STANDARD CONSTRUCTION SPECIFICATIONS

CITY OF WHITE PLAINS, NEW YORK

DEPARTMENT OF PUBLIC WORKS

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DEPARTMENT OF PUBLIC WORKS

CITY OF WHITE PLAINS, N.Y.

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SECTION I

GENERAL CONDITIONS

10. SCOPE OF WORK

10.1 General

This Contract is for the construction of all the items shown on the Plans and included in the Specifications. All plant, materials, equipment, supplies, labor, transportation, fuel, power and water necessary to complete the work properly in accordance with the Plans and the Specifications shall be provided at the agreed unit prices.

The work shall be complete, and all work, materials, and services not expressly called for in the Specifications, or not shown on the plans, which may be necessary for complete and proper execution of the Contract shall be performed, furnished and installed by the Contractor at the agreed unit and lump sum prices, with no additional cost to the City.

11. TEMPORARY SERVICES

11.1 General

It is understood that, except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete and deliver the work within the specified time.

11.2 Water

The Contractor shall provide, at said Contractor's own expense, the water supply necessary for drinking purposes as well as water required for the work.

11.3 Sanitary Facilities

The Contractor shall provide, at said Contractor's own expense, ample washroom and toilet facilities. He shall maintain these facilities in strict conformity with the regulations of the State and County Departments of Health for the use of his employees and the Engineer. Upon completion of the work, all sanitary facilities shall be removed.

11.4 Light and Power

The Contractor shall provide, at said Contractor's own expense, temporary electric lighting and power service and facilities as required for the proper prosecution and inspection of the work. If, in the opinion of the Engineer, the facilities provided by the Contractor are inadequate, the Contractor will not be permitted to proceed with any portion of the work affected thereby.

All wiring for electric light and power shall be installed and maintained in accordance with all City ordinances, the National Electric Code and the Board of Fire Underwriters. Unless otherwise permitted, circuits separate from lighting circuits shall be used for all power purposes.

11.5 Heating

The Contractor shall provide, at said Contractor's own expense, temporary heat as required on account of work being carried on during cold weather and to prevent damage to the work. Heat shall be furnished when and as directed by the Engineer.

12. COOPERATION WITH OTHERS

12.1 General

The City reserves the right to let other contracts in connection with the work set forth in this Contract.

The Contractor's attention is specifically directed to the fact that because of the work on other contracts he may not have exclusive occupancy of the territory within or adjacent to limits of the Contract.

The Contractor will be required to cooperate with other contractors and the owners of the various utilities and to coordinate and arrange the sequence of his work to conform with the progressive operations of the work under other contracts. Cooperation and adjustments with such other contractors is essential to properly coordinate the construction efforts of all contractors, utility owners, and sub-contractors engaged in the work within and adjacent to the construction area of this Contract.

In case of interference between the operations of the utility owners and different contractors, the Engineer will be the sole judge of the rights of each contractor and the sequence of work necessary to expedite the completion of the entire project and in all cases his decision shall be accepted as final.

13. TRAFFIC REGULATION

13.1 General

Unless otherwise specified, the Contractor shall regulate and maintain traffic, post construction and detour signs and do such work as may be set forth on the plans or ordered by the Engineer for the proper safeguarding and handling of all traffic.

As set forth on the plans or as ordered by the Engineer, streets along the line of work may be closed or traffic shall be maintained in one or both directions. Residents along the line of work or persons having business with such residents shall have safe means of ingress and egress at all times. Access to all driveways shall be maintained at all times. Fire, police and emergency personnel and equipment shall have safe and adequate access at all times to all portions of the line of work. When so directed, the Contractor shall provide approved safe and adequate temporary bridging over newly-built work to protect the work from any injury which might result from traffic.

Unless otherwise specified, no direct payment will be made for regulating and maintaining traffic, compensation for same being considered as included in the prices bid for the various items of the contract.

The Contractor shall be responsible for maintaining all public streets and walks within the job site, so that the City and/or land owner can easily sand, salt, plow and remove the snow or ice with normal snow removal equipment. Should the surface be such that snow and ice can not be easily removed, the Contractor shall perform such services at his expense. Failing to do so, he shall reimburse the City for said work, including any costs arising from damage and injury to equipment.

13.2 Signs

Before construction is started and during the progress of the work, the Contractor shall prepare and erect such approved construction and detour directional signs at each end of the contract and at other points as may be directed.

13.3 Protection Devices

The Contractor shall supply and maintain all lights, flares, torches, fences, barricades, steel plates, flagmen, and/or other protection devices necessary to adequately protect traffic during construction.

14. NUISANCES

14.1 General

The Contractor shall avoid injury to persons and, so far as possible, all odors, smoke, noise, nuisance, vibration or disturbances, as from machinery, pumping, compressing, blasting, blacksmithing or trucking, and he shall be liable for all damages therefrom or for violation of any and all related present and future local laws, ordinances or regulations or otherwise. Approved silencers shall be installed on noise making equipment.

14.2 Sanitary

The Contractor will be required to strictly observe the sanitary rules and regulations of the State and County Departments of Health.

He shall prohibit and prevent the committing of nuisances on the site of the work, or on adjoining property. When directed by the Engineer he shall summarily discharge any and every employee who commits a nuisance. Sanitary precautions shall at all times be satisfactory to the Engineer.

14.3 Pollution

The Contractor shall make provisions for settling all pumpage water, so as not to cause muddy or polluted water to impair the quality of water in water courses or that entering water courses. Rigid compliance with this will be enforced to the extent of stopping all work if necessary.

15. AREA TO BE OCCUPIED

15.1 Right-of-way

Right-of-way necessary for carrying out the provisions of this Contract will be obtained by the City The Contractor shall confine his work to area within this right-of-way, and shall be responsible for damages resulting from trespassing upon adjacent lands, or damage to adjacent lands or property resulting from action of his agents and employees.

15.2 Adjacent Property

When any work is done on grass plots on public or private property, the Contractor shall take off the sod and topsoil over the excavation and place them separately to one side of the excavation, carefully preserving such sod and topsoil. After the pipe is laid or the appurtenance is built, and the excavation is backfilled and thoroughly tamped, the topsoil and sod shall be replaced carefully in the same condition as they were when the work was begun; and the ground shall be well seeded over the excavation and where the excavated material was piled with seed mixture satisfactory to the Engineer. If required, the ground shall be rolled with a roller of suitable weight satisfactory to the Engineer.

15.2 Adjacent Property (Cont'd)

Unless otherwise specified or ordered, any and all property monuments and marks, hedges, bushes, shrubs, flower gardens, rock gardens, etc., along the line of work shall be carefully protected by the Contractor at said Contractor's own expense; if required to be moved, with the approval of the Engineer, because of interference with the proper prosecution of the work, they shall be carefully moved and preserved in an approved manner and subsequently returned in good condition to their original location, any damage or losses being made good by the Contractor at said Contractor's own expense. No trees, tree roots or limbs may be cut or removed by the Contractor unless so ordered by the Engineer.

Unless otherwise specified, any masonry walls, steps or other structures along the line of work shall be carefully protected by the Contractor at said Contractor's own expense; such structures, if required to be removed, with the approval of the Engineer, because of interference with the proper prosecution of the work, will be replaced by the Contractor in a condition equal to or better than their original condition and subject to the approval of the Engineer.

When carting materials across private property or grass plots, great care shall be exercised by the Contractor not to cut up or damage such property more than is necessary to do the work. All the damage done shall be repaired and made good by the Contractor at said Contractor's own expense and to the satisfaction of the Engineer.

15.3 Public Property

Whenever the work, or any portion thereof, is to be performed on lands, property or facilities owned or maintained by the State of New York and the County of Westchester or under the Supervision of any Department, Commission or Authority of said State or County, the Contractor shall perform such work in accordance with the regulations and conditions imposed by the Department, Commission or Authority thereof having jurisdiction.

16. DISPOSITION OF MATERIALS AND RESTORATION

16.1 General

The Contractor shall take every precaution against injuries to persons or damages to property.

The Contractor shall store his apparatus, materials, supplies, and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any other contractors nor with the public interest and to the satisfaction of the Engineer.

16.1 General (Cont'd)

All excavated material and the materials of construction shall be placed so as to leave open and free all roadways, crosswalks, sidewalks, hydrants, water gates, drainage structures, fire alarm boxes and mail boxes. Fire, police and other emergency personnel and equipment shall have safe and adequate access at all times to all portions of the line of work.

16.2 During Construction

Where directed by the Engineer, in built-up districts and in streets where traffic conditions render it necessary, the material excavated from the first 50 feet of trenches shall be removed by the Contractor as soon as excavated, and the material subsequently excavated, if suitable for the purpose, shall be used to backfill the trenches in which the work has been constructed, and neither the excavated materials nor the materials of construction shall be stored on the roadways or sidewalks.

The Contractor shall not remove from the line of work any sand, gravel or other earth excavation which may be suitable for refilling the excavations or for other use as directed, except where directed by the Engineer and after excavations have been completely refilled.

All surplus earth or unclassified excavation which is left over after excavations have been backfilled and which is not to be used for other purposes as directed shall be regarded as the property of the City unless otherwise ordered by the Engineer and shall be deposited by the Contractor where directed within the limits of the City of White Plains, unless otherwise specifically provided in the plans and/or specifications, and there spread by the Contractor to such lines and grades as may be furnished by the Engineer. All such work shall be done by the Contractor at said Contractor's own expense.

Rock which is not required for backfill will be considered to be the property of the Contractor unless otherwise specified and such rock as cannot be used to backfill trenches must be carted away from the work and away from all private property.

The Contractor shall clean up and remove all refuse, rubbish, scrap materials, surplus materials and debris caused by his operations to the end that at all times the site of the work shall present a neat, orderly and workmanlike appearance. The work shall not be considered complete until cleaned up to the satisfaction of the Engineer.

16.3 Restoration

Where and as directed by the Engineer, the Contractor shall replace all surfaces disturbed and shall restore paving, curbing, sidewalks, driveways, gutters, shrubbery, fences, sod and other surfaces disturbed to a condition equal to or better than that which existed before the work began, furnishing all labor, material, and equipment necessary thereto.

16.3 Restoration (Cont'd)

The Contractor shall, at said Contractor's own expense and to the satisfaction of the Engineer, clean up and correct unsightliness, inconvenience, hazard or damage caused by water, mud, stones, dust, rubbish, construction debris, traffic, workmen or the general operations. Wheel tracks, paths, puddles, damage growth, ragged edges, undesirable spoil from excavation and rough slopes are to be removed, obliterated, corrected, graded, leveled, patched or smoothed. All areas adjacent that have been damaged or that require regrading shall be smoothed and worked to make the project area blend into existing conditions.

Unsightliness extending onto adjacent private or public property is to be taken care of to the satisfaction of both the adjacent owner and the Engineer, and no private agreements allowing a waiver of clean-up will be recognized.

All sewers, drains, ditches and brooks downstream from the project are to be inspected and cleaned to the satisfaction of the Engineer. All low areas are to be filled to eliminate any tendency to catch and hold water.

17. SAFEGUARDING WORK

17.1 General

The Contractor shall take all precautions to prevent damage to the work by storms or by water entering the site of the work directly or through the ground. In case of damage by storm or water, the Contractor shall make such repairs or replacements or rebuild such parts of the work as the Engineer may require in order that the finished work may be completed as required by the plans and specifications. All damaged work shall be replaced and/or rebuilt at said Contractor's own expense.

The Engineer may suspend construction operations at any time when, in his judgment, the conditions are not suitable or the proper precautions are not being taken, whatever the weather may be, in any season.

17.2 Existing Structures

The items and structures which are to be built and installed under this Contract are located in public streets or other City-owned property and on rights-of-way in private or public property, as shown on the Plans. The utilities, (gas, water, telephone, power, drainage, sanitary sewers, etc.) shown on the Plans are those known to exist. The locations of these utilities as shown on the Plans, are not guaranteed, nor is it guaranteed that all utilities are shown.

17.2 Existing Structures (Cont'd)

The Contractor shall not disconnect, obstruct or in any other way interfere with the operation of existing facilities deemed necessary for the safety of the general public (sewers, water-lines, hydrants, street lights, traffic control devices, fire alarm boxes, etc.) until such time as he has placed in operation adequate, permanent, or temporary substitute facilities.

All existing gas, water and steam pipes, telegraph, telephone and electric poles or wires, telephone, electric and fire alarm conduits, sewers, drains, culverts, fire hydrants, railway tracks, buildings, and other structures which do not, in the opinion of the Engineer, require to be removed or changed in location, shall be carefully supported, maintained in operation and protected from injury by the Contractor, and in case of injury, they shall be restored by the Contractor, at said Contractor's own expense, to as good a condition as that in which they were found before the beginning of the work. The Contractor shall notify all utility companies seventy-two (72) hours prior to the start of his operations.

The Contractor shall, at said Contractor's own expense, sling, support, shore up and secure in place all pipe or conduits, without injury, and provide for and maintain, by means of suitable temporary channels, the flow of drainage and water courses, whether on the surface or underground which may be interrupted during and by progress of the work. All works of drainage intercepted or disconnected shall, at the Contractor's own expense, be restored and made good or taken down and rebuilt to the extent made necessary by the new work, and all offensive materials immediately removed from them.

When pipe, conduits or sewers are removed from trenches, leaving dead-ends in the ground, the Contractor shall carefully plug or bulkhead such ends with brick and mortar, or in such other manner as may be satisfactory to the Engineer, and without additional compensation therefor.

The Contractor shall operate no facilities in the local water supply system without written consent from the Engineer.

17.3 Use of Portion of Work

Whenever, in the opinion of the Engineer, any portion of the work is completed or is in acceptable condition for use, it shall be used for the purpose intended, as may be directed, and such use shall be considered a test or trial and shall not be held in any way an acceptance of that portion of the work used, or as a waiver of any of the provisions of these specifications and contract.

Necessary repairs or renewals made in any portion of the work under instructions from the Engineer, due to defective materials or work, lack of care or protection, or otherwise, pending final acceptance of the entire work, shall be done by the Contractor, without extra cost to the City.

18. FINAL INSPECTION

18.1 General

Upon notification by the Contractor to the City of White Plains of the completion of the work to be performed under this contract, the Engineer will carefully inspect all work done by the Contractor. The Contractor shall replace all unsatisfactory material and work, make all necessary adjustments to grade and remove all excess material and deposits, as directed by the Engineer.

If so ordered by the Engineer, underground work shall be uncovered and rebuilt in an approved manner at said Contractor's own expense. If it is found, after uncovering any pipe or other work at the order of the Engineer, that, in the opinion of said Engineer, no defect exists or that the defect was not due to any fault of the Contractor, the expense of this work shall be borne by the City and shall be paid for as extra work.

SECTION II

MATERIALS OF CONSTRUCTION

20. GENERAL

20.1 General Requirements

Unless otherwise specified, all materials used in the work shall be new and shall meet the requirements described herein.

20.2 Other Specifications

All references to standards or specifications of the American Society for Testing Materials (ASTM), the American Standards Association (ASA), the American Water Works Association (AWWA), the New York State Department of Transportation (NYSDOT) or the Federal Specifications shall mean in the case of each reference the most recent standard or specification or such later tentatives acceptable to and approved in writing by the Engineer.

The abbreviations set forth in the foregoing paragraph are used throughout these Specifications to designate the society, association or agency set forth in full therein.

20.3 Substitutions

Wherever the term "State" or any State department, division, office, laboratory or employee is referred to in the New York State Department of Transportation (NYSDOT) Specifications in a manner indicating a proprietary or supervisory interest in this Contract, it shall be understood that the City of White Plains and its respective departments, offices and employees shall be substituted therefor in accordance with the following schedule:

For STATE	Substitute "The City of White Plains"
For DEPARTMENT DIVISION	Substitute "Department of Public Works of the City of White Plains"
For SUPERINTENDENT DEPUTY SUPERINTENDENT	Substitute "Commissioner of Public Works of the City of White Plains"
For CHIEF ENGINEER DEPUTY CHIEF ENGINEER DISTRICT ENGINEER ENGINEER IN CHARGE	Substitute "Engineer"
For COMPTROLLER	Substitute "Commissioner of Finance of the City of White Plains"
For LABORATORY OR TESTING LABORATORY OF THE STATE DEPT. OF PUBLIC WORKS OR TRANSPORTATION	Substitute "Such testing laboratory as may be designated by the Commissioner of Public Works of the City of White Plains"

20.4 Inspection and Testing

All materials proposed to be used in construction shall be subject to examination and required tests before acceptance. Tests may be performed in any laboratory designated by the Engineer. Representative preliminary samples of materials shall be submitted by the Contractor, when required, for examination and test. All materials used shall be the equal of the sample examined or tested and if, after approval, the quality of the material changes so that it does not conform to the original sample tested, the Contractor will secure the necessary materials from other sources of supply and he shall have no claim for additional payment on account of such requirements.

All materials,processes of manufacture and finished pipe shall be subject to inspection and approval by the Engineer, or his authorized representative, who shall at all time have immediate access to all places of manufacture and shall be provided with full facilities for determining whether the pipe is being manufactured in accordance with these specifications.

The Tyler Standard Screen Scale Sieves shall be used on fine aggregates for concrete and mortar sands. The U.S. Standard Screen sieves meeting ASTM Designation E11 shall be used on other materials requiring gradation tests.

20.5 Expense of Testing

The expense of testing materials for use under this contract will be paid for by the City, except that the costs of retests made necessary by the failure of samples or specimens to meet the specified requirements shall be paid by the Contractor, and shall be deducted from payment due or becoming due from partial or final estimates.

The Contractor, at said Contractor's own expense, shall furnish and deliver to the testing site such samples and specimens as may be selected by the Engineer for tests or retests. The Contractor, when directed by the Engineer, shall place said samples and specimens in the testing machine in the correct position for testing. Notwithstanding any of the provisions of the NYSDOT, ASTM, ASA or AWWA Specifications, such samples and specimens shall be furnished, delivered and so placed in such quantities as may be required to clearly establish, in the opinion of the Engineer, the acceptability of the materials and the conformance of said materials with the Specifications.

20.6 Defective Materials

All materials not conforming to the requirements of these Specifications shall be considered as defective and all such materials, whether in place or not, shall be rejected and shall be removed immediately from the work unless otherwise permitted. If not removed, when so ordered, the Engineer may cause such rejected material to be removed by outside parties, at the expense of the Contractor.

20.7 Unspecified Materials

Whenever materials are to be used for which no specification is provided, materials of the best grade and first quality shall be used. The current standard specifications of ASTM shall, in general, be used. The prior written approval of the Engineer must be secured before these materials are incorporated in the work.

20.8 Engineer to be Sole Judge

All material becoming a part of the permanent construction as called for in the contract documents shall be subject to the approval of the Engineer, who shall be the sole judge of their quality and their suitability for the purposes for which they are to be used.

20.9 Shop and Working Drawings

The Contractor shall submit for approval shop or working drawings of structural details, piping layout, materials fabricated especially for this project, materials for which drawings are specifically requested, and equipment.

Such drawings shall show the principal dimensions, the weight, structural and operating features, space required, clearances, etc., depending on the subject of the drawings. When it is customary to do so, or when the dimensions are of particular importance, the drawings shall be certified by the manufacturer as correct for this project.

No material shall be purchased or fabricated for equipment or other features until the Engineer has certified that the shop or working drawings conform to the contract requirements. All materials and work involved in the construction shall then be as represented by said drawings.

No work shall be done upon any part of a structure of which the design or construction is dependent upon the design of equipment or other features for which approval is required. until such approval has been given.

All shop or working drawings shall be submitted in quadruplicate (unless otherwise specified) to the Engineer through the Contractor. Only drawings which have been checked and corrected by the material fabricator should be submitted. The Contractor shall be responsible for the prompt submission of all shop or working drawings, so that there shall be no delay to the work due to the absence of such drawings. Additional prints of approved drawings shall be furnished as required.

The approval of shop and working drawings, etc., will be general and shall not relieve the Contractor from the responsibility for details of design, dimensions, etc., necessary for proper fitting and construction of the work required by the contract.

21. MATERIAL CLASSIFICATION

21.1 Cement, Sand and Mortar

M-1 Portland Cement

a. Standard Portland Cement

Unless otherwise specified or ordered, all cement used shall be Portland Cement of known and approved brands that shall conform to the "Specifications for Portland Cement", ASTM Designation C150-Type II.

b. High-Early Strength Portland Cement

High-early strength Portland Cement shall conform to the "Specifications for Portland Cement", ASTM Designation C150-Type III.

c. Air-Entraining Portland Cement

Air-entraining Portland Cement shall conform to the "Specifications for Air-Entraining Portland Cement", ASTM Designation C175-Type IIA.

d. Delivery in Bags

Cement that is to be mixed on the site of the work shall be delivered to the site of the work in paper bags containing 94 lbs. (net weight) of cement per bag. One bag of cement shall be considered as containing one cubic foot of cement. Bags varying from the specified weight by more than five per cent shall be rejected.

e. Storage

All cement shall be stored in a weather-tight building having a wooden floor or platform raised above the ground which will protect the cement from dampness. All cement stored for a period of time exceeding five months from the date of manufacture shall not be used until retested.

M-2 Air-Entraining Admixtures

a. Acceptable Brands

Air-entraining admixtures shall conform to the "Specifications for Air-Entraining Admixtures for Concrete", ASTM Designation C260.

The following brands of air-entraining admixtures are acceptable:

(1) "Darex" as manufactured by the Dewey and Almy Chemical Co. of Cambridge, Mass.

M-2 Air-Entraining Admixtures (Cont'd)

a. Acceptable Brands (Cont'd)

(2) "Portite" as manufactured by the Askania Co. of Irvington, New York.

No other brand may be used without the prior written approval of the Commissioner.

b. Entrained Air

When air-entraining Portland Cement, or any air-entraining admixture, is specified and used in any Portland Cement concrete, such concrete shall have an air content of not less than three (3) per cent nor more than six (6) per cent, with a desired average of between four and one-half (4-1/2) and five (5) per cent.

Air-entraining admixtures, when specified and used, shall be added to the concrete at the batching plant only under the supervision of the Engineer.

Determination of the amount of entrained air in the concrete shall be made by use of an approved air meter by the Engineer.

M-3 Mineral Filler

a. General

Mineral filler shall conform to the requirements set forth under the heading "Mineral Filler" in Part II, Section 8 of the NYSDOT Specifications.

M-4 Sand

a. For Concrete, Mortar, Grout, and Asphaltic Concrete

Sand for concrete, mortar, grout and asphaltic concrete shall conform to the requirements set forth under the headings of "Fine Aggregate Details", the table entitled "Type of Fine Aggregate", NYSDOT Specifications, with the exception that only sand known as clear, sharp, washed Long Island sand will be allowed for use in concrete or mortar. Sand coming from local pits will not be allowed for use in concrete or mortar unless specially authorized in writing by the Engineer.

b. For Cushion and Backfill

Sand for cushion and backfill shall conform to the requirements set forth under the heading "Cushion Sand" in Part II, Section 6, M3 of the NYSDOT Specifications.

M-5 Water

a. General

Water shall be clean and shall not contain any oil, acid, alkali, salts, vegetable matter, organic matter or other deleterious substances.

b. Reimbursement of Cost

When taken from hydrants of the City of White Plains, the Contractor will reimburse the City of White Plains the cost thereof.

M-6 Mortar

a. General

Mortar, unless otherwise specified, shall be composed of one (1) part Portland Cement and two (2) parts of sand, by volume.

Hand mixing will be permitted only when, in the opinion of the Engineer, the amount of mortar to be used makes machine mixing undesirable. When hand mixing is used, the ingredients must first be thoroughly mixed dry, in a tight box, after which the proper quantity of clean water shall be gradually added and then the materials shall be hoed or worked until a uniform mixture is secured. Admixtures may be added only with the prior written consent, and under the direction, of the Engineer.

No greater quantity of mortar is to be prepared than is required for immediate use, and it shall be worked over constantly with hoe or shovel until used. No Mortar shall be re-tempered, and none shall be used more than one and one-half (1½) hours after mixing. All mortar containing cement which must be left upon stopping work shall be discarded.

M-7 Grout

a. General

Grout, unless otherwise specified, shall be composed of one (1) part Portland Cement and three (3) parts of sand, by volume. Mixing shall be done in the manner set forth hereinabove for mortar.

21.2 Coarse Aggregates and Stone

M-10 Crushed Stone

a. General

Crushed stone for uses outlined in Paragraphs "b" to "e" inclusive hereinunder shall conform to the requirements set forth under the heading "Crushed Stone" in Part II, Section 6, M4 of the NYSDOT Specifications.

The sizes of crushed stone shall conform to the said NYSDOT Specifications set forth in the table headed "Percentage By Weight Passing the Following Square Openings".

b. For Concrete

Only crushed stone of types A and B, sizes 1 and 2 shall be used in general purpose concrete. Size 3 crushed stone shall be used only in concrete pavement.

c. For Asphaltic Macadam

Only crushed stone of types A and B shall be used for asphaltic macadam.

d. For Underdrainage

Only crushed stone of types A and B, sizes 2 or 3, shall be used for underdrainage.

e. Uniform 3/4" Stone

Only crushed stone of types A and B shall be used, and it shall be graded so that 100% by weight shall pass a sieve having 1" openings and 80% to 100% by weight shall be retained on a screen having 5/8" openings.

M-11 Run-of-Bank Gravel

a. General

Run-of-bank gravel for fill and foundation shall be of hard durable stone, well graded, and the particles shall be of such size that all will pass through a screen with two (2) inch openings with not more than 10% passing a 200 mesh sieve and shall be satisfactorily graded.

If, at any time during the work, the gravel fails to maintain suitable proportions of coarse and fine particles, the Contractor shall be responsible for the addition of selected material and for the satisfactory manipulation to produce a material meeting the above requirements. No segregation of large or fine particles will be allowed but the gravel as spread shall be well graded with no pockets of fine material.

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M-12 Stone for Masonry

a. General

Stone shall be sound, durable, properly quarried, free from reeds, rifts, seams, laminations and minerals which, by weathering, would cause discolorations or deterioration. Each stone shall be cleaned and dampened by either wetting and draining or by sprinkling to the satisfaction of the Engineer, and shall be damp and free from frost or other coating when laid.

Stone for the construction of tree wells and walls shall be roughly rectangular, sound, field or quarry stone, whichever specified. At least four-fifths of the stones shall be greater than one-third cubic foot in volume. Exposed face of each stone shall have a minimum height of 2 inches and a minimum width of 10 inches.

M-13 Stone for Curb

a. Bluestone

Bluestone curb shall be of first quality Quarry Split North River Bluestone. Each piece shall be not less than 4 feet long, 4 inches thick and 16 inches in depth, matched when set, and approved by the Engineer. The front face shall be straight and dressed true to a depth of ten inches, the ends from top to bottom shall be truly squared so as to form close and even joints, and the front so laid as to present an unbroken line. The back of the curb shall be pitched true to a depth of two inches. The top of the curb shall be set to a level as directed by the Engineer.

b. Granite

Granite for curbing shall be of good quality New England granite from a quarry which shall have been approved by the Engineer. The granite shall be medium grained, shall have an even distribution of constituent minerals and shall be of uniform quality and texture and without seams, scales, or discolorations showing disintegration.

Granite curbing shall be of the widths and depths shown on the plans, of a length not less than 4 feet for straight curb nor less than 2 feet, 6 inches for radius curb, except where closures are required, in which case the lengths shall be as needed. The top surface shall be sawn to a horizontal plane. Arris lines at top and bottom of the face shall be pitched straight and true. All stone shall be jointed square with the planes of the face and top. The face shall be quarry split and for a distance of 8 inches down from the top shall have no projections or depressions of more than 1/2 inch.

M-13 Stone for Curb (Cont'd)

b. Granite (Cont'd)

measured from the vertical plane of the arris or pitch line. Any projections beyond this 1/2 inch shall be cut off. Stone shall be set so as to form close and even joints.

Unless otherwise specified, granite radius curb shall be laid when the radius of the curb is up to and including 90' - 0".

Granite bullnose curb shall be laid when the radius of the curb is up to and including 2' - 6".

c. Fieldstone

Fieldstone curb shall be granite or approved local quarried granite not less than 4" thick, 13" deep and 18" long.

21.3 Portland Cement Concrete

M-15 Portland Cement Concrete

a. Material

Portland Cement concrete shall consist of Portland Cement, sand, crushed stone, water and admixture. All of these materials shall conform in every respect to the requirements contained in these Specifications under the appropriate headings, and to the requirements set forth for Portland Cement Concrete in Part II, Section 7 of the NYSDOT Specifications, except that no gravel or slag will be used for coarse aggregate. The same brand and color of Portland Cement shall be used throughout the work.

COMPOSITION OF CONCRETE

Description	Class of Conc.	Portland Cement Type II	Portland Cement Type IIA	Slump Test (Min-Max)	Water/Cem Ratio (Maximum Gal./Sack)	Course Agg. Size (No.)
STRUCTURAL						
Reinforced Walls	A		X	2 1/2"-4"	5 1/2	1-2
Masonry Wall Foundations	A	X		2"-3"	6-3/4	1-2
Reinforced Slabs	A		X	2"-3"	6	1-2
Head Walls	A		X	2"-3"	5 1/2	1-2
PAVEMENTS & CURBS						
Reinforced Pavements	A		X	1"-2 1/2"	5 1/2	1-3
Pavement Foundations	B	X		1"-2 1/2"	6	1-3
Driveways	A		X	1"-2 1/2"	6	1-2
Sidewalks	A		X	1 1/2"-3"	6	1-2
Curbs	A		X	2"-3"	6	1-2
Curb Foundations	B	X		1"-2 1/2"	6-3/4	1
Gutters	A		X	1"-2 1/2"	5 1/2	1-2
Islands or Malls	A		X	2"-3"	6	1-2
FOOTINGS, PIERS & BASES						
Footings	A	X		2"-3"	6	1-2
Piers	A	X		2"-3"	6	1
Pole Bases	A		X	2"-3"	5 1/2	1-2
MISCELLANEOUS						
Steps	A		X	2"-3"	6	1-2
Pipe Cradles	B	X		2"-3"	6-3/4	1-2
Thrust Blocks	B	X		1"-2 1/2"	7 1/2	1-2
Miscellaneous	A	X		1"-2 1/2"	7 1/2	1-2
Miscellaneous	B	X		1"-2 1/2"	7 1/2	1-2

Note: Where no other mix has been specified in the plans or in the specifications the Contractor shall use Class A concrete mix. The materials shall be actually measured, not estimated, in the given proportions as specified in Part II, Section 7 of the NYSDOT Specifications, entitled "Portland Cement Concrete".

21.4 Asphaltic Material

M-20 Asphalt Cement

a. General

Asphalt cement shall conform to the requirements set forth for Item No. 64 in "Table I - Asphalts" in Part II, Section 6, M5 of the NYSDOT Specifications.

b. Subsealing Asphalt Cement

Subsealing asphalt cement shall conform to the requirements set forth for Item 71C in "Table I - Asphalts" in Part II, Section 6, M5 of the NYSDOT Specifications.

M-21 Cationic Asphalt Emulsion

a. General

Cationic asphalt emulsion shall conform to the requirements set forth for RS-3K emulsified asphalt (quick-setting high viscosity grade) in the NYSDOT Specifications.

M-22 Asphaltic Concrete

a. Material

(1) General

The material furnished under this Specification shall be a hot-laid plant-mixed asphaltic concrete. The material shall be manufactured by mixing the hot aggregates with hot asphalt cement.

(2) Aggregate

The aggregates to be used in each mix shall be passed through a dryer and heater so as to result in a temperature, after drying, not less than 350°F., unless otherwise authorized by the Engineer. After the aggregates have passed through the dryer they shall be screened to the proper sizes and these graded sizes shall be placed in separate storage bins over the mixer unit.

(3) Asphalt Cement

The asphalt cement used in each mix shall meet the requirements set forth in these Specifications for "M-15 Asphalt Cement".

M-22 Asphaltic Concrete (Cont'd)

b. Mixes

The paving mixtures used shall meet the following requirements for grading and mix composition for the mixtures shown in the plans, set forth in these Specifications or specified in writing by the Engineer.

ASPHALTIC CONCRETE GRADING AND MIX COMPOSITION TABLE

Sieve Size	Mix #1 (Plant Mix Mac)	Mix #2 (Binder)	Mix #3 (Std. top)	Mix #4 (Other top)	Mix #5 (Asbes. Asph)	Mix #6 (Berms)
2"	100	-	-	-	-	-
1 1/2"	75-100	-	-	-	-	-
1 1/4"	-	100	-	-	-	-
1"	55-80	95-100	-	-	-	-
3/4"	-	70-100	-	-	-	-
1/2"	23-42	50-85	100	100	-	100
3/8"	-	35-60	85-100	90-100	-	85-100
1/4"	5-20	-	-	-	-	-
No. 4	-	25-45	54-78	70-90	100	60-85
1/8"	2-15	-	-	-	85-100	-
No. 10	-	16-30	40-52	56-72	65-85	45-60
No. 20	-	-	-	-	45-65	-
No. 40	-	-	15-38	20-50	25-45	20-45
No. 80	-	-	6-25	8-32	7-18	6-25
No. 200	-	0-5	3.5-7.5	6-10	2-9	0-5
%Asbestos	-	-	-	-	2	3-4
%Asph.Cem.	2.5-5.0	4.5-5.5	5.5-6.5	6.5-8.0	7.5-9.5	6.0-7.5
Mix.Temp.°F.	205-245	250-300	275-325	275-325	290-340	325-375

The percentages shown above are the limits of the amount of combined aggregate (including filler) passing each sieve size, by weight. The permissible variations from the mixtures set forth above are:

Total Passing	No.	4	sieve	-	plus	or	minus	6%
"	"	10	"	-	"	"	"	4%
"	"	40	"	-	"	"	"	3%
"	"	200	"	-	"	"	"	2%
Asphalt Cement								0.3%

b. Mixes (Cont'd)

In general, the mixes set forth above will be used for the following purposes:

Mix No. 1 - Plant mix macadam base course
Mix No. 2 - Binder course and thick wedging course
Mix No. 3 - Top course in street paving and parking lots, and thin wedging course
Mix No. 4 - Top course for uses other than Mix No. 3, i.e. walks, playgrounds, etc.
Mix No. 5 - Thin top course in street paving
Mix No. 6 - Berms

c. Mixing

The aggregate shall be introduced into the mixer at temperatures between 325°F and 375°F and dry mixed for at least 15 seconds before the asphalt cement is added. The asphalt cement shall be introduced into the mixer at temperatures between 250°F and 300°F. The mixing period, after the introduction of the asphalt cement, shall be at least 45 seconds, or as long as may be necessary to completely and uniformly coat all aggregate particles with the asphalt cement. A shorter mixing time may be authorized by the Engineer provided uniform coating is obtained.

d. Transportation

The paving mixtures shall be transported from the paving plants to the work in tight vehicles previously cleaned of all foreign materials and, when directed by the Engineer, each load shall be covered with canvas or other suitable material of sufficient size and thickness to protect it from weather conditions. No loads shall be sent out so late in the day as to interfere with spreading and compacting the mixture during daylight. The mixing shall be delivered within 20°F of the temperature specified by the Engineer.

