CITY OF SEATTLE

Supplement
to
Standard Specifications
for
Municipal Public Works Construction

1970

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City of Seattle

Supplement

to

Standard Specifications

for

Municipal Public Works Construction

prepared by

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Roy W. Morse
City Engineer

Philip M. Buswell
Principal Assistant City Engineer

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FOREWORD

These supplemental specifications contain modifications to the "Standard Specifications for Municipal Public Works Construction" prepared by the Washington State Chapter, American Public Works Association, 1969.

For every City of Seattle sponsored public works project, the supplements contained herein, the 1969 publication of Standard Specifications for Municipal Public Works Construction, the City of Seattle Standard Drawings, 1970 supplement, the laws of the State of Washington, the Charter and ordinances of the City of Seattle, the project proposal and the project plans shall constitute the contract for the project and shall be considered as a whole.

The City Engineer maintains a register of all persons or agencies holding copies of this specification. Revisions thereto, as printed, will be mailed to holders of record at the address on file in the office of the City Engineer. Please notify the City Engineer, attention Standard Specifications Register, of any change of address.

DIVISION 1—GENERAL REQUIREMENTS AND COVENANTS

Page 1 Section 1.02 ENGINEER

The City Engineer, or executive officer of another department when such other department plans and supervises public construction for the Board of Public Works in accordance with Article VII of the Charter of The City of Seattle, including such assistants as are authorized to represent him, except that in Section 7.14A, 7.15B, 7.15D, 7.17 and 7.18 the term "Engineer" shall mean the City Engineer of The City of Seattle.

Page 4 Section 3.01A Bidding Errors

This section shall be deleted.

Page 4 Section 3.02 RETURN OF PROPOSAL GUARANTY.

After the bids have been tabulated and compared, the Board of Public Works will return the proposal guaranty to all but the successful bidder. The successful bidder's deposit will be retained pending the execution of the contract and the bond therefor.

Page 4 Section 3.05 FAILURE TO EXECUTE CONTRACT

Upon failure to enter into the contract and furnish the necessary bond within the time specified in Section 3.03, the proposal guaranty which accompanied the bid, whether in the form of a bond, check, or cash deposit, shall be forfeited to the Owner. The Board of Public Works will then readvertise for proposals for such work. Neither the Board of Public Works nor the City Council may remit such forfeiture of proposal guaranty.

New Section

Section 4.09 PROTESTS

If the Contractor considers any work demanded of him to be outside the requirements of the contract, or considers any ruling of the Engineer to be unfair, he shall immediately, upon such work being demanded or such ruling being made, proceed without delay to perform the work or to conform to the ruling, and within twenty (20) days after date of receipt of the instructions or ruling, he shall file a written protest with the Engineer, stating clearly and in detail the basis of his objection, and include an itemized statement of any extra costs which may have resulted. Except for such protests or objections as are made of record in the manner herein specified and within the time limit stated, the records, rulings, instructions or decisions of the Engineer will be final and conclusive.

Page 7 Section 5.10 DAMAGE TO EXISTING IMPROVEMENTS AND UTILITIES

The second paragraph shall be amended as follows:

Underground utilities of record, except services, will be shown on the construction plans or located in the field insofar as it is possible to do so. These, however, are shown for convenience only, and the Owner assumes no responsibility for improper locations or failures to show utility locations on the construction plans.

Page 8 Section 5.16 FINAL INSPECTION

This section shall be deleted.

Page 8 Section 6.02 SAMPLES AND TESTS

(Refer to Materials Laboratory of the Seattle Engineering Department rather than Materials Laboratory of the Department of Highways.)

Page 8 Section 6.03 SPECIAL METHODS OF TEST

(Refer to Materials Laboratory of the Seattle Engineering Department rather than Materials Laboratory of the Department of Highways.)

Page 10 Section 7.05A Non-Discrimination Certificate

This section shall be deleted. (Reference is made to Ordinance 98386, a copy of which is to be included with all special provisions.)

New Section

Section 7.14A Warning Lights and Barricades

It shall be unlawful, in accordance with the prevailing Street Use Ordinance, for anyone, in any manner, to obstruct, excavate or tear up any public place, without at all times during the hours of darkness maintaining, at the point of obstruction or excavation, a barricade and four or more red or flashing amber lights of sufficient power and brilliancy and so placed as to be plainly visible for a distance of not less than five hundred (500) feet along the public way from the point of such obstructions. Obstructions in public places during daylight hours shall have sufficient barricades posted in such a manner as to indicate plainly the danger involved. Barricades may be removed at the completion of the work or the removal of obstructions in public places, providing the surface of the roadway has been restored as required and approved by the Engineer.

Adequate advance warning lights and barricades must be posted on all obstructions in any arterial street as defined in the traffic code of the City of Seattle.

The Engineer is hereby authorized to place barricades and warning lights at unguarded or inadequately guarded excavations, obstructions or other dangerous conditions existing in any public place and anyone causing or permitting such condition shall pay the cost of such barricading and lighting by the City at the rate and under the conditions established by ordinance.

The Engineer's judgment shall be final as to the number and adequacy of lights or barricades at all obstructions and excavations.

Page 11 Section 7.15B Street Closures or Partial Closures

Streets may be closed to through traffic unless otherwise provided for in special provisions. Streets shall not be closed to traffic until such closure has been approved by the Engineer. Street closures shall be made in such a manner as to provide for maximum public safety and public convenience. They shall be opened to through traffic at such time as the work has been completed, or as the Engineer may direct.

Whenever the standard specifications require the project area be closed to traffic for a definite lenght of time or for a period as directed by the Engineer, the Contractor shall completely barricade the street, alley, driveway or other access to the project with approved barricades. No direct payment will be allowed for furnishing, placing and removal of barricades as required, and all costs therefor shall be included in the unit bid prices in the proposal.

Page 11 Section 7.15D Existing Traffic Signs and Facilities

The Owner will make all necessary adjustments to traffic signals and traffic signal activators at no cost to the Contractor. STOP, YIELD and Street Name signs which will interfere with construction shall be removed by the Contractor and relocated in a temporary location. All other traffic control signs which will interfere with construction

shall be removed by the Contractor and stored in a safe and approved location. These signs shall not be removed, however, until the Engineer has so directed and until the necessary measures have been taken to safeguard traffic after the signs have been removed.

Preservation and maintenance of the signs shall be the sole responsibility of the Contractor.

All costs for replacement of street name signs and posts and traffic signs and posts, due to loss or damage by the Contractor, will be charged to the Contractor.

Upon completion of the project, the Owner will reset all such signs in their permanent location at no cost to the Contractor. In areas where posts for signs are to be permanently located in concrete sidewalks, the Contractor shall, during the progress of the work, notify the Engineer two (2) working days prior to constructing the walks in order to allow sufficient time for the Owner to place the posts ahead of the sidewalk paving.

Preservation, maintenance and resetting of all signs, as outlined above, shall be considered as incidental to the construction, and all costs in connection therewith shall be considered to be included in the prices bid for the various items comprising the improvement.

Page 12 Section 7.15F Local and Emergency Traffic

(Delete the second paragraph.)

Page 12 Section 7.15I Flagmen

Whenever necessary, and during the times set forth in the special provisions, the Contractor shall provide a uniformed flagman acceptable to the Engineer who shall maintain the safe and efficient flow of traffic through and adjacent to the work area.

The Engineer shall have complete authority to require the Contractor to remove from the project any flagman whose performance is not suitable or acceptable.

Page 13 Section 8.02 NOTICE TO PROCEED AND PROSECUTION OF THE WORK

The following paragraph shall be added:

Written notice to proceed will be given after the contract has been executed and the performance bond and all required insurances have been filed with and approved by the Owner. The Contractor shall not commence work under the contract until such written notice has been given by the Engineer.

Page 14 Section 8.05 CONTRACT TIME

The first paragraph shall be amended as follows:

The improvement contemplated by the contract shall be completed in its entirety within the number of working days, or by definite completion date specified in the special provisions. The contract time shall commence at the time written notice to proceed is given by the Engineer.

Page 15 Section 8.12 OVERTIME WORK BY OWNER EMPLOYEES

Contractors desiring to perform contractual work on holidays, Saturdays and Sundays shall apply to the Engineer's office in writing. The Engineer will determine whether such work is essential, permission will be granted, and engineering costs resulting from work on the aforementioned days shall be borne as hereinafter provided. If the work is determined not to be essential, permission will not be granted.

The work performed by the Engineer on holidays, Saturdays and Sundays will be classified as "essential overtime" and will be paid for at the rate established by the prevailing City Salary Ordinance. Payment of "essential overtime" will be made partially from moneys withheld from the Contractor's final estimate and partially from the improvement funds. The Contractor shall pay that portion of the Engineer's salary in excess of normal straight time, with the exception of February 12, October 12 and November 11, which are additional City holidays as outlined in Section 8.05. Engineering costs on these additional holidays will be paid entirely from the improvement funds.

Page 15 Section 9.03 PAYMENT FOR EXTRA WORK

The following paragraph shall be added:

When payment for extra work is by lump sum agreed price or by unit prices mutually agreed upon by the Contractor and the Owner, the Contractor shall include in his agreed prices, retail sales tax on taxable materials when such extra work is for improving public roads. When the extra work is for water systems, sanitary sewer systems, sewage disposal facilities, or other work not related to public roads, the Contractor shall not include retail sales tax in his agreed prices. The Contractor is advised that the sale to him of necessary material, supplies, etc., are sales for resale and the Owner will pay the retail sales tax on the entire extra work.

Page 17 Section 9.05 PROGRESS PAYMENTS, FINAL PAYMENT, RETAINED PERCENTAGE

The first paragraph shall be amended as follows:

The Contractor shall be entitled to monthly progress payments corresponding to the stage of the work. Progress estimates will be prepared by the Engineer not later than (30) days after commencing work, and every thirty (30) days thereafter, if so entitled, for the duration of the construction. These shall be based upon an approximate estimate of quantities of work completed and considered acceptable, multiplied by the unit prices established in the contract.

Add the following paragraph:

It is provided, however, pursuant to the laws of Washington relating to liens on public works, that there shall be deducted from each monthly progress payment such percentages and amounts as the laws provide.

The first sentence in paragraph two shall be amended as follows:

Cost of materials, properly stored, protected and insured at the site of the work will be paid on monthly estimates.

The fourth paragraph shall be deleted.

Page 17 Section 9.06 ACCEPTANCE OF CONSTRUCTION

The first and second paragraphs shall be amended as follows:

Acceptance of construction shall be defined as final approval of the project only in that is has been constructed, cleaned up and completed in accordance with plans and specifications.

Projects will be accepted as final at such time as the Board of Public Works finds they are entirely completed. It is provided further that such approval shall not constitute an acceptance of any unauthorized work, that no payment made under the contract except the final payment shall be evidence of the contract, either wholly or in part, and that no payment shall constitute an acceptance of unauthorized or defective work or improper material.

Page 19 Section 12-2.03 PROTECTION OF EXISTING IMPROVEMENTS DURING GRUBBING OPERATIONS

Delete paragraph one.

Page 19 Section 12-2.04 CONSTRUCTION DETAILS

The second sentence in the first paragraph shall be amended as follows:

Piling shall be removed to a minimum depth of two (2) feet below subgrade or two (2) feet below original ground, whichever is lower.

Page 19 Section 12-4 PRESERVATION OF EXISTING TREES

It shall be the responsibility of the Contractor to preserve any tree for which the special provisions or plans so provide or for which the Engineer may direct.

If the Contractor damages or destroys a tree which he has been directed to preserve, he shall replace it in species, size and grade with a healthy tree acceptable to the Engineer, and guarantee the tree to live for a period of one (1) year. In the event the tree fails to survive for the one-year period, it shall be repalced in species, size and grade. If the Contractor fails to replace a tree damaged or destroyed as a result of his operations, he shall forfeit twelve (12) dollars per square inch of sectional area measured six (6) inches above the ground line of the damaged or destroyed tree. The calculated value of the tree as described above shall be withheld from the final payment to the Contractor.

Page 19 Section 12-4.01 DESCRIPTION

This section shall be deleted.

Page 20 Section 12-4.02 MEASUREMENT, ORNAMENAND DANGER TREES

This section shall be deleted.

Page 20 Section 13-1.01 CLASSIFICATION

Roadway excavation, comprising all materials within the roadway, planting and sidewalk areas, but excluding trench excavation and borrow pits, will be classified under headings of "Common Excavation" and "Solid Rock Excavation," in accordance with specifications therefor.

"Solid Rock Excavation" shall include all solid rock in ledges, bedded deposits and unstratified masses and conglomerate deposits so firmly cemented as to present all the characteristics of solid rock and which cannot be removed without drilling and blasting, and all boulders containing a volume of more than one-half (1/2) cubic yard. All solid rock layers with an overburden of shattered rock or solid rock layers interspersed with strata of clay or similar material will be classified as "Solid Rock Excavation" for the total depth of excavation in which the solid rock strata constitute not less than eighty-five per cent (85%) of the total depth.

"Common Excavation" shall include all other material not classified as solid rock.

Page 23 Section 13-3.10C Embankment Construction

First sentence in the fourth paragraph shall read as follows:

"At the time of compaction, the moisture content of that portion of embankment material passing a one-fourth inch (1/4") sieve shall be not more than three (3) percentage points above or below the optimum moisture content as determined in the "Compaction Control Test" specified in Section 13-3. 10E5."

Page 24 Section 13-3. 10E5 Compaction Control Test

Optimum moisture content and maximum density for other than granular materials shall be determined in accordance with ASTM Designation D 698, Method C.

For granular materials, required density shall be determined in accordance with the City of Seattle Compaction Control Method for Granular Materials.

Instructions for both of these methods may be had without charge upon request to the Materials Laboratory, Seattle Engineering Department, Municipal Building, Seattle, Washington.

Page 24 Section 13-3.11 BORROW

Borrow shall consist of suitable material obtained from pits for the construction of embankments, subgrade, planting strips, sidewalk areas or shoulders and other facilities. The widening of street cuts and ditches will be considered as street excavation and not borrow.

Borrow materials, approved by the Engineer, shall be secured by the Contractor at his own expense and from a source of his own choosing.

Page 25 Section 13-3.12 STRIPPING QUARRIES AND PITS

This section shall be deleted in its entirety.

Page 26 Section 13-4 MEASUREMENTS

Paragraph two shall read as follows:

"Borrow will be measured by the ton at the point of delivery."

Paragraph three shall be deleted.

Page 26 Section 13-5 PAYMENT

Bid items 1, 4, 5, 6, 7, 8, 9, 10, 12, 14 and 17 shall be deleted.

Bid items 2 and 3 shall be amended to read as follows:

"Common Excavation," per cubic yard.
"Solid Rock Excavation," per cubic yard.

The following bid items shall be added:

"Heavy Duty Power Grader with Scarifier," per hour.
"Tamping Roller," per hour.
"Heavy Duty Rooter," per hour.
"Gang Plow and Tractor," per hour.
"Tandem Disc and Tractor," per hour.

Bid item 11 shall read as follows:

"Common Borrow," per ton.

Paragraph two shall be revised to read as follows:

"The unit contract prices for such types and classes of excavation and borrow listed above shall be full compensation for excavating, loading, placing or otherwise disposing of the material as shown on the plans, as specified herein or as directed by the Engineer, and shall include the removal and disposal, the wasting or stock-piling of forest debris or any top soil organic matter or other deleterious matter from the surface of a cut or fill, as may be specified or as may be directed by the Engineer."

Paragraph three shall be deleted.

Paragraph eleven shall be revised to read as follows:

"The unit contract prices per hour for the operating

equipment listed shall be full compensation for furnishing and operating the assemblies and for all rentals, supplies and labor to perform the work specified."

Paragraph twelve shall be deleted.

Paragraph thirteen shall be revised to read as follows:

"In the event solid rock is encountered on any project for which no payment item for its excavation is provided in the bid proposal, compensation for necessary removal shall be by extra work as outlined in Section 9.03."

Paragraphs fourteen and fifteen shall be deleted.

Page 27 Section 14—HAUL

This section shall be deleted in its entirety.

Page 27 Section 15-2.01 SUBGRADE FOR BASE MATERIALS

Paragraph six shall be amended to read as follows:

"When ordered by the Engineer, the Contractor shall sprinkle the subgrade with water in such quantities as directed. No compensation will be paid therefor."

Page 29 Section 15-4 PAYMENT

Paragraph four shall be deleted.

Page 29 Section 16-1.01 WATER FOR STREETS

The first sentence shall be amended to read as follows:

"Water for compacting embankment, constructing subgrade, placement of screened gravel and crushed surfacing, and for laying dust caused by grading operations or public travel, if ordered by the Engineer, shall be applied in the amounts and places designated by the Engineer."

Page 30 Section 16-2.01 WATER SUPPLY

The Owner will furnish, at the nearest source, all necessary water for construction and testing purposes at no cost to the Contractor, unless otherwise noted in the special provisions.

Page 30 Section 16-2.02 REQUIREMENTS AND RESPONSIBILITY

Title shall read: REGULATIONS FOR USE OF FIRE HYDRANTS

The Contractor shall use only those hydrants designated by the Seattle Water Department, and in strict accordance with its requirements for hydrant use as stipulated in Ordinance 65877 and as outlined in the foilowing Board of Public Works regulations:

1. A written permit will be required for the use of a hydrant by other than employees of the Fire and Water Departments.

2. Wherever possible, use of water from hydrants shall be through a meter equipped with a hand-operated valve on the outlet side of the meter, and affixed to the hydrant by an employee of the Water Department.

3. The Water Department employee shall ascertain that the hydrant is in good working order, shall open the main stem fully after affixing the meter to the hydrant, and shall also close the hand-operated valve affixed to the meter. If the hydrant is equipped with an independent stem and gate, the Water Department shall also open the independent port to which the meter is affixed. (The above will preclude the necessity for any hydrant operation by unauthorized personnel.)

4. If it is not required or practical to use a meter in conjunction with the use of water through a hydrant, it will then be required that control of the water taken from a hydrant shall be by means of a special auxiliary valve affixed to an independent port, said valve to be equipped with a hand-operated control. Valves will be made available by the Water Department to those authorized by permit to draw water from a hydrant.

5. When Water Department valves are utilized, a deposit covering the cost of such valves and fittings, in addition to any other costs or charges, shall be made at the time the permit is issued. Wherever possible, such auxiliary valves shall be installed by Water Department personnel who, at the time of installation, shall ascertain that the hydrant is in good operating condition, shall open the main stem of the hydrant fully, and ascertain that the independent gate controlling the outlet to be used is also open.

