

FOR INFORMATIONAL PURPOSES ONLY - DO NOT USE TO SUBMIT YOUR BID

Department of Public Works Nassau County, N.Y.

Bid Sheet for Contract: S80031B

Item No	Engineers Estimate	Item Description			
1M	1.00 LS	Mobilization	For:	\$12,000.00	
2S	.50 cy	Unclassified Excavation	For:		
3S-1	125.00 CY	Trench, Culvert, and Bridge Excavation	For:		
3S-3	50.00 CY	Trench, Culvert, and Bridge Excavation	For:		
3S-2	100.00 CY	Trench, Culvert, and Bridge Excavation	For:		
4B	.50 CY	Cement Concrete Breaking (Structures)	For:		
4A	.50 SY	Cement Concrete Breaking (Pavement)	For:		
5B	.50 CY	Borrow Fill	For:		
5D	3.00 CY	Selected Granular Fill	For:		
5C	2.00 CY	Selected Fill	For:		
5A	.50 CY	Embankment in Place	For:		
6	.50 CYM	Trucking	For:		
7	.50 SY	Preparing Fine Grade	For:		
9	.50 CY	Topsoil	For:		
9R	.50 CY	Topsoil (Rehandled)	For:		
10C-1	.50 SF	Permanent Corrugated Metal Sheeting & Bracing	For:		
10C-2	.50 SF	Permanent Steel Sheet Piling and Bracing	For:		
10C-3	.50 SF	Permanent Timber Sheet Piling & Bracing	For:		
10B	.50 SF	Temporary Sheeting and Bracing Ordered Left In Place	For:		
10A	.50 SF	Temporary Sheeting and Bracing	For:		

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Contract No. S80031B
Requirements-Maintenance & Repair
of Water Mains & Appurtenances

Department of Public Works Nassau County, N.Y.
 Bid Sheet for Contract: S80031B

Item No	Engineers Estimate	Item Description			
17A	.50 CY	Class A Concrete for Structures	For:		
20	.50 CY	Broken Stone, Loose Measure	For:		
21	.50 CY	Limestone Screening	For:		
22C-B	.50 TON	Base Course Asphalt Concrete, Type Dense Base	For:		
22C-A	.50 TON	Base Course Asphalt Concrete, Type Dense Base	For:		
23	.50 CY	Concrete Foundation For Pavement	For:		
24	5.00 CY	Cement Concrete Pavement	For:		
26S	3.00 LF	Concrete Curb (Special)	For:		
27	75.00 SF	Cement Concrete Sidewalk	For:		
28	.50 SF	Cement Concrete Driveways and Driveway Aprons	For:		
30	.50 SY	Metal Reinforcement for Concrete Pavement	For:		
33	.50 LB	Bar Reinforcement for Structures	For:		
36S-A	.50 TON	Asphalt Concrete (Special)	For:		
36T	.06 TON	Temporary Pavement	For:		
36S-B	.50 TON	Asphalt Concrete (Special)	For:		
58RPC	.50 LF	Saw Cutting Existing Roadway Pavement Concrete	For:		
58A	.50 LF	Saw Cutting Existing Non-Roadway Asphalt	For:		
102X	3.00 DAY	Work Zone Traffic Control	For:		
111	125.00 SY	Removal and Replacement of Pavement	For:		
121	.50 CY	Drybound Base Course	For:		

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 Requirements-Maintenance & Repair
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Department of Public Works Nassau County, N.Y.
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Item No	Engineers Estimate	Item Description			
122	.50 EA	Test Holes	For:		
127	.50 EA	Relocating Existing Hydrant	For:		
363	.50 SY	Grass Seeding	For:		
365	4.50 SF	Sodding	For:		
510	1.00 LS	Force Account Work	For:		
519	.50 CY	Sand Bags in Place	For:		
600A-10C	.25 EA	High Density Polyethylene Electrofusion Electrofuse Coupling Fitting 10" DIA	For:		
600A-8C	.25 EA	High Density Polyethylene Electrofusion Electrofuse Coupling Fitting 8" DIA	For:		
600A-6C	.25 EA	High Density Polyethylene Electrofusion Electrofuse Coupling Fitting 6" DIA	For:		
600-12-B	.25 LF	Furnish and Install 12" Diameter of High Density Polyethylene Pipes (11' & Over)	For:		
600-6-B	.25 LF	Furnish and Install 6" Diameter of High Density Polyethylene Pipes (11' & Over)	For:		
600-10-A	.25 LF	Furnish and Install 10" Diameter of High Density Polyethylene Pipes (0'-10')	For:		
600-8-B	.25 LF	Furnish and Install 8" Diameter of High Density Polyethylene Pipes (11' & Over)	For:		
600-12-A	.25 LF	Furnish and Install 12" Diameter of High Density Polyethylene Pipes (0'-10')	For:		
600A-8T	.25 EA	High Density Polyethylene Electrofusion "T" Fitting 8"x8"x6" DIA	For:		
600A-12T	.25 EA	High Density Polyethylene Electrofusion "T" Fitting 12"x21"x6" DIA	For:		

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Contract No. S80031B
 Requirements-Maintenance & Repair
 of Water Mains & Appurtenances

Department of Public Works Nassau County, N.Y.
 Bid Sheet for Contract: S80031B

Item No	Engineers Estimate	Item Description			
600A-12C	.25 EA	High Density Polyethylene Electrofusion Electrofuse Coupling Fitting 12" DIA	For:		
600A-8R	.25 EA	High Density Polyethylene Electrofusion Fittings 8"x6" DIA	For:		
600A-10R	.25 EA	High Density Polyethylene Electrofusion Fittings 8"x6" DIA	For:		
600A-12R	.25 EA	High Density Polyethylene Electrofusion Fittings 12"x10" DIA	For:		
600-8-A	.25 LF	Furnish and Install 8" Diameter of High Density Polyethylene Pipes (0'-10')	For:		
600-6-A	.25 LF	Furnish and Install 6" Diameter of High Density Polyethylene Pipes (0'-10')	For:		
600-10-B	.25 LF	Furnish and Install 10" Diameter of High Density Polyethylene Pipes (11' & Over)	For:		
601-24-A	3.00 LF	Furnish and Install 24" Diameter of Ductile Iron Pipes (0-10")	For:		
601-16-B	.50 LF	Furnish and Install 16" Diameter of Ductile Iron Pipes (11" & Over)	For:		
601-16-A	3.00 LF	Furnish and Install 16" Diameter of Ductile Iron Pipes (0-10")	For:		
601-10-A	10.00 LF	Furnish and Install 10" Diameter of Ductile Iron Pipes (0-10")	For:		
601-8-A	25.00 LF	Furnish and Install 8" Diameter of Ductile Iron Pipes (0-10")	For:		
601-6-A	25.00 LF	Furnish and Install 6" Diameter of Ductile Iron Pipes (0-10")	For:		
601-4-B	.50 LF	Furnish and Install 4" Diameter of Ductile Iron Pipes (11" & Over)	For:		
601-24-B	.50 LF	Furnish and Install 24" Diameter of Ductile Iron Pipes (11" & Over)	For:		

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Contract No. S80031B
 Requirements-Maintenance & Repair
 of Water Mains & Appurtenances

Department of Public Works Nassau County, N.Y.
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Item No	Engineers Estimate	Item Description			
601-12-B	.50 LF	Furnish and Install 12" Diameter of Ductile Iron Pipes (11" & Over)	For:		
601-12-A	3.00 LF	Furnish and Install 12" Diameter of Ductile Iron Pipes (0-10")	For:		
601-10-B	10.00 LF	Furnish and Install 10" Diameter of Ductile Iron Pipes (11"& Over)	For:		
601-8-B	10.00 LF	Furnish and Install 8" Diameter of Ductile Iron Pipes (11" & Over)	For:		
601-6-B	10.00 LF	Furnish and Install 6" Diameter of Ductile Iron Pipes (11" & Over)	For:		
601-4-A	3.00 LF	Furnish and Install 4" Diameter of Ductile Iron Pipes (0-10")	For:		
602-10-B	.50 LF	Furnish and Install 10" Diameter PVC Pipe (11" & Over)	For:		
602-10-A	.50 LF	Furnish and Install 10" Diameter PVC Pipe (0-10")	For:		
602-12-A	.50 LF	Furnish and Install 12" Diameter PVC Pipe(0-10")	For:		
602-8-B	.50 LF	Furnish and Install 8" Diameter PVC Pipe (11" & Over)	For:		
602-12-B	.50 LF	Furnish and Install 12" Diameter PVC Pipe(11" & Over)	For:		
602-8-A	.50 LF	Furnish and Install 8" Diameter PVC Pipe (0-10")	For:		
602-6-B	.50 LF	Furnish and Install 6" Diameter PVC Pipe (11" & Over)	For:		
602-6-A	.50 LF	Furnish and Install 6" Diameter PVC Pipe (0-10")	For:		
602-4-B	.50 LF	Furnish and Install 4" Diameter PVC Pipe (11" & Over)	For:		
602-4-A	.50 LF	Furnish and Install 4" Diameter PVC Pipe (0- 10")	For:		
603	750.00 LB	Cast Iron Fittings	For:		

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Contract No. S80031B
 Requirements-Maintenance & Repair
 of Water Mains & Appurtenances

Department of Public Works Nassau County, N.Y.
 Bid Sheet for Contract: S80031B

Item No	Engineers Estimate	Item Description			
604-12	.50 EA	Furnish and Install 12" Diameter Valves and Valve Boxes	For:		
604-10	.50 EA	Furnish and Install 10" Diameter Valves and Valve Boxes	For:		
604-8	6.00 EA	Furnish and Install 8" Diameter Valves and Valve Boxes	For:		
604-6	6.00 EA	Furnish and Install 6" Diameter Valves and Valve Boxes	For:		
604-4	3.00 EA	Furnish and Install 4" Diameter Valves and Valve Boxes	For:		
605-24	.50 EA	Furnish and Install 24" Diameter Valves and Valve Boxes	For:		
605-16	.50 EA	Furnish and Install 16" Diameter Valves and Valve Boxes	For:		
607	75.00 LB	Threaded Steel Thrust Rods and Appurtenances	For:		
608	.50 CY	Class "A" Concrete for Concrete Thrust Blocking and Concrete Piers	For:		
609D	.50 DIA	Cutting and Connecting to High Density Polyethylene Pipe Water Mains of Various Sizes	For:		
609B	5.00 DIA	Cutting and Connecting to Existing Poly-Vinyl Chloride Water Mains of Various Sizes	For:		
609A	5.00 DIA	Cutting and Connecting to Existing Asbestos Cement Water Mains of Various Sizes	For:		
609C	100.00 DIA	Cutting and Connecting to Existing Cast Iron or Ductile Iron Water Mains of Various Sizes	For:		
610	200.00 DIA	Directional Drilling of HDPE Water Mains of various Sizes	For:		
611-D	.50 EA	Supply and Install Top and Bottom Section of Valve Box and Cover	For:		
611-C	.50 EA	Supply and Install Extension of Valve Box	For:		
611-B	.50 EA	Supply and Install Bottom Section of Valve Box	For:		
611-A	.50 EA	Supply and Install Top Section of Valve Box and Cover	For:		

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Item No	Engineers Estimate	Item Description			
612-C	10.00 EA	Supply and Install "Rite Hite" to Raise Valve Box to Proper Grade	For:		
612-B	.50 EA	Straighten and Plumb Existing Valve Box	For:		
612-A	.50 EA	Raise Existing Valve Box to Proper Grade	For:		
613	3.00 EA	Valve Packing Repair	For:		
614F-X	25.00 EA	Hydrants	For:		
614G	10.00 EA	Furnish and Install Upper Section of Hydrant Assembly	For:		
615D	20.00 EA	Supply and Repair Hydrant Break Flange	For:		
615C	10.00 EA	Repair of Hydrant Valve and Drain Assembly	For:		
615B-36	.50 EA	Supply and Install 36" Hydrant Riser Assembly	For:		
615B-30	.50 EA	Supply and Install 30" Hydrant Riser Assembly	For:		
615B-24	.50 EA	Supply and Install 24" Hydrant Riser Assembly	For:		
615B-18	.50 EA	Supply and Install 18" Hydrant Riser Assembly	For:		
615B-12	1.00 EA	Supply and Install 12" Hydrant Riser Assembly	For:		
615B-6	5.00 EA	Supply and Install 6" Hydrant Riser Assembly	For:		
615A	10.00 EA	Repair of Upper Hydrant Assembly	For:		
615G	300.00 EA	Inspection, Reporting and Basic Maintenance of Hydrants	For:		
616	150.00 EA	Inspection and Operation of Water Main Valves and Boxes	For:		
622	50.00 EA	Painting Existing Hydrants	For:		
623	.50 EA	Sampling and Tap Connection	For:		
624	.50 EA	Emergency Repair Chlorination of Water Mains and Appurtenances	For:		

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of Water Mains & Appurtenances

Department of Public Works Nassau County, N.Y.
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Item No	Engineers Estimate	Item Description			
625-P	5.00 EA	Painting Existing Bollards	For:		
625	5.00 EA	Hydrant Bollards	For:		
626-8	.50 EA	Furnish and Install 8" Reduced Pressure Zone Backflow Prevention Device Inside a Building	For:		
626-6	.50 EA	Furnish and Install 6" Reduced Pressure Zone Backflow Prevention Device Inside a Building	For:		
626-4	.50 EA	Furnish and Install 4" Reduced Pressure Zone Backflow Prevention Device Inside a Building	For:		
626-3	.50 EA	Furnish and Install 3" Reduced Pressure Zone Backflow Prevention Device Inside a Building	For:		
626-2-1/2	.50 EA	Furnish and Install 2- 1/2" Reduced Pressure Zone Backflow Prevention Device Inside a Building	For:		
626-2	.50 EA	Furnish and Install 2" Reduced Pressure Zone Backflow Prevention Device Inside a Building	For:		
626-1-1/2	.50 EA	Furnish and Install 1- 1/2" Reduced Pressure Zone Backflow Prevention Device Inside a Building	For:		
626-1-1/4	.50 EA	Furnish and Install 1- 1/4" Reduced Pressure Zone Backflow Prevention Device Inside a Building	For:		
626-1	.50 EA	Furnish and Install 1" Reduced Pressure Zone Backflow Prevention Device Inside a Building	For:		
626-3/4	.50 EA	Furnish and Install 3/4" Reduced Pressure Zone Backflow Prevention Device Inside a Building	For:		
627-8	.50 EA	Furnish and Install 8" Double Check Valve Backflow Prevention Device Inside a Building	For:		

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Item No	Engineers Estimate	Item Description			
627-6	.50 EA	Furnish and Install 6" Double Check Valve Backflow Prevention Device Inside a Building	For:		
627-4	.50 EA	Furnish and Install 4" Double Check Valve Backflow Prevention Device Inside a Building	For:		
627-3	.50 EA	Furnish and Install 3" Double Check Valve Backflow Prevention Device Inside a Building	For:		
627-2-1/2	.50 EA	Furnish and Install 2- 1/2" Double Check Valve Backflow Prevention Device Inside a Building	For:		
627-2	.50 EA	Furnish and Install 2" Double Check Valve Backflow Prevention Device Inside a Building	For:		
627-1-1/2	.50 EA	Furnish and Install 1- 1/2" Double Check Valve Backflow Prevention Device Inside a Building	For:		
627-1	.50 EA	Furnish and Install 1" Double Check Valve Backflow Prevention Device Inside a Building	For:		
627-3/4	.50 EA	Furnish and Install 3/4" Double Check Valve Backflow Prevention Device Inside a Building	For:		
628	3.00 EA	Flow Testing of Water Mains	For:		
722-2	10 EA	Furnish and Install 2" Dia. Hymax 2 Coupling to water main	For:		
722-4	10 EA	Furnish and Install 4" Dia. Hymax 2 Coupling to water main	For:		
722-6	10 EA	Furnish and Install 6" Dia. Hymax 2 Coupling to water main	For:		
722-8	10 EA	Furnish and Install 8" Dia. Hymax 2 Coupling to water main	For:		
722-10	10 EA	Furnish and Install 10" Dia. Hymax 2 Coupling to water main	For:		

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Contract No. S80031B
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Item No	Engineers Estimate	Item Description			
722-12	10 EA	Furnish and Install 12" Dia. Hymax 2 Coupling to water main	For:		

REQUIREMENTS CONTRACT FOR THE MAINTENANCE
AND REPAIR OF WATER MAINS AND APPURTENANCES

NASSAU COUNTY
CONTRACT NO. S80031B
2024 – 2027

SPECIAL CONDITIONS

1. Special Specifications:

- a. This document provides specifications for a contract to provide for all necessary maintenance and repairs of Nassau County-owned water mains and appurtenances and the incorporation of water conservation methods at Nassau County facilities. All work under this Contract shall be by and in conformity with the Nassau County Department of Public Works 2009 Standard Specifications for the Civil Engineering and Site Development Construction with addenda notes and modifications except as modified on the plans or in the itemized specifications including addenda to the specifications.
- b. All correspondence concerning this Contract shall be addressed to the Commissioner of Public Works, 1194 Prospect Avenue, Hicksville, New York 11801.