When the air temperature is near the minimum temperature permitted for laying the pavement, the Contractor shall insulate the sides of steel bodied vehicles used for the transportation of plant mixed material.

M-23 Premoulded Expansion Joint

a. General

Premoulded expansion joints shall conform to the requirements set forth under the heading "Premoulded Bituminous Joint" in Part II, Section 6, M36 of the NYSDOT Specifications.

M-23 Premoulded Expansion Joint (Cont'd)

a. General (Cont'd)

In general, and unless otherwise specified or ordered, premoulded expansion joints shall be of the following dimensions:

Concrete Sidewalks - 1/2" thick, and a depth 1/4" less than the thickness of the concrete sidewalk.

Concrete Driveways - 1/2" thick, and a depth 1/4" less than the thickness of the concrete driveway.

Concrete Pavements - 3/4" thick, and a depth 1/2" less than the thickness of the concrete pavement.

Premoulded expansion joints shall be furnished in strips having a length equal to the width of the section of pavement or walk being built. When used along curbs, gutters, headers, in longitudinal joints, etc., the premoulded expansion joints shall be furnished in flat strips of lengths of at least 8 feet.

21.5 Pipe, Conduit and Appurtenances

M-30 Cast Iron Pipe

a. General

Pipe shall be centrifugally cast in metal molds in 18 foot or 20 foot lengths and shall conform to ASA Specifications A 21.6. Unless otherwise specified, pipe used for water mains shall be Class A and pipe used for sanitary sewer and storm water drains shall be Class B. The pipe shall be of sizes from four to twenty-four inch (4"-24") nominal inside diameter inclusive and shall be of one of the following thickness classes.

	Class A Pipe (Water)		Class B Pipe (Sewage and Drainage)	
Pipe Dia.	Thickness Class	Wall Thickness (inches)	Thickness Class	Wall Thickness (inches)
4"	23	0.38	22	0.35
6"	24	0.44	22	0.38
8"	25	0.52	22	0.41
10"	25	0.56	22	0.44
12"	26	0.65	22	0.48
14"	26	0.69	23	0.55
16"	27	0.79	23	0.58
18"	27	0.85	23	0.63
20"	27	0.91	23	0.67
24"	27	0.99	24	0.79

b. Linings and Coatings

(1) Water Pipe

The inside of the pipe shall be cement lined in accordance with ASA Specifications A 21.4 except that the thicknesses of the cement lining shall be twice those set forth in the above mentioned specifications.

The outside of the pipe shall be coated with coal-tar-pitch varnish as specified in the 1908 AWWA Specifications for Cast Iron Water Pipes and Special Castings.

(2) Drainage and Sewage Pipe

The pipe shall be completely coated inside and out with coal-tar-pitch varnish as specified in the 1908 AWWA Specifications for Cast Iron Water Pipes and Special Castings.

M-30 Cast Iron Pipe (Cont'd)

c. Joints

(1) Types

Unless otherwise specified, all pipe used shall be furnished with bell and spigot ends for assembly by either (1) prepositioning a continuous molded rubber ring gasket in an annular recess in the pipe socket and forcing the spigot end of the entering pipe into the socket, or (2) pouring a calking joint. All water service lines shall be made by pouring a calked joint.

d. Joint Material

The jointing material for both cast iron water and sewer pipe shall conform to the requirements set forth in M-39 of these specifications, entitled "Joint Material".

e. Fittings

(1) Water

Unless otherwise specified, cast iron fittings shall conform to one of the following specifications:

Poured Calked Joints
a) AWWA Specification C100, Class D bell and spigot.
b) ASA Specification A21.10, bell and spigot, Class 250, in sizes 4" - 14" and Class 150 in sizes 16" - 24".

Push-on Joints
a) The body thickness and radii of curvature for gray iron push-on joint fittings shall conform to ASA A21.10 , Class 250 in sizes 4" - 14" and Class 150 in sizes 16" - 24". The rubber gasket joint shall conform to those sections of ASA A21.11 pertaining to "Push-on Joints."

All fittings shall be provided with lugs for clamping.

The inside fittings shall be cement lined in accordance with ASA Specification A21.4, except that the thicknesses of the cement lining shall be twice those set forth in the above-mentioned specifications. The outside of the fittings shall be coated with coal-tar-pitch varnish as specified in the 1908 AWWA Specifications for Cast Iron Water Pipes and Special Castings.

(2) Sewer

Fittings shall conform to AWWA Specification C100 for Class D, cast iron bell and spigot fittings for poured calked joints.

The fittings shall be completely coated inside and out with coal-tar-pitch varnish as specified in the 1908 AWWA Specifications for Cast Iron Water Pipes and Special Castings.

M-31 Cast Iron Soil Pipe For Service Lines

a. General

Unless otherwise specified, cast iron soil pipe and fittings for sewage and drainage service lines shall conform to the "Specifications for Cast Iron Soil Pipe and Fittings", ASTM Designation A74, and shall be uncoated, sound, cylindrical and smooth; free from cracks, and sand holes or other defects; of uniform thickness; and of the grade known to commerce as "Extra Heavy" (XH). The size, weight and maker's name must be cast upon each length of pipe.

Pipe, including the hub, shall be in 5 foot laid lengths and shall weigh not less than the following average weights per lineal foot.

INSIDE DIAMETER	WEIGHT PER LIN. FT.
2"	5.0 lbs.
3"	9.0 lbs.
4"	12.0 lbs.
5"	15.0 lbs.
6"	19.0 lbs.
8"	30.0 lbs.
10"	43.0 lbs.
12"	54.0 lbs.
15"	75.0 lbs.

M-32 Copper Tubing

a. General

Copper tubing shall conform to the "Specifications for Seamless Copper Water Tube", ASTM Designation B88-Type K.

M-33 Galvanized Steel Pipe

a. General

Galvanized steel pipe and black finish steel pipe shall conform to the "Specifications for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe", ASTM Designation A 53.

M-34 Malleable Iron Fittings

a. General

Malleable iron fittings shall conform to the "Standard Specifications for Malleable Iron Flanges, Pipe Fittings, etc." ASTM Designation A 338.

M-35 Vitrified Tile Pipe

a. General

Vitrified tile pipe shall be either standard strength vitrified clay tile pipe, which shall conform to the "Specifications for Standard Strength Clay Sewer Pipe", ASTM Designation C 13; or extra strength vitrified clay tile pipe, which shall conform to the "Specifications for Extra Strength Clay Pipe", ASTM Designation C200. The pipe shall be supplied in laying lengths of not more than five (5) feet.

M-36 Reinforced Concrete Pipe

a. General

Reinforced concrete pipe shall be either standard strength reinforced concrete pipe, which shall conform to the design requirements of Table III of ASTM Specification C 76 "Specifications for Reinforced Concrete Culvert, Storm Drain, and sewer Pipe"; or extra-strength reinforced concrete pipe, which shall conform to the design requirements of Table IV of ASTM Specification C 76. Reinforced concrete pipe shall conform to all other requirements of ASTM Specification C 76 with the following exceptions set forth below in subdivisions "b" to "h" inclusive.

b. Lengths

All pipe shall be furnished in the following lengths:

4 ft. or 6 ft. lengths	all pipe whose inside diameter is either 12 inches or greater than 30 inches.
4 ft.,6 ft. or 8 ft.lengths	all pipe whose inside diameter is from 15 inches through 30 inches.

c. Joints

All pipe shall have tongue and groove joints with the exception that pipe less than 24 inches in internal diameter may have full or modified bell and spigot joints.

d. Basis of Acceptance

Notwithstanding any of the provisions of ASTM Specification C 76, the Engineer shall have the right to base acceptance on any or all of the methods or results specified therein without prior designation in the contract documents.

e. Concrete Strength Requirements

When the quality of the pipe is determined in whole or in part, at the discretion of the Engineer, by tests of concrete cylinders in accordance with ASTM Specifications A 39 " Method of Test for

M-36 Reinforced Concrete Pipe (Cont'd)

e. Concrete Strength Requirements (Cont'd)

Compression Strength of Molded Concrete Cylinders", compression tests of such cylinders shall show an average strength at 28 days of not less than the concrete strength requirements set forth in these specifications for the size and class of pipe concerned, and not less than 60 per cent of said specified strength requirement at 7 days when Portland Cement conforming to that required in ASTM Specification C 76 is used.

f. Minimum Age for Use

No pipe shall be laid in the work until at least 14 days after date of manufacture, unless otherwise authorized in writing by the Engineer, and until the acceptability of said pipe has been established to the satisfaction of the Engineer.

g. Facilities for Inspection

When so ordered by the Engineer the Contractor shall cause suitable holes to be cut in such sections of the finished pipe as desired, so that a proper inspection may be made of the quality and placement of the reinforcement.

h. Causes for Rejection of Pipe

In addition to the provisions of ASTM Specification C 76, pipe shall be subject, at the discretion of the Engineer, to rejection on account of any of the following:

(1) A single end-crack that does not exceed the depth of the joints but which is present in more than 10 per cent of the pipe inspected;

(2) Spalls deeper than one-half the depth of the joint or extending more than 4 inches around the circumference; and spalls less than one-half the depth of a joint or extending less than 4 inches around the circumference but which are present in more than 10 per cent of pipe inspected;

(3) Exposure of circumferential reinforcement when said exposure would indicate misplacement of reinforcement.

M-37 Porous Concrete Pipe

a. General

Porous Concrete Pipe shall conform to the requirements of the NYSDOT Specifications set forth for M22G "Porous Concrete Pipe Underdrain".

M-38 Conduit

a. Asbestos Cement

Asbestos cement conduit shall be 3" diameter "Transite", as manufactured by the Johns-Manville Co., or approved equal. Connections shall be made with plastic couplings.

b. Concrete

Concrete conduit shall be 4" diameter precast concrete electrical duct, as manufactured by the Concrete Conduit Corp., Inc., of Flushing, N. Y., or approved equal. It shall be furnished in four foot lengths with 1" minimum wall thickness and shall be joined together with plastic couplings.

c. Galvanized Steel Conduit

Galvanized steel rigid conduit and fittings shall be new and un-used material, each conduit shall bear the manufacturer's trademark and the approval stamp of the Underwriters Laboratories, Inc. The length of the conduit shall be 10 feet including coupling and each end shall be reamed and threaded.

M-39 Joint Material

a. General

Where a substitute joint is authorized and is used in place of the specified joint, the Contractor shall not be entitled to additional compensation for the use thereof unless such substitute has been specifically ordered by the Engineer, in which case the Contractor will be allowed excess cost of substitute joint where an excess cost is involved.

b. Cast Iron Pipe for Water and Sewer Lines

Cast iron water and sewer line joints may be made with either "Tyton" push-on joints, "Hydro-tite" as manufactured by the Hydraulic Development Co., lead or an approved equal.

Where "Tyton" push-on joints are used, two (2) silicone bronze wedges are to be inserted in a horizontal plane at each joint.

Where "Hydro-tite" joints are specified, the Contractor may, at his own option, use either lead, "Hydro-tite" or an approved equal.

Where lead joints are specified, the Contractor will not be allowed to substitute another type of joint, under any condition. The lead shall be Type I conforming to Federal Specification QQ-L-156, Amendment 1, for Lead; calking. All water and sewer service lines shall be a leaded calked joint.

M-39 Joint Material (Cont'd)

c. Vitrified Tile Pipe

Where jointite joints are specified, the Contractor shall use "Jointite" as manufactured by Pacific Flush Tank Company, or an equal approved by the Engineer. Ex-cell (XL) or G-K may be allowed as substitutes for "Jointite", but no other substitute compound offered for use in the Place of "Jointite" will be allowed except after submission to such tests as are ordered by the Engineer, who shall be the final judge as to its acceptability for use in the work.

d. Reinforced Concrete Pipe

Where portland cement mortar joints are specified, or when poured cement joints are specified, no substitutes will be allowed except upon special authorization of the Engineer.

M-40 Hydrants

a. General

Each hydrant shall be list 90-B as manufactured by the Rensselaer Valve Company, with a 5" valve opening, a 6" hub inlet, 5-1/2 foot trench depth and shall turn left (counterclockwise) to open. Each hydrant shall have a 1-1/2" pentagon weather shield nut, two 2-1/2' hose nozzles and one 5" steamer nozzle. All nozzles shall have National Standard Threads.

Finish coat on cap and head shall be red enamel. Finish coat on standpipe to a point approximately 3" below ground flange shall be yellow enamel. City of White Plains standard colors and shades for fire hydrants shall be used.

M-41 Gate Valves

a. General

All gate valves shall be iron-body, bronze-mounted, double-disk gate valves with flanged or bell ends, as indicated on the plans. Both bell-end and flanged valves shall be of the non-rising stem type, conforming to the 125-lb. American Standard. Gate valves shall conform to the AWWA Tentative Standard Specifications for Gate Valves for Ordinary Waterwork Service, Designation C-500 insofar as applicable. In addition, they shall conform to the following requirements:

1. Face-to-face dimensions of flanged-end valves shall conform to American Standard Face-to-Face Dimensions of Ferrous Flanged and Welding End Valves (ASA B16.1) for 125-lb., Cast Iron Valves.

M-41 Gate Valves (Cont'd)

2. Gate rings shall be riveted to the gates with suitable bronze rivets, unless the grooves in the gates are of suitable dovetail construction.

3. Stuffing box follower bolts shall be of steel, and the nuts shall be of bronze.

4. O-ring stuffing boxes may be used.

5. Hand wheels and operating nuts shall be turned counterclockwise to open the valves. Hand wheels shall have the word OPEN cast thereon to indicate the direction of opening. All valves 24' and larger in size shall have hand wheels. Each hand wheel shall have a 2" x 2" operating nut of standard height integrally cast on top of it.

6. Valves 16" and larger in size shall have spur or bevel gears, as appropriate to their setting. All gears shall be enclosed with gear cases of the extended type and have suitable provision for lubrication.

7. Valves 16" and larger shall be provided with rollers or trunnions, tracks, and scrapers if and as required by the above-mentioned AWWA Specifications.

8. Bypasses shall be provided as indicated on the plans.

9. A description of all valves the Contractor proposes to install, together with shop drawings, shall be submitted to the Engineer for review and approval within thirty (30) days after the award of the Contract.

10. The Contractor shall submit to the Engineer an affidavit from the manufacturer that the valves furnished comply with the standards mentioned above and that the valves have passed the leakage and operational tests.

b. Tapping Valves and Sleeves

Unless otherwise specified, tapping valves shall be of the calked type with hub end for cast iron branch main equal to Mueller Co. Style #H-662 with "O" ring seals. Tapping sleeves for cast iron pipe shall be calked type, Class 125 outlet flange equal to Mueller Co. Style #H-610.

M-42 Valve Boxes

a. General

Each valve box shall be a sliding "Buffalo" type and shall be made of cast iron (Heavy Pattern), having a minimum interior diameter of 5-1/4". They shall have a base of the proper size to fit the valve upon which it is installed and shall have a drop cover marked "WATER".

21.6 Landscaping Material

M-50 Topsoil

a. General

Topsoil shall be a natural fertile agricultural soil, capable of sustaining vigorous plant growth. It shall be uniform composition free of subsoil, stones, sticks, roots, weeds, material toxic to plant growth and other extraneous matter and shall not be delivered in a frozen or muddy condition. Topsoil shall have an acidity range of PH 5.0 to PH 7.0 and contain not less than six per cent (6%) organic matter, Mechanical analysis shall be as follows:

Passing	Retaining On	Percentages
1" screen	- - -	100%
1" screen	¼" screen	No more than 3%
1/4" screen	No. 100 U.S.S. mesh	40%-60%
No. 100 U.S.S.	(Very fine sand, silt clay)	40%-60%

M-51 Grass Seed

a. General

The seed used shall be fresh, reclaned seed of the latest crop, machine mixed in the following proportions by weight, and meeting the following standards of pure live seed content. The tolerance for P.L.S. (purity x germination) shall be those called official and tabulated on Page 5, U.S. Department of Agriculture Bulletin No. 480.

Illahee Fine Leaf Red Fescue - 50%

Pelo Perennial Rye Grass - 30%

Common Kentucky Bluegrass - 20%

The seed shall be of high grade commercial stock of the most recent year's crop, and in no case shall exceed one-half of one per cent (0.5%) weed content. All of these grass seeds shall show by test at least ninety per cent (90%) pure seed and eighty per cent (80%) germination. The quality and type of seed shall be as specified above or approved equal.

All grass seed shall be delivered in standard size bags of the vendor, showing weight, analysis and name of vendor. It shall be stored in such a manner that its effectiveness will not be impaired.

M-52 Sod

a. General

All sod furnished for use in the work shall conform to the requirements set forth under the heading "Sod" in Part II, Section 6a, M59 of the NYSDOT Specifications.

M-53 Trees and Shrubs

a. General

All trees and shrubs furnished shall conform to the requirements set forth under the heading "Trees, Shrubs and Vines" in Part II, Section 6, M60 of the NYSDOT Specifications.

All plants shall be typical of their species or variety and shall have a normal habit of growth and shall be first quality, sound, healthy, vigorous, well branched and densely foliated. They shall be free of disease, insect pests, eggs, or larvae, and shall have healthy, well furnished root systems.

M-54 Materials for Protection

a. General

Materials for protection of plants and trees shall conform to the requirements set forth under the heading "Materials for Protection of Plants" in Part II, Section 6a, M61 of the NYSDOT Specifications.

21.7 Miscellaneous Metals

M-60 Steel Reinforcement

a. General

Steel reinforcement shall conform to the requirements set forth under either the heading "Bar Reinforcement for Cement Concrete" in Part II, Section 6, M17, or the heading "Wire Fabric Concrete Reinforcement" in Part II, Section 6, M17AB, of the NYSDOT Specifications.

M-61 Iron Castings

a. General

Iron castings shall conform to the requirements set forth under the heading "Iron Castings" in Part II, Section 6, M8, of the NYSDOT Specifications.

M-62 Chain Link Fence

a. Galvanized

Galvanized chain link fencing shall conform to the requirements set forth under the heading "Materials" of Item 106L of the NYSDOT Specifications.

b. Aluminum

Aluminum chain link fencing shall conform to the requirements set forth under the heading "Materials" of Item 106A "Aluminum Chain Link Fencing" of the NYSDOT Specifications.

M-63 Bumper Rail

a. General

Galvanized steel bumper rail shall be 10 guage "Armco Flex-Beam Guardrail" complete with splice bolts, post bolts, nuts and washers as manufactuered by Armco Drainage and Metal Products, Inc., or approved equal.

M-64 Wrought Iron Bars

a. General

Wrought iron bars shall conform to the Specification for "Rolled Wrought Iron Shapes and Bars", ASTM Designation A-207.

M-65 Galvanizing

a. General

Where materials are required to be galvanized, they shall be galvanized in accordance with the requirements set forth under the heading "Galvanizing and Galvanized Sheets", in Part II, Section 6, M19 of the NYSDOT Specifications.

21.8 Miscellaneous

M-70 Timber and Lumber

a. General

Timber and Lumber shall conform to the requirements set forth under the heading "Stress Graded Timber and Lumber" in Part II, Section 6, M27 of the NYSDOT Specifications.

b. Preservative

Where specified the wood preservative shall conform to the requirements set forth under the heading "Wood Preservative - Oil Borne" in Part II, Section 6, M28C of the NYSDOT Specifications.

M-71 Brick

a. Common

Common brick shall conform to the "Specifications for Sewer Brick (Made from Clay or Shale)", ASTM Designation C32 - Grade MA, except that the maximum absorption shall be 16 per cent (average of 5 bricks) and 20 per cent (individual maximum).

b. Face

Face brick shall conform to the "Specifications for Facing Brick (Solid Masonry Units made from Clay or Shale)", ASTM Designation C216 - Grade SW.

M-72 Concrete Block

a. General

(1) Solid

Concrete block shall conform to the "Specifications for Concrete Masonry Units for Construction of Catch Basins and Manholes", ASTM Designation C139.

(2) Hollow Core

Concrete block shall conform to the "Specifications for concrete masonry units, Solid Load-Bearing" ASTM Designation C145.

M-73 Calcium Chloride

a. General

Calcium Chloride shall be in the form of flakes and shall conform to the "Specifications for Calcium Chloride", ASTM Designation D98.

The calcium chloride shall be delivered in waterproof paper bags of an approved type. The name of the manufacturer, the approximate net weight and the percentage of calcium chloride ($CaCl_2$) guaranteed by the manufacturer shall be plainly marked on each bag.

M-74 Paint

a. General

Paint and painting procedures shall conform to the requirements set forth under the headings of "M18A Paints and Painting Materials" and "Painting" in Part II, Section 6 and 8A of the NYSDOT Specifications.

SECTION III

CONSTRUCTION METHODS AND PAYMENT ITEMS

30. EXCAVATION AND BACKFILL

30.1 General

30.11 General Excavation

30.111 General Requirements

The Contractor's attention is directed to Section I of these Specifications, entitled "General Conditions" and Section II of these Specifications, entitled "Materials of Construction". Set forth therein are provisions for placement of excavated material, disposal of surplus material, traffic control and materials of construction.

The Contractor's attention is directed to Item I of these Specifications, entitled "Clearing and Grubbing". All clearing and grubbing operations will be done in accordance with the provisions of Item 1. No direct payment for clearing and grubbing will be made unless bids are specifically requested in the Proposal for Item 1.

The Contractor shall remove all rock, earth and other material of any nature whatsoever required by the plans and/or as ordered by the Engineer. He shall dispose of this material as required by the various sections of these Specifications.

Topsoil shall be removed before other excavation is commenced and stock-piled and/or placed as directed.

30.112 Cutting Paved Surfaces

When excavations are to be made in paved surfaces, the pavement and/or sidewalk shall be cut ahead of the excavation by means of pneumatic, saw cutting or other suitable tools to provide a clean, uniform edge with minimum disturbance of remaining pavement and/or sidewalk.

Where a new reinforced concrete pavement or pavement foundation will abut existing concrete pavement, the edges of the pavement shall be cut vertically. Where steel reinforcing exists in the adjacent existing pavement or foundation, said reinforcing shall be exposed for the full 1'0" cut-back and this exposed reinforcement shall be used to splice the steel reinforcement in the new pavement or foundation.

If pavement is removed in large pieces, it shall not be mixed with other excavated material, but shall be disposed of away from the site of the work before the remainder of the excavation is made, unless otherwise specified or permitted by the Engineer.

30.113 Unauthorized Excavation

The pay limits for all excavations allow for forms, bracing and other construction equipment required to build the items and structures as shown on the Plans and as specified.

Excavation beyond the pay limits shown by the Plans and Specifications, or given by the Engineer, shall be at the Contractor's expense. The Contractor shall pay any cost necessary to restore the area to its original condition or fill the excavation with concrete, or good compacted material as may be ordered by the Engineer to bring the excavation to the intended grade.

30.114 Unsuitable Subgrade

After excavation has been made to the depth specified on the contract drawings, and the subgrade material is found to be unsatisfactory to the Engineer, the Contractor will be required to excavate to a greater depth and place concrete, or approved fill material as directed. The Contractor will be paid for this additional excavation and fill material at the prices bid for the various items of the contract.

30.115 Grading

Grading operations shall not be started until the Engineer is satisfied that sufficient equipment is available to perform the work properly. Grading operations shall not be performed from November 1, to April 1, except under such special conditions as directed in writing by the Engineer.

30.116 Disposal of Water

The Contractor shall at all times keep all excavations free from water while work is being done in them. The water from the excavations shall be disposed of in such a manner as will not cause injury to the public health, public property, work contemplated or in progress, surfaces of the streets, nor cause any interference with the use of the same by the public. The disposal of this water shall be done in a manner satisfactory to the Engineer.

Newly laid masonry shall be protected from damage resulting from dewatering operations by the use of canvas, tar-paper or other methods as may be approved. No water shall be allowed to run through masonry or pipes except with the approval of the Engineer.

The Contractor shall furnish at his own expense all necessary material and machinery for pumping, bailing, or otherwise expelling any water which may be found or shall accumulate in the trenches. The Contractor shall at all times have at the work site sufficient pumping machinery ready for immediate use. The Contractor shall receive no additional compensation for removing water from excavations.

30.117 Quick Sand

When treacherous ground, such as quick sand or running sand is encountered, the Contractor shall perform the work in a manner approved by the Engineer. If ordered by the Engineer, the Contractor shall work day and night, with such safety precautions as the Engineer may direct. The Contractor shall receive no additional compensation for the above work, except for working beyond the normal work day, which will be paid for as extra work.

30.12 Rock Excavation

30.121 General Requirements

The Contractor shall excavate rock to the lines and grades indicated on the Plans or as ordered. He shall dispose of the excavated material as specified or as ordered. Payment for work done beyond the pay limits specified will not be made unless ordered by the Engineer.

30.122 Definition

The word "rock" wherever used as the name of an excavated material shall mean boulders and pieces of concrete or masonry exceeding one-half cubic yard in volume or solid ledge rock which, in the opinion of the Engineer, requires for its removal drilling and blasting, or wedging, sledging, barring, or breaking up with a power-operated tool. No soft or disintegrated rock which can be removed with heavy excavating equipment; no loose, shaken, or previously blasted rock or broken stone in rock fillings or elsewhere, and no rock exterior to the maximum pay limits, which may fall into excavations will be measured or allowed for payment.

30.123 Shattered Rock

If, in the course of rock excavation, the rock below grade is shattered due to over drilling or over blasting, and the Engineer considers such shattered rock to be unfit for foundations, the shattered rock shall be removed and the excavation backfilled with concrete, screened gravel or crushed stone, as the Engineer directs. All such removal and backfilling shall be done by and at the expense of the Contractor.

30.124 Blasting

Where rock encountered in cuts requires drilling and blasting, all necessary precautions shall be exercised to preserve the rock in the finished slope in a natural undamaged condition, with the surface remaining reasonably straight and clean. Blast holes shall be drilled at the inclination of slope along the line of proposed finished slope and in the adjacent areas. An approved system of relief or delayed blasting shall be employed. The spacing of the blast holes and the method of delayed blasting required will be dependent upon the quality and the structure of the rock encountered and the method of blasting used in approaching the slope. The Contractor shall adjust his operations to obtain the required slope conditions, as called for on the plans.

30.124 Blasting (Cont'd)

The drilling and blasting must be conducted with all possible care. All blasting operations shall be conducted in strict accordance with existing ordinances and regulations relative to rock blasting and the storage and use of explosives. Any rock excavation within five (5') feet of a water or gas main twenty inches (20") or less in diameter, and within ten feet (10') of a water or gas main more than twenty (20") inches in diameter, shall be done with very slight charges of explosives, and the utmost care shall be used to avoid disturbing the main.

No blasting shall be done within forty (40') feet of a recently laid pipe or ten (10') feet of an uncovered gas or water pipe.

All pipes, conduits or structures shall be carefully protected from the effects of blasts, and any damage done to them by blasting shall be promptly repaired by the Contractor at his own expense. Sufficient warning shall be given to all persons in the vicinity of the work before blasting. The site of the blast shall be adequately covered with heavy timbers, blasting mats or some other devices to prevent damage from flying rock. The time of blasting and the manner and size of charges must be satisfactory to the Engineer. The blasting shall be done only by experienced and licensed blasters.

The Contractor shall be liable for all damage, to persons or property, caused by blasting operations.

30.125 Explosives

The Contractor shall keep explosives on the job only in such quantity as may be needed for the work under way and only during such time as they are being used. Not more than fifty (50) pounds of dynamite shall be kept on hand at one time at any one place. He shall notify the Engineer, in advance, of his intention to store and use explosives. Explosives shall be stored in a secure manner and separate from all tools. Caps or detonators shall be safely stored separately at a point over 100 ft. distant from the explosives. When the need for explosives has ended, all such materials remaining on the site of the work shall be promptly removed from the premises.

In addition to observing all municipal ordinances and State and Federal laws relating to the transportation, storage, handling, and use of explosives, the Contractor shall conform to any further regulations which the Engineer may deem necessary in this respect.

30.13 Unclassified Excavation

30.131 General Requirements

Unless otherwise specified, unclassified excavation shall include the excavation and removal of all material of any nature whatsoever, whether earth, rock, boulders, masonry, muck, concrete, old pavements, pavement foundations or any other material. The Contractor shall dispose of this material in a manner prescribed by the various items of these specifications. Unless otherwise ordered, topsoil shall be removed before any other excavation is commenced and stockpiled and/or placed as directed.

30.14 Earth Excavation

30.141 General Requirements

The Contractor shall excavate earth to the lines and grades indicated on the plans or as ordered. He shall dispose of the material as specified or as ordered.

Payment for work done beyond the pay limits specified will not be made unless ordered by the Engineer. Earth excavation shall include excavation of all materials except as provided for "Rock Excavation" and shall include but not be limited to so called muck, hard-pan, soft shale, loose disintegrated or decomposed ledge rock, old macadam, topsoil and sod.

30.142 Additional Excavation

Whenever the Engineer, as the result of unforeseen conditions arising during the progress of the work, shall order the grade of a pipe or its location, or the grade or location of any other structure under construction, changed from that previously established on the plans or from a location previously ordered by him, or shall order the raising, lowering or alteration of any existing pipe line or structure, or shall order test-holes to be dug, the additional earth excavation occasioned by such changes, alterations or test-holes, shall be considered as included for payment under Item 4 entitled, "Additional Earth Excavation".

30.15 Trench Excavation

30.151 General Requirements

All trenches shall be excavated to the depths required so as to provide a uniform and continuous support for the pipe or structure on solid and undisturbed ground.

Trenching may be done with excavating machinery except in such places where work performed in this manner will injure trees, buildings or existing utilities or structures, or when the use of machinery is specifically forbidden, in which case hand methods shall be employed. The finished subgrade shall be prepared accurately, to the shape of the barrel, by means of hand tools. In no case shall earth be plowed or scraped by machinery nearer than six inches (6") to the finished barrel grade of the pipe. Special care shall be taken to insure that the barrels of the pipes are well bedded on a solid foundation, and any defects due to settlement or excessive excavation shall be made good by the Contractor at his own expense. Bell holes shall be dug sufficiently large to insure the making of proper joints. Special precautions shall be exercised to prevent any pipe from resting on rock, masonry or other material which would present a non-uniform foundation. The use of wooden or other blocks, rocks, stones or mounds of earth for the purposes of supporting pipe and fittings will not be permitted. Where two (2) pipes are laid in the same trench, the Contractor will excavate the trench so that both pipes are laid on undisturbed material. After the lower pipe has been laid as directed and the trench backfilled and thoroughly tamped to the invert of the upper pipe, than the upper pipe shall be laid and the entire trench backfilled and thoroughly tamped.

30.152 Limits

30.1521 Lines and Depths

Trenches shall be excavated along the lines designated by the Engineer, and to the depths required for laying pipes and other structures at the grades indicated on the plans and/or as ordered by the Engineer. In general, and unless otherwise specified, trenches dug for water pipe shall provide a minimum cover of four feet-six inches (4'6") below the actual or established gutter grade.

In rock, the trench shall be carried four inches (4") below the outside bottom of the barrel or bell of the pipe when no under-drain, concrete cradle or other foundation is required. The four inch (4") spacing between the rock and the pipe barrel shall be refilled with clean sand or approved three-quarter inch (3/4") crushed stone, as ordered to the satisfaction of the Engineer, to serve as a cushion for the pipe. In no case shall any part of the pipe be allowed to rest in contact with the rock.

30.152 Limits (Cont'd)

30.1521 Lines and Depths (Cont'd)

When an underdrain, concrete cradle or other foundation is required, the bottom of the trench shall be considered as the bottom of the underdrain and stone filling and the bottom of the cradle or other foundation as shown on the plans or ordered by the Engineer.

30.1522 Maximum Widths

The maximum widths of trenches at the outside bottom of the proposed pipe shall be as shown in the table below, unless otherwise provided in the plans or ordered by the Engineer. The minimum width of a trench shall be 2'-0", unless otherwise ordered by the Engineer.

Inside Diameter of Pipe or Conduit	Max. Width of Bottom of Trench	Inside Diameter of Pipe	Max. Width of Bottom of Trench
6" or under	2'-0"	54"	6'-6"
8"	2'-6"	60"	7'-0"
10" - 12"	3'-0"	66"	7'-6"
14" - 18"	3'-6"	72"	8'-0"
20" - 30"	4'-0"	78"	9'-0"
36"	4'-6"	84"	9'-6"
42"	5'-6"	90"	10'-0"
48"	6'-0"	96"	10'-6"

Where two lines of pipe are laid in the same trench, under this contract, the maximum widths for excavation shall be on the same basis specified hereinabove excepting that the width of the bottom of the trench shall be calculated in the following manner: one-half (1/2) the width specified for one (1) pipe, plus one-half (1/2) the width specified for the other pipe, plus the distance between the center lines of the two (2) pipes.

The sides of the trench shall be cut to a maximum slope of six (6) vertical to one (1) horizontal in earth and twelve (12) vertical to one (1) horizontal in rock, unless otherwise ordered by the Engineer. If the character of the earth does not permit this, the trench sides shall be shored as described in Article 30.17 of these Specifications, entitled "Sheeting and Shoring". If the width of cut at the surface extends beyond these limits the Contractor shall replace all material removed at his own expense, including pavement and base, topsoil, shrubs, etc., beyond the maximum payment limit.

Maximum payment lines for excavation of a manhole, catch basin or other structure shall be those with vertical sides and a horizontal section twelve inches (12") wider on each side than the smallest rectangle which will enclose such structure and its foundation.

30.1522 Maximum Widths (Cont'd)

If, at any time along the line of work and below the elevation stated hereinabove, the trench exceeds the maximum width specified, the Contractor, when so ordered by the Engineer, shall furnish and place at his own expense a 1:3:5 concrete cradle under and around the pipe, for a depth of not less than four (4) inches below the outside bottom barrel of pipe, a height above the invert grade of the pipe not less than one-third (1/3) the inside diameter of the pipe, and a width of the trench at this point.