6. If it is not practical for the Water Department to install the auxiliary valves on the independent hydrant ports, those to whom permits are issued shall be fully instructed in the correct operating of a hydrant, and after the main valve is open on the hydrant, all control of water flow thereafter shall be by means of the auxiliary valve. Removal of meters and valves will be done by Water Department personnel, at which time the hydrant and all equipment will be inspected.

7. All fees, estimates of rental charges and estimates of inspection and repair costs shall be collected at the time a permit is issued for hydrant use. The rates to be charged for valves furnished by the Water Department are as follows:
   $2.00 per month per valve.
   $30.00 deposit per valve – will be returned at completion of job.

8. The Contractor will be required to make a deposit for valves for one full day's operation when a permit is issued, and the Water Department will set additional valves ahead and in sequence with paving operations.

   This system also applies where series of hydrants are used in water settling trenches, jetting, sluicing and making hydraulic earth fills.

Page 30 Section 16-3.03A Jetting

The last two paragraphs shall be deleted.

Page 30 Section 16-3.03B Sluicing

The second paragraph shall be deleted.

Page 30 Section 16-4 MEASUREMENT

This section shall be deleted.

Page 30 Section 16-5 PAYMENT

This section shall be amended to read as follows:

"All costs for water shall be considered by the contractor as incidental to the construction, and no separate payment therefor will be made."

New Section 20–MINERAL AGGREGATES
Section

New Section 20-1 DESCRIPTION
Section

Mineral aggregate shall be free of wood, roots, bark and other extraneous material.

Classification of mineral aggregates shall be by type number, and for each type specified, the grading shall conform to the requirements in the Table shown on page 6.

Page 34 Section 22–PRODUCTION FROM QUARRY AND PIT SITES

This section shall be deleted in its entirety.

Page 36 Section 23-2.01 CRUSHED SURFACING

Crushed surfacing shall be manufactured from ledge rock. The materials shall be uniform in quality and free of wood, roots, bark and other extraneous material and shall meet the test requirements for type aggregates Nos. 1 through 4, inclusive, as outlined in the Mineral Aggregate Table in Section 20.

Page 37 Section 23-2.02 BALLAST

Ballast shall consist of crushed, partially crushed or naturally occurring granular material from approved sources. In the manufacture of ballast, all oversize material up to and including boulders of ten inches (10") in the greatest dimension shall be utilized in the manufacture of the finished product.

The material from which ballast is to be manufactured shall meet the test requirements for type aggregate No. 14 outlined in the Mineral Aggregate Table in Section 20.

Page 38 Section 23-3.11 HOURS OF WORK

Normally, the Contractor shall so arrange his surfacing operations that the work will be carried on during the hours of daylight. However, when necessary to complete the project within the time specified, work may be undertaken during the hours of darkness; provided the Contractor obtains approval of the Board of Public Works for work conducted between the hours of 7:00 p.m. and 6:00 a.m. and furnishes and operates during such period an adequate and effective artificial lighting apparatus to insure that all work undertaken can be carried on satisfactorily in the manner contemplated by the specifications.

REQUIREMENTS FOR MINERAL AGGREGATES

Aggregate Type No.	Nature	Los Angeles Abrasion (Max.) Per	Sieve Analysis—Percent Passing By Weight (Wet Sieving) 200	50	40	10	8	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	2	2 1/2	3	Plasticity Index (Max.)	Liquid Limit (Max.)	Sand Equivalent (Min.)	Dust Ratio (Max.
1	Crushed Ledge Rock	35	0-10	.....	.....	.....	.....	50-65	65-80	.....	.....	90-100	100	.....	.....	.....	.....	.....	1	25	.....	.....
2	Crushed Ledge Rock	35	0-7.5	.....	.....	.....	.....	30-50	.....	.....	.....	55-80	.....	.....	95-100	100	.....	.....	1	25	.....	.....
3	Base Course	35	0-7.5	.....	3-18	.....	.....	30-50	.....	.....	50-80	.....	.....	100	.....	.....	.....	.....	..	...	.....	.....
4	Top Course and Keystone	35	0-10	.....	5-23	.....	.....	50-65	.....	.....	100	.....	.....	.....	.....	.....	.....	.....	..	...	40	.....
5	Washed Sandy Gravel	30	0-1	.....	.....	.....	.....	20-40	.....	.....	.....	.....	.....	.....	.....	.....	100	.....	..	...	.....	.....
6	Washed Sand	...	0-2	10-30	.....	.....	65-95	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	...	.....	.....
7	Washed Gravel	30	0-1	.....	.....	.....	.....	2-8	.....	12-34	.....	30-60	.....	95-100	100	.....	.....	.....	..	...	.....	.....
8	Washed Gravel	30	0-1	.....	.....	.....	.....	5-20	.....	30-60	.....	60-90	.....	100	.....	.....	.....	.....	..	...	.....	.....
9	Washed Gravel	30	0-1	.....	.....	.....	0-8	.....	95-100	.....	.....	100	.....	.....	.....	.....	.....	.....	..	...	.....	.....
10	Pit Run Sand	...	0-10	10-60	.....	.....	40-100	90-100	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	30	.....	.....
11	Sand Filler	...	0-15	.....	15-40	40-75	.....	90-100	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	..	40	.....
12	Pit Run Gravel	30	0-5	.....	.....	.....	0-8	.....	95-100	.....	.....	100	.....	.....	100	.....	.....	.....	3	30	.....	.....
13	Pit Run Sandy Gravel	30	0-10	.....	.....	.....	.....	20-40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	30	.....	.....
14	Ballast	30	0-9	.....	0-16	.....	.....	30-50	.....	.....	.....	.....	.....	.....	.....	65-100	100	.....	..	....	35	2/3
15	Pit Run Sandy Gravel	30	0-10	.....	.....	.....	.....	20-40	.....	.....	.....	100	.....	.....	.....	.....	.....	.....	3	30	.....	.....
16	Screened Gravel Surfacing	...	0-5	.....	.....	.....	.....	50-65	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	...	.....	.....
17	Bank Run Gravel	...	0-5	.....	.....	.....	.....	25-75	.....	.....	.....	.....	100	.....	.....	.....	95-100	.....	..	...	.....	.....
18	Bank Run Gravel	...	0-10	.....	.....	.....	.....	25-75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	...	.....	.....
‡*19	Bank Gravel (Class A)	...	0-5	.....	.....	.....	.....	25-75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	...	.....	.....
‡*20	Bank Run Gravel (Class B)	...	0-10	.....	.....	.....	.....	25-75	.....	.....	.....	.....	100	.....	.....	.....	.....	.....	..	...	50	2/3
**21	Crushed Gravel	30	.....	.....	.....	.....	.....	0-25	.....	.....	.....	45-70	85-100	.....	.....	.....	.....	.....	..	...	30	2/3
**22	Crushed Gravel	30	.....	.....	.....	.....	.....	0-25	.....	.....	.....	.....	.....	.....	100	.....	.....	.....	..	...	.....	.....
**23	Crushed Gravel	30	2-12	.....	.....	40-75	.....	70-100	.....	100	.....	.....	.....	.....	.....	.....	.....	.....	..	...	.....	.....
24	Crushed Filler	...	0-15	.....	15-40	40-75	.....	90-100	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	....	40	.....

*Bank Run Gravel for uses other than support of Portland cement concrete pavement shall meet the following additional requirements:
Stabilometer Resistance Value (Section 6) .....68 minimum
Swell Pressure (Section 6) .....0.3 PSI maximum
**Crushed Gravel shall have a minimum of 75% machine fracture.
‡ The maximum size of stone shall not exceed the depth of the course being applied less one (1) inch, except that in no case shall the maximum size exceed eight (8) inches.

Page 38 Section 23-3.16D MAINTENANCE ROCK

This section shall be deleted.

New Section

Section 23-3.21 APPLICATION OF DUST PALLIATIVE OIL

When required by the plans, in the special provisions or when directed by the Engineer, completed crushed rock surfacing courses or roadways shall be given two or more applications of dust palliative oil to the limits specified.

Dust palliative shall be P.S. 300 oil and shall be uniformly applied by an approved pressure-type distributor at the rate of three-tenths (0.3) gallons of oil per square yard of surface to be treated. Before succeeding applications of dust palliative are applied, the preceding application shall have thoroughly dried, as approved by the Engineer.

Dust palliative shall not be applied upon a wet surface nor when the temperature is below 60° F.

When directed by the Engineer, the Contractor shall furnish and place Type No. 6 sand on newly oiled streets to such limits as designated by the Engineer to prevent tracking of oil onto adjacent existing concrete pavement. Sand shall also be used where, in the opinion of the Engineer, the oil penetration is unsatisfactory.

Page 39 Section 23-4 MEASUREMENT

Paragraph five, regarding Water, shall be deleted.

Paragraph seven, regarding Maintenance Rock, shall be deleted.

The following paragraph shall be added:

"Dust palliative oil shall be measured in barrels used. One barrel is equal to forty-two (42) gallons."

Page 39 Section 23-5 PAYMENT

Bid items 7, 9, 10 and 11 shall be deleted.

Add the following bid item:

"Dust Palliative," per barrel.

Paragraph six, regarding water, shall be deleted.

Paragraphs eight and nine regarding maintenance rock and preparing stockpile sites shall be deleted.

Delete the following in the final paragraph:

"also for all expenses incurred in consequences of or discontinuance of work covered by these specifications."

Page 40 Section 24-2.01 SAND FILLER

Sand filler shall consist of sand screened from natural deposits and shall be composed of naturally occurring grains, preferably angular.

Sand filler shall meet the requirements for type No. 11 as outlined in the Mineral Aggregate Table in Section 20.

Page 40 Section 24-2.02 CRUSHED FILLER

Crushed filler shall consist of the fine product resulting from crushed stone and shall meet the requirements for type No. 24 as outlined in the Mineral Aggregate Table in Section 20.

Page 40 Section 25-2 MATERIALS

Screened gravel surfacing shall consist of crushed, partially crushed, or naturally occurring granular materials from approved sources, and shall meet the requirements for type No. 16 as outlined in the Mineral Aggregate Table in Section 20.

Page 41 Section 25-5 PAYMENT

The last paragraph shall be deleted.

Page 41 Section 26-2.01 CLASSES AND GRADING OF BANK RUN GRAVEL

Bank run gravel shall be substantially free from wood, roots, bark or other extraneous material. It shall have such characteristics of particle size that it will compact readily to a firm, stable course, and shall meet the requirements for type Nos. 19 or 20 as outlined in the Mineral Aggregate Table in Section 20.

Page 41 Section 26-2.03 BANK RUN GRAVEL FROM SOURCES PROVIDED BY THE CONTRACTOR

Bank run gravel furnished from sources provided by the Contractor, shall be produced from approved sources in accordance with Section 22. The grading and quality shall be as specified in Section 20.

If bank run gravel from sources furnished by the Contractor has lower resistance value or higher swell pressure, it may be used if approved by the Engineer; provided that the thickness of crushed surfacing is increased over that shown on the plans by such an amount as the Engineer determines necessary to compensate for the lower values. The bank run gravel shall be decreased in thickness by an amount equal to the required increased thickness of crushed surfacing. The volume of crushed surfacing required to compensate for resistance value lower than, or swell pressure higher than, that specified above shall be measured for payment as "Bank Run Gravel, Class A or Class B," and not as crushed surfacing. All costs incurred therefor shall be included by the Contractor in his unit contract price for "Bank Run Gravel, Class A or Class B."

Page 42 Section 26-3.04 PIT OPERATIONS

This section shall be deleted.

Page 42 Section 26-5 PAYMENT

Bid items 2, 3, 4, 5, 6, and 7 shall be deleted.

Add the following bid item:

"Mineral Aggregate Type No. .....," per cubic yard or per ton.

The second paragraph shall be amended to read as follows:

"The unit contract price per ton or per cubic yard for "Bank Run Gravel" or "Mineral Aggregate" shall be full compensation for furnishing all material, labor, tools, equipment and all other costs and expense necessary or incidental to the preparation of the roadbed, excavating, loading, hauling the full distance, placing and blading the material for which no other specific bid item is provided."

Paragraphs 3, 4, 5 and 6 shall be deleted.

The final line in the last paragraph shall be amended to read as follows:

"Bank Run Gravel or Mineral Aggregate."

Page 50 Section 34-2.02B Test Requirements

The first line in table one shall read as follows:

CLASS OF ASPHALT CONCRETE	B	G	D	E	F
% Fracture, size above U.S. No. 10	95	95	95	50	50

Page 55 Section 34-3.10 PRELEVELING FOR ASPHALT CONCRETE

The third paragraph shall be amended to read as follows:

The unit contract price per ton for "Asphalt Concrete Pavement, Class.....(Leveling Course)" shall be full compensation for all costs and expense involved in furnishing all labor, material, tools and equipment necessary in preleveling the surface as herein specified.

Page 56 Section 34-3.12 JOINTS

The placing of the top or wearing course shall be as nearly continuous as possible.

In placing the top or wearing course, the work shall be scheduled in a manner to provide for full width pavement at the conclusion of the day's work. Where this is beyond the control of the Contractor, he shall barricade and protect all cold longitudinal joints until work is resumed again. Heavy building paper shall be placed wherever cold transverse joints are necessary, or as the Engineer may direct. Upon resuming work, the paper and asphalt thereon shall be removed and the joint neatly trimmed to a straight and vertical face. Before placing mixture against them, contact surfaces of cold longitudinal or transverse joints, castings, curbs and concrete gutters shall be painted with a thin, uniform coating of cutback asphalt or SS-1 emulsified asphalt.

Immediately following the completion of the top or wearing course, all joints where the asphalt concrete meets existing asphalt concrete pavements, portland cement concrete pavements, oil mats, concrete curb, concrete gutter, etc., shall be painted with a cutback asphalt or an SS-1 emulsified asphalt as described in Section 34-3.02, and shall immediately be covered with clean dry sand. The painted strip shall be directly over the joint and shall not exceed more than one and one-half (1½) inches on either side of the joint. No painting shall be performed when the pavement is wet or damp.

Page 56 Section 34-3.13 SURFACE SMOOTHNESS

The finished surface of the top or wearing course shall be of uniform texture, smooth, true to crown and grade, and free from defects of all kinds. The finished surface shall not vary more than one-fourth (¼) inch from the lower edge of a ten-foot (10') straight edge placed on the surface parallel to the center line, excepting at intersections where, in the opinion of the Engineer, this may be impracticable. No portion of the finished pavement shall vary more than one-fourth (¼) inch from a template cut to exact section shown on the plans or as staked by the Engineer, when placed at right angles to the center line on the finished surface.

When deviations in excess of the above tolerances are found, the surface shall be corrected by the addition of asphalt mixture to low places or the removal of material from high places, followed by further rolling. This shall be done as soon after the first rolling as possible and before the pavement mixture becomes chilled. Correction of defects shall be performed until there are no deviations anywhere greater than the allowable tolerances.

Page 57 Section 34-3.19 UNFAVORABLE WEATHER

Delete the second sentence in paragraph two. Delete the third and fourth paragraphs.

Page 57 Section 34-3.20 TRAFFIC AND DETOURS

The maintenance of traffic and the handling and care of traffic signs shall meet the requirements outlined in Section 7.15.

Page 57 Section 34-5 MEASUREMENT AND PAYMENT

Bid Item No. 3 shall read:

"Prime Coat Aggregate," per cubic yard or per ton.

Delete Bid Item No. 4 and insert the following:

"Asphalt Concrete Pavement, Class .....(Leveling Course)" per ton.

Delete Bid Item No. 6.

Delete Bid Item No. 9 and insert the following:

"Chipping Existing Asphalt Surface," per square yard.

Add the following paragraph:

"When any work or material described in the section is required but no item of payment is provided therefor in the proposal, the work or material required shall be considered incidental to the construction and all costs therof shall be included in other pay items of the contract."

Page 57 Section 34-5.03 PRIME COAT AGGREGATE

The first line in paragraph one shall be amended as follows:

"The unit contract price per cubic yard or per ton for 'Prime Coat Aggregate' shall be . . ."

The first line in paragraph four shall be amended to read as follows:

"Measurement will be made by the cubic yard or by the ton at the point of delivery on the road."

Page 57 Section 34-5.04 ASPHALT CONCRETE PAVEMENT CLASS.....(Leveling Course)

The Unit contract price per ton for asphalt leveling course shall be full compensation for all costs of material, labor, tools and equipment necessary for the application of the leveling course as specified.

Page 57 Section 34-5.05 ASPHALT CONCRETE PAVEMENT

In line two of paragraph three, the word "State" shall be changed to "Owner."

Page 57 Section 34-5.06 MINERAL AGGREGATES IN STOCKPILE

This section shall be deleted.

Page 58 Section 34-5.07 BLENDING SAND

This section shall be deleted.

Page 58 Section 34-5.08 FURNISHING MINERAL FILLER

This section shall be deleted.

Page 58 Section 34-5.09 WATER

This section shall be deleted.

Page 58 Section 34-5.10 REMOVING EXISTING PAVEMENT

The unit contract price per square yard for "Remove (Type) Pavement" of the type shown on the plans and specified in the proposal, shall be full compensation for removing the pavement and disposing of it as specified in Section 52, "Removal of Existing Street Improvements."

Page 58 Section 35-1 DESCRIPTION

Extruded asphalt curb shall be constructed at such locations as shown on the plans and to the cross section shown on Standard Plan No. 122.

Page 58 Section 35-4 MEASUREMENT AND PAYMENT

The bid item shall be amended to read as follows:

1. "Type 122 Extruded Asphalt Concrete Curb," per linear foot.

New Section

Section 36-1 DESCRIPTION

Beam guard rail complying with the requirements of these specifications shall be constructed in accordance with Standard Plan No. 201 and where indicated on the plans, or where directed by the Engineer.

Beam guard rail shall consist of a steel plate mounted on one or both sides of reinforced concrete or wood posts. Terminal sections of rail, as detailed on the plans, shall be installed at both ends of a complete guard rail section unless their omission is authorized by the Engineer.