2. Terms of Agreement:

The work encompassed in this agreement involves furnishing the labor, tools, equipment, materials and other items included in the maintenance and repair to County-owned water mains and appurtenances in various locations in Nassau County. Further, the incorporation of water conservation methods at Nassau County facilities shall be included as part of the agreement. The Contract will begin upon receiving the Notice to Proceed for a period of 36 consecutive calendar months. The Contract may be extended for two (2) one (1) year periods an additional maximum Cap increase of \$1,000,000.00 per year, upon mutual agreement between the Contractor and the Department and upon written authorization from the Commissioner of Public Works. An extension to the contract may be allowed contingent upon the following unless extended by mutual agreement of the Commissioner and the Contractor.

3. Variation for Normal Bidding Procedure:

- a. Bidders are cautioned that this is a 36-consecutive calendar month Contract and that the measurements given are on a single unit basis (e.g. one cubic yard, foot, etc.) with the exception of those items which are on a lump sum basis. All bids are to be based upon a unit price only.
- b. The sum total of Comparison Bid Price will determine the low bid. The bidder is further advised that the County may use only one item of work or may use varying quantities of any combination of or all of the Contract items. This Contract shall hold the price bid for each unit (item) whether it be a single one or hundreds, except as noted.
- c. The total value of this Contract shall not exceed \$ 5,000,000 including the two (2) one (1) year extension periods, unless otherwise amended.

4. Force Bids:

All lump sum items are Force Bids and therefore the Contractor must bid the price as stated in the Engineer's Estimate for all lump sum items.

5. Bonds & Contract Duration:

<u>Contract</u>	<u>Bid Bond</u>	<u>Performance Bond</u>	<u>Labor and Material Payment Bond</u>
Water Main	\$50,000.00	\$500,000.00	\$500,000.00

The performance bond and the labor and material payment bond are to be submitted upon execution of the contract as indicated in the Instructions to Bidders.

- A. Should the County deem it advisable, the County shall have the right to request, and the Contractor shall provide, additional Performance and Labor and Material Payment Bonds in the amount determined by the County.
- B. The Contractor shall supply all labor, materials, services, insurance, permits and equipment necessary to carry out the work in accordance with all applicable federal, state and local regulations.
- C. The Contract may be extended for another two (2) years, and for \$2,000,000.00 per year, upon mutual agreement between the Contractor and the Department and upon written authorization from the Commissioner of Public Works. An extension to the contract may be allowed contingent upon the following:
 - 1. The same terms and conditions of the Contract will apply, including all bid prices indicated in the contract proposal;
 - 2. The Contractor must have demonstrated that all Work Orders issued to date under the contract have been completed and/or progressed to the satisfaction of the Commissioner of Public Works.
- D. This Requirements Contract shall be for a term of 730 calendar days from the date of the Contract start notice (Notice to Proceed).
- E. The Department reserves the right to cancel the Contract by giving not less than thirty (30) days written notice that, on or after a date therein specified, the Contract shall be deemed terminated and canceled.

6. Recourse:

This Contract does not imply that the low bidder, following the award of this Contract, has the exclusive right or legal recourse to the County of Nassau for any other similar requirements type, or any other water main or appurtenances contract that may be awarded during the life of this Contract.

7. Sites:

The areas of work provided for shall be at various sites at County-owned installations and in Nassau County-owned rights-of-way. All work shall be at the direction of the Engineer.

8. Qualifications of Bidders:

The Contractor shall have had at least five years experience in water main installation and give evidence of same. Further, he shall have at his immediate disposal a minimum of the following operational equipment rated to do that work required to expeditiously repair County-owned water mains:

1. Backhoe
2. Dump trucks, utility truck, pick-up truck
3. Miscellaneous pumps, generators, traffic control items, hand tools
4. Pipe cutters, threading machine
5. Air compressor, jack hammers
6. Rubber tired front-end loader
7. Have available those necessary repair clamps, special castings, valves and other appurtenances required for complete emergency repair in conformance with AWWA Specifications and N.C. Health Department criteria.
8. Supply a listing of all the above
9. Repair of the mains shall be under the general supervision of a person or firm qualified to practice Professional Engineering in the State of New York under the Education Law of the State of New York.

9. Material Requirements:

The Contractor shall have the following materials in stock for emergency water main repairs. All materials shall conform to NC and AWWA Specifications as described in Item 601-6 through 601-24:

601-6	-	6"	Cement Lined Duc. Iron Pipe, 3 lengths
601-8	-	8"	" " " " " 3 "
601-10	-	10"	" " " " " 3 "
601-12	-	12"	" " " " " 2 "
601-16	-	16"	" " " " " 1 length
601-24	-	24"	" " " " " "

10. Commence Work Order:

- a. A Commence Work Order shall be initiated by the Engineer or his representative to set the starting date of the contract.
- b. Prior to starting a work order the Contractor or his representative shall inspect the job site with the Engineer or County Inspector.

- c. The Contractor will not be allowed to start any work order, or progress any which have been started, without proper supervisory personnel (e.g. Foreman or Superintendent) on the job site.
- d. The Contractor shall maintain a telephone number within the County of Nassau for 7-day, 24-hour emergency calls. The Contractor will be responsible for the notification of Water Districts or Companies, Police and Fire Departments, or any other agency that may be affected by the work performed.
- e. Once begun, emergency projects shall proceed continuously until completed with the exception of final paving. The completion time of any segment of this agreement not emergent, shall be that time agreed to by the Contractor and Engineer as appropriate to complete the designated task.
- f. Failure to complete the work to the satisfaction of the Engineer (Commissioner) within the specified time limit shall involve the application of Article 15, Liquidated Damages, of this agreement. Extension of Contract Time of the General Specifications is hereby deleted and replaced by this Special Provision.

11. Contractor Scheduling:

The Engineer shall issue work orders; except in the case of emergency situations, to the Contractor outlining the locations and dates of work to be performed. The Contractor shall not be required to submit a work schedule unless otherwise requested. Work orders shall be completed in the order issued unless otherwise directed by the Engineer.

The Contractor shall not be permitted to commence more than three work orders at any one time and shall not commence work on a fourth, unless the Engineer deems it an emergency, or until such time as one of the three in progress is 100% complete.

12. Safety and Health Requirements:

The Contractor shall comply with the U.S. Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596), as currently amended; and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54), as currently amended; as a minimum requirement. In the event of conflict among said Safety and Health Regulations, the Contract Documents and requirements of other regulator agencies, the most stringent provisions shall be binding on the Contractor.

The Contractor is advised of the provisions of Section 4(b) (4) of the Occupational Safety and Health Act of 1970, which states: "Nothing in this Act shall be construed to supersede or in any manner affect any workman's compensation law or to enlarge or diminish or affect in any manner the common law or statutory rights, duties, or liabilities of employers and employees under any law with respect to injuries, diseases, or death of employees arising out of, or in the course of, employment."

13. Protection of Lives and Health:

In order to protect the lives and health of his employees under this Contract, the Contractor shall comply with all pertinent provisions of the "Manual of Accident Prevention in Construction," issued by the Associated General Contractors of America, Inc., and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention, or causing loss of time from work, arising out of and in the course of employment on work under the Contract. He alone

shall be responsible for the safety, efficiency and adequacy of his plant, appliances, and methods, and for any damage which may result from their failure or improper construction, maintenance, or operation.

14. Governmental Access:

State and Federal Representatives will have access to the work whenever it is in progress and the Contractor shall provide proper facilities for such access and inspection.

15. Permits for Other Political Subdivisions (General):

All permits shall be obtained by the Contractor from the appropriate political subdivision including costs of inspection. No separate or additional payment will be made for conforming to various requirements of said political subdivisions but the cost thereof will be deemed included in the appropriate Contract items without regard to differences in materials, thickness and types of pavement, methods of construction, temporary construction or maintenance of traffic.

- a. H. Thyber, State of New York, State Office Building, Veterans Highway, Hauppauge, NY 11788, Telephone: 631-360-6025.
- b. City of New York, Transportation Administration, Administrator, Office of Construction Coordination, 40 Worth Street, New York, NY 10013.
- c. Long Island State Park & Recreation Commission, or Jones Beach State Park Authority.

16. Access to Work Site:

The Contractor's attention is called to the fact that he may not have exclusive access to the site of the work at all times. Work on other contracts by various agencies will or may be performed simultaneously with the work of the Contract. The Contractor shall coordinate his work with that of other contractors.

All payment items referring to existing utilities shall apply only to municipally owned utilities. All work on/or for private utilities shall be done by and at the cost of the utility company. The Contractor is not authorized to work on such privately-owned utilities, nor will he be paid for such work under this Contract. It shall be the Contractor's responsibility to notify such private utility companies when work on their facilities is required and to arrange for the timely execution of the required work.

17. Jurisdiction Requirements:

All work shall be done in cooperation and in accordance with the requirements of the water district or company having jurisdiction.

18. Shutdowns:

Shutdowns of any portion of the service to make connection with the existing mains will be made

only with the consent of the Engineer subsequent to the notification of the owner or user of such service. It shall be the responsibility of the Engineer or his representative to make such notification. When any main is shut off for such purpose, the work on the connection shall be carried on continuously by the Contractor and with all possible dispatch until water is again turned on into the main.

19. Easement Area Access:

The Contractor will not be permitted to enter an easement area with equipment or men, nor will he be permitted to perform any work operations in the area, until the County has obtained permission from the owner and has authorized the Contractor, in writing, to proceed with work operations in the easement area.

20. Preservation of Traffic Signal Devices:

The Contractor is responsible for notification of the Division of Road Maintenance/Traffic Operations for all traffic signal devices where encountered, for maintenance by Traffic Operations.

21. Preservation of Traffic Signal Equipment:

Traffic signal equipment, conduit, cable, wire, fittings, and material shall be preserved where possible and stored for the Division of Road Maintenance/Traffic Operations.

22. Emergency Notification:

The Contractor shall be responsible for promptly informing the local Police Precinct and the Nassau County Department of Public Works, Division of Road Maintenance/Traffic Operations, if any emergency situation arises on the job site that affects traffic signals. Failure to notify will make the Contractor responsible for repair costs. Monday through Friday between 8:00 a.m. and 4:30 p.m., call the signal shop at 516-572-0465. After normal business hours contact the Road Maintenance 24-hour hotline at (516) 571-6900.

23. Safety Devices:

Lighted barricades, blinkers and warning signs must be serviced a minimum of twice a week and must be checked daily, including holidays and weekends. They shall be weighted or secured to ensure that high winds will not blow them down.

24. Material Approval:

All materials, precast items and structures, concrete and bituminous mixtures shall be obtained from sources approved by the Nassau County Department of Public Works. Approval must be obtained prior to the start of work.

All construction materials shall conform to County standards. The County laboratory shall be notified three days in advance so that appropriate materials tests may be performed and/or samples taken.

25. Shop Drawings:

Prior to placing any materials, the Contractor shall submit to the Engineer for approval shop drawings or detailed catalog drawings of the pipe, valves, fittings and appurtenances to be used in the Contract. Whenever required by the Engineer, the Contractor shall furnish detailed construction drawings showing material and method of construction. The Contractor shall also submit for testing any materials or components deemed necessary by the Engineer. Any materials ordered by the Contractor prior to obtaining approval and which shall be later found unsatisfactory on the basis of test results, shall be replaced by him with satisfactory materials at no additional cost to the County. No payment will be made to the Contractor for furnishing shop drawings.

26. Submittal of Plans:

When required by the Engineer, plans submitted for approval shall include construction details, dimensions of structures, etc.

27. Cross Sections:

Cross sections of the trench area, showing details of construction and restoration are to be shown.

28. Typical Sections:

Typical section to include:

- a. Existing pavement type, joints, pavement thickness.
- b. Restoration material type, identified by Standard County Specifications, item numbers, limits of restoration.

29. Facilities Maintenance:

Maintenance of existing County facilities to be specified, i.e. support of pipes, cleaning of drainage systems, etc.

30. Subsurface Investigations:

The Contractor shall make any subsurface investigations (borings, cores) required to determine pavement types and thickness, location of utilities, clearances, etc. The Engineer shall determine the need to relocate or change grade on new work to prevent conflict with existing installations. If the

above procedure is not adhered to by the Contractor and the work is delayed or must be replaced or removed, the responsibility for such occurrence shall be the Contractor's. The Engineer shall, however, pay for items in place at the end of the Contract.

31. Tree Removal:

Existing trees on right-of-way where tree removal is proposed must be approved by the Engineer and plotted by size and specie where restoration of landscaping is specified by the Engineer.

32. Connecting to Existing Mains:

Whenever it is necessary to connect with existing mains, such connections shall be made by the Contractor. Any sections of the existing mains, except caps which must be cut out in making the required connections or changes and which are not required in reconnecting the mains, shall become the property of the Contractor and shall be removed by him.

33. Sheeting Pilot Cuts:

Upon installation of sheeting in a pilot cut, the Contractor will immediately and without delay backfill the void behind the sheeting and thoroughly compact the material to the satisfaction of the Engineer. No more than 25' of sheeting may be installed in the pilot cut ahead of this backfilling and compaction procedure.