Where water taps are to be made for service lines, the Contractor shall excavate not less than one (1') foot around the entire water main for a distance of eighteen (18") inches on each side of the service tap. The limits of trenching of all other water taps shall be as indicated on the plans.

30.1523 Limit of Open Trench

Unless otherwise authorized by the Engineer, no trench shall be opened more than 200 feet in advance of the pipe laying, nor left unfilled for more than 100 feet in the rear thereof. The Engineer, however, shall have the right to limit the distance to which the trench shall be opened in advance of the pipe laying or actual construction, as set forth in Article 16 of these Specifications, entitled "Disposition of Materials and Restoration".

Trenches for house service lines and basin leads shall not be opened on both sides of the street at the same time except by prior permission of the Engineer, or unless permission has previously been obtained to close the street. Unless otherwise directed, each such trench shall be excavated for its entire length within the street lines before any pipe is laid within it.

Whenever rock is encountered in the trench, it shall be stripped of earth in sections which, unless otherwise permitted, shall be not less than fifty feet (50') in length, and the Engineer shall then be notified in order that he may measure it. Rock blasted before such measurement is made will not be paid for.

Every trench in rock must be fully opened at least forty feet (40') in advance of any place where pipe is being laid or masonry is being constructed. Whenever the pipe or masonry under construction is to be extended in the future, rock shall be excavated as directed not less than ten feet (10') beyond the end of such pipe or masonry.

30.153 Underdrains

When an underdrain is required, the trench shall be carried to the depth and width required by the underdrain, as shown on the plans or ordered by the Engineer. Unless otherwise specified, the maximum payment limit for broken stone shall be based upon a depth of 6" and a width as described in Article 30.1522 entitled "Maximum Width of Trenches".

30-154 Near Existing Structures

The Contractor's attention is directed to the fact that there are water pipes, drains and other utilities in certain locations. Some of these have been indicated on the plans, and an attempt has been made to show all of the services, but the completeness or accuracy of the information given is not guaranteed.

As the excavation approaches pipes, conduits, or other underground structures, digging by machinery shall be discontinued, and the excavation shall be done manually.

The Contractor's attention is directed to Article 17.2 of these Specifications, entitled "Existing Structures and Utilities".

Whenever the Contractor encounters underground pipes, wires, or other structures which are located so near the excavation that, in the opinion of the Engineer, satisfactory construction cannot proceed until they have been removed, the Contractor shall remove and change, relocate, or restore such portions thereof as the Engineer directs, and such work shall be paid for under the price bid for the appropriate items in the contract or as "Extra Work".

30.155 Bridging Trenches

When trenching across pavements, driveway entrances, sidewalks and other points as may be directed by the Engineer, the trenches shall, at the Contractor's own expense, be bridged in such a manner as to prevent any serious interruption of travel upon the roadway or sidewalk, and also to afford necessary access to public and private premises. The material used and mode of constructing such bridges and approaches thereto must be satisfactory to the Engineer. If necessary, the Contractor shall furnish and place steel plates where directed. All streets shall be kept open for traffic and the Engineer reserves the right to regulate the use of power machinery, if necessary, to insure this.

30.16 Tunnelling

30.161 General Requirements

All excavation shall be open cut unless tunneling is specified or ordered by the Engineer. When specified or ordered, tunnels may be required under cross walks, large trees and utility lines. When tunneling under trees the Contractor shall use extreme caution not to damage any of the root structure. Any damage to roots shall be repaired by the Contractor at his own expense, and all work to be done according to approved horticultural methods.

The proposed tunneling procedure shall be approved by the Engineer prior to the start of the Contractor's operations. The backfilling of such work shall be thoroughly compacted with proper tools, maintaining as nearly vertical a face as possible. If backfilling proves unsatisfactory in the opinion of the Engineer, tunnels shall be re-excavated from the surface and properly backfilled at the Contractor's expense. No tunneling will be permitted under roads, except with the prior approval of the method by the Engineer.

Tunnelling shall be defined as meaning excavating beneath the existing ground surfaces such as walks, trees, utilities without disturbing said ground surface and that the subgrade material above the excavation remains in its original position and undisturbed.

30.17 Sheeting and Shoring

30.171 General Requirements

The Contractor shall furnish, install and maintain such sheeting, bracing, shoring, cofferdamming, etc., as may be needed to support the sides and roofs of excavations and to prevent any earth or rock movements which might in any way diminish or affect the necessary width of the excavation; endanger the safety of persons; injure or delay the work, or jeopardize the safety of adjacent pavements, public or private property, buildings or other structures.

30.172 Material

All lumber furnished by the Contractor for use in sheeting, bracing, shoring, cofferdamming, etc., shall conform with the requirements set forth in Article 34 of these Specifications, entitled "Timber and Lumber".

30.173 Responsibility

The Contractor shall be entirely and solely responsible for the adequacy and sufficiency of all supports and of all sheeting, bracing, shoring, underpinning, cofferdamming, etc. The Contractor shall assume entire and sole liability for damages on account of injury to persons, adjacent pavements, and public and private property (including, but not limited to, the work under construction, buildings and other structures), which injury results directly or indirectly from said Contractor's failure to install or to leave in place adequate and sufficient supports, sheeting, bracing, shoring, underpinning, cofferdamming, etc.

The right of the Engineer to order lumber installed or left in place, and to pass upon the sufficiency and adequacy of such lumber, shall not be construed as creating an obligation upon the part of said Engineer to issue such orders and/or to pass upon such sufficiency and adequacy; nor shall the failure on the part of the Engineer to exercise said rights relieve the Contractor from liability for damages on account of injury to persons or property occurring from or upon the work and occasioned by negligence, or otherwise growing out of a failure on the part of the Contractor to leave in place in the excavation sufficient lumber to prevent the caving in or moving of the ground adjacent to the sides of the excavation.

30.174 Installation

Unless expressly authorized by the Engineer, sheeting shall be driven ahead of the excavation to avoid loss of material from behind the sheeting. When starting trench excavation at the ground surface, the Contractor may excavate to a maximum depth of one foot (1') without sheeting in order to facilitate the setup for the driving operation. If it is necessary to excavate below the sheeting, care shall be taken to avoid trimming behind the face along which the sheeting will be driven. Care shall be taken to prevent voids outside of the sheeting; but if voids are formed, they shall be promptly filled with approved material and compacted to the satisfaction of the Engineer.

The Engineer shall have the right to order the installation of sheeting as and where needed, whenever the Engineer deems such sheeting necessary to prevent possible injury to persons or property.

30.175 Removal

The Contractor shall remove the sheeting and bracing from the trench as indicated on the plans and/or ordered by the Engineer.

The Contractor may elect to leave in place the sheeting and bracing, for his own convenience or subserve his own interests, except that no sheeting or bracing which is within four feet (4') of the existing or proposed finished grade may be left in place in the trench without the prior permission of the Engineer.

The Contractor shall be paid for the work set forth above under Item 175, "Sheeting and Shoring Installed and Removed".

All sheeting and bracing removed shall be carefully removed from the excavation in such manner as not to endanger the completed work or any adjacent pavements, buildings, structures, utilities, and property. All voids left or caused by the withdrawal of such lumber shall be immediately refilled with approved material and consolidated by ramming, tamping, puddling and/or other approved methods, to the satisfaction of the Engineer.

30.176 Left in Place

Upon the written order of the Engineer, or wherever so indicated upon the plans, the Contractor shall leave in place, to be imbedded in the backfill of the excavation, such sheeting and bracing as is so ordered or indicated to be left in place.

30.18 Backfill

30.181 General Requirements

After the structures and/or pipe have been completely built, tested and approved, the excavated area beyond the limits of the walls, foundations and pipe shall be backfilled with material from the excavation unless otherwise specified. The backfill shall be placed in layers as described below or as directed by the Engineer. The backfill shall proceed up to the lines and grades as shown on the plans or as directed. All settled backfilled areas shall be refilled by the Contractor at his own expense.

30.182 Material

The material used to backfill the bottom of the trench up to a level two feet (2') above the top of the pipe or other structure shall be clean earth, sand or rock dust, and shall contain no broken rock, stone or frozen earth. Above a level two feet (2') higher than the top of the pipe or structure, the material used for backfill shall be approved material containing no frozen earth and not more than one-third (1/3) broken rock and no stone or piece thereof shall exceed one-half (½) cubic foot in size. No payment will be made for rehandling of excavated material for this work.

Should there be a deficiency of proper material for backfilling, the Contractor shall furnish such additional material as may be required, but no additional payment shall be made therefor.

30.183 Method

The space between the pipe or structure and the bottom and sides of the trench shall be packed full by hand and thoroughly tamped as fast as placed and up to the level of the top of the pipe or structure. The backfilling shall be carried up evenly on both sides. The pipe or structure shall then be backfilled by hand to a level at least two feet (2') above the top of the pipe or structure, the backfill material being carefully deposited in layers not more than six inches (6") thick, and then thoroughly tamped.

The use of power equipment or other mechanical means for backfilling will not be allowed for placing backfill below a level of two feet (2') above the top of a pipe or structure. Above this level, mechanical backfilling may be done only on condition that the requirements contained in these specifications as to tamping and backfill material are being fully satisfied, and care is being taken to safeguard the pipe or structure and prevent damage thereto.

Unless otherwise specified or ordered, trenches shall be backfilled to the height of the surface of the ground as it existed at the commencement of the work.

30.184 Tamping

Tamping shall be done with an approved pneumatic tamper weighing from six (6) to eight (8) pounds and having a face not more than twenty (20) square inches in area or an approved gasoline driven vibratory tamper. Tamping shall be conducted in such a manner as to secure compacted backfill without in any way injuring or disturbing the completed pipe or structure. At least one man shall be provided for tamping for each man engaged in backfilling.

30.185 Puddling

When, in the opinion of the Engineer, the backfill can be compacted in a suitable manner by flooding or puddling with water, the Contractor may be permitted by the Engineer to do so,but he shall furnish the water at his own expense and shall perform the work strictly in accordance with the Engineer's directions.

When flooding is allowed and unless otherwise directed by the Engineer, the backfill material shall be levelled off in horizontal layers two feet (2') thick and flooded with water until, after standing five (5) minutes, water shall just show on the surface, when another layer shall be thrown in and flooded. This shall be continued up to within two feet (2') of the surface, and allowed to stand for a few hours. The last two feet (2') shall then be put in and hand tamped as specified above. During the process of puddling, openings shall be constantly made with rods to aid the water in penetrating the backfill already placed.

When a trench is puddled, any earth which may have slid in or caved in from the bank shall be thrown out of the trench and the space refilled and tamped in the same way as the trench proper, without any additional compensation.

30.186 Removal of Sheeting

During backfilling operations, no sheeting which is to be drawn shall at anytime extend into the backfill which is being tamped, but the sheeting shall be drawn so as to be always above such backfill if it cannot be at once entirely removed.

30.187 Storage of Material

The Contractor shall not remove or permit to be removed from the line of work, before the trenches and structures have been backfilled, any sand, gravel or earth excavation therefrom which may be suitable and needed for backfilling. If suitable storage for said excavated material is not available at the site of the work the material shall be stockpiled at a site acceptable to the Engineer until such time as the material is needed for backfilling. No payment shall be made for such storage.

30.19 Restoration

30.191 General Requirements

All areas disturbed shall be restored and excess materials removed in the manner set forth in Article 16 of these Specifications, entitled "Disposition of Materials and Restoration".

30.2 Payment Items

Item 1 - Clearing and Grubbing

a. Work

Under this item the Contractor shall do such clearing and grubbing as required by the Plans and Specifications and as directed by the Engineer. This includes such work as cutting and removing shrubbery, bushes, trees, roots, stumps, organic matter, fences, rubbish and other objectionable materials. All materials removed under this item which are not to be replaced or allowed in the backfill shall be disposed of by the Contractor at the Contractor's expense. Clearing beyond the line of work shall be only where specified or directed.

The Contractor shall so control his operations as to prevent damage to trees and shrubs which are to be preserved. Protection may include fences and/or boards lashed to trees to prevent damage from blasting or machine operations. Where the Engineer directs, the Contractor shall carefully cut off all branches of trees that interfere with construction operations or which have been broken or injured during construction. Where the root structure of the existing trees interfere with the proposed work, the Contractor will be required to cut and trim the roots as directed. All root surfaces which become exposed by cutting shall be painted with an approved asphalt base tree paint. All tree repairs and painting of tree wounds shall be approved by the Engineer. Where soil over the roots of trees to be preserved has become compacted it shall be restored by proper cultivation to a condition to permit adequate aeration of the soil. Turf which has become injured shall be satisfactorily restored.

No materials shall be burned on or near the job site without prior authorization by the Engineer. In such case, the Contractor, when permitted to burn, shall do so in a manner specified by the City of White Plains Fire Department. The Contractor shall have an attendant present at all times while the material is being burned and precautions shall be taken to eliminate any possible spread of fire. All fires shall be extinguished before leaving the job site at the end of each working day.

b. Payment

When bids are requested under this item, the Contractor shall be paid the lump sum bid, which sum shall cover the cost of all labor, materials, plant and equipment necessary to complete the work described to the satisfaction of the Engineer.

Item 2 - Unclassified Excavation in Open Cut

a. Work

Under this item the Contractor shall excavate, remove and dispose of all material of any nature whatsoever as required by the Plans and Specifications and as directed by the Engineer. Unless otherwise specified, this material shall include, but shall not be limited to, earth, rock, boulders, masonry, concrete, driveways, sidewalks, curbs, old pavements and pavement foundations.

Unless otherwise specified herein work shall be performed as described in Article 30.13 of these Specifications, entitled "Unclassified Excavation".

b. Payment

The quantity of unclassified excavation measured for payment shall be the number of cubic yards of material excavated, measured in its original position between the payment lines shown on the Plans, specified or ordered by the Engineer and the original ground surface as determined by the Engineer.

Unless otherwise specified, the surface of the topsoil in place shall be the final pay limit in calculating unclassified excavation. No allowance will be made for the excavation necessary to place topsoil to the depth specified.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described to the satisfaction of the Engineer.

Item 3 - Earth Excavation in Open Cut

a. Work

Under this Item the Contractor shall excavate, remove and dispose of earth within the limits specified and as required by the Plans and Specifications and as directed by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 30.14 of these Specifications, entitled "Earth Excavation".

b. Payment

The quantity of earth excavation measured for payment shall be the number of cubic yards of earth excavated, measured in its original position between the payment lines shown on the plans, specified or ordered by the Engineer and the original ground surface as determined by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described to the satisfaction of the Engineer.

Item 4 - Additional Earth Excavation

a. Work

Under this Item the Contractor shall excavate, remove and dispose of earth as directed by the Engineer. Unless otherwise specified herein, work shall be performed as described in Article 30.14 of these Specifications entitled "Earth Excavation".

b. Payment

The quantity of additional earth excavation measured for payment shall be the number of cubic yards of earth excavated, measured in its original position between the payment lines shown on the Plans, specified or ordered by the Engineer and the final location of such pipe, pipeline, test-hole or structure.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described to the satisfaction of the Engineer.

Item 5 - Rock Excavation in Open Cut

a. Work

Under this item the Contractor shall excavate, remove and dispose of rock within the limits specified and as required by the Plans and specifiactions and as directed by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 30.12 of these specifications, entitled "Rock Excavation".

b. Payment

The quantity of rock excavation measured for payment shall be the number of cubic yards or rock excavated, measured in its original position between the payment lines shown on the Plans, specified or ordered by the Engineer and the top of rock as determined by the Engineer. No rock shall be paid for twice no matter how often moved. The Contractor at his own expense shall remove all falls, loose and insecure pieces of rock outside of the pay limits, and shall fill all voids caused by their removal as elsewhere specified.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described to the satisfaction of the Engineer.

Item 6 - Rock Excavation in Trenches

a. Work

Under this item the Contractor shall excavate, remove and dispose of rock in trenches as required within the limits shown on the Plans and Specifications and as directed by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 30.1, "General" of these specifications, entitled "Excavation and Backfill".

b. Payment

Rock excavation in trench shall be paid for as described in Item 5, except:

Unless otherwise specified or ordered, maximum limits of payment for rock excavation in trenches shall be based upon the following formula:

$$L = w + \frac{h}{6}$$

Where:

L = Maximum width at top of trench (in feet)

w = Maximum width at bottom of trench (in feet) as specified in Article 30.1522

h = Depth of trench as specified on the plans or ordered by the Engineer (in feet)

No payment for rock excavation shall be allowed outside of the above limits unless specifically provided for in the Contract.

Item 7 - Rock Drilling for Post Holes

a. Work

Where rock is encountered when digging post holes, the Contractor shall employ suitable methods, approved by the Engineer, to obtain the required size and depth of hole. The minimum diameter shall be three inches (3") larger than the post diameter. The depth shall be as shown on the Plans or specified by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 30.12 of these Specifications entitled, "Rock Excavation".

Item 7 - Rock Drilling for Post Holes (Cont'd)

b. Payment

The quantity of rock drilling for post holes measured for payment shall be the number of lineal feet of hole drilled through rock, regardless of diameter, as shown on the Plans, specified or ordered by the Engineer. No payment will be made for holes drilled beyond the depth specified.

The unit price bid shall include the cost of all labor, materials, plant, and equipment necessary to complete the work described to the satisfaction of the Engineer.

Item 8 - Trenching for Water Mains

Item 9 - Trenching for Water Service Lines

Item 10- Trenching for Conduits

a. Work

Under these three items the Contractor shall excavate and backfill trenches as required by the plans and specifications and as directed by the Engineer.

All materials (including pipe, conduit, valves, valve boxes, sleeves and fittings, etc.) shall be furnished and delivered along the line of work by City forces. Handling of the pipe, conduit, fittings and appurtenances thereafter shall be done by the Contractor at his own expense. The Contractor is directed to inspect all such material that has been furnished by the City, previous to being lowered into the trench. Any pipe, conduit, fittings or appurtenances found defective shall be replaced by the City at no cost to the Contractor. If the material is found to be damaged after it has been laid and jointed, due to lack of inspection by the Contractor, no additional payment will be made for work required to remove and relay same. Any material damaged by the Contractor shall be replaced by him at no cost to the City.

Unless otherwise specified the Contractor shall handle and lay all pipe to the proper line and grade except water service lines.

City forces shall make up all joints and connections on water mains and service lines.

Where existing pipes and appurtenances are ordered removed, the Contractor shall transport and store the pipe and appurtenance where and as directed by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 30.15 and Article 30.18 of these Specifications, entitled "Trench Excavation" and "Backfill", respectively.

Item 8 - Trenching for Water Mains (Cont'd)

Item 9 - Trenching for Water Service Lines (Cont'd)

Item 10- Trenching for Conduits (Cont'd)

b. Payment

The quantity of trenching measured for payment shall be the number of lineal feet of trench excavation and backfill with no deductions made for fittings and appurtenances, as shown on the plans, specified or ordered by the Engineer. Measurement of length of trench excavation and backfill shall be made along the center line of the pipe at the surface of the ground.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to perform the work described to the satisfaction of the Engineer.

Item 11- Tunneling

a. Work

Under this item the Contractor shall tunnel where directed, as described in Article 30.16 of these Specifications, entitled "Tunneling".

b. Payment

The quantity of tunneling measured for payment shall be the number of lineal feet of tunnel shown on the Plans, specified or ordered by the Engineer. Tunneling in areas not shown on the Plans or specified by the Engineer shall be done at the Contractor's expense.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to perform the work described to the satisfaction of the Engineer.

Item 12- Select Fill

a. Work

Under this item the Contractor shall furnish, place and compact select fill to the lines and grades shown on the Plans, specified or ordered by the Engineer.

The select fill shall consist of a select granular material as set forth under Item 4 of the NYSDOT Specifications or other material approved by the Engineer.

Select fill used for shoulders and sub-base foundations shall be placed in layers not to exceed six inches (6") in thickness and thoroughly compacted by rolling, mechanical tamping or other approved means.

Item 12 - Select Fill (Cont'd)

a. Work (Cont'd)

When bagged screened gravel is used, it shall be placed dry against the back of the structure and shall provide a thickness not less than that shown on the plans or as directed.

Unless otherwise specified herein, work shall be performed as described in Article 30.11 of these Specifications, entitled "General Excavation".

b. Payment

The quantity of select fill measured for payment shall be the number of cubic yards of select fill furnished and placed between the payment lines shown on the plans, specified or ordered by the Engineer. The material shall be measured in its final compacted position. Select fill used to replace unauthorized excavation will not be measured for payment.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described to the satisfaction of the Engineer.

Item 13 - Subgrade Fill

a. Work

Under this item the Contractor shall furnish, place and compact subgrade fill material to the lines and grades shown on the plans, specified or ordered by the Engineer.

The subgrade fill material and method of placement shall be as described in Article 32.122 entitled "Subgrade Foundation".

b. Payment

The quantity of subgrade fill measured for payment shall be the number of cubic yards of subgrade fill furnished and placed between the payment lines shown on the plans, specified or ordered by the Engineer. The fill shall be measured in its final compacted position. Subgrade fill used to replace unauthorized excavation will not be measured for payment.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described to the satisfaction of the Engineer.

Item 14 - Embankment Fill

a. Work

Under this item the Contractor shall furnish, place and compact embankment fill material to the lines and grades shown on the plans, specified or ordered by the Engineer.

The embankment fill material and method of placement shall be as described in Article 32.123 entitled, "Embankment Foundation".

b. Payment

The quantity of embankment fill measured for payment shall be the number of cubic yards of embankment fill furnished and placed between the payment lines shown on the plans, specified or ordered by the Engineer. The fill shall be measured in its final compacted position. Embankment fill used to replace unauthorized excavation will not be measured for payment.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described to the satisfaction of the Engineer.

Item 15 - Saw Cutting Paved Surfaces

a. Work

Under this item the Contractor shall saw cut concrete pavements and/or walks where indicated on the plans or ordered by the Engineer. The cutting shall be done with an approved power saw with a carborundum tipped blade. The cut shall be neat and true and cut to a minimum depth of 2" or as specified.

Unless otherwise specified herein, work shall be performed in accordance with Article 30.1 "General", of these specifications entitled "Excavation and Backfill".

b. Payment

The quantity of saw cutting measured for payment shall be the number of lineal feet of cutting as ordered or indicated.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described to the satisfaction of the Engineer.

31. PORTLAND CEMENT CONCRETE AND MASONRY

31.1 General

31.11 General Requirements

31.111 Work

The Contractor shall furnish, place and incorporate into the work portland cement concrete and masonry where indicated on the plans or ordered by the Engineer.

The Contractor shall excavate and backfill the area where required as described in Article 30 of these Specifications, entitled, "Excavation and Backfill". Unless otherwise specified, payment for excavation will be made under various items in the contract.

The Contractor's attention is directed to the "Standard Construction Details of the City of White Plains". Payment for modifications to the details shall be included under the appropriate item(s) in the Contract.

31.112 Materials

The materials used, and the proportions shall conform to Section II of these specifications,entitled, "Materials of Construction".

During cold weather, materials shall be preheated, if required, and the materials and adjacent structure into which they are to be incorporated shall be made and kept sufficiently warm so that a proper bond will take place and a proper curing, aging, or drying will result. Protected spaces shall be artificially heated by approved means which will result in a moist or a dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture shall be warm throughout when used.

At the request of the Engineer, the Contractor shall submit for approval one or more samples of the brick or stone he proposes to use, and all the brick or stone used in the work must conform in every respect with the sample approved by the Engineer.

31.12 Portland Cement Concrete

31.121 Definition

Portland Cement Concrete shall consist of a homogeneous mixture of portland cement, fine aggregates, coarse aggregates water and admixtures, when required, proportioned and mixed as specified. No admixtures shall be allowed other than those specified in these specifications.

31.122 General Restrictions

No concrete shall be placed in the work when the temperature is below thirty-two degrees Fahrenheit (32°F), or when the temperature is likely in the opinion of the Engineer to drop to thirty-two degrees Fahrenheit (32°F) within the next twenty-four hours, except with the prior approval of the Engineer and under special protective measures approved by the Engineer.

31.123 Work

Unless otherwise specified or as indicated herein all concrete work such as proportioning, restrictions, mixing, consistency, formwork, handling, pouring, jointing, finishing and curing shall conform to Part II Section 7 of the NYSDOT Specification entitled, "Portland Cement Concrete".

When authorized by the Engineer, the Contractor may substitute steel mats in lieu of using steel bars, provided that the mats contain the equivalent cross-sectional area per square foot of bars specified.

31.124 Forms and Finish

Description	Forms	Exposed Finish
STRUCTURAL		
Reinforced Walls	6	1
Masonry Wall Foundations	6	1
Reinforced Slabs	5	2
Head Walls	6	1
PAVEMENTS & CURBS		
Reinforced Pavements	6	3
Pavement Foundations	6	4
Driveways	5	3
Sidewalks	5	3
Curbs	6	1
Curb Foundations	5	4
Gutters	6	3
Islands or Malls	6	3

31.124 Forms and Finish (Cont'd)

Description	Forms	Exposed Finish
FOOTINGS, PIERS AND BASES		
Footings	5	2
Piers	5	2
Pole Bases	5	2
MISCELLANEOUS		
Steps	5	1
Pipe Cradles	5	4
Thrust Blocks	7	7
Miscellaneous -Class A	5	7
Miscellaneous -Class B	5	7

LEGEND

1. Smooth
2. Screeded and wood float
3. Screeded, wood float and broom textured
4. Roughly screeded
5. Wood
6. Metal or wood
7. As directed by the Engineer

31.125 Curing and Protection

Unless otherwise specified, all exposed concrete shall be covered either with thick straw or burlap which shall be continuously wet or a polyethylene cover whose minimum thickness shall be 4 mils. Either curing method shall retain after 72 hours, at least 90% of the original water in the mix and shall be maintained for a period of 8 days at a temperature of 40° F.

The Contractor shall have sufficient tarpaulins to protect his work from precipitation at all times. When, in the opinion of the Engineer, there is danger of frost, the Contractor shall maintain sufficient hay or other approved material on the site to protect his work. The Contractor is responsible for protecting and maintaining his work in first-class condition during the course of the Contract.

31.13 Masonry

31.131 General Requirements

All structures shall be constructed of such dimension, materials and workmanship as shown on the plans or as specified by the Engineer.

Unless otherwise specified, all brick and concrete block shall be laid up with 1:2 portland cement mortar joints not more than 3/8" thick and stone shall be laid up with 1:3 portland cement mortar joints whose thickness shall be as directed.

The brick, block and stone shall be thoroughly wetted before laying. No work shall be permitted during freezing weather, or when the material contains frost. The brick, concrete, block and stone shall be laid on full mortar bed and have all exposed vertical and horizontal joints completely filled with mortar; and shall be plumb, square, and true to dimensions shown or specified. In general unless otherwise specified the brick bond shall consist of five (5) stretcher courses to one (1) header course and block shall be set to a bond and break joints. When directed, brick and block joints exposed to the exterior shall be finished with a concave pointing tool, applied so as to compact the setting mortar and form a close and continuous contact with the brick or block.

The first course of brick, block and/or stone shall be partly imbedded in the concrete footing or foundation immediately after the concrete has been poured.

The concrete footing shall be constructed in accordance with the requirements given in these specifications for "Portland Cement Concrete".

31.132 Brick Masonry

31.1321 General Requirements

Unless otherwise specified or ordered all brick work shall conform to the "General Requirements" as set forth under Article 31.131.

31.1322 Miscellaneous Brick Masonry

Miscellaneous brick masonry shall consist of furnishing and laying common clay brick where and as directed. No pointing of joints will be necessary.

Unless otherwise specified, miscellaneous brick masonry shall be required in the construction, reconstruction or adjustment of structures, piers, inverts and the plugging of pipes and culverts or in general any brick work that will not be exposed to view above ground.

31.1323 Ornamental Brick Masonry

Ornamental brick masonry shall consist of furnishing and laying a face brick of a type specified on the plans and as directed. All exposed joints shall be pointed up as described herein.

31.133 Concrete Block Masonry

31.1331 General Requirements

Unless otherwise specified or ordered all concrete block work shall conform to the "General Requirements" as set forth under Article 31.131.

When directed the Contractor shall fill all voids with a Class A concrete. No more than two (2) courses shall be laid before concrete is slushed into voids.

31.134 Rubble Stone Masonry

31.1341 General Requirements

Unless otherwise specified or ordered, all stone work shall conform to the "General Requirements" as set forth under Article 31.131.

31.1342 Stone Masonry in Mortar

The stone shall be laid on its natural bed to form substantial masonry, present a neat and finished appearance. Spalls and pinners shall not be allowed to show on the face of the wall, and shall be used only where necessary. In general, unless otherwise specified herein the length of stretchers shall not exceed three times their rise; the width of stretchers shall in no case be less than one and one-half times their rise. At least one-fourth of the stone in the face shall be headers and these shall be evenly distributed. The length of each header shall be approximately two-thirds the thickness of the wall at the point where the header is laid. The width of each header shall be not less than its rise. All stones shall be laid to break joints six inches or more and to thoroughly bond the work. No joint of the face shall be over one inch in width. Backing shall consist of good sized, well shaped stone so laid as to break joints. All spaces between the stone shall be filled with spalls set in mortar. The rear faces shall present approximately plane surfaces. Selected flat stones, roughly square and of uniform thickness, extending across the entire width of the wall, shall be used for the top course of the wall. No plaster coat shall be permitted on the finished top of the wall.

31.1342 Stone Masonry in Mortar (Cont'd)

On all exposed faces a neat depressed mortar joint three fourths (3/4) of an inch deep shall be formed before the bedding mortar has set. In hot or dry weather, masonry walls shall be kept continuously wet for a period of at least three (3) days after pointing. The face surface of the stones shall not be smeared with excess cement. Thorough cleaning, with water or acid, of the exposed face may be required to remove all excess mortar before it has set.

31.1343 Stone Masonry Laid Dry

Work shall be as described for stone masonry in mortar except that cement mortar shall be omitted in the joints and no weep holes will be required.

31.1344 Tree Wells and Walls

Work shall be as described for stone masonry laid dry except that the Contractor will be permitted to incorporate into the work rubble stones removed from the job site, provided they meet the necessary requirements and have been approved by the Engineer.

31.2 Payment Items

Item 20 - Miscellaneous Class A Concrete

a. Work

Under this item the Contractor shall furnish and place Class A concrete as shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be done in accordance with Article 31.1, "General" as set forth in these Specifications, entitled, "Portland Cement Concrete and Masonry".

b. Payment

The quantity of Class A Concrete measured for payment will be the actual number of cubic yards of concrete, of the proportions specified or ordered, actually incorporated in the work as required, and measured in place according to the dimensions, lines and grades as established on the plans or as ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment, including excavation and backfilling, mixing, formwork, placing, finishing, and protecting the concrete, and all incidental work needed to perform the work described.

Item 21 - Miscellaneous Class B Concrete

a. Work

Under this item the Contractor shall furnish and place Class B Concrete as shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be done in accordance with Article 31.1 "General" as set forth in these Specifications entitled, "Portland Cement Concrete and Masonry".

b. Payment

The entire payment section of Item 20 shall apply herein except that payment will be made for actual number of cubic yards of Class B Concrete furnished and placed.

Item 22 - Reinforced Concrete Retaining Walls

a. Work

Under this Item, the Contractor shall furnish and place Class A Concrete as indicated on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be done in accordance with Article 31.1, "General" as set forth in these Specifications, entitled, "Portland Cement Concrete and Masonry".

Item 22 - Reinforced Concrete Retaining Walls (Cont'd)

b. Payment

The quantity of reinforced concrete retaining wall measured for payment will be the actual number of cubic yards of concrete of the proportions specified or ordered, actually incorporated in the work as required, and measured in place according to the dimensions, lines and grades as established on the plans or as ordered by the Engineer.

If specified, the Contractor shall be paid the lump sum price bid for the work described herein.

The unit price bid shall include the cost of all labor, materials, plant and equipment, including excavation and backfill, mixing, forming, reinforcing, placing, finishing, weepholes, sleeves, crushed stone or gravel backfill, protecting the concrete, and all incidental work needed to perform the work described.

Item 23 - Concrete Foundation for Walls

a. Work

Under this Item the Contractor shall construct Class B concrete foundation for walls,to the dimensions, lines and grades as shown on the plans or as directed by the Engineer.

Unless otherwise specified, and provided that the sub-grade is satisfactory, the Contractor may pour the concrete against undisturbed material with no formwork required.

Unless otherwise specified herein, work shall conform with Article 31.1, "General" of these Specifications, entitled, "Portland Cement Concrete and Masonry".

b. Payment

The quantity of concrete foundation to be measured for payment under this Item shall be the total number of cubic yards of concrete measured in the completed work and the limits shall not exceed those shown on the plans or fixed by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to satisfactorily complete the work contemplated under this Item, including all necessary excavation and backfill, placing formwork where required, protecting and all incidental work needed to perform the work described.

Item 24 - Concrete Steps

a. Work

Under this item the Contractor shall furnish and place Class A concrete as indicated on the plans or as directed by the Engineer.

Item 24 - Concrete Steps (Cont'd)

a. Work (Cont'd)

Unless otherwise specified herein, work shall be done in accordance with Article 31.1 "General" as set forth in these specifications, entitled, "Portland Cement Concrete and Masonry".

b. Payment

The entire payment section from Item 22 shall apply herein except that weep holes and crushed stone or gravel backfill shall be omitted.

Item 25 - Concrete Block Masonry

a. Work

Under this Item the Contractor shall construct concrete block masonry with portland cement mortar joints to the line and grade as shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be done in accordance with Article 31.1 "General" as set forth in these specifications, entitled, "Portland Cement Concrete and Masonry".

b. Payment

The quantity of concrete block masonry measured for payment will be the actual number of cubic feet of concrete block, actually incorporated in the work as required, and measured in place according to the dimensions, lines and grades as established on the plans or as ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment, including excavation and backfill, laying, finishing, protecting and all incidental work needed to perform the work described.

Item 26 - Brick Masonry

a. Work

Under this item the Contractor shall construct miscellaneous or ornamental brick masonry, whichever specified, with portland cement mortar joints in areas and to the line and grade as shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be done in accordance with Article 31.1 "General" as set forth in these Specifications, entitled, "Portland Cement Concrete and Masonry".

b. Payment

The entire payment section from Item 25 shall apply herein except that payment will be made for actual number of cubic feet of brick masonry constructed.