New Section

Section 36-2 MATERIALS

New Section

Section 36-2.01 RAIL ELEMENT

The rail element and terminal sections shall consist of twelve-gauge (12-gauge) steel formed into a beam not less than twelve (12) inches wide and three (3) inches deep. The rail element and terminal sections shall be formed from open hearth or electric furnace steel. The physical property of the steel shall conform to the following minimum requirements:

	Rail Element	Terminal Sections
Ultimate tensile strength	70,000 p.s.i.	
Yield point strength	50,000 p.s.i.	25,000 p.s.i.
Elongation in two inches	12 per cent	

The rail splices shall have a minimum total ultimate strength of 80,000 pounds at each joint.

The holes in the plate shall be slotted to facilitate erection and to permit expansion and contraction. The edges of the rail shall be rolled or rounded so they will present no sharp edges. Where the rail is on a curve, the plates at the splice shall make contact throughout the area of the splice. When the radius of curvature is less than one hundred fifty (150) feet, the rail shall be shaped in the shop.

New Section

Section 36-2.01A Inspection

The Contractor shall give ample notice to the Engineer before the rail elements are fabricated in order that inspection may be provided. The Contractor shall arrange for all facilities necessary for the inspection of material and workmanship at the point of fabrication of the rail element, and inspectors shall be allowed free access to the necessary parts of the premises.

The inspector shall have the authority to reject materials or workmanship which do not fulfill the requirements of these specifications. In cases of dispute the Contractor may appeal to the Engineer, whose decision shall be final.

The inspector may accept a mill test report certifying that the steel used in fabricating the rail elements meets the requirements of the specifications. The City reserves the right, however, to require the Contractor to furnish samples of the steel proposed for use and to determine to its satisfaction that the steel meets the specification requirements.

It is the intent of these specifications that the inspection will be performed at the point of fabrication. Plant inspection is intended as a means of facilitating the work and avoiding error. It is expressly understood that inspection at the fabricating plant will not relieve the Contractor from responsibility from material and workmanship meeting the specifications, nor from his obligation to replace material found to be defective in any particular after delivery to the site of the work.

New Section

Section 36-2.02 POSTS

Posts for beam guard rail, unless concrete posts are specified in the special provisions, may be creosote treated or pentachlorophenol treated wood posts or reinforced concrete posts, whichever kind the Contractor may elect to use; provided, however, that only one type of post shall be used on any one project. Posts shall be of the dimensions shown on the plans and shall meet the requirements of these specifications.

New Section

Section 36-2.02A Treated Timber Posts

Timber posts shall be square, eight (8) inches by eight (8) inches S4S and shall conform to the grade specified in Section 114-2.01. The posts shall be shaped as shown on the plans before being treated.

Timber posts shall be pressure treated by the empty cell process to provide a minimum retention of eight (8) pounds of creosote oil or four-tenth (0.4) pounds of pentachlorophenol per cubic foot of timber in accordance with Section 115-3.02.

New Section

Section 36-2.02B Precast Reinforced Concrete Posts

Precast concrete posts shall be round, reinforced concrete posts eight-inch (8") minimum to nine-inch (9") maximum diameter. The post may be tapered from nine-inch (9") diameter at the bottom to eight-inch (8") diameter at the top to allow for vertical stripping of the forms. If a tapered post is furnished, the larger end will be at the bottom of the post.

Portland cement and water shall comply with the requirements of the standard specifications for the materials. Aggregates shall meet all requirements of specifications except for grading. The maximum size of aggregate shall be appropriate for the dimension of the post and the combined aggregate shall be well graded from coarse to fine.

The materials used in the concrete shall develop on test not less than thirty-five hundred (3,500) pounds per square inch compressive strength at the age of twenty-eight (28) days.

Reinforcement shall consist of either one of the following:

(a) Wire meeting the requirement of ASTM Designation A 82, Cold Drain Steel Wire for Concrete Reinforcement.

(b) Intermediate grade steel bars, deformed type, meeting the requirements of ASTM Designation A 15, Billet-Steel Bars for Concrete Reinforcement, and

ASTM Designation A 305, Minimum Requirements for the Deformed Steel Bars for Concrete Reinforcement.

The metal reinforcement in Type A posts shall be spaced and arranged to provide not less than sixty per cent (60%) nor more than seventy per cent (70%) of the total cross sectional area of the reinforcement in the one-half of the post which will face the roadway when installed. Except at the bottom of the post, metal reinforcing shall be placed no closer than one (1) inch from the outer surface of the post. When deformed bars are used for reinforcement, there shall be not less than two (2) bars of the roadway face of the post. The reinforcement shall be supported in such a manner that the minimum cover of concrete will be secured.

Each Type A post shall be marked by suitable means to identify the center of the heavier reinforced (roadway) face of the post. Centered and tapered bolt holes will be acceptable identification. Tapered holes shall taper from seven-eights (7/8) inch to one and one-eighth (1-1/8) inch in diameter and shall have the larger opening on the roadway face of the post.

Metal reinforcement in Type B posts shall be spaced to provide equal cross-sectional area of reinforcement in each roadway face of the post. When deformed bars are used, there shall be not less than two (2) bars in each roadway face.

Type B posts shall be plainly marked with the letter B on top of each post.

New Section

Section 36-2.02B1 Finish

Precast reinforced concrete posts will not be painted. The concrete may be placed in the form and compacted in any manner desired by the manufacturer (tamped, vibrated, spun, etc.) provided the finished post is true in form and shape, is free of fractures, cracks, honeycomb and other serious defects, and meets the requirements for strength. The presence of web after stripping the fresh concrete, or of surface holes up to one-half (1/2) inch in diameter and three-sixteenth (3/16) inch in depth, will not be considered defects sufficient for rejection. It is the intent of these specifications to provide a post manufactured in a careful and workmanlike manner with a surface that is reasonably dense and uniform in color, but without the more refined surface finish usually required when the product is to be painted.

New Section

Section 36-2.02B2 Strength Requirements

When subjected to testing as a simple beam of twenty-four (24) inch span and center loading applied to either roadway face of the post, the reinforced post, when twenty-eight (28) days old, shall withstand a total load of not less than thirty thousand (30,000) pounds at failure.

New Section

Section 36-2.02B3 Testing

The Contractor shall be obligated to furnish the Engineer without charge for testing purposes, upon request, a minimum of two (2) representative reinforced concrete posts for any one (1) contract or a maximum of one per cent (1%) of the number of posts specified for any one (1) contract, whichever option the Engineer may determine to be necessary.

New Section

Section 36-2.03 GALVANIZING

All rail elements shall be galvanized in accordance with ASTM Designation A 93, Coating Class 2.5. Bolts, nuts and washers shall be galvanized in accordance with the requirements of ASTM Designation A 153, Zinc Coating on Hardware, Iron and Steel.

New Section

Section 36-2.04 HARDWARE

Bolts shall be made from commercial bolt stock having tensile strength of not less than fifty thousand (50,000) pounds per square inch. Washers shall be malleable iron, or shall be cut from medium steel or wrought iron plate.

New Section

Section 36-3 CONSTRUCTION DETAILS

New Section

Section 36-3.01 ERECTION OF POSTS

The posts shall be set to the true line and grade of the highway and spaced as shown on the plans. When the plans require that the ends of a section of guard rail be splayed out, the posts shall be set to accommodate the splaying.

The post holes shall be of sufficient dimension to allow placement and thorough compaction of selected backfill material completely around the post.

In general, all post holes shall be dug or drilled. Ramming or driving will be permitted only if approved by the Engineer and if no damage to the shoulders and adjacent slopes results therefrom.

New Section

Section 36-3.02 PAINTING

Before applying any paint to the beam rail, the surface shall be thoroughly clean and dry and all loose paint or scale shall be removed. No exterior painting shall be done in wet or freezing weather.

Galvanized guard rail shall be painted on the roadway face only.

Painting shall be done in accordance with the applicable sections of Section 116-3.04 of these specifications.

Guard rail posts shall not be painted.

New Section

Section 36-3.03 ERECTION OF RAIL

All metal work shall be fabricated in the shop. No punching, cutting or welding shall be done in the field, except that holes for special details in exceptional cases may be drilled in the field, when approved by the Engineer. The rail shall be erected so bolts at expansion joints will be located at the centers of the slotted holes.

Rail plates shall be fastened to the posts with galvanized bolts, washers and nuts of the size and kind shown on the plans.

All bolts, except where otherwise required at expansion joints, shall be drawn tight. Bolts through expansion joints shall be drawn up as tight as possible without being tight enough to prevent the rail elements from sliding past one another longitudinally. Bolts shall be sufficiently long to extend at least one-fourth (1/4) inch beyond the nuts. Except where required for adjustments, bolts shall not extend more than one-half (1/2) inch beyond the nuts. Bolts through posts of variable thickness shall be cut off one-fourth (1/4) inch beyond the nuts, and burred.

New Section

Section 36-3.04 PLANS

The Contractor shall submit for approval of the Engineer such additional detailed plans and shop drawings of rail punchings, fittings and assemblies as may be required by the Engineer. The Contractor shall cooperate with the Engineer in working out any detail in connection with the guard rail required to complete the work satisfactorily.

New Section

Section 36-4 MEASUREMENT

Measurement of beam guard rail shall be by the linear foot measured along the line of the completed guard rail from end to end of terminal sections, or from end to end rail sections if terminal sections are not installed.

New Section

Section 36-5 PAYMENT

The unit contract prices per linear foot for "Single Beam Guard Rail," "Double Beam Guard Rail," or "Temporary Beam Guard Rail" shall be full compensation for furnishing all labor, tools, material and equipment, and for all other costs and expenses necessary to complete the work as specified.

Page 59 Section 37-2.02 CONCRETE AGGREGATES

Concrete aggregates shall be manufactured from ledge rock, talus or sand and gravel.

Page 60 Section 37-2.02C2 Wear in Los Angeles Machine

Coarse aggregate shall not have a percentage of wear in the Los Angeles machine in excess of thirty (30) after five hundred (500) revolutions.

New Section

Section 37-2.06C Non-Extruding Joint Filler

Non-extruding joint filler shall be used in all sidewalk, sidewalk driveway crossings, stairways, curb and curb and gutter sections.

Page 61 Section 37-2.13 JOINT-SEALANTS

The last line and next to the last line in paragraph one shall make reference to the Materials Laboratory, Seattle Engineering Department, City Municipal Building, Seattle, Washington.

Page 61 Section 37-3.02 AIR-ENTRAINED CONCRETE

Delete the first and second paragraphs and substitute the following:

Air-entrained concrete shall only be used in pavements (7) inches or more in thickness and when otherwise required in the special provisions. When air-entrained concrete is required, either air-entrained portland cement or an air-entraining admixture shall be added to the mixer. Both the air-entrained cement and the air-entraining admixture shall conform to requirements of Section 37-2.01E.

Page 62 Section 37-3.04 PROPORTIONING MATERIALS

In the table under Class 3 (1½), "Lbs, No. 2 coarse aggregate" shall read 710, instead of 710 for "dry fine aggregate No. 2."

Page 62 Section 37-3.06 CONSISTENCY OF CONCRETE

The following shall be added:

The slump of concrete, with machine compaction measured with the slump cone (ASTM Designation C 143), shall not exceed two (2) inches.

The slump of concrete placed by hand shall not exceed three and one-half (3-1/2) inches.

Page 63 Section 37-3.08 READY MIXED CONCRETE

Item No. 2 and the first paragraph under No. 3 shall be deleted.

Page 63 Section 38-3.03 REINFORCING STEEL

The following sentence shall be added: "No additional payment will be made for reinforcing steel, the cost of which shall be included in the unit price for "Cement Concrete Stairway," per linear foot."

Page 64 Section 38-4 MEASUREMENT

In line one of paragraph one, "Unclassified Excavation" shall read "Common Excavation."

Page 66 Section 39-3.17 WATER

Water for pavement construction will be furnished as provided in Section 16.

Page 67 Section 39-3.18B Construction of Formed Contraction Joints

The following shall be added to the last sentence in paragraph one:

"of any panel, and the transverse joints of two contiguous lanes must meet at a common point at the center line; except on curves where the resultant panel would be less than twelve and one-half (12-1/2) feet."

The following shall be added to the final paragraph:

"Exception is made, however, that if there should be alternate bid items in the proposal for transverse contraction (dummy) joints and sawed contraction joints, the bid proposal will include an item per linear foot for "Transverse Contraction Joint," the price for which shall include all costs for the furnishing and placing of the joint filler in accordance with these specifications."

Page 67 Section 39-3.18C Sawed Contraction Joints

The following sentences shall be added to the beginning of paragraph four:

"Transverse joints shall be sawed at sixty (60) foot intervals or such other spacing as directed by the Engineer, as soon as the cast can be made without undue raveling of concrete. Intermediate joints shall be sawed thereafter."

Page 68 Section 39-3.18H Standard Location for Longitudinal Joints

Under "Width from Curb to Curb" the following "Joint Locations" shall be amended as follows:

40 Feet . . . Center line and 10 feet each side of center line.

44 Feet . . . Center line and 11 feet each side of center line.

Page 68 Section 39-3.19 FINISHING CONCRETE

The first paragraph shall be amended to read as follows:

"The entire pavement surface shall be machine finished unless hand finishing is permitted in the special provisions."

Page 68 Section 39-3.19B Machine Finishing

The following paragraph shall be added at the end of the Section:

"Before any work is commenced, the Contractor shall have available on the work site all of the necessary tools for hand finishing."

Page 69 Section 39-3.20G Emulsified Asphalt

This section shall be deleted.

Page 70 Section 39-3.22 CONCRETE PAVEMENT CONSTRUCTION IN SINGLE LANE

The heading shall be revised to read:

CONCRETE PAVEMENT CONSTRUCTION IN SINGLE, DOUBLE OR MULTIPLE LANES

The first paragraph shall be deleted and replaced with the following:

Concrete pavement shall be constructed in the following manner:

Twenty-five (25) foot paving shall be constructed full width in one operation, unless otherwise authorized by the Engineer. Should the Contractor be allowed to pave a twenty-five (25) foot street in two (2) operations, then the Contractor shall be required to construct a thickened edge section, as shown on Standard Plan No. 101.

Thirty-two (32) foot, thirty-six (36) foot, forty (40) foot and forty-four (44) foot pavement sections shall be paved in two (2) operations, with additional compensation for thickened edges, if required. Should the Contractor be allowed to pave thirty-two (32) foot, thirty-six (36) foot, forty (40) foot and forty-four (44) foot pavements in more than two (2) operations, then thickened edges, if required, shall be constructed at no additional expense to the Owner. Pavement widths greater than forty-four (44) feet will be paved as specified in the special provisions. Concrete shall not be placed in a succeeding lane sooner than forty-eight (48) hours after finishing of the first lane. Whenever possible, the mixer shall be operated on the subgrade or on the shoulder adjacent to the lane being paved.

Page 70 Section 39-3.23 CONCRETE BASE PAVEMENT

Delete Item No. 3.

Item No. 4 shall be amended as follows:

(4) Dummy or through joints shall be constructed unless otherwise noted in the special provisions.

Page 70 Section 39-3.28 CLEANUP

The words "catch basins" in the fifth line shall be deleted.

New Section

Section 39-3.30 CEMENT CONCRETE ALLEY PAVEMENT

Cement concrete alley pavement shall be constructed as shown on Standard Plan No. 104.

Preparation of subgrade, setting forms, placing concrete, joints, finishing, curing, protection, etc., shall conform in all respects with the applicable specifications for street pavements, including measurement for payment, except finished tools used shall be determined by conditions encountered.

New Section

Section 39-3.30A EDGE SUPPORT WALLS FOR ALLEY PAVEMENT

Where called for on the plans or in the special provisions, the Contractor shall construct "Type 104B Alley Pavement Edge Wall," as detailed on Standard Plan No. 104B for the concrete section under the pavement base along the edge of the alley pavement, or "Type 104.1 Alley Pavement Support Wall," as detailed on Standard Plan No. 104.1.

Payment shall be as specified under Section 39-4.

After removal of forms, all exposed concrete wall surfaces that will be permanently in view above the ground line shall be finished to a uniform Class 3 surface finish, as specified in Section 107-3.16.

New Section

Section 39-3.30B CURB FOR ALLEY PAVEMENTS

Construction of curb upon alley pavement shall conform to the applicable requirements therefor specified in Section 40-3.02.

Page 70 Section 39-4 MEASUREMENT AND PAYMENT

Add the following two bid items:

(7) "Type 104B Alley Pavement Edge Wall," per cubic yard.

(8) "Type 104.1 Alley Pavement Support Wall," per cubic yard.

Page 71 Section 39-4.05 EXTRA FOR FURNISHING HIGH-EARLY-STRENGTH CEMENT

If the Engineer shall direct that high-early-strength cement be used on any part of the work in lieu of standard portland cement, and if there is no appropriate bid item, extra compensation will be made the Contractor in an amount per barrel equal to the difference between the price paid by him for standard portland cement and the price paid by him for high-early-strength cement.

New Section

Section 39-4.07 TYPE 104B ALLEY PAVEMENT EDGE WALL

Measurement for payment of "Type 104B Alley Pavement Edge Wall" will be made on the basis of actual computed cubic yards of concrete in the wall section.

The unit contract price per cubic yard shall be full compensation for all labor, tools, materials, equipment and other incidental work necessary to construct complete in place the inverted wall section under the pavement edge simultaneously with the paving operation in accordance with the standard plan and these specifications. Excavation shall be paid for at unit contract price bid for Structure Excavation.

New Section

Section 39-4.08 TYPE 104.1 ALLEY PAVEMENT SUPPORT WALL

Measurement for payment of "Type 104.1 Alley Pavement Support Wall" will be made on a cubic yard basis for the actual length of the wall formed in place in accordance with the details shown on Standard Plan No. 104.1.

The unit contract price per cubic yard shall be full compensation for all labor, tools, materials, equipment and all necessary incidental work required to excavate and construct the reinforced concrete support wall complete in place below the elevation of the alley pavement sub-grade, in accordance with the dimensions and details shown on Standard Plan No. 104.1.

Page 72 Section 40-3.01D Stripping Forms and Finishing

Delete the second sentence in paragraph two.

Page 72 Section 40-3.01E Curing

Delete the second and third sentences in paragraph two.

Page 72 Section 40-3.02 TYPE A AND TYPE B CURB

Title shall be amended to read CURB.

Delete reference to Types A and B in paragraphs one, two and three.

Page 72 Section 40-3.03 TYPE C AND TYPE D LOW CURB

This section shall be deleted.

Page 72 Section 40-3.04 TYPE E SEPARATE CURB

This section shall be deleted.