34. Sheeting:

Sheeting shall conform strictly to requirements of OSHA Regulations for Construction, Subpart P, Excavation.

Trenching and Shoring:

- 1926.650 General protection requirements;
- 1926.651 Specific excavation requirements;
- 1926.652 Specific trenching requirements and
- 1926.653 Definitions applicable to this subject.

35. Payment:

No separate payment will be made for dewatering or for the removal of sand, silt or other materials deposited into existing drains, ditches, streams or creeks resulting from discharge of dewatering operations. The price bid for each item shall include the cost of any necessary dewatering.

36. Ductile Iron Pipe:

All work concerning the installation of ductile iron pipe shall be in conformity with AWWA Standards C600-82, or latest revision, and other AWWA current standards.

37. Water:

The Contractor shall obtain water for filling pipes and testing same, or for any other approved purpose, from the nearest Nassau County water supply facility and/or approved public water supply facility. Water supply facility charges for water use to be paid by the County where applicable.

38. Disinfecting Pipe:

If a leak or break occurs and is repairable with a clamping device while the pipe remains full, disinfection is not required other than that outlined under AWWA C-651-86, or latest revision. However, when a main is wholly or partially dewatered, the Contractor shall flush, disinfect with chlorine, then reflush after installation. This disinfection procedure shall conform to Item 624.

39. Trench Backfilling:

All trench areas in the roadway are to be backfilled at the end of each working day and surfaced with temporary pavement. Where concrete pavement is broken and left in place prior to removal, these pavement areas shall be surfaced with a temporary asphalt pavement before opening to traffic. Debris is to be removed from the project site at the end of each work day. No burning of debris is permitted.

40. Temporary Pavements:

The Contractor will be required to maintain temporary pavements flush with the grades of the adjoining surfaces until such times as the County representative is satisfied that the trench areas have become sufficiently stabilized to permit restorations.

41. Transverse Cuts:

No excavation shall exceed ten feet in length at any one time unless otherwise authorized by the Engineer.

42. Density Tests:

- a. Prior to pavement replacement soil density tests shall be taken by an independent laboratory and certified copies of the results shall be supplied to the County.
- b. Maximum Density is defined as the maximum dry weight density in pounds per cubic foot, as determined by the latest ASSHTO-TI80 Designation: A satisfactorily compacted backfill shall have a minimum dry density of 95% of the Maximum Density except that where fill is placed within one foot of the pavement sub-grade a minimum dry density of 100% of Maximum Density will be required. The in-place density will be determined by the sand cone method in accordance with ASTM procedures for testing soils.
- c. Tests shall be taken at locations designated by the Engineer. Areas backfilled by the Contractor that fail to meet the requirements of the Soil Density Test, as described herein, shall be re-excavated, backfilled and compacted by the Contractor as necessary to achieve the specified minimum dry densities. Any corrective work shall be done at the Contractor's expense.

43. Clean Up:

Immediately following the saw cuttings of concrete pavement, concrete base pavement or concrete sidewalks, all residue shall be broomed and removed from the adjoining surfaces.

44. Undermining Prevention:

All possible care shall be taken to prevent undermining of the adjoining pavements and the use of driven sheeting, either temporary or permanent, may be required to prevent such undermining. Any such undermining shall be deemed sufficient reason for the issuance of orders to remove additional pavement at the Contractor's own expense.

45. Concrete:

- a. All concrete items shall be air-entrained in accordance with Part III, General Specifications for the Construction of Highways & Bridges, Department of Public Works, County of Nassau, New York, and Addenda Notes, Modifications and Corrections of the Nassau County Department of Public Works.
- b. If Type 2 Portland Cement is used, the air-entraining agent is to be added in accordance with the specifications. All other specifications for Portland Cement Concrete as noted in the above-mentioned specification shall apply.
- c. Concrete supplied for Item 24, Cement Concrete Pavement, shall include an admixture (Pozzoleth 122N or approved equal) at a rate recommended by the supplier at no increase in cost.
- d. The Contractor shall provide a nearby site for concrete test cylinders that share curing conditions and shall protect these cylinders for the three days they will be on the job site.

46. Stone Base Pavement Restoration:

- a. Longitudinal Openings:
 1. The pavement over the trench shall be cut back a minimum of 6' on both sides of the trench to insure an even edge.
 2. If the remaining longitudinal strip is less than 3' on one side, the total width of the cut back, trench and side strip must be replaced.
- b. Transverse Openings:
 1. The pavement over the trench shall be cut back a minimum of 6" on both sides of the trench to insure an even edge.
 2. Asphalt plant mix, type 45SN, or concrete, shall be used for the replacement of the stone base pavement removed.

47. Concrete Base & Finished Concrete Pavement Restoration:

- a. Longitudinal Openings:
 1. The entire panel width must be removed and replaced. Ends of panel to be saw cut if not at a transverse joint.

2. In no case shall any portion of the existing panel that is less than 6' from a transverse joint be left in place.
3. When concrete base panels with macadam overlays are to be removed, the black top shall be cut back a minimum of 6" onto the adjacent panels to provide a smooth vertical edge on the black top.

b. Transverse Openings:

1. Transverse openings shall be saw cut 90 degrees to the longitudinal joints.
2. Pavement replacement to be a minimum 2' on both sides of the trench, and a total minimum of 6' wide.
3. In no case shall any portion of the existing panel that is less than 6' in length from a transverse joint be left in place.
4. Where openings are skewed across the pavement the concrete replacement must be carried straight across each panel and not staggered.

48. Road Closings:

No road shall be closed without prior written approval of the Engineer.

49. Time Restrictions:

No work shall be permitted within the limits of the traveled way before 9:00 AM and after 4:00 PM unless otherwise specified, or for emergency water main repairs.

50. Contractor's Representative:

The Contractor shall have a competent representative at the site of the work or immediately available at all times while the work is being progressed to insure a satisfactory adherence to all of the terms and conditions of this contract. This representative shall be well qualified in the particular work being undertaken.

51. Pedestrian Access:

No trench areas shall be left open after working hours.

52. Pedestrian Safety:

A space at least four-feet wide shall be maintained at all times on one side of the right-of-way for the safe use of pedestrians. The use of barricades along the pavement area will be required for this purpose where work is being progressed in the sidewalk area.

53. Traffic Maintenance:

Whenever it becomes necessary to maintain traffic on one lane, adequate controls shall be

provided to maintain vehicular traffic. A sufficient number of competent flagmen shall be employed at all times to maintain traffic, and proper warning signs and barricades shall be provided to protect and warn the general public who, for any reason, may enter the limits of work. The Police Department having jurisdiction of the area shall be notified of the condition in writing, a duplicate copy is to be furnished to the Engineer. All signs and devices shall conform to the N.Y. State Manual of Uniform Traffic Control Devices (1974) as amended.

54. Work Areas:

Actual working areas (installations) shall be confined to one block at a time, but in no case for a distance greater than 100 linear feet. No parking shall be permitted within the working area.

55. Trench Openings:

Open trench areas shall be kept as short as possible consistent with the installations involved.

56. Sidewalk Removals:

- a. In no case shall sidewalks or bituminous pavements be removed, nor sidewalks, concrete pavement and concrete base pavements be broken, without first receiving permission from the County Engineer, or his representative, and the authority having jurisdiction over the roadway.
- b. Sidewalks and bituminous pavements shall not be removed, and concrete pavements and concrete base pavements shall not be broken and left in place at any time for a distance greater than 100 feet ahead of the actual working areas.

57. Construction Restrictions:

Every precaution shall be taken to prevent the marring of and damage to structures such as, pavements, curbs, sidewalks, etc., or facilities adjoining the work as follows:

- a. Timber planks shall be used to support steel caterpillars and steel cleats used on mobile equipment, and timber blocks or planks shall be placed under all outriggers used to stabilize excavating and other mechanical equipment.
- b. Loose stones, broken concrete, sand, dirt, debris, etc., shall be swept up daily from the areas adjoining the work.
- c. Under no circumstances shall the mixing of mortar or concrete be permitted directly on the surfaces of the sidewalk and pavement areas adjacent to the work.
- d. The dumping and/or storage of bituminous mixtures will not be permitted directly on the surfaces of the areas adjacent to the work. Such dumping and/or storage will be permitted only when approved steel plates or timber platforms are provided for the reception of the mixtures.
- e. The Contractor shall be responsible for repair and replacement at his cost for all the above.

58. Supply of Tools and Equipment:

Contractor may be required from time to time to supply County with various tools, equipment, or

other items deemed necessary by the Engineer. Such tools, equipment, or other items shall become County property upon receipt by Contractor of reimbursement for same.

59. Testing and Repair of Backflow Prevention Assemblies:

Contractor may be required from time to time to supply personnel and tools to test and repair various backflow prevention devices (RPZ and DCV). The contractor shall be responsible to provide qualified personnel to do the work.

60. Water Service Line Repair:

From time to time the contractor may be required to repair/install service lines to various County buildings. Sizes will generally range between 2" and 4". Contractor must be equipped with all necessary materials and personnel to do such work.

As-Built Drawings

Subsequent to each repair, modification or installation of water main or any associated facilities the contractor shall supply an as-built drawing to the County detailing the work performed.

CONTRACT NO. S80031B

TECHNICAL SPECIFICATIONS

ITEM 1MX - COMMUNICATION

1. Description:

a. Cellular Telephone

The Contractor will supply and maintain one (1) cellular phone for the County Engineer to stay in contact as well as document jobsite photographs and videos as necessary. Phone will be either the latest version of Apple iPhone or Samsung Galaxy or equal for the entire term of the contract. The following accessories for the phone will be provided: Case and screen protector, 110V AC and 12V DC chargers, one (1) set of either Apple Air Pods or Samsung Earbuds. The cost of the phone, related usage fees, and insurance shall be included in the Contractor's overhead for each Work Order of the contract.

All manufacturer's warranties/guarantees, and operating instructions shall be furnished with the phone.

3. Construction Details:

The work required to provide facilities and services for mobilization shall be accomplished in a safe and workmanlike manner, conforming to local, state and federal code, regulation or law. Good housekeeping consistent with safety shall be maintained. Unless elsewhere provided, costs of required insurance bonds and any initiations of contract work may be included in this work.

4. Payment:

Payment shall be made for furnishing and providing the general plant, storage area, equipment, sanitary facilities, and any other elements the contractor deems necessary to operate consistent with all requirements listed above to complete the work. The total value of this item is in accordance with the forced bid as shown in the proposal and payment will be made in equal monthly installments for the duration of this contract. In the event that this contract is extended by mutual agreement, no additional monthly mobilization will be payable beyond the initial 24-month period of the contract.

No additional payment will be made for prior evaluation of job sites. All job site evaluation will be covered under this item's price.

ITEM 2S – UNCLASSIFIED EXCAVATION

The standard specifications for Item 2, “Unclassified Excavation and Disposal/Placement” shall apply with the following modifications and/or additions:

1. Method of Measurement

The requirements of “Method of Measurement” shall apply with the following modifications and/or additions:

Under the price bid for this item the Contractor shall include the cost of all clearing and grubbing which may be required during the performance of this contract.

ITEM 3S-1 – TRENCH, CULVERT AND BRIDGE EXCAVATION

ITEM 3S-2 – TRENCH, CULVERT AND BRIDGE EXCAVATION

ITEM 3S-3 – TRENCH, CULVERT AND BRIDGE EXCAVATION

The standard specifications for Item 3, “Trench, Culvert and Bridge Excavation” shall apply with the following modifications and/or additions:

2. Payment Limits

The requirements of “4. Payment Limits” shall apply with the following modifications and/or additions:

Maximum trench width shall be 4 feet greater in width than the outside diameter of the pipe maximum, with payment to be made for actual quantity of excavation within these limits, unless noted in other items.

The upper payment limit will be the subgrade of the road and/or sidewalk section.

This item includes backfilling of excavated materials or materials supplied to backfill and compaction of the same.

3. Basis of Payment

The requirements of “4. Basis of Payment” shall apply with the following modifications and/or additions:

Under Item 3S-1, the contractor shall be paid based upon the total material excavated, between 0 and 10 cubic yards.

Under Item 3S-2, the contractor shall be paid based upon the total material excavated, between 11 and 25 cubic yards.

Under Item 3S-3, the contractor shall be paid based upon the total material excavated, greater than 25 cubic yards.

ITEM 22C – BASE COURSE ASPHALT CONCRETE, TYPE DENSE BASE

All the provisions of Item 22C of the Nassau County Department of Public Works (NCDPW) 2009 Standard Specifications and as amended shall apply with the following modifications:

1. Description

The requirements of “Description” shall apply with the following modifications and/or additions:

This item shall be utilized to replace base course asphalt concrete in a road and/or sidewalk

2. Basis of Payment

The requirements of “Basis of Payment” shall apply with the following modifications and/or additions:

Payment shall be made under the following schedule:

Under Item 22C, the Contractor shall be paid based upon the total square yards of base course asphalt concrete placed.

ITEM 26S – CONCRETE CURB SPECIAL

All provisions of Item 26, “Concrete Curb” shall apply with the following modifications and/or additions.

1. Description

The requirements of “Description” shall apply with the following modifications and/or additions:

Under this item the Contractor will be required to install curbing of various types to match the existing curb. The height of the new curb shall match the height of the existing curb and all dimensions shall conform to the types shown on the Standard Sheets for the Construction of Highways and Bridges.

ITEM 36S – ASPHALT CONCRETE (SPECIAL)

All the provisions of Item 36D of the Nassau County Department of Public Works (NCDPW) 2009 Standard Specifications and as amended shall apply with the following modifications:

The standard specifications for Item 36D, “Asphalt Concrete Type 1A (Top and Binder)” shall apply with the following modifications and/or additions:

1. Description

The requirements of “Description” shall apply with the following modifications and/or additions:

Under this item the Contractor will be required to place any or all asphalt items as covered under Items 36C through 36E in the 2009 Nassau County Standard Specifications for Civil Engineering and Site Development Construction.

2. Materials and Construction Details

The requirements of “Materials and Construction Details” shall apply with the following modifications and/or additions:

- 1.) Unless otherwise noted or ordered by the Engineer, the Contractor shall cover all existing surfaces with a fog coat of asphalt emulsion after the surfaces have been cleaned. The asphalt emulsion must be Type RS-1 or a rapid curing asphalt cutback, Grade RC 70.

The selection of a fog coat material shall be such that it will set up in a reasonable time. Bituminous Macadam shall not be applied while the fog coat is in a wet condition or after it has lost its tacky quality.

The fog coat distributor must be in proper working order with the nozzles adjusted to provide a fine spray and an even coating on the existing pavement.

If at any point the Engineer is not satisfied with the application of the fog coat, all work of laying asphalt shall cease until satisfactory results are obtained.

Where the new asphalt meets existing asphalt, a “V” groove shall be cut into the existing asphalt. This groove shall be cut into the existing asphalt. This groove shall be cut in a neat straight line, not less than one (1) inch deep, or as ordered by the Engineer. After this groove has been cut it shall be cleaned and sealed.

