SPECIFICATIONS

DUCTILE IRON WATER MAIN AND FITTINGS

Scope:

Under this item, the contractor shall furnish all material, labor, equipment, insurance, etc., necessary to install the ductile iron water main and fittings for the proposed potable water distribution system complete as shown on the plans and as herein specified or as directed by the City.

MATERIALS

A. Ductile Iron Water Main and Fittings – Below Grade

1. Push-On joint pipe shall be thickness class 52, pressure class 200, in conformance of ANSI/AWWA C150/A21.50-02. The Push-On rubber gasket shall conform to ANSI/AWWA C111/A21.11, the national standard for rubber gasket joints.

2. All pipe furnished shall be in 18 and 20 foot nominal lengths. All pipe shall have an outside coating in accordance to ANSI/AWWA C110/A21.10. The outside casting shall be a petroleum asphaltic coating. The coating shall be applied to the outside of all fittings. The finished coating shall be continuous, smooth, neither brittle when cold nor sticky when exposed to the sun, and strongly adherent to the fitting.

3. Cement mortar lining shall conform with the latest revision of ANSI/AWWA C104/A21.4-95.

4. All pipe fittings shall be mechanical joint class 350 compact fittings in accordance to ANSI/AWWA C153/A21.53-00. Fittings could be either cement lined in accordance to ANSI/AWWA C104/A21.4 or have an epoxy coating on the interior/exterior surface for ductile iron fittings in accordance to ANSI/AWWA C116/A21.16-98

5. Fittings shall have distinctly cast on them pressure ratings, nominal diameters of openings and the number of degrees or fraction of the circle on the bends. Ductile Iron fittings shall have the letters “DI” or “Ductile” cast on them. Cast letters and figures shall be on the outside body of the fitting set forth in the latest revision of ANSI/AWWA C110/A21.10-98.

6. All jointing materials shall be as furnished by manufacturer of pipe and fittings and as specified above. All jointing materials shall be in accordance with ANSI/AWWA C111 A21.11-00.

B. Concrete for Thrust Blocks

1. Compressive strength shall be 4,000 p.s.i. minimum at twenty-eight days.

2. Concrete shall be Class C in conformance with Section 914 of the NJDOTStandard Specifications.

Method of Construction:

A. General - All ductile iron pipe shall be installed in accordance with the details shown on the drawings or as directed by the City and all excavation and backfill shall conform to the requirements hereinbefore specified.

B. Submittals - Contractor shall submit two (2) copies of manufacturer's certification stating that the pipe and joint materials ordered are in conformance with these specifications. Certification shall also indicate compliance with all appropriate reference standards listed.

C . Handling - All ductile iron pipe, fittings and accessories shall be new material which has at no time been used for any purpose whatsoever. All pipe, fittings and accessories shall be handled in such a manner to insure delivery to the work site in sound, undamaged condition and conforming in all respects to these specifications. Particular care shall be taken not to injure the pipe coating. No other pipe or material of any kind shall be placed inside of any pipe or fittings at any time after application of the coating.

D. Laying - All pipe shall be thoroughly cleaned of all dirt, excess tar, cement, oil, grease and any other foreign matter before lowered into the trench. All pipe shall be carefully handled to avoid damage while suspended over the trench and before lowering shall be rung with a light hammer to detect faults. After pipe is placed in the trench, care shall be taken to prevent the entrance of dirt or water into the pipe by the use of plugs or bulkheads. At all times when work is not in progress, all open ends of pipes and fittings shall be securely closed to the satisfaction of the City.

Under no circumstances will pipe be laid in water and no pipe shall be laid when trench conditions or weather conditions are unsuitable or unsafe for such work as determined by the City.

All ground water which may be found in the trenches and any water which may get into them by any cause whatsoever shall be pumped or bailed out so that the trench shall be dry during pipe laying period. No water shall be permitted to reach concrete until it has set sufficiently. All water pumped from the trenches shall be disposed of in compliance with the applicable local regulations of the appropriate governing body. The contractor shall provide a minimum of two pumps for each trench opened in wet ground, one operating and one standby.

