfaces after repair and concrete overlay operations - Sikatop 144 (gray in color) polymer-powered coating.
6. Sealing of newly poured concrete surfaces after properly cured and forms removed - Sikagard 70 water-repellant, colorless liquid, penetrating sealer.

7. Grouting under base plates - non-shrink grout, 3 parts oven-dried aggregate to 2 parts Sikadur 32 Hi-Mod.

Forms and Form Coatings:

- A. Forms for concrete work shall conform to ACI 318, and shall be constructed of wood, steel, or other approved materials. Surfaces of forms shall be free from irregularities, dents and sags. Knot-holes and broken places in wood forms shall be covered with metal patches. Lumber used in forms shall be dressed to a uniform thickness, evenly matched and free from loose knots and other imperfections that would produce defects in the finished concrete surfaces.

The Contractor may elect to employ prefabricated forms, upon prior approval of the Engineer as to both type and materials, for mass concrete walls and structures.

- B. Form surfaces in contact with concrete shall be treated with an effective bond-breaking form coating. Plywood shall be coated with non-staining form coating (manufacturer to be approved by the Engineer before reinforcing is placed). Wood board forms shall be wetted directly before the pour. Prior to reusing any forms, the nails shall be removed and surfaces shall be thoroughly cleaned.
- C. For concrete surfaces within the structures that will be exposed in the finished work, forms shall be plastic coated or lined with 3/16 inch tempered pressed wood with all exposed corners chamfered. For unexposed surfaces, forms of unfinished lumber may be used if they conform to these Specifications. By unexposed surfaces, it is meant any concrete not exposed to view on completion of the project. All concrete surfaces inside the buildings shall be considered exposed surfaces. Unexposed surfaces may be poured against the soil only if prior approval is obtained from the Engineer.
- D. Plywood forming shall be Exterior Type Class 1, Grade BC, as designated by the American Plywood Association.
- E. It shall be the responsibility of the Contractor that all forms, shores, bracing, etc. are of sufficient capacity to carry all live and dead loads at all times, before, during and after pouring of concrete.
- F. Form work shall be provided with adequate cleanout openings to permit inspection and easy cleaning after reinforcement has been placed. Where possible, these openings shall be in the side of the unexposed surfaces.
- G. Form ties shall be a type which will leave no metal closer than 3/4-inch to the surface, and they shall not be fitted with any lugs, cones, washers, or other devices which will leave a hole larger than 7/8-inch in diameter, or any depression in the exposed surface of the concrete. Twisted wire ties will not be permitted.

H. Where soil conditions will permit excavation to accurate sizes without bracing, side forms for footings may be omitted and the sides of excavation lined with waterproof paper.

I. Removal of Forms and Shoring

1. After concrete has been placed, all forms, bracings, and support shall remain undisturbed long enough to allow the concrete to reach the strength necessary to support with safety its own weight plus any live load and earth pressure that might be placed upon it without causing excessive settlement or deflection or any temporary or permanent damage to the structure.

The following will be the minimum time accepted before removal of forms: where the structure as a whole is supported on shores, beam and girder sides, column and similar vertical forms may be removed after 72 hours, providing the concrete is sufficiently set not to be injured thereby. Beams and slab forms shall remain in place for at least seven (7) days, or until the concrete attains an in-place strength of 75% of its specified cylinder strength.

Where, in his opinion, such contributes to the permanent benefit of the structure, the Engineer may order the forms to remain in place for a longer period than that considered to be sufficient in the judgement of the Contractor. However, should the Engineer acquiesce in the removal of forms by the Contractor, the Engineer assumes no responsibility as a result of their removal. The Contractor is fully and personally responsible and is in no manner relieved of his responsibility for such removal. Special care shall be taken to prevent the breaking of edges and corners of concrete in the stripping of forms.

2. Shoring shall not be removed until the member has acquired sufficient strength to safely support its weight and the load upon it. Members subject to additional loads during construction shall be adequately shored to support both the member and the construction loads in such a manner as will protect the member from damage by loads.
3. No patching of honeycombed areas and other voids shall be done until these areas have been brought to the attention of the Engineer, and until specific instructions have been received for the methods of correction to be used in each specific case.

Execution

Design of Mix:

- A. The Contractor shall assume complete responsibility for producing a workable, dense and homogeneous concrete of the minimum

strengths specified. Nothing in these Specifications shall be construed as relieving him of this responsibility. All proportioning shall conform to the latest ACI Standard "Recommended Practice for Selecting Proportions for Concrete". However, the minimum amount of cement shall be six (6) bags per cubic yard of concrete.

- B. One copy of all mixes shall be sent to the Engineer for their files before any concrete is placed.

Consistency:

The Contractor shall have the option of providing whatever slump concrete he feels to be proper for the pour at hand. However, the slump shall in no case exceed 3" for floor slabs, beams and columns and 4" for all other work.

Subgrades:

- A. Fill and tamp all traces of trenches and excavations. Remove unsuitable material and replace with acceptable fill. Subgrade shall provide uniform bearing under all slabs.
- B. All pipes, conduits, etc. shall be in place and approved before closing slab is poured.
- C. Six inch (6") deep porous fill shall be furnished, placed and compacted by this concrete section, under all slabs on grade. Do any final compaction, leveling, or sloping which may be necessary.
- D. Porous fill shall consist of crushed stone or clean gravel ranging from 1-1/2" maximum size to 1/2" minimum size. If gravel is used, it must be washed and free from all clay. Cinders will not be acceptable for porous fill under floor slabs.

Reinforcement - Bending and Placing:

- A. Bending and placing of all reinforcement shall comply with bending and placing diagrams which shall be furnished by the Contractor. Copies of drawing shall be submitted to the Engineer as outlined in the GENERAL CONDITIONS for his approval. All cleaning, bending and placing of reinforcement shall be done in accordance with requirements of the ACI Building Code.
- B. All steel shall be bent around pins of approved diameter and spacing, or by methods approved by the Engineer. No heating of steel will be permitted.
- C. Reinforcing steel shall be accurately set as indicated on the Drawings with all laps as indicated.
- D. All intersections shall be wired together and all required chairs, spacers and other accessories provided and installed. Galvanized

chairs, bolsters and spacers are to be used where concrete will be exposed finish.

- E. Reinforcement shall be so placed and secured as to assure that its position is maintained during placing of concrete.
- F. Mesh shall be placed as shown. Side laps shall be not less than 2" and end laps not less than 6". All shall be securely wired together.
- G. Prior to placing reinforcement, all rust, grease and scale shall be removed.
- H. The following concrete minimum coverages should be provided for reinforcing bars:

Provide for Reinforcing Bars

Minimum cover, in.

Cast against and permanently exposed
to earth

3

Exposed to earth or weather

#6 through #18 bars

2

#5 bars, 5/8 in. wire, and smaller

1-1/2

Not exposed to weather or in contact
with the ground:

Slabs, walls, joists:

#14 and #18 bars

1-1/2

#11 and smaller

3/4

Beams, girders, columns:

Principal reinforcement, ties, stirrups
or spirals

1-1/2

Precast concrete (manufactured under plant
control conditions)

Exposed to earth or weather:

Wall panels:

#14 and #18 bars

1-1/2

#11 and smaller

3/4

Other members:

#14 and #18 bars

2

#6 through #11

1-1/2

#5 bars, 5/8 in. wire, and smaller

1-1/4

Not exposed to weather or in contact with the ground:

Slabs, walls, joists:

#14 and #18 bars	1-1/4
#11 and smaller	5/8

Beams, girders, columns:

Principal reinforcement	Bar diameter, but not less than 5/8 and need not exceed 1-1/2
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Ties, stirrups, or spirals	3/8
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Placing of Concrete:

- A. All concrete shall be placed in accordance with the requirements of ACI Building Code (ACI 318).
- B. Before concrete is placed, all debris and ice or excess water shall be removed from the place to be occupied by the concrete, forms shall be thoroughly wetted (except in freezing weather) or oiled, and the reinforcement shall be thoroughly cleaned of ice or other coatings. Concrete shall be deposited in approximately horizontal layers of 12 to 18 inches as nearly as possible in its final position to avoid segregation due to rehandling or flowing. No concrete that has partially hardened or has been contaminated by foreign material shall be deposited in the work, nor shall retempered concrete be used. The maximum height of free fall shall be limited to four (4) feet.
- C. Before concrete is placed in each particular location, the Contractor shall ascertain and verify that all permanently built-in items specified as part of this or other divisions of work, such as frames, pipes, sleeves, anchors, inserts, dowels, nailing strips, blocking, or other fastening devices, conduit, waterstops and the like have been installed and are in their proper locations.
- D. Concrete shall not be mixed when the water and/or the atmospheric temperature is plus 40°F. or below measured by accurate thermometer kept on the premises. Concrete shall not be poured if the U.S. Weather Bureau forecasts an air temperature of less than plus 40°F. during the next 24 hours. Contractor shall be prepared to maintain a temperature of plus 55°F. or more in all normal strength concrete for a minimum of 168 hours after placing, with no additional cost to the Owner.