No direct payment shall be made for the above items of work, but the cost shall be included in the price bid for the asphalt item, except where directed to saw cut existing pavement, then the contractor will be paid under either Item 58RPC or 58A.

- 2.) When ordered by the Engineer, mechanical means of asphalt placement shall be used.
- 3.) Joints of cracks in all pavements will be thoroughly cleaned and filled with either bituminous concrete Item No. 36E – Asphalt Concrete, or poured with a material as directed by the Engineer prior to placing the asphalt surface.

Curbs and castings will be painted to a depth equal to the thickness of the new asphalt surface.

No direct payment shall be made for the above Items of Work, but the cost shall be included in the price bid for the various asphalt items.

3. Basis for Payment

The requirements of "Basis for Payment" shall apply with the following modifications and/or additions:

Payment under this item will be made for the total amount of asphalt concrete used at each work order location as follows:

Under Item 36S, the Contractor shall be paid based upon the total square yards of wearing course asphalt concrete placed.

ITEM 102X – WORK ZONE TRAFFIC CONTROL

All provisions of Item 102 “Work Zone Traffic Control” of the Nassau County Department of Public Works (NCDPW) 2009 Standard Specifications and as amended shall apply with the following modifications:

1. Method of Measurement

The requirements of “Method of Measurement” shall apply with the following modifications and/or additions:

The work of maintenance and protection of traffic shall be paid for on a daily basis.

The amount of such daily nonpayment will be determined by dividing the daily sum amount bid for this item by the number of calendar days between the date of award and the date of completion as designated in the Proposal, without regard to any extension of time.

25. Basis of Payment

The requirements of “Basis of Payment” shall apply with the following modifications and/or additions:

Maintenance and protection of traffic shall be paid for on the daily basis price bid for this item, less any deductions for unsatisfactory accomplishment or non-compliance as determined under Method of Measurement.

Also included in the price bid for this item shall be the preparation and submittal of any required traffic maintenance plans and the securing of any necessary permits.

1. Description:

Under this item all provisions as incorporated in Nassau County Department of Public Works 2009 Standard Specifications for the Civil Engineering and Site Development Construction with addenda notes and modifications except as modified on the plans or in the itemized specifications including addenda to the specifications. (Pages 11-16, Art. 2: (1) Materials, (2) Labor Costs, (3) Sales Tax, (4) Equipment and Plant Rental and (5) Profit and Overhead) shall apply for that work not covered by contract items on water main repair, as ordered by the Engineer. Work under this item includes but is not limited to:

- a. Provide personnel for emergency repair work on water mains including shutting down and reopening of required valves.
- b. All required repair work, special castings, pumps, equipment, or any tools or materials not covered by items in the proposal to expeditiously repair water mains.
- c. Any other work necessary to keep the water supply system in proper working order.
- d. All repair work to the main shall be tested, flushed, and disinfected in accordance with AWWA and Nassau County Department of Health standards.

2. Intent:

The intent of this item is to cover costs on emergency water main repair work and any other work related to the water supply system not provided for by other items in this proposal.

3. Equipment & Materials:

It shall be the contractor's obligation to have available the necessary pipe, repair clamps, special castings, valves and other appurtenances and equipment necessary for a complete emergency repair.

In the case of non-emergency repairs or alternations not covered by items, work orders shall be issued specifying the work to be done and generally listing the non-item materials required.

4. Measurement:

All work shall be inspected and measured as completed. Such measurement taken at the completion of each phase.

5. Payment:

As provided in Nassau County Standard Specifications for Civil Engineering and Site Development Construction, pages 11-16, Art. 2, (1) - (5) inclusive, for all items NOT covered by specific items in this proposal. In the case of emergency repairs only, payment for contractor personnel shall begin from time of notification to the contractor until completion of the work. The maximum payment for time of notification to start of work shall be one (1) hour. All other payment under this item shall be the actual time spent working at the site, plus the costs of materials supplied and installed in place.

ITEM 519 - SAND BAGS IN PLACE

1. Description

Under this item the Contractor shall furnish and place bagged sand around structures, in and around stream beds or at any location deemed necessary as shown on the plans or ordered by the Engineer where it is necessary to divert or stem the flow of water.

2. Materials:

Sand shall be of any grade but shall not contain gravel, stone, clay, loam or any deleterious lumpy material. The sand shall be placed in heavy cloth or burlap bags (plastic will not be allowed), each bag having not less than one cubic foot capacity.

3. Construction Details:

Bags of sand shall be placed where shown on the plans and shall provide a thickness not less than that shown or ordered by the Engineer.

4. Method of Measurement:

The quantity of bagged sand to be paid for under this item shall be the amount of bagged sand placed, measured in cubic yards in its final position within payment limit either shown on the plans or as directed by the Engineer.

5. Basis of Payment:

The unit price bid per cubic yard shall include the cost of furnishing all labor, materials and equipment necessary to complete the work.

ITEM 600 - FURNISH AND INSTALL VARIOUS DIAMETER SIZES HIGH DENSITY
POLYETHYLENE PIPES

1. Description:

Under these items the contractor shall furnish all labor, materials, equipment and incidentals required to install high density polyethylene (HDPE) pipes of various sizes, 6" to 12" in diameter inclusive, where directed by the Engineer. Work under each item shall include but not be limited to:

- a. The HDPE pipe shall be installed in accordance with manufacturer's recommendations and tested according to AWWA C600.
- b. The trench shall be backfilled and compacted according to Nassau County standard.

2. Intent:

The intent of this item is to furnish and install HDPE pipe as necessary to complete the work as directed by the Engineer.

3. Materials and Installation:

All polyethylene pipe shall meet the requirements of ASTM F714. HDPE pipe resins shall be Type III high molecular weight, high-density polyethylene with a cell classification number of PE 345434C in accordance with ASTM D3350. The Polyethylene compound shall be suitably protected against degradation by ultraviolet light as required by ASTM D1603.

HDPE pipe shall be designed for use in minus 20 degree F to 120 degree F applications. The pipes shall have a pressure rating of 800psi and conform to Standard Dimension Ratio (SDR) 26 for 10 inch and 12 inch diameter pipe and SDR 17 for 4 inch, 6 inch and 8 inch pipe. Inside diameter of all pipe shall conform to ASTM D2239. 12 inch pipe will have a nominal inside diameter of 11.77 inches. In no instance will a wall thickness of less than 0.335 inches be accepted.

Care shall be taken when handling HDPE pipe. Ropes, fabric, rubber coated slings and straps shall be used. Chains, cables or hooks inserted into the pipe ends shall not be used. Slings for handling joined pipe shall not be positioned at butt-fused joints. Pipe and fittings shall not be dropped onto the ground.

All joints shall be made by the electrofusion method. Electrofusion means that the joint is heated internally by an electric current applied to a conductive material in the fitting. Electrofusion shall be performed in strict compliance with the manufacturers' recommendations.

ITEM 600 – FURNISH AND INSTALL VARIOUS DIAMETER SIZES HIGH DENSITY
POLYETHYLENE PIPES (Cont.)

All pipelines shall remain undisturbed for 24 hours to develop complete strength at all joints. Prior to backfilling all pipelines shall be tested as specified in AWWA C600. The pressure shall be maintained at 80 psi for 12 hours. Any material showing seepage or leakage shall be replaced as directed by the engineer at no expense to the County.

All backfill shall be mechanically compacted as described under the Standard Specifications for Construction of Sanitary Sewers, Section 02222, Paragraph 3.03-C Entitled Vibratory Compaction.

4. Measurement:

Pipe shall be measured in lineal feet by steel tape from the end of run of installed pipe to center lines of tees, fittings and hydrants. No deduction shall be made from the measured lengths for valves and fittings or special adaptor pieces.

5. Payment:

Payment shall be made for each lineal foot of pipe furnished and installed in final position, tested, and measured as described herein, in accordance with the unit price bid in the Proposal for High Density Polyethylene Pipe, and shall include all labor. All fittings are included in this item except for Electrofuse couplings which will be paid for under Item 600A. Dewatering, backfilling, backfill compaction, testing and sterilization, and all tools and equipment necessary for the satisfactory installation, complete and ready for continuous use, are part of this item. Pavement removal and replacement shall be paid under the appropriate item, excavation, under Item 3S.

ITEM 600A - HIGH DENSITY POLYETHYLENE ELECTROFUSION FITTINGS

1. Description:

Under this item the Contractor shall furnish and install High Density Polyethylene Electrofusion fittings as required to repair force mains where directed by the Engineer. Work under this item shall include but not be limited to the following:

- a. Installation of fittings shall be in comply with manufacturer's recommendations and tested according to AWWA C600.
- b. Trench shall be backfilled and compacted according to Nassau County standard, as directed by the Engineer.

2. Intent:

The intent of this item is to furnish and install High Density Polyethylene Electrofusion pipe fittings as necessary to connect force mains.

3. Materials and Installation:

The High Density Polyethylene Electrofusion fittings shall be furnished and installed in accordance with Section 600 – Furnish and Install Various Diameter Sizes High Density Polyethylene Piping of this Specification.

4. Measurement:

The High Density Polyethylene Electrofusion fittings shall be measured by each fitting as indicated below.

8x8x6 "T"
12x12x6 "T"
8x6 Reducer
10x8 Reducer
12x10 Reducer
6" Coupling
8" Coupling
10" Coupling
12" Coupling

5. Payment:

Payment shall be made for each High Density Polyethylene Electrofusion fitting (including accessories) furnished and installed in final position. High Density Polyethylene fittings shall be tested and measured as described, in accordance with the unit price bid.

Dewatering, backfilling, backfill compaction, sterilization, all tools, jointing equipment and equipment necessary for the satisfactory installation, complete and ready for continuous use, shall be part of this item. Pavement removal and replacement shall be paid under the appropriate items in the proposal.

ITEM 601 - FURNISH AND INSTALL VARIOUS DIAMETER SIZES DUCTILE IRON PIPES

1. Description:

Under these items the contractor shall furnish and install ductile iron pipes of various sizes, 4" to 24" in diameter inclusive, where directed by the Engineer. Work under each item shall include but not be limited to:

- a. The DI pipe shall be installed, flushed, disinfected and tested according to AWWA and Nassau County Department of Health Standards.
- b. The trench shall be backfilled and compacted according to Nassau County standard.

2. Intent:

The intent of this item is to furnish and install DI pipe as necessary to complete the work as directed by the Engineer.

3. Materials and Installation:

All ductile iron pipe shall be furnished and installed in accordance with the American Water Works Standard for Installation of Ductile Iron Water Mains and their appurtenances, AWWA C-600-82 or latest revision, and as specified herein and as directed by the Engineer.

Ductile Iron Pipe shall be centrifugally cast ductile iron pipe meeting the requirements of ANSI/AWWA C-150/A-21.50-81, or latest revision and Class 54 thickness. All pipe shall be cement lined, double thick with a bitumastic seal coat in accordance with ANSI/AWWA C-104/A-21. 4-80 or latest revision and coated on the outside with bitumastic paint, in accordance with ANSI/AWWA C-110/A-21.10-82 or latest revision.

Joints for ductile pipe shall be push on rubber gasket joints or mechanical joints as manufactured by U.S. Pipe and Foundry Company, all conforming to applicable portions of ANSI/AWWA C-111/A-21.11-85, or latest revision. All pipe shall be cement lined double thick with a bitumastic seal coat in accordance with ANSI/AWWA C-104/A-21.4-80 or latest revision inside, and the outside coated with bitumastic paint.

Pipe and specials will be cut by the Contractor when required to install the pipe and fittings under this contract and/or when directed by the Engineer. Cutting shall be performed with electrically operated pipe saw approved by the pipe manufacturer. Cutting with chisels or torch will not be permitted.

All backfill shall be mechanically compacted as described under the Standard Specifications for Construction of Sanitary Sewers, Section 02222, Paragraph 3.03-C Entitled Vibratory Compaction.

4. Measurement:

Pipe shall be measured in lineal feet by steel tape from the end of run of installed pipe to center lines of tees, fittings and hydrants. No deduction shall be made from the measured lengths for valves and fittings or special adaptor pieces.

5. Payment:

Payment shall be made for each lineal foot of pipe furnished and installed in final position, tested,

sterilized and measured as described herein, in accordance with the unit price bid in the Proposal for Ductile Iron Pipe, and shall include all labor. Dewatering, backfilling, backfill compaction, testing and sterilization, and all tools and equipment necessary for the satisfactory installation, complete and ready for continuous use, are part of this item. Pavement removal and replacement shall be paid under the appropriate item, excavation, under Item 3S.

ITEM 602- FURNISH AND INSTALL VARIOUS DIAMETER SIZES PVC PIPES

1. Description:

Under these items the contractor shall furnish all labor, materials, equipment and incidentals required to install PVC pipes of various sizes, 6" to 12" in diameter inclusive, where directed by the Engineer. Work under each item shall include but not be limited to:

- a. The PVC pipe shall be installed in accordance with manufacturer's recommendations and tested according to AWWA C600.
- b. The trench shall be backfilled and compacted according to Nassau County standard.

2. Intent:

The intent of this item is to furnish and install PVC pipe as necessary to complete the work as directed by the Engineer.

3. Materials and Installation:

All PVC pipe shall meet the requirements of AWWA C900 for pressure pipe. PVC pipe shall be PVC 1120 made from PVC compounds class 12454 in accordance with ASTM D1784.

PVC pipe shall have a hydrostatic design stress rating of 2,000 psi at 73 degree F and must be suitable for field cutting and solvent welding. The pipe must be Schedule 80 unless directed otherwise.

Joints for PVC pipe shall be solvent welded except where flanged joints are required. Pipe and fittings shall be socket type for solvent welded joints conforming to ASTM D2466. Flanged joints shall be furnished with 1/8 inch thick full faced Viton gaskets. Rubber gaskets shall not be permitted. Flange bolts and nuts shall be ASTM A726 and ASTM A307 Type 316 Stainless Steel. Fittings, specials, unions and flanges shall be Schedule 80 and manufactured of the same materials as the pipe. Deflection at joints shall not exceed deflection recommended by the manufacturer. Solvent welded joints shall be made in accordance with ASTM D2855.

When cutting pipe is required the cutting shall be done by machine, leaving a smooth cut at right angle to the axis of the pipe. Cut ends used with a bell shall be beveled as recommended by the manufacturer or to conform to a manufactured spigot end.

All backfill shall be mechanically compacted as described under the Standard Specifications for Construction of Sanitary Sewers, Section 02222, Paragraph 3.03-C Entitled Vibratory Compaction.

4. Measurement:

Pipe shall be measured in lineal feet by steel tape from the end of run of installed pipe to center lines of tees, fittings and hydrants. No deduction shall be made from the measured lengths for valves and fittings or special adaptor pieces.

5. Payment:

Payment shall be made for each lineal foot of pipe furnished and installed in final position, tested, and measured as described herein, in accordance with the unit price bid in the Proposal for PVC Pipe, and shall include all labor. Dewatering, backfilling, backfill compaction, testing and sterilization, and all tools and equipment necessary for the satisfactory installation, complete and ready for continuous use, are part of this item. Pavement removal and replacement shall be paid under the appropriate item, excavation, under Item 3S.