Item 27 - Rubble Stone Masonry

a. Work

Under this Item, the Contractor shall construct rubble masonry in mortar with portland cement mortar joints in areas and to the line and grade as shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be done in accordance with Article 31.1, "General" as set forth in these Specifications entitled, "Portland Cement Concrete and Masonry".

b. Payment

The quantity of stone masonry to be measured for payment under this item shall be the total number of cubic yards of rubble stone masonry measured in the completed work, and the limits shall not exceed those shown upon the plans or fixed by the Engineer.

If specified, the Contractor shall be paid the lump sum price bid for the work described herein.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to satisfactorily complete the work contemplated under this Item, including all necessary excavation and backfill, weepholes, sleeves, crushed stone or gravel backfill, laying, finishing, protecting and all incidental work needed to perform the work described.

Item 28 - Rubble Stone Masonry Laid Dry

a. Work

Under this Item the Contractor shall construct dry rubble stone masonry in areas and to the line and grade as shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be done in accordance with Article 31.1 "General" as set forth in these Specifications, entitled "Portland Cement Concrete and Masonry", except that no weepholes are required.

b. Payment

The entire payment section from Item 27 shall apply herein except that payment will be made for actual number of cubic yards of dry rubble stone masonry constructed.

Item 29 - Tree Wells and Walls

a. Work

Under this Item the Contractor shall construct dry rubble stone masonry for tree wells and walls in areas and to the line and grade as shown on the plans or as directed by the Engineer.

Unless otherwise specified here, work shall be done in accordance with Article 31.1 "General" as set forth in these Specifications,entitled, "Portland Cement Concrete and Masonry", except that no weep-holes are required.

b. Payment

The entire payment section from Item 27 shall apply herein except that payment will be made for the actual number of cubic yards of dry rubble stone masonry for tree wells and walls constructed.

32. STREETS AND SIDEWALKS

32.1 General

32.11 General Requirements

The Contractor shall furnish, place, construct and incorporate into the work, pavements, walks and curbs where indicated on the plans or ordered by the Engineer.

All excavation and backfill shall be to the line and grade specified and as described in Article 30 of these specifications entitled "Excavation and Backfill".

All concrete and masonry work shall conform to Article 31 of these specifications entitled "Portland Cement Concrete and Masonry".

All materials used shall conform to Section II of these specifications entitled "Materials of Construction".

The Contractor is directed to the "Standard Construction Details" of the City of White Plains. Any modifications to the details shall be included under the appropriate item in the Contract.

32.12 Earthwork Foundations

32.121 Subbase

32.1211 General Requirements

The subbase area where specified shall mean a cross-sectional area with the top dimension equal to the width of pavement and a depth of nine (9) inches below the pavement base course as specified and as shown on the standard construction detail.

In general a thoroughly and satisfactorily compacted subbase shall consist of a select fill material as described under Item 12, entitled "Select Fill".

Sod, roots, stumps, brush, large stones or other objectionable material shall be removed and disposed of as directed by the Engineer.

32.1212 Placement and Compaction

Unless otherwise specified, the method of placing and compacting selected fill for subbase foundation, shall conform to the requirements set forth under Item 4, entitled, "Subbase Course, Selected Granular Material" of the NYSDOT Specifications.

Where fill is to be placed on existing pavements, the Contractor shall scarify, break or remove, whichever the Engineer directs, prior to spreading of fill.

32.1213 Payment

All of the work under the heading of subbase foundation as described hereinabove will be paid for under Item 12, entitled "Select Fill".

32.122 Subgrade

32.1221 General Requirements

The subgrade area shall mean a cross-sectional area with the top dimension equal to the width of the right-of-way and a depth of three (3) feet below the base course or subbase course grade of the pavement as specified and as shown on the standard construction detail. No stone larger than six (6) inches in greatest dimension shall be placed within this area. This depth of three feet (3) need not apply in areas of cuts or shallow fills where in the opinion of the Engineer, the existing material is satisfactory.

32.122 Subgrade (Cont'd)

A thoroughly and satisfactorily compacted subgrade is defined as having a minimum dry density of 95% of the maximum dry weight density in pounds per cubic foot as determined as determined by the A.A.S.H.O. Designation: T-99 Method C.

The excavation of the site(s) shall be conducted so that the selected excavation material can be utilized in the subgrade. Sod, roots, stumps, brush, large stones or other objectionable material shall be removed and disposed of as directed by the Engineer.

32.1222 Placement

Suitable material shall be placed within the subgrade area in successive uniform layers, not exceeding eight (8) inches in thickness and compacted as described herein.

Where the subgrade area is in cut and the soils are suitable the subgrade of the pavement foundation shall be rolled to obtain the required densities as set forth herein, to a depth of at least eight (8) inches.

In areas where fill is to be placed on existing slopes steeper than one (1) on three (3) the Contractor shall be required to remove the sod, weeds, undergrowth, and all other objectionable material and bench said slopes as directed, in order that the fill may have a firm bearing surface.

Where fill is to be placed on existing pavements, the Contractor shall scarify, break or remove, whichever the Engineer directs, prior to spreading of fill.

After all structures, pipes, ducts and appurtenances have been laid and/or constructed, the subgrade shall be properly shaped and drained and shall be satisfactorily rolled with an approved pneumatic and/or smooth wheel roller weighing not less than 10 tons. All depressions which develop in the final rolling shall be filled with acceptable material and the subgrade again rolled until no depressions develop.

32.1223 Compaction

Equipment for adequate compaction must be on hand and approved by the Engineer before any embankment or backfill operations are started by the Contractor. All compaction equipment must be of modern design and any worn or defective equipment shall be immediately replaced or repaired.

32.1223 Compaction (Cont'd)

After the selected material has been placed as described above, it shall then be thoroughly rolled by pneumatic, smooth or sheepsfoot rollers. Pneumatic tired rollers shall be self-propelled and have an operating weight of not less than 1000 pounds per tire. Tandem steel rollers shall be self-propelled and have a minimum weight of 10 tons and shall exert a pressure of not less than 300 pounds per lineal inch of compression wheel or roll width. Sheepsfoot rollers shall exert a pressure of not less than 300 pounds per square inch of foot area. The tamping feet of the sheepsfoot roller shall not be worn to less than 7 inches in length and less than 5 square inches of flat end surface.

Any depressions that develop during the compacting operations shall be filled with suitable material and those areas further compacted. Successive layers shall not be placed until the layer under construction has been thoroughly compacted.

In areas inaccessible to power rolling, other types of compaction equipment may be used. Where the impact rammer type is used, such rammer shall weigh not less than 200 pounds, have a ramming foot area not exceeding 80 square inches and be capable of delivering not less than 200 foot pounds of compacting energy per blow. Where mechanical platform vibrating compactors are used, such compactors shall be capable of delivering blows of a minimum of 3000 pounds impact at a rate of not less than 1100 impacts per minute. A minimum coverage of three (3) passes will be required for either rammer or vibrator equipment.

For other types of compaction equipment, the minimum number of passes required on all portions of each successive layer shall be determined by the Engineer after appropriate field tests to evaluate the efficiency of the equipment. The use of hand tampers will not be permitted.

32.1224 Payment

No direct payment will be made for any delay, extra work or expenses which may be necessary due to this requirement.

All of the work under the heading of subgrade foundation described hereinabove will be included under the unit price bid for unclassified excavation (Item 2) or earth excavation (Item 3), whichever is specified. No direct payment will be made except where there is a deficiency of suitable subgrade material on the site(s), for which payment will be made under Item 13, entitled "Subgrade Fill".

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32.123 Embankment

32.1231 General Requirements

The embankment area shall mean a cross-sectional area with the top dimension equal to the width of the right-of-way and a depth as measured from the bottom of the subgrade area to the existing grade after the sod and topsoil has been stripped.

In general a thoroughly and satisfactorily compacted embankment shall consist of material containing a mixture of earth and rock. All stone and ledge rock shall be less than two (2) feet in greatest dimension.

The excavation of the site(s) shall be conducted so that the selected excavation material can be utilized in the embankment. Sod, roots, stumps, brush, large stones as described above or other objectionable material shall be removed and disposed of as directed by the Engineer. The entire embankment foundation area shall be rolled until the underlying soil is thoroughly compacted to the satisfaction of the Engineer before any construction of the embankment is begun.

32.1232 Placement

Where the embankment material contains less than one third, by volume, of stones or rocks larger than 6 inches in greatest dimension, it shall be placed in successive uniform layers not exceeding 8 inches in thickness, loose measure, over the entire area of the embankment. All stones or rocks over 6 inches, but less than 2 feet in greatest dimension shall be placed in the embankment outer edges. Each layer shall be thoroughly rolled over its entire area.

For embankments in which the material contains more than one-third by volume, of stone or ledge rock larger than 6 inches in greatest dimension, the thickness of the construction layers shall not exceed the maximum size of the rock or stone. In no case, shall the layer thickness exceed 2 feet. Spreading shall be done by bulldozer operation in such manner that the maximum amount of the rock fragments of each succeeding deposited load will sift into the voids of the layer under construction. Unless designated on the plans or in the proposal, rock, boulders, broken pavement or slabs, larger than 2 feet in the greatest dimension will not be permitted to be placed within the limits of any embankment.

Where fill is to be placed on existing pavements, the Contractor shall scarify, break or remove, whichever the Engineer directs, prior to spreading of fill.

32.1233 Compaction

All work performed herein shall be done in accordance with Article 32.1223, entitled, "Compaction" of these specifications.

32.1234 Payment

No direct payment will be made for any delay, extra work or expenses which may be necessary due to this requirement.

All of the work under the heading of embankment foundation described hereinabove will be included under the unit price bid for unclassified excavation (Item 2) or earth excavation (Item 3), whichever is specified. No direct payment will be made except where there is a deficiency of suitable embankment material on the site(s) for which payment will be made under Item 14, entitled "Embankment Fill".

32.13 Asphalt Cement

32.131 General Requirements

The Contractor shall furnish and apply asphalt cement of the degree and consistency specified or ordered by the Engineer, or as indicated on the plans.

When directed by the Engineer, the Contractor shall apply a cationic asphalt emulsion in lieu of asphalt cement. The method of application shall be as described for asphalt cement.

32.132 Construction

The pavement or base to be sprayed shall be clean and dry. An approved pressure distributor shall be used to apply the asphalt cement maintaining a pressure of at least 20 psi for surface application and 50 psi for penetration. The amount of bituminous material to be used at any one application per square yard shall depend upon the character of the pavement, the materials and the local conditions. The Contractor shall, therefore, be subject entirely to the direction of the Engineer and as specified herein or as shown on the plans.

Unless otherwise specified asphalt cement shall be heated to a temperature between 325° and 350° F. The Contractor shall take such precautions as may be deemed necessary to prevent cement from being sprayed onto exposed portions of curbing, catch basins, manholes, valve boxes, etc.

The application of the asphalt cement for surface application shall be confined to one side of the pavement for any continuous length of roadway treated under this contract. The opposite side shall then be treated, starting at the same end of the roadway as in the treatment of the first side. The application of asphalt cement for penetration work shall be as directed by the Engineer. Asphalt cement that has been wasted or that has been rendered unfit because of overheating will not be paid for.

32.133 Measurement

For purposes of measurement, a gallon shall be a volume of 231 cubic inches, and measurement shall be based upon the volume of the asphalt cement at a temperature of 60° F.

The method to be used for volume corrections for petroleum products shall be the standard Abridged Volume Correction Tables for Petroleum Oils, ASTM Designation D 1250.

32.14 Sealing Pavements

32.141 General Requirements

Wherever pavements are ordered to be sealed, they shall be constructed as shown on the plans and as specified herein, or as directed by the Engineer.

32.142 Preparation

The Contractor shall clean the pavement by the use of hand brooms or by the use of mechanical sweepers of an approved type, as directed by the Engineer.

All mud, dust and other loose material so swept off, shall then be removed and deposited in such places and in such a manner as the Engineer may direct.

Ruts and depressions below the general surface of the pavement shall be swept out by hand brooms until all loose material has been removed and embedded stones are uncovered.

The operation of cleaning out the ruts and depressions and filling them with thoroughly compacted stone to the general level of the surface, shall immediately follow the general operation of cleaning the surface.

32.143 Single Treatment Seal Coat

32.1431 First Application

After the base course has been thoroughly broomed and compacted and the excess stone removed, an application of asphalt cement conforming with specifications shall be applied by means of a pressure distributor, at a rate to be determined by the Engineer. No asphalt cement shall be applied until after all necessary cover stone is available at the site of work. All cover stone must be dry and free from dirt, and/or stone dust; failure to comply with the requirement will be cause for immediate rejection of such stone and order for its removal from the job site. Stone containing excessive moisture will be rejected. Immediately after application of the asphalt cement, the entire surface shall be completely covered with No. 1 crushed stone spread at the rate of 20 to 30 lbs. per square yard or as ordered by the Engineer. The surface shall be immediately leveled by brooming and rolled with a roller weighing not less than 10 tons. Additional No. 1 stone may be added and the brooming and rolling are to continue until a true and uniform surface is produced.

32.1432 Second Application

Before being opened to traffic, a layer of No. 1A broken stone approximately 1/4" thick shall be spread loose on the surface for wearing course. After the road has been opened to traffic for ten days, or as the Engineer may direct, this wearing carpet shall again be spread by sweeping the surplus stone from the sides to the center of the pavement. When and if ordered by the Engineer, all loose stone shall be swept off the road and transported to the Gedney Way Yard or where directed.

After completion of the single-treatment seal coat the surface of the finished pavement shall be free from depressions exceeding 1/4 inch as measured with a 10 foot straight edge parallel to the centerline of the roadway.

32.144 Double Treatment Seal Coat

32.1441 First Application

The first application shall be as described in Article 32.1431 entitled "First Application" except that the rate of application of asphalt cement shall be .50 gallon per sq. yard or as ordered by the Engineer.

32.1442 Second Application

After a period of not less than 24 hours and not exceeding 10 days, the pavement shall be broomed and cleaned of all excess stone or foreign material and treated with a second application of asphalt cement as specified herein, except at the rate of .30 gallon per square yard. Immediately after the second application of asphalt cement, the entire surface shall be uniformly covered with No. 1A crushed stone spread at the rate of 20 to 25 lb. per square yard. The same conditions and manner of operation are to be as specified in Article 32.1431 (first application). After the road has been open to traffic for ten days, or as the Engineer may direct, this second application of stone shall again be broomed by sweeping the surplus stone from the sides to the center of the pavement. All loose stone remaining in the pavement area after 30 days time from the date of the second application, will be removed and disposed of as directed.

After completion of the double-treatment seal coat, the surface of the finished pavement shall be free from depressions exceeding 1/4 inch as measured with a 10 foot straight edge parallel to the center line of the roadway.

32.15 Pavements

32.151 General Requirements

The Contractor shall furnish and lay an asphaltic pavement or base of the total finished thickness specified, to the lines and grades indicated on the plans and/or as directed by the Engineer.

32.152 Temporary Pavement

If required by the Engineer, the Contractor shall construct a temporary pavement or sidewalk in areas where pavement or sidewalks have been disturbed due to his operations. This pavement shall be constructed after the excavation has been backfilled and compacted properly.

Unless otherwise specified the construction of the temporary pavement shall consist of 2" compacted thickness of hot-mix asphaltic concrete or approved equal.

Before the material is spread, all surfaces of curbs, edgings, manholes and other structures which will come into contact with the new pavement shall be well painted with a bituminous emulsion or priming material acceptable to the Engineer. Care shall be taken to prevent staining, smearing or defacing the exposed faces of the curbs and other structures during the spreading and rolling of the material.

After spreading, the material shall be rolled by means of a well balanced roller weighing not less than 10 tons. In all places not accessible to the roller, the material shall be compacted thoroughly by tampers weighing not less than 25 pounds and having a bearing area not exceeding 50 square inches.

The temporary pavement shall be maintained by the Contractor until such time that the final settlement of the trench shall have taken place in the opinion of the Engineer. Any settlement taking place, will be maintained by the Contractor at his expense by furnishing, spreading and rolling additional material over that previously laid. The Contractor shall continue this maintenance until such time that the Engineer will consider that final settlement of the trench has occurred and that the trench is in readiness for the replacement of the permanent surface. The maximum payment limit shall be as described in Article 32.1543 entitled "Maximum Payment Limits".

32.153 Fine Grading

32.1531 Work

Prior to laying of pavement or base the Contractor shall prepare the fine grade to receive the pavement or base in conformity with the lines and grades shown on the plans.

32.1531 Work (cont'd.)

The subbase or subgrade shall be compacted with an approved self-propelling tandem roller weighing not less than ten (10) tons. When the width of the pavement is less than the width of one lane, an approved self-propelled roller providing a compression of not less than 300 pounds per lineal inch of roller may be used. All hollows and depressions which develop under rolling shall be filled with acceptable materials and shall again be rolled. This process of shaping, rolling and filling shall be repeated until no depressions develop. The subbase or subgrade shall not be muddy, frozen or otherwise unsatisfactory when the pavement is placed upon it. If the fine grade becomes rutted or displaced, due to any cause whatsoever then the Contractor shall regrade same without additional payment therefor.

32.1532 Payment

No direct payment for fine grading will be made unless bids are specifically requested in the proposal for Item 35. Payment is to be included under the appropriate items bid in the contract

32.154 Pavement Replacement

32.1541 General Requirements

Under this item the Contractor shall furnish and lay a pavement on an approved subgrade to the lines and grades shown on the plans or specified herein. The existing pavement shall be line cut with suitable tools as shown on the plans or directed. When removing reinforced concrete pavement or base, the existing reinforcing shall be exposed a minimum of twelve (12") inches beyond the cut edge.

In areas where a temporary pavement has been placed, the Contractor shall remove said temporary pavement to the subgrade line shown on the plans or specified. He shall then bring the subgrade to the proper elevation and compact it as described in Article 32.122 of these specifications, entitled "Subgrade".

Where shown on the plans or specified by the Engineer, the Contractor shall excavate a shelf to provide a bearing area on all sides for the new pavement. The width of said shelf shall be as shown on the plans or directed by the Engineer.

32.1542 Brick Pavement

Under this item the Contractor shall remove, clean and relay the existing brick pavement on an approved subgrade to the lines and grades specified.

32.1542 Brick Pavement (Cont'd)

Any brick that is damaged or in a condition such that, in the opinion of the Engineer, it cannot be used in the relaying of the pavement, shall be replaced at the Contractor's expense with new paving brick matching the existing brick to be relaid.

Prior to replacing or relaying brick pavement, a Class B concrete base shall be placed to a thickness specified on the plans or as directed including a sand cushion one inch (1") in thickness.

The brick shall be laid on the sand cushion, and the joints shall be broken and fitted into the original pavement in a workmanlike manner. All brick shall be tamped and rolled and laid to conform with the adjoining street surfaces and to the satisfaction of the Engineer. The brick shall then be grouted with a cement grout mixed in the proportions of one part cement to two parts sand, and shall be of such consistency that it will readily flow into the joints between the brick. The use of stiff mortar will not be permitted. The pavement shall be protected and kept wet for at least two (2) days after grouting. No grout shall be placed in freezing weather.

32.1543 Maximum Payment Limits

In the case of trenches the maximum limits of payment shall be on the basis of the formulas: -

Permanent Pavement Replaced in Earth = $W+S+\frac{H}{3}$ or Rock = $W+S+\frac{H}{6}$

Temporary Pavement Replaced in Earth = $W+\frac{H}{3}$ or Rock = $W+\frac{H}{6}$

Where: W = width of bottom of trench as established in Article 30.1522 of these specifications entitled, "Maximum Widths of Trenches".

H = depth of cut from the original surface of ground as indicated, to the bottom of the trench as established by the Engineer.

S = width of bearing shelf as shown on the plans or directed by the Engineer.

Where two lines of pipe are to be laid in the same trench the maximum limits of payment shall be calculated by the use of the formulas above and determined in the following manner: one-half the "maximum limit" calculated for one pipe, plus one-half the "maximum limit" calculated for the other pipe.

32.1543 Maximum Payment Limits (Cont'd)

Whenever the Contractor has excavated outside the limits established herein above, payment for the replacement and/or furnishing and laying of the pavement, will be made only within the limits prescribed. The Contractor will be required to replace or to furnish and lay the pavement over the area outside of these limits at his own expense, unless such payment has been specifically provided for in the contract or has been authorized by the Engineer.

In any case the limits of payment shall be determined by the Engineer, whose decision shall be final.

32.155 Asphaltic Macadam

Where the new macadam is to meet an existing pavement, the Contractor shall cut the existing pavement with pneumatic tools and as directed by the Engineer.

After the subgrade has been prepared as described under Article 32.153, "Fine Grading", a layer of No. 3 crushed stone shall be evenly spread upon the subgrade by means of an approved mechanical spreader and in sufficient quantity so that the compacted thickness after rolling shall be as specified.

No dust-covered or dirty stone will be permitted for use. Any stone that is found by the Engineer to be dirty when placed shall be removed and replaced with clean stone. All stone must be dry for the full depth of the course before any asphalt cement is applied thereto. No stone shall be laid on subgrade that is frozen or contains frost.

Asphaltic macadam shall be constructed in courses not exceeding 4 inches (4") in compacted thickness and shall conform accurately to line and grade as indicated on the plans and/or furnished by the Engineer. The Contractor shall provide the Engineer with all necessary pins, string, lines and labor to set grades.

After spreading, stone shall be compacted with a roller weighing not less than 10 tons and the rolling shall be continued until the stone is thoroughly compacted and conforms to the desired cross-section and grade. Any irregularities that develop shall be corrected by roughing the stone surface and removing or adding stone of the same size and continuing compacting so as to secure the desired results.

After proper compaction, asphaltic cement as specified, heated to a temperature between 325° and 350° F. shall be applied at the rate of one-half gallon per sq. yard per inch of compacted depth of each course by means of an approved pressure distributor, operating under a pressure of 50 pounds per square inch or more as the Engineer may direct.

32.155 Asphaltic Macadam (Cont'd)

Asphalt cement shall be applied uniformly over the entire area. In order to insure uniformity at junction point of two applications, it will be required that the distributor should, in starting, lap back on the previous application, covering the lap with building paper, to avoid either an excess or an insufficient quantity at the junction point. The paper shall then be removed and destroyed. All exposed surfaces of curbs, manholes, catch basins, water valve boxes, etc., shall be protected as directed, to prevent the deposit of bituminous material on such surfaces.

Immediately after application of the asphalt cement the surface shall be filled with clean No. 1 crushed stone by means of hand labor or an approved mechanical spreader and completely fill all the surface voids, after which the entire area shall then be compacted with a roller weighing not less than 10 tons. Such compaction shall continue until there is no movement under the roller. A surplus of No. 1 stone shall be avoided.

32.156 Plant Mix Macadam

Unless otherwise specified, all work shall comply with the requirements as described in Part II, Section 8, entitled "Bituminous Concrete" in the NYSDOT Specification.

32.157 Concrete

Unless otherwise specified, all work shall comply with the requirements as described in Part II, Section 7, entitled "Portland Cement & Concrete" and that portion pertaining to "Concrete Pavement", in the NYSDOT Specification.

32.16 Asphaltic Concrete

32.161 General Requirements

The Contractor shall furnish and place a hot-mix asphaltic concrete material of such thickness and at such locations as shown, specified or ordered.

32.162 Construction

32.1621 Delivery

The only vehicles that will be permitted for the delivery of plant-mixed asphaltic materials will be those that can dump directly into the hopper of the spreading machine. The extreme outside dimensions of the rear tires of such machines shall be at least one inch less than the width between the supports of the wheels of the spreader. Material shall not be delivered from more than one plant without the written permission of the Engineer.

The delivery of top course material from two or more plants, in alternate deliveries to the same spreader, will not be permitted.

32.1622 Joints

Longitudinal and transverse joints shall be made in a careful manner, as directed by the Engineer, so as to insure a thorough and continuous bond between the old and new surfaces. Joints that have already set up shall be cut back to the full depth so as to expose a fresh surface. Hot tampers shall be employed to heat the cold joint, after which it should be painted with a thin uniform coat of approved emulsion or bituminous priming material. Immediately after this the paving operation shall begin.

32.1623 Placing

The course shall be laid with a finishing machine of an approved type, Barber-Greene or equal, which has an edging attachment to aid in securing a satisfactory joint between lanes. An experienced operator shall operate the finishing machine.

Mixtures shall be placed only where the surface to be covered is dry and clean. Mixtures shall be laid only when weather conditions, in the opinion of the Engineer, are suitable. All defective areas in a foundation for a course shall be repaired, as directed, in advance of laying the bituminous course.

32.1623 Placing (Cont'd)

The contact surfaces of all curbings, gutters, manholes and of adjacent pavement edges shall be painted or sealed with approved bituminous emulsion or priming materials before placing the course. Upon arrival, the mixture shall be dumped into the approved mechanical spreader and immediately spread and struck off to the full width required and to such appropriate loose depth that when the work is completed the compacted thickness of mixture required in each square yard will be secured. The course shall be struck off by mechanical equipment. For use in striking off the course, the machine shall be equipped with easily adjustable strike-off plates or screeds.

When a surface course is laid over an existing pavement that portion of existing bituminous-type pavement adjacent to catch basins, the old pavement surface shall be cut back to the satisfaction of the Engineer in such a manner that the finished surface of the bituminous surfacing shall properly meet the catch basin grating or inlet.

When hand spreading is permitted, the mixture, upon arrival, shall be dumped on approved dump sheets outside of the area on which it is to be spread and shall then be immediately distributed into place by means of suitable shovels and other tools and spread with rakes in a uniformly loose layer of such depth, as shown by template cut to proper crown, as will result in a completed pavement having the thickness per square yard required. Any deviation from standard crown or section shall be immediately remedied by placing additional material or removing surplus as directed. The Engineer may direct that other means of placing the material in addition to the rakes be used to insure a better control of the depth of material and the surface finish.

The depth of any one course of plant-mixed material shall not be greater than 4 inches before consolidation.

Before any rolling is started, the finished surface struck off by the machine shall be checked, any inequalities adjusted, and all fat spots or areas from any source shall be removed and replaced by satisfactory material.

32.1624 Compacting

After placing, and while still hot or workable, the course mixture shall be rolled with a 10-12 ton three-wheel, power-driven roller, an 8-10 ton tandem roller or a roller producing a compression with the rear wheels of not less than 300 pounds per inch of roller.

32.1624 Compacting (Cont'd)

During the initial rolling, the roller shall travel parallel to the center lines of the pavement beginning at each edge and working toward the center, overlapping on successive trips by one-half the rear wheel of the roller. The roller shall be operated at a speed satisfactory to the Engineer but not to exceed 3 miles per hour, and rolling shall proceed continuously at the rate of not more than 25 tons of mixture per hour for each roller, except 30 tons per hour will be permitted when a three axle tandem roller is used.

When trench widening of existing pavements is made with bituminous materials, the subgrade and all materials that are placed in the trench shall be consolidated by means of a trench roller which has a compression under the roller of not less than 300 pounds per inch of roller.

In all places inaccessible to a roller, the required compression shall be secured with tampers. Each tamper shall weigh not less than 25 pounds and shall have a tamping area of not more than 50 square inches.

The wheels of the roller and paver shall be kept clean at all times. They may be kept moist with water or a mixture of water with not more than 10% lubricating oil as directed. Ashes, hot or dirty water, gasoline or grease shall not be allowed to drop from the roller or paver onto the pavement.

If depressions remain after rolling, more of the mixture shall be added at such point and firmly rolled into place. After the rolling has been finished, the surface of the course shall have the required crown, density and thickness and be at the grade established for the surface of the finished pavement. At the direction of the Engineer, any fat spots or fat areas that develop during the life of the contract shall be removed and replaced with suitable material at the expense of the Contractor.

32.1625 Construction Conditions

All equipment, including the wheels of the rollers and mechanical spreader, small tools, etc., shall at all times and in a suitable manner be kept clean and free from accumulation of bituminous material. The pavement shall be protected from drippings of oil, kerosene, etc. used for the cleaning of small tools. The Contractor shall provide and have ready for use at all times sufficient tarpaulins or covers as may be directed by the Engineer for use in any emergency, such as rains, chilling winds or unavoidable delays, for the purpose of covering or protecting any material that may be dumped and not spread.

32.1626 Testing Surface

The surface of the material, after rolling, shall be tested with a sixteen (16) foot straight edge laid parallel with the center-line of the road upon any portion of the surface, and any deviations from a true profile which exceed one-fourth inch (1/4") shall be eliminated in a satisfactory manner or such portions of the surfacing shall be relaid as ordered.

32.17 Restrictions and Conditions

32.171 Seasonal Limitation

No material shall be placed between October 15th and May 15th, nor when the air temperature in the shade is less than 50 degrees F. except with the proper written authorization of the Engineer.

32.172 Right of Access

Before, during and/or after the Contractor shall begin the work contemplated under this contract, the City of White Plains shall have the right to enter upon, or allow representatives of the public service corporations or others to enter upon any of the streets under the contract for the purpose of adjusting castings or any other structures and bringing same to the proper grade, and the Contractor shall make no claims against the City by reason thereof.

32.173 Maintenance

After the asphaltic concrete surfacing is laid where designated by the Engineer and under the provisions of the contract, the Contractor shall at his own expense and for a period as designated in the legal section of this contract, keep the said work in good repair and any portion or whole of such pavement that shows improper mixing, disintegration, cracking, softness or excessive wear shall be taken up and replaced at the Contractor's expense when the Contractor is so notified in writing by the City of White Plains.

The cost of such maintenance shall be included in the price bid for the appropriate item for "Asphaltic Concrete Top Course".

32.174 Method of Payment

32.1741 Materials Furnished

Under this method the Contractor shall be paid for the number of gallons of asphalt cement and for the number of tons of crushed stone of various sizes and for the number of tons of asphaltic concrete furnished and incorporated in the work in accordance with the plans and specifications and/or as ordered by the Engineer. If it is specified that payment will be made for the number of tons of stone incorporated in the work, the Contractor will be required to have each truck load of stone weighed by a certified licensed weighmaster. A ticket bearing the net weight of stone and signed by the weighmaster shall accompany each load of stone delivered to the job, and said ticket shall be given to the Engineer. No payment will be made for stone not certified by the licensed weighmaster.

32.1742 Square Yard

Under this method of payment, the Contractor shall be paid for the number of square yards of seal coat, asphaltic concrete and penetration macadam base or pavement furnished and laid in accordance with the plans and specifications and/or ordered by the Engineer.

32.18 Walks and Drives

32.181 General Requirements

Where existing walks are ordered to be removed, reset and new walks installed, they shall be constructed as shown on the plans and as specified herein, or as directed by the Engineer.

32.182 Walks Removed and Reset

32.1821 General Requirements

The sidewalk that is removed shall be stored where and as directed by the Engineer. If required by the Engineer, the Contractor shall backfill the area where the sidewalk has been removed; suitable material to be supplied by the Contractor at his own expense.

Care shall be taken in handling the sidewalk so that there shall be no unnecessary breakage. Any sidewalk damaged in removing, hauling and handling due to the carelessness of the Contractor shall be replaced with new sidewalk at the Contractor's expense.

32.1822 Brick Walks

The Contractor shall carefully remove the existing brick and place them in neat piles, as directed by the Engineer, until they are relaid.

Before being relayed, the brick shall be carefully cleaned, old mortar or dust being removed from each brick. Brick which, in the opinion of the Engineer, are unfit to be relaid shall be discarded and removed from the job by the Contractor at the latter's own expense, and such brick shall be replaced by new brick at the Contractor's expense.

After the excavation has been done to the satisfaction of the Engineer, a layer of sand three inches (3") in depth shall be placed and thoroughly tamped.

The brick shall be laid on this layer of sand in such a manner that they shall have an even bearing. After the brick have been laid to the satisfaction of the Engineer, a cement grout consisting of one part of cement and two parts sand shall be poured and broomed into the joints until the said joints are entirely filled flush with the surface of the brick. This grout shall be mixed in water-tight containers and shall be of such consistency that it will readily flow into the joints between the brick. Excess grout shall be broomed from the surface of the brick. The use of stiff mortar will not be permitted. The sidewalk will be protected and kept wet for at least two (2) days after grouting. No grout shall be placed in freezing weather.

32.1823 Bluestone Walks

When resetting existing flags, the Contractor shall chisel and dress the flags as directed on all four edges, and for a distance of not less than one (1) inch down from the top surface and at right angles thereto.

After the excavation has been done to the satisfaction of the Engineer, a layer of sand three (3) inches in depth shall be placed, and thoroughly tamped.

The bluestone flags shall be laid on this layer of sand so that they shall have even bearing and so as to have the required pitch as shown on the plans or ordered by the Engineer. Low or uneven flags shall be removed, and the sand cushion shall be raised or adjusted so that the flags may be laid to an even surface.

After the flags have been laid, the joints shall be not more than one-half inch wide, and shall be filled with mortar 1:3 mix, conforming with the requirements for mortar contained in these specifications. The joints shall be filled flush with the top surface of the flags. Particular care shall be taken to prevent smearing and staining of the bluestone flags adjacent to the joints. All excess cement or mortar shall be washed off immediately. All earth debris and surplus material shall be removed, and the sidewalks swept clean as soon as the work thereon is completed.

32.183 Concrete Walks

32.1831 General Requirements

The Contractor shall construct a one course air-entrained concrete sidewalk as indicated on the plans or as ordered by the Engineer.

32.1832 Foundation

After the necessary excavation has been completed to the required grade and the subgrade has been compacted to the satisfaction of the Engineer, a layer of approved steam cinders, run-of-bank gravel or crushed stone shall be placed thereon and shall be compacted to a compressed thickness of not less than six (6") inches.

32.1833 Forms

Metal forms shall be used in the construction of the walk. Wood forms may be used only with permission of the Engineer. The forms shall be set true to line and grade and shall be installed with sufficient bracing to prevent warping. Before any concrete is poured the Engineer shall approve the form work.

32.1834 Construction Joints

Construction joints shall be constructed where necessary, shall be vertical and shall fit the scoring pattern. The edge of each joint shall be finished with a standard edging tool.

32.1835 Expansion Joints

A 1/2" x 5" approved premoulded expansion joint shall be installed so that the top is 1/4" below the finish grade of the sidewalk, at intervals not greater than twenty feet (20') and also adjacent to all buildings, driveways, and other structures, and at such other locations as may be ordered by the Engineer.