- E. Concrete shall be transported from the mixer to the place of final deposit as rapidly as practical by methods which will prevent separation of the ingredients and displacement of reinforcement and which will avoid rehandling. In no case shall more than one hour elapse between time water is added and concrete is deposited. Partially hardened concrete shall not be deposited in the work. Such hardened concrete shall be removed from the site.
- F. Construction joints shall be as shown on the Drawings or as approved by the Engineer. All construction joints shall be keyed and doweled and meet the requirements of ACI Standards 318 and 350.
- G. Before placing concrete adjoining construction joints, the surface of the joint already in place shall be picked, brushed clean and given a coat of neat cement grout.
- H. All concrete shall be placed with the aid of mechanical vibrating equipment as approved by the Engineer. Vibration shall be transmitted directly to the concrete and in no case shall be transmitted through the forms. The duration of the vibration at any location in the forms shall be held to a minimum necessary to produce thorough compaction. Vibration shall be supplemented by forking or spading by hand, and shall be adjacent to the forms on exposed faces in order to secure smooth, dense and even surfaces.
- I. Immediately after removal of forms, form ties extending into concrete shall be cut off at least $3/4$ " back from surface exposed to view and holes pointed up with 1:2 cement and sand mortar approximately the same color and finish as the adjacent concrete surface, mixed and placed as dry as possible to avoid excessive shrinkage.
- J. Honeycombing shall be cut out and repaired as directed.
- K. All concrete edges to be exposed, in the final design condition, shall be chamfered at $3/4$ " x $3/4$ ".
- L. Contractor shall ensure that all concrete, reinforcing steel, anchor bolt, grouting and appurtenant work is straight, plumb and true.

Testing:

- A. Contractor shall employ at his own expense a qualified testing laboratory to perform all tests of concrete cylinders to determine strength of mix. Such laboratory shall be approved in writing by the Engineer.
- B. All testing shall conform to Building Code Requirements for Reinforced Concrete (ACI 318) Chapter Four (4).
- C. Four test cylinders shall be made for each day's operation and/or for each structure; two of these cylinders shall be for 7-day

tests (one field cured and one lab cured) and two shall be for 28-day tests (one field cured and one lab cured). Preparation and testing of cylinders shall conform to ASTM Standards.

- D. The Engineer shall have the right to order the making of load tests, compression tests on specimens taken from the concrete in any place, or any other tests of the completed concrete structure or any part thereof at any time during the course of construction. If the tests show that the concrete tested is not in accordance with Specifications, such concrete may be condemned and the Contractor, at his own expense, shall remove such condemned concrete and replace same with new concrete to the satisfaction of the Engineer.
- E. Any additional costs for Engineering services incurred because of Contractor's failure to comply with Specifications shall be borne by the Contractor.

Protection and Curing:

- A. Concrete shall be protected against frost and rapid drying and kept moist for at least seven (7) days after placing. Concrete from which forms are removed within six (6) days after pouring and cement finished shall be sprayed during the curing period as frequently as drying conditions may require and, if necessary, protected by suitable temporary covering. Covering shall be of a type that will not stain or discolor finished concrete surfaces. Curing of concrete shall be done in accordance with requirements of the American Concrete Institute Building Code, and "Design and Control of Concrete Mixtures" - Portland Cement Association.
- B. All freshly placed concrete shall be protected from the elements and from defacement due to building operations. The Contractor shall provide and use tarpaulins when necessary to cover completely or enclose all freshly finished concrete.
- C. Adequate equipment shall be provided for heating the concrete materials and protecting the concrete during freezing or near freezing weather. No frozen materials or materials containing ice shall be used. Use of salts, chemicals or other foreign materials to prevent freezing of concrete will not be permitted.

When the air temperature around the areas to receive concrete is at or below 55°F. for twenty-four (24) hours or less before the concrete is to be poured, the Contractor must maintain the surrounding air temperature between 55°F. and 80°F. from a time twenty-four (24) hours prior to, during, and for seven (7) days after the pour, as a minimum. When the acceptable time of maintaining the air temperature around the concrete between 55°F. and 80°F. has lapsed, the cooling rate of the air may not be more than 20°F. per twenty-four (24) hours. The Contractor will perform all of these required conditional tasks at no additional cost to the Owner.

All procedures used in the placing and protecting of concrete during cold weather are subject to approval by the Engineer, and no work shall be done until such approval is given.

Castings and Openings in Concrete:

- A. The Contractor shall coordinate the work of the other trades in regard to openings in slabs, and shall assume the responsibility of indicating all required holes not shown on structural drawings on the reinforcing shop drawings prior to submission to the Engineer for approval.
- B. It shall be the duty of the Contractor to coordinate the work under this Section with the work of mechanical and/or electrical trades to ensure that mechanical and/or electrical work will not be placed so as to injure or cause weaknesses in the concrete work.
- C. Individual sleeves or groups of conduits shall not be placed horizontally or vertically in beams, nor shall they be placed in slabs and walls so as to interfere with the specified location of reinforcing.
- D. Conduits shall be placed no closer than 3 diameters on center and, if closer than 1" to the concrete surface, expanded metal or wire mesh shall be laid between them and the concrete surface and shall extend 8" beyond the conduit.
- E. Sleeves shall be placed by the Contractor requiring the sleeve.

Finishes:

All floor slabs shall be finished as follows: screed, float, and trowel monolithic slab to proper elevations and/or grades; then steel troweled to a hard, dense, polished finish. All slopes must be true and must allow for proper drainage at all times.

Unexposed surfaces require no special finishing other than filling of voids, providing that the surfaces are sufficiently true so as not to interfere with other work and, further, provided they are structurally sound.

Exposed surfaces shall receive a rubbed smooth finish subject to approval of the Engineer.

Exterior concrete slabs and platforms shall receive a wood floated finish worked in such a manner as to result in a coarse-textured surface that will resist slipping.

Expansion Joints:

- A. Where shown on the Drawings, Contractor shall install expansion joints using preformed bituminous-fiber type expansion joint

filler 1/2" thick by full slab depth unless detailed otherwise by the Engineer. Joint fillers are to be in accordance with ASTM D 544, Type V.

- B. Joint Sealer in all expansion joints shall be in accordance with ASTM Specification D 1190. Joint sealer shall be applied to the top one inch of all joints indicated as premolded joints on the Drawings.
- C. Except for the expansion joints shown by the Drawings, Contractor shall locate expansion joints only where approved by the Engineer.

Cleaning and Patching of New Concrete Surfaces:

Within ten (10) calendar days of stripping the forms, concrete surfaces shall be cleaned and all stains removed by lightly sandblasting the surfaces. After the light sandblasting operation, the new concrete surfaces shall be washed with water to remove all dust and loose material. Then, all small voids, defects, and holes less than 1/2" deep x 10" x 10" shall receive uniformly brushed or sprayed grout of 1 part Portland cement and 2 parts fine sand, completely filling all air bubbles, holes and voids. All large voids, defects and holes greater than 1/2" deep x 10" x 10" shall be prepared and filled with Sikatop 122 repair mortar by the Sika Corporation, P. O. Box 297, Lyndhurst, NJ 07071 (201-933-8800), or approved equal, in accordance with the complete manufacturer's instructions. The surface preparations, storage, mixing, application, finishing and clean-up of the approved repair mortar must be in accordance with these Specifications and the approved manufacturer's complete instructions.

MISCELLANEOUS METALS

Work of this Section

- A. Provide all miscellaneous metal work, as identified on the drawings and/or these Specifications. This work shall include furnishing, fabricating and erecting or installing the work, together with galvanizing, anchorage, fastenings, bolts, washers, nuts, shims, welding and appurtenant work.

Codes and Standards

- A. In addition to conforming with all pertinent codes and regulations, all metal work and materials shall conform with the following standards:
1. "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings" of the American Institute of Steel Construction.
 2. "Code for Welding in Building Construction" of the American Welding Society.

Qualifications of Welders

- A. All welding shall be performed by certified welders, using shielded arc process.