During installation, upon encountering wet, spongy or other unsuitable material, the contractor shall place crushed stone in the trench for its full width to uniformly support the pipe at the required line and grade. Crushed stone shall be spread in 4-inch layers and compacted. In the event of steam or wetlands crossings, installation of the pipe within these limits shall conform to

AWWA Standard C600-99, Section 4.5, Subaqueous Crossings, the construction plans, and these specifications.

Water mains and sewers generally shall be separated by a horizontal distance of ten (10) feet. If such lateral separation is not possible, the water and sewer pipes shall be in separate trenches, with the sewer pipe at least eighteen (18) inches below the bottom of the water main. At all crossings of sewers and water mains, the top of the sewer lines shall be at least eighteen (18) inches below the bottom of the water main. If such vertical separation is not possible, the sewer shall be encased in six inches of flowable fill, 500 PSI, for a minimum distance of ten (10) feet on either side of the crossing. Ductile iron pipe is to be wrapped with 8 mil polyethylene at area of crossing. In addition, one full length of sewer pipe should be located so both joints will be as far from the water line as possible. Except where necessary in making connection with other pipe lines and as directed by the City, all pipe shall be laid with the bells facing in the direction of the laying.

Slip-on pipe shall be jointed with a circular rubber gasket supplied by the pipe manufacturer conforming to the requirements of USAS A21.11 and Federal Specifications WAP-P-421c. The gasket and gasket seat must be thoroughly cleaned with a clean cloth and the gasket flexed and placed in the socket so that the gasket is seated evenly around the inside of the socket with the heel of the gasket fitting snugly in the retainer seat. A thin film of lubricant shall be applied to the inside surface of the gasket and the plain end of pipe entering to be jointed. The plain end of the pipe shall be carefully aligned and forced into the socket until it makes contact with the bottom of the socket and the first painted guide stripe has disappeared and the second stripe is approximately flush with the bell face. Any joint not coupled to the satisfaction of the City shall be disassembled and re-jointed to the satisfaction of the City.

E. Cutting Pipe - Cutting the pipe for closure pieces or for other reasons shall be done in a neat and workmanlike manner by a method which will not damage the pipe lining. All field cut pipe shall have the cut end tapered back 1/4 inch at an angle of 30 degrees with the centerline of the pipe by use of a coarse file or portable grinder. All cutting of pipe shall be done by means of mechanical cutters of an approved type to insure a uniform pipe end to protect all gaskets and prevent leakage. Cutters must be maintained at the job site at all times.

F. Sheeting and Shoring - Where sheeting, shoring, bracing, or trench boxes are used, they must be designed by a New Jersey Licensed Professional Engineer, paid for by the Contractor. Said Engineer shall provide the Contractor with a certification signed and sealed by him stating that the design of the sheeting and bracing conforms to all applicable requirements of the New Jersey Construction Safety Code and the Occupational Health and Safety Act. Copies of this certification shall be submitted to the Owner's Representative.

Trenches shall, at all times, be properly protected to prevent accidents, caving of the sides of the trench or breaking of the ground outside of the trenches proper or damage to buildings or other structures along the line of construction. Underground structures of all types shall be protected by the Contractor, who shall use all necessary shoring, bracing or other appliances for the protection of the same. Care must be taken not to damage in any way water mains, water service pipes, drain pipes, sanitary or storm water sewers, gas mains, oil mains, electric conduits or other structures encountered. The Contractor must follow the proposed sheeting plans submitted. No deviations may be made from the filed procedure without first submitting a revised sheeting and bracing plan, signed and certified as required for the original submission, by the same licensed Professional Engineer who prepared the original submission.

No shoring shall be left in place unless so authorized by the Owner's Representative.

All sheeting and bracing not to be left in place shall be carefully removed in such a manner as not to endanger the construction or other structures. All voids left or caused by withdraw of sheeting shall be immediately back-filled with well compacted material.