ITEM 603 - CAST IRON FITTINGS

1. Description:

Under this item the Contractor shall furnish and install cast iron fittings as required to repair water mains where directed by the Engineer. Work under this item shall include but not be limited to the following:

- a. Installation of fittings shall be in conformity with all AWWA and N.C. Department of Health standards relating to flushing, disinfecting and testing.
- b. Trench shall be backfilled and compacted according to Nassau County standard, as directed by the Engineer.

2. Intent:

The intent of this item is to furnish and install cast iron pipe fittings as necessary to connect water mains.

3. Materials and Installation:

The cast iron fittings shall be furnished and installed in accordance with AWWA Standard C600-82, or latest revision as directed by the Engineer.

Fittings shall conform to ANSI/AWWA C110/A21.10-82, or latest revision for 250 psi minimum rated pressure with mechanical joints, conforming to ANSI/AWWA C111/A21.11-85 or latest revision with plain rubber gaskets and high strength, low alloy steel bolts. All fittings shall be cement mortar lined and bitumastic seal coated on the inside, in accordance with ANSI/AWWA C104/A21.4-80 or latest revision, and coated on the outside with bitumastic coating 1 mil thick, in accordance with ANSI/AWWA C110/A21.10-82 or latest revision.

4. Measurement:

The cast iron fittings shall be measured by the pound weight as per ANSI/AWWA C110/21.10-82 or latest revision, table 10.3 to 10.13 inclusive, for cast iron mechanical joint fittings. Joint accessories, such as glands, bolts and gaskets, shall be measured by weight in pounds as per ANSI/AWWA C110/A21.10-82 or latest revision, table 10.1.

5. Payment:

Payment shall be made for each cast iron fitting (including accessories, such as glands, bolts and gaskets) furnished and installed in final position. Cast iron fittings shall be tested and measured as described, in accordance with the unit price bid.

Dewatering, backfilling, backfill compaction, sterilization, all tools, jointing equipment and equipment necessary for the satisfactory installation, complete and ready for continuous use, shall be part of this item. Pavement removal and replacement shall be paid under the appropriate items in the proposal.

ITEM 604 - FURNISH AND INSTALL 4" - 12" DIAMETER VALVES AND VALVE BOXES

1. Description:

Under this item the Contractor shall furnish and install valves and valve boxes from 4" to 12" in diameter inclusive, as directed by the Engineer. Work under each item shall include but not be limited to the following:

- a. Valves shall be installed, flushed, disinfected and tested in accordance with AWWA and N.C. Department of Health standards.
- b. The trench shall be backfilled and compacted according to Nassau County standard.

2. Intent:

Intent of this item is to install all valves to replace worn and faulty equipment, and to properly subdivide the main as necessary for testing, to provide shutoff points for future maintenance and repair of main, and to provide shutoff for new hydrants and connections.

3. Materials and Installation:

Valves shall be iron body, bronze mounted, double disc, parallel seat gate valves as manufactured by Clow Corp., Eddy Iowa Div., Muller Company, or approved equal; conforming to AWWA Specification C500, latest revision. Valve is to be suitable for direct burial, have mechanical joint ends, open counter-clockwise, have non-rising stem, be installed vertically, have O-ring packing and AWWA approved operating nut.

Valve boxes shall be Eddy Iowa, consisting of top section F-2455; center section F-2460. For valves 4" and 8", F-2465, #6 round base. For valves 10" and larger, F-2484, oval base, set as per standards.

Valve box covers are to be wire brushed cleaned and painted with one coat of "Rust-oleum" No. 866, Marlin Blue or equivalent.

4. Measurement:

Valves shall be measured for payment for each individual valve installed complete with valve box.

5. Payment:

Payment shall be made for valve furnished and installed complete with valve box in final position, tested, sterilized and measured as described herein, and valve box cover painted, in accordance with unit price bid for 4", 6", 8", 10" and 12" valves and valve boxes complete, including all labor and materials. Dewatering, backfilling, backfill compaction, testing, sterilization, all tools and jointing equipment necessary for the satisfactory installation complete and ready for continuous use shall be part of this item. Pavement removal and replacement shall be paid under the appropriate item; excavation under Item 3S.

ITEM 605 - FURNISH AND INSTALL 16" - 24" DIAMETER VALVES AND VALVE BOXES

1. Description:

Under this item the Contractor shall furnish and install valves and valve boxes 16" through 24" in diameter where directed by the Engineer. Work under this item shall include but not be limited to:

- a. Valve shall be installed, flushed, disinfected and tested in accordance with AWWA and N.C. Department of Health standards.
- b. Trench shall be backfilled and compacted according to Nassau County standard.

2. Intent:

The intent of this item is to install a replacement valve to replace worn and faulty equipment and to properly subdivide the main as necessary for testing to provide shutoff points for future maintenance and repair of the main and to provide for new hydrant and connections.

3. Materials and Installation:

Valves shall be butterfly type suitable for direct burial service, manufactured by Henry Pratt Company, Clow Corporation, Eddy Iowa Division, or approved equal.

All parts of valve shall conform to strength and performance requirements of AWWA C504 or latest revision, Pressure Class 150B. Valve components shall be as follows:

- a. Valve bodies and flanges. Bodies shall be constructed of cast iron ASTM A-126, Class B, and shall have integrally cast mechanical joint ends conforming to ANSI/AWWA C111/21.11-85 or latest revision with plain rubber gaskets and high strength, low alloy steel bolts.
- b. Valve discs. Discs shall be constructed of ASTM A-436 Ni-Resist, Type 1.
- c. Valve shafts. Shafts shall be one piece, stainless steel, extending full size through valve disc and bearings. Stub shafts not acceptable.
- d. Valve seats. Seats shall be a Buna N bonded or mechanically secured to the valve body. Seat must withstand 75 lbs. pull under test procedure ASTM D-429-58, Method B. Seats affixed to disc not acceptable.
- e. Valve bearings. Bearings shall be sleeve type, corrosion resistant and self-lubricating with load not to exceed 1500 psi.
- f. Valve operators. Valve operator shall be traveling nut type designed to withstand 300 ft. lbs. of input torque at full open positions without damage to valve or operator, must be fully gasketed and grease packed and designed to withstand submersion in water to 10 psi. Valves shall open counterclockwise rotation of AWWA nut and shall require a minimum of 30 turns to move from fully opened to fully closed.
- g. Testing. Hydrostatic and leakage tests shall be conducted in strict accordance with AWWA C504-80, Section 13, or latest revision.

ITEM 605 - FURNISH AND INSTALL 16" - 24" DIAMETER VALVES AND VALVE BOXES (Cont.)

- h. Valve box covers are to be wire brushed cleaned and painted with one coat of "Rust-Oleum," No. 866, Marlin Blue or equivalent.

Valve boxes shall be Clow Corp., Eddy Iowa Division, or approved equal, consisting of top section F2455, center section F2450, and oval base F2484.

4. Measurement:

Valve shall be measured for payment for each individual valve installed complete with valve box.

5. Payment:

Payment shall be made for valves furnished and installed complete with valve box in final position, tested, sterilized and measured as described herein, and valve box cover painted, in accordance with unit price bid in proposal for 16"-24" diameter valves and valve boxes, complete including all labor and materials. Dewatering, backfilling, backfill compaction, testing, sterilization, all tools and jointing equipment necessary for the satisfactory installation complete and ready for continuous use shall be part of this Item. Pavement removal and replacement shall be paid under appropriate item; excavation, under Item 3S.

ITEM 607 - THREADED STEEL THRUST RODS AND APPURTENANCES

1. Description:

Under this item the Contractor shall furnish and install threaded steel rods with bolts and joint lugs where directed by the Engineer, to prevent movement in the pipe, fittings and valves. Work under this item shall include but not be limited to the following:

- a. Installation of steel rods.
- b. The trench shall be backfilled and compacted according to Nassau County standards.

2. Intent:

The intent of this item is that pipe fittings and valves owned by Nassau County shall be prevented from moving when the internal working pressure in the mains shall reach the designed maximum plus water hammer. Thrust rods shall only be used where directed by the Engineer. Ordinarily all pipe fittings, valves and hydrants installed under this contract will be prevented from moving by means of steel thrust rods and/or concrete blocking.

3. Materials and Installation:

Threaded Rods, Bolts and Joint Lugs:

Rods shall be steel or modified range merchants quality as defined in Standard for Open Hearth Hot Rolled Steel Rods, U.S. Federal Standard 10066B.

Bolts shall be steel in accordance with tentative specifications for Low Carbon Steel Externally or Internally Threaded Standard Fastness, ASTM-A307-63T.

Lugs shall be ductile iron Mutual Fire Insurance listed and approved.

Rod Couplings shall be malleable iron conforming to Standard Specifications of Cupola Malleable Iron ASTM 197.

Washers shall be Class A cast iron as defined by Tentative Specifications for Gray Iron Castings for valves, flanges and pipe fittings, ASTM A126-61T. Bolts, rods, couplings, washers and lugs shall be as manufactured by Stellar Corp. under the trade name of Duc-Lug or approved equal.

Four rods shall be used at all joints restrained with steel rods. Prior to installation the Contractor shall submit a sketch showing the proposed thrust rod installation, it shall be the Contractor's full responsibility for the adequacy and safety of the thrust installation.

4. Measurement:

Steel rods, bolts, couplings, washers and lugs used for thrust blocking shall be measured by weight in pounds as per the manufacturer's catalog which shall be submitted by the Contractor to the Engineer with his claim for payment under this item.

ITEM 607 - THREADED STEEL THRUST RODS AND APPURTENANCES (cont.)

5. Payment:

Payment shall be made for the threaded steel thrust rods and appurtenances for thrust blocking furnished and installed in final position, tested and measured as described herein, in accordance with the unit price bid in the proposal for furnishing and installing Threaded Steel Thrust Rods & Appurtenances, and shall include all labor and materials. Dewatering, backfilling, compaction, sterilization (if necessary), testing and all tools, equipment and painting where required for the satisfactory installation complete and ready for continuous use shall be part of this item. Pavement removal and replacement shall be paid for under the appropriate item; excavation under Item 3S.

ITEM 608 CLASS "A" CONCRETE FOR CONCRETE THRUST BLOCKING & CONCRETE PIERS

1. Description:

Under this item the Contractor shall furnish and install as required, concrete thrust blocking to prevent movement in pipes, fittings and valves installed for concrete piers under water mains wherein the mains are installed over storm drains, sanitary sewers, gas lines, telephone ducts and electrical conduit, etc. Work under this item shall include but not be limited to:

- a. Excavation as necessary to install steel rods.
- b. Installation of blocking and piers.
- c. Trench shall be backfilled and compacted according to Nassau County standards.

2. Intent:

Intent of this item is to ensure that piping, fittings and valves are prevented from moving when maximum designed water pressure (or 250 #/sq. in. plus water hammer) is encountered. Water mains will be supported where they pass over underground pipes and structures, to insure support of other underground pipes and structures where they pass over water mains.

3. Materials and Installation:

- a. Concrete thrust blocks shall be cast in place, against undisturbed soil where possible, or properly compacted and suitable backfill. Class "A" concrete thrust blocking shall be as defined in the County of Nassau Department of Public Works 2009 Standards Specifications and Detail Sheets, item 17A.
- b. Concrete piers shall be placed under and to the side of the water main (or other underground pipe or structure) on undisturbed earth as directed by the Engineer. Before pouring, the Contractor shall submit a detailed sketch of all concrete piers to the Engineer for approval. The Contractor shall assume full responsibility for the adequacy and safety of the concrete piers.

4. Measurement:

Concrete for thrust blocking and piers shall be actual field measurements by volume, by cubic yards, for concrete placed under and behind pipe, fittings and valves to prevent movement in the pipe and to provide support where the pipe passes over other underground lines.

5. Payment:

Payment shall be made for concrete thrust blocking and concrete piers furnished and installed, tested and measured in final position as described herein in accordance with the unit price bid in the proposal for furnishing and installing Class "A" concrete for Concrete Thrust Blocking and Concrete Piers. Included in each item are all labor, materials, excavation, backfill, compaction of backfill, painting where specified, testing, and all tools and equipment necessary for a satisfactory installation, complete and ready for continuous use. Pavement removal and replacement shall be paid for under the appropriate item.

ITEM 609A, ITEM 609B, ITEM 609C, ITEM 609D - CUTTING AND CONNECTING TO EXISTING
WATER MAINS

609A - Cutting and Connecting to Existing Asbestos Cement Water Mains of Various Sizes

609B - Cutting and Connecting to Existing Poly-Vinyl Chloride Water Mains of Various Sizes

609C - Cutting and Connecting to Existing Cast Iron or Ductile Iron Water Mains of Various Sizes

609D - Cutting and Connecting to High Density Polyethylene Pipe Water Mains of Various Sizes

1. Description:

Under these items the Contractor shall cut and connect to existing water mains in sizes 4" to 24" inclusive, where directed by the Engineer. Work under this item shall include but not be limited to:

- a. Locating and closing all necessary existing valves to shut down water service in the main to be cut.
- b. Cutting the existing main and the installation of necessary fittings.
- c. All dewatering work in the trench to permit operation in a dry excavation.
- d. The installation shall conform with all AWWA and Nassau County Department of Health standards relating to flushing, disinfecting and testing of the disturbed portion of the main.

2. Intent:

The intent of this item is to be cut and connect to existing water mains for interconnection or installation of new hydrant or valves; to seal open ends of pipe, fittings, or valves that have been abandoned resultant by any new work undertaken, and to restore pipe and connections to an operating condition, leak tight and under pressure, blocked to prevent movement, disinfected and flushed.

3. Materials and Installation:

All work under this item shall comply with specifications contained herein for excavation, backfill, pipe, fittings, threaded steel rods, thrust rods and appurtenances, and concrete thrust blocking. All pipe and fittings shall conform to the latest AWWA specifications.

4. Measurement:

All materials and work required for this item shall be included in the proposal for cutting and connecting to existing water mains for various sized pipe being connected, 4"-24" inclusive. Said cutting and connection shall be the measured inches of diameter for each location where pipe is exposed, cut and a connection made.

ITEM 609A, ITEM 609B, ITEM 609C, ITEM 609D - CUTTING AND CONNECTING TO
EXISTING WATER MAINS (cont.)

5. Payment:

Payment shall be made for each location where existing pipe is exposed, finish cut, connected, flushed and disinfected in accordance with the unit bid for cutting and connecting to existing water mains of various sizes, 4" through 24" inclusive, for the main size where such cut and connection was made. No payment shall be made for relief cuts. Additional cuts required to reach a suitable connection point, when directed by the Engineer, are payable. Included in the unit price is dewatering, backfilling compaction, flushing, testing and disinfection of pipes; all tools and equipment necessary for a satisfactory installation, complete and ready for continuous use. However, payment for excavating, sheeting, pavement removal and restoration, ductile pipe fittings, valves, rods, etc., shall be paid at the unit price bid for each specific item in this proposal.