Materials

- A. To the extent that such materials are shown on the drawings or specified herein, they shall conform to the following:
1. Steel
 - a. Structural steel shapes, plates and bars, Core-Ten (or approved equal), ASTM A36, latest revision, not to be painted or galvanized.
 2. Cast Iron - "Gray Iron Castings", ASTM A-48-64, true to pattern, free from cracks and warps, uniform, in thickness, with workmanlike finish, and of proper tensile strength grade to attain performance under proposed usage.
 3. Aluminum - as specified hereinafter for alloy and finish.
 4. Wrought iron - uniform in quality and free from flaws or other defects, ASTM A189, latest revision, Grade A.

5. Stainless steel - Type 302 or 304, ASTM A-276 or A-167, as applicable to bars, or plate, sheet and strip materials, respectively.
6. Bolts, nuts, washers, and shims - AISC specification requirements. Galvanize where installed for exterior use and/or connected to galvanized inserts. Low carbon steel fasteners ASTM A-307 galvanized. Expansion anchor bolts Rawl-Stud high tensile steel anchor galvanized by the Rawplug Company, Inc., New Rochelle, NY (215-425-6373), or approved equal; the expansion bolt holes shall be prepped and bolts installed in accordance with manufacturer's instructions.
7. Welding - whether done in shop or at the site, shall conform to AWS Standards. Where permanent structural welding is involved, engage AWS Certified Welders therefore.

Shop Drawings and Samples

- A. Provide shop drawings of all items of miscellaneous metal work. Obtain Engineer's approval of shop drawings before purchasing special materials or beginning any part of the work of this Section. No fabrication of any gratings shall be undertaken until all dimensions pertinent to installation have been measured by the Contractor in the field after concrete has set and forms have been removed. Provide samples where specified or if requested. Approval of shop drawings will be for size and arrangement of principal members and strength of connections and will not include a detailed check of figures or dimensions which are the responsibility of the Contractor.
- B. Fabrication and erection or installation of the work shall conform to the work shown on the final approved shop drawings, and to approved samples.
- C. Wherever work of other trades adjoins work of this Section details of miscellaneous metal work shall give consideration to the adjoining work for best joint possible and shall identify such work by accurate profiles on the shop drawings; all such details shall be subject to Engineer's approval.

Painting, Galvanizing

- A. Except as noted or specified galvanized or Core-Ten, or as otherwise specified, all ferrous metal shall be thoroughly cleaned after fabrication and given one shop coat of best quality rust-inhibitive paint. After erection of painted work, touch-up all welds, abrasions and defects in shop coat with same paint used for shop coat, so that each painted item is thoroughly tight-coated, and in good condition, ready for field painting.

- B. All ferrous metal installed for exterior use, or elsewhere if so noted or specified, shall be hot-dip galvanized after fabrication in accordance with ASTM A123-67. Anchorage portions of galvanized work shall also be galvanized, if not specified as Core-Ten steel.

Fabrication and Erection

- A. In general, all work shall be fabricated of materials in shapes and sizes as noted, detailed or scheduled on the drawings. Details on the drawings illustrate the intent, thicknesses, shapes and similar information of the work. Such details shall govern the work except where specific items of the work described herein exceed the requirements of the drawings. These specified items of the work shall be considered minimum requirements.
- B. All joints shall be made to close tolerances and shall be rigid and permanent in the finished work. Anchorage portions of the work shall be spaced and detailed to provide rigidity to the work installed.
- C. Grind all welds, exposed to view in the finished installation of the work, to a smooth surface, as flush as possible to surrounding material without weakening the strength requirements of the welds. Provide groove welding to accomplish this result wherever metal thicknesses permit, unless another type welding is noted or specified.
- D. Field welding shall be done with same care as that done in shop, and all precautions shall be taken to prevent fire or injury to work of others. Comply with NFPA Standard No. 51-1964 and No. 51B-1962.
- E. Furnish trade named material where specified, or its approved equal; do not build facsimile thereof that could become a real or an alleged infringement of patent rights. Follow manufacturer's instructions in assembly and preparation for erection, and erection of trade named material.
- F. Where methods of erection and attachment are provided, follow such directives. Do not substitute bolting where welding is called for, or vice versa.
- G. Where separate directives result in erection of the work by the General Contractor or another sub-contractor, provide complete instructions and prints of shop drawings as well as observe the installation at the site. Should an error occur in the work, inform the Engineer; do not attempt to correct the error by supplemental members.
- H. Fastening devices, in all cases, shall be of permanent and rigid type. Wherever fastenings are made to concrete and embedded anchorage cannot be used, fastenings shall be metal expansion

shields set into concrete; except that where a specific type of fastening is indicated on drawings the particular type shown shall be provided. In no case shall fiber plug fastenings be used.

- I. Where fastenings are made to concrete block or other masonry, provide toggle bolts, metal expansion shields, or through-wall bolt fastenings as required for rigid, permanent construction.
- J. Completed miscellaneous metal work shall be structurally sound and rigidly secured, free of sway and excessive deflection.
- K. Contractor shall ensure that all structural steel and architectural work is straight, plumb and true.

ROUGH CARPENTRY

General

Description:

- A. The work included in this Section consists of furnishing all labor, materials, equipment and services necessary to complete all carpentry work shown on the Drawings, herein specified, and/or reasonably implied to carry out the intent of the carpentry work.

Codes and Standards:

- A. In addition to conforming with pertinent codes and regulations, all timber work and materials shall conform with the latest edition of the National Forest Products Association "National Design Specification for Wood Construction", and the latest supplements thereof.

Grounds, Blocking, Stripping, Furring and Nailers:

- A. Provide all wood stripping, blocking, etc. as indicated on the drawings or required by conditions, for the securing of work or equipment in place. All the wood stripping or furring on masonry shall be secured with correct sizes of cut nails, toggle or expansion bolts, (wood plugs shall not be permitted) spaced to suit conditions, and as approved.

Preservative Treatment:

- A. All wood blocking, furring, etc., that is subject to dampness, roof nailers, or is in contact with masonry and/or concrete shall be pressure treated with a suitable solution of Wolman salts or approved equal, in accordance with AWP specification C1 and C2, and Federal Spec. TT-W-571.
- B. Brush coat surfaces of lumber sawed or cut after treatment with same preservative used at plant.

Anchors:

- A. Provide necessary anchors, bolts, and other fastening devices that are specified and/or may be required to hold any millwork, grounds, blocks, nailers, rough bucks and framing in place. Fasteners of wood grounds, blocks, nailers, plates, etc., to masonry and/or concrete shall be of metal and of type and design best suited to the conditions.

Protection of Materials:

- A. The Contractor shall protect all materials from damage by exposure to moisture by suitable means from time of erection until completion of the work.

Products

Wood Materials:

- A. All wood throughout the work shall be thoroughly kiln-dried or properly seasoned, the best of each kind known to the trade for the purposes specified; the moisture content of finished woodwork shall not exceed 12%. All wood shall be free from rot, sap, knots, splits, shakes, pitch pockets or any other imperfection that will impair its strength or durability and its appearance if exposed. All material shall be grade marked.
- B. Blocking, furring and other rough wood work shall be western hemlock, spruce or douglas fir, construction.
- C. Fir plywood shall meet American Plywood Association Standards, and shall be suitable for the function it is to perform.
- D. Sign boards shall be clear, all heart Redwood. Do not apply any preservative treatment to Redwood sign boards.
- E. Sign posts, bridge beams and planking shall be preservative pressure treated Douglas Fir or Southern Pine, minimum grade No. 2.
- F. Timber railings shall be preservative pressure treated Douglas Fir, minimum grade dense No. 1.
- G. Furnish trade name material where specified, or its approved equal; do not build facsimile thereof which could become a real or an alleged infringement of patent rights. Follow manufacturer's instructions in assembly preparation for erection, and erection of trade name material.

Where methods of erection and attachment are provided, follow such directives.

Where separate directives result in erection of the work by the General Contractor or another sub-contractor, provide complete instructions and prints of shop drawings, as well as observe the installation at the site. Should an error occur in the work, inform the Engineer; do not attempt to correct the error by supplemental members.

- H. Contractor shall ensure that all timber and carpentry work is straight, plumb and true.

Rough Hardware:

- A. The Contractor shall furnish all bolts, nails, anchors, etc. required for the installation of his work. Anchors and inserts for embedment shall be furnished to the trades involved with necessary instructions for locations and installations. All

nails, bolts, nuts and washers identified on, or implied by, the drawings for use with all timber shall be galvanized in accordance with this Specification.