32.1836 Concrete

The concrete shall be evenly spread and leveled by screeding in such a manner as to obtain the required thickness of five inches (5"). The concrete shall be poured in twenty foot (20') strips and to a width as shown on the plans, or as directed.

32.1837 Finish

As soon as the concrete has set sufficiently to permit finishing operations, the surface of the concrete shall be rubbed with a wooden float. The "floating" shall remove all irregularities and produce a smooth and granular finish. The addition of cement to the surface will not be permitted. Unless otherwise directed, the edges of each panel or segment shall be 5 feet on center, parallel and perpendicular to the curb or pavement, or as ordered and shall be marked out with a standard edging tool having a radius of one-half inch (1/2"). If ordered by the Engineer, the concrete surface shall be lightly broomed with a standard hair broom to produce a non-skid surface, as directed.

32.1838 Protection

After the concrete has cured for about 28 days, a mixture of 50% boiled linseed oil and 50% mineral spirits by volume shall be applied with an approved type hand tank sprayer in two (2) applications. The first coat shall be applied at the rate of 0.025 gallons per square yard (40 sq. yd/gal.). After the first coat has thoroughly dried, a second coat shall be applied at the rate of 0.015 gallons per square yard (67 sq. yd/gal.). No traffic shall be allowed on the concrete walk until it has thoroughly dried.

Prior to any application of the linseed compound, the concrete surface shall be dry and cleaned of all dirt and debris.

32.184 Asphaltic Concrete Walks

After the necessary excavation has been completed to the required g-ade and the subgrade has been compacted to the satisfaction of the Engineer, a layer of approved steam cinders, run-of-bank gravel or crushed stone shall be placed thereon and shall be compacted to a compressed thickness of not less than three (3") inches.

After compacting the foundation course, 2" x 4" lumber of ten foot minimum length shall be placed flat along tangents and 1" x 3" lumber of ten foot minimum length along curves, both being securely staked to the proper line and grade as directed. Forms shall be straight, free from bends and warps at all times and shall be cleaned thoroughly and oiled before asphaltic concrete is placed against them. The forms shall rest firmly upon the thoroughly compacted sub-grade throughout their entire length, shall be joined neatly and tightly and staked securely to line and grade at least 200 feet in advance of the point of placing pavement by using at least three (3) bracing pins or stakes to each ten (10) foot length of side form, so that they resist the pressure of the pavement and the impact of the roller without springing.

Upon the approved foundation course shall be placed a layer of asphaltic concrete sufficient to give a compressed thickness of 1 1/2 inches after compacting with a 3 to 5 ton roller.

After the sidewalk has hardened sufficiently all formwork shall be removed and the spaces left shall be neatly filled with topsoil.

32.185 Concrete Drives

The Contractor shall use metal forms in the construction of the driveway. Wood forms may be used only when permitted by the Engineer. The forms shall be set true to line and grade and shall be installed with sufficient bracing to prevent warping.

No. 3 reinforcing bars shall be installed with a spacing of 12" center to center in both directions. Before any concrete is poured the Engineer shall approve the formwork and reinforcing.

When authorized by the Engineer, the Contractor may substitute steel mats in lieu of using steel bars, provided that the mats contain the equivalent cross-sectional area of bars specified per square foot.

Construction and expansion joints shall be placed where directed. The 1/2" x 7" approved premoulded expansion joints shall be installed in a workmanlike manner so that the top of material is 1/4" below the surface of the driveway and in a straight line.

Unless otherwise specified herein the method of construction shall be as described in Article 32.183, entitled "Concrete Walk".

32.186 Asphaltic Concrete Drives

After the necessary excavation has been completed to the required grade and the sub grade has been compacted to the satisfaction of the Engineer, a layer of approved No. 2 crushed stone shall be placed thereon and shall be compacted to a compressed thickness of not less than four (4") inches. Upon the approved foundation course shall be placed a layer of asphaltic concrete sufficient to give a compressed thickness of 1 1/2" inches after compacting with a 5 ton roller.

32.19 Curbing

32.191 General Construction

Wherever existing curbs are ordered to be removed, reset or new curb furnished and laid, they shall be constructed as shown on the plans and as specified herein, or as directed by the Engineer.

Unless otherwise specified, granite curb having radius of less than 90'-0" shall be cut to the true radius specified or ordered. The granite bullnose curb shall be laid in lieu of radius curb when the radius is 2'-6" or less.

The curb shall be set true to line and grade on an approved subgrade or concrete foundation. All spaces shall be thoroughly rammed so that the curb is fully supported throughout its entire length. Where required, the Contractor shall supply suitable pins and string lines so that the Engineer may provide line and grade.

Where curbing is to be removed or laid adjacent to existing pavement or sidewalks that are to remain, the Contractor shall line cut said pavements or sidewalks to provide a clean, uniform edge with a minimum disturbance to the remaining pavement.

The excavation and backfill shall be done in accordance with Article 30 of these specifications entitled "Excavation and Backfill". The cost of the excavation, backfill, preparation of the subgrade line cutting the pavement, will be paid for under the appropriate curb items bid in this contract.

32.1911 Drains

Provision shall be made for all existing drains leading to the curb, by cutting a circular hole through the curb of the same diameter and elevation as the drain pipe. Joints between the back face of the curb and end of pipe shall be watertight, and formed by applying mortar composed of one part Portland Cement and two parts sand, as shown on the plans. Openings in the curb for drains shall not be less than 12 inches from either end of the curb stone, and no patching or cementing of the curb will be permitted. The Contractor shall not change the locations of existing drains unless ordered by the Engineer.

32.1912 Depressed Curbs

At driveways and other places as directed, the curb shall be depressed so as to give a 1 1/2 inch front face and the ends and top of the depressed section shall be dressed with uniform slope as shown on the plans.

32.1913 Protection

The Contractor shall protect the curbing and keep it in first class condition until the completion of the contract. Any curbing which is damaged at any time previous to the final acceptance of the work shall be removed and replaced with satisfactory curbing at the Contractor's expense.

32.192 Stone Curbs

32.1921 Concrete Foundations

Where concrete foundations are specified or ordered, the foundation shall consist of a Class B concrete as described in Article 31 of the specifications entitled "Portland Cement Concrete", except that the mix shall contain #1 crushed stone.

Concrete shall be placed in such a manner that the curbing shall be set true to line and grade and the curb shall be set so as to have a firm and uniform bearing.

32.1922 Handling

Care shall be taken in handling the curb so that there shall be no unnecessary breakage. Any curbing damaged in removing, hauling and handling due to the carelessness of the Contractor shall be replaced with new curb at the Contractor's expense.

Particular care shall be taken to protect the exposed face of the curb from stains or smears of cement during the operation of bedding and of grouting the front joint. If required, these exposed faces shall be thoroughly washed with water or acid to remove all stains.

32.1923 Resetting

Existing curb that is ordered to be reset, shall only be curb that is sound and of a dimension acceptable to the Engineer.

All joints, tops and faces shall be redressed, if and as ordered by the Engineer, so as to obtain a smooth top surface and satisfactory lines of the same class as specified for new curbing.

Where old curb is to be reset adjacent to a concrete pavement, the space remaining after insertion of the 3/4" longitudinal expansion joint shall be filled with cement grout consisting of one (1) part of cement to two (2) parts of sand by volume.

32.193 Concrete Curbs

Curbing shall be moulded in place in sections 6 feet long with provision made at each joint for expansion of one-eighth inch.

In moulding, the section shall be completely separated by steel sheet templets set perpendicular to the face and top of the curb. These templets shall be one-eighth inch in thickness and not less than 2 inches longer than the depth of curbing. These templets shall be set carefully during the placing of the concrete and allowed to remain in place until the concrete has set sufficiently to hold its shape.

All forms shall be set true to line grade and held rigidly in position. They shall be of metal and such construction that a smooth surface shall be provided. Wood forms may be used only with authorization from the Engineer. On curves, all forms must be bent to meet the required curvature; the use of short chords will not be permitted. All forms shall be cleaned thoroughly and greased or soaped before concrete is placed against them. Forms which have become worn, bent or broken shall not be used.

The concrete shall be compacted by means of an approved immersion type mechanical vibrator of a size and weight sufficient to thoroughly vibrate the entire mass. It shall vibrate at not less than 5000 impulses per minute. The forms shall be left in place until the concrete has set sufficiently so that, when ordered by the Engineer, they can be removed without injury to the curbing.

Exposed edges of the sections shall be neatly rounded by a proper edging tool of the radius as directed. Immediately upon the removal of the forms the curbing shall be rubbed down to a smooth and uniform surface, but no plastering or brush finishing will be allowed. All joints shall be opened from top to bottom, the edges adjacent to the joint being sharp and clean cut. For this work, a competent and skillful finisher shall be employed.

All exposed concrete shall be protected as described under Article 32.1838 entitled "Protection".

32.2 Payment Items

Item 35 - Fine Grading

a. Work

Under this item, the Contractor shall prepare the fine grade to receive pavement, or foundation for pavement, in conformity with the lines and grades as shown on the plans or as ordered by the Engineer.

Unless otherwise specified herein, work shall conform with Article 32.1 "General", of these specifications entitled "Streets and Sidewalks".

b. Payment

The quantity of fine grading measured for payment shall be the actual number of square yards of fine grading prepared in accordance with the plans or the orders of the Engineer.

The unit price bid shall include the cost of all labor, materials, plant, equipment and all incidental expenses necessary to satisfactorily perform all of the work contemplated under this item.

Item 36 - Calcium Chloride

a. Work

Under this item the Contractor shall furnish and apply Calcium Chloride as shown on the plans or ordered by the Engineer.

Calcium Chloride shall be delivered in waterproof paper bags of an approved type.

The Contractor shall treat the roadway with Calcium Chloride by means of an approved spreader, at such locations and at such times as the Engineer may direct.

b. Payment

The quantity of Calcium Chloride to be measured for payment shall be the actual number of tons furnished and applied as directed by the Engineer.

The unit price bid shall include the cost of furnishing all labor, material, plant and equipment necessary to dampen the surface and spread the Calcium Chloride.

Item 37 - Concrete Base for Pavement

a. Work

Under this item the Contractor shall furnish and place, upon a properly prepared subgrade, Class B concrete base for pavement, of the dimensions shown on the plans or as ordered by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications, entitled, "Streets and Sidewalks".

b. Payment

The quantity of concrete base for pavement measured for payment shall be the number of square yards of base incorporated in the work in accordance with the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant, and equipment necessary to completely perform the work contemplated under this item, including line cutting, preparation of subgrade foundation, furnishing and laying of forms, mixing, placing, screeding, finishing and curing of the concrete and joint material.

Item 38 - Reinforced Concrete Pavement

a. Work

Under this item the Contractor shall furnish and install Class A air-entrained reinforced concrete pavement of the dimensions specified or ordered and to the lines and grades indicated in the plans or ordered by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications, entitled, "Streets and Sidewalks".

b. Payment

The quantity of reinforced concrete pavement measured for payment shall be the actual number of square yards of pavement of the dimensions specified or ordered, furnished and installed to the lines and grades indicated in the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant, equipment and other incidental expenses necessary to completely perform the work contemplated under this item, including line cutting, preparation of subgrade foundation, furnishing and laying of forms, lathing, mixing, placing, screeding, finishing and curing of the concrete, crossovers and joint material.

Item 39 - Seal Coat - Single Treatment

a. Work

Under this item, the Contractor shall furnish and lay a single treatment asphaltic macadam seal coat where specified and/or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications, entitled, "Streets and Sidewalks".

b. Payment

The Contractor shall be paid for the number of square yards of asphaltic macadam seal coat - single treatment - furnished and laid in accordance with the plans and specifications and/or as ordered by the Engineer.

The unit price bid shall include the cost of furnishing all labor, materials, plant, equipment and other incidental expenses necessary to completely perform the work specified and/or ordered.

Item 40 - Seal Coat - Double Treatment

a. Work

Under this item, the Contractor shall furnish and lay a double treatment asphaltic macadam seal coat where specified and/or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications, entitled, "Streets and Sidewalks".

b. Payment

The entire payment section from Item 39 shall apply herein except that payment shall be made for an asphaltic macadam seal coat - double treatment.

Item 41 - Asphaltic Macadam Base

a. Work

Under this item the Contractor shall furnish and lay an asphaltic penetration macadam base of the total finished thickness specified, to the lines and grades indicated on the plans and/or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Argicle 32.1 "General" of these specifications, entitled, "Streets and Sidewalks".

Item 41 - Asphaltic Macadam Base (Cont'd)

b. Payment

The Contractor shall be paid for the number of square yards of Asphaltic Macadam base furnished and laid in accordance with the plans and specifications and/or as ordered by the Engineer.

The unit price bid shall include the cost of furnishing all labor, materials, plant and equipment necessary to completely perform the work specified and/or ordered.

Item 42 - Asphaltic Macadam Pavement

a. Work

Under this item the Contractor shall furnish and lay an asphaltic penetration macadam pavement of the finished thickness specified to the lines and grades shown on the plans and/or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications entitled, "Streets and Sidewalks"

b. Payment

The entire payment section from Item 41 shall apply herein, except that payment shall be made for an Asphaltic Macadam Pavement, including a specified seal coat.

Item 43 - Asphaltic Plant Mix Macadam Base

a. Work

Under this item the Contractor shall furnish and lay an asphaltic plant mix macadam base of the finished thickness specified to the lines and grades shown on the plans and/or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications, entitled, "Streets and Sidewalks".

b. Payment

The Contractor shall be paid for the number of tons of asphaltic plant mix macadam furnished and laid in accordance with the plans and specifications and/or as ordered by the Engineer.

The unit price bid shall include the cost of furnishing all labor, materials, plant, equipment and other incidental expenses necessary to completely perform the work specified and/or ordered.

Item 44 - Asphaltic Plant Mix Macadam Pavement

a. Work

Under this item the Contractor shall furnish and lay an asphaltic plant mix macadam pavement of the finished thickness specified to the lines and grades shown on the plans and/or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications, entitled, "Streets and Sidewalks".

b. Payment

The entire payment section from Item 43 shall apply herein, except this payment shall be made for an asphaltic plant mix macadam pavement including a specified seal coat.

Item 45 - Concrete Pavement Chipped

a. Work

Under this item, the Contractor shall chip and remove a portion of the existing pavement to a minimum depth of two (2") inches or as indicated on the plans and directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 32.1 "General" of these specifications, entitled, "Streets and Sidewalks".

b. Payment

The quantity to be measured for payment shall be the total number of square yards of existing concrete pavement chipped as specified or ordered.

The unit price bid shall include the cost of all labor, plant, material, equipment and other incidental expenses required to complete the work described, including all necessary excavation.

Item 46 - Asphaltic Concrete Surface Removed

a. Work

Under this item the Contractor shall remove existing asphaltic concrete surface as indicated on the plans or directed by the Engineer. It is important that the Contractor remove the pavement surface carefully so as not to damage base material that is to remain. If, in the opinion of the Engineer, said damage or excavation could have been avoided, the Contractor shall repair the damaged areas to the satisfaction of the Engineer. If directed by the Engineer, the Contractor shall line cut the portions of pavement surface where they abut pavement shown to remain.

Item 46 - Asphaltic Concrete Surface Removed (Cont'd)

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1, "General", of these specifications entitled, "Streets and Sidewalks".

b. Payment

The entire payment section from Item 45 shall apply herein except that payment will be made for actual number of square yards of existing asphaltic concrete surface removed.

Item 47 - Brick Surfacing Removed and Relaid

a. Work

Under this item the Contractor shall relay or replace brick surfacing where specified or ordered by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1, "General", of these specifications entitled, "Streets and Sidewalks".

b. Payment

The quantity of brick pavement and/or gutter measured for payment shall be the actual number of square yards of pavement and/or gutter replaced, or relaid, as specified or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment to complete the work described including all necessary excavation, fine grading, Class B concrete, sand, cement, grouting, and any new paving brick that may be required.

Item 48 - Asphaltic Concrete Binder Course

b. Work

Under this item the Contractor shall furnish and lay a hot-mix asphaltic concrete binder material of such thickness and at such locations as shown, specified or ordered.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1, "General" of these specifications, entitled, "Streets and Sidewalks".

c. Payment

Asphaltic concrete binder material will not be accepted unless the asphaltic concrete delivered is certified and approved by a recognized testing and inspection laboratory.

Item 48 - Asphaltic Concrete Binder Course (Cont'd)

The Contractor shall be paid for the number of tons of asphaltic concrete binder material furnished and laid in accordance with the plans and specifications and/or as ordered by the Engineer.

The unit price bid shall include the cost of furnishing all labor, materials, plant and equipment necessary to completely perform the work specified and/or ordered.

Item 49 - Asphaltic Concrete Wedge Course

a. Work

Under this item the Contractor shall furnish and spread mechanically or manually a hot-mix asphaltic concrete wedge material of such thickness and at such location as specified or ordered.

The material shall be of the same composition as "Asphaltic Concrete Binder Course".

Unless otherwise specified herein, work shall be performed as described in Article 32.1, "General", in these specifications entitled "Streets and Sidewalks".

b. Payment

The entire payment section of Item 48 shall apply herein, except that payment shall be made for Asphaltic Concrete Binder Course.

Item 50 - Asphaltic Concrete Surface Course

a. Work

Under this item the Contractor shall furnish and lay a hot-mix asphaltic concrete surfacing material of such thickness and at such locations as shown, specified or ordered.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1, "General", of these specifications entitled "Streets and Sidewalks".

b. Payment

The entire payment section of Item 48 shall apply herein except that payment shall be made for Asphaltic Concrete Surface Course.

Item 51 - Asphaltic Asbestos Concrete Surface Course

a. Work

Under this item the Contractor shall furnish and lay a hot-mix asbestos asphaltic concrete surfacing material of such thickness and at such locations as shown, specified or ordered.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1, "General" of these specifications, entitled "Streets and Sidewalks".

b. Payment

The entire payment section of Item 48 shall apply herein except that payment shall be made for Asphaltic Asbestos Concrete Surface Course.

Item 52 - Temporary Pavement

a. Work

Under this item, the Contractor will be required to furnish, lay and maintain temporary pavement. The width of temporary pavement will be as shown on the plans or specified. Where the excavation has gone beyond the limits shown on the plans or specified, the Contractor shall install temporary pavement in these areas at his own expense.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1, "General" of these specifications, entitled, "Streets and Sidewalks", and particularly Article 32.152 thereof.

b. Payment

The quantity of temporary pavement and/or sidewalk measured for payment shall be the actual number of square yards of temporary pavement or sidewalk furnished and laid where and as ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to satisfactorily furnish, place and maintain the temporary surface complete as specified and ordered.

Item 53 - Reinforced Concrete Base Replaced

a. Work

Under this item the Contractor shall furnish and place a Class B reinforced concrete base as shown on the plans or as directed.

Item 53 - Reinforced Concrete Base Replaced (Cont'd)

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1, "General", of these specifications entitled, "Streets and Sidewalks.

Unless otherwise directed, the top of the proposed base shall meet the top of the existing base.

b. Payment

The quantity of concrete base measured for payment shall be the actual number of square yards of base replaced as shown on the plans or directed.

Unless specified elsewhere, reinforcing steel furnished and placed shall be included in the price bid for this item.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including line cutting, excavation, fine grading, placing reinforcement and curing of concrete.

Item 54 - Asphaltic Macadam Base Replaced

a. Work

Under this item the Contractor shall furnish and place an asphaltic macadam base, replaced as shown on the plans or as directed.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications, entitled, "Streets and Sidewalks.

b. Payment

The quantity of paving furnished and laid to be measured for payment shall be the total number of square yards of area paved as shown on the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment, necessary to complete the work described including line cutting, excavation, and fine grading.

Item 55 - Asphaltic Macadam Pavement Replaced

a. Work

Under this item the Contractor shall furnish and place an asphaltic macadam pavement including a seal coat as shown on the plans or as directed.

Item 55 - Asphaltic Macadam Pavement Replaced (Cont'd)

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General", entitled "Streets and Sidewalks".

b. Payment

The entire payment section from Item 54 shall apply herein except that payment will be made for actual number of square yards of asphaltic macadam pavement, including a specified seal coat, replaced.

Item 56 - Reinforced Concrete Pavement Replaced

a. Work

Under this item the Contractor shall furnish and place a reinforced concrete pavement as shown on the plans or as directed.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General", of these specifications, entitled "Streets and Sidewalks".

b. Payment

The entire payment section from Item 54 shall apply herein except that payment will be made for actual number of square yards of reinforced concrete pavement replaced.

Item 57 - Crushed Stone

a. Work

Under this item the Contractor shall furnish, place and compact crushed stone of the sizes specified to the lines and grades shown on the plans and/or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications entitled, "Streets and Sidewalks".

b. Payment

The quantity of crushed stone measured for payment shall be the actual number of tons of stone furnished and spread as described.

The unit price bid shall include the cost of all labor, material, plant, equipment and other incidental expenses necessary to perform the work described.

Item 58 - Asphalt Cement

a. Work

Under this item the Contractor shall furnish and apply asphalt cement of the degree and consistency specified or ordered by the Engineer, and as indicated on the plans.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications entitled, "Streets and Sidewalks".

b. Payment

The quantity of asphalt cement measured for payment under this item shall be the actual number of gallons of material furnished and applied as specified or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant, and equipment to complete the work described.

Under this item the Contractor will be paid for the number of gallons of asphalt cement furnished and incorporated in the work in accordance with the plans and specifications and the orders of the Engineer.

Item 59 - Cationic Asphalt Emulsion

a. Work

Under this item, the Contractor shall furnish and apply cationic asphalt emulsion of the degree and consistency specified or ordered by the Engineer, and as indicated on the plans.

The entire work section from Item 58 shall apply, except as specified herein.

b. Payment

The entire payment section from Item 58 shall apply herein, except that payment will be made for the actual number of gallons of Cationic Asphalt Emulsion furnished and applied as specified or ordered by the Engineer.

Item 60 - Asphalt Cement for Subsealing Pavement

a. Work

Under this item, the Contractor shall furnish and apply asphalt cement for subsealing cement concrete pavements of the degree and consistency specified or ordered by the Engineer, and as indicated on the plans.

Item 60 - Asphalt Cement for Subsealing Pavement (Cont'd)

All work shall comply with the requirements as described in Item 60 of the NYSDOT specifications, entitled "Subsealing Cement Concrete Pavement".

b. Payment

The entire payment section from Item 58 shall apply herein, except that payment will be made for the actual number of gallons of Asphalt Cement for Subsealing Cement Concrete Pavements furnished and applied as specified or ordered by the Engineer.

Item 61 - Drill Holes for Subsealing Pavement

a. Work

Under this item the Contractor shall drill holes through the existing cement concrete pavement at locations designated by the Engineer to provide means for pumping the subsealing asphalt.

All work shall comply with the requirements as described in Item 60D of the NYSDOT specifications entitled, "Drilling Subsealing Holes."

b. Payment

The quantity of holes measured for payment under this item shall be the actual number of holes drilled in accordance with the plans and specifications or as ordered by the Engineer.

The unit price bid per each hole shall include the cost of all labor, materials, plant and equipment necessary for proper completion of the work.

Item 62 - Curb Removed and Stored

a. Work

Under this item the Contractor shall remove, transport and store existing curbing where shown on the plans or specified. The Contractor shall store only that curb that is acceptable for relaying, as determined by the Engineer and that curb shall be cleaned of all concrete.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications entitled "Streets and Sidewalks".

b. Payment

The quantity of curb removed and stored measured for payment under this item shall be the actual number of lineal feet of curb removed, transported and stored in accordance with the plans and specifications and as directed.

The unit price bid shall include the cost of all labor, material, plant, equipment and incidental expenses necessary to complete the work; including excavation, backfill, handling, transporting and storing.

Item 63 Curb Removed and Reset Witnout Concrete Foundation

a. Work

Under this item the Contractor shall remove and reset existing curb without concrete foundation as shown on the plans or ordered by the Engineer.

Where specified or ordered, the curb shall be dressed as directed.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications entitled "Streets and Sidewalks".

b. Payment

The quantity of curb removed and reset without foundation measured under this item shall be the actual number of lineal feet of curb set, as specified and shown on the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described including all necessary excavation, backfill, cutting and dressing of curb.

Item 64 - Curb Removed and Reset with Concrete Foundation

a. Work

Under this item the Contractor shall remove and reset existing curb in concrete foundation as shown on the plans or ordered by the Engineer. The Contractor shall clean and reset only that curb that is acceptable as determined by the Engineer.

The entire work section from Item 63 shall apply except as specified herein.

b. Payment

The entire payment section of Item 63 shall apply herein except that payment will be made for the actual number of lineal feet of existing curb removed and reset with concrete foundation.

Item 65 - Curb Set

a. Work

Under this item the Contractor shall set curbing furnished by others in concrete foundations where shown on the plans or specified. The curb shall be picked up by the Contractor from a location within the City of White Plains and delivered to the job site. The concrete foundation shall be furnished and placed by the Contractor including all formwork. Where specified or ordered the curb shall be dressed as directed.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications entitled "Streets and Sidewalks".

b. Payment

The quantity of curb set with concrete foundation measured for payment under these items shall be the actual number of lineal feet of curbing set in accordance with the plans, specifications and directions of the Engineer.

The unit price bid for these items shall include the cost of all labor, materials, plant, and equipment necessary to complete the work described and including all necessary excavation, backfill, concrete foundation and dressing of curb, except when otherwise specified.

Item 66 - Field Stone Curb

Item 67 - Bluestone Curb

Item 68 - Granite Straight Curb

Item 69 - Granite Radius Curb

Item 70 - Granite Bullnose Curb

a. Work

Under these items the Contractor shall furnish and set curb(s) specified above the concrete foundations, in locations and to the line and grade shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications, entitled, "Streets and Sidewalks".

b. Payment

The quantity of curb furnished and set with concrete foundation measured for payment under these items shall be the actual number of lineal feet of curbing set as measured along the exterior face at the gutter line in accordance with the plans, specifications and directions of the Engineer.

The unit price bid for these items shall include the cost of all labor, materials, plant and equipment necessary to complete the work described and including all necessary excavation, backfill, concrete foundation and dressing of curb.

Item 71 - Concrete Curb

a. Work

Under this item, the Contractor shall construct air-entrained concrete curbing of the dimensions and type shown on plans at places specified on the plans or ordered by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications entitled "Streets and Sidewalks".

The concrete shall be of a Class A mix except that the coarse aggregate shall be of #1 size.

Item 71 - Concrete Curb (Cont'd)

b. Payment

The quantity of concrete curb measured for payment under this item shall be the actual number of lineal feet of curb placed in accordance with the plans or directions of the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work, and including all necessary excavation, backfill, air-entraining concrete, forms, finishing, joint material, curing and protection.

Item 72 - Asphaltic Concrete Berm

a. Work

Under this item the Contractor shall construct asphaltic concrete berm of the dimensions and type as shown on the plans or directed by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications entitled "Streets and Sidewalks".

The berm shall be constructed by machine or hand and shall be compacted so as to produce a dense, uniform finished product. All berm that is damaged prior to final acceptance of the work shall be replaced by the Contractor at no expense to the City of White Plains.

b. Payment

The quantity of asphaltic concrete berm measured for payment shall be the total number of lineal feet of berm set in accordance with the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, material, plant, equipment and incidental expenses necessary to complete the work described including necessary excavation and backfill.

Item 73 - Stone Gutter Removed and Relaid

a. Work

Under this item, the Contractor shall remove and relay a stone gutter of the dimensions specified in the plans and specifications, or ordered by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications entitled "Streets and Sidewalks".

Item 73 - Stone Gutter Removed and Relaid (Cont'd)

The stone shall be removed and relaid in the same manner as Item 76, entitled "Brick Sidewalk Removed and Relaid".

b. Payment

The quantity of stone gutter to be measured for payment shall be the actual number of square feet of exposed surface or lineal feet of gutter as specified, and in accordance with the plans or as directed by the Engineer.

The unit price bid shall include the cost of all materials, labor, plant and equipment necessary to complete the work described, including all necessary excavation and backfill unless otherwise specified.

Square foot measurement, if specified, shall be taken as level measurement; lineal foot measurement, if specified, shall be taken along the axis of the gutter.

Item 74 - Concrete Curb and Gutter

a. Work

Under this item the Contractor shall place concrete curb and gutter of the dimensions and type shown on the plans at places specified on the plans or as ordered by the Engineer.

The requirements specified under Item 71 "Concrete Curb" shall apply as specified herein.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications entitled, "Streets and Sidewalks".

b. Payment

The quantity of concrete curb and gutter to be measured for payment shall be the actual number of square feet of exposed surface or lineal feet of curb and gutter as specified, placed in accordance with the plans or as ordered by the Engineer.

The unit price bid shall cover the cost of all labor, materials, plant and equipment necessary to complete the work described including all necessary excavation, backfill, form and protection. Square foot measurements, if specified, shall be taken as level measurements; lineal foot measurements, if and unless otherwise specified, shall be taken along the axis of the gutter.

Item 75 - Concrete Island or Mall

a. Work

Under this item the Contractor shall construct an air-entrained concrete island or mall as shown on the plans or directed by the Engineer.

Unless otherwise specified the concrete shall be Class A and the work shall be performed in accordance with Article 32.1 "General" of these specifications, entitled, "Streets and Sidewalks".

b. Payment

The quantity of concrete island or mall measured for payment shall be the actual number of square yards of island or mall constructed as shown on the plans or as directed.

The unit price bid shall cover the cost of all labor, materials, plant and equipment necessary to complete the work, including line cutting, excavation and backfill, air-entrained concrete, forms, reinforcement and expansion joint material.

Item 76 - Brick Sidewalk Removed and Relaid

a. Work

Under this item the Contractor shall remove and relay brick sidewalk on a three inch (3") sand cushion, where shown on the plans or ordered by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications entitled "Streets and Sidewalks".

b. Payment

The quantity of brick sidewalk removed and relaid measured for payment under this item shall be the number of square feet of sidewalk relaid in accordance with the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including all necessary excavation and backfill unless otherwise specified.

Item 77 - Bluestone Sidewalk Removed and Reset

a. Work

Under this item the Contractor shall remove and reset flag walks on a three inch (3") sand cushion where shown on the plans or ordered by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications entitled, "Streets and Sidewalks".

b. Payment

The quantity of sidewalk removed and reset measured for payment shall be the number of square feet of walks removed and reset in accordance with the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including all necessary excavation and backfill unless otherwise specified.

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Item 78 - Bluestone Sidewalk

a. Work

Under this item the Contractor shall furnish and place new bluestone flag walks where shown on the plans or ordered by the Engineer.

The method of laying new flags shall be as described in Article 32.182, entitled "Walk Removed and Reset".

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications entitled "Streets and Sidewalks".

b. Payment

The quantity of sidewalk furnished and set measured for payment shall be the number of square feet of sidewalks, in place in accordance with the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, plant and equipment necessary to complete the work described, including dressing of flags, sand cushion, cement, mortar, excavation and backfill.

Item 79 - Concrete Sidewalk

a. Work

Under this item the Contractor will be required to construct a one course, air-entrained sidewalk to the dimensions indicated on the plans and as ordered by the Engineer.

Unless otherwise specified the concrete shall be Class A and the work shall be performed in accordance with the requirements as contained in Article 32.1 "General" of these specifications, entitled, "Streets and Sidewalks".

b. Payment

The quantity of concrete sidewalk measured for payment shall be the number of square feet of walk in place in accordance with the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, plant and equipment necessary to complete the work described, including air-entraining concrete, base course, expansion joint material, linseed compound, formwork, line cutting, excavation, backfill and disposal of excess material.

Item 80 - Asphaltic Concrete Sidewalk

a. Work

Under this item the Contractor will be required to construct an asphaltic concrete sidewalk to the dimensions indicated on the plans and as ordered by the Engineer.

Unless otherwise specified herein, work shall conform with the requirements as contained in Article 32.1 "General" in these specifications entitled, "Streets and Sidewalks".

b. Payment

The quantity of asphaltic concrete sidewalk measured for payment shall be the number of square feet of sidewalk laid in place in accordance with the plans and specifications and the orders of the Engineer.

The unit price bid shall include the cost of all labor, plant, materials and equipment necessary to complete the work described, including cinders or gravel, formwork, asphaltic concrete, line cutting, excavation and backfill.

Item 81 - Reinforced Concrete Driveway

a. Work

Under this item the Contractor shall construct air-entrained reinforced concrete driveway on an approved subbase, as shown on the plans or directed by the Engineer.

Unless otherwise specified the concrete shall be Class A and the work shall be performed in accordance with the requirements as contained in Article 32.1 "General" of these specifications, entitled, "Streets and Sidewalks". The cement used shall be High Early Strength Portland Cement.

b. Payment

The quantity of reinforced concrete driveway measured for payment shall be the actual number of square yards or square feet of driveway constructed.

The unit price bid shall cover the cost of all labor, materials, plant and equipment necessary to complete the work, including all excavation and backfill, air-entrained concrete, forms, line cutting, reinforcement, linseed compound, expansion joint material and disposal of excess material.

Where a cinder or broken stone foundation is ordered by the Engineer to be laid below the concrete, such foundation will be paid for as specified, or if no provision has been made for payment, then payment will be made as specified for Extra Work.

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Item 82 - Asphaltic Concrete Driveway

a. Work

Under this item the Contractor shall construct an asphaltic concrete driveway to the lines and grades as shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed in accordance with Article 32.1 "General" of these specifications, entitled "Streets and Sidewalks", and under Items 50 and 57 entitled "Asphaltic Concrete Surface Course" and "Crushed Stone" respectively.

b. Payment

The quantity of asphaltic concrete driveway measured for payment shall be the actual number of square yards of driveway constructed as shown on the plans or as directed.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including excavation and backfill, line cutting and preparation of subgrade.

33. PIPELINES, CONDUITS AND APPURTENANCES

33.1 General

33.11 General Requirements

The Contractor shall lay pipe, conduit, fittings and appurtenances of the size specified or ordered. He shall construct structures as shown on the plans or as directed. The work shall include the making of joints as specified or ordered, and all necessary earth excavation and backfill, removal of existing pavement or other surface, sheeting and shoring, (except as otherwise provided under the item of "Sheeting and Shoring"), dewatering and other incidental work, to the line and grade indicated on the plans or ordered by the Engineer. City forces shall make all connections to existing water pipe unless otherwise specified in the plans or ordered by the Engineer.