ITEM 610 – DIRECTIONAL DRILLING OF HDPE WATER MAINS OF VARIOUS SIZES

1. Description:

Under this item the Contractor shall install new HDPE water mains and or services by means of directional drilling method sizes 1" to 24" inclusive, where directed by the Engineer. Work under this item shall include but not limited to:

- a. Test holing area to confirm existence and clearances of existing utilities to allow for a bore path design.
- b. Excavation of installation of drilling and receiving pits.
- c. All dewatering work as necessary to allow for the installation of the pipe.
- d. Remove and legal dispose of drilling mud spoils.
- e. The installation shall conform with all AWWA and Nassau County Department of Health standards relating to flushing, disinfecting and testing of the new water main.

2. Intent:

The intent of this item is to install water mains / services under roads or water ways by means of trenchless installation (directional drill), pressure test, disinfect and flush line before put into service.

3. Materials and Installation:

All polyethylene pipe shall meet the requirements of ASTM F714. HDPE pipe resins shall be Type III high molecular weight, high-density polyethylene with a cell classification number of PE 345434C in accordance with ASTM D3350. The polyethylene compound shall be suitably protected against degradation by ultraviolet light as required by ASTM D1603

HDPE pipe shall be designed for use in minus 20 degree F to 120 degree F applications. The pipes shall have a pressure rating of 800psi and conform to Standard Dimension Ratio (SDR) DR11 pipe shall be "Blue Stripe" AWWA.

Care shall be taken when handling HDPE pipe. Ropes, fabric, rubber coated slings and straps shall be used. Chains, cables or hooks inserted into the pipe ends shall not be used. Slings for handling joined pipe shall not be positioned at butt-fused joints. Pipe and fittings shall not be dropped onto the ground.

ITEM 610 – DIRECTIONAL DRILLING OF HDPE WATER MAINS OF VARIOUS SIZES

All joints shall be made by the electrofusion method. Electrofusion means that the joint is heated internally by an electric current applied to a conductive material in the fitting. Electrofusion shall be performed in strict compliance with the manufacturer's recommendations.

4. Measurement:

Pipe shall be measured in linear foot from end at drill pit to end at receiving pit. All materials and work required for this item shall be included in the proposal for directional drilling of water mains and services for various sized pipe being connected, 1" to 24" inclusive. Said drilling of mains shall be measured inches of diameter for each location where pipe is drilled and installed.

5. Payment:

Payment shall be made for each lineal foot / inch of pipe furnished and installed in final position, tested, and measured as described herein, in accordance with the unit price bid in the Proposal for Directional Drilled High Density Polyethylene Pipe, and shall include all labor. Electrofuse couplings which will be paid for under Item 600A. Dewatering, backfilling, backfill compaction, testing and sterilization, and all tools and equipment necessary for the satisfactory installation, complete and ready for continuous use, are part of this item. Pavement removal and replacement shall be paid under the appropriate item, excavation, under Item 3S.

ITEM 611-A, ITEM 611-B, ITEM 611-C, ITEM 611-D - REPLACEMENT OF VARIOUS SIZES OF
VALVE BOXES AND COMPONENT PARTS

1. Description:

611-A, supply & install top section of valve box and cover

611-B, supply & install bottom section of valve box.

611-C, supply & install extension of valve box.

611-D, supply & install top and bottom section of valve box and cover

Under these items the Contractor shall provide and replace as directed by the Engineer, all damaged or worn elements of valve boxes, covers or extensions on valves 4" to 24", inclusive.

2. Intent:

The intent of this item is to provide and install compatible valve box sections and valve box appurtenances to repair or replace worn and faulty equipment, provide 4' minimum cover over valve, to allow adjustment of valve box to proper grade, and to assure ability to operate valves.

3. Materials and Installation:

Valve boxes shall be iron bodied and approved, conforming to AWWA Spec. 500, latest revision. Valve boxes are to be suitable for direct burial, compatible to valve boxes being replaced and shall be installed vertically. They are to be equivalent to top section F-2455; center section F-2460. Valves 4"-8" are to be equivalent to F-2465, #6, round base; valves 10" and larger, to F-2484, #160, oval base, set as per standard. Valve boxes shall be installed so that no stress or shock will be transmitted through the box, set plumb over the valve operating nut and flush to existing pavement. Valve boxes and extensions shall be saw cut to obtain the proper length. Covers are to be wire brushed, cleaned and painted with one coat of "Rust-Oleum" No. 866, Marlin Blue or equivalent.

4. Measurement:

Valve boxes or attendant part shall be measured installed in place, cover painted, set to grade and complete.

5. Payment:

Payment shall be made for valve boxes, covers, top sections, bottom sections, extensions where necessary, installed in final position, with cover painted, all complete and in accordance with such unit price bid. Included are all tools, equipment and labor necessary for satisfactory installation, complete and ready for continuous use. Excavation, backfilling and compaction shall be paid under Item 3S; pavement removal and replacement, under the appropriate item, and/or stripping and replacement of topsoil, under Item 9R.

ITEM 612-A, ITEM 612-B, ITEM 612-C - CORRECTING EXISTING VALVE BOXES

1. Description:

612-A, Raise Existing Valve Box to Proper Grade
612-B, Straighten and Plumb Existing Valve Box
612-C, Supply & Install "Rite Hite" to Raise Valve Box to Proper Grade

Under this item the Contractor shall correct existing valve boxes where all sections are in satisfactory condition as directed by the Engineer. Work under this item shall include but not be limited to:

- a. Excavation in order to plumb and straighten valve box.
- b. The opening shall be backfilled, compacted and resurfaced according to Nassau County standard.
- c. Supply and install rite hites as directed.
- d. Cleaning valve box of sand, stone and other debris.

2. Intent:

The intent of this item is to adjust existing valve boxes so as to be properly aligned in relationship to the valve operating nut so that the valve may be easily operated, and that the top of said box is adjusted to be flush with the existing surface.

3. Materials and Installation:

Valve boxes shall be corrected by straightening or raising so that no stress or shock will be transmitted through the box to the valve. Each box shall be plumb over the valve operating nut and flush to the existing surface. Compacting and surfacing to conform with applicable County specifications. Work shall be conducted so that the boxes shall be free of stones, sand, or any other debris.

4. Measurement:

Valve box shall be inspected as to plumbness and surface level, installed in place set to grade and complete.

5. Payment:

Payment shall be made for each valve box corrected, completed in final position in accordance with such unit price bid. Where a "rite hite" is utilized to raise the valve box to proper grade, payment shall be made on a per each basis. Included are all labor, tools and equipment necessary for a satisfactory adjustment complete and ready for continuous use. Excavation, backfilling and compaction shall be paid under Item 3S, pavement removal and replacement under the appropriate item, and/or stripping and replacement of topsoil under another item.

ITEM 613 - VALVE PACKING REPAIR

1. Description:

Under this item the Contractor shall correct and repair valve packing and perform maintenance as necessary on that section of the exposed valve as directed by the Engineer. Work under this item shall include but not be limited to:

- a. Replacement of valve packing and adjustment.
- b. Trench or opening shall be backfilled to assure a 4' minimum cover, compacted and resurfaced according to Nassau County standard.

2. Intent:

The intent of this item is to provide for the repair of valve packing found to be faulty, to insure a mechanically sound and hygienically pure water system.

3. Materials and Installation:

All work on valves shall be in conformance with AWWA Spec. C-500, latest revision. Valve boxes moved shall be reinstalled, straightened and set level so that no stress or shock will be transmitted through box, and set plumb over the valve operating nut, flush to the existing pavement. Compacting and resurfacing shall conform to applicable County specifications. Work shall be conducted so that boxes are free of stones, sand and other debris.

4. Measurement:

Valve packing repair shall be inspected and tested as repaired in the field, installed in place, backfilled, compacted, etc., complete and ready for use.

5. Payment:

Payment shall be made for each location where valve packing repair is made, exposed, packed and connected and tested in accordance with such unit price bid. Included are all tools, equipment and labor necessary for satisfactory valve packing repair, complete and ready for continuous use. Excavation backfilling and compaction shall be paid under Item 3S. Pavement removal and replacement, and/or topsoil stripping and replacement shall be paid under appropriate item. All materials used in this item shall be paid under Item 510.

ITEM 614F X - HYDRANTS

1. Description:

Under this item the Contractor shall furnish and install hydrants where directed by the Engineer. Work under this item shall include but not be limited to:

- a. Hydrant shall be installed to provide a minimum 5' bury and riser sections where necessary.
- b. Hydrant shall be installed, flushed, disinfected and pressure tested in accordance with AWWA and Nassau County Department of Health standards.
- c. Trench shall be backfilled and compacted according to Nassau County standards. All salvageable hydrant materials shall be removed and transported for storage as directed by the Engineer.

2. Intent:

The intent of this item is to furnish and install hydrants equal to existing equipment to replace damaged or worn equipment, or to extend new hydrant coverage to County owned mains in conformance with AWWA Specification 502-80, or latest revision.

3. Materials:

Hydrants shall be 5-1/4" M.V.O. (main valve opening), dry barrel standard, mechanical joint inlet, conforming to AWWA Specification 502-80, or latest revision, as manufactured by Clow Corp., Eddy Iowa Division, or equal, to conform with system into which hydrant will be installed. Areas of bury generally 5'. Nozzles, main valve opening, inlet connection, direction of opening, color, riser section, operating nut, type of construction and hydrant packing shall be determined by Engineer to conform with or supersede existing installation. Included in this item will be a hydrant flag, as manufactured by Joseph G. Pollard Co., Inc. Item No. P69101, or equal, installed on each new hydrant as directed by the engineer.

4. Payment:

Payment shall be made for hydrant installed with hydrant flag, complete with drain sump in final position, pressure tested, sterilized, painted and measured in accordance with unit price bid in proposal for hydrants, all complete including labor and materials. Dewatering, backfilling, compaction, testing, sterilization, saw cutting of branch lines, and all jointing equipment necessary for satisfactory installation, complete and ready for continuous use, shall be part of this item. Pavement removal and replacement shall be paid under appropriate item; excavation, backfilling and compaction, under Item 3S. Additional payment will be made for all buries in excess of 7. L.F. under Item 615B. Topsoil in area will be stripped, stored and replaced where encountered and paid under Item 9R.

ITEM 614G – FURNISH AND INSTALL UPPER SECTION OF HYDRANT ASSEMBLY

1. Description:

Under this item the Contractor shall furnish and install the upper section of a hydrant assembly as directed by the Engineer. Work shall include but not be limited to:

- a. Removal of old section.
- b. All excavation required to install top section of hydrant, compaction and leveling of materials excavated.
- c. Hydrant section installed, flushed, disinfected and pressure tested in accordance with AWWA and Nassau County Department of Health standards, completely functional and operational.
- d. Top section and exposed lower section of riser assembly painted according to Nassau County specification and colors, as directed by Engineer.

2. Intent:

The intent of this item is to furnish and install upper section of hydrants compatible and equal to existing equipment that is worn or damaged, in conformance with AWWA specifications 502-80 and 600-82, or latest revisions.

3. Materials:

Upper section of hydrants shall be equal to and conform with system into which it will be installed. Nozzles, color, operating nut, and type of construction shall be determined by the Engineer to conform with or supersede existing installations.

4. Payment:

Payment shall be made for each hydrant upper section installed and completely functional, pressure tested and sterilized as inspected in accordance with the unit price bid on the upper section of hydrant assembly, including all labor, materials, excavation, backfilling, compaction, painting, testing, and sterilization; and all tools and equipment for the satisfactory installation complete and ready for continuous use shall be part of this item.

ITEM 615A – REPAIR OF UPPER HYDRANT ASSEMBLY

1. Description:

Under this item the Contractor shall repair on County owned hydrants those upper barrel sections that are sound and repairable. Included are internal component parts, operating nut, and weather cap, down to but not including the hydrant break flange. All work shall be directed by the Engineer. Work shall include but not be limited to:

- a. Closing valves to shut down water service to hydrant.
- b. Installation of same or approved equivalent replacement elements.
- c. Removal of all debris and useless parts.
- d. Clean up as required.
- e. Hydrants to be flushed, disinfected and pressure tested in accordance with AWWA and County Department of Health standards, completely functional and operational.

2. Intent:

The intent of this item is to furnish and install those component parts contained in the upper section of the hydrant assembly from top operating nut to break flange that are either damaged or worn, so as to insure their proper operation.

3. Materials and Installation:

All work on hydrants shall conform to AWWA specifications 502-80 and 600-82, latest revisions. All component parts of upper section shall be equal to and conform with the hydrant to which it will be installed and all new installed external parts shall be painted to meet Nassau County standards.

4. Payment:

Payment shall be made for each damaged hydrant assembly, upper section, repaired to be completely functional, pressure tested, sterilized and painted as inspected in accordance with the unit price bid. Payment to include all labor, tools and equipment necessary for the satisfactory repair of upper hydrant assembly. All materials used in this item to be paid under Item 510.

ITEM 615B – SUPPLY AND INSTALL VARIOUS LENGTHS OF HYDRANT RISER ASSEMBLIES

(6", 12", 18", 24", 30", 36")

1. Description:

Under this item the Contractor shall install hydrant riser assembly and component parts of lower hydrant sections including lower barrel and parts of stem but not the foot piece or shoe. All work shall be as directed by the Engineer. Work shall include but not be limited to:

- a. Closing valves to shut down water service to hydrants.
- b. Installation of same or approved equivalent elements.
- c. Removal of all debris and useless parts.
- d. Cleanup as required.
- e. Hydrant to be flushed, disinfected and pressure tested in accordance with AWWA and Nassau County Department of Health standards, completely functional and operational.

2. Intent:

The intent of this item is to furnish and install those component parts contained in the lower section of the hydrant assembly from the break flange down to the foot or shoe that are damaged, worn or required to be raised, so as to insure their proper operation.

3. Materials and Installation:

All work on the hydrant shall conform to AWWA Specifications 502-80 and 600-82, latest revisions. All component parts of the lower section shall be equal to and conform with the hydrant to which it will be installed.

4. Payment:

Payment shall be made for each length (as per item length) of damaged hydrant riser assembly, lower section, repaired from immediately below break flange to foot or shoe assembly, completely functional, pressure tested, sterilized and inspected, in accordance with unit bid price. Payment under this item shall include all labor, materials, testing, sterilization, tools and equipment for the satisfactory repair, complete and ready for continuous use. Excavation, backfilling and compaction shall be paid under Item 3S; pavement removal and replacement, under the appropriate item; stripping and replacement of topsoil, under another Item.

ITEM 615C – REPAIR OF HYDRANT VALVE AND DRAIN ASSEMBLY

1. Description:

Under this item the Contractor shall make repairs to damaged or worn shoe (foot) section of county owned hydrant below barrel of hydrant (valve and drain assembly), or any component parts including nuts and bolts. All work shall be as directed by the Engineer. Work under this item shall include but not be limited to:

- a. Closing valves to shut down water service to hydrant.
- b. Removal of upper barrel, break flange, et al.
- c. Installation of same or approved equivalent elements.
- d. Blocking, cleanup and restoration.
- e. Hydrant flushed, disinfected and pressure tested in accordance with AWWA and County Department of Health standards, completely functional and operational.