Framing Lumber:

- A. Softwood framing lumber shall comply with American Lumber Standards, and with specific grading requirements of the West Coast Lumbermen's Association covering construction grade Douglas Fir.
- B. All framing lumber shall be identified by the grade mark of a recognized grading association or of an independent lumber grading inspection agency authorized to grade the species. The Association or dependent inspection agency and the grading rules under which they grade shall be certified by the Board of Review, American Lumber Standards Committee.
- C. Dimensions:
 - 1. Nominal sizes are shown on the Drawings unless otherwise noted.
 - 2. Dressed dimensions shall be within five percent of the American Lumber Standard Sizes measured at a moisture content of 15%.
- D. Moisture content of framing lumber shall not exceed 15 percent at time of installation.
- E. Miscellaneous Uses:

<u>Use</u>	<u>Grade</u>	<u>Species</u>
Nailers, blocking studding and furring	No. 2	Douglas fir, coast and inland Hemlock, west coast Pine, northern white, Norway, ponderosa and southern Spruce, Englemann

Execution

Installation - General:

- A. Except as otherwise indicated, comply with "MANUAL OF HOUSE FRAMING" by National Forest Product Association, including nailing firestopping, anchorage, framing and bracing.
- B. Furnish tradename material where specified, or its approved equal; do not build facsimile thereof which could become a real or an alleged infringement of patent rights. Follow manufacturer's instructions in assembly preparation for erection, and erection of tradename material.

Where methods of erection and attachment are provided, follow such directives.

Where separate directives result in erection of the work by the General Contractor or another sub-contractor, provide complete instructions and prints of shop drawings, as well as observe the installation at the site. Should an error occur in the work, inform the Engineer; do not attempt to correct the error by supplemental members.

- C. Contractor shall ensure that all timber and carpentry work is straight, plumb and true.

Shop Drawings:

The Contractor shall provide shop drawings to the Engineer and Owner, for the sign boards, indicating the board cut, engraving and bolt hole details, and number of each type of sign as identified on the drawings. Work on the sign boards shall not begin until the shop drawings are approved by the Engineer.

SITE AMENITIES

General

Description: The Contractor shall provide all labor, materials, equipment and accessories necessary to construct and install all site amenities as herein specified, and as shown or detailed on the drawings.

Products

Materials: All materials shall be in accordance with the descriptions herein and as called out on the drawings.

Execution

Bollards: Bollards shall be constructed and installed as detailed on the drawings. Number of bollards (quantity) and locations are shown on the drawings.

Bollards shall be constructed of used utility poles, which are in no way rotted or severely cracked, and generally have an overall good appearance.

Cut sections of utility poles shall have the newly exposed cut ends treated with creosote.

Picnic Table: Picnic tables shall be Iron Mountain Forge Model 238-8GU, 2-3/8" O.D. pipe frame, 8' long, galvanized, pressure-treated pine top and seats, or approved equal. Locations to be determined in the field.

Swinging Red Cedar Gate: Gate shall be two (2) Iron Mountain Forge Model 250-12X, swinging western red cedar gates, 12' long, painted black enamel hardware, total span 24 feet, or approved equal. Provide additional hitch post (Model 255-X), as required. Anchor as shown on plans and in accordance with manufacturer's specifications. Location shown on plans.

Bench: Benches shall be Iron Mountain Forge Model 285-6XP, stationary flat bench, 6' long, painted black enamel framework, construction heart redwood seat, or approved equal. Anchor as shown on plan and in accordance with manufacturer's specifications. Locations to be determined in the field.

Litter Receptacle: Stationary litter receptacles shall be Iron Mountain Forge Model 293-X2P, stationary trash can holder, 32 gallon capacity, painted black enamel frame components, 2" x 4" construction

heart redwood slats, and Model 332 galvanized trash can with lid, 32-gallon capacity, or approved equal. Anchor as shown on plans and in accordance with manufacturer's specifications. Locations to be determined in the field.

Rotating Grill: Grills shall be Iron Mountain Forge Model 200-X, pedestal mount grill, waist high single site, stationary, non-toxic, rust resistant, baked-on black enamel finish, or approved equal. Anchor as shown on plans and in accordance with manufacturer's specifications. Locations to be determined in the field.

Bicycle Rack: Bicycle racks shall be Iron Mountain Forge Model 504-P5, construction heart redwood ends, hot-dipped galvanized rack, 5 feet long. Locations to be determined in the field.

Hiking Trails: Hiking trail alignment as shown on the plans is approximate. Contractor shall stake-out hiking trails in the field. Owner shall approve staked-out alignment prior to construction. Trails shall be 6 feet wide. Clear 6-foot width of all vegetation, branches, etc. Remove debris from the site. Place 3-inch depth of wood chips and compact. Maintain existing drainage patterns. Contractor shall furnish Owner with sample of wood chips for approval prior to construction.

Signs: Park signs shall be constructed as detailed on the plans. Materials shall comply with the Rough Carpentry and Structural Concrete sections of this Specification. Locate signs as shown on plans.

Footbridges: Footbridges shall be constructed as detailed on the plans. Materials shall conform with the Rough Carpentry and Structural Concrete sections of this Specification. Two (2) footbridges shall be field located.

Repairs to Existing Fishing Pier and Walls: Repairs and installation of railings shall be in accordance with construction details as shown on the plans. Materials and methods shall conform with the Structural Concrete, Rough Carpentry, and Miscellaneous Metals sections of this Specification. Rip-rap shall be minimum size 24-inch rock.

Canoe Launch: The canoe launch (or ramp) shall be constructed as detailed on the drawings.

Earth work required shall conform to the proposed contours and elevations shown on the grading plan.

Stone base shall be No. 2 ballast, 8 inches thick. Concrete shall be a pebble or river stone mix, 6 inches thick. Concrete finish shall be exposed aggregate. See pages TS-27 to TS-40 - Structural Concrete.

Rip-rap shall be placed along the upstream edge of the canoe launch as shown on plans to protect from water undermining. Rip-rap stone size shall be a minimum of 24 inches in diameter.

Water level of the Neshaminy Creek at this project location is tidal. Canoe launch construction shall be done during a time of low tide. The time of construction shall be approved by the Engineer.

If necessary, the Contractor shall construct berms or other devices to maintain a dry condition around the work area.

EXHIBIT A
NONDISCRIMINATION CLAUSE

(for the purposes of this Exhibit A, the term "Contractor" Shall be defined to be "Cooperator.")

During the term of this Contract, Contractor agrees as follows:

1. Contractor shall not discriminate against any employee, applicant for employment, independent contractor, or any other person because of race, color, religious creed, ancestry, national origin, age, or sex. Contractor shall take affirmative action to ensure that applicants are employed, and that employees or agents are treated during employment, without regard to their race, color, religious creed, handicap, ancestry, national origin, age, or sex. Such affirmative action shall include, but is not limited to: employment, upgrading, demotion or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training. Contractor shall post in conspicuous places, available to employees, agents, applicants for employment, and other persons, a notice to be provided by the contracting agency setting forth the provisions of this nondiscrimination clause.
2. Contractor shall, in advertisements or requests for employment placed by it or on its behalf, state that all qualified applicants will receive consideration for employment without regard to race, color, religious creed, handicap, ancestry, national origin, age, or sex.
3. Contractor shall send each labor union or workers' representative with which it has a collective bargaining agreement or other contract or understanding, a notice advising said labor union or workers' representative of its commitment to this non-discrimination clause. Similar notice shall be sent to every other source of recruitment regularly utilized by Contractor.
4. It shall be no defense to a finding of noncompliance with this nondiscrimination clause that Contractor had delegated some of its employment practices to any union, training program, or other source of recruitment which prevents it from meeting its obligations. However, if the evidence indicates that the Contractor was not on notice of the third-party discrimination or made a good faith effort to correct it, such factor shall be considered in mitigation in determining appropriate sanctions.
5. Where the practices of a union or any training program or other source of recruitment will result in the exclusion of minority group persons, so that Contractor will be unable to meet its obligations under this non-discrimination clause, Contractor shall then employ and fill vacancies through other non-discriminatory employment procedures.
6. Contractor shall comply with all State and Federal laws prohibiting discrimination in hiring or employment opportunities. In the event of Contractor's noncompliance with the non-discrimination clause of this

Contract or with any such laws, this Contract may be terminated or suspended, in whole or in part, and Contractor may be declared temporarily ineligible for further Commonwealth contracts, and other sanctions may be imposed and remedies invoked.

7. Contractor shall furnish all necessary employment documents and records to, and permit access to its books, records, and accounts by the contracting agency for purposes of investigation to ascertain compliance with the provisions of this clause. If Contractor does not possess documents or records reflecting the necessary information requested, it shall furnish such information on reporting forms supplied by the contracting agency.
8. Contractor shall actively recruit minority and women subcontractors or subcontractors with substantial minority representation among their employees.
9. Contractor shall include the provisions of this non-discrimination clause in every subcontract, so that such provisions will be binding upon each subcontractor.
10. Contractor obligations under this clause are limited to the Contractor's facilities within Pennsylvania or, where the Contract is for purchase of goods manufactured outside of Pennsylvania, the facilities at which such goods are actually produced.