Where specified on the plans or ordered by the Engineer, the Contractor shall remove existing valves, hydrants, castings and appurtenances that have been abandoned, and shall be delivered by the Contractor to a location within the City of White Plains as the Engineer may designate. Such material as is not desired by the City, as indicated by the Engineer, shall be removed from the site of the work and disposed of by the Contractor at the latter's own expense. The Contractor shall exercise all necessary precautions when removing, transporting and storing the above-mentioned material. Any damage to the materials due to the Contractor's carelessness shall be replaced or repaired at no cost to the City.

All materials used shall conform to Section II of these specifications entitled "Materials of Construction".

The Contractor is directed to the "Standard Construction Details" of the City of White Plains. Any modifications to the details shall be included under the appropriate item in the Contract.

33.12 Excavation and Backfill

The Contractor shall excavate and backfill to the line and grade specified and as described in Article 30. of these Specifications entitled "Excavation and Backfill".

33.13 Laying Pipe, and Conduit

33.131 Handling and Cutting

When the Contractor is to furnish the pipe, conduit and/or fittings and appurtenances, all handling charges shall be included in the price bid for the work. Any pipe, conduit, fittings or appurtenances found to be damaged shall be replaced by the Contractor at no cost to the City.

The Contractor's attention is directed to the fact that cast iron used for pipe and fittings, and also the cement lining, are both comparatively brittle. Every care shall be taken in handling and laying to avoid abrasion of the pipe coating and the lining.

Care shall be taken to prevent damage to valves and appurtenances during handling and installation. All material shall be carefully inspected for defects in workmanship and materials; all debris and foreign material cleaned out of valve openings, etc.; all operating mechanisms operated to check their proper functioning; and all nuts and bolts checked for tightness. Valves and other equipment which do not operate easily or are otherwise defective shall be repaired or replaced at the Contractor's expense.

Any fitting showing a crack, and any fitting or pipe which has received a severe blow that may have caused an incipient fracture even though no such fracture can be seen, shall be marked as rejected and removed at once from the work.

Whenever the coating of cast-iron pipe shall be found to have been rubbed off to an unusual extent, the part shall be thoroughly cleaned and recoated by the Contractor at his own expense, with Smith's Durable Metal Coating, or other paint satisfactory to the Engineer, and the Contractor shall keep on hand a suitable supply for this purpose.

Unless otherwise approved, all cutting of cast-iron pipe shall be done with an approved power-driven cutter. A hammer and chisel shall not be used to cut pipe. All ends shall be examined for possible cracks caused by cutting.

Pipes and fittings shall be subjected to a careful inspection and a hammer test just before being laid.

33.132 Laying

No pipe or conduit shall be laid except in the presence of the Engineer or his authorized inspector, and the Engineer may order the removal and relaying of any pipe or conduit not so laid.

Every pipe conduit and fitting shall be cleared of all debris, dirt, etc., before being laid, and shall be kept clean until accepted in the completed work. All pipe conduit and fittings shall be carefully handled by equipment of sufficient capacity and proper design to avoid damage to the pipe.

33.132 Laying (Cont'd)

Special precautions shall be exercised to prevent any pipe from resting on rock, masonry or other material which would present a non-uniform foundation. The use of wooden or other blocks, rocks, stones or mounds of earth for the purposes of supporting pipe and fittings will not be permitted.

Pipe, conduit and fittings shall be laid accurately to the required lines and grades. Care shall be taken to preserve a good alignment. The Contractor shall provide a minimum of 3 consecutive batter boards, spaced at 25 ft. intervals. Joints shall not be pulled or cramped to secure changes in alignment, except as the design of the joint will conservatively permit and then only as specifically directed by the Engineer. The following table indicates the maximum allowable deflection for cast iron pipe laid in place without fittings.

Maximum Deflection		
Pipe Dia.	Water (18'-20' length)	Sewer and Drain
4"	13.0"	Unless otherwise specified, no deflections will be permitted.
6"	11.0"	
8"	10.0"	
10"	9.5"	
12"	9.5"	
14"	9.0"	
16"	8.8"	
18"	8.0"	
20"	7.2"	
24"	6.0"	

At all times when pipe laying is not actually in progress, all open ends of all pipes shall be closed by approved temporary watertight plugs. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe has passed.

If directed by the Engineer, watertight plugs shall be left in either or both ends of all finished pipelines until the work is completed. All pipe shall be laid with bells upstream. The spigot shall be carefully inserted into the bell in such a manner that there will be no uneveness along the bottom half of the pipes and and so that there is a uniform joint space all around the pipe when the pipes are joined together in the trench. Trimming of pipe will not be allowed.

33.132 Laying (Cont'd)

When sewers and drains are being laid in each section between manholes or other permanent openings, light from the remote end of the section shall remain constantly in plain view throughout the entire length of such section.

Where required, pipe or fittings shall be drilled and tapped for threaded connections. If required, bosses shall be provided at such points.

Whenever unforseen conditions in the field require a change in alignment of pipe and/or conduit the Contractor shall be required to submit such proposed change to the Engineer for approval, prior to the laying of pipe, conduit, fittings and appurtenances.

Unless otherwise specified the length of pipe or conduit measured for payment shall be considered as being the actual number of linear feet as measured along the centerline of the pipe or conduit in place, with no deductions made for fittings. The nominal length of a unit or fractional unit shall be the inside measured length from butt end to butt end exclusive of the bell.

Unless otherwise specified, measurement for payment of pipes and conduits whose diameters are from four (4") inches up to, but not including, twenty-four (24") inches shall be made to the center line of manholes, catch basins, valves and other structures. The measurement for payment of pipes and conduits whose diameters are twenty-four (24") inches and greater shall be made by deducting the distances between inside faces of manholes, catch basins and other structures.

33.133 Making Joints

33.1331 General Requirements

The pipe shall be placed together in such a manner as to obtain a uniform joint space between the spigot and hub so that the jointing material may flow freely around the joint and give an even thickness of jointing material all around the pipe. On large-sized pipe, if wedges are being driven to obtain this uniform space, the pipe must be braced so that it will not slide forward or away from the hub shoulder. Large pipe may be held in position by keeping a strain on the hoisting line. Spigot ends must be solidly placed against the hub-shoulder, and must be driven completely "home" to within one eighth (1/8") inch of the total depth of the bell, and held in place until the joint is completed.

Unless otherwise specified calked joints shall be yarned tightly, allowing a depth of joint of not less than two and a half inches (2 1/2") after joint has been yarned. The yarn shall be of the best quality one-half inch (1/2") braided hemp entirely free from oil, tar or grease and shall be driven hard against the back of the hub allowing no stray ends to protrude. All joints shall be perfectly dry before pouring.

33.1331 General Requirements (Cont'd)

The joints shall be dry, well cleaned, and all dirt, oil grease, blisters or lumps of tar coating removed from the bell and spigot before the pipe is inserted into the bell. In extreme cold weather pipes shall be heated with a torch to remove frost.

The jointer shall be the usual round asbestos jointer, or rubber jointer. When jointer is placed around the pipe there shall be an opening of at least two inches (2") where the ends of jointer approach each other in order to allow for the placing of a pouring gate.

The Contractor shall use a high pouring gate, made of metal and at least 8" in height. The top of the gate shall be three inches (3") in diameter, tapering down to two inches (2") where it enters the joint. All joints must be completely filled at one pouring. If one ladle will not hold enough, two or more ladles shall be used for this purpose. The pouring shall be done in such a manner as to keep a continuous stream running into the joint until the pouring gate is entirely filled.

When the jointer is removed the joint shall be inspected and, if found to be imperfect, shall be cut out and replaced at once.

If joints are not tight within a reasonable time after testing they shall be cut out and replaced with an entire new joint at the Contractor's expense and no extra compensation will be allowed therefor.

33.1332 Lead Joint for C.I. Pipe

The lead shall be heated to a temperature of about 625 deg. F. at which it will be free-pouring and have a definite bluish color. Dross shall not be permitted to accumulate in the melting pot. The pot shall be kept in easy reach of the joint so that the molten metal shall not be chilled in being carried from the melting pot to the pipe. Each joint shall be run in one pouring and shall thereafter be calked by skilled mechanics in such manner as to secure a permanently tight joint without straining either the pipe or the bell.

33.1333 Hydro-tite Joint for C.I. Pipe

The method of heating and pouring of the compound shall be performed in strict accordance with the manufacturers' instructions or as directed by the Engineer.

33.1334 Push-on Joint for C.I. Pipe

The method of installing this joint shall be performed in strict accordance with the manufacturers' instructions or as directed by the Engineer.

33.1335 Jointite Joint for V.T. Pipe

The method of heating and pouring of the compound shall be performed in strict accordance with the manufacturers' instructions or as directed by the Engineer.

33.1336 Cement Mortar Joint for Concrete Pipe

Cement mortar joints, if specified, shall be made in the following manner: Before a pipe is laid, the exposed joint end of the preceding pipe shall be plastered on the inside with stiff mortar consisting of 1 part of cement and 2 parts of sand, (by volume) and of sufficient thickness to bring the inner bottoms of the abutting pipes flush and even. After the pipe is laid, additional 1:2 mortar shall be inserted into the joint space so as to thoroughly fill same. The joint shall then be wiped and pointed inside and finished to a smooth level outside.

33.1337 Poured Cement Joint for Concrete Pipe

The inside surface of the pipe at the joint shall be plastered with stiff mortar consisting of 1 part of cement and 2 parts of sand (by volume), and sufficient time shall be allowed for the mortar to harden before the joint proper is poured.

In order to confine the poured material to the annular joint space, a strip of double-thickness, burlap twelve (12) inches in width shall be passed around the pipe, centered at the joint, and securely tightened and held in place at the top of the pipe.

The poured joint material shall consist of cement mortar of 1 part cement and 2 parts sand (by volume), with the addition of just sufficient water to allow the mortar to slowly flow through an opening made over the joint groove at the top of the pipe as laid. Care shall be taken that sufficient mortar is used to entirely fill the annular joint space between the bell of the one pipe and the spigot of the adjacent pipe.

33.14 Building Service Lines and Connections

In general, all water, drainage, and sewer service lines shall be of cast iron (except water service lines of 2" diameter and less, which shall be copper) conforming to the requirements contained in the specifications. They shall be laid in accordance with the provisions of the Plumbing Code of the City of White Plains, by a plumber duly registered and licensed in accordance with the said code. All cast iron pipe and the cast iron soil pipe joints shall be calked with lead.

When an M-D connection is to be installed on an existing cast iron sewer or drain line, all cutting and connecting shall be done by electric arc welding and the work shall be approved by the Bureau of Sewers prior to backfilling.

In general, unless otherwise specified or ordered by the Engineer, all connections to existing water lines shall be made by City forces. The contractor shall obtain and pay for all necessary permits or fees.

33.15 Pipe Supports

All plugs, caps, tees, hydrants and bends deflecting 22 1/2 degrees or more on mains 8" and over and at other locations where there will be an unbalanced thrust in the line, or where ordered, shall be provided with a Class B concrete thrust block or anchorages to prevent movement. The anchorage shall be of such a shape that the load due to the thrust shall not exceed the safe bearing load for the soil in question as shown in the table below. The excavation shall be carried out by hand at such locations to provide a good bearing against undisturbed materials within a short distance from the fitting.

SAFE BEARING LOAD FOR DETERMINATION OF THRUST BLOCK AREA

Soil	Safe Bearing Load (psf)
Muck, Peat	0
Soft Clay	500
Sand	1000
Sand & Gravel	1500
Sand and Gravel Cemented with Clay	2000
Shale	5000

33.15 Pipe Supports (Cont'd)

Where directed, the mains shall be encased in an envelope of concrete of dimensions as directed. The pipe to be encased shall be supported on precast concrete blocks placed on firm foundation. The concrete encasement shall extend to the nearest pipe joint. Joints in the pipe shall be arranged so that the face of a bell or a sleeve will be exposed at the end of the encasement to provide for repair of the joint. Concrete encasement shall be poured on undisturbed ground, existing structures, or other approved foundation suitable for pipe laying.

Where bends turn down and the resulting thrust will be upward, provision to restrain the thrust shall be made with either steel tie rods, concrete anchorages, steel dowels grouted into holes drilled in rock, or a combination of both.

33.16 Structures and Appurtenances

33.161 General Requirements

Manholes, drop connections, catch basins and other structures shall be built wherever shown on the plans and at such other places as may be ordered by the Engineer during the progress of the work.

33.162 Masonry

The masonry structures shall consist of brick, concrete block and precast concrete of such dimensions, materials and workmanship as specified on the plans and unless otherwise specified, shall conform in every respect with Article 31. of these specifications entitled "Portland Cement Concrete and Masonry". The outside of the walls of brick and concrete block manholes and catch basins shall be plastered with a coat one inch (1") thick of Portland Cement mortar composed of one (1) part of cement and two (2) parts of sand (by volume). The inside of the walls of all these structures shall be painted with three (3) coats of neat grout without sand. In addition to the plastering of the exterior of sanitary sewer manholes, the Contractor shall apply two (2) brush coats of bituminous waterproof material equal to Sika-Seal as manufactured by the Sika Chemical Corporation. The application of the coatings shall be done according to the manufacturer's recommendations.

Openings in manholes for connections with existing or future utilities shall be constructed as shown on plans or as directed by the Engineer and the Contractor shall build in and from manholes, one or several lengths of pipe, including inverts and channels of the diameters specified or ordered. Such pipe openings shall be tightly closed and sealed up in a manner satisfactory to the Engineer.

Where brick masonry structures are ordered or specified to be circular, the brick wall shall be carried up vertically to the heights specified, and shall be so built that the diameter of these structures shall gradually diminish in size to receive the frame and cover of the sizes shown. The brick shall be bonded satisfactorily and shall be generally all headers.

A limited number of half-brick may be used in building brick structures, but such number shall not exceed thirty per cent (30%) in any one structure.

Where circular concrete block structures are ordered or specified to be constructed, they shall be so designed and laid that the interior surface of the structure are cylindrical for the straight sides and conical for the top courses with no offsets. Units must be so designed that only full length units are required to lay any one course.

33.162 Masonry (Cont'd)

Corner units for rectangular concrete block structures must be "L" shaped with an inside return side equal to half the length of the normal unit. Units must be so designed that only full length units are required to lay any one course.

Where precast concrete structures are ordered or specified, they shall comply with ASTM Specifications C478-67, the contrete shall be designed to a minimum compressive strength of 4000 P.S.I. Where structures are to be located in roadways, they shall be designed and fabricated for H-20 loading. The Contractor shall use extreme care in the handling of the structures. Any damage occuring to the structures due to carelessness in handling shall be replaced or repaired at his own expense.

The contractor shall install precast structures on a 6" foundation course consisting of sand or #2 crushed stone that has been compacted to a true horizontal plane. Should the contractor excavate beyond the 6" required, he shall replace the disturbed area with Class "B" concrete at no additional cost to the City.

It shall be the Contractor's responsibility to furnish the correct quantity and size structure and to locate the openings in the structure to accommodate the work as shown on the plans or ordered by the Engineer at no additional cost to the City. All patching shall be accomplished with non-shrinking portland cement mortar equal to "Sika-Set" as manufactured by the "Sika Chemical Corp."

Whenever a square bottom manhole is ordered by the Engineer, the square section will be carried up the entire height of the 12' wall. The inclined wall is to be gradually and evenly corbelled from a square section at the bottom to a circular section at the top which will be of proper dimensions to receive the casting and cover specified. Payment for a square manhole will be made at the unit price bid for a standard manhole.

The Construction of each structure or appurtenance shall be begun within twenty-four (24) hours of the time is is reached in the laying of the pipe or conduit and shall be completed and the excavation closed as expeditiously as possible.

33.163 Castings

All frames, covers, grates and other fittings shall be as shown on the plans and as specified. They shall be set during the construction or at the completion of the structure or appurtenances, in a firm, neat and workmanlike manner. A silt bucket will be furnished with each standard Type "A" manhole frame and cover placed on a sanitary sewer manhole. Manholes constructed on storm water drains will not require silt buckets.

33.163 Castings (Cont'd)

Unless otherwise specified, the Contractor shall remove, transport, unload and store as directed existing castings as shown on the plans or directed by the Engineer. Transportation shall be to any point within the City of White Plains as directed by the Engineer, the cost shall be included in the prices bid for the various items of the Contract.

33.164 Inverts

Inverts shall be built of brick, or split pipe at the discretion of the Engineer. Brick inverts shall be painted with three (3) coats of neat cement grout without sand or, if ordered by the Engineer, they shall be plastered with mortar mixed in the proportions of one (1) part of Portland Cement to two (2) parts of fine aggregate (by volume).

Great care shall be taken by the Contractor to make the depth of the channels exactly the diameter of the pipe.

When a curve in the channel or some other condition prevents the use of channels as shown on the plans, then such channels shall be constructed in accordance with the Engineer's directions.

When pipes entering and leaving a manhole or structure are of different diameters, then the invert channel shall be warped to meet the inflowing and outflowing sewers, so as to provide a gradual transition from one diameter to the other.

33.165 Connections to Existing Structures

When the Contractor is required to lay pipelines and conduits into existing manholes or other structures as designated on the plans or ordered by the Engineer, he shall perform all of the work necessary to effect a tight and workmanlike connection to the satisfaction of the Engineer and in accordance with his directions.

The Contractor is hereby cautioned to exercise care when breaking through the wall of an existing structure. The hole shall provide a maximum of 6" clearance around the pipe.

The pipe shall be installed flush with the inside surface of the structure, and any cutting of pipe required to accomplish this shall be included in the price bid for the pipe in place or connection, whichever is specified. When concrete pipe is cut, no reinforcing steel shall be left exposed; all exposed areas shall be covered with 1:2 cement mortar. After the connection has been made the Contractor shall fill the space around the pipe with Class B concrete, in a manner to assure a completely watertight connection. A suitable bituminous sealer shall be applied to the outside of the manhole around the connection.

33.165 Connections to Existing Structures (Cont'd)

In the case of a connection to an existing concrete pole base, the base shall be cut with a suitable pneumatic tool to the depths and locations as shown on the plans or as directed by the Engineer. Before the fitting is installed a bedding of 1:2 cement-sand mortar shall be troweled in the area to assure a firm bed for the fitting. After the fitting has been set, the cut area shall be filled with a Class A concrete mix and finished to the satisfaction of the Engineer.

Any damage done to the pole or base during the above-mentioned operations shall be repaired by the Contractor, at his expense, to the Engineer's satisfaction.

In the case of a connection being made into an existing manhole, or other structure, which is under the control and jurisdiction of the Westchester County Department of Public Works or any of its bureaus or other subdivisions, the Contractor shall satisfy all of the requirements of the particular Department, bureau or other subdivision that may be concerned, and shall perform the work to the satisfaction of the County Commissioner of Public Works or the latter's authorized representative, at no additional expense to the City beyond the price bid for connection to County Manhole.

Whenever a connection into an existing manhole or structure necessitates the repairing or rebuilding of the channel or invert thereof in order to make such channel or invert conform with the direction of flow from the sewer or drain under construction, such work shall be performed by the Contractor in accordance with the directions of the Engineer, at no additional expense to the City.

All mortar used to repair walls of existing structures shall be an approved non-shrink cement mortar equal to "Sika Set".

Payment for connections to existing structures and manholes shall be included in the price bid for pipe or conduit in place unless otherwise specified or provided for in the proposal.

33.17 Testing and Chlorinating

33.171 Waterlines

33.1711 Testing

The cast iron pipe valves and appurtenances shall be given pressure and leakage tests in sections of approved length. For these tests, the City shall furnish a water meter and a pressure gauge. The Contractor shall furnish and install suitable temporary testing plugs or caps for the pipelines, all necessary pressure pumps, pipe connections, other similar equipment, and all labor required. All expenses involved in making leakage and pressure tests shall be borne by the Contractor and no reimbursement will be made by the City for these expenses. The meter and gauge shall be installed by the Contractor in such manner that all water entering the section under test will be measured and the pressure in the section indicated, and shall be kept in use during both tests.

Unless specifically ordered by the Engineer, the Contractor may make the tests when he desires.

Unless it has already been done, the section of pipe to be tested shall be filled with water of approved quality and all air shall be expelled from the pipe. If hydrants or blowoffs are not available at high point for releasing air, the Contractor shall make the necessary excavations and do the necessary backfilling and shall make all taps and shall plug said holes after completion of the test to the satisfaction of the Engineer.

For the pressure test the Contractor shall, by pumping, raise the water pressure (based on the elevation at the lowest point of the section under test and corrected to the gauge location) to a pressure in pounds per square inch numerically equal to 150% of the normal operating pressure or a minimum pressure of 150 p.s.i. whichever is greater. If the Contractor cannot achieve the specified pressure and maintain it for a period of one hour the section under test shall be considered as having failed to pass the pressure test.

Following a successful pressure test, the Contractor shall make a leakage test by metering the flow of water into the pipe while maintaining in the section being tested a pressure equal to the average pressure to which the pipe will be subjected under normal conditions of service. This shall be done by placing the section under system pressure or by pumping. If the average leakage during a four-hour period shall not exceed 0.5 gallons per 24 hours per linear foot of joint, the section shall be considered to have passed the leakage test.

33.1711 Testing (Cont'd)

The length of joint to be used in determining the allowable leakage shall be based on the nominal diameter of the pipe.

If the section shall fail to pass the pressure test or the leakage test, or both, the Contractor shall do everything necessary to locate, uncover, and repair or replace the defective pipe, fitting or joint.

If, in the judgment of the Engineer, it is impractical to follow the foregoing procedure exactly for any reason, required modifications in procedure shall be made, but, in any event, the Contractor shall be responsible for the ultimate tightness of the line within the above leakage requirements.

33.1712 Chlorinating

After a section of the water main has been laid and the valves set ready for the pressure test, the Water Department will inject a chlorinating agent at points along the line of pipe to insure an equal distribution of this material.

The water shall then be turned into the main and allowed to settle for at least thirty minutes before the chlorine test is made. If the chlorine test proves to be satisfactory the main shall be flushed out until it is entirely free from chlorine. No service connection shall be made until the chlorine test is completed and the line is flushed. Water and chlorine used for flushing and testing water mains will be furnished by the City of White Plains and the Contractor shall provide pumps, hose or other necessary appliances to protect his work while the flushing is in progress.

33.172 Sanitary Sewer Lines

33.1721 General Requirements

All gravity sewers, including manholes, shall be tested for leakage and shall satisfactorily meet the test requirements prior to final acceptance of the work.

The Engineer, during the course of the work, may order leakage tests made on certain sections of the sewer as they are completed. His right is reserved to order the tests performed before backfill is placed over the pipe joints.

Upon completion of the entire sewer under this contract, the Contractor shall make a final leakage test for the entire length installed by him (if less than 1,000 ft.), or in sections as directed by the Engineer. The Contractor shall make all necessary repairs or replacements, and shall repeat the final leakage test (s) until the specified minimum leakage requirements are met.

33.172 Sanitary Sewer Lines (Cont'd)

33.1721 General Requirements (Cont'd)

The test length intervals for either type of test shall be as ordered or approved but in no event shall they exceed 1000 feet. In the case of sewers laid on steep grades, the length of line to be tested by exfiltration at any one time may be limited by the maximum allowable internal pressure on the pipe and joints at the lower end of the line.

The test period, wherein the measurements are taken, shall not be less than two (2) hours in either type of test.

The total leakage of any section tested shall not exceed the rate of 100 gallons per mile of pipe per 24 hours per inch of nominal pipe diameter. For purposes of determining the maximum allowable leakage, manholes shall be considered as sections of 48 inch diameter pipe, five (5) feet long, and the equivalent leakage allowance shall be 4.5 gallons per manhole per 24 hours.

If leakage exceeds the specified amount, the Contractor shall make the necessary repairs or replacements required to permanently reduce the leakage to within the specified limit, and the tests shall be repeated until the leakage requirement is met.

There shall be no direct payment for any costs involved with performing these tests and in fully meeting the requirements of this specification, but the costs therefor will be deemed to be included in the bid prices for those contract items involved with furnishing and installing of pipe.

The Contractor shall furnish all labor, testing materials and equipment (such as plugs and standpipes), and shall perform the tests described herein under the supervision and to the satisfaction of the Engineer. Depending on field conditions, there is a choice of two tests which may be employed for gravity sewers, namely the infiltration test and the exfiltration test. These are described as follows:

33.1722 Infiltration Test:

This test may be used only when ground water levels are at least five (5) feet above the top of the pipe for the entire length of the section to be tested during the entire period of the tests. Ground water levels may be measured in an open trench or in standpipes previously placed in backfilled trenches during the backfilling operation. When standpipes are installed in the backfill for ground water measurement, the lower ends of these shall be satisfactorily embedded in a mass of crushed stone or gravel to maintain free percolation and drainage. Infiltration through joints shall be measured by using a watertight weir or any other approved device for volumetric measurement installed at the lower end of the section under test.

33.1723 Exfiltration Test:

This test consists of filling the pipe with water to provide a head of at least five (5) feet above the top of the pipe or five (5) feet above groundwater, whichever is higher, at the highest point of the pipe line under test, and then measuring the loss of water from the line by the amount which must be added to maintain the original level. In this test the line must remain filled with water for at least twenty-four (24) hours prior to the taking of measurements. Exfiltration shall be measured by the drop of water level in a closed-end standpipe or in one of the sewer manholes available for convenient measuring.

When a standpipe and plug arrangement is used in the upper manhole of a line under test, there must be some positive method of releasing entrapped air in the sewer prior to taking measurements.

33.2 Payment Items

33.21 Water Lines and Appurtenances

Item 90 - Cast Iron Pipe (Class A)

a. Work

Unless otherwise specified under this item the Contractor shall furnish and lay Class A pipe in locations and to the line and grade shown on the plans or directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity of Class A pipe measured for payment shall be the actual number of lineal feet of pipe, with no deductions for fittings, valves, structures or appurtenances (except as otherwise described on page S-145) in each size furnished and laid in accordance with the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described; excavation and backfill, laying, jointing and testing of the completed work.

Item 91 - Cast Iron Fittings

a. Work

Under this item, the Contractor shall furnish and install Class D cast-iron pipe fittings for poured joints or gray iron push-on joint fittings wherever specified on the plans or ordered by the Engineer. All fittings shall be lugged, tied and clamped, unless otherwise directed.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity of fittings measured for payment shall be the actual number of tons of fittings furnished and laid in accordance with the plans or as directed by the Engineer. A ton shall be considered as 2000 pounds. The weight of any fitting will be taken as the weight shown in the latest edition of the "Handbook of Cast Iron Pipe". The weight for poured joint fittings shall be on the basis of Class D fittings and push-on joint fittings on the basis of ASA A 21-10 weights for mechanical joint fittings not including accessories and not including cement lining weights.

Item 91 - Cast Iron Fittings (Cont'd)

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, and including the furnishing and laying of the fittings, clamping and any necessary excavation and backfill.

Item 92 - Valves

a. Work

Under this item the Contractor shall furnish and install gate valves and valve boxes along the water mains where shown on the plans or designated by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

All valve boxes shall be placed so as not to transmit shock or stress to the valve and shall be centered and plumb over the operating nut of the valve. A flange or flanges, having sufficient bearing area to prevent undue settlement under heavy loads, shall be cast on the upper section of the valve box. The lower section shall be designed to enclose the operating nut and the stuffing box, and to rest on the throat flange of valves. The valve boxes shall be so designed and constructed as to allow an adjustment of at least 6 in. vertically without reducing the lap to less than 4 in. and shall be of sufficient length for the required cover over the top of the pipe. The upper section of the valve boxes shall be carefully fitted with a cast iron cover flush with its rim and with the word "WATER" cast on the top. The Contractor shall use care in setting valve boxes plumb and directly over the center of the valve nut; this will be insisted upon at all times. Before the permanent paving is placed, the Contractor shall, if necessary, raise or lower the valve boxes so that the covers shall be even with the final surface of the permanent paving.

Valves, bolts and all other appurtenances shall be thoroughly cleaned and given a shop coat of asphaltum varnish.

b. Payment

The quantity of valves furnished and set measured for payment shall be the total number of valves of the various sizes, furnished and placed in accordance with the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary for the installation of the valves and valve boxes, as shown and specified, including all installation, and testing of the completed work.

Item 93 - Valves Set

a. Work

The entire work section of Item 92 shall apply herein except the Contractor shall set valves and valve boxes furnished and delivered to the job site by the City of White Plains.

b. Payment

The entire payment section of Item 92 shall apply herein except that payment will be made for actual number of valves set (including valve boxes).

Item 94 - Valves Reset

a. Work

Under this item the Contractor shall remove and reset existing valves, including valve boxes, as shown on the plans or directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

The valves and valve boxes shall be set as described in Item 92 of these specifications.

b. Payment

The quantity of valves removed and reset measured for payment shall be the total number of valves removed and reset in accordance with the plans or directed by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including excavation and backfill, burning of joints, making of new joints, and joint material, and plugging.

Item 95 - Valves Stored

a. Work

Under this item the Contractor shall remove and store existing valves and valve boxes shown on the plans or directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

Item 95 - Valves Stored (Cont'd)

b. Payment

The quantity of valves removed and stored and measured for payment shall be the total number of valves removed and stored in a location within the City of White Plains and in accordance with the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including excavation and backfill, burning of joints, handling, plugging, transporting and storing.

Item 96 - Hydrants

a. Work

Under this item the Contractor shall furnish and set hydrants as shown on the plans or directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity to be measured for payment shall be the total number of hydrants furnished and set in accordance with the plans or directed by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to completely perform the work described, including excavation and backfill, joint material, making of joints, concrete thrust block, bluestone or concrete slab and broken stone for drain.

Item 97 - Hydrants Set

a. Work

Under this item the Contractor shall set hydrants as shown on the plans or directed by the Engineer. The City of White Plains shall furnish and deliver to the job site necessary hydrants.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

Item 97 - Hydrants Set (Cont'd)

b. Payment

The entire payment section from Item 96 shall apply herein except that payment will be made for actual number of hydrants set.

Item 98 - Hydrants Reset

a. Work

Under this item the Contractor shall remove and reset existing hydrants as shown on the plans or directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity to be measured for payment shall be the total number of hydrants removed and reset, in accordance with the plans or directed by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including excavation and backfill, burning of joints, making of new joints, joint material, broken stone for drain, bluestone or concrete slab and concrete thrust block, and necessary plugging.

Item 99 - Hydrants Stored

a. Work

Under this item the Contractor shall remove and store in a location within the City of White Plains, the existing hydrants shown on the plans or directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity to be measured for payment shall be the total number of hydrants removed and stored in accordance with the plans or directed by the Engineer.

The unit price bid shall include the cost of all labor, plant and equipment necessary to complete the work described including excavation and backfill, burning of joints, removal, handling, plugging, transporting and storing.

Item 100 - Water Valve Boxes

a. Work

Under this item the Contractor shall furnish and set water valve boxes to the line and grade, as shown on the plans or as ordered by the Engineer. Valve boxes shall be set as described in Item 92.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity to be measured for payment shall be the number of valve boxes furnished and set as directed by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including necessary excavation, removal of the existing valve box and backfill.

Item 101 - Water Valve Boxes Set

a. Work

Under this item the Contractor shall set water valve boxes to the line and grade, as shown on the plans or as ordered by the Engineer. The valve boxes shall be furnished and delivered to the job site by City forces and shall be set as described in item 92.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity to be measured for payment shall be the number of valve boxes set as directed by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including necessary excavation, removal of the existing valve box and backfill.

Item 102 - Water Valve Boxes Adjusted

a. Work

Under this item the Contractor shall adjust existing water valve boxes to the line and grade, as shown on the plans or as ordered by the Engineer.

Item 102 - Water Valve Boxes Adjusted (Cont'd)

After adjustment, the portion of casting below grade shall be carefully encased with at least 6" of Class B concrete. If directed by the Engineer, the casting shall be given a coat of black asphaltum paint.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity to be measured for payment shall be the number of valve boxes adjusted as directed by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including all necessary excavation and backfill and concrete.

Item 103 - Type "D" Manholes

a. Work

Unless otherwise specified under this item, the Contractor shall construct either brick or concrete block masonry Type "D" manhole as shown on the plans or as directed by the Engineer. The furnishing and installation of the valve shall not be included under this item.

The design for a Type "D" manhole is as shown on the "Standard Construction Details" of the City of White Plains. Any modifications shown on the construction plans shall be included under this item.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity of Type "D" manholes measured for payment shall be the actual number of manholes constructed in accordance with the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including excavation and backfill, shoring (except as otherwise provided for) and the furnishing and setting of castings and accessories.

33.22 Sewer Lines and Appurtenances

Item 110 - Cast Iron Pipe (Class B)

Item 111 - Cast Iron "XH" Soil Pipe

Item 112 - Standard Strength V.T. Pipe

Item 113 - Extra Strength V.T. Pipe

Item 114 - Standard Strength R.C. Pipe

Item 115 - Extra Strength R.C. Pipe

Item 116 - C.I. Pipe Leader and Curb Drains

Item 117 - V.T. Pipe Leader and Curb Drains

a. Work

Under this item the Contractor shall furnish and lay the pipe(s) specified above, in locations and to the line and grade shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity of pipe (s) measured for payment shall be the actual number of lineal feet of pipe (except as otherwise described on page S-145) of each type and size specified or ordered, furnished and laid to the line and grade indicated on the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including excavation, backfill, handling, jointing, and testing the completed work as specified.

Item 118 - Pipe Underdrains

a. Work

Under this item the Contractor shall furnish and lay a pipe underdrain of vitrified tile pipe and crushed stone in trench below the foundation of the pipeline, structure or pavement for the sub-soil drainage.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

Item 118 - Pipe Underdrains (Cont'd)

Every joint in the underdrain shall be free and clean from earth, dirt or other solid matter. If ordered by the Engineer, each joint shall be wrapped with a strip of asphalt-impregnated building paper long enough to overlap four inches on each side, and at least twelve inches wide, laid to project evenly beyond each side of the joints. The spigot of each pipe shall be laid in the bell of the adjacent one but shall not touch its shoulder within one-half inch (1/2").

Porous concrete drain pipe acceptable to the Engineer may be substituted for vitrified tile pipe, but must provide a free waterway equal in diameter. It shall be laid carefully in a manner that will accomplish the purpose of the vitrified pipe underdrain.

Unless otherwise ordered by the Engineer the underdrain shall be plugged with masonry at lower ends of stream crossings and elsewhere, as and where directed by the Engineer.