G. Extent Of Trench Opening - The trench for the pipe shall not be opened for a distance of more than 100 feet at any one time. At no time will Contractor be allowed to leave the trench open at the end of a working day.

If concrete is to be installed for pipe encasement, longer lengths of trench may be left open with the Owner's approval provided that all trenching regulations are met and all trenches are properly secured and protected.

H. Back-filling - No back-filling shall be done before the Owner's representative gives permission. After pipes have been have been checked for alignment and bedding, the back-filling may proceed. A sufficient number of men shall be available to spread the backfill in uniform layers.

All backfill material shall be free from cinders, ashes, refuse, vegetable or organic material, excessive clay, boulders, rocks or stones, frozen soil, or other unsuitablematerial.

If excavated material is unsuitable for backfill, as determined by the City, select backfill must be used. Select backfill shall be Standard Soil Aggregate Gradation Designation I-2, consisting of bank-run sand and gravel in accordance with NJDOT specifications.

The initial backfill shall be placed around the upper half of pipe and compacted, by hand or approved mechanical equipment, to avoid damage to or movement of pipe. The trench shall be filled and compacted this way to a depth of 12 inches above the pipe. The remainder of the trench shall be compacted in layers not to exceed 12 inches maximum using a mechanical tamper up to the bottom elevation of the pavement structure.

I. Pressure Test - Test pressure will be 150 p.s.i. The contractor shall test the pipe lines in sections. Section of pipe tested shall not exceed 1,200 feet in total length. Test pressure will not be applied to existing water services. The length of water main under test shall be slowly filled with water and brought to test pressure (at the point of lowest elevation on the section of pipe under test) by means of a pump connected to the pipe in a manner acceptable to the City. The pump, pipe connection and all necessary apparatus, including gauges shall be furnished and paid for by the contractor. All air must be expelled from the pipe line prior to the test period. The test pressure shall be maintained for a period not less than two (2) hours. Pressure test shall be conducted in the presence of the Superintendent, Engineer or other designated representative of the City.

A leakage test shall be conducted concurrently with the pressure test. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to bring pressure back to the initial test pressure of 150 p.s.i. If at any time during hydrostatic test, the line pressure drops more than 5 p.s.i., test shall be considered null and void. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD\sqrt{P}}{\text{----------}}$$

133,200

L = Maximum Allowable Leakage (gal./hr.)
S = Length of pipe tested in feet
P = Average test pressure during leakage test
D = Nominal diameter of the pipe

When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gallons per hour per inch diameter (gal./hr./in.) of nominal valve size will be allowed. When hydrants are in the test section, the test shall be made against the closed main valve of the hydrant.

Should any of these tests on a section of pipe line disclose an inability to maintain the stipulated test pressure, or leakage in an amount greater than that permitted, the Contractor shall, at his own cost and expense, locate and correct any defect and retest same to the satisfaction of the City.

All visible leaks shall be repaired by the Contractor regardless of the amount of leakage or the results of the test.

J. Sterilization - All new water mains shall be sterilized with granular HTH as manufactured by Mathieson Alkali Works or approved equal. The sterilization of the water main shall be done in strict accordance with the manufacturer's instructions and to the satisfaction of the City.

Water shall be fed slowly into the main being treated with chlorine applied to produce a dosage of the following:

1. Contact with a chlorine solution of concentration not less than fifty parts per million (50 ppm) for a minimum contact time of twelve (12) hours.

or

2. Contact with a chlorine solution of concentration not less than twenty parts per million (20 ppm) for a minimum contact time of twenty-four (24) hours.

After sterilization, the main shall be flushed within 24 hours to prevent possible damage to interior of pipe due to prolonged exposure to high concentrations of chlorine. A neutralizing chemical shall be applied to the super chlorinated water to be wasted to neutralize thoroughly the residual chlorine. The contractor must contact the Vineland Water Utility prior to flushing. Main shall be flushed at its extremities until the replaced water tests equal chemically and bacteriologicaly to that of the present source of supply. After flushing the new main, as specified, and following a successful pressure/leakage test, the Contractor shall, at his cost and expense, have the water sampled from the new water main and tested for the presence of Coliform Bacteria and free chlorine residual by a laboratory certified by the State of New Jersey for the analysis of same. Samples shall be collected every 1,200 feet, at the end of the line and at each branch of new water main. The Contractor shall provide the City with two (2) copies of the results of the analysis performed by the Certified Laboratory which shall indicate that the water quality is acceptable for consumption.