EXHIBIT B

Federal Statutory Requirements

- A. The COOPERATOR shall comply, and require each CONTRACTOR and subcontractor to comply, with the special Federal and State Statutory Requirements for Construction Contracts and Subcontracts, and all applicable standards, order or regulations issued pursuant thereto.
1. The Copeland "Anti-Kickback" Act, as amended, (18 USC 874) as supplemented in the Department of Labor regulations (41 CFR Chapter 60).
 2. Non-discrimination, Title VI of the Civil Rights Act of 1964 (P.L. 88-352), as amended, (42 USC 2000d) and the requirements imposed by the Regulations of the Department of Commerce (15 CRF Part 8) issued pursuant to that Title. In accordance therewith no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the COOPERATOR receives Federal financial assistance and will immediately take any measures necessary to effectuate this AGREEMENT.
 3. The Flood Disaster Protection Act of 1973 (P.L. 93-234), as amended. The COOPERATOR will fulfill any flood insurance requirements under this Act and any regulations issued thereunder by the U.S. Department of Housing and Urban Development or which may be issued by NOAA.
 4. Architectural Barriers Act (P.L. 90-480), 42 USC 4151, as amended, and the regulations issued or to be issued thereunder, prescribing standards for the design and construction of any building or facility intended to be accessible to the public or which may result in the employment of handicapped persons therein.
 5. Rehabilitation Act of 1973, 29 USC 794, Executive Order 11914. No otherwise qualified handicapped individual shall, solely by reason of his/her handicap, be denied the benefits of, be excluded from participation in, or be subjected to discrimination under any program or activity receiving Federal financial assistance.
 6. The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646, as amended), 15 CFR Part 916.
 7. The National Environmental Policy Act of 1969 (P.L. 90-190); The National Historic Preservation Act of 1966 (80 Stat 915, 16 USC 470); and Executive Order No. 11593 of May 31, 1971.
 8. Equal Employment Opportunity, Executive Order 11246, as amended, by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR Chapter 60). The COOPERATOR shall cause or require to be inserted in full in any construction contract or subcontract for more than \$10,000, or modification thereof, as defined in the rules and regulations of the Secretary of Labor at

41 CFR Chapter 60, which is paid for in whole or in part with funds provided under this AGREEMENT, the attached "Construction Contractor's Affirmative Action Requirements" (Exhibit F 1).

9. Certification of Nonsegregated facilities as required by the May 9, 1967, order (32 F.R. 7439, May 19, 1967) on Elimination of Segregated facilities, by the Secretary of Labor. Prior to the award of any construction contract or subcontract exceeding \$10,000, the COOPERATOR shall require the prospective prime CONTRACTOR and each subcontractor to submit the following certification:

"By submission of this bid, the bidder, offer or, applicant or subcontractor certifies that he/she does not maintain or provide for his/her employees any segregated facilities at any of his/her establishments, and that he/she does not permit his/her employees to perform their services at any location, under his/her control where segregated facilities are maintained. He/she certifies further that he/she will not maintain or provide for his/her employees any segregated facilities at any of his/her establishments, and that he/she will not permit his/her employees to perform their services at any location under his/her control, where segregated facilities are maintained. The bidder, offeror, applicant, or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habitat, location custom, or otherwise. He/she further agrees that (except where he/she has obtained identical certifications from proposed subcontractors for specific time periods) he/she will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause; that he/she will retain such certifications in his/her files; and that he/she will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific term periods):

**NOTICE TO PROSPECTIVE SUBCONTRACTORS
OF REQUIREMENTS FOR CERTIFICATIONS
OF NONSEGREGATED FACILITIES**

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

subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually)."

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

10. The Clean Air Act, as amended, 42 USC 1857 et seq., the Federal Water Pollution Control Act, as amended, 33 USC 1251 et seq. and the regulations of the Environmental Protection Agency with respect thereto, at 40 ofr Part 15, as amended from time to time.

In compliance with said regulations, the COOPERATOR shall cause or require to be inserted in full in all contracts, subcontractors, and subgrants in excess of \$100,000 funded with assistance provided under this AGREEMENT, the following requirements:

- a. A stipulation by the COOPERATOR, CONTRACTOR or subcontractors that any facility to be utilized in the performance of any contract or subcontract is not listed on the List of Violating Facilities issued by the Environmental Protection Agency (EPA) pursuant to 40 CFR 15.20.
- b. AGREEMENT by the COOPERATOR to comply with all the requirements of Section 114 of the Clean Air Act, as amended, (42 USC 1857 et seq.) Section 308 of the Federal Water Pollution Control Act, as amended, (33 USC 1318) relating to inspection, monitoring, entry reports, and information, as well as all other requirements and guidelines issued thereunder.
- c. A stipulation that as a condition for the award of the Contract prompt notice will be given of any notification received from the Director, Office of Federal Activities EPA, indicating that a facility utilized or to be utilized for the Contract is under consideration to be listed on the EPA List of Violating Facilities.
- d. AGREEMENT by the COOPERATOR that he/she will include or cause to be included the criteria and requirements in paragraph (a) through (d) of this Section in every nonexempt subcontract and requiring that the COOPERATOR will take such action as the Federal Government or DEPARTMENT may direct as a means of enforcing such provisions.

In no event shall any amount of the assistance provided under this AGREEMENT be utilized with respect to a facility which has given rise to a conviction under Section 113(c)(1) of the Clean Air Act or Section 309(c) of the Federal Water Pollution Control Act.

11. The Powerplant and Industrial Fuel Use Act of 1978 (92 Stat. 3318. P.L. 95-620) relating to the conservation of petroleum and natural gas. The COOPERATOR shall comply with the requirements of the American Society of Heating, Refrigerating, and Air Conditioning Engineers Standard 90-75, "Energy Conservation in New Building Design".

Commonwealth of Pennsylvania Statutory Requirements

1. The COOPERATOR shall include the provisions of Act 3 of March 3, 1978, known as the Steel Products Procurement Act, as amended by Act 144 of July 9, 1984 (73 P.S. Section 1881 et seq.) in every contract and supply contract so that the provisions of the Act shall be binding upon each CONTRACTOR, subcontractor and supplier.

The COOPERATOR, CONTRACTOR, subcontractors, materialmen, or suppliers shall use only steel products, rolled, formed, shaped, drawn, extruded, forged, cast, fabricated, or otherwise similarly processed, or processed by a combination of two or more of such operations, from steel made in the United States by the open hearth, basic oxygen, electric furnace, Bessemer, or other steel-making process. Steel products include not only cast iron products, but also machinery and equipment listed in United States Department of Commerce Standard Industrial Classifications 25 (furniture and fixtures), 35 (machinery, except electrical), and 37 (transportation equipment), and made of, fabricated from, or containing steel components. If a product contains both foreign and United States steel, it shall be determined to be a United States steel product only if at least 75% of the cost of the articles, materials, and supplies have been mined, produced, or manufactured, as the case may be, in the United States. Transportation equipment shall be determined to be a United States steel product only if it complies with Section 165 of Public Law 97-424 (96 Stat. 2136).

When unidentified, steel products are supplied under this AGREEMENT, before any payment will be made, the CONTRACTOR must provide documentation to the COOPERATOR including, but not limited to invoices, bills of lading, and mill certification that the steel was melted and manufactured in the United States. If a steel product is identifiable from its face, the CONTRACTOR must submit certification which satisfies the COOPERATOR that the CONTRACTOR has fully complied with this provision. The DEPARTMENT shall not provide for or make any payments to any person who has not complied with the Act. Any such payments made to any person by the DEPARTMENT which should not have been made as a result of the Act shall be recoverable directly from the COOPERATOR, CONTRACTOR, subcontractor, manufacturer, or supplier who did not comply with the Act.

In addition to the withholding of payments, any person who willfully violates any of the provisions of the Act shall be prohibited from submitting any bids to any public agency for a period of five (5) years from the date of the determination that a violation has occurred. In the event the person who violates the provisions of the Act is a subcontractor, manufacturer, or supplier, such person shall be prohibited from performing any work or supplying any materials to a public agency for a period of five (5) years from the date of the determination that a violation has occurred.