The pipe underdrain shall be laid in acceptable broken stone of a size not less than 1 1/2" nor more than 2 1/2" unless otherwise permitted by the Engineer, and in accordance with the plans.

b. Payment

The quantity of pipe underdrain measured for payment shall be the actual number of lineal feet of pipe of each size and type furnished and laid as specified or ordered.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work as described including all excavation and backfill, crushed stone and making joints.

Item 119 - Type "A" Manholes

a. Work

Under this item, unless otherwise specified, the Contractor shall construct either brick, concrete block or precast concrete masonry Type "A" manholes from 5 ft. deep to 10 ft. deep, as shown on the plans or as directed by the Engineer. The design for a Type"A" manhole is as shown on the "Standard Construction Details" of the City of White Plains. Any modifications shown on the construction plans shall be included under this item.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

Item 119 - Type "A" Manholes (Cont'd)

b. Payment

The quantity of Type "A" manholes measured for payment shall be the actual number of manholes constructed in accordance with the plans or ordered by the Engineer. The depth of the manhole shall be not more than 10 ft. and shall be measured between the invert of the lowest pipe and the finished grade of the top of the casting.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including excavation and backfill, shoring (except as otherwise provided for) and the furnishing and setting of castings and accessories.

Item 120 - Type "B" Manholes

a. Work

Under this item, unless otherwise specified, the contractor shall construct either brick, concrete block or precast concrete masonry Type "B" manholes up to and including 5'-0" as shown on the plans or as directed by the Engineer.

The design for a Type "B" manhole is shown on the "Standard Construction Details" of the City of White Plains. Any modifications shown on the construction plans shall be included under this item.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity of Type "B" manholes measured for payment shall be the actual number of manholes constructed in accordance with the plans or ordered by the Engineer. The depth of the manhole shall be not more than 5 ft. and shall be measured between the invert of the lowest pipe and the finished grade of the top of the casting.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including excavation and backfill, shoring (except as otherwise provided for), and furnishing and setting of castings and accessories.

Item 121 - Type "C" Manholes

a. Work

Unless otherwise specified under this item, the Contractor shall construct either brick or concrete block masonry Type "C" manholes as shown on the plans or as directed by the Engineer.

The design for a Type "C" manhole is shown on the "Standard Construction Details" of the City of White Plains.

Any modifications shown on the construction plans shall be included under this item. Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity of Type "C" manholes measured for payment shall be the actual number of manholes constructed in accordance with the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including excavation and backfill, shoring (except as otherwise provided for) and furnishing and setting of castings and accessories.

Item 122 - Additional Manhole Depth

a. Work

Under this item the Contractor shall construct additional depth of brick and/or concrete block manholes as shown on the plans or as directed by the Engineer. Any modifications shown on the construction plans shall be included under this item.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

Under this item the contractor shall furnish and construct the necessary additional vertical depth of manholes beyond that described in Items 119 and 120 and shown on the standard detail sheets.

b. Payment

The quantity to be measured for payment shall be the actual number of lineal feet of additional depth of manholes as shown on the plans or ordered by the Engineer.

Item 122 - Additional Manhole Depth (Cont'd)

The unit price bid shall include the price of all labor, materials, plant and equipment necessary to complete the work described, including additional excavation and backfill and shoring (except as otherwise provided for).

Item 123 - Type "A" Drop Connections

Item 124 - Type "B" Drop Connections

a. Work

Under these items the Contractor will construct drop connections of the type specified, detailed on the plans and standard construction details and in accordance with such variations as may be ordered by the Engineer.

No "push-on" joints will be permitted.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity of drop connections measured for payment will be the actual number of drop connections constructed in accordance with the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including excavation and backfill, making joints, shoring (except as otherwise provided for) and concrete.

Item 125 - Type "A" Catch Basins

Item 126 - Type "B" Catch Basins

Item 127 - Type "C" Catch Basins

Item 128 - Type "D-1" Catch Basins

Item 129 - Type "D-2" Catch Basins

Item 130 - Drop Inlets

Item 131 - Side Inlets - Single

Item 132 - Side Inlets - Double

a. Work

Unless otherwise specified, the Contractor shall construct either brick, concrete block or precast concrete masonry catch basins or inlets of the type specified and as shown on the plans or as directed by the Engineer.

The designs for all catch basins listed above are shown on the "Standard Construction Details" of the City of White Plains or on the Construction plans. Any modifications shown on the construction plans shall be included under this item.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances."

b. Payment

The quantity of catch basins measured for payment shall be the actual number of catch basins or inlets constructed in accordance with the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including excavation and backfill, shoring (except as otherwise provided for) and the furnishing and setting of reinforcing steel, castings and accessories.

Item 133 - Dry Wells

a. Work

Under this item the Contractor shall construct concrete block dry wells, filled with No. 3 crushed stone and with a cast iron frame and grate as shown on the plans or as directed by the Engineer.

Item 133 - Dry Well (Cont'd)

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity of dry wells measured for payment shall be the actual number of dry wells constructed in accordance with the plans or ordered by the Engineer.

The unit price shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including excavation and backfill, laying and furnishing, crushed stone, and the furnishing and setting of castings and fittings.

Item 134 - "M-D" Connections

a. Work

Under this item the Contractor shall install "M-D" connections on sewer pipes as shown on the plans, or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled "Pipelines, Conduits and Appurtenances".

Suitable equipment shall be employed to cut the pipe so that no pipe is cracked or broken beyond the area where the connection is to be made. Any pipe that is broken or cracked beyond said limits and which, in the opinion of the Engineer, requires repair or replacement shall be repaired or replaced as directed by the Engineer. All costs for such repairs or replacements shall be borne by the Contractor.

The connection shall be made by a licensed plumber and approved by the Bureau of Sewers prior to any backfilling operations.

Class B concrete shall be placed around the concrete or tile pipe and "M-D" connection after the connection is made. The concrete shall be placed as shown on the plans or as directed by the Engineer. Connections to C.I. Pipe shall be entirely brazed in an approved manner.

b. Payment

The quantity of "M-D" connections measured for payment shall be the total number of connections installed in accordance with the plans or ordered by the Engineer.

The unit price bid shall include the cost of all material, labor, plant and equipment necessary to complete the work described, including excavation and backfill, cutting, concrete, brazing, shoring (except as otherwise provided for).

Item 135 - Broken Stone for Underdrainage

a. Work

Under this item the contractor shall furnish and place broken stone where and as directed by the Engineer - under the pipe, around pipe joints and at such other points as may be ordered.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

All broken stone furnished and placed under this item shall be not less than 1 1/2" and not more than 2 1/2" in size, and shall conform to Section II of these specifications entitled "Materials of Construction".

b. Payment

The quantity of "Broken Stone for Underdrainage" to be measured for payment shall be the actual number of cubic yards furnished and placed where and as directed by the Engineer, and shall be measured in place. Unless otherwise directed by the Engineer in writing, the maximum limits of payment shall be as described in Article 30.153 entitled "Underdrains".

The unit price bid shall include the cost of all labor, materials, plant and equipment, necessary to complete the work described, including excavation and backfill.

Item 136 - Concrete Cradle

a. Work

Whenever specified on the plans or ordered by the Engineer the pipe shall be laid in a Class B concrete cradle of the dimensions specified or ordered.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

The pipe shall first be laid to line and grade on timber blocks, the concrete for the cradle being subsequently placed under and around the pipe in one continuous operation for the entire width and height of the cradle so as to result in a monolithic structure poured on undisturbed material.

Timber blocks shall conform with the requirements for lumber contained in these specifications and shall be of such dimensions and spacing, and shall be laid in such a manner, as shall meet with the approval of the Engineer.

Item 136 - Concrete Cradle (Cont'd)

b. Payment

The quantity of concrete cradle measured for payment shall be the actual number of cubic yards of cradle furnished and placed as shown on the plans or directed by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including excavation and backfill.

Item 137 - Stone Masonry Headwall

a. Work

Under this item the Contractor shall furnish and construct a stone masonry in mortar headwall as shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity of stone masonry headwall measured for payment shall be the actual number of cubic yards of headwall furnished and constructed in accordance with the plans and specifications or ordered by the Engineer.

If specified, the Contractor shall be paid the lump sum bid for the work described herein.

The unit price bid for this item shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including excavation and backfill.

Item 138 - Grouted Rubble Stone Rip-Rap

a. Work

Under this item the Contractor shall furnish and place grouted rip-rap for slope protection and erosion of the thickness and extent shown on the plans or ordered by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

Item 138 - Grouted Rubble Stone Rip-Rap (Cont'd)

Rip-rap shall be composed of durable field or quarry stone of acceptable sizes and shall consist of angular fragments of stone of which none shall be smaller than one cubic foot.

The grout shall consist of one part cement and three parts of sand by volume.

The largest stone shall be placed first at the bottom of the slope. Subsequent stones shall be placed in as close a contact to each other as possible. The stones shall rest on six inches of stone chips or gravel or other acceptable material where ordered by the Engineer. No material upon which the grouted rip-rap is laid will be allowed to fill the spaces between the stones. When the stones are in place the spaces between them shall be completely filled with grout and the surface swept with a stiff push broom. No rip-rap shall be grouted in freezing weather. In hot, dry weather the grouted rip-rap shall be protected from the sun and shall be kept moist for three days after grouting.

b. Payment

The quantity of grouted rip-rap measured for payment shall be the actual number of square yards of exposed surface of rip-rap placed in accordance with the plans and specifications and/or directions of the Engineer.

The unit price bid for this item shall include the cost of all labor, materials, plant and equipment necessary to complete the described work including excavation and backfill.

Item 139 - Manhole Castings

Item 140 - Catch Basin Castings

a. Work

Under these items the Contractor shall furnish and install new castings of the type specified to the line and grade as shown on the plans or as ordered by the Engineer.

After the casting has been set to the proper line and grade it shall be carefully and thoroughly bedded in mortar of 1:2 mix, and all joints shall be pointed up in workmanlike manner. If directed by the Engineer, the casting shall be given a coat of black bituminous paint. Should any portion of existing structure be broken or damaged through carelessness on the part of the Contractor, such broken or damaged part shall be restored as directed by the Engineer, entirely at the Contractor's own expense.

Item 140 - Catch Basin Castings (Cont'd)

Where new castings are to replace old castings, the Contractor shall remove, transport and store the old casting where directed within the City of White Plains.

b. Payment

The quantity to be measured for payment shall be the number of castings furnished and set in accordance with the plans and specifications and/or directions of the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work, including all necessary excavation and backfill, concrete, brick work and removing, transporting and storing of existing castings.

Item 141 - Manhole Castings Adjusted

Item 142 - Catch Basin Castings Adjusted

a. Work

Under these items the Contractor shall adjust existing castings to the lines and grades as shown on the plans or as directed by the Engineer.

The maximum vertical pay limit for adjusting castings will be one (1) foot below the bottom of the casting. If the Engineer directs the Contractor to adjust the casting beyond the pay limits, then the Contractor shall be compensated for this additional work under Item 26, entitled "Brick Masonry".

The entire work section of Item 139 shall apply herein except as described above.

b. Payment

The entire payment section of Item 139 shall apply herein except that payment will be made for the actual number of castings adjusted.

33.23 Traffic Control, Fire Alarm and Lighting

Item 145 - Asbestos Cement Conduit

Item 146 - Concrete Conduit

Item 147 - Galvanized Steel Conduit

a. Work

Under this item the Contractor shall furnish and lay conduit of the type and size shown on the plans or as directed by the Engineer. A #10 gauge galvanized draw wire shall be furnished and installed in all conduit.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity of conduit measured for payment shall be the actual number of lineal feet of conduit furnished and laid, in accordance with the plans or as ordered by the Engineer. No deductions shall be made for fittings and adapters.

Where the Contractor is required to furnish and lay more than one conduit in the same trench, the quantity of conduit measured for payment shall be considered as being a single unit of multiple conduit in place.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described, including necessary excavation and backfill, draw wire, jointing, fittings, conduit adapters and connections.

Item 148 - Conduit Removed and Relaid

a. Work

Under this item the Contractor shall carefully remove, store, handle and relay existing conduit and fittings as shown on the plans or as directed by the Engineer.

The entire work section of Item 145 shall apply herein except as described above.

b. Payment

The quantity to be measured for payment shall be the actual number of lineal feet of conduit and fittings removed and relaid as shown on the plans or directed by the Engineer.

Item 148 - Conduit Removed and Relaid (Cont'd)

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including excavation and backfill, draw wire and connections.

Item 149 - Galvanized Steel Conduit Sweeps

a. Work

Under this item the Contractor shall furnish and install galvanized steel conduit sweeps as shown on the plans or as directed by the Engineer. The entire work section of Item 145 shall apply herein except as described above.

b. Payment

The entire payment section from Item 145 shall apply herein except that payment will be made for the actual number of galvanized steel conduit sweeps furnished and installed.

Item 150 - Type "F" Manholes

a. Work

Unless otherwise specified, the Contractor shall construct either brick, concrete block or precast concrete Type "F" manholes as shown on the plans or as directed by the Engineer.

The design for a Type "F" manhole is shown on the "Standard Construction Details" of the City of White Plains.

Any modifications shown on tne construction plans shall be included under this item.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity of Type "F" manholes measured for payment shall be the actual number of manholes constructed in accordance with the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described, including excavation and backfill and the furnishing and setting of castings and accessories.

Item 151 - Splice Boxes

a. Work

Unless otherwise specified, the Contractor shall construct either brick, concrete bock or precast concrete splice boxes as shown on the plans or as directed by the Engineer.

Item 151 - Splice Boxes (Cont'd)

The design of the structure is shown on the "Standard Construction Details" of the City of White Plains or on the construction plans.

Any modifications shown on the construction plans shall be included under this item.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General" in these specifications entitled, "Pipelines, Conduits and Appurtenances."

b. Payment

The quantity of splice boxes measured for payment shall be the actual number of splice boxes constructed in accordance with the plans or as ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant, and equipment necessary to complete the work described, including excavation and backfill, and furnishing and setting of all castings or accessories.

Item 152 - Pull Boxes

a. Work

Under this item the Contractor shall furnish and install brick, concrete block or precast concrete pull boxes as shown on the plans or as ordered by the Engineer.

The entire work section of Item 151 shall apply herein except as described above.

b. Payment

The quantity of precast concrete pull boxes measured for payment shall be the actual number of boxes furnished and installed in accordance with the plans or as ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described, including excavation and backfill, and furnishing and setting of all castings or accessories.

Item 153 - Pole and Pedestal Bases

a. Work

Under this item the Contractor shall construct concrete bases of the types specified and as shown on the plans or as directed by the Engineer.

Item 153 - Pole and Pedestal Bases (Cont'd)

The design of the specified base is shown on the "Standard Const-uction Details" of the City of White Plains.

Unless otherwise specified, anchor bolts are to be furnished by the City and set by the Contractor.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity of concrete bases for poles and/or pedestals measured for payment shall be the actual number of bases constructed in accordance with the plans or as ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including excavation, backfill, formwork, furnishing and installing sweeps and ground rod, installing anchor bolts furnished by the City and finishing of concrete.

Item 154 - Poles

a. Work

Under this item the Contractor shall furnish and install poles complete as shown on the plans or as directed by the Engineer.

When specified, the Contractor shall furnish and install poles, bracket arms, luminaires, photo-electric light switches, fittings of the type and size specified and any incidentals necessary to complete the work to the satisfaction of the Engineer.

Unless otherwise specified, wood poles shall be Class 4 creosoted pine pole 35 feet in total length and the bottoms of which shall be set 5 1/2 feet below finished grade.

Unless otherwise specified all wiring and energizing shall be done by others and not included under this item.

The poles shall be set plumb on bases provided or in holes which shall be excavated as directed.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications, entitled, "Pipelines, Conduits and Appurtenances".

Item 154 - Poles (Cont'd)

b. Payment

The quantity to be measured for payment shall be the actual number of poles furnished and installed in accordance with the plans or as ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including excavation and backfill, furnishing and setting of poles and accessories complete.

Item 155 - Poles Set

a. Work

Under this item the Contractor shall install poles furnished by others, as shown on the plans or as directed by the Engineer.

Unless otherwise specified the Contractor shall pick up from a location within the City of White Plains all materials (including poles) necessary to complete the work and deliver same to the job site. Any materials damaged due to the Contractor's carelessness shall be replaced or repaired at his own expense.

The entire work section of Item 154 shall apply except as specified herein.

b. Payment

The entire payment section of Item 154 shall apply herein, except that payment shall be made for the actual number of poles installed.

Item 156 - Poles Reset

a. Work

Under this item the Contractor shall remove and reset existing poles as shown on the plans or as directed by the Engineer.

The Contractor shall notify the City of White Plains at least seventy-two (72) hours prior to removal of poles, so that City forces can de-energize and remove the equipment and accessories.

Unless otherwise specified, City forces shall install all equipment and appurtenances and do the necessary wiring to energize the pole(s) that have been reset.

After removal, the Contractor shall be required to store the poles until they are ready to be reset.

The entire work section of Item 155 shall apply herein except as described above.

Item 156 - Poles Reset (Cont'd)

b. Payment

The quantity of existing poles to be removed and reset measured for payment shall be the actual number of poles reset in accordance with the plans or as ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work, including storage of poles.

Item 157 - Poles Stored

a. Work

Under this item the Contractor shall remove and store existing poles as shown on the plans or as directed by the Engineer.

The Contractor shall notify the City of White Plains at least seventy-two (72) hours prior to removal of poles, so that City forces can de-energize and remove the equipment and accessories.

The poles that have been removed shall be transported to a location within the City of White Plains and stored in a workmanlike manner in areas where directed, and any damage occurring to same, due to the Contractor's operations, shall be repaired and/or replaced at the Contractor's own expense.

b. Payment

The entire payment section of Item 156 shall apply herein except that payment will be made for actual number of existing poles removed and stored.

Item 158 - Push Button Standards

a. Work

Under this item the Contractor shall furnish and install push button standards as shown on the plans or as directed.

The Standard shall be set plumb on a concrete base as shown on the plan or as directed.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

Item 158 - Push Button Standards (Cont'd)

b. Payment

The quantity to be measured for payment shall be the actual number of standards furnished and installed in accordance with the plans or as ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including excavation, backfill, concrete footing, furnishing and setting of standards and accessories.

Item 159 - Guying

a. Work

Under this item the Contractor shall furnish and install complete approved guy wire and guy anchor of the type and size specified, as shown on the plans or as directed.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity to be measured for payment shall be the actual number of guys and anchors furnished and installed complete in accordance with the plans or as ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including excavation and backfill, furnishing and setting of guys, anchors and accessories.

Item 160 - Lighting the Area

a. Work

Under this item the Contractor shall furnish and install all necessary equipment to properly light the area as shown on the plans or as directed by the Engineer.

The materials furnished shall conform with the descriptions contained on the plans or in these specifications.

Any equipment to be supplied by the City of White Plains shall be picked up by the Contractor at such locations as may be designated.

Item 160 - Lighting the Area (Cont'd)

The Contractor shall furnish, pull and connect all necessary wiring required to light the area specified. All wires shall be sized in accordance with Consolidated Edison Company's specifications and the requirements of the National Board of Fire Underwriters.

The Contractor shall provide the City of White Plains, N. Y., with a certificate of acceptance from the National Board of Fire Underwriters upon completion of the work and before final payment is made.

In addition to the above-mentioned requirements the Contractor shall furnish two copies of the complete wiring diagram. One copy shall be fastened to the inside of the equipment box door. The second copy shall be sent to the City of White Plains, Department of Public Works, Bureau of Engineering.

b. Payment

This item shall be paid as a lump sum.

The price bid shall include all labor, material, plant and equipment, necessary to complete the work described, including furnishing and erecting poles, equipment, all wiring, all fees and/or charges made by others and other incidental expenses.

33.24 Miscellaneous Structures and Appurtenances

Item 165 - Special Structures

a. Work

Under this item the Contractor shall construct special structures as shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity of special structures measured for payment shall be the actual number of structures constructed in accordance with the plans or as ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including excavation and backfill.

Item 166 - Structures Abandoned

a. Work

The work under these items shall consist of abandoning existing manholes, lamp holes, catch basins and other structures, where so designated and as shown on the plans or ordered by the Engineer.

All structures and appurtenances abandoned under these items, or such portions of them as, in the opinion of the Engineer, can be salvaged for future use, shall be delivered by the Contractor at the latter's own expense to the City Yard at Gedney Way or to such other points within the City of White Plains as the Engineer may designate. Such material as is not desired by the City, as indicated by the Engineer, shall be removed from the site of the work and disposed of by the Contractor at the latter's own expense.

When abandoning existing manholes, catch basins, etc., the Contractor shall plug the pipes specified, remove the existing walls down to a point approximately three (3) feet below the finished grade, break up the concrete base and backfill with suitable fill material.

Item 166 - Structures Abandoned (Cont'd)

b. Payment

The Contractor shall bid a unit price per structure and appurtenance abandoned, which price shall include the cost of all labor, materials, plant and equipment necessary to satisfactorily perform the work contemplated in these items, including all necessary excavation and backfill, the excavation and removal of existing pavement or other ground surface, shoring (except as otherwise provided under the item of "Shoring"), plugging pipes, and hauling to designated delivery points.

The quantity to be paid for under this item shall be the number of structures actually abandoned in accordance with these specifications and the instructions of the Engineer.

Item 167 - Structures Altered

a. Work

Under this item, the Contractor shall alter and/or rebuild existing structures as shown on the plans or as directed by the Engineer.

The Contractor shall exercise care during such alteration so as not to damage portions of the structure and/or pipe shown to remain. Any such damage shall be repaired by the Contractor at his expense, to the satisfaction of the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General" in these specifications entitled, "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity to be measured for payment shall be the actual number of structures altered and/or rebuilt as shown on the plans or ordered by the Engineer.

The unit price bid shall include the cost of all materials, labor, plant and equipment necessary to complete the work described, including excavation and backfill, castings, masonry, constructing inverts if so ordered.

Item 168 - Miscellaneous Castings

a. Work

Under this item the Contractor shall furnish and place castings as shown on the plans or as directed by the Engineer.

Item 168 - Miscellaneous Castings (Cont'd)

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

If required by the plans or Engineer the Contractor shall remove and store existing castings that are to be replaced by new castings.

Castings shall be set as described in the various sections of these specifications.

b. Payment

The quantity of miscellaneous castings measured for payment shall be the actual number of castings furnished and placed in accordance with the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including necessary excavation and backfill, removal and storage of existing casting if required, concrete for collar or base, and other incidental expenses.

Item 169 - Miscellaneous Castings Adjusted

a. Work

Under this item the Contractor shall adjust existing miscellaneous cast iron castings to the line and grade as shown on the plans or as ordered by the Engineer.

The entire work section of Item 168 shall apply except as described herein.

b. Payment

The entire payment section of Item 168 shall apply herein except that payment will be made for actual number of existing miscellaneous castings adjusted.

Item 170 - Connections to Existing Structures

a. Work

Under this item, the Contractor shall be required to lay the pipe or conduit under construction into an existing manhole or other structure at such point as is designated on the plans or ordered by the Engineer.

Item 170 - Connections to Existing Structures (Cont'd)

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications, entitled, "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity to be measured for payment shall be the actual number of connections made in accordance with the plans or ordered by the Engineer. The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to perform all of the work contemplated under this item, including excavation and backfill, shoring (except as otherwise specified), concrete and sealing material.

Item 171 - Connections to County Structures

a. Work

Under this item, the Contractor shall be required to lay the pipeline under construction into an existing County manhole or other County structure at such point as is designated on the plans or ordered by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 33.1, "General", in these specifications entitled, "Pipelines, Conduits and Appurtenances".

b. Payment

The quantity to be measured for payment shall be the actual number of connections made in accordance with the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to perform all of the work contemplated under this item, including excavation and backfill, shoring, (except as otherwise specified), concrete, and sealing material.

34. LUMBER AND TIMBER

34.1 General

34.11 General Requirements

The Contractor shall furnish, place and incorporate into the work lumber and timber where indicated on the plans or ordered by the Engineer.

All excavation and backfill shall be to the line and grade specified and all sheeting and shoring procedures shall be as described in Article 30 of these Specifications, entitled, "Excavation and Backfill".

All materials used, shall conform to Section II of these Specifications, entitled, "Materials of Construction".

34.2 Payment Items

Item 175 - Sheeting and Shoring Removed

a. Work

Under this item the Contractor shall install and remove lumber as shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 34.1, "General", in these Specifications, entitled, "Lumber and Timber".

b. Payment

Measurement shall be made from an elevation of one (1) foot above existing grade or finished subgrade, whichever is less, and shall be based upon the standard sizes and commercial thickness of the lumber used; but a thickness of sheeting greater than two (2) inches shall not be paid for, except where shown on the plans or ordered in writing by the Engineer. No allowance will be made for sheeting driven below the invert of the pipe, unless authorized by the Engineer.

The unit price bid per thousand board feet for "Sheeting and Shoring Installed and Removed" shall include the cost of all labor, materials, plant and equipment necessary to perform the work set forth hereinabove.

Item 176 - Sheeting and Shoring Left

a. Work

Unless otherwise specified, the entire work section of Item 175 shall apply herein except that the work shall consist of lumber installed and left in place.

b. Payment

Unless otherwise specified, the entire payment section of Item 175 shall apply herein except that the lumber to be measured for payment under this item shall be ONLY that left in place as shown on the plans or ordered in writing by the Engineer, and shall be the actual number of thousand board feet (or fraction thereof) measured from an elevation two (2) feet above the elevation at which the Engineer ordered the sheeting cut off.

Item 177 - Timber Wheel Stop

a. Work

Under this item the Contractor shall furnish and install timber wheel stop as shown on the plans or as directed by the Engineer.

Item 177 - Timber Wheel Stop (Cont'd)

The material used may be either telephone poles or railroad ties. In the case of railroad ties they shall be 8'-0" x 8" x 10". Drift pins, if required, shall be equal to 1/2" diameter plain reinforcing bars of the length specified, cut on a diagonal.

Unless otherwise specified herein, work shall be performed as described in Article 34.1, "General", in these Specifications, entitled, "Lumber and Timber".

b. Payment

The quantity of timber wheel stop measured for payment shall be the actual number of lineal feet of wheel stop furnished and installed in accordance with the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work as described including excavation, backfill, steel drift pin if required, and other incidental expenses.

Item 178 - Timber Guard Posts

a. Work

Under this item the Contractor shall furnish and install timber guard posts as shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 34.1, "General", in these Specifications, entitled, "Lumber and Timber".

b. Payment

The quantity of timber guard posts measured for payment shall be the actual number of posts furnished and installed in accordance with the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work as described including necessary excavation and backfill.

Item 179 - Timber Crib Wall

a. Work

Under this item the Contractor shall furnish and install timber crib retaining walls as shown on the plans or as directed by the Engineer.

The material to be used shall be railroad ties, 8'-0" x 8" x 10", in good condition and free from rotten or disintegrated areas. They shall be sorted and the best ones used in the front face.

Item 179 - Timber Crib Wall (Cont'd)

Drift pins, if required, shall be equal to 1/2" dia. plain reinforcing bars of the length specified cut on a diagonal.

After the base has been cut to the depth shown, the crib shall be constructed. The open spaces between the ties shall be backfilled with selected material as the cribbing builds up. Compaction shall be done by pneumatic tampers weighing not less than twenty (20) pounds, having a face area of not less than twenty (20) square inches and a piston stroke of not less than six (6) inches.

Unless otherwise specified, the Contractor shall supply any selected fill required.

Unless otherwise specified herein, work shall be performed as described in Article 34.1, "General", in these Specifications, entitled, "Lumber and Timber".

b. Payment

The quantity of timber crib wall measured for payment shall be the actual number of square feet of cribbing furnished and installed, as shown on the plans or ordered by the Engineer. The measurement shall be based on the area of the front face.

The unit price bid shall include the cost of all labor, materials, plant and equipment, necessary to complete the work described, including necessary excavation and backfill, furnishing and placing of select fill, if required, and other incidental expenses.

Item 180 - Timber Crib Wall Installed

a. Work

Under this item the Contractor shall install timber crib retaining walls as shown on the plans or as directed by the Engineer.

The railroad ties to be used will be supplied by the City of White Plains and stockpiled on the job site. They shall be sorted and the best ones used in the front face.

Unless otherwise specified herein, work shall be done in accordance with Item 179 of these specifications.

b. Payment

The quantity of timber crib wall measured for payment shall be the actual number of square feet of cribbing installed, as shown on the plans or ordered by the Engineer. The measurement shall be based on the area of the front face.

Item 180 - Timber Crib Wall Installed (Cont'd)

The unit price bid shall include the cost of all labor, materials, plant and equipment, necessary to complete the work described, including necessary excavation and backfill, furnishing and placing of select fill, if required, and other incidental expenses.

Item 181 - Wood Fence or Barricade

a. Work

Under this item the Contractor shall furnish and install wood fence and/or barricade where and as shown on the plans or as directed by the Engineer.

Unless otherwise specified, all wood fence and barricade shall be painted with two coats of white paint.

Unless otherwise specified herein, work shall be performed as described in Article 34.1, "General", in these Specification, entitled, "Lumber and Timber".

b. Payment

The quantity of wood fencing and/or barricade measured for payment shall be the actual number of lineal feet of fencing or barricade furnished and installed in accordance with the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work as described, including excavation and backfill, preserving and painting if specified.

Item 182 - Wood or Wire Fences Reset

a. Work

The Contractor shall remove and reset existing fence and posts as shown on the plans or as directed by the Engineer.

In the case of a wood fence the Contractor shall supply new posts if the original posts are found to be decayed or rotted. Such posts shall be treated with a wood preservative below ground and painted or otherwise treated above ground in an approved manner so as to equal to the remainder of the existing fence.

If the fence cannot be reset immediately the Contractor shall store it in an approved manner until such time as it can be reset. There shall be no compensation for such storage.

The Contractor shall be responsible for the handling, moving, storing and resetting of said fences and any loss or damage to them will be made good by the Contractor at his expense.

Item 182 - Wood or Wire Fences Reset (Cont'd)

b. Payment

The quantity of fence to be measured for payment shall be the total lineal feet of fence reset, as shown on the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including excavation and backfill, new posts where required, storage, handling and resetting of fence.

No direct payment shall be made for fence that has been removed and not reset. Compensation shall be made as described under "Clearing & Grubbing".

Item 183 - Wood Benches

a. Work

Under this item the Contractor shall furnish and install wood benches where and as shown on the plans or as directed by the Engineer.

Unless otherwise specified here, work shall be performed as described in Article 34.1, "General", in these Specifications, entitled, "Lumber and Timber".

b. Payment

The quantity of wood benches measured for payment shall be the actual number of bench units furnished and installed in accordance with the plans or as directed by the Engineer.

The unit price bid for each bench unit shall include the cost of all labor, material, plant and equipment necessary to complete the work as described including excavation, backfill and concrete footing.

Item 184 - Wood Benches Installed

a. Work

Under this item the Contractor shall install wood benches, where and as shown on the plans or as directed by the Engineer.

The benches will be supplied by the City of White Plains and delivered to the job site.

Unless otherwise specified herein, work shall be performed as described in Article 34.1, "General", in these Specifications, entitled, "Lumber and Timber".

b. Payment

Unless otherwise specified, the entire payment section of Item 183 shall apply herein except that payment shall be the actual number of bench units installed.

35. LANDSCAPING

35.1 General

35.11 General Requirements

The Contractor shall furnish, place and incorporate into the work landscaping operations where indicated on the plans or ordered by the Engineer. The work shall consist of stripping, spreading, tilling, storing, planting, staking, repairing, pruning, fertilizing, watering, and caring, which work shall be done by workmen experienced in landscaping in accordance with accepted horticultural practice.

Unless otherwise specified herein, all work pertaining to seeding, sodding and planting shall be done as described in Section 10 of the NYSDOT Specifications entitled, "Roadside Development".

The Contractor is directed to the "Standard Construction Details" of the City of White Plains. Any modifications to the details shall be included under the appropriate item in the Contract.

35.12 Materials

All landscaping materials such as topsoil, fertilizers, seed, sod, shrubbery, trees, ground cover and all other plantings shall be healthy nursery stock in accordance with the standards of the American Association of Nurserymen and shall conform with the requirements as described in Section II in these specifications entitled "Materials of Construction". Plants shall not be pruned before delivery, and plants shall not be cut back from larger sizes to meet the sizes specified. All plants shall be subject to the approval of the Engineer prior to planting. A representative from the City's Bureau of Forestry shall visit the nursery of the supplier to choose and mark the trees and/or shrubs that will be acceptable for planting.

Unless otherwise specified all new trees and shrubs shall be burlapped and balled. All other plantings shall be well rooted and acceptable to the Engineer.

35.13 Work

Trees shall be planted in pits whose minimum size shall be two (2) feet larger than the diameter of the ball. Shrubs shall be planted in pits whose minimum size shall be one (1) foot larger than the diameter of the ball. Each pit shall be backfilled with a mixture of 20% peat moss and 80% topsoil with a saucer effect created at the base to allow for the retention of water. In addition to the above mixture, an organic fertilizer shall be included at the rate of 2 lb. per inch of tree caliber and 1 lb. per shrub planted.

35.13 Work (Cont'd)

All guying, staking or anchoring and wrapping shall be done immediately after planting. Stakes shall be driven into the ground around the periphery of the tree. Plants shall stand plumb after staking. All trees shall be protected from contact with the wires by sections of rubber hose of sufficient length to prevent injury to the tree.

All trees shall also be guyed and supported as described in Part II, Section 6, M61 of the NYSDOT Specifications, entitled "Materials for protection of Plants". No direct payment shall be made for guying. Compensation shall be included under items 200, 202, and 203, entitled "Trees Furnished and Planted" and "Existing Trees Removed and Replanted".

Where topsoil is available along the line of work, the Contractor shall strip, store and respread the topsoil where and as directed by the Engineer. No payment shall be made for excavating, storing, transporting and/or spreading of existing topsoil which is available on the site of the work, and which is excavated in conjunction with the work under contract.

Before placing topsoil the Contractor shall scarify or till the surface of the subsoil to permit bonding the topsoil layer with the subsoil. Tillage shall be accomplished by discing, harrowing, raking or by other approved methods.