Quantity and Payment:

A. Pipe

1. Quantity - The quantity of ductile iron water main for which payment will be made will be the actual, completed laying lengths constructed and satisfactorily tested in accordance with the drawings or as directed by the City, as measured in place.

2**. Payment** - Payment for furnishing the material and constructing in place the ductile iron water main shown on the drawings and as herein specified shall be made at the prices bid per lineal foot in the proposal. The price bid per lineal foot shall include the furnishing of all materials, labor, equipment, tools, testing, insurance, etc. necessary to properly carry out and complete the work including laying and jointing the pipes, removal and disposal of unsuitable material, repairing leaks, pressure testing, disinfection, encasement of sewer mains and/or laterals, installing concrete thrust blocks, retainer glands and or locking gaskets, shoring, de-watering, traffic control, safety signing and pipe support where necessary and all other work incidental thereto and necessary for a complete and satisfactory installation, as determined by the City.

GATE VALVES AND BOXES

Scope:

Under this item, the Contractor shall furnish all material, labor, equipment, insurance, valves, valve boxes, etc., necessary to construct in place, all valves and valve boxes as shown on the plans, as herein specified and as directed by the City.

Materials:

A. Gate valves shall be iron body fully bronze mounted, double disc, parallel seat valves with ends suitable for laying with the class pipe used in the construction of the ductile iron water main. Resilient seat solid modified wedge valves are acceptable as an alternate to the double disc gate valves.

B. All gate valves shall be Mueller Company of Decatur, IL, or previously approved equal make, and shall meet or exceed all applicable AWWA Standards and meet all requirements, standards and operating functions of the City of Vineland Water Utility.

C. All valves shall be gate type and installed complete with all necessary operating mechanisms, valve boxes and appurtenances necessary for the satisfactory operation of same.

D. All buried valves shall be non-rising stem type with 2” square operating nut and adjustable cast iron valve boxes and covers.

E. All wearing parts shall be renewable of solid bronze or faced with bronze securely fastened to the castings. All valves shall have “O” ring stem seals. Parts of the valves of the same size and make shall be perfectly interchangeable with existing valves in the City of Vineland system. Resilient seat modified wedge valves shall have machined seating surfaces. The rubber seat on resilient seat gate valves shall be steel reinforced, molded separately from the disc and be field replaceable.

F. All gate valves shall have the manufacturer's name upon them and all iron work shall be thoroughly cleaned and coated at the shop with suitable coating material. All valves shall be tested for leakage and distortion to a pressure of 330 p.s.i. before shipment.

G. All gate valves **shall open by turning left** (counter clockwise) and the direction of opening shall be plainly marked on the operating mechanism.

H. Valve boxes shall be of cast iron, in two sections, with the upper section adjustable for elevation and with round drop cover marked "Water". The base shall be centered over the valve and shall rest on compacted backfill. The top of the base section shall be approximately on line with operating nut at the top of the valve stem. Valve boxes shall be coated both inside and outside. The entire assembly shall be constructed straight and plumb to the satisfaction of the City.

Method of Construction:

A. Handling, installation, jointing, and testing shall be as specified for Ductile Iron water Main.

B. All valves shall have stuffing boxes tightened if required and shall be opened and closed to see that all working parts are in order and properly operating prior to installation.

C. All gate valves shall be set on blocking to ensure position and to prevent strain on connecting pipe or joints.

D. Valve boxes shall be set directly over the valve in a vertical and plumb position.

E. Backfill shall be placed around the valve box by carefully compacting suitable material in layers not exceeding 6" in depth. Valves shall not be covered until inspected and approved by the City.