2. In accordance with the Trade Practices Act of July 23, 1968, P.L. 686 (71 P.S. Section 773.101 et. seq.), the COOPERATOR cannot and shall not use or permit to be used in the work any aluminum or steel products

made in a foreign country which is listed below as a foreign country which discriminates against aluminum or steel products manufactured in Pennsylvania. The countries of Brazil, South Korea, Spain, Mexico, and Argentina have been found to discriminate against certain products manufactured in Pennsylvania. Therefore, the purchase or use of those countries' products, as listed below, is not permitted:

- a. Brazil: welded carbon steel pipes and tubes; carbon steel wire rod; tool steel; certain stainless steel products including hot-rolled stainless steel bar; stainless steel wire rod and cold-formed stainless steel bar; prestressed concrete steel wire strand; hot-rolled carbon steel plate in coil; hot-rolled wire strand; hot-rolled carbon steel plate in coil; hot rolled carbon steel sheet; and cold-rolled carbon steel sheet.
- b. Spain: certain stainless steel products including stainless steel wire rod, hot-rolled stainless steel bars, and cold-formed stainless steel bars; prestressed concrete steel wire strand; and certain steel products including hot-rolled steel plate, cold-rolled carbon steel plate, carbon steel structural shapes, galvanized carbon steel sheet, hot-rolled carbon steel bars, and cold-formed carbon steel bars.
- c. South Korea: welded carbon steel pipes and tubes; hot-rolled carbon steel plate; hot-rolled carbon steel sheet; and galvanized steel sheet.
- d. Mexico: certain iron-metal construction castings including manhole covers, rings and frames, catch basin frames and grates, cleanout covers, grates, meter boxes, and valve boxes; galvanized carbon steel sheet; cold rolled carbon steel sheet; carbon steel sheet; carbon steel plate in coil; carbon steel plate cut to length; and small diameter carbon steel plate welded pipe.
- e. Argentina: carbon steel wire rod and cold-rolled carbon steel sheet. Penalties for violation of this paragraph may be found in the Trade Practices Act, which penalties include becoming ineligible for public works contracts for a period of three years.

3. Resident Labor Requirement

All laborers and mechanics employed by the CONTRACTOR for the work to be performed under this Contract shall have been residents of the Commonwealth for at least ninety (90) days prior to their employment. Failure to keep and comply with this provision shall be sufficient legal reason to refuse payment of the AGREEMENT price to the CONTRACTOR.

4. Pennsylvania Prevailing Wage Act

The CONTRACTOR is subject to the provisions, duties, obligations, remedies, and penalties of the Pennsylvania Prevailing Wage Act, 43 P.S. Section 165-1 et. seq., which is incorporated herein by reference as if fully set forth herein. The general prevailing minimum wage rates as determined by the Secretary of Labor and Industry shall be paid for each craft or classification of all workmen needed to perform this Contract during the term hereof for the locality in which the work is to be performed.

EXHIBIT C

CONSTRUCTION CONTRACTOR'S FEDERAL AFFIRMATIVE ACTION REQUIREMENTS

The following notice shall be included in, and shall be a part of, all solicitations for offers and bids on all Federal and Federally-assisted construction contracts or subcontracts in excess of \$10,000 to be performed in

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

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the CONTRACTOR'S aggregate workforce in each trade on all construction work in the covered area, are as follows:

Female Participation:

Goals (Percent)

6.9

Minority Participation:

Goals (Percent)

17.3

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

The CONTRACTOR'S compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, his efforts to meet the goals established for the geographical area where the contracts resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the Contract, in each trade, and the CONTRACTOR shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or

female employees or trainees from CONTRACTOR to CONTRACTOR or from project to project for the sole purpose of meeting the CONTRACTOR goals shall be a violation of the Contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

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

FEDERAL EQUAL OPPORTUNITY CLAUSE

During the performance of this AGREEMENT, the CONTRACTOR agrees as follows:

1. The CONTRACTOR will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The CONTRACTOR will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination 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, color, religion, sex, 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 advising the said labor union or workers' representatives of the CONTRACTOR'S commitment under this section 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 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/her books, records, and accounts by NOAA 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, terminated or suspended in whole or in part and the CONTRACTOR may be declared ineligible for further government contracts or Federally assisted construction contract procedures authorized in Executive Order 11246 of September 24, 1965, or by rule,

regulation, or order of the Secretary of Labor, or as otherwise provided by law.

7. The CONTRACTOR will include the portion of the sentence immediately preceding paragraph 1 and the provisions of paragraphs 1 through 7 in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The CONTRACTOR will take such action with respect to any subcontract or purchase order as NOAA may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event a CONTRACTOR becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by NOAA, the CONTRACTOR may request the United States to enter into such litigation to protect the interest of the United States.

The Department further agrees that it will be bound by the above Equal Opportunity Clause with respect to its own employment practices when it participates in Federally-assisted construction work: Provided, that if the CONTRACTOR so participating is a State or local government, the above Equal Opportunity Clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work or under the Contract.

The Department agrees that it will assist and cooperate actively with NOAA and the Secretary of Labor in obtaining the compliance of CONTRACTOR and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor; that it will furnish NOAA and the Secretary of Labor such information as they may require for the supervision of such compliance; and that it will otherwise assist NOAA in the discharge of its primary responsibility for securing compliance.

The DEPARTMENT further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a CONTRACTOR debarred from, or who has not demonstrated eligibility for, Government contracts and Federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon CONTRACTORS and subcontractors by NOAA or the Secretary of Labor pursuant to Part 11, Subpart D of the Executive Order. In addition, the DEPARTMENT agrees that if it fails or refuses to comply with these undertakings, NOAA may take any or all of the following actions: cancel, terminate, or suspend the grant in whole or in part; refrain from extending any further assistance to the DEPARTMENT under the program with respect to which the failure or refusal occurred until satisfactory assurance of future compliance has been received from such Department; and refer the case to the Department of Justice for appropriate legal proceedings.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY
CONSTRUCTION CONTRACT SPECIFICATIONS
(EXECUTIVE ORDER 11246)

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

with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other CONTRACTOR or subcontractors toward a goal in an approved Plan does not excuse any covered CONTRACTOR'S or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The CONTRACTOR shall implement the specific affirmative action standards provided in Paragraphs 7A through P of these specifications. The goals set forth in the solicitation from which this Contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the CONTRACTOR shall reasonably be able to achieve in each construction trade in which it has employees in the covered area. The CONTRACTOR is expected to make substantially uniform progress toward its goals in each craft during the period specified.
5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the CONTRACTOR has a collective bargaining agreement, to refer either minorities or women shall excuse the CONTRACTOR'S obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the CONTRACTOR during the training period, and the CONTRACTOR must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U. S. Department of Labor.
7. The CONTRACTOR shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the CONTRACTOR'S compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The CONTRACTOR shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
 - A. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the CONTRACTOR'S employees are assigned to work. The CONTRACTOR, where possible, will assign two or more women to each construction project. The CONTRACTOR shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the CONTRACTOR'S obligation to maintain such working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
 - B. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the CONTRACTOR or its unions have employment opportunities available, and maintain a record of the organizations' responses.

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

- I. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the CONTRACTOR'S recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the CONTRACTOR shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
 - J. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a CONTRACTOR'S workforce.
 - K. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part. 60-3.
 - L. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
 - M. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the CONTRACTOR'S obligations under these specifications are being carried out.
 - N. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
 - O. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
 - P. Conduct a review, at least annually, of all supervisors' adherence to and performance under the CONTRACTOR'S EEO policies and affirmative action obligations.
8. CONTRACTORS are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7A through P). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the CONTRACTOR is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7A through P of these Specifications provided that the CONTRACTOR actively participates in the group, makes every effort to assure that the group

has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the CONTRACTOR'S minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the CONTRACTOR. The obligation to comply, however, is the CONTRACTOR'S and failure of such a group to fulfill an obligation shall not be a defense for the CONTRACTOR'S noncompliance.

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

retrievable form; however, to the degree that existing records satisfy this requirement, CONTRACTORS shall be required to maintain separate records.