2. Intent:

Intent of this item is to furnish and install those component parts, such as shoe or foot of hydrant assembly (valve and drain), that are either damaged or worn so as to insure proper operation.

3. Materials and Installation:

All work on hydrant shall conform to AWWA specifications 502-80 and 600-82, latest revisions. All component parts of valve and drain assembly shall be equal to and conform with the hydrant to which it is being installed.

4. Payment:

Payment shall be made for each damaged valve and drain hydrant assembly in the shoe or foot, repaired completely functional, pressure tested and sterilized as inspected, in accordance with unit bid price. Payment under this item shall include all labor, tools and equipment for the satisfactory repair, complete and ready for continuous use. All materials used in this item shall be paid under Item 510. Excavation, backfilling and compaction shall be paid under Item 3S; pavement removal and replacement, stripping and replacement of topsoil, under the appropriate items.

ITEM 615D – SUPPLY AND REPAIR HYDRANT BREAK FLANGE

1. Description:

Under this item the Contractor shall supply and repair the break flange of County owned hydrants including all necessary stem and flange sections, bolts and any incidental parts. All work shall be as directed by the Engineer. Work under this item shall include but not be limited to:

- a. Closing valves to shut down water service to the hydrant.
- b. Installation of proper break flange elements.
- c. Hydrant flushed, disinfected and pressure tested in accordance with AWWA and Nassau County Department of Health standards, completely functional and operational.

2. Intent:

The intent of this item is to furnish and install the component parts of a break flange and stem that have been broken to insure proper operation.

3. Materials and Installation:

All work on the hydrant shall conform to AWWA Specifications 502-80 and 600-82, latest revisions. All component parts of the break flange shall be equal to and conform with the hydrant to which it is being installed and shall be painted to meet existing Nassau County standards.

4. Payment:

Payment shall be made for each damaged hydrant break flange and stem installed, with break flange completely functional, painted, pressure tested, sterilized and inspected in accordance with the unit price bid. Payment under this item shall include all labor, materials, tools and equipment for the satisfactory repair, complete and ready for continuous use.

When only one-half (1/2) of a break flange is installed, payment shall be made based on one-half (1/2) of the unit price bid.

ITEM 615G – INSPECTION, REPORTING AND BASIC MAINTENANCE OF HYDRANTS

1. Description:

Under this item the Contractor shall inspect, report, operate and perform basic maintenance of County-owned hydrants and branch valves as directed by the Engineer. Work under this item shall include but not be limited to:

- a. Operation of hydrants, and branch valve, checking on condition of component parts.
- b. Performing basic maintenance, flushing, lubricating and cleanups and report information pertinent to future maintenance of said hydrant.
- c. Inspections, generally to be done between March 15 and December 15.

2. Intent:

The intent of this item is to inspect, report and perform basic maintenance to County-owned hydrants and branch valves so as to insure their proper operation, as outlined in AWWA Manual M17, latest revision.

3. Methodology and Materials:

Contractor's personnel shall be thoroughly familiar with the design and operation of the various types of hydrants and branch valve to be serviced, and shall:

- (1) Remove outlet nozzle caps and check with plumb bob for presence of water or ice standing in barrel of dry barrel type hydrants. Replace all but one nozzle cap, shut down branch valve and open hydrant to determine whether branch valve is obtaining complete shut down.
- (2) Replace outlet nozzle caps and open hydrant to full open position, checking ease of operation. If stem action is tight, repeat operation several times until opening and closing action is smooth and free.

Note: Water conditions may be such as to cause "Hard Water Build-up" on stem threads. A series of opening and closing operations usually is sufficient to remove this build-up.

- (3) While the hydrant is under pressure, check for leakage at joints, around outlet nozzles, at packing or seals, and past outlet nozzle caps.
- (4) If leakage is observed, tighten or recaulk outlet nozzles, lubricate and tighten compression packing or replace O-rings or similar seals, replace gaskets. If leakage cannot be corrected with the tools at hand, record the nature of the leakage for prompt attention by those responsible for repairs.
- (5) Close hydrant main valve to the position at which the drains open and allow flow through the drains under pressure for about ten seconds to flush the drains. Then close completely.
- (6) Remove a nozzle cap and attach a section of hose, if necessary, to direct the flow into the street. Open the hydrant and flush to remove foreign material from the interior and lateral piping.

3. Methodology and Materials (Cont.):

- (7) Close main valve and check hydrants for drainage from barrel. Drainage should be sufficiently rapid to create a suction if the hand is placed over a nozzle outlet during drainage. Check again for seat leakage with the aquaphone on dry barrel hydrants and visually on wet barrel hydrants.
- (8) If hydrants do not have a drain, pump out any residual water in the barrel. If there is any question as to whether the barrel can be kept dry, add a non-toxic solution during the fall inspection to prevent freezing and cracking of barrel. Follow the same procedure after each usage during the period of freezing weather.
- (9) Remove all nozzle caps and inspect for thread damage from impact or cross threading. Clean and lubricate outlet nozzle threads and use caps to check for easy operation of threads. Be sure outlet nozzle cap gaskets are in good condition.
- (10) Check nozzle cap chains for free action on each cap. If binding is observed, open the loop around the cap until the action is free so as to prevent kinking during removal of the cap under emergency conditions.
- (11) Replace caps, tighten with spanner wrench, then back off on threads slightly so that the caps will not be excessively tight, but leave sufficient frictional resistance to prevent removal by hand.
- (12) Lubricate operating unit threads in accordance with manufacturer's instructions.
- (13) Check for any exterior obstruction which may interfere with hydrant use in a fire emergency.
- (14) Clean the exterior of hydrant.
- (15) Be sure branch valve is operable and in wide open position. Valve box cover shall be wire brushed, cleaned and painted with one coat of "Rustoleum" No. 866 Marlin Blue or equivalent.
- (16) If hydrant is inoperable, tag it with a clearly visible marking to prevent loss of time by fire fighting crews in case an emergency occurs before the hydrant is repaired. Report this condition to the fire department at once.
- (17) Flow hydrant, measure and report Static Pressure (lbs), Flow (gpm) and Residual Pressure (lbs).

Repairs: Any condition that cannot be corrected during the regular inspection should be recorded and reported for subsequent action by repair crews. Leakage, broken parts, hard operation, corrosion, need for painting, and other major defects shall be corrected by a crew as soon as possible after the defect is reported.

4. Measurement:

Hydrants and branch valves will be inspected on site as well as verifying the on-site record and maintenance cards.

ITEM 615G – INSPECTION, REPORTING AND BASIC MAINTENANCE OF HYDRANTS (CONT.)

5. Payment:

Payment shall be made upon the receipt of a completed hydrant report card for each hydrant inspected and on which basic maintenance was performed including the operation, flushing, recaulking of outlet nozzles, replacement of O-rings, if required, or similar seals, so that leakage is corrected. Operation and painting of existing branch valves shall also be included under this item. Area to be checked for any exterior obstructions that could interfere with operation, and hydrant is to be completed and ready for use.

ITEM 616 – INSPECTION AND OPERATION OF WATER MAIN VALVES AND BOXES

1. Description:

Under this item the Contractor shall inspect, operate and report on valves owned by Nassau County as directed by the Engineer. Work under this item shall include but not be limited to:

- a. Operation of valves and the checking of condition and ease of operation of valves, and reporting pertinent information for future maintenance of valves and boxes.
- b. Painting of valve box cover for easy identification in the field.
- c. Inspections to be done between March 15 and December 15, generally.

2. Intent:

The intent of this item is to inspect, operate, record and verify the operation of valves and condition of valve boxes so as to insure their proper functioning, as outlined in AWWA Manual M-8.

3. Methodology and Materials:

Contractor's personnel shall be thoroughly familiar with the design and operation of the various types of valves to be inspected and operated.

- a. Valves are to be operated in both directions, fully closed and fully opened, with the number of turns and direction noted. Particular care is to be taken to identify valves that operate in the opposite direction to that which is standard in the system.
- b. Valves should normally be left in the open position, but any valve required to be closed should be carefully noted.
- c. Badly corroded valves are to be operated several times, and if necessary, flow should be induced by opening a hydrant to flush out the valve seats.
- d. The condition of the valve packing, stem, stem nut, and gearing to be noted.
- e. Valve boxes or vaults are to be checked and reported to the Engineer if raising, lowering or replacement is necessary. As needed, valve box shall be cleaned out as part of this item.
- f. Any condition that requires immediate attention shall be reported to the Engineer.
- g. Each valve box cover to be wire brushed, cleaned and painted with one coat of "Rust-Oleum", No. 866, Marlin Blue or equivalent.

4. Measurement:

Valves and valve boxes will be inspected on site as well as verifying on site record and maintenance cards.

5. Payment:

Payment shall be made for each valve box upon receipt of a completed valve report card, and valve being operated, inspected and verified on a one-each basis.

ITEM 622 – PAINTING EXISTING HYDRANTS

1. Description:

The painting of existing hydrants shall include proper preparation of the surface, the application, protection and drying of paint coatings, the protection of adjacent property against disfigurement by splatters and splashes of paint, and the supplying of all tools, drop cloths, labor and materials to complete all work.

2. Intent:

The intent of this item is to provide protection to the hydrant from corrosion, the weather, and to make it easily identifiable by painting.

3. Materials and Application:

All hydrant external parts, generally from the lower side of the safety flange or break point, or 6" below existing ground level, where all previously applied paint shall be cleaned prior to painting to remove rust, loose mill scale, dirt, oil or grease and all other foreign substances by use of metal brushes, scrapers, or any other effective means, as determined by the Engineer, in conformity with Surface Preparation Specifications of the Steel Painting Council, 144000 Fifth Avenue, Pittsburgh, PA, covering No. 1, Solvent Cleaning; No. 2, Hand Cleaning; No. 3, Power Tool Cleaning; No. 5, Blast Cleaning to 'White' Metal.

All areas adjacent to the fire hydrant shall be cleaned daily and restored to original condition at the completion of work. In addition to detailed cleaning requirements, all painted surfaces, regardless of condition, shall be brushed to ensure removal of dust, sand and mud, and primed before painting. All surfaces shall be dry and clean before application of paint.

Painting shall consist of one spot prime coat and two finish coats, colors designated by the Engineer, conforming to Federal Spec. TT-86a, Type IV, or equal. No thinning of paint or the addition of any material whatsoever will be permitted except by order of the Engineer. All paints shall be submitted for sampling before use and the start of work. All paint shall be thoroughly stirred by mechanical means before being removed from their containers. Succeeding coats of paint shall not be applied until previous coats have dried thoroughly. Paint shall be applied by means of round or oval brushes being thoroughly applied and well brushed into all cracks or fissures without leaving runs.

4. Measurement:

Painting and preparations in the field shall be inspected as work progresses on hydrant cleaning, preparation and painting, and the cleaning and restoration of the area, complete and ready for use.

5. Payment:

Payment shall be made for each completed and acceptable hydrant scraped, cleaned, primed, painted and restored in accordance with such bid unit price. Included are costs of furnishing all labor, materials, drop cloths and equipment necessary for preparation of the hydrants and completion of painting of fire hydrants.

ITEM 623 – SAMPLING AND TAP CONNECTION

1. Description:

Under this item the contractor shall furnish and install sampling taps for testing and chlorination where directed by the engineer. Work under this item shall include but not be limited to:

- a. Drilling and tapping main (under pressure where necessary).
- b. Installing corporation stops with copper tubing and other appurtenances necessary for testing or sampling.
- c. After testing and/or flushing remove tap and insert plug.

2. Intent:

The intent of this item is to provide access to the main for the sampling blow off, chlorination, and flushing of water main.

3. Materials:

The use of a drilling, tapping and inserting machine similar to the Mueller B-100, or equivalent, to insert 5/8" taps and corporation stops equivalent to Mueller style H-15000 series. A 5/8" tap for a 5/8" x 3/4" corporation, pet cock and copper pipe reduced to 1/4" will be used.

4. Measurement:

Installing taps, corporation stops and plug shall be measured when complete in place including all necessary piping.

5. Payment:

Payment shall be made for each sampling tap and connection installed and plug inserted. Payment shall be in accordance with the unit price bid in the proposal.

ITEM 624 – EMERGENCY REPAIR CHLORINATION OF WATER MAINS AND APPURTENANCES

1. Description:

Under this item the Contractor shall treat the site of an emergency break or leak in a County owned main by chlorination. All work shall be as directed by the Engineer. Work under this item shall include but not be limited to:

- a. Application for hypochlorite solution to trench area.
- b. Swabbing all interior pipe and fittings used in repairs with 5% hypochlorite solution before installation.
- c. Flushing pipe and operating related appurtenances in affected section.
- d. Chlorination of main with hypochlorite solution to yield 300 ppm chloride solution.
- e. Sampling to provide a record of effectiveness of procedure.

2. Intent:

The intent of this item is to provide disinfection for those mains wholly or partially dewatered after a break to prevent or remedy any contamination in emergency conditions.

3. Work and Materials:

The Contractor shall first flush, then disinfect with hypochlorite solution, then reflush. The pipe shall be flushed through hydrants whenever possible and sampled through a 5/8" blow off and sampling tap (Item 623), using the following procedure.

- a. The pipe shall be thoroughly flushed.
- b. The main shall then be chlorinated with hydrochlorite solution to yield 300 ppm chlorine in the pipe and this solution shall be permitted to stand 1/2 hour minimum. Chlorine solution is to be pumped into the pipe.
- c. The main shall then be thoroughly flushed until no trace of chlorine remains.
- d. A sampling tee shall then be sterilized by flaming the end and a sample taken by the Contractor's representative in the presence of the Engineer. The sample shall be picked up at the work site by Nassau County personnel and delivered to the Department of Health laboratory.
- e. If the sanitary condition of the interior of the repaired main is found by the Engineer or the laboratory to be unsatisfactory, the Contractor shall proceed to disinfect the complete main in accordance with the directions of the Engineer and shall repeat such disinfection as often as may be necessary until samples of the water taken from the main by the County show this condition to be satisfactory. The cost of such additional disinfection shall be borne by the Contractor.
- f. No allowance will be made to the Contractor because of delays resulting from the taking of samples or because of any other operation which may be needed to insure that the sanitary condition of the main is satisfactory.
- g. Except where herein described otherwise, all water main chlorination shall conform to AWWA C651-86, or latest revision.

4. Payment:

Payment shall be made at completion of chlorination and the satisfactory testing of a bacteriological sample taken at completion of repair and shall include all materials, tools and labor necessary for chlorination.

ITEM 625 - BOLLARDS

1. Description:

Under this item the Contractor shall furnish and install hydrant bollards at locations as shown on the plans or as directed by the Engineer.

2. Intent:

The intent of this item is to place hydrant bollards as necessary to protect hydrants from damage by vehicles.

3. Materials:

Hydrant bollards shall be concrete-filled 5" Schedule 40 Steel Pipe 6-1/2 feet long, one end threaded with a 5" domed threaded cap.