F. All valve boxes shall be reset as required before final grading or restoration to the satisfaction of the City. All valve boxes shall be cleaned of all dirt or other foreign material so as to provide ease of operation.

Quantity and Payment:

A. Quantity - The quantity of Gate Valves for which payment will be made will be the actual number constructed in accordance with the Plans and as specified herein or as directed by the City.

B. Payment - Payment for gate valves will be made for the quantity of each size as above determined at the unit price bid for the respective sizes, which unit price shall include the cost of excavation, setting, assembling and jointing the valves complete, shoring, de-watering, testing, pumping, valve box, sterilization, back-filling, adjustment, labor material, equipment, insurance and all else necessary therefor, and all other work in accordance with and incidental thereto.

FIRE HYDRANTS

Scope:

Under this item, the Contractor shall furnish all materials, labor, equipment, insurance, etc., necessary to construct in place all fire hydrants as shown on the plans, as specified herein or as directed by the City.

Materials:

A. All fire hydrants shall be of the type as manufactured by Mueller Company of Decatur, IL. or previously approved equal, shall be of improved AWWA type and shall be equipped with one (1) Storz nozzle and two (2) 2-1/2" hose nozzles.

B. All nozzle thread shall conform to the **VINELAND STANDARD THREAD.**

C. The connection pipe and valve from the tee in the main line to and including the Fire Hydrant shall be mechanical joint and shall be the same type as specified under the respective items elsewhere in these specifications.

D. Fire Hydrant main valve shall be four and one-half inch (4-1/2") in size, or as specified on detail sheet, with a six inch (6") mechanical joint inlet connection.

E. Fire Hydrants shall have the name of the manufacturer, size and year of manufacture cast upon it in raised letters.

F. The main valve of the hydrant shall open against pressure. This valve shall be faced with rubber which shall seat against an accurately machined bronze seat. **The direction of opening shall be left** and shall be cast upon the hydrant head in raised letters.

G. All fire hydrants shall be of such height that the six inch (6") pipe connection shall be made at a depth of four feet (4'). Extension to the fire hydrants constructed may be required to bring the hydrant to proper grade. Any extensions so required shall be paid at the unit price bid for the respective sizes, according to the number actually installed at the direction of the City.

H. All ferrus metal shall be satisfactorily and at all times protected by a durable coating paint. All metal surfaces not buried in the earth shall be left clean and well painted to the satisfaction of the City at the completion of the project. Color shall be **red.**

Method of Construction:

A. All fire hydrants shall be placed at the proper line and grade and shall be set accurately and truly plumb. Contractor shall take all precautions and make every effort to ensure that the interior of the hydrant, valve and drain are clean and free from all obstructions.

B. The fire hydrants shall be anchored to the 6" valves with 3/4" diameter steel rods or with wedge type retainer glands. Steel rods are to be coated with two coats of bitumastic paint after installation.

C. All fire hydrants shall be solid blocked to the undisturbed earth at the end of the trench opposite the water main connection by means of concrete blocking, placed in such a manner as to withstand the thrust of water pressure and with care not to interfere with the proper operation of

the drainage drip valve. All fire hydrants shall be placed on a 3' x 3' x 4" thick concrete pad, consisting of Class B concrete, which shall be constructed on undisturbed earth.

D. A drain of crushed stone shall be constructed at a depth of not less than eighteen inches (18") below the hydrant drain to the satisfaction of the City.

E. All fire hydrants shall be back-filled in the same manner as gate valves and graded to conform as nearly as possible to the appearance of the area as before excavating and to the satisfaction of the City.

F. All fire hydrants shall be set with openings 90 degrees (perpendicular) to the curb line unless otherwise directed by the City.

G. All fire hydrants shall be covered by burlap bags, or other acceptable method or as directed by the City continuously from the time of installation until available for fire protection as determined by the City.

Quantity and Payment:

A. Quantity - The quantity of fire hydrants for which payment will be made will be the actual number constructed in accordance with the plans and as herein specified or as directed by the City.