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

NONDISCRIMINATION CLAUSE

During the term of this Contract, Contractor agrees as follows:

1. Contractor shall not discriminate against any employee, applicant for employment, independent contractor, or any other person because of race, color, religious creed, ancestry, national origin, age, or sex. Contractor shall take affirmative action to ensure that applicants are employed, and that employees or agents are treated during employment, without regard to their race, color, religious creed, handicap, ancestry, national origin, age, or sex. Such affirmative action shall include, but is not limited to: employment, upgrading, demotion or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training. Contractor shall post in conspicuous places, available to employees, agents, applicants for employment, and other persons, a notice to be provided by the contracting agency setting forth the provisions of this nondiscrimination clause.
2. Contractor shall, in advertisements or requests for employment placed by it or on its behalf, state that all qualified applicants will receive consideration for employment without regard to race, color, religious creed, handicap, ancestry, national origin, age, or sex.
3. Contractor shall send each labor union or workers' representative with which it has a collective bargaining agreement or other contract or understanding, a notice advising said labor union or workers' representative of its commitment to this non-discrimination clause. Similar notice shall be sent to every other source of recruitment regularly utilized by Contractor.
4. It shall be no defense to a finding of noncompliance with this nondiscrimination clause that Contractor had delegated some of its employment practices to any union, training program, or other source of recruitment which prevents it from meeting its obligations. However, if the evidence indicates that the Contractor was not on notice of the third-party discrimination or made a good faith effort to correct it, such factor shall be considered in mitigation in determining appropriate sanctions.
5. Where the practices of a union or any training program or other source of recruitment will result in the exclusion of minority group persons, so that Contractor will be unable to meet its obligations under this non-discrimination clause, Contractor shall then employ and fill vacancies through other non-discriminatory employment procedures.
6. Contractor shall comply with all State and Federal laws prohibiting discrimination in hiring or employment opportunities. In the event of Contractor's noncompliance with the non-discrimination clause of this contract or with any such laws, this Contract may be terminated or suspended, in whole or in part, and Contractor may be declared temporarily ineligible for further Commonwealth contracts, and other sanctions may be imposed and remedies invoked.

7. Contractor shall furnish all necessary employment documents and records to, and permit access to its books, records, and accounts by the contracting agency for purposes of investigation to ascertain compliance with the provisions of this clause. If Contractor does not possess documents or records reflecting the necessary information requested, it shall furnish such information on reporting forms supplied by the contracting agency.
8. Contractor shall actively recruit minority and women subcontractors or subcontractors with substantial minority representation among their employees.
9. Contractor shall include the provisions of this non-discrimination clause in every subcontract, so that such provisions will be binding upon each Subcontractor.
10. Contractor obligations under this clause are limited to the Contractor's facilities within Pennsylvania or, where the contract is for purchase of goods manufactured outside of Pennsylvania, the facilities at which such goods are actually produced.

CONTRACTOR

EXHIBIT D

**CONTRACTOR INTEGRITY PROVISIONS FOR COMMONWEALTH
CONTRACTS**

- A. The CONTRACTOR and his employees shall accept no pay, remuneration, or gratuity of any value: (1) for performance on or information derived from this project from any party under contract to the Commonwealth as described in this AGREEMENT, or (2) from any party under contract to the Commonwealth or seeking to contract with the Commonwealth with respect to this project.
- B. The CONTRACTOR and his employees shall not offer or give any gift, gratuity, favor, entertainment, loan, or any other thing of monetary value to any Commonwealth employee.
- C. The CONTRACTOR and his employees shall not disclose any information gained by virtue of this AGREEMENT to any party without the consent of the Commonwealth.
- D. The CONTRACTOR and his employees shall take no action in the performance of this AGREEMENT to create an unfair, unethical, or illegal competitive advantage for itself or others.
- E. The CONTRACTOR and his employees shall not have any financial or personal interests other than the interest in this AGREEMENT in any contract, subcontract, supply agreement, or other financial relationships relating to this project without the explicit written consent of the Commonwealth. For purposes of this provision, "interest" shall include, but not be limited to, any circumstances under which an organization such as a contractor, professional, or supplier enjoys pecuniary, managerial, consultant, or other advantages as a result managerial, cross-directorship, common, partial, or complete ownership, stock interest, contractual, or other common links with another contracting professional, supplier, or subcontracting organization supplying services, material, or labor on the same project. Such advantages may include, but are not limited to, foreknowledge of other bid proposals, proposed specification requirements, anticipated timeframes, costs, and any other particular knowledge which tends to provide the contractor, subcontractor, or supplier with an unfair, unethical, or illegal competitive advantage over other parties wishing to bid or contract such services, materials, or labor. Upon learning that any of the above may occur, the CONTRACTOR and his employees shall immediately notify the Commonwealth in writing.
- F. For violation of any of the above provisions, the Commonwealth may terminate the contract with the CONTRACTOR, receive restitution from the CONTRACTOR, debar the CONTRACTOR, or take any other appropriate action against the CONTRACTOR.

For purposes of provisions A through F, above, "CONTRACTOR" shall include construction firms, architects, engineers, consultants, designers, or any other person or firm that enters into a contract with the Commonwealth.

U.S. Department of Labor



EXHIBIT E

GENERAL WAGE DECISION NO. PA87-6

Supersedes General Wage Decision No. PA86-6

State: PENNSYLVANIA

County(ies): BUCKS, CHESTER, DELWARE, MONTGOMERY & PHILADELPHIA

Construction
Type: Heavy & Highway

Construction
Description: Heavy & Highway Construction

Modification Record:
No.

Publication Date

Page No. (s)

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	Basic Hourly Rates	Fringe Benefits
CARPENTERS	16.37	6.71+ a
CEMENT MAOSNS	15.00	7.04
ELECTRICIANS:		
Philadelphia (only)	20.12	28%
IRONWORKERS:		
Structural & Ornamental		
Philadelphia	17.75	8.33
Rigger, machinery mover		
Philadelphia	16.20	7.70
Reinforcing	18.00	7.32
LABORERS:		
Group 1	14.70	3.75
Group 2	14.50	3.75
Group 3	14.40	3.75
Group 4	14.55	3.75
Group 5	14.30	3.75
Group 6	14.95	3.75
Group 7	14.80	3.75
Group 8	14.65	3.75
Group 9	15.20	3.75
Group 10 (Flaggers)	9.10	3.75
Tunnel Compressed Air:		
Laborers:		
Blasterers, shield drivers	19.375	1.80
Miners, miner's bore driver	20.00	1.80
Brakemen, trackmen, miners, helpers,		
groutmen, iron men, maintenance man,		
pump men, electrician, cement finisher		
carpenters, hydraulic men, monorail		
men, conveyor men, power carriers,		
pan men, powder carriers, pan men,		
riggers, lock tenders' helpers,		
nippers, derailed men, cablemen,		
hosemen, gravel men	17.955	1.80
Mucking machine operators	20.665	1.80
Laborers (Surface) per hour	9.75	1.80
Between Locks		
Lock tenders, motor men	18.80	1.80
All other men	17.955	1.80
Outside of Locks		
Outside lock tenders, gauge tenders	19.955	1.80
Outside lock tenders' helpers	17.11	1.80

AMOUNT IN ADDITION TO BASE RATE (NOT CUMULATIVE)

Air pressure:	
15 lb. up to but less than 26 lb.	1.50
26 lb. up to but less than 31 lb.	2.00
31 lb. up to but less than 36 lb.	2.50
36 lb. up to but less than 41 lb.	3.00
41 lb. up to or more	3.50

LANDSCAPING:		
Landscape laborers	11.50	3.30+ b

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Farm Tractor Driver	12.00	3.30+ b
Hydroseeder Nozzlemen	12.00	3.30+ b
Mulcher Nozzlemen	12.00	3.30+ b
LINE CONSTRUCTION		
ZONE 1		
Linenen	22.16	.80+ 3-3/4%
Groundmen	13.30	.80+ 3-3/4%
Winch truck operator	15.51	.80+ 3-3/4%
ZONE 2		
Linenen, cable splicers, heavy equipment operator, truck driver	15.27	.80+ 10 3/4%
Groundman, winch operator	12.22	.80+ 10 3/4%
LINE CONSTRUCTION (RAILROAD ONLY)		
Linenen		
"A" equipment operator	13.28	.60+ 3 3/4%+ c
"B" equipment operator	11.61	.60+ 3 3/4%+ c
MILLWRIGHTS:		
Philadelphia (only)	16.82	6.86
PILED RIVERMEN	16.57	8.26+ g
POWER EQUIPMENT OPERATORS:		
Heavy Construction		
Wage Group 1	18.22	1.00+ 26.6%+ e
Wage Group 2	17.96	1.00+ 26.6%+ e
Wage Group 3	16.50	1.00+ 26.6%+ e
Wage Group 4	16.19	1.00+ 26.6%+ e
Wage Group 5	14.42	1.00+ 26.6%+ e
Wage Group 6	13.91	1.00+ 26.6%+ e
Highway Construction, and Water Lines Construction (Off Plant Site)		
GROUP 1	17.97	1.00+ 26.6%+ e
GROUP 2	17.75	1.00+ 26.6%+ e
GROUP 3	16.23	1.00+ 26.6%+ e
GROUP 4	15.86	1.00+ 26.6%+ e
GROUP 5	14.27	1.00+ 26.6%+ e
GROUP 6	13.92	1.00+ 26.6%+ e
HEAVY & HIGHWAY TRUCK DRIVERS:		
Including Site Preparation, Paving and Utilities on Building Construction		
Class 1	13.55	3.4225+ f+g
Class 2	13.65	3.4225+ f+g
Class 3	13.85	3.4225+ f+g
WELDERS - Rate for craft to which welding is incidental.		