Page 72 Section 40-3.05 TRANSITIONAL CURB

This section shall be deleted.

Page 73 Section 40-4 MEASUREMENT AND PAYMENT

Delete Bid Item No. 3.

Paragraph two shall be amended as follows:

"Concrete curb and curb and gutter will be measured by the linear foot along the face of curb for the actual length constructed and no deductions will be made for driveways."

Paragraph three shall be amended as follows:

"Curbs do not include the pavement slab upon which they are placed. That portion of the pavement slab underneath the curb will be paid for as concrete pavement."

Page 73 Section 41-3.03 PLACING AND FINISHING CEMENT CONCRETE PAVEMENT

Revise title to read as follows:

PLACING AND FINISHING CEMENT CONCRETE DRIVEWAY

Page 73 Section 41-4 MEASUREMENT

Measurement for cement concrete driveway will be by the square yard for the class and thickness of concrete placed, excluding the area underneath the curb.

Measurement for cement concrete driveways will be by the square yard for the class and thickness of driveways actually placed in conformance with the methods shown on the standard plans.

Page 73 Section 41-5 PAYMENT

Delete Bid Items 2 and 3. Add the following new Bid Item:

2. "Steel Reinforcing Bars," per pound.

Page 74 Section 42-2 MATERIALS

The concrete mix shall be amended to read "Class 5 (¾)."

New Section

Section 42-3.05 SIDEWALK DRAINS

Where shown on the construction plans for sidewalks or directed by the Engineer, four (4) inch galvanized steel pipe shall be placed under the sidewalk in one length and extended across the planting area to the roadway gutter line, or through curb if existing, as shown on Standard Plan No. 117.

The horizontal slope angle of the four (4) inch galvanized drain pipe, between the inlet elevation of the back section to provide positive drainage, will be established in the field by the Engineer at the time of excavating for the sidewalk construction.

Sidewalk drain pipe will be paid for on a basis of linear feet for inlet depths at the gravel pocket.

The unit contract price shall include all labor, tools, material, and equipment necessary to construct the sidewalk drain in accordance with the details shown on the standard plan, including an excavation at the inlet end of the pipe to make a gravel pocket corresponding to that shown on the standard plan, Section A-A, that is a minimum of three (3) feet in lenght parallel to the back of the sidewalk.

New Section

Section 42-3.06 EXPANSION AND CONTRACTION JOINTS

Standard locations for expansion joints for sidewalks are:

(1) At street margins produced and at thirty (30) feet or twenty-eight (28) feet intervals for Type A or B as shown on Standard Plan No. 114.

(2) To separate concrete driveways, stairways and their landings from sidewalks as shown on Standard Plans Nos. 106, 107, and 115, respectively.

(3) Around the vertical barrel of fire hydrants, around utility poles and large diameter underground utility cover castings when located in the sidewalk area.

(4) Longitudinally along both sides of cement concrete walks when they cover the entire planting and sidewalk area between solid masonry walls, building walls and pavement curbs.

No payment will be made for furnishing and placing expansion and contraction joint materials for cement concrete sidewalks. All costs therefor shall be considered incidental to the construction and included in the unit bid contract prices of the proposal for sidewalk.

Payment for extra concrete placed as shown on the standard plan, Section B-B, will be made at the unit contract price for "Thickened Edge for Sidewalk."

Transverse and longitudinal expansion joints as shown on the standard plans shall be three-eights (3/8) inch thickness premoulded non-extruding joint material, cut to a width equal to the full depth of the concrete where located, plus one-half (1/2) inch. When installed, they shall be placed with top edge one-eighth (1/8) inch below the finished surface of the concrete, in a perpendicular plane to the surface and with the bottom edge embedded in the subgrades. All joints shall be in straight alignment, except where palced in curved locations as required by the construction plans.

Contraction joints for sidewalks shall conform to the applicable requirements for expansion joints for placement, except for thickness of joint material being three-sixteenth (3/16) inch and width of two (2) inches. The top edge shall be one-eighth (1/8) inch below the finished surface of the sidewalk.

Page 74 Section 42-4 MEASUREMENT

Measurement for cement concrete sidewalk will be by the square yard for all surface of concrete walk placed. Measurement for thickened edge of sidewalk will be by the linear foot for the distance thickened. Payment for "Monolithic Cement Concrete Curb and Sidewalk, Type 114.1A," will be made at the price bid per square yard, which price shall constitute full compensation for all labor, equipment and material necessary for the completed curb and sidewalk including preparation of subgrade and compaction thereof. Measurement for payment will be made on the slope for the actual amount constructed by the Contractor within the limits shown on the plan and as computed by the Engineer.

Page 74 Section 42-5 PAYMENT

Add the following two Bid Items:

5. "4-inch Sidewalk Drain (Depth)," per linear foot.
6. "Monolithic Cement Concrete Curb and Sidewalk, Type 114.1A," per square yard.

Page 75 Section 43 CEMENT CONCRETE COMBINED SIDEWALK CURB AND GUTTER

This entire section is deleted.

Page 75 Section 44-1 DESCRIPTION

This section shall be amended as follows:

"Precast concrete traffic curb and extruded traffic curb shall be constructed in accordance with the design standards, or as shown on the plans and shall be placed in locations shown on the plans, or as directed by the Engineer."

Page 75 Section 44-201 PRECAST CONCRETE TRAFFIC CURB CLASS 1, AND TRAFFIC BUTTONS

Title shall be amended to read:

PRECAST CONCRETE TRAFFIC CURB

Page 75 Section 44-2.02 ALUMINUM COVERED TRAFFIC BUTTONS

The title and section shall be amended as follows:

Section 44-2.02 PLASTIC COVERED TRAFFIC BUTTONS

Plastic traffic button size and shape shall conform to the details shown on the Standard drawing.

New Section

Section 44-2.02A TRAFFIC BUTTONS – TYPE 125A and 125B

New Section

Section 44-2.02A1 DESCRIPTION

Plastic traffic buttons shall be white in color, essentially in the form of a single-based modified spherical segment (with shoulder). They shall be composed of thermosetting resins, pigments and clean, fine gravel and white sand, and shall be of uniform composition throughout.

New Section

Section 44-2.02A2 PHYSICAL PROPERTIES

The exposed surface shall be free of irregularities such such as chips, cracks, and mold marks interfering with appearance or application. The bottom surface may have molded patterns, but must not show general convexity or concavity in excess of one-quarter (1/4) inch.

The molding process shall be such that coarse aggregate particles on the curved surface are covered by not less than one-sixteenth (1/16) inch of pigmented material.

The buttons shall meet the following requirements:

Weight – Pounds	Type 125A	9.0 maximum
	Type 125B	4.0 maximum
Brightness		70% minimum
Flexural strength – pounds total load		1,500 minimum

Brightness will be measured with equipment conforming to ASTM Designation E97 using a Brightness Standard of seventy-five per cent (75%).

Flexural strength will be measured by placing the button base down on two (2) three-quarter (3/4) inch round supports on five (5) inch centers and loading vertically at the center of the curved section by means of a flat plate.

New Section

Section 44-2.02B TRAFFIC BUTTONS – TYPE 125C (LANE MARKERS)

New Section

Section 44-2.02B1 Description

The markers shall be precast, plastic markers in the form of a single-based spheroidal segment, composed of thermosetting resins, pigments, and inerts and shall be of uniform composition throughout. The markers shall not contain glass.

New Section

Section 44-2.02B2 Physical Properties

The markers shall be of uniform composition and free from surface irregularities, cracks, checks, chipping and other physical damage interfering with appearance or application and shall conform to the detail shown on the standard drawing.

The markers shall meet the following requirements:

Property:		
Weight	ounces	4.14 minimum
Planeness of base:		
Concavity	inches	0.02 maximum
Convexity	inches	0.05 maximum
Brightness		80% minimum
Color		White
Impact Resistance	inches	15 minimum
Titanium dioxide	% by weight	21 minimum
Resin content	% by weight	20 minimum

New Section

Section 44-2.02B3 Test Methods

Brightness will be measured with equipment conforming to ASTM Designation E97 using a Brightness Standard of seventy-five per cent (75%).

Impact resistance will be measured by allowing a one (1) pound steel ball to fall fifteen (15) inches (free fall) onto the marker, supported by but not bonded to a steel base plate.

The titanium dioxide content will be determined by ashing representative portions of the marker, treating the ash with a boiling $(NH_4)\ SO_4H_2SO_4$ solution, filtering, and measuring the absorbance of the filtrate at about 410 millimicrons. This method is calibrated with known samples using ASTM Designation D 921.

Resin content will be determined by ashing and igniting representative portions of the marker.

Additional information on the test methods is available from the Materials Laboratory.

New Section

Section 44-2.02B4 ADHESIVE (EPOXY)

New Section

Section 44-2.02B4(1) Description

The adhesive shall be furnished as two (2) components, each packaged separately. The components shall have the following composition:

	Parts by Weight
Package A	
Epoxy Resin (1)	100.00
Titanium Dioxide (2)	7.31
Resin Grade Asbestos (3)	5.00
Talc (4)	37.64
Package B	
N-Aminoethyl Piperazine (5)	23.16
Nonylphenol (6)	52.00
Carbon Black (7)	0.22
Talc (4)	77.37
Resin Grade Asbestos (3)	1.00

At the time of use the contents of Packages A and B shall be thoroughly redispersed by mixing. One (1) volume or weight of Package A shall be mixed with one (1) volume or weight of Package B until a uniform gray color is achieved without visible streaks of white or black. Formulation may be revised, if approved by the Engineer.

New Section

Section 44-2.02B4(2) Raw Materials

Raw materials for the adhesive shall meet the following specifications:

1. Epoxy Resin–Viscosity, 5-7 poises at 25°C.; epoxide equivalent 175-205; color (Gardiner) 5 maximum; manufactured from epichlorohydrin and bisphenol A. The reactive dilutent shall be butyl glycidal ether.
2. Titanium Dioxide–TT-P-00442. Type IV.
3. Resin grade Asbestos–Specific gravity, grams per milliliter 2.45; moisture content, % by weight, 2.0 maximum; surface area, square meters per gram–60 approximately; reflectance, G.E. brightness, 72-76; nature of surface change, electro-positive (cationic); PH in water, 9.5; bulking value, gallons per 100 pounds, 4.3; oil absorption (DOP) pounds per 100 pounds, 120; refractive index n_d 25°C., 1.54 – 1.56; wet bulk density in water, after dispension, 2 grams per liter, settling 1 hour, 100 ml clean maximum; dry bulk density, pounds per cubic foot, 4.
4. Talc–Percent passing U.S. No. 325 sieve, 94-96; maximum particle size, 70 microns; oil absorption (Gardiner-Coleman), 6-7 ml per 20 grams; fineness in oil (Hegman) 1-2; specific surface, 0.5 – 0.6 square meter per gram; consistency (40% suspension in linseed oil), 55-60 K.U.
5. N-Aminoethyl Piperazine–color (APHA) 50 maximum; amine value, 1250-1350 based on titration which reacts with 3 nitrogens in the molecule; appearance, clear and substantially free of suspended matter.
6. Nonyl Phenol–Color (APHA) 50 maximum; hydroxyl number, 245-255; distillation range, °C. at 760 mm, first drop 295 minimum, 5% 298 minimum, 95% 325 maximum; water, % (K.F.) 0.05 maximum.
7. Carbon Black–TT-P-343, Form 1, Class B.

New Section

Section 44-2.02B4(3) Physical Requirements of Mixed Adhesive

Mixed adhesive shall meet the following requirements:

A blend of one (1) part of Component A and one (1) part of Component B shall exhibit the following properties:

Gel Time (100 gm Batch)		5-30 Minutes
Tensile strength (1/16 in film between steel blocks cured 24 hours at 70°.)		
Tested at 70°F		1,000 psi (Minimum)
Shore D Hardness	(Cured 24 hours at 70°F.)	
Tested at 70°F		70-80
Tested at 120°F	(Minimum)	30
Deformation Temp	(Minimum)	120°F.

New Section

Section 44-2.02B4(4) Acceptance

The manufacturer shall certify that each batch of adhesive conforms to these specifications.

The lot or batch number shall appear on the certificates, on all samples, and on all lots of adhesives delivered. A one (1) pint sample of the A and B components shall be sent to the Materials Laboratory by the supplier no less than ten (10) days before using.

Page 76 Section 44-3.01 PRECAST CONCRETE TRAFFIC CURB AND TRAFFIC BUTTONS

Title shall be amended to read:

PRECAST CONCRETE TRAFFIC CURB

Page 76 Section 44-3.01A4 Placing Concrete

Delete the words "or buttons" in the final paragraph.

Page 76 Section 44-3.01A5 Removal of Forms

Delete the words "or buttons" in the first line of the second paragraph. Delete the words "and buttons" in the third line of the second paragraph.

Page 76 Section 44-3.01A7 Finish

Amend the first paragraph to read as follows:

"Curb shall have a smooth, glassy finish on all exposed surfaces."

Page 77 Section 44-3.01A12 Repairing Curb

Delete the words "or buttons" in the second line of the second paragraph.

Page 77 Section 44-3.01A13 Identification Marking

Delete the words "or buttons" from the first line of the second paragraph.

Page 77 Section 44-3.01A14 Shipping

Delete the words "or buttons" from the first line.

Page 77 Section 44-3.01A15 Samples

Delete the words "or button" from the second line. Delete the words "and buttons" from the third line from the bottom of the paragraph.

Page 78 Section 44-3.01C INSTALLATION OF BUTTONS

Delete the word "concrete" in the first line.

New Section

Section 44-3.01C1 Type 125A and 125B

The plastic traffic buttons shall be attached to the pave-

ment by placing a tack coat of hot 85-100 penetration asphalt on the pavement and firmly pressing the traffic button onto it.

New Section

Section 44-3.01C2 Type 125C (Lane Markers)

New Section

Section 44-3.01C2(1) Surface Preparation

All sand, dirt and loose extraneous material shall be swept or blown away from the marker location to the satisfaction of the Engineer.

New Section

Section 44-3.01C2(2) Marker Preparation

The resin–rich, waxy or greasy surface–that characterizes the marker is not satisfactory as a bonding surface. A satisfactory bonding surface may be secured by: (1) Cleaning in a fluid heating bath, (2) sanding off the bottom of the marker, or (3) structurally bonding a layer of sand into the bottom surface during manufacture.

Markers, whose surfaces have *not* been prepared by structural bonding, must be preheated in a fluid cleaning bath controlled between 275°F. and 300°F. for not less than ten (10) minutes before setting.

Markers, whose surfaces have been prepared by sanding or structurally bonding, may be preheated in either the fluid heating bath or a dry oven controlled between 275°F. and 300°F. for not less than ten (10) minutes before setting.

New Section

Section 44-3.01C2(3) Adhesive Preparation

The adhesive shall be maintained at a temperature of 60°– 85° F. before use and during application.

Catalyst shall be added to the base just before use and mixed to a smooth, uniform blend. Unused mixed adhesive shall be discarded when catalytic action has caused stiffening and reduction of workability or a small ball of gelled resin has formed in the center of the container.

New Section

Section 44-3.01C2(4) Application Procedure

The mixed adhesive shall be applied to the marker and the marker pressed onto the pavement so as to squeeze out a small bead of adhesive around the entire periphery of the marker. The required amount of adhesive per marker will normally be in the range of 20-40 grams.

Lane markers shall be spaced and aligned as directed by the Engineer. A dispalcement of not more than one-half (1/2) inch, left or right of the established guide line will be permitted. The Contractor shall remove and replace at his own expense all improperly placed markers. The markers shall be installed on dry pavement.

Bonding of the marker shall take place in not more than (15) minutes. Bonding shall be considered satisfactory when adhesive developes a minimum bond strength in tension of not less than 800 grams. When roadway sections are opened to public traffic before or during the installation of the markers, the fifteen (15) minute set-to-traffic provision will be enforced, and necessary flagging and traffic control will be required. Provided such delay in installation is not caused by failure of the Contractor to perform, the Owner will provide flagging and traffic control at no cost to the Contractor.

Page 78 Section 44-4 MEASUREMENT

Type 123A traffic curb (A curb, Standard Plan No. 123) will be measured along the front face of curbs and returns. Type 124C traffic curb (C curb, Standard Plan No. 123) traffic curb nosing and dividers (Standard Plan No. 123) will, respectively be measured as for Type 123A and Type 123C.

Precast traffic buttons (Standard Plan No. 125) will be measured by "each."

Extruded cement concrete traffic curb as detailed on the plans will be measured by linear feet along the axis of the curb.

Page 78 Section 44-5 PAYMENT

Payment will be made for such of the following bid items as are included and shown in any particular contract:

1. "Precast Traffic Curb Type ( )," per linear foot.
2. "Precast Traffic Button Type ( )," per each.
3. "Extruded Cement Concrete Traffic Curb," per linear foot.

The unit contract price for each of the above bid items shall be full compensation for all costs of labor, tools, and materials and for complete installation in accordance with the standard drawings and specifications.

Page 78 Section 45 BLOCK PRECAST TRAFFIC CURB CLASS II

This heading shall be amended to read as follows:

Section 45 – BLOCK PRECAST TRAFFIC CURB

Page 78 Section 45-4 MEASUREMENT

Type 124A block type precast traffic curb (Standard Plan No. 124) will be measured by the linear foot along the front face of the curb and returns. Type 124C block type precast traffic curb (Standard Plan No. 124) will be measured by the linear foot along the axis of the curb. Precast nosing pieces and dividers (Standard Plan No. 123) will be measured as for Type 124A and Type 124C traffic curbs, respectively.

Page 78 Section 45-5 PAYMENT

Amend the two bid items to read as follows:

1. "Type 124A Block Precast Traffic Curb," per linear foot.
2. "Type 124C Block Precast Traffic Curb," per linear foot.

Page 79 Section 46-1 DESCRIPTION

Delete the words "Type 1 or Type 2" in line three of the first paragraph.

Page 79 Section 46-2.04 CONDUIT

This entire section shall be amended as follows:

New Section

Section 46-2.04A Conduit, Rigid Steel Hot-Dip Galvanized

Rigid steel conduit shall be zinc-coated by the hot-dip galvanizing process and shall meet the requirements of ANS C80.1 and Underwriters' Laboratories Standard UL6. This specification also covers couplings, elbows, bends and nipples.