On all areas to be seeded, the surfaces shall be suitably raked and cleared of all debris, roots, stone and of otherwise unsatisfactory materials. After the surface has been prepared to the satisfaction of the Engineer, the Contractor shall place and rake into the top 3" of the soil an approved 5-10-5 chemical fertilizer at the rate of one thousand (1,000) pounds per acre (0.21 lbs. per square yard). After which a mixture of the specified grass seed shall be spread at the rate of 5 lbs. per 1,000 square feet (0.045 lbs. per square yard). The surface shall then be lightly rolled and maintained by the Contractor until the completion of his work. If approved, acceptable manure may be substituted for chemical fertilizer at the rate of 40 cubic yards per acre (0.008 cu. yd. per square yard). Prior to fertilizing and seeding the Contractor will be required to place and rake into the soil, agricultural lime at a rate of one ton per acre. No water seeding will be allowed.

Existing sod that is to be removed and replanted shall be cut with spades or by sod cutters to a depth of one and one-half (1 1/2") inches to two inches (2") or as specified. The sod shall be cut into squares or rectangular portions which shall be twelve inches (12") wide and may vary in length, but must be of a size which will permit them to be lifted without breaking.

35.13 Work (Cont'd)

No planting of trees or shrubs shall be done between November 1st and March 15th or between May 15th and September 1st, and no permanent seeding or sodding shall be done between October 1 and March 15th or between May 15th and August 15th, except as directed by the Engineer. Sowing of seed shall not be done when the ground is frozen or on windy days, and advantage shall be taken to sow immediately before or after rains, if possible. All seeded or sodded areas shall be watered to the extent and at intervals as directed in order to secure germination and a healthy stand of grass.

Grassed areas injured by the Contractor in the course of his operation may be seeded and grassed under this item if directed in writing by the Engineer. The Contractor shall take proper precautions by erecting barricades and signs to protect from damage these areas which have been seeded, until the grass is established.

If the nature of the work is such that the existing trees, shrubs, sod and hedges removed cannot be planted immediately they shall be planted in a temporary manner, approved by the Engineer until such time as they can be planted in the proper location. There shall be no compensation for such temporary planting. The Contractor shall be responsible for the handling, moving, replanting of the above-mentioned items, and any damage or losses thereof shall be made good by the Contractor at the latter's expense.

No direct payment shall be made for any plants that are removed and not replanted. Compensation shall be made as described under the item "Clearing and Grubbing".

No payment shall be made for any planting item until the final acceptance of the contract.

35.14 Maintenance

The Contractor will be held responsible for the maintenance of all work and parts thereof until Final Acceptance. No trees or shrubs will be accepted unless they show a healthy growth and satisfactory foliage conditions.

Maintenance shall include watering of lawns, trees and plants, cultivation, pruning, weeding, mowing, spraying, pruning of trees and shrubbery, cleaning up, edging, repairs to guy wires, stakes and wrappings.

35.15 Definitions

35.151 Trees

A tree is defined as a perennial plant having one permanent woody, self-supporting stem or trunk, ordinarily growing to a considerable height, and usually developing branches at some distance from the ground.

35.151 Trees (Cont'd)

The tree caliber or diameter of the trunk shall be measured six (6) inches above the finished grade, up to and including 4" caliber size and three (3) feet above the finished grade for larger sizes.

35.152 Shrub or Bush

A shrub is defined as a woody perennial plant usually smaller than a tree, usually having permanent stems branching from or near the ground and may be planted in small clusters to appear as one plant.

35.153 Hedge

A hedge is defined as being a row of bushes, shrubs or small trees planted close together to form a boundary or fence line.

35.16 Guarantee

The Contractor hereby guarantees that, upon completion of the work, all portions thereof will be in accordance with the Contract, and will be perfect as to materials and workmanship and that the same will so remain for a period as specified in the contract.

At any time within the period of the guarantee, the Contractor shall replace any plant which for any reason has died or is in a dying condition, or which has failed to flourish in such manner or in such a degree that its usefulness or appearance has been impaired; and he shall further make good any other damage, loss, impairment or defect in materials or work when the loss, impairment, destruction, or failure to flourish sufficiently is the result of inferior or defective materials or workmanship, or unfavorable weather conditions. The decision of the Engineer as to the necessity of replacing any plants or materials or repairing any defects in workmanship, or of the cause of any destruction, loss, impairment or failure to flourish, shall be conclusive and binding upon the Contractor. The Contractor shall also make good all damage to persons or property caused by defective workmanship or materials.

35.2 Payment Items

Item 190 - Topsoil

a. Work

Under this item the Contractor shall furnish and spread topsoil at the points and to the depths shown on the plans, specified or ordered by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 35.1, "General", in these specifications entitled "Landscaping".

b. Payment

The quantity of topsoil measured for payment shall be the number of cubic yards of topsoil furnished and placed between payment lines shown on the plans, specified or ordered by the Engineer. The volume of topsoil shall be measured in the trucks delivering it to the work site, and the volume of stones, roots, weeds and other unacceptable material will be deducted therefrom.

No payment will be made for topsoil spread in areas beyond those shown on the plans or ordered by the Engineer.

The surface of the topsoil in place shall be the final pay line in calculating unclassified excavation. No allowance will be made for the excavation necessary to place topsoil to a proper depth.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described to the satisfaction of the Engineer, including excavation.

Item 191 - Seeding and Grassing

a. Work

Under this item, the Contractor shall prepare and sow with grass seed such areas as are shown on the plans or designated by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 35.1, "General", in these specifications entitled "Landscaping".

b. Payment

The quantity of seeding and grassing measured for payment shall be the actual number of square yards or area seeded and grassed in accordance with the orders of the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described including preparation of surfaces, lime, fertilizing, sowing of seed, wetting and maintenance.

Item 192 - Sodding

a. Work

Under this item the Contractor shall be required to furnish and lay sod to the lines and grades as shown on the plans or where directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 35.1, "General", in these specifications entitled "Landscaping".

b. Payment

The quantity of sodding measured for payment will be the actual number of square yards of sod in place as ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described including excavation, preparation of surfaces, lime, fertilizing, planting, pegging, wetting and maintenance.

Item 193 - Sod Relaid

a. Work

Under this item the Contractor shall be required to remove and relay the existing sod where and as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 35.1, "General", in these specifications entitled "Landscaping".

b. Payment

The entire payment section of item 192 shall apply herein except payment will be made for the actual number of square yards of sod removed and relaid.

Item 194 - Hedge

a. Work

Under this item the Contractor shall furnish and plant new hedges of the size, type and species as shown on the plans or where and as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 35.1, "General", in these specifications entitled "Landscaping".

b. Payment

The quantity of hedges furnished and planted to be measured for payment shall be the actual number of lineal feet of hedge planted as shown on the plans or ordered by the Engineer.

Item 194 - Hedge (Cont'd)

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described including topsoil, peat, fertilizer, excavation and backfill.

Item 195 - Hedge Replanted - up to 6 Feet High

Item 196 - Hedge Replanted - over 6 Feet High

a. Work

Under this item the Contractor shall remove and reset existing hedges specified, as shown on the plans, or where and as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 35.1, "General", in these specifications entitled, "Landscaping".

b. Payment

The entire payment section of Item 194 shall apply herein except payment will be made for the actual number of linear feet of hedge removed and replanted of the height specified.

Item 197 - Shrubs

a. Work

Under this item the Contractor shall furnish and plant new shrubs of the size, type and species as shown on the plans or where and as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 35.1, "General", in these specifications entitled "Landscaping".

b. Payment

The quantity of shrubs furnished and planted to be measured for payment shall be the actual number of shrubs planted as shown on the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described including excavation and backfill, necessary topsoil, peat moss, fertilizer, handling, moving and planting of shrubs.

Item 198 - Shrubs Replanted - up to 6 feet high

Item 199 - Shrubs Replanted - over 6 feet high

a. Work

Under this item the Contractor shall remove and reset existing shrubs of the height specified, in the same manner as described for new shrubs in Item 197.

b. Payment

The entire payment section of Item 197 shall apply herein except payment will be made for the actual number of existing shrubs removed and replanted of the height specified.

Item 200 - Trees

a. Work

Under this item the Contractor shall furnish and plant new trees of the size, type and species as shown on the plans or where and as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 35.1, "General", in these specifications entitled "Landscaping".

b. Payment

The quantity of trees furnished and planted to be measured for payment shall be the total number of trees planted as shown on the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment, necessary to complete the work described including excavation and backfill, topsoil, fertilizer, peat moss, guys and stakes, handling, moving and planting of trees.

Item 201 - Trees Removed

a. Work

Under this item the Contractor shall remove trees of the size and type specified as shown on the plans or where and as directed by the Engineer.

The Contractor shall use extreme care, including adequate roping of tree branches,so that no damage will occur to other trees, plantings, fences, pavement, sidewalks, curbing or other private or public property during the removal of the trees. Any damage occuring during the Contractor's operations shall be repaired or replaced to its original or better condition at the expense of the Contractor.

Item 201 - Trees Removed (Cont'd)

Unless otherwise specified all stumps will be removed flush to the existing ground surface and all exposed surfaces will be debarked.

All trees to be removed to be identified by a specified marker on the street side of the tree.

Only experienced treemen shall be employed by the Contractor.

All trees and branches are to be removed from the site and disposed of outside of the City of White Plains. The Contractor shall obtain all permits and pay all fees. NO wood from this Contract will be accepted at the Gedney Way Yard nor any other City-owned property.

b. Regulating Traffic

Unless otherwise specified, the Contractor shall regulate and maintain traffic, post construction and detour signs and do such work as may be called for on the plans or ordered by the Engineer for the proper safeguarding and handling of all traffic.

Streets shall be kept open to traffic at all times except during actual periods of dropping of tree trunks and/or large limbs. Two flagmen shall be present and clearly visible when lowering limbs or topping trees in roadway or walkway areas.

Before construction is started and during the progress of the work, the Contractor shall prepare and erect necessary approved construction and detour directional signs at each end of the contract and at such other points as may be directed.

c. Payment

The quantity of trees removed measured for payment will be the actual number of trees removed as specified and as shown on the plans or directed by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described.

Item 202 - Trees Replanted - up to 3" Caliber

Item 203 - Trees Replanted - over 3" Caliber

a. Work

The work shall be performed as described in Item 200.

b. Payment

The entire payment section of Item 200 shall apply herein except payment will be made for the actual number of existing trees removed and reset of the caliber specified.

Item 204 - Tree Pit Paving

a. Work

Under this item the Contractor shall furnish and lay a paving material of the type and size specified for tree pits.

Unless otherwise specified herein, work shall be performed as described in Article 35.1, "General", in these specifications entitled, "Landscaping".

b. Materials

Materials for paving shall include items of brick, granite blocks or precast concrete pavers laid dry with sand joints as specified.

Unless otherwise specified, brick paving shall be standard size brick of the dimensions indicated on the drawings. They shall conform to the requirements of the applicable ASTM Specifications of latest revision dealing with brick pavers. Color and finish shall be as selected by the Engineer.

Unless otherwise specified, granite blocks shall be split face, natural gray granite approximately 4"x6"x12" and they shall be of uniform quality and texture and free from seams, disintegrated materials or any unsightly defects.

Precast concrete paving block shall be of the type and design as indicated on the plans.

c. Method

A foundation course for tree pit pavers or blocks shall be installed as shown on the plans. Foundation course shall be of clean, sharp sand, wetted and tamped smooth and compacted to a thickness of three (3") inches.

Tree pit pavers shall be firmly set, true to line and grade and with joints as called for on the plans. Sand joints, where called for, shall be filled with sand to the full depth of the paver.

Item 204 - Tree Pit Paving (Cont'd)

Tree pit pavers shall not be installed until the tree itself has been planted and the topsoil backfill has settled sufficiently to allow a solid base for the construction of the tree pit as detailed on the drawings.

The Contractor shall submit samples of all brick, block and sand materials to the Engineer for approval before any of the work of this item is started and the materials used in the work must match the approved samples.

d. Payment

The quantity of paving furnished and laid to be measured for payment shall be the total number of square feet of area paved as shown on the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment, necessary to complete the work described including excavation and backfill and paving materials including sand.

Item 205 - Ground Cover

a. Work

Under this item the Contractor shall furnish and plant ground cover of the size, spacing, type and species as shown on the plan or where and as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 35.1, "General", in these specifications entitled "Landscaping".

b. Payment

The quantity of ground cover furnished and planted to be measured for payment shall be the total number of square yards of ground cover as shown on the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, materials plant and equipment necessary to complete the work described including excavation and backfill, topsoil, fertilizer, peat moss, handling, moving and planting.

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Item 206 - Landscaping

a. Work

Under this item the Contractor shall landscape the area with plants of the type and size specified and as shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 35.1, "General", in these specifications entitled "Landscaping".

b. Payment

The quantity of landscaping furnished and planted to be measured for payment shall be the lump sum bid, which sum shall cover the cost of all labor, materials, plant and equipment necessary to complete the work described, including excavation and backfill, topsoil, fertilizer, peat moss, handling, moving and planting.

36. MISCELLANEOUS METALS

36.1 General

36.11 General Requirements

The Contractor shall furnish, place, construct and incorporate into the work, miscellaneous metal items where indicated on the plans or ordered by the Engineer.

All materials used shall conform to Section II of these Specifications, entitled, "Materials of Construction."

All excavation and backfill and concrete work shall be as described in Article 30. and 31. of these Specifications, entitled, "Excavation and Backfill" and "Portland Cement Concrete and Masonry" respectively.

Where metals are to be stored outdoors and exposed to the weather elements, they shall be protected from rusting.

Where the Contractor is required to remove, set or store metal structures and/or appurtenances, he shall use care not to damage the material. Any damage to the material due to carelessness or poor workmansnip shall be repaired and/or replaced by the Contractor at no cost to the City of White Plains.

Existing posts removed shall be cleaned of all concrete prior to resetting or storing.

The Contractor shall notify the City of White Plains seventy-two (72) hours prior to the removal of existing posts or poles, so that City forces may remove, dismantle and store the equipment and accessories.

36.12 Construction Procedures

36.121 Installation

All posts shall be driven straight and true where directed, at accurate spacings and in such a manner that the completed rail or post shall be in correct alignment, height and location. A suitable protective driving cap shall be used in driving all posts. All posts except meter and fence posts shall be filled with 1:2 cement mortar and the top surface of the mortar shall be neatly rounded to provide for run-off of water.

Unless otherwise specified, posts shall be set in Class A concrete footings of the size shown on the plans. The maximum size of the stone aggregate shall not exceed 1". Where tops of footings are to be exposed they shall be domed above grade to shed water.

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36.122 Painting

When painting of metals is required or specified, work shall conform to the requirements set forth under the heading of "Painting" in Part II, Section 8-A of the NYSDOT specifications.

All metals exposed to the elements, except castings and galvanized material, shall be given a shop coat of red lead and oil primer and after being placed shall be normally given two coats of aluminum paint.

36.2 Payment Items

Item 210 - Steel Reinforcement

a. Work

Under this item the Contractor shall furnish and install approved intermediate steel deformed bars of the size and spaced as shown on the plans, specifications or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 36.1, "General", in these specifications entitled, "Miscellaneous Metals".

b. Payment

The quantity of steel reinforcement measured for payment shall be the actual number of pounds of approved reinforcing furnished and placed in accordance with the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment, necessary to complete the work described including cutting, tie wire, chairs and installation thereof, and other incidental expenses.

Item 211 - Bumper Meter Posts

a. Work

Under this item the Contractor shall furnish and install galvanized steel bumper meter posts as shown on the plans or as directed by the Engineer. The design of the post is shown on the "Standard Construction Details of the City of White Plains". Any modifications shown on the construction plans shall be included under this item.

Unless otherwise specified herein, work shall be performed as described in Article 36.1, "General", in these specifications entitled, "Miscellaneous Metals".

b. Payment

The quantity of bumper meter posts to be measured for payment shall be the actual number of posts furnished and installed in accordance with the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including necessary excavation and backfill, and furnishing and placing of concrete for the post base.

Item 212 - Meter Posts

a. Work

The entire work section of Item 211 shall apply herein, except that the Contractor shall furnish and install 2" galvanized steel meter posts.

b. Payment

The entire payment section of Item 211 shall apply herein except payment will be made for actual number of meter posts furnished and installed.

Item 213 - Meter Posts Installed

a. Work

The entire work section of Item 211 shall apply herein except that the Contractor shall install meter posts furnished by the City of White Plains.

The posts will be furnished and delivered to the site by the City of White Plains.

Unless otherwise specified, upon completion of the installation the posts shall be painted as described in these specifications.

b. Payment

The entire payment section of Item 211 shall apply herein except payment will be made for actual number of meter posts installed.

Item 214 - Meter Posts Reset

a. Work

Under this item the Contractor shall remove and reset existing meter posts as shown on the plans or as directed by the Engineer.

Unless otherwise specified elsewhere upon completion of the installation the posts shall be painted as described in these specifications.

Unless otherwise specified herein, work shall be performed as described in Article 36.1, "General", of these specifications entitled "Miscellaneous Metals".

Item 214 - Meter Posts Reset (Cont'd)

a. Payment

The entire payment section of Item 211 shall apply herein except that payment will be made for actual number of meter posts removed and reset including painting as specified.

Item 215 - Bumper Posts

a. Work

The entire work section of Item 211 shall apply herein except that the Contractor shall furnish and install 5" galvanized steel bumper posts.

b. Payment

The entire payment section of Item 211 shall apply herein except that payment will be made for actual number of bumper posts furnished and installed.

Item 216 - Post and Chain Barrier

a. Work

The entire work section of Item 211 shall apply herein except that the Contractor shall furnish and install galvanized posts and chains.

b. Payment

The entire payment section of Item 211 shall apply herein except payment will be made for actual number of post and chain barriers furnished and installed complete.

Item 217 - Steel Posts Stored

a. Work

Under this item the Contractor shall remove, transport and store where directed in the City of White Plains existing steel posts as shown on the plans or as directed by the Engineer.

b. Payment

The entire payment section of Item 211 shall apply herein except that payment will be made for actual number of posts removed, transported and stored.

Item 218 - Bumper Rail

a. Work

Under this item the Contractor shall furnish all material (#10 gauge galvanized steel bumper rail, terminal sections, end plates, posts, bolts, etc.) and install same complete where and as shown on the plans or ordered by the Engineer.

Bumper rails, end wings, posts, splice bolts and mounting bolts shall be galvanized and of the type, size and shape indicated on the plans. All material used in the installation of the bumper rail shall be new and unused material free of grease, oil, rust, dirt and other foreign substances.

The Contractor will be required to punch or cut one hole in each post and also one hole in the center of each length of bumper rail. All mounting bolts shall have one lock washer and at least one flat washer placed under the nut at the rear of the bumper rail.

In general, bumper rails shall be installed without concrete foundations except in those areas where the fill exceeds are (1) foot.

Upon completion of the entire railing, all portions not galvanized shall be painted with two (2) coats of an approved zinc base paint.

Unless otherwise specified herein, work shall be performed as described in Article 36.1, "General", in these specifications entitled, "Miscellansous Metals".

The design for a "Bumper Rail" is shown on the "Standard Construction Details" of the City of White Plains. Any modifications shown on the construction plans shall be included under this item.

b. Payment

The quantity of bumper rail to be measured for payment under this item will be the number of lineal feet of bumper rail completed in place as shown on the Plans or as directed by the Engineer.

The bumper rail length payment shall be the overall length of rail measured between end posts where no terminal sections are required and to the tip of the terminal sections when the installation of terminal sections are required.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described, including painting and concrete foundations where specified.

Item 219 - Bumper Rail Installed

a. Work

The entire work section of Item 218 shall apply herein except that the Contractor shall install steel bumper rail furnished and delivered by the City of White Plains.

Item 219 - Bumper Rail Installed (Cont'd)

After the installation the Contractor shall clean and remove the rust and apply two (2) coats of aluminum paint or as otherwise specified.

a. Payment

The entire payment section of Item 218 shall apply herein except that payment will be made for actual number of lineal feet of steel bumper rail installed.

Item 220 - Bumper Rail Reset

a. Work

Under this item the Contractor shall remove and reset steel bumper rail as shown on the plans or as directed by the Engineer.

The bumper rail shall be dismantled and then the posts removed.

The method of resetting the posts and rail shall conform to Item 218 including the painting of posts and rail.

Unless otherwise specified herein, work shall be performed as described in Article 56.1, "General", in these specfications entitled "Miscellaneous Metals".

b. Payment

The entire payment section of Item 218 shall apply herein except that payment will be made for the actual number of lineal feet of steel bumper rail removed and reset.

In addition the price bid shall include the cost of restoring the site from which the rail is removed, including stone and asphaltic concrete that may be required to fill the post holes.

Item 221 - Bumper Rail Stored

a. Work

Under this item the Contractor shall remove, transport and store existing bumper rail as shown on the plans or as directed by the Engineer.

The bumper rail shall be dismantled and then the posts removed and cleaned of any concrete.

The material removed shall be transported and stored in a workmanlike manner in such locations within the City of White Plains as the Engineer may direct.

Item 221 - Bumper Rail Stored (Cont'd)

b. Payment

The entire payment section of Item 218 shall apply herein except that payment will be made for the number of lineal feet of bumper rail removed and stored.

Item 222 - Metal Handrail

a. Work

Under this item the Contractor shall furnish and install metal railing of the type and size shown on the plans or as directed by the Engineer.

If specified or allowed by the Engineer the Contractor may substitute welded joints for malleable iron fittings. Such welding shall be performed in a manner satisfactory to the Engineer, and all welded areas shall be galvanized prior to installation of the handrail. Such welded areas shall be smooth.

After installation, all railing not galvanized shall be painted as specified in these specifications.

Unless otherwise specified herein, work shall be performed as described in Article 36.1, "General", in these specifications entitled, "Miscellaneous Metals".

b. Payment

The quantity of metal handrail measured for payment shall be the actual number of lineal feet of handrail furnished and installed as shown on the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including necessary excavation and backfill, sleeves, lead, concrete for bases, fittings, painting and any other incidental costs.

Item 223 - Handrail Reset

a. Work

Under this item the Contractor shall remove and reset existing handrail of the type shown on the plans or as directed by the Engineer.

After the installation of the handrail, and if required, the rail shall be painted as described in Article 36.1, "General" of these specifications, entitled "Miscellaneous Metals".

Item 223 - Handrail Reset (Cont'd)

Unless otherwise specified herein, work shall be performed as described in Article 36.1 "General", in these specifications entitled "Miscellaneous Metals".

b. Payment

The entire payment section of Item 223 shall apply herein except that payment will be made for actual number of lineal feet of handrail removed and reset.

Item 224 - Chain Link Fence

a. Work

Under this item the Contractor shall furnish and erect chain link fencing of the type, size and in the locations shown on the plans or ordered by the Engineer.

The design for a "Chain Link Fence" is shown on the "Standard Construction Details" of the City of White Plains. Any modifications shown on the construction plans shall be included under this item.

When galvanized chain link fencing is specified, it shall be the hot dipped process after weaving.

Unless otherwise specified, work and material shall conform with the requirements as set forth under Item 106A entitled "Aluminum Chain Link Fencing", and Item 106L entitled "Chain Link Fencing" in the NYSDOT Specifications.

b. Payment

The quantity of fencing to be paid for under this item will be the number of lineal feet of fencing completed in place as shown on the plans or as directed by the Engineer. The fence length payment shall be the overall length of fence measured along the ground surface.

The unit price bid shall include the cost of all labor, material, plant and equipment, necessary to complete the work described including excavation and backfill, concrete for post footings, fittings, sleeves, lead and other incidental expenses.

Item 225 - Chain Link Gates

a. Work

Under this item the Contractor shall furnish and erect chain link fence gates of the type and size and at the locations shown on the plans or ordered by the Engineer.

Item 225 - Chain Link Gates (Cont'd)

Gate frames shall be composed of tubing or bars braced with rods, bars or angles and filled with wire mesh meeting the requirements of the specifications for the type of fencing with which the gate is to be used, all as detailed on the plans. Gate posts shall likewise be made of tubing or bars and angle bracing as shown on the plans. Each gate shall be supplied with an approved lock and triplicate keys. Use of old or reconditioned materials will not be permitted.

b. Payment

The quantity to be paid for under this item will be the number of complete gates furnished and erected in accordance with the specifications, plans and orders of the Engineer.

The unit price bid shall include the cost of all labor, materials, plant and equipment necessary to complete the work described including excavation and backfill, concrete for post footings and other incidental expenses.

Item 226 - Metal Fence Reset - up to 4 feet high

a. Work

The Contractor shall remove, store, clean and reset existing fence, gates and posts of the type shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Item 224 of these specifications entitled "Chain Link Fence".

b. Payment

The quantity of fence to be measured for payment shall be the total lineal feet of fence reset, as shown on the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including excavation, backfill, cement, concrete, storing, cleaning, handling and resetting of fence.

Item 227 - Metal Fence Reset - over 4 feet high

a. Work

The entire work section from Item 226 shall apply herein except the Contractor shall remove and reset existing metal fence over 4 feet high.

Item 227 - Metal Fence Reset - over 4 feet high (Cont'd)

b. Payment

The entire payment section of Item 226 shall apply herein except payment will be made for existing metal fence over 4 feet high removed and reset.

Item 228 - Fence Stored

a. Work

Under this item the Contractor shall remove and store existing fence of the type shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 56.1, "General", of these specifications entitled "Miscellaneous Metals".

The material removed shall be transported to any location specified within the City of White Plains and stored where directed, in a workmanlike manner.

b. Payment

The quantity to be measured for payment shall be the actual number of lineal feet of fence removed and stored as shown on the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described, including necessary excavation and backfill, restoration of the site and other incidental expenses.

37. MISCELLANEOUS

37.1 General

37.11 General Requirements

The Contractor shall furnish, place, construct and incorporate into the work, miscellaneous items where indicated on the plans or ordered by the Engineer.

All excavation and backfill shall be as described in Article 30. of these specifications entitled "Excavation and Backfill".

All materials used shall conform to Section II of the specifications entitled "Materials of Construction".

37.2 Payment Items

Item 235 - Oil Fillers Adjusted

a. Work

Under this item the Contractor shall adjust to grade oil fillers as shown on the plans or as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 37.1, "General", in these specifications, entitled "Miscellaneous".

All work shall be performed by a plumber licensed by the City of White Plains.

b. Payment

The quantity of oil fillers to be measured for payment shall be the actual number of oil fillers adjusted in accordance with the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including excavation and backfill, cutting and threading of existing pipe, and other incidental work.

Item 236 - Oil Fillers Relocated

a. Work

Under this item the Contractor shall relocate oil fillers as shown on the plans or as directed by the Engineer.

The fittings and pipe used shall be the same type and size material as that of the existing pipe and fittings. All work shall be performed by a plumber licensed by the City of White Plains.

Unless otherwise specified herein, work shall be performed as described in Article 37.1, "General", in these specifications entitled "Miscellaneous".

b. Payment

The entire payment section of Item 235 shall apply herein except payment will be made for actual number of oil fillers relocated.

Item 237 - Fuel Tanks Removed

a. Work

Under this item the Contractor shall remove and dispose of existing fuel tanks as shown on the plans or as directed by the Engineer.

Item 237 - Fuel Tanks Removed (Cont'd)

The Contractor shall excavate to such a depth that will facilitate the removal of the tank. The hole shall then be backfilled with selected fill. If required by the Engineer, the Contractor shall transport the tank to some location within the City of White Plains and dispose of it there.

Unless otherwise specified herein, work shall be performed as described in Article 37.1, "General", in these specifications entitled "Miscellaneous".

b. Payment

The quantity to be measured for payment shall be the actual number of fuel tanks removed and disposed of as shown on the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including excavations and backfill, selected fill material, restoration of the site, and transporting and disposing of the tank.

Item 238 - Fuel Tanks Abandoned

a. Work

Under this item the Contractor shall abandon existing fuel tank as shown on the plans or as directed by the Engineer.

The Contractor shall remove a section of the tank and fill the tank with sand as directed.

Unless otherwise specified herein, work shall be performed as described in Article 37.1, "General", in these specifications entitled "Miscellaneous".

b. Payment

The quantity to be measured for payment shall be the actual number of fuel tanks abandoned as shown on the plans or as directed by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described including excavations and backfill, sand and restoration of the site.

Item 239 - Survey Monuments

a. Work

Under this item the Contractor shall furnish and install survey monuments, including castings where specified and where shown on the plans.

All work performed under this item shall be done by a surveyor licensed by the State of New York and he shall submit an approved plan showing a minimum of four (4) permanent ties for each monument and certifying the accuracy of each location. Monuments shall be made of the type and size materials specified on the plans.

Unless otherwise specified herein, work shall be performed as described in Article 37.1, "General", in these specifications, entitled "Miscellaneous".

b. Payment

The quantity of monuments to be measured for payment shall be the actual number of monuments furnished and placed as shown on the plans or ordered by the Engineer.

The unit price bid shall include the cost of all labor, material, plant and equipment necessary to complete the work described, including excavation, backfill and casting.

Item 240 - Flagman

a. Work

Under this item the Contractor shall furnish an experienced flagman to coordinate traffic within the job site as directed by the Engineer.

Unless otherwise specified herein, work shall be performed as described in Article 37.1, "General", in these specifications entitled "Miscellaneous".

b. Payment

The quantity to be measured for payment shall be the actual number of hours of directing traffic by a flagman as ordered.

The unit price bid shall include the cost of all labor and equipment necessary to complete the work described.

Item 241 - Demolition

a. Work

Under this item the Contractor will furnish all labor, materials and equipment necessary to demolish all buildings and structures in property of the City of White Plains, New York, as designated in the Legal Section of this contract.

Unless otherwise specified herein, work shall be performed as described in Article 37.1, "General", in these specifications entitled "Miscellaneous".

b. Demolition

(1) General

All work shall be performed under the supervision of the Department of Public Works and subject to the approval of the Commissioner of Public Works.

Demolition shall proceed in such a manner as to adequately protect adjacent buildings, structures and trees from damage and with as little disturbance as possible. All salvaged material, except excavated earth free from rock, masonry and debris not needed to fill excavations shall become the property of the Contractor. Stockpiling or storing of salvaged material on the site will not be permitted. After the cellar floor has been broken up and inspected by the Engineer, the Contractor will backfill the cellar or basement with earth excavated from the site. The Contractor will transport and grade all excess earth excavation where directed.

(2) Order of Work

In general, the order of work will be as follows:

(a) Disconnect and plug all service lines that are connected to the building(s) under contract.

(b) Demolish buildings and backfill cellar.

1) The cellar is not to be backfilled until the floor has been broken up and inspected by the Engineer.

(c) Remove all trees, including tree stumps, shrubs, masonry walls and any other structures within the property lines.

(d) Complete backfilling and grading operations.

Item 241 - Demolition (Cont'd)

c. Permits

Before the demolition of any building is started, the Contractor shall first obtain the following permits and do the following work.

(1) Disconnecting Sanitary Sewer and Water

The Contractor shall obtain a "Street Opening" permit from the Department of Public Works. The charges for this permit shall be included in the lump sum price bid for this contract. The charges for this permit shall be as follows:

Deposit (Returnable)
Fee (Non-returnable)

After obtaining the permit the Contractor shall excavate, backfill and do all other work necessary to seal and plug the sanitary sewer at the curb line to the satisfaction of the plumbing inspector from the Bureau of Plumbing. A licensed plumber must seal and plug the sewer service line. The Contractor shall excavate, backfill and do all other work necessary to shut off the water service line at the water main in the street. Employees of the Bureau of Water of the Department of Public Works will make the actual shut-off at the water main.

(2) Demolition Permit

The Contractor shall obtain a "Demolition Permit" from the Department of Buildings. The charges for this permit shall be included in the lump sum price bid for this contract. The charges for this permit shall be as follows:

Fee (Non-returnable) of $5.00 per structure

(3) Disconnecting Gas Service

The Contractor shall notify Consolidated Edison Company to seal the gas service line at the property line. There is no charge for this service.

(4) Abandoning Fuel Oil Tanks and Oil Lines

The Contractor shall remove all fuel oil tanks and oil lines from the premises. Excavations caused by such removals shall be backfilled with clean fill and thoroughly tamped in the manner specified above.

Item 241 - Demolition (Cont'd)

(5) Other Services

The Contractor shall do all work necessary to seal all other service lines at the front property line.

d. Backfilling

Foundation walls shall remain in until all materials have been removed from the site and the cellar area has been cleared and is in a broom clean condition. When this has been performed to the satisfaction of the Engineer, the cellar floor shall be broken up sufficiently to prevent collection of water and the cellar walls removed to a point three (3) feet below the surrounding finish grade. The walls shall be broken up into small sizes and deposited in the cellar area. The voids in the stone and the remaining space shall be backfilled to finish grade with clean fill available at the job site. All necessary additional clean backfill will be supplied by the Contractor. The earth fill shall be placed in layers not exceeding eighteen (18") inches in depth and each layer shall be pneumatically tamped as directed. The entire site shall be cleared of all debris and graded as directed.

Any solid piece of earth, masonry, rock or other acceptable inorganic material that contains less than one cubic foot of volume and measures less than eighteen (18") inches in any direction shall be considered to be acceptable fill material.

No wood, metal or lath shall be used by the Contractor as fill, nor masonry larger than the sizes specified.

e. Regulations

All regulations of the Department of Public Safety and Department of Building shall be observed during the progress of the work and all necessary permits obtained and paid for by the Contractor. Special attention shall be given to the regulations of the Fire Department concerning the burning of debris.

f. Special Conditions

No materials shall be burned on or near the job site without prior written authorization by the Engineer. In such case, the Contractor, when permitted to burn, shall do so in a manner specified by the City of White Plains Fire Department. The Contractor shall have an attendant present at all times while the material is being burned and precautions shall be taken to eliminate any possible spread of fire. All fires shall be extinguished before leaving the job site at the end of each working day.

Item 241 - Demolition (Cont'd)

The Contractor will erect a wooden fence barricade across existing driveways and/or across the frontage of the property as directed by the Engineer. The Contractor may utilize salvageable material available at the site. All such barricades shall be given two coats of white paint.

g. Payment

Unless otherwise specified, the Contractor shall bid a lump sum price for the demolition of all buildings on the parcel of land, which price shall include the cost of all labor, materials, plant, equipment and incidental expenses necessary for the demolition and removal of all buildings, structures, foundations and fuel oil tanks; discontinuance of all service lines; demolition of foundation walls; placing and compaction of fill; grading the entire site; installing barricades; painting and cleaning up in general and such other work as is set forth in the specifications or shown on the plans.