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

AREA COVERED BY LINE CONSTRUCTION



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ZONE 1 - Chester, Delaware, Montgomery, Philadelphia Counties,
Remainder of Bucks County.

ZONE 2 - Buck county: That portion east of a line starting at the Delaware River and following the west limits of the Borough of Bristol, along the continuation of U.S. Highway 13 and under the Pennsylvania Railroad Bridge to Route 09113, north along 09113 to Route 152, north along Route 152 to the Hulmeville Rd., east on the Hulmeville to Route 344, north on Route 344 to the junction of Spurs 281 and 252, continue north on Spur 252 and Route 09028, west on 09028 to Route 152, north on 152 to Tr 532, north on Tr 532 to Tr 11w, north on Tr 113 to Tr 232 at Anchor Inn, northeast on Tr 232 and continue northeast along Route 659 to Route 09060, west on 09060 to Route 402, north on 402 to the Borough Line at the Southwest corner of the Borough of New Hope. The Boroughs of New Hope and Bristol are included

CLASSIFICATIONS DEFINITIONS FOR LINE CONSTRUCTION (RAILROAD ONLY)

"A" Equipment Operators:

1. Hoisting equipment - when erecting complete towers, erecting framed structures, erecting steel transmission poles, erecting railroad pole extensions and crossbeams and when operating personnel lift baskets.
2. Tension pulling equipment under energized conditions - parallel with other energized circuits or above energized circuits on the same structure, not to include crossovers. Bundled conductor stringing, including static conductors on bundled conductor lines.
3. Excavating augurs 36" inches in diameter or larger, 5/8 cubic yard backhoe and larger, trencher over four feet' in depth, bulldozer D-6 (caterpillar) or larger, and blade on finish grade work

"B" Equipment Operators:

Operators of-all other equipment

LABORERS CLASSIFICATIONS OTHER THAN TUNNEL COMPRESSED AIR & LANDSCAPING

Group 1 - Powderman, multiple wagon drill op. under pinning excavation, bottom men

Group 2 - Finished surface asphalt rakers ops., pipelayers, or caulkers conduit and duct layers, jackhammer operator, paving

Group 3 - Other pneumatic tools ops., labor stripping concrete forms, carrying or handling lumber, steel & steel mesh and other concrete materials, form pinners, tool room men, mortar mixers, concrete pitman & spaders, grademen, asphalt shovelers, men working in shoring, men working in lagging, laborers assistance in the setting of cut stone, granite or artificial stone, hod carriers, scaffold builders, all other laborers on construction with the exception of workers in compressed air, relief joints and approach slab, men working in sheeting



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Group 4 - Wagon drill operators

Group 5 - Yard workers: Laborers, scale mixemen, burnermen
dustmen, feeder

Group 6 - Free Air Tunnel: Miner bore driver, blasters, drillers,
pneumatic shield op., welders & burners, miners

Group 7 - Miners' Helper, form setters, circular caisson excav-
ation bottom men underpinning excavation bottom men, welders,
burners and air tugger

Group 8 - Trackmen, brakemen, groutmen, bottom shaft men, all others
in free air tunnels

Group 9 - Welders and Burners

POWER EQUIPMENT OPERATORS
(HEAVY CONSTRUCTION CLASSIFICATION DEFINITIONS)

Wage Group 1 - Handling steel and stone in connection with erection,
cranes doing hook work, any machines handling machinery, cable
spinning machine, helicopters, and machines similar to above.

Wage Group 2 - All types of cranes, all types of backhoes, cable-
ways, drag lines, keystones, all types of shovels, derricks,
trench shovels, trenching machines, pippin type backhoes, hoist
with two towers, pavers 21E and over, all types overhead cranes,
building hoist - double drum, (unless used as single drum), mucking
machines in tunnel, gradalls, front end loaders, boat captain,
tandem scrapers, towers type crane operation, erecting, dismantling,
jumping or jacking, drill self contained (drillmaster type),
fork lift (20 ft. and over), motor patrols (fine grade), batch
mixer, scrapers & tournapulls, rollers (high grade finishing),
mechanic-welder, spreaders, bulldozers and tractors, and machines
similar to the above.

Wage Group 3 - Conveyors (except building conveyors), building
hoists (single drum), asphalt plant engineers, high or low
pressure boilers, concrete pumps, well drillers, fork lift trucks
of all types, ditch witch type trencher, motor patrol, concrete
breaking machines, rollers, and machines similar to the above.

Wage Group 4 - Seaman pulverizing mixer, tireman on power equipment,
maintenance engineer (power boat), farm tractors, fine grade
machines, form line graders, road finishing machines, power broom
(self-contained), seed spreader, grease truck, and machines similar
to the above.

Wage Group 5 - Coveyors (building), welding machines, heaters,
wellpoints, compressors, pumps, and machines similar to the
above.

Wage Group 6 - Fireman, oilers and deckhands (personnel boats),
grease truck helper.

HIGHWAY CONSTRUCTION CLASSIFICATIONS

Wage Group 1 - handling steel and stone in connection with errec-



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tion, cranes, doing work any machine handling machinery, helicopters, machines similar to the above.

Wage Group 2 - All types of cranes, all types of backhoes, cableways, draglines, keystones, all types of shovels, pavers 24E and over, trenching machines, gradallis, front-end loaders, boat captain, pippin type backhoes, tandens scrapers, towers type crane operation erecting, dismantling, jumping, or jacking, drills self-contained, (drillmaster type) forklift (20 ft. and over, motor patrols (fine grade), batch plant with mixer, carryalls, scraper, tournapulls, roller (High Grade Finishing), spreaders (Asphalt), bulldozers and tractors, mechanic-welder, and machines similar to the above.

Wage Group 3 - Asphalt plant engineers, concrete pumps, well drillers, ditch witch (small trencher), motor patrols, conveyors, ten-ton roller (grade fill stone base), concrete breaking machines, and machines similar to the above.

Wage Group 4 - Seaman, pulverizer, form line grader, fine grade machines farm tractors, road finishing, concrete spreaders, power broom self contained, seed spreader, grease truck, and machines similar to the above.

Wage Group 5 - Compressors, pumps, well point pumps, welding machines tireman, power equipment, maintenance engineers (Power Boats), and machines similar to the above.

Wage Group 6 - Fireman, oilers and deck hands (Personnel Boats), grease truck helpers.

HEAVY AND HIGHWAY TRUCK DRIVERS INCLUDING
SITE PREPARATION, PAVING AND UTILITIES
ON BUILDING CONSTRUCTION CLASSIFICATIONS

Class 1 - Helpers, stake body truck (single axle, dumpster)

Class 2 - Dump trucks, tandem & batch trucks, semi-trailers, agitator mixer trucks, and dumpcrete type vehicles, asphalt distributors, farm tractor when used for transportation, stake body truck (tandem)

Class 3 - Euclid type, off-highway equipment or belly dump trucks and double hitched equipment, staddle (ross) carrier, low-bed trailers

FOOTNOTES:

- a. Paid Holiday: Labor Day.
- b. Paid Holidays: July 4th, Labor Day, and Thanksgiving Day.
- c. Paid Holidays: New Year's Day; Decoration Day; Indendence Day; Labor Day; Thanksgiving Day; Christmas Day and Good Friday.
- d. Paid Holidays: Washington's Birthday; Good Friday; Memorial Day; Labor Day; Presidential Election Day; Veteran's Day;



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Thanksgiving Day and Christmas.

- e. Paid Holidays: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day and Christmas Day, providing the employee works the day before and after the holiday.
- f. Employee will earn one (1) vacation day every two (2) months up to a maximum of five (5) vacation days per calendar year. During each two (2) consecutive months period, employee must have worked twenty-six (26) days in that two month period. After 130 workdays the employee will be entitled to all days of vacation.
- g. Paid Holidays: Memorial Day; Independence Day; Labor Day and Veterans Day and five (5) personal holidays provided such employee work the scheduled work days before and after said holiday; and employee gives employer one (1) week's notice requesting a personal holiday. The eligibility for personal holiday every two (2) months up to a maximum of five (5) consecutive month period, employee must have worked twenty-six (26) days in that two month period. After 130 workdays the employee will be entitled to all personal holidays.

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