Zinc Coating. The minimum average thickness of the zinc coating shall be 1.72 mils, equivalent to one (1) ounce per square foot of surface area. The minimum thickness of any point on the surface shall be 1.38 mils, equivalent to 0.8-ounce per square foot of surface area.

The minimum average thickness may be determined by magnetic thickness gauge or by the acid stripping method of ASTM A90. The minimum thickness at any point on the surface shall be determined only by magnetic thickness gauge.

Inspection and Test. Conduit, couplings, elbows, bends and nipples are subject to inspection and test upon receipt in accordance with the referenced specifications.

The Preece Test will not be considered as proof of compliance with this specification.

Rejection and Replacement. Failure to meet the requirements of this specification shall, at the discretion of the Owner, constitue grounds for rejection of:

A The lot as received in whole or part, or
B Future bids to supply the product of the manufacturer, or
C Both A and B.

The supplier shall at his own expense replace any rejected conduit or fittings with an equal amount complying with this specification.

Reference Specifications: ANS C80.1; ASTM A90; UL6, latest revisions.

Approved Manufacturers: Armco, Clifton, Knight, Republic, Rome, Steelduct, Western, Wheatland, Youngstown.

New Section

Section 46-2.04B Conduit, Rigid Polyvinyl Chloride

This specification covers Rigid Unplasticized Polyvinyl Chloride Conduit, Schedule 40, for applications such as direct burial, encasement in concrete, pole risers and corrosive exposures.

Conduit in this specification shall comply with the U.S. Department of Commerce Commercial Standard CS207 for Rigid Unplasticized Polyvinyl Chloride Pipe, latest revision.

Diameters and wall thickness shall be as indicated on Table 1 of CS 207 for Schedule 40 pipe.

Lengths – Polyvinyl chloride conduit shall be furnished in 10 foot lengths, except where 20 foot lengths are expressly ordered. The color shall be medium to dark grey.

Polyvinyl chloride conduit shall be furnished unthreaded. One cementable coupling shall be furnished with each length. The conduit shall be packed in such a manner as to prevent damage in ordinary handling and transportation. Each package shall be marked with the gross and net weights and name and address of the manufacturer. The conduit may be subject to inspection and tests as indicated in CS207.

The supplier shall at his own expense replace any rejected conduit.

New Section

Section 46-2.04C Conduit, Aluminum Rigid Metallic

This specification covers the ordering, purchase and acceptance of Aluminum Rigid Metallic Conduit and associated elbows, nipples, bends, and couplings as electrical raceway.

Applicable specifications are Underwriters' Laboratories, Inc. Standard for Rigid Metallic Conduit UL 6 latest revision and ASTM Tentative Specification for Aluminum-Alloy Extruded Tubes B-235, latest revision.

The material shall be Aluminum-Alloy extruded tube of 6063 alloy with a T42 temper in accordance with ASTM B-235.

Trade size and dimensions of threaded conduit, elbows, bends and couplings shall be in accordance with Underwriters' Laboratories, Inc. UL 6.

Identification and UL label shall be in accordance with Underwriters' Laboratories, Inc. UL 6.

The threaded end, other than the end to which the coupling is attached, shall be protected by a suitable cover.

Packing, marking, and shipping shall be in accordance wtih Section 16 of ASTM B-235.

Conduit, elbows, bends, and couplings may be subject to inspection and test as outlined in Section 17 of ASTM B-235.

Conduit, elbows, bends and couplings shall be inspected in accordance with the provisions of Underwriters' Laboratories, Inc. UL 6.

The supplier shall at his own expense replace any rejected conduit.

Page 80 Section 46-3.04 CONDUIT

The following paragraph shall be added after the fourth paragraph:

"Plastic conduit to rigid steel conduit connections shall be made with a plastic female adapter."

The first line in paragraph six shall read as follows:

"The threads on all steel conduit shall be well painted with . . . etc."

Add the following sentence at the end of the seventh paragraph:

"Plastic conduit shall be capped with an appropriate plastic cap."

Begin the ninth paragraph with the word "Steel."

The twelfth paragraph shall be amended to read as follows:

"Conduit shall be placed under existing pavement by approved jacking or boring methods. Pavement shall not be disturbed without the approval of the Engineer. Upon approval of the Engineer, small test holes may be cut in the pavement to locate obstructions. If the depth of the conduit below the surface of the street is within one (1) foot of the outside perimeter of the existing facilities, the facilities shall be uncovered for inspection purposes during the jacking or boring operation. Jacking or drilling pits shall be kept two feet clear of the edge of any type of pavement wherever possible. Excessive use of water such that pavement might be undermined, or subgrade softened, will not be permitted."

Delete the thirteenth and fourteenth paragraphs.

The fifteenth paragraph shall be amended as follows:

"Conduit terminating in standards or pedestals shall extend vertically above the foundation and shall be sloped towards the handhole opening."

The sixteenth paragraph shall be amended as follows:

"Conduit entering through the bottom of a pull box shall be located near the end wall from the direction of the run to leave the major portion of the box clear. Conduit shall terminate six (6) inches to eight (8) inches below the pull box lid and shall be spaced at least three (3) inches from the wall of the box."

The next to the last paragraph shall be amended as follows:

"A 450# test (minimum strength) nylon pull cord shall be installed, with at least two (2) feet of excess cord at each outlet, in all conduits which are to receive future conductors. A plastic cap shall remain on the unsued conduits and the cord shall be passed through a small hole in the center

of the cap. The excess cord for each outlet shall be wound around and tied to its respective conduit."

Page 81 Section 46-4 MEASUREMENT AND PAYMENT

Bid Item No. 2 shall be amended as follows:

2. "( ) Conduit (Diameter)," per linear foot.

The last paragraph shall be amended as follows:

"The unit contract price per linear foot, measured by the actual length of completed conduit in place for ( ) Conduit (Diameter), shall be full compensation for furnishing all conduit, conduit connections, elbows, bend caps, reducers, condulets, unions, pull boxes and junction boxes for placing the conduit in accordance with the above provisions, including all excavation or jacking required, backfilling of the trenches, chipping of pavement and bedding of the conduit and all other work incidental to the construction of the conduit."

New Section

Section – 47 EROSION CONTROL

New Section

Section 47-1 DESCRIPTION

Erosion control shall consist of preparing slopes, placing and compacting top soil, seeding, fertilizing and mulching all graded and disturbed areas in accordance with these specifications, the details shown on the plans and the special provisions.

New Section

Section 47-2 MATERIALS

New Section

Section 47-201 TOP SOIL

Top soil material shall conform to the requirements of Section 55-2.01.

New Section

Section 47-2.02 SEED

Grasses, legumes, or cover crop seed of the type hereinafter specified shall conform to the standards for "Certified" grade seed or better, as outlined by the State of Washington Department of Agriculture "Rules for Seed Certification" latest edition. Seed shall be furnished in standard containers on which shall be shown the following information:

(1) Seed name
(2) Lot number
(3) Net weight
(4) Percentage of purity
(5) Percentage of germination (in cases of legumes percentage of germination to include hard seed.)
(6) Percentage of weed seed content and inert material clearly marked for each kind of seed in accordance with applicable State and Federal laws.

Upon request, the Contractor shall furnish to the Engineer duplicate copies of a statement signed by the vendor certifying that each lot of seed has been tested by a recognized seed testing laboratory within six (6) months before the date of delivery on the project. Seed which has become wet, moldy, or otherwise damaged in transit or storage will not be accepted.

Seed mix and rate of application shall be as specified in the special provisions.

New Section

Section 47-2.03 FERTILIZER

Fertilizer shall be a standard commercial grade of organic or inorganic fertilizer of the kind and quality specified herein. It may be separate or in a mixture containing the percentage of total nitrogen, available phosphoric acid and water-soluble potash in the amounts specified. All fertilizers shall be furnished in standard unopened containers with weight, name of plant nutrients and manufacturer's guaranteed statement of analysis clearly marked, all in accordance with State and Federal laws.

Acceptable commercial fertilizer may be supplied in one of the following forms:

(1) A dry free-flowing granular fertilizer suitable for application by agricultural fertilizer spreader.
(2) A soluble fertilizer ground to a fineness that will permit complete suspension of insoluble particles in water, suitable for application by power sprayer.
(3) A granular or pelleted fertilizer, suitable for application by blower equipment.
(4) A non-volatile liquid fertilizer.

Commercial fertilizer formulation and rate of application shall be as specified in the special provisions.

New Section

Section 47-2.04 MULCH

New Section

Section 47-2.04A Hay

All mulch material shall be in an air dried condition free of noxious weeds, weed seeds and other materials detrimental to plant life. Unless otherwise specified in the special provisions mulch materials shall be hay of approved field grasses indigenous to the area. Hay shall be seasoned before bailing or loading and shall be acceptable to the Engineer. Hay mulch so provided shall be suitable for spreading with mulch blower equipment. Rate of application shall be as specified in the special provisions.

New Section

Section 47-2.04B Wood Cellulose Fiber

Wood cellulose fiber mulch shall be specially processed wood-fiber containing no growth or germination inhibiting factors and shall be dyed a suitable color to facilitate inspection of the placement of the material. It shall be manufactured in such a manner that after addition and agitation in slurry tanks with fertilizers, grass seeds, water and other improved additives, the fibers in the material will become uniformly suspended to form a homogenous slurry. When hydraulically sprayed on the ground the material shall be uniformly impregnated with grass seed, and which after application, will allow the absorption and percolation of moisture.

Wood cellulose fiber shall be supplied in packages having a gross weight not in excess of eighty (80) pounds. Each package of the cellulose fiber shall be marked by the manufacturer to show the air dry weight content. All such material must be acceptable to the Engineer.

New Section

Section 47-2.05 ASPHALT EMULSION

Asphalt emulsion used as a tie-down for mulch shall be a standard SS-1 emulsion conforming to the requirements of Section 27-1.01.

New Section

Section 47-2.06 JUTE MATTING

Hay mulch will not be required where jute matting is specified. Jute matting shall be of a uniform open plain weave of undyed and unbleached single jute yarn. The yarn shall be of a loosely twisted construction and shall not vary in thickness by more than one-half its normal diameter. Jute matting shall be furnished in rolled strips as follows:

Length approximately fifty (50) yards.

Matting width shall be forty-eight (48) inches with an average weight of 0.92 pounds per square yard. A tolerance of plus or minus one (1) inch in width and five per cent (5%) in weight will be allowed.

New Section

Section 47-3 CONSTRUCTION DETAILS

New Section

Section 47-3.01 PREPARATION

Before the placing of top soil, all soil conditioners shall be applied at the rate specified in the special provisions. All areas shall be cultivated to a depth of two (2) inches unless otherwise specified.

Cultivation of the soil may be done by farm disk, harrow or other suitable equipment approved by the Engineer. This operation shall be done at right angles to the natural flow of water on the slopes unless otherwise ordered by the Engineer. All cost and expense incurred in performing the work herein specified shall be considered incidental to other bid items on the project and no additional compensation will be made.

New Section

Section 47-3.02 PLACEMENT OF SOIL

Top soil shall be evenly spread over the specified areas to the depth shown on the plans or as otherwise ordered by the Engineer. After the top soil has been spread, all large clods, hard lumps, rocks and litter shall be raked up, removed and disposed of by the Contractor.

Top soil shall not be placed when the ground or top soil is frozen, excessively wet or in the opinion of the Engineer, in a condition detrimental to the work.

All damage occurring to existing roadbeds, shoulders, walks, curbs or other existing adjacent structures or areas due to the Contractor's operations in hauling and placing the top soil shall be repaired by the Contractor at his own cost and expense.

New Section

Section 47-3.03 COMPACTION

All top soil shall be compacted unless otherwise specified or ordered by the Engineer. Compaction shall be by sheepsfoot roller, cleated crawler tractor or similar equipment approved by the Engineer, which will produce a minimum of one hundred fifty (150) pounds per square inch ground pressure to a maximum of three hundred (300) pounds per square inch ground pressure. Equipment shall be so designed and constructed to produce a uniform rough textured surface ready for seeding and mulching, and which will bond the top soil to the underlying material. The entire area shall be covered by a minimum of four (4) passes or two (2) round trips of the roller or approved equipment. Compaction equipment shall be operated parallel to the natural flow of water on the slopes unless otherwise ordered by the Engineer. Conveying the roller or approved equipment up and down the slopes shall be by means devised by the Contractor, providing that the required results are obtained to the satisfaction of the Engineer. After compaction, the finished grade of the top soil shall be one (1) inch below the top of all curbs, catch basins and other structures.

If, in the opinion of the Engineer, water is required to condition the top soil for rolling, it shall be immediately furnished and applied by the method and in the amount designated by the Engineer.

New Section

Section 47-3.04 SEEDING AND FERTILIZING

The Contractor shall notify the Engineer not less than twenty-four (24) hours in advance of any seeding operation and he shall not begin the work until areas prepared or designated for seeding have been approved. Following the Engineer's approval, seeding and fertilizing of the approved slopes shall begin immediately.

Seeding shall not be done during windy weather or when the ground is frozen. Seed and fertilizer shall be placed at the rate and mix specified herein or as directed by the Engineer. Seed and fertilizer may be sown by one of the following methods:

(1) An approved type hydro-seeder which utilizes water as the carrying agent, and maintains a continuous agitator action that will keep seed and fertilizer mixed in uniform distribution until pumped from the tank. Pump pressure shall be such as to maintain a continuous, nonfluctuating stream of solution.
(2) Approved blower equipment with an adjustable disseminating device capable of maintaining a constant measured rate of material discharge that will insure an even distribution of seed and fertilizer at the rates herein specified.
(3) Helicopters properly equipped for aerial seeding and fertilizing. Helicopters so equipped shall have the following:
    (a) Two hoppers or seed compartments capable of containing a minimum of one hundred (100) pounds each of grass seed, or granular fertilizer.
    (b) Power-driven, readily adjustable disseminating mechanisms capable of maintaining a constant, measured rate of distribution of seed, or granular fertilizer.
    (c) Where liquid fertilizer is furnished in lieu of dry granular fertilizer, the helicopter shall be equipped with two barrels or containers capable of containing a minimum of fifteen (15) gallons each. Distribution shall be by a spray boom of sufficient size and length, fitted with proper nozzles to distribute uniformly liquid fertilizer as herein specified.
(4) Approved power-drawn drills or seeders.

Areas inaccessible to above methods of application shall be seeded and fertilized by approved hand methods. Distribution of the material shall be uniform and at the rates specified.

It shall be the Contractor's responsibility to provide qualified personnel experienced in all phases of the seeding and fertilizing operation, equipment and methods as herein specified.

New Section

Section 47-3.05 SPREADING MULCH

of the cap. The excess cord for each outlet shall be wound around and tied to its respective conduit."

Page 81 Section 46-4 MEASUREMENT AND PAYMENT

Bid Item No. 2 shall be amended as follows:

2. "( ) Conduit (Diameter)," per linear foot.

The last paragraph shall be amended as follows:

"The unit contract price per linear foot, measured by the actual length of completed conduit in place for ( ) Conduit (Diameter), shall be full compensation for furnishing all conduit, conduit connections, elbows, bend caps, reducers, condulets, unions, pull boxes and junction boxes for placing the conduit in accordance with the above provisions, including all excavation or jacking required, backfilling of the trenches, chipping of pavement and bedding of the conduit and all other work incidental to the construction of the conduit."

New Section

Section – 47 EROSION CONTROL

New Section

Section 47-1 DESCRIPTION

Erosion control shall consist of preparing slopes, placing and compacting top soil, seeding, fertilizing and mulching all graded and disturbed areas in accordance with these specifications, the details shown on the plans and the special provisions.

New Section

Section 47-2 MATERIALS

New Section

Section 47-201 TOP SOIL

Top soil material shall conform to the requirements of Section 55-2.01.

New Section

Section 47-2.02 SEED

Grasses, legumes, or cover crop seed of the type hereinafter specified shall conform to the standards for "Certified" grade seed or better, as outlined by the State of Washington Department of Agriculture "Rules for Seed Certification" latest edition. Seed shall be furnished in standard containers on which shall be shown the following information:

(1) Seed name
(2) Lot number
(3) Net weight
(4) Percentage of purity
(5) Percentage of germination (in cases of legumes percentage of germination to include hard seed.)
(6) Percentage of weed seed content and inert material clearly marked for each kind of seed in accordance with applicable State and Federal laws.

Upon request, the Contractor shall furnish to the Engineer duplicate copies of a statement signed by the vendor certifying that each lot of seed has been tested by a recognized seed testing laboratory within six (6) months before the date of delivery on the project. Seed which has become wet, moldy, or otherwise damaged in transit or storage will not be accepted.

Seed mix and rate of application shall be as specified in the special provisions.

New Section

Section 47-2.03 FERTILIZER

Fertilizer shall be a standard commercial grade of organic or inorganic fertilizer of the kind and quality specified herein. It may be separate or in a mixture containing the percentage of total nitrogen, available phosphoric acid and water-soluble potash in the amounts specified. All fertilizers shall be furnished in standard unopened containers with weight, name of plant nutrients and manufacturer's guaranteed statement of analysis clearly marked, all in accordance with State and Federal laws.

Acceptable commercial fertilizer may be supplied in one of the following forms:

(1) A dry free-flowing granular fertilizer suitable for application by agricultural fertilizer spreader.
(2) A soluble fertilizer ground to a fineness that will permit complete suspension of insoluble particles in water, suitable for application by power sprayer.
(3) A granular or pelleted fertilizer, suitable for application by blower equipment.
(4) A non-volatile liquid fertilizer.

Commercial fertilizer formulation and rate of application shall be as specified in the special provisions.

New Section

Section 47-2.04 MULCH

New Section

Section 47-2.04A Hay

All mulch material shall be in an air dried condition free of noxious weeds, weed seeds and other materials detrimental to plant life. Unless otherwise specified in the special provisions mulch materials shall be hay of approved field grasses indigenous to the area. Hay shall be seasoned before bailing or loading and shall be acceptable to the Engineer. Hay mulch so provided shall be suitable for spreading with mulch blower equipment. Rate of application shall be as specified in the special provisions.

New Section

Section 47-2.04B Wood Cellulose Fiber

Wood cellulose fiber mulch shall be specially processed wood-fiber containing no growth or germination inhibiting factors and shall be dyed a suitable color to facilitate inspection of the placement of the material. It shall be manufactured in such a manner that after addition and agitation in slurry tanks with fertilizers, grass seeds, water and other improved additives, the fibers in the material will become uniformly suspended to form a homogenous slurry. When hydraulically sprayed on the ground the material shall be uniformly impregnated with grass seed, and which after application, will allow the absorption and percolation of moisture.