B. Payment - Payment for fire hydrants will be made for the quantity as above determined at the unit price bid which unit price shall include the cost of excavation, furnishing of all fire hydrants, all materials, tools, labor, equipment, flanged nuts, bolts, glands, gaskets, flanges, drilling, jute, lead, jointing to water mains, back-filling, trenching, shoring, de-watering, testing, sterilization, construction of drains, blocking, rods, painting, insurance, removal and disposal of surplus material, etc., and all else necessary to complete an installation satisfactory to the City.

RESTORATION

Temporary Restoration - All Disturbed Road Areas

A. All temporary restoration shall be placed immediately upon completion of the backfill. **NO TRENCH SHALL BE LEFT WITHOUT TEMPORARY RESTORATION OVERNIGHT.**

B. Temporary restoration shall consist of 2" RR material placed and compacted to conform with the grade of the existing pavement. All temporary restoration shall be maintained in a condition suitable to the City continuously and until final restoration is completed. Quantity and payment for temporary restoration shall be incidental to the unit price bid per lineal foot of ductile iron water main and no separate allowance or payment will considered for temporary restoration.

Final Restoration - Oil and Stone Roadway

A. For openings in gravel and oil and stone roads, clean granular backfill shall be added Eight inches (8") of road gravel (Soil aggregate Type I-5) shall then be added to a level ten inches (10") minimum below the level of the adjacent paved surfaces. A two (2") minimum depth of cold patch shall be placed on the base materials as temporary restoration only.

B. The opening shall be saw cut a minimum of six inches (6") back beyond the perimeter of trench opening and a tack coat applied to all joints. The contractor shall perform the final restoration by removing the 2 inch patch and replacing it with FABC-1, Mix 5 and rolled in place to obtain a smooth pavement surface.

Final Restoration - Asphalt Pavement

A. The opening shall be saw cut a minimum of six inches (6") back beyond the perimeter of the trench opening and a tack coat applied to all joints. The tack coat shall be Cut Back Asphaltic Grade RC-70 or Emulsified Asphalt Grade RS-1 or equal as approved by the City. A minimum of ten inches (10") of backfill shall be removed and the trench compacted. Six inches (6") of compacted crushed concrete shall then be installed. A minimum of two inches (2") of compacted Bituminous Stabilized Base Course (I-2 or I-3) and then two inches (2") of compacted F.A.B.C. Surface Course (I-4 or I-5) shall be constructed in conformance with the Standard Specifications of the New Jersey Department of Transportation.

B. For openings in concrete or asphalt overlays on concrete, reinforced Class C concrete shall be installed at a minimum thickness of six inches (6") or match existing, whichever is greater. The concrete shall be doweled into the existing concrete with Number Six Reinforcing Bars at twelve inches (12") O.C. in all directions. If an asphalt overlay existed over the concrete, then the identical thickness of compacted F.A.B.C. Surface Course (I-4 or I-5) shall be placed over any new concrete repairs. The opening shall be saw cut a minimum of six inches (6")back beyond the perimeter of the trench opening and a tack coat applied to all joints. The tack coat shall be Asphaltic Oil Grade RC-0 or Emulsified Asphalt 2S-2 or equal as approved by the City. A minimum of eight inches (8") of backfill shall be removed and the trench compacted. Six inches (6") of compacted crushed concrete shall then be installed. A minimum of two inches (2") of compacted Bituminous Stabilized Base Course (I-2 or I-3) shall be constructed in conformance with the Standard specifications of the New Jersey Department of Transportation.

Topsoil Restoration:

A. This item shall include the placement, spreading, raking, grading, seeding, liming and fertilizing of a minimum of four inches (4") of topsoil in all disturbed areas as directed by the City and in accordance with all current NJDOT Standard Specifications.

B. Areas around fire hydrants, taps, curb boxes, etc., shall receive topsoil restoration in accordance with all current NJDOT Standard Specifications; however, all costs associated with this work shall be included under the respective bid items (i.e.: fire hydrant, tap, etc.) and no separate allowance or payment will be considered for topsoil restoration.