4. Installation:

Bollards shall be buried 3-1/2 feet and set in a one by two feet circular concrete footing. The domed cap and exposed body of the bollard shall be painted according to Nassau County specification and colors, as directed by the Engineer.

5. Payment:

Payment shall be made for each bollard installed as stated above, concrete-filled, in accordance with the unit price bid. Included are all tools and equipment necessary for a satisfactory installation complete and ready for continuous use. Excavation, backfilling and compaction are also included in this unit price bid. Pavement removal and replacement shall be paid for under the appropriate item. Stripping and replacement of topsoil shall be paid for under Item 9R.

ITEM 625-P – PAINTING EXISTING BOLLARDS

1. Description:

The painting of existing bollards shall include proper preparation of the surface, the application, protection and drying of paint coatings, the protection of adjacent property against disfigurement by splatters and splashes of paint, and the supplying of all tools, drop cloths, labor and materials to complete all work.

2. Intent:

The intent of this item is to provide protection to the bollard from corrosion, the weather, and to make it easily identifiable by painting.

3. Materials and Application:

All external parts, generally from existing ground level, where all previously applied paint shall be cleansed prior to painting to remove rust, loose mill scale, dirt, oil or grease and all other foreign substances by use of metal brushes, scrapers, or any other effective means, as determined by the Engineer, in conformity with Surface Preparation Specifications of the Steel Painting Council, 144000 Fifth Avenue, Pittsburgh, PA, covering No. 1, Solvent Cleaning; No. 2, Hand Cleaning; No. 3, Power Tool Cleaning; No. 5, Blast Cleaning to 'White' Metal.

All areas adjacent to the bollard shall be cleaned daily and restored to original condition at the completion of work. In addition to detailed cleaning requirements, all painted surfaces, regardless of condition, shall be brushed to ensure removal of dust, sand and mud, and primed before painting. All surfaces shall be dry and clean before application of paint.

Painting shall consist of one spot prime coat and two finish coats, colors designated by the Engineer, conforming to Federal Spec. TT-86a, Type IV, or equal. No thinning of paint or the addition of any material whatsoever will be permitted except by order of the Engineer. All paints shall be submitted for sampling before use and the start of work. All paint shall be thoroughly stirred by mechanical means before being removed from their containers. Succeeding coats of paint shall not be applied until previous coats have dried thoroughly. Paint shall be applied by means of round or oval brushes being thoroughly applied and well brushed into all cracks or fissures without leaving runs.

4. Measurement:

Painting and preparations in the field shall be inspected as work progresses on bollard cleaning, preparation and painting, and the cleaning and restoration of the area, complete and ready for use.

5. Payment:

Payment shall be made for each completed and acceptable bollard scraped, cleaned, primed, painted and restored in accordance with such bid unit price. Included are costs of furnishing all labor, materials, drop cloths and equipment necessary for preparation of the bollard and completion of painting of the bollard.

ITEM 626 – FURNISH AND INSTALL REDUCED PRESSURE ZONE BACKFLOW PREVENTION
DEVICES OF VARIOUS SIZES INSIDE A BUILDING

1. Description:

Under this item, the Contractor shall furnish and install reduced pressure zone backflow prevention devices of various sizes within buildings where shown on the plans or as directed by the Engineer. Work under each item shall include but not be limited to:

- a. Locating and shutting down existing water service pipe, cutting and disassembly of existing piping as necessary to install the new backflow prevention device.
- b. Furnishing and installing the new reduced pressure zone backflow prevention device complete with pipe, fittings, valves, gravity drain and all appurtenances.
- c. Reassemble the existing piping arrangement, making alterations to the piping, furnishing and installing new pipe, fittings and valves, flushing, disinfecting, and testing, as necessary to restore service to the facility served through the new backflow device.
- d. Furnishing and installing new pipe supports, hangers, brackets and appurtenances necessary to provide a safe, stable installation.
- e. Furnishing Nassau County with written results of all tests on New York State Health Department Test Report Forms.

2. Intent:

It is the intent under this item to provide a reduced pressure zone backflow prevention device at each individual location shown on the drawing and/or where directed by the Engineer.

3. Materials and Installation:

Reduced pressure zone backflow prevention devices shall be Febco Model 825 or 825Y or approved equal. All installations shall meet the Nassau County Department of Health requirements and the Contractor is required to submit four (4) sets of drawings of his proposed installation for approval. Drawings shall show location of devices, indicating distance from existing walls and floors, all fittings, new pipe, pipe support and hanger and bracket installation. Disinfecting and testing shall be in conformity with all current AWWA and Nassau County Department of Health standards.

All devices must be protected from freezing. Test cocks must be positioned to facilitate testing. A gravity drain large enough to receive maximum flow must be provided. Drains cannot be subject to flooding and must be screened.

ITEM 626 – FURNISH AND INSTALL REDUCED PRESSURE ZONE BACKFLOW PREVENTION
DEVICES OF VARIOUS SIZES INSIDE A BUILDING (Cont.)

4. Payment:

Payment shall be made for a reduced pressure zone backflow prevention device furnished and installed and tested, disinfected, complete and ready for continuous use as per approved drawings. Payment will be made in accordance with the unit price bid for:

- | | | | | |
|----------|---|--------|---|---|
| Item 626 | - | 3/4" | - | Furnish and install 3/4" reduced pressure zone backflow prevention device inside a building |
| Item 626 | - | 1" | - | Furnish and install 1" reduced pressure zone backflow prevention device inside a building |
| Item 626 | - | 1-1/4" | - | Furnish and install 1-1/4" reduced pressure zone backflow prevention device inside a building |
| Item 626 | - | 1-1/2" | - | Furnish and install 1-1/2" reduced pressure zone backflow prevention device inside a building |
| Item 626 | - | 2" | - | Furnish and install 2" reduced pressure zone backflow prevention device inside a building |
| Item 626 | - | 2-1/2" | - | Furnish and install 2-1/2" reduced pressure zone backflow prevention device inside a building |
| Item 626 | - | 3" | - | Furnish and install 3" reduced pressure zone backflow prevention device inside a building |
| Item 626 | - | 4" | - | Furnish and install 4" reduced pressure zone backflow prevention device inside a building |
| Item 626 | - | 6" | - | Furnish and install 6" reduced pressure zone backflow prevention device inside a building |
| Item 626 | - | 8" | - | Furnish and install 8" reduced pressure zone backflow prevention device inside a building |

The furnishing and installing of strainers and/or meters shall be paid for under Item 510. Gravity drains shall be paid for under Item 510.

ITEM 627 – FURNISH AND INSTALL DOUBLE CHECK VALVE BACKFLOW PREVENTION
DEVICES OF VARIOUS SIZES INSIDE A BUILDING

3/4", 1", 1-1/2", 2" 2-1/2", 3", 4", 6", 8"

1. Description:

Under this item the Contractor shall furnish and install double check valve backflow prevention devices of various sizes within buildings where shown on the plans or as directed by the Engineer. Work under each item shall include but not be limited to:

- a. Locating and shutting down existing water service pipe, cutting and disassembly of existing piping as necessary to install the new backflow prevention device.
- b. Furnishing and installing the new backflow prevention device complete with pipe, fittings, valves and all appurtenances.
- c. Reassemble the existing piping arrangement, making alterations to the piping, furnishing and installing new pipe, fittings and valves, flushing, disinfecting, and testing, as necessary to restore service to the facility served through the new backflow device.
- d. Furnishing and installing new pipe supports, hangers, brackets and appurtenances necessary to provide a safe, stable installation.
- e. Furnishing Nassau County with written results of all tests on New York State Health Department Test Report Forms.

2. Intent:

It is the intent under this item to provide a double check valve backflow prevention device at each individual location shown on the drawing and/or where directed by the Engineer.

3. Materials and Installation:

Double check valve backflow prevention devices shall be Febco Model 805 or 805Y or approved equal. All installations shall meet the Nassau County Department of Health requirements and the Contractor is required to submit four (4) sets of drawings of his proposed installation for approval. Drawings shall show location of devices indicating distances from existing walls and floors, all fittings, new pipe, pipe support and hanger and bracket installation. All devices must be protected from freezing. Test cocks must be positioned to facilitate testing. Disinfecting and testing shall be in conformity with all current AWWA and Nassau County Department of Health standards.

ITEM 627 – FURNISH AND INSTALL DOUBLE CHECK VALVE BACKFLOW PREVENTION
DEVICES OF VARIOUS SIZES INSIDE A BUILDING (Cont.)

4. Payment:

Payment shall be made for double check valve backflow prevention devices furnished, installed, tested, disinfected, complete and ready for continuous use as per approved drawings. Payment will be made in accordance with the unit price bid for:

Item 627 - 3/4" - Furnish and install 3/4" double check valve
backflow prevention device inside a building

Item 627 - 1" - Furnish and install 1" double check valve
backflow prevention device inside a building

Item 627 - 1-1/2" - Furnish and install 1-1/2" double check valve
backflow prevention device inside a building

Item 627 - 2" - Furnish and install 2" double check valve
backflow prevention device inside a building

Item 627 - 2-1/2" - Furnish and install 2-1/2" double check valve
backflow prevention device inside a building

Item 627 - 3" - Furnish and install 3" double check valve
backflow prevention device inside a building

Item 627 - 4" - Furnish and install 4" double check valve
backflow prevention device inside a building

Item 627 - 6" - Furnish and install 6" double check valve
backflow prevention device inside a building

Item 627 - 8" - Furnish and install 8" double check valve
backflow prevention device inside a building

The furnishing and installing of strainers and/or meters shall be paid for under Item 510.

ITEM 628 – FLOW TESTING OF WATER MAINS

1. Description:

Under this item the Contractor shall shut down various valves in order to isolate a selected water main in a distribution system and shall measure static and residual pressures at various hydrants along the isolated main as directed by the Engineer. The information collected will be used for determining Hazen-William "C" values of the water main and flow rates at various residual pressures.

2. Intent:

The intent of this item is to gain information on the condition of County owned distribution systems by conducting hydrant and main tests in conformance with procedures as specified by the Engineer.

3. Methodology:

Contractor's personnel shall be familiar with the operation of various types of valves, hydrants, and hydrant branch valves. While the number of valves that will need to be closed for isolating a water main could be variable, it is anticipated that the closing of two or three valves would attain the necessary isolation. Static pressures shall be measured at two hydrants along the isolated main, both during flow and non-flow conditions, and residual pressure and flow rate shall be measured at one open hydrant down-gradient of the other two - all hydrants to be common to the same isolated water main. At the conclusion of the test the Contractor shall re-open any valves that were closed and shall close down any open hydrants and replace hydrant caps.

4. Payment:

Payment shall be made for each flow test performed as described above. The Contractor is advised that he may be required to perform these tests during low water demand periods such as before or after regular working hours or on weekends in order to minimize disturbances to the water supply of various buildings and facilities.

ITEM 722-02 - FURNISH AND INSTALL 1.5" - 60" DIAMETER STEEL COUPLING

1. Description:

Under this item the Contractor shall furnish and install couplings 1.5" through 60" in diameter where directed by the Engineer. Work under this item shall include but not be limited to:

- a. The Coupling shall be installed, flushed, disinfected and tested in accordance with AWWA and N.C. Department of Health standards.
- b. The Coupling shall be a full transition coupling with no interchangeable or replacement parts for completing installation on same or different o.d. sizes, out of round pipe, on the following pipe types: ductile iron, cast iron, oversized cast iron, steel, HDPE, pvc, asbestos cement. Shall cover copper piping with a reducer.
- c. Meets and exceeds standards AWWA C-219, NSF61, NSF372. ISO-9001 certified
- d. Trench shall be backfilled and compacted according to Nassau County standard.

2. Intent:

The intent of this item is to install a coupling for the repair of or connection to a water main.

3. Materials and Installation:

Couplings shall be suitable for direct burial service, 'Hymax 2' coupling, manufactured by Hymax Industries, a Mueller Water Product Company, or approved equal.

The coupling shall be a full transition coupling with no interchangeable or replacement parts for completing installation on same or different o.d. Sizes, out of round pipe, on the following pipe types: ductile iron, cast iron, oversized cast iron, steel, HDPE, pvc, asbestos cement. Shall cover copper pipe with a reducer.

End Rings shall be 1.5" – 60" ASTM A283 / A283M grade c steel

Center Rings shall be 1.5" – 60" ASTM a283 / a 283m grade c steel

Gaskets shall be hydraulic-assisted, self-inflated gasket using water pressure, EPDM compounded for potable water. Must meet international standards for contact with drinking water, NSF-61 & NSF-372. NSF-372 covers all carcinogens including lead.

Coating shall be 100% fusion bonded epoxy. Average thickness of 14 mil, meets ns NSF-61 and NSF-372 standards.

Nuts & bolts shall be manufactured using AISI 304 stainless steel & have a rolled thread anti-galling coating to eliminate galling and required not to use anti-seize lube. All nuts & bolts must face the same direction, be positioned on the top of the fitting for ease of installation.

Bridge shall be manufactured using AISI 304 stainless steel.

Spherical Spacers shall be manufactured using AISI 304 stainless steel.

Testing. Hydrostatic and leakage tests shall be conducted in strict accordance with AWWA C219-23, or latest revision.

Transition coupling must contain only 2 bolts for closure on 1.5"-12" and only 4 bolts for 14" - 60". Must have a handle attached to coupling's main body on 4"-12" for ease of installation. Must have centering bolts on 14"- 60" couplings to prevent decoupling (creeping off connection).

Approved coupling must be made in additional configurations including reducers flange adapters, long body, and cathodic protection.

4. Product performance:

1. WORKING TEMPERATURE:	EPDM:	-20°F TO 120°F		
	NBR:	-20°F TO 125°F		
2. CONTINUOUS DYNAMIC DEFLECTION:	UP TO 4° PER SIDE. HYDRAULICALLY			
	-ASSISTED GASKET WITH 2 STAGE SEALING			
3. MAXIMUM OFFSET FOR	1.5" - 3"	4" - 60"		
MISALIGNED PIPE:	0.39"	0.51"		
4. MAXIMUM OUT OF	1.5"	2"-3"	4"-12"	14"-60"
ROUNDNESS:	.08"	.20"	.31"	.051"
5. WORKING PRESSURE:	1.5" - 16"	18" - 24"	26" - 60"	
	260PSI	232PSI	Contact Manufacturer	
6. RATED PRESSURE:	390PSI	350PSI	Contact Manufacturer	
7. WIDE RANGES:	1.5" - 12"	14"-60"		
MINIMUM RANGE	.052"-1.38"	2.10"		

5. Measurement:

Couplings shall be measured for payment for each individual valve installed.

6. Payment:

Payment shall be made for couplings furnished and installed in final position, tested, sterilized and measured as described herein, in accordance with unit price bid in proposal for 2", 4", 6", 8", 10" and 12"- diameter couplings, complete including all labor and materials. Dewatering, backfilling, backfill compaction, testing, sterilization, all tools and jointing equipment necessary for the satisfactory installation complete and ready for continuous use shall be part of this Item. Pavement removal and replacement shall be paid under appropriate item; excavation, under Item 3S.

Approved product must have a minimum 2-year manufacturer's warranty.