Wood cellulose fiber shall be supplied in packages having a gross weight not in excess of eighty (80) pounds. Each package of the cellulose fiber shall be marked by the manufacturer to show the air dry weight content. All such material must be acceptable to the Engineer.

New Section

Section 47-2.05 ASPHALT EMULSION

Asphalt emulsion used as a tie-down for mulch shall be a standard SS-1 emulsion conforming to the requirements of Section 27-1.01.

New Section

Section 47-2.06 JUTE MATTING

Hay mulch will not be required where jute matting is specified. Jute matting shall be of a uniform open plain weave of undyed and unbleached single jute yarn. The yarn shall be of a loosely twisted construction and shall not vary in thickness by more than one-half its normal diameter. Jute matting shall be furnished in rolled strips as follows:

Length approximately fifty (50) yards.

Matting width shall be forty-eight (48) inches with an average weight of 0.92 pounds per square yard. A tolerance of plus or minus one (1) inch in width and five per cent (5%) in weight will be allowed.

New Section

Section 47-3 CONSTRUCTION DETAILS

New Section

Section 47-3.01 PREPARATION

Before the placing of top soil, all soil conditioners shall be applied at the rate specified in the special provisions. All areas shall be cultivated to a depth of two (2) inches unless otherwise specified.

Cultivation of the soil may be done by farm disk, harrow or other suitable equipment approved by the Engineer. This operation shall be done at right angles to the natural flow of water on the slopes unless otherwise ordered by the Engineer. All cost and expense incurred in performing the work herein specified shall be considered incidental to other bid items on the project and no additional compensation will be made.

New Section

Section 47-3.02 PLACEMENT OF SOIL

Top soil shall be evenly spread over the specified areas to the depth shown on the plans or as otherwise ordered by the Engineer. After the top soil has been spread, all large clods, hard lumps, rocks and litter shall be raked up, removed and disposed of by the Contractor.

Top soil shall not be placed when the ground or top soil is frozen, excessively wet or in the opinion of the Engineer, in a condition detrimental to the work.

All damage occurring to existing roadbeds, shoulders, walks, curbs or other existing adjacent structures or areas due to the Contractor's operations in hauling and placing the top soil shall be repaired by the Contractor at his own cost and expense.

New Section

Section 47-3.03 COMPACTION

All top soil shall be compacted unless otherwise specified or ordered by the Engineer. Compaction shall be by sheepsfoot roller, cleated crawler tractor or similar equipment approved by the Engineer, which will produce a minimum of one hundred fifty (150) pounds per square inch ground pressure to a maximum of three hundred (300) pounds per square inch ground pressure. Equipment shall be so designed and constructed to produce a uniform rough textured surface ready for seeding and mulching, and which will bond the top soil to the underlying material. The entire area shall be covered by a minimum of four (4) passes or two (2) round trips of the roller or approved equipment. Compaction equipment shall be operated parallel to the natural flow of water on the slopes unless otherwise ordered by the Engineer. Conveying the roller or approved equipment up and down the slopes shall be by means devised by the Contractor, providing that the required results are obtained to the satisfaction of the Engineer. After compaction, the finished grade of the top soil shall be one (1) inch below the top of all curbs, catch basins and other structures.

If, in the opinion of the Engineer, water is required to condition the top soil for rolling, it shall be immediately furnished and applied by the method and in the amount designated by the Engineer.

New Section

Section 47-3.04 SEEDING AND FERTILIZING

The Contractor shall notify the Engineer not less than twenty-four (24) hours in advance of any seeding operation and he shall not begin the work until areas prepared or designated for seeding have been approved. Following the Engineer's approval, seeding and fertilizing of the approved slopes shall begin immediately.

Seeding shall not be done during windy weather or when the ground is frozen. Seed and fertilizer shall be placed at the rate and mix specified herein or as directed by the Engineer. Seed and fertilizer may be sown by one of the following methods:

(1) An approved type hydro-seeder which utilizes water as the carrying agent, and maintains a continuous agitator action that will keep seed and fertilizer mixed in uniform distribution until pumped from the tank. Pump pressure shall be such as to maintain a continuous, nonfluctuating stream of solution.
(2) Approved blower equipment with an adjustable disseminating device capable of maintaining a constant measured rate of material discharge that will insure an even distribution of seed and fertilizer at the rates herein specified.
(3) Helicopters properly equipped for aerial seeding and fertilizing. Helicopters so equipped shall have the following:
    (a) Two hoppers or seed compartments capable of containing a minimum of one hundred (100) pounds each of grass seed, or granular fertilizer.
    (b) Power-driven, readily adjustable disseminating mechanisms capable of maintaining a constant, measured rate of distribution of seed, or granular fertilizer.
    (c) Where liquid fertilizer is furnished in lieu of dry granular fertilizer, the helicopter shall be equipped with two barrels or containers capable of containing a minimum of fifteen (15) gallons each. Distribution shall be by a spray boom of sufficient size and length, fitted with proper nozzles to distribute uniformly liquid fertilizer as herein specified.
(4) Approved power-drawn drills or seeders.

Areas inaccessible to above methods of application shall be seeded and fertilized by approved hand methods. Distribution of the material shall be uniform and at the rates specified.

It shall be the Contractor's responsibility to provide qualified personnel experienced in all phases of the seeding and fertilizing operation, equipment and methods as herein specified.

New Section

Section 47-3.05 SPREADING MULCH

New Section

Section 47-3.05A Hay

Mulch material of the type herein specified shall be furnished, hauled and evenly applied at the rates indicated, and shall be spread on seeded areas within forty-eight (48) hours after seeding unless otherwise specified. Distribution of mulch material shall be by means of an approved type mulch spreader which utilizes forced air to blow mulch material on seeded area. The spreader shall produce a uniform distribution of the hay, without cutting or breaking it into short stalks. Areas beyond the range of the mulch spreader shall be mulched by approved hand methods. Distribution of the material shall be uniform and at the rate specified.

New Section

Section 47-3.05B Wood Cellulose Fiber

Wood cellulose fiber utilized as a mulch may be applied with seed and fertilizer in one operation by approved hydraulic equipment. The equipment shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend, and homogenously mix a slurry of the specified amount of fiber, fertilizer, seed and water. Distribution and discharge lines shall be large enough to prevent stoppage and shall be equipped with a set of hydraulic discharge spray nozzles which will provide a uniform distribution of the slurry.

New Section

Section 47-3.06 APPLICATION OF ASPHALT EMULSION

Mulch material shall be anchored in place with asphalt emulsion as herein specified. Asphalt emulsion shall be sprayed into the mulch as it leaves the blower pipe and shall be uniformly mixed with the mulch. Asphalt emulsion as specified shall be applied at the rate of one hundred (100) gallons per acre. Any mulch disturbed or displaced following application shall be removed and reapplied as specified.

New Section

Section 47-3.07 PLACING JUTE MATTING

Jute matting shall be unrolled parallel to the flow of water immediately following the placing of seed and fertilizer. Where more than one strip is required to cover the given area, they shall overlap a minimum of four (4) inches. Ends shall overlap at least six (6) inches with the upgrade section on top. The upslope end of each strip of matting shall be buried in six (6) inch slots with the soil firmly tamped against it. The Engineer may require that any other edge exposed to more than a normal flow of water or strong prevailing winds be buried in a similar manner. Check slots shall be placed between the ends of strips by placing a tight fold of matting at least six (6) inches vertically into the soil. These shall be tamped and stapled the same as upslope ends. Check lots must be spaced so that one check slot or one end occurs within each fifty (50) feet of slope.

Edges of matting shall be buried around the edges of catch basins and other structures as herein described. Matting must be spread evenly and smoothly and in contact with the soil at all points.

Jute matting shall be held in place by approved wire staples, pins, spikes or wooden stakes driven vertically into the soil. Matting shall be fastened at intervals not more than three (3) feet apart in three (3) rows for each strip of matting, with one (1) row along each edge and one (1) row alternately spaced in the middle. All ends of the matting and check slots shall be fastened at six (6) inch intervals across their width. Length of fastening devices shall be sufficient to securely anchor matting against the soil and driven flush with the finished grade.

New Section

Section 47-3.08 CONTRACTOR'S RESPONSIBILITY FOR WORK

The Contractor shall be responsible for all work herein described in accordance with Section 7 and the following requirements as directed by the Engineer:

(1) Protect all areas involved against vehicle and barricades.
(2) Reseed and fertilize areas failing to show a uniform stand of grass after germination of seed, or damage through any cause before final inspection.

Maintenance and protection during a suspension of work shall be as herein described and in accordance with Section 8 and as directed by the Engineer.

New Section

Section 47-3.09 FINAL INSPECTION AND ACCEPTANCE

Acceptance of areas receiving seed, fertilizer and mulch as herein specified shall be based on a uniform stand of grass at the time of final inspection. Areas failing to show uniform stand of grass after germination, or damage through any cause prior to final inspection shall be reseeded as herein specified at the Contractor's expense.

New Section

Section 47-4 MEASUREMENT

New Section

Section 47-4.01 TOP SOIL

Measurement for top soil shall be by the cubic yard in the haul conveyance at the point of delivery.

New Section

Section 47-4.02 SEEDING AND FERTILIZING

The quantity of seeding and fertilizing to be paid for will be ground slope measurement in acres of actual seeding and fertilizing completed and accepted.

New Section

Section 47-4.03 MULCHING

The quantity of mulching to be paid for will be by ground slope measurement in acres of actual mulching completed and accepted, including anchoring with asphalt emulsion or by any other means specified, in accordance with these specifications and as shown on the plans.

New Section

Section 47-4.04 JUTE MATTING

The quantity of jute matting to be paid for will be by the square yard measurement of surface area covered and accepted in accordance with the special provisions and the plans.

New Section

Section 47-4.05 SOIL CONDITIONERS

The quantity of soil conditioners to be paid for will be by the ton. Contractor shall furnish duplicate bills of lading to the Engineer.

New Section

Section 47-5 PAYMENT

New Section

Section 47-5.01 TOP SOIL

"Top Soil," including compaction, will be paid for per cubic yard, which price shall include the furnishing of all materials, labor, equipment and all items required to complete the work as specified.

New Section

Section 47-5.02 SEED AND FERTILIZER

Payment for seeding and fertilizing will be made at the unit contract price per acre for "Seeding and Fertilizing," which price shall include the furnishing of all materials, labor, equipment and all items required to complete the work as specified.

New Section

Section 47-5.03 MULCHING

Payment for mulching will be made at the unit contract price per acre for "Mulching," which price shall include the furnishing of all materials, labor, equipment and all items required to complete the work as specified.

New Section

Section 47-5.04 JUTE MATTING

Payment for Jute matting will be made at the unit contract price per square yard of surface area covered by "Jute Matting," which price shall include the furnishing of all materials, labor, equipment and all items to complete the work as specified.

New Section

Section 47-5.05 WATER

Water, unless otherwise provided in the special provisions, will be paid for by the improvement, in accordance with Section 5.13.

New Section

Section 47-5.06 SOIL CONDITIONERS

Payment for soil conditioners will be made at the unit contract price per ton for "Soil Conditioners," which price shall include the furnishing of all material, labor, equipment and all items required to complete the work as specified.

New Section

Section 48 ROADSIDE PLANTING

New Section

Section 48-1 DESCRIPTION

Where shown on the plans, trees, shrubs and ground covers shall be furnished and planted by the Contractor in accordance with accepted horticultural practice, these specifications and as directed by the Engineer. Trees, shrubs and ground covers will hereinafter be referred to collectively as "plants" or "plant material."

New Section

Section 48-2 MATERIALS

New Section

Section 48-2.01 NOMENCLATURE

Nomenclature for plant names and varieties shall be in accordance with the latest edition of "Standardized Plant Names" as prepared by the American Joint Committee on Horticultural Nomenclature.

New Section

Section 48-2.02 QUALITY OF PLANT MATERIAL

All plant material furnished shall conform to the applicable requirements described in the current issue of "American Standard for Nursery Stock," and in addition thereto shall meet the following requirements:

(a) All plant material shall comply with State and Federal laws with the respect to inspection for plant diseases and insect infestation. Inspection certificates required by law shall accompany each shipment of plant material and shall be filed with the Engineer. All plant material specified shall be first-class representatives of their normal species or varieties in healthy growing condition with normal well developed branch system and vigorous root systems. They shall be free from disease and insect infestation, disfiguring knots, sun-scalds, abrasions of the bark, broken tops, torn roots and any other objectionable features. Plants cut back from large sizes to meet specified sizes will not be accepted. All plants shall be nursery grown stock unless otherwise specified.
(b) Plants shall not have cuts over three-fourth (3/4) inch diameter which have not completely healed over. Leader shall be intact on all plants.
(c) Ground plants furnished in pots or other containers shall be acclimated to outside conditions and equal to field grown stock.
(d) When so specified, collected plant material shall conform in quality, size and grade as for nursery stock, except that roots and ball shall be one-third (1/3) greater in diameter than required of nursery grown stock.

New Section

Section 48-2.03 HANDLING AND SHIPPING

All plants shall be dug with care by experienced workmen immediately before shipment. Plants shall be packed for shipment according to standard practice for the type of plant being shipped. The root system of all plants shall not be permitted to dry out at any time. Plants shall be protected at all times against heat and freezing temperatures, sun, wind, climatic or seasonal conditions during transit. When transported a considerable distance in closed vehicles, plants shall receive adequate ventilation to prevent "sweating." In open vehicles, plants are to be protected by tarpaulins or other suitable cover material. All deciduous plant material shall be furnished bare root (BR) unless otherwise specified. All evergreen plant material shall be furnished balled and burlapped (B&B) unless otherwise specified. Broken or "made" balls will not be accepted. All balled and burlapped plants shall at all times be handled by the ball of earth and not the plant. Unless otherwise specified, all plants may be supplied in suitable metal or other containers should the Contractor so desire. Container grown plants shall be well developed to hold the earth intact after removal from the container without being root bound.

New Section

Section 48-2.04 TAGGING PLANT MATERIAL

Plants delivered shall have legible labels attached to each individual plant delivered as a separate unit or to each box, bundle, bale or container containing one or more plants. Labels shall give the necessary detailed information as to horticultural name, size, age, caliber or other data required

to identify as conforming to specifications. When the label is attached to a bundle, box, container, etc., containing more than one plant, information on the label shall show the quantity together with the other required information.

New Section

Section 48-2.05 INSPECTION OF PLANT MATERIAL

The Contractor shall, as soon as practical, inform the Engineer as to the source of plant materials for the project. All plants intended for use by the Contractor are subject to inspection at any time by the Engineer. Approval of plant material for a project shall not be considered as final acceptance. The Contractor shall notify the Engineer not less than two (2) days in advance of delivery of plants from the nursery.

All plants will be inspected by the Engineer on arrival at the project and before the time of planting. Root condition of plants furnished in containers shall be determined by removal of the plant from the container. Plants not meeting the requirements herein specified shall be immediately removed from the project and replaced by the Contractor at his own expense.

New Section

Section 48-2.06 SUBSTITUTION OF PLANTS

No substitution of plant material will be permitted unless evidence is submitted in writing to the Engineer that a specified plant cannot be obtained and has been unobtainable since the award of the contract. If substitution is permitted, it can be made only with written approval by the Engineer. The nearest variety, size and grade as approved by the Engineer shall then be furnished.

New Section

Section 48-2.07 TEMPORARY STORAGE

Plant material delivered and accepted shall be planted immediately. Plants that cannot be planted within one (1) day after arrival shall be "heeled-in" in accordance with accepted horticultural practice.

(a) Bare root plants shall be placed in trenches with roots covered with moist earth or other suitable material. All bare root material supplied in bundles shall have the bundle broken and placed in the trenches separately.

(b) Balled and burlapped plants shall have the root ball protected by moist earth, sawdust, or other accepted material.

Plants stored under temporary conditions shall be protected at all times from extreme weather conditions, and shall be kept moist. All plants that must be stored longer than one month shall be planted in nursery rows and maintained by the Contractor at his own expense.

New Section

Section 48-2.08 TOP SOIL

Top soil material shall conform to the requirements of Section 55, including any soil conditioners specified in the special provisions.

New Section

Section 48-2.09 PLANTING SOIL

Planting soil shall be a mix of sandy loam, peat, cow manure, or other ingredients in the combination and proportions specified in the special provisions. Mixed planting soil shall have a ph range of 5.0 to 6.0. The Contractor shall notify the Engineer as to the date and location he is going to mix planting soil. Any planting soil mixed without approval of the Engineer shall be rejected.

The ingredients to be used in mixing planting soil shall meet the following requirements:

(a) Sandy loam shall consist largely of sand, but with enough silt and clay present to give it a small amount of stability. Individual sand grains can be seen and felt readily. On squeezing in the hand when dry, it will fall apart when the pressure is released; on squeezing when moist, it will form a cast that will not only hold its shape when the pressure is released, but will withstand careful handling without breaking.

(b) Peat shall consist of fibrous sedge, woody or reed type peat, containing less than twenty per cent (20%) of ash by dry weight.

(c) Manure shall be composed of well rotted cow manure free of weeds and weed seed, with a minimum of litter (straw, shavings and sawdust) content.

At the time of mixing, planting soil shall have added to it commercial fertilizer of the type and at the rate specified in the special provisions.

New Section

Section 48-3 CONSTRUCTION DETAILS

New Section

Section 48-3.01 LAYOUT OF PLANTING

Plant locations and outline of planting areas shall be staked by the Contractor and approved by the Engineer before the planting of any trees, shrubs or ground covers.

New Section

Section 48-3.02 ORDER OF PLANTING

In mixing planting areas, trees shall be planted first, followed by the larger shrubs, low shrubs and the final planting of ground covers.

New Section

Section 48-3.03 PLANTING

Plants shall not be placed in any areas that are below the finished grade as shown on plans. Planting areas which, in the opinion of the Engineer, require cultivating shall be cultivated to a depth of six (6) inches and all rocks, sticks, roots and other debris shall be removed before any plants are planted. In addition thereto all planting shall be performed in accordance with the following requirements:

(a) Planting shall not be done during freezing weather or when conditions are unfavorable to the work.

(b) Plant locations shall be established, approved and holes dug before moving the plants out to the planting area.

(c) Plants shall be protected at all times to prevent roots from drying out during the planting operation.