C: The establishment of permanent vegetative cover such as seeding or sodding on all areas shall be accomplished within 10 days after final grading operations have been completed. Time extensions beyond the 10 day requirement must be requested in writing and are subject to written approval. After the construction phase is complete, permanent vegetation on the areas that have been disturbed shall be reestablished as rapidly as possible. If the completion of the construction activities does not coincide with a season in which permanent vegetation can be started, an interim or temporary program is required. This shall include soil stabilization, mulching or the establishment of filter strips. In any case, sediment and erosion controls shall be installed promptly and their maintenance assured. As a minimum, permanent vegetative cover shall be established by providing the following:

1. Fertilizer: 14 lbs./100 S.F. of 10-20-10 or equivalent
2. Limestone: Shall be equivalent to 50% Calcium plus Magnesium Oxides, and applied at the rate of 90 lbs/1000 S.F..
3. Work lime and fertilizer into the soil as nearly as practical to a depth of 4 inches with a disc, spring tooth harrow, or other suitable equipment. The final harrowing or disking operation should be on the general contour. Continue tillage until a reasonably uniform seedbed is prepared.
4. Inspect seedbed just before seeding. If traffic has left the soil compacted, the area must be re-tilled as above.
5. Permanent seeding (minimum requirements) shall be as follows:

Seed Mixture:

Spreading Fescue	1.0 lbs./1,000 S.F.
Red Fescue	1.0 lbs./1,000 S.F.
Kentucky Blue	2.0 lbs./1,000 S.F.
Perennial Rye	0.6 lbs./1,000 S.F.

Plant between March 1 and May 5 or between August 15 and October 1.

Soil Erosion and Sediment Control

This item refers to the establishment and maintenance of all soil erosion and sediment control measures that are required during this contract as specified in the current Standards for Soil Erosion and Sediment Control in News Jersey and section 212 of the N.J.D.O.T. Standard Specifications for Road and Bridge Construction, 1996.

These standards are published by the New Jersey Association of Conservation Districts and are distributed by the New Jersey Soil Conservation Districts. Copies of these standards may be obtained locally from the Cumberland Soil Conservation District Office located at P.O. Box 144, Route 77, Deerfield, New Jersey 08313.

The Contractor shall be responsible for the application for, preparation of and implementation of Soil Erosion and Sediment Control Plans that are acceptable to and approved by the Cumberland Soil Conservation District. **The contractor shall be responsible for all permit fees and costs associated with the preparation, submittal, approval and implementation of the Soil Erosion and Sediment Control Plan.** Prior to the start of any work which would require any soil erosion or sediment control devices, the Contractor shall submit to the Superintendent two (2) copies of the approved Soil Erosion and Sediment Control Plan.

Payment for this item will be made on a Lump Sum basis in accordance with the project areas, described under Project Site, at the unit price bid for this item. Payment for this item will be made only after proof of the required permit has been provided to the City.

TAPS

Water Taps:

A. Taps shall be installed to individual lots at the location and sizes as directed by the Superintendent or other designated agent of the City. All taps shall be installed complete

including corporation stop, appropriate continuous length of pipe, curb stop and curb box. Curb box shall be adjusted to match existing grade prior to Restoration.

B. All tap materials shall be of the same make, grade and manufacture as the materials currently used by the City of Vineland Water Utility. Cut sheets for proposed materials shall be submitted to the City for approval prior to the installation of any tap.

C. Taps may be pushed, jacked or bored. No taps shall be installed by the open cut method without prior approval by the City.

D. Payment will be made for taps based on the actual number installed multiplied by the unit price bid for this item.

E. Taps on each road or area shall be installed immediately upon successful completion and testing of the water main. No taps shall be installed prior to receipt by the City of Vineland Water Utility of written notice prepared by a New Jersey Certified laboratory that the water quality is acceptable for consumption. Accordingly, no taps shall be installed without the prior approval of the Superintendent or other designated agent of the City.