(d) Unless otherwise specified, holes shall be dug for trees, twelve (12) inches greater in diameter than the diameter of the root ball or natural spread of the roots. Depth of hole shall provide a minimum backfill under roots or root ball of six (6) inches. Shrub holes shall be twelve (12) inches greater in diameter than the root ball or natural spread of the roots. Depth of shrub holes shall allow for a minimum backfill under roots or balls of six (6) inches. Ground covers shall have a minimum backfill on all sides of the root system of two (2) inches.

(e) When trees are to be planted in cement concrete sidewalk areas, pits shall be dug at the locations shown on the plans. The pits shall be a minimum of three (3) feet by three (3) feet and have a depth of four (4) feet. Following excavation of the tree pits, a mixture of fifty per cent (50%) planting soil and fifty per cent (50%) exisitng soil shall be placed in the bottom one (1) foot of the hole. The balance of the hole shall be filled with planting soil.

(f) Planting shall be done by experienced workmen in accordance with recognized horticultural practice. All plants shall be set plumb and at such an elevation that after backfill settlement plants will bear the same relationship to the finished grade as they were planted in the nursery.

(g) Bare root plants shall be set in the plant holes with roots spread out in a natural position. Backfill material as specified shall then be worked in and around the roots filling all voids. Firming or tamping of backfill material around roots shall be done in such a manner so as not to damage the roots. Balled and burlapped material shall have all strings or cords cut, and the burlap shall be laid back from the top half of the ball. This shall be done only after the plant is placed in its final position and before completion of the backfill. Plants supplied in containers shall be removed from the containers in such a manner as to prevent disturbances of the root system or material in which they were planted. Under no circumstances shall the plant be removed from the container by pulling the main stem. Plants removed from their containers shall be planted without delay, in the manner described for balled and burlapped plants.

A shallow rain basin consisting of a ridge of earth one (1) to three (3) inches high and equal in diameter to the planting hole, shall be left around each plant. Immediately after a plant is planted and basin constructed, the basin shall be filled with water.

(h) All excess or unsuitable material excavated from plant holes shall be removed and disposed of off the project site and to the satisfaction of the Engineer.

New Section

Section 48-3.04 PRUNING, STAKING AND GUYING

Before planting, all bare root stock shall have damaged or torn roots removed with clean cut. After planting, all plant material shall be pruned in conformance with the best horticultural practice, appropriate to the type of plant. Top pruning shall remove all damaged twigs and branches, and compensate for loss of roots during planting operation. Top growth removal to compensate for root loss shall not exceed one-third (1/3) of the top growth unless otherwise specified or directed by the Engineer. Removal of top growth shall be in such a manner as to retain the natural growth characteristics of the plant. Cuts greater than three-fourth (3/4) inch in diameter shall be treated with an approved tree wound dressing. Pruning shall produce a clean cut without bruising or tearing the bark and shall be in living wood where the wound can heal over properly.

All deciduous trees shall be staked at the time of planting unless otherwise specified. Trees up to twelve (12) feet in height shall be staked with one three-inch by three-inch by twelve-foot (3" x 3" x 12') stake, stained dark brown. The stake shall be placed in the plant hole and driven a minimum of one (1) foot into firm ground at the time of planting, before backfilling around roots. The tree shall be fastened to the stake with two (2) hose and nylon cord ties each. Ties shall be spaced two feet six inches (2'6") apart and shall be centered on a point approximately three-fifths (3/5) the height of the tree. Ties shall be nylon cord securely anchored to the posts. Loops shall be formed around the trunk of the tree with each tie leaving at least four (4) inch diameter open space after the hose protection has been applied. Good quality rubber hose, brown in color, shall be used to protect the bark of the tree. If the coat of stain is broken during placing, the unprotected areas of the stake shall be recoated after installation is complete. All stakes shall be placed to the windward side of the tree. The Contractor shall stake one (1) tree as a sample and get the approval of the Engineer before making further installations.

Deciduous trees over twelve (12) feet in height and all evergreen shrubs or trees over four (4) feet in height shall be guyed with three (3) guy wires or cables. Guy wires shall be two (2) strands of twelve (12) gauge wire twisted, passed through a loop of garden hose around the tree trunk at a point approximately three-fifths (3/5) the height of the tree and fastened securely to a stake placed approximately three-fourths (3/4) the fastening height from the trunk or main stem. Guy stakes shall be placed equal distances apart.

New Section

Section 48-3.05 CULTIVATION AND CLEAN-UP

Upon completion of planting all excess material shall be removed and disposed of off the project site. Planting areas shall be brought to a uniform grade flush with walks, curbs, pavements and driveways. The soil surrounding each individual plant shall be cultivated and loosened to a depth of three (3) inches and all rocks, grass, weeds, hard clods, and other debris shall be removed. An area three (3) feet in diameter around each individually planted tree or shrub shall be cultivated as specified and an area not less than one (1) foot around small shrubs and ground covers. Where trees and shrubs are planted in groups or mass plantings the total area shall be treated as a unit and cultivated as specified. Planted areas shall be neatly edged with a sharp edging tool.

New Section

Section 48-3.06 FERTILIZERS AND SOIL CONDITIONERS

Fertilizers and soil conditioners when called for in the special provisions shall be thoroughly and uniformly incorporated into the top soil at the rates specified.

New Section

Section 48-3.07 SAWDUST MULCH

Mulch shall be applied where shown on plans or where directed by the Engineer. Planting areas of trees, shrubs, and ground covers shall be mulched with hardwood or softwood to the depth shown. Sawdust shall be free of chips, chunks and large splinters and shall not contain resin, tannin

or other compounds in quantities that would be detrimental to plant life.

New Section

Section 48-3.08 CARE DURING CONSTRUCTION

The Contractor shall insure adequate and proper care of all plant material and work done on this project until the contract is completed and accepted by the City. Adequate and proper care shall consist of keeping all plant material in a healthy, growing condition by watering, cultivating, pruning, spraying and any other necessary operations. This work shall also include keeping the grass, litter and other debris along with retaining the finished grades in a neat uniform condition.

New Section

Section 48-3.09 PROTECTION OF EXISTING FACILITIES

See sections 5.09 and 5.10.

New Section

Section 48-3.10 REPLACEMENT

All plants not in a healthy, growing condition at the time of final inspection shall be removed and replaced in species, size and grade by the Contractor at his own expense.

New Section

Section 48-5 MEASUREMENT AND PAYMENT

Payment will be made for such of the following bid items as are included and shown in any particular contract:

1. "Trees," per each.
2. "Shrubs," per each.
3. "Ground Cover Plants," per each.
4. "Top Soil," per cubic yard.
5. "Planting Soil," per cubic yard.
6. "Planting Mulch," per cubic yard.

The price per each for "Trees," "Shrubs" and "Ground Cover Plants" shall be full compensation for all costs necessary to furnish, plant, fertilize and cultivate the particular items called for on the plans.

The price per cubic yard for "Top Soil," "Planting Soil" or for "Planting Mulch," measured in the hauling conveyance at the point of delivery, shall be full compensation for all costs necesasry for furnishing and placing as shown on the plans.

Any incidental work required to complete the roadside planting specified herein but not specifically mentioned in these specifications shall be considered as incidental to the roadside planting and all costs therefor shall be included in the unit contract prices of the bid items.

New Section

Section 49–SPRINKLER IRRIGATION SYSTEM

New Section

Section 49-1 DESCRIPTION

The work under this section shall consist of furnishing all materials and labor required to install a sprinkler irrigation system in accordance with these specifications and the details shown on the plans.

New Section

Section 49-2 MATERIALS

All materials shall be new of the best quality obtainable and shall comply strictly with the drawings and specifications. Materials shall be in accordance with the provisions of all applicable City and/or County plumbing ordinances and shall be subject to testing as specified herein.

Prior to beginning any work, the Contractor shall submit to the Owner for approval, a complete materials list together with descriptive matter and manufacturer's name and numbers covering all irrigation system material to be furnished under the contract.

New Section

Section 49-2.01 PIPE AND FITTINGS

Galvanized Pipe:

Galvanized pipe shall be standard weight, hot-dipped galvanized iron or steel pipe, threaded and coupled. Pipe shall meet the current requirements of ASTM Designation A 120, and shall be furnished in standard lengths. All pipe fittings shall be standard threaded galvanized malleable iron fittings.

Plastic Pipe:

P.V.C. Plastic pipe shall be extruded from unplasticized virgin resins of polyvinyl chloride material, grey in color. The material is non-toxic, free from taste and odor and conforms to Commercial Standard No. CS 207-60, as published by the U.S. Department of Commerce, February 15, 1960. All plastic pipe fittings shall be of the same manufacture as the plastic pipe specified above.

Pipe type and size shall be as specified on plans.

New Section

Section 49-2.02 CONTROL TUBING

Control tubing shall be copper refrigerator tubing meeting the current requirements of ASTM Designation B 280 or polyvinyl chloride refrigeration tubing. Tubing and fittings shall be capable of withstanding a three-hundred (300) p.s.i. operating pressure and shall be of the size indicated on the plans.

New Section

Section 49-2.03 AUTOMATIC CONTROLLERS

When called for on the plans, the Contractor shall furnish and install on a concrete base, automatic controllers as herein specified. They shall be an electrically timed device for automatically opening and closing control valves for predetermined periods of time and mounted so that all normal adjustments will be conveniently located for use by the operator. Controllers shall be enclosed in a weather-proof metal housing with hasp and lock or locking device. All locks or locking devices shall be master keyed and three (3) sets of keys provided. Operating features shall include the following:

(a) Each valve in the circuit shall be adjustable for setting to remain open for any desired period of time – from one (1) to thirty (30) minutes.
(b) Controller adjustments shall be such that the open cycle may be doubled or repeated not less than three (3) times during the complete watering cycle.
(c) Adjustments shall be provided whereby any number of days may be omitted and whereby any one or more positions on the controller can be skipped. When adjustments are made they shall continue automatically within a fourteen (14) day cycle until the operator desires to make new adjustments.
(d) Controls shall allow any position to be operated manually both on or off whenever desired.

(e) Controls shall provide for resetting the start of the irrigation cycle at any time and advancing from one position to another.
(f) Controllers shall contain an "on-off" switch and fuse assembly.
(g) Controller shall have a power failure cutout.

New Section

Section 49-2.04 SPRINKLER HEADS

Sprinkler heads shall be of the style, pattern and coverage shown on the plans. All heads shall be constructed on heavy duty bronze, brass or stainless steel. Sprinklers shall be designed so that spray adjustments can be made by either an adjustment screw or interchangeable nozzles. Watering cores shall be precision machined for accurate performances and shall be easily removed without removing the housing from the pipe. All turf heads shall be designed with turf flanges having two gripping holes to facilitate removal of the head.

New Section

Section 49-2.05 VALVE PROTECTIVE SLEEVES

All valves shall be equipped with a protective sleeve and cap as shown on the plans. Protective sleeves shall be plain concrete pipe of the size and length called for on the plans.

New Section

Section 49-2.06 GATE VALVES

Gate valves when called for on the plans shall be heavy duty bronze conforming to the requirements of ASTM Designation B 62. Valves shall be of the same size as the pipes on which they are placed and shall have union or flange connections. Service rating (for non-shock cold water) shall be three-hundred (300) p.s.i. Valves shall be of the double disk, taper seat type, with rising stem, union bonnet and handwheel. Manufacturer's name, type of valve and size shall be cast on the valve.

New Section

Section 49-2.07 CONTROL VALVES

Manual section control valves shall be bronze angle valves, renewable disk type with rising stem and either screwed or union bonnet, fitted for key operation. Service rating shall be not less than one-hundred fifty (150) p.s.i. non-shock cold water.

Automatic remote control valves shall be brass or bronze, pattern as specified with flanged or screwed outlet. Screwed valves shall be provided with union connections or a short brass nipple with brass union. Valves shall be a "normally closed" design and shall be opened and closed as required by the automatic controller. Valves shall be designed to have a manual adjustment from fully closed to wide open. Once the manual adjustment is set, the valve shall operate automatically in the adjusted position. Water flow shall be completely stopped when the control valve is closed either manually or automatically.

New Section

Section 49-2.08 QUICK COUPLER VALVES

Quick Coupler valves shall have a service rating not less than 150 p.s.i. for non-shock cold water. Body of the valves shall be a single brass alloy #5-A as given in ASTM Designation B 145. Base of the valve shall be such that it will open only upon inserting a coupler device, and will close as the coupler is removed from the valve. Leakage of water between the coupler and valve body when in operation will not be accepted. The valve body receiving the coupler shall be designed with worm slots to allow smooth action in opening and closing of the valve with a minimum of effort. Slots shall be notched at the base to hold the coupler firmly in the open position. Couplers shall be of the same material as the valve body with guide lugs to fit the worm slots. Couplers shall be of one piece construction with steel reinforced side handle attached. All couplers shall have standard male pipe threads at the top. Couplers shall be furnished with all quick coupler valves, unless otherwise specified.

New Section

Section 49-2.09 DRAIN VALVES

Drain valves shall be bronze or brass gate valves with a service rating of 125 p.s.i. Drain valves shall be furnished with cross tops. The Contractor shall furnish a suitable operating key. Each drain valve shall be placed in a drain pit which shall be constructed in accordance with the details on the plans.

New Section

Section 49-2.10 HOSE BIBS

Hose bibs shall be constructed of bronze or brass, angle type threaded to accommodate a three-fourths (3/4) inch hose connection and shall be key operated. Design shall be such as to prevent operation by wrench or pliers.

New Section

Section 49-211 VACUUM BREAKERS

When called for in the plans and special provisions, vacuum breakers meeting the following requirements shall be furnished and installed. All vacuum breaker installations are subject to inspection by the Engineer.

New Section

Section 49-2.11A Atmospheric Vacuum Breakers

Atmospheric vacuum breakers shall have all bronze bodies and be of the same dimension as the pipe on which it is attached. Design shall permit free flow of water under pressure. When vacuum conditions exist it shall automatically close the check valve stopping all flow of water and admit air into the main line. Upon restoration of water pressure, the air intake shall be shut off and the check valve reopened without spillage. Unless otherwise specified, the vacuum breaker shall be installed on the discharge side of the control valve six (6) inches above the highest sprinkler head on the line. Vacuum breakers shall not be required on sprinkler line when all sprinkler heads on the line are elevated a minimum of six (6) inches above the finished grade, such as sprinkler lines irrigating shrub beds. Atmospheric vacuum breakers shall have a service rating of 150 p.s.i. for non-shock cold water and shall be designed for operation up to temperatures of 140°F.

New Section

Section 49-2.11B Pressure Vacuum Breakers

Pressure type vacuum breakers shall be installed on the discharge side of the meter or service connection as shown on the plans. Vacuum breakers shall be of heavy duty construction with all bronze bodies, check valves and test cocks. Pressure type vacuum breakers shall be designed to operate under continuous pressure permitting the free flow of water at all times. Air intake shall be spring loaded to insure positive opening upon release of pressure or vacuum created in the supply lines. Vacuum breakers shall be furnished with

(Pressure type vacuum breakers, including their check valve components, shall be installed at least twelve (12) inches above the highest point of use in the system.)

approved check valves, inlet and discharge shut-off valves and field testing cocks. Assembly for various pipe sizes shall be as specified on plans and in special provisions. Unless otherwise specified, pressure type vacuum breakers shall have a service rating of 300 p.s.i. for non-shock cold water.

New Section

Section 49-3 CONSTRUCTION DETAILS

All work shall conform to the local plumbing code having jurisdiction. The Contractor shall apply and pay for all permits having to do with the work.

All scaled dimensions are approximate. The Contractor shall check and verify all dimensions on the site before proceeding with any work as part of the contract. Before starting work on the sprinkler system, the Contractor shall carefully note all finish grades. Finish grades changed in the course of the work shall be restored to the original grades and contours.

The Owner will furnish meters at the locations as noted on the plans.

New Section

Section 49-3.01 EXCAVATION

Pipe trenches shall be no wider at any point than is necessary to lay the pipe or install equipment. The top six (6) inches of top soil, when such exists, shall be kept separate from subsoil and shall be replaced as the top layer when backfill is made. Trenches shall be excavated with vertical sides and provided with bracing and shoring to be placed as directed by the Engineer. Trenches in rock or like material shall be excavated six (6) inches below the required depth and shall be backfilled to required depth with sand or other suitable materials free from rocks or stones.

New Section

Section 49-3.02 EXCAVATION ADJACENT TO TREES

Care shall be exercised by the Contractor when excavating trenches near existing trees. Where roots are two (2) inches and greater in diameter, except in the direct path of the pipe, the pipe trench shall be hand excavated and tunneled. When large roots are exposed they shall be wrapped with heavy burlap for protection and to prevent excessive drying. Trenches dug by machines adjacent to trees having roots two (2) inches and less in diameter shall have the sides hand trimmed making a clean cut of the roots. All roots one-half (1/2) inch or greater in diameter that are cut and trimmed shall be treated with an approved tree wound dressing. Trenches having exposed tree roots shall be backfilled within twenty-four (24) hours unless adequately protected by moist burlap or canvas.

New Section

Section 49-3.03 PIPING

All live main lines shall be a minimum of twenty-four (24) inches below finished grade measured from the top of the pipe. Lateral or section lines shall be a minimum of ten (10) inches below finished grade measured from the top of the pipe. Pipes shall be sloped to drain without sags. Unless otherwise specified, drain valves shall be placed only at the low point of all lateral or section lines. All live mains located under existing pavement shall be placed in conduits jacked under pavement unless otherwise noted on the plans or directed by the Engineer. Conduits shall be no larger than necessary to conveniently accommodate the pipe and fittings. When necessary, live mains and control tubing may be placed in separate conduits laid adjacent and parallel. All jacking operations shall be performed and conduit run at a depth below the pavement as directed by the Engineer. Where possible, mains and laterals or section piping shall be placed in the same trench.

New Section

Section 49-3.04 JOINTING

All galvanized steel pipe shall have sound, clean cut standard pipe threads well fitted. All pipes shall be well reamed to the full diameter and burrs removed before assembly. Threaded joints shall be made up with the best quality pure lead paste, applied smoothly and evenly to the male thread only. All screwed joints shall be made tight with tongs and wrenches without the use of handle extensions. Any joints that leak shall be cleaned and re-made with new material. Caulking or thread cement to make joints tight will not be permitted.

New Section

Section 49-3.05 CONTROL TUBING

Copper control tubing shall be jointed with brass or bronze screwed compression type fittings. Ends of tubing to be joined shall be uniformly cut, burred and flanged. Directional changes requiring less than a three (3) inch radius shall be made with 90° ell fittings.

New Section

Section 49-3.06 INSTALLATION

Location of pipe, sprinkler heads, valves and other equipment shall be as shown on the plans and shall be of the size and type indicated. No changes shall be made except as approved by the Engineer. Sprinkler heads located within lawn areas shall be installed on temporary high risers approximately twelve (12) inches above finished grade. Once turf has been established and Contractor shall, upon written notice from the Engineer, lower the head to final position as a part of the contract. Lowering of sprinkler heads shall be completed within thirty (30) days after receipt of written notice. Final position of turf heads shall be between one-half (1/2) and one (1) inch above finished grade measured from the top of the sprinkler. All sprinklers adjacent to walks, curbs and pavement shall be placed at the same elevation and six (6) inches from such structure. Elevation shall be taken from the top of the sprinkler head, walks, curbs, or pavement. Shrub heads, unless otherwise specified, shall be placed on high risers elevating them approximately twelve (12) inches above finished grade. Lowering of shrub heads will not be required.

New Section

Section 49-3.07 CONTROL TUBING INSTALLATION

Control tubing shall be placed with the main supply line. Tubing shall be bundled together by four (4) wraps of friction tape at six (6) foot intervals. Location of the bundle of control tubing shall be to one side of the pipe, and a minimum of two (2) inches from any galvanized pipe.

New Section

Section 49-3.08 FLUSHING AND TESTING

All main supply lines shall be flushed completely of foreign particles before placing section control valves, quick-coupler valves and hose bibs. After flushing and when valves are in place, all main supply lines shall be tested at one hundred and fifty (150) p.s.i. with valves closed. Pressure shall be maintained for a period of two (2) hours. All joints showing leaks shall be cleaned, remade and tested.

After installation of section lines, the piping shall be completely flushed of foreign particles before attaching sprinkler heads and drain valves. After flushing, section lines shall be tested with risers capped and drain valves closed. The test shall be made at maximum operating pressure for a period of one (1) hour. Any pipe, fittings or joints showing leaks will not be accepted. All joints showing leaks shall be cleaned, remade and tested. Control tubing shall be tested in the manner specified hereinbefore for the main supply lines. Tubing shall be flushed for five (5) minutes before connection with the control valve.

Automatic conrtollers shall be tested by actual operation for a period of two weeks under normal operating conditions. Should adjustments be required, the Contractor shall do so according to manufacturer's direction and test until operation is satisfactory.

New Section

Section 49-3.09 ADJUSTING SYSTEM

Before final inspection the Contractor shall adjust and balance all sprinklers to provide adequate and uniform coverage. Spray patterns shall be balanced by adjusting individual sprinkler heads with the adjustment screws or replacing nozzles to produce a uniform pattern. Unless otherwise specified, sprinkler spray patterns will not be permitted on pavement, walks or structures.

New Section

Section 49-3.10 BACKFILL

Backfill shall not be started until all piping has been inspected, tested and approved by the Engineer, after which backfilling shall be completed as soon as possible. Upon completion of all piping in the same trench, backfill shall be completed as specified. Trenches containing control tubing shall have a three (3) inch sand or sandy loam cushion free from rocks or stones larger than three-eighths (3/8) inch in diameter placed over all control tubing. Backfill from the bottom of the trench to approximately six (6) inches above the pipe shall be by continuous tamping in such a manner that will not damage pipe or control tubing and shall proceed evenly on both sides of the pipe. The remainder of the backfill shall be thoroughly tamped, except that heavy equipment shall not be used within eighteen (18) inches of any pipe.

All backfill material shall be free of rocks, roots or other objectionable material. The top six (6) inches of the backfill shall be of top soil material or the first six (6) inches of material removed in the excavation.

New Section

Section 49-5 MEASUREMENT AND PAYMENT

Payment will be made for such of the following bid items as are included and shown in any particular contract:

"Manual Sprinkler Irrigation System Complete," lump sum.

"Automatic Sprinkler Irrigation System Complete," lump sum.

The lump sum contract prices for "Manual Sprinkler Irrigation System Complete" and/or "Automatic Sprinkler Irrigation System Complete" shall be full compensation for furnishing all labor, materials, tools and equipment necessary or incidental to the construction of the complete sprinkler system as shown on the plans.

All additional material and labor, not shown on the plans or called for herein and which are required to complete the sprinkler system, shall be considered as incidental to the construction and be included in the lump sum contract prices. No additional compensation will be allowed.

Page 81 Section 50-3.01 REFERENCE POINTS

Delete the words "monuments and" in the second line of the second paragraph.

Page 81 Section 50-3.02 PRECAST CONCRETE MONUMENTS

This section shall be deleted in its entirety.

Page 81 Section 50-3.03 POURED MONUMENT

This section shall be deleted in its entirety.

Page 81 Section 50-4 MEASUREMENT AND PAYMENT

Delete Bid Items 1 and 2.

In the second paragraph, fourth line, delete the words "monuments and."

Page 82 Section 51—SIDEWALK DRAIN FOR BUILDING DOWNSPOUT

This section shall be deleted in its entirety.

Page 82 Section 52-2.02 REMOVAL OF PAVEMENT

Existing pavement such as concrete, asphalt, brick, cobblestone, or combinations of the various materials which constitute a rigid type of pavement and which is four (4) inches or more in thickness, shall be removed as shown on the plan or directed by the Engineer.

In the removal of pavement for the purpose described above, extreme care shall be taken to prevent damage to any pavement that is to remain in place, and to leave vertical cleavage planes in order that the paved surface will be as durable as before it was disturbed.

Pavement breakers such as a "headache ball" shall not be used and paving breakers shall be of such types as will not damage any of the utility installations, and shall be approved by the Engineer before use.

Removal of existing pavement, i.e., bituminous mixes as a surfacing upon earth or granular subgrades averaging four (4) inches and less in thickness, when required shall be removed as common excavation, except as may otherwise be provided in special provisions.

Page 82 Section 52-2.02A Pavement Removal, Class A

This section shall be deleted in its entirety.

Page 82 Section 52-2.02B Pavement Removal, Class AA

This section shall be deleted in its entirety.

Page 82 Section 52-2.02C Pavement Removal, Class B

This section shall be deleted in its entirety.

Page 82 Section 52-2.02D Pavement Removal, Class C

This section shall be deleted in its entirety.

Page 82 Section 52-2.03 REMOVAL OF ASPHALT CONCRETE PAVEMENT

The second paragraph of this section shall be amended as follows:

Where asphalt concrete pavement exists in planting strips and is to be removed, it will be considered as part of the clearing and grubbing and no payment will be made therefor.

The third paragraph of this section shall be amended as follows:

Side street approaches to the project and street approaches at each end of the project paved with asphalt concrete on an earth or granular base and which are to be removed, will be paid for as common excavation.

The fourth paragraph of this section shall be amended as follows:

Immediately prior to the placing of asphalt concrete against the meet line, the existing edge shall be removed by cutting the existing pavement vertically a sufficient distance from the line of excavation to avoid damaged areas (not to exceed three (3) feet).

Page 83 Section 52-2.06 REMOVAL OF CEMENT CONCRETE SIDEWALKS

The last word in the third sentence shall be amended to read "prevail."

Page 83 Section 52-2.07 REMOVAL OF CATCH BASINS, MANHOLES, CURB INLETS, SUMPS, ETC.

The second paragraph shall be amended to read as follows:

"Where the structures are removed, the voids shall be backfilled with such material as the Engineer may direct and be compacted to the degree required by the Engineer, and such work shall be considered as incidental to the removal without compensation. The removal of wooden structures shall be considered as incidental to the work unless otherwise provided in the special provisions."

The third and fourth paragraphs shall be deleted in their entirety.

Page 83 Section 52-3 MEASUREMENT AND PAYMENT

Bid Item No. 1 shall be amended to read as follows:

1. "Remove Existing Pavement, ( )," per square yard.

Delete Bid Item Nos. 2, 3, 4, 13 and 15.

Page 84 Section 53-2.03 CONTRACTOR TO SCHEDULE WORK

This section shall be amended to read as follows:

"The contractor shall schedule his work and cooperate to the fullest extent so that structure adjustments by others can be satisfactorily accomplished."

Page 84 Section 53-3.01A General

This section shall be amended to read as follows:

"Adjustment of cover casting for the subject structures to final grade when for new work constructed in conjunction with the project shall be incidental to their construction and no separate payment therefore will be made. Provided however, that when the new construction has been completed by the Contractor to a final grade as set by the Engineer and such final grade is subsequently revised by the Engineer, then the change necessary shall be made as an adjustment and paid for in accordance with the following specifications for the adjusting of existing utility structures which payment would be in addition to the original new construction payment.

Adjustment payment shall be at the bid price whenever the required adjustment consists of raising or lowering the top of the existing structure to place the cover casting to a new grade, provided the vertical adjustment does not exceed twenty (20) inches and the sizes of the structure opening remains the same. When the vertical adjustment exceeds twenty (20) inches or results in a change in the size of the structure opening, payment will be in accordance with the following provisions.

(a) Downward Adjustment: When the required adjustment is downward in excess of twenty (20) inches and cannot be made to conform to the requirements for new construction, and is not otherwise provided for on the proposal plans or special provisions, the lowering work shall be performed by the Contractor as directed by the Engineer and paid for on the basis of extra work as provided in Section 9.03.

Where adjustment is downward more than twenty (20) inches and can be made in conformance with the requirements for new work and involves removing the structure precast cone, or flat side reducing section and reinstalling to conform to the new final grade, the adjustment shall be completed by the Contractor; and additional payment in addition to payment for adjusting will be made on the basis of linear feet for all original vertical height of the structure removed in excess of eight (8) inches to make the adjustment in accordance with new work requirements as "shafting" of the maximum diameter removed.

(b) Upward Adjustment: Where adjustment is upward in excess of twenty (20) inches and the existing precast cone or flat slab reducing section is removed and reinstalled at the new grade in conformance with requirements for new construction, additional payment on the basis of linear feet will be made for all height in excess of twenty (20) inches as "shafting" of the maximum diameter installed.

The above conditions, as described for a structure constructed with precast sections, shall likewise apply for such structures constructed with masonry blocks or bricks in mortar and cast-in-place concrete structures."

Page 84 Section 53-3.01C Cement Concrete Paving Projects

Reference to Section number in the third line shall be amended to read "Section 53-3.01A."

Page 84 Section 53-3.01D Asphalt Concrete Paving Projects

This section shall be amended to read as follows:

"On asphalt concrete paving projects, the adjustment of new and existing manholes, catch basins and similar structures shall be made in accordance with the applicable requirements of Section 53-3.01A to place the casting to the proposed final grade of the asphalt concrete pavement"

Page 84 Section 53-3.01E Asphalt Resurfacing Projects

Reference to Section number in the second line shall be amended to read "Section 53-3.01A."

Page 85 Section 53-4 MEASUREMENT AND PAYMENT

Amend Bid Item No. 1 as follows:

"Adjust Existing Manhole or Catch Basin or Gate Valve Structure to Grade," per each.

Delete Bid Items 4, 5, 6, 8, 9, 10, 11 and 12.

Add the following bid items:

"Furnish Valve Chamber Frame and Cover," per each.
"Shafting (diameter)," per linear foot.
"Furnish Manhole Ring and Cover Casting Type ( )," per each.
"Furnish Inlet Frame and Cover Castings Type ( )," per each.
"Furnish Precast Concrete Manhole Reducing Slab (D to 'd')," per each.

Page 85 Section 53-4.01 ADJUST EXISTING MANHOLE OR CATCH BASIN TO GRADE

Title shall be amended as follows:

"ADJUST EXISTING MANHOLE, CATCH BASIN AND GATE VALVE CHAMBER TO GRADE"

The unit contract price for "Adjust Existing Manhole, Catch Basin and Gate Valve Chamber to Grade," shall be full compensation for removing the cast iron frame and cover, removing necessary pavement, cutting the existing structure down where necessary, furnishing and placing temporary wood cover, rebuilding the structure, resetting the existing cast iron frame and cover to proper grade, backfilling the void around the structure, and plastering the structure throat and extension. Where manholes are to be adjusted upward or downward and it is necessary to remove the entire cone section, the entire adjustment will be paid for as specified in Section 53-3.01A.

Page 85 Section 53-4.05 TYPE, OR SIZE, MANHOLE EXTRA DEPTH

Title shall be amended to read as follows:

"SHAFTING"

The unit contract price for "Shafting" per linear foot of the diameter involved, as described in Section 53-3.01A for completing adjustment construction for manholes, catch basins and gate chambers, shall be full compensation for completing the upward or downward change in the existing structure shafting as required, which payment will be in addition to payment for adjusting the existing cover casting to final grade.

Page 85 Section 53-4.06 ADDITIONAL DEPTH SHAFTING FOR EXISTING MANHOLE

This section shall be deleted.

Page 86 Section 54-3.02 CEMENT CONCRETE PAVEMENTS

Add the following paragraph:

The Contractor shall furnish, place and maintain to the satisfaction of the Engineer, temporary asphaltic concrete pavement over trench areas until backfill settlement, as determined by the Engineer, is complete; also, such temporary asphaltic concrete pavement may be required by the Engineer at any time the roadway is needed for vehicular traffic and permanent pavement cannot be placed. The Contractor shall remove the temporary asphalt, clean the exposed face of the existing concrete, and restore the concrete pavement as herein specified at the time directed by the Engineer. No separate payment will be made for the temporary asphaltic concrete, but the cost therof shall be included in the other pay items of the contract.

New Section

Section 54-3.07 RESPONSIBILITY FOR PAVEMENT PATCHING

On all public works contracts, the Contractor shall perform all work for backfilling of excavations made under existing pavements, and the restoration of pavement cuts and patching, in accordance with these specifications unless otherwise provided in the special provisions of the proposals.

Page 86 Section 54-4 MEASUREMENT AND PAYMENT

Delete the words "above grade" in the first paragraph.

Page 86 Section 55-2.01 TOP SOIL, PROCURED

The third sentence shall be amended as follows:

"It shall be reasonably free from brush, roots, heavy clay, sticks, roots of noxious weeds or grasses and other litter, and shall contain no stones or gravel larger than one-half (1/2) inch in diameter."

The last sentence shall be amended as follows:

"A sample of the top soil shall be submitted to the Engineer for approval prior to placement."

Page 87 Section 56-2 CONSTRUCTION DETAILS

The first paragraph shall be amended as follows:

The sod shall be removed to a uniform depth of approximately two (2) inches with an approved type of sod cutter. This operation shall be performed in such manner as to insure uniform thickness of sod throughout the operation. If the stored sod is not replaced within ten days, all other work shall cease until this is accomplished.

The first sentence in the third paragraph shall be amended as follows:

Prior to replacing the strips of sod, the scalped area shall be carefully shaped to proper grade, rototilled to a depth of six (6) inches and lightly compacted.

The first sentence in the fourth paragraph shall be amended as follows:

After rototilling, shaping and lightly compacting the finished grade, the top soil shall be thoroughly dampened and fertilized prior to and immediately before replacing the sod.

New Section

Section 56-5 LAWN AND REPLACEMENT BY SEEDING

In lieu of removing and replacing sod as provided in Section 56 of the Standard Plans and Specifications, the Contractor may furnish and place six (6) inches of top soil and organic fertilizer and reseed the disturbed areas.

Top soil shall be as specified in Section 55-2.01 of the Standard Plans and Specifications.

Organic fertilizer shall consist of not less than six percent (6%) nitrogen, ten percent (10%) superphosphate and four percent (4%) potash and shall be applied at the rate of one (1) pound per fifteen (15) square feet.

Lawn seed shall consist of a mixture of three (3) parts Kentucky blue grass, three (3) parts Chewing's Fescue and two (2) parts Astoria Bent by weight, sown at the rate of eight (8) pounds per one thousand (1000) square feet.

Seed shall be properly raked in and protected with Canadian Horticulture Peat Moss one-fourth (1/4) inch thick. The planting area shall be watered and maintained. The grass shall be mowed to one half (1/2) inch with a sharp hand mower when 25% of the grass reaches (1) one inch in height. The maintenance shall continue until the grass is 90% full and has reached a height of one and one-half (1-1/2) inches.

Page 87 Section 57-2 CONSTRUCTION DETAILS

The last sentence in the second paragraph shall read as follows:

Wherever fill material is required in the planting area, it shall be left sufficiently higher to allow for final settlement but, nevertheless, the raised surface shall present a uniform appearance.

The following shall be added after the fifth paragraph:

The Owner will not clean existing catch basins involved on any improvement, after award of contract by the Board of Public Works.

The Contractor shall accept the condition of all existing catch basins involved on the improvement and shall maintain them for the duration of the contract in a manner satisfactory to the Engineer.

The Engineer shall note defective parts found on the existing catch basins prior to construction operations by the Contractor on any area of the improvement. Where and directed by the Engineer, the Contractor shall make the required repairs to the existing catch basins and full compensation therefore will be made by appropriate bid items included in the proposal of this contract or as provided in Section 9.04.

Delete the last sentence in paragraph nine and substitute the following:

Water for flushing will be furnished at no cost to the Contractor in accordance with the applicable provisions of Section 5.13.

Sidewalk shall be cleaned by hand brooming in conjunction with water if necessary.

New Section

Section 58–CHAIN LINK FENCE

New Section

Section 58-1 DESCRIPTION

Chain link fence and wire fence of the types specified shall be constructed at the locations shown on the plans or where directed by the Engineer, and shall conform to these specifications and the Standard Plans. (File No. 857-78)

Chain link fence shall be of diamond woven wire mesh mounted on steel posts.

Metal gates shall consist of a metal frame or frames covered with wire mesh.

New Section

Section 58-2 MATERIALS

New Section

Section 58-2.01 CHAIN LINK FENCE AND GATES

New Section

Section 58-2.01A General

All material used in the construction of the fence shall be new. Iron or steel material shall be galvanized. Imperfectly galvanized material, or material upon which serious abrasions of galvanizing occur, will not be acceptable.

Posts, braces, top rails and gate frames shall be galvanized in accordance with the requirements of ASTM Designation A 120 or A 123 except that the requirements for adherence of zinc coating in paragraph 9 (b) of said Designation A 123 shall not apply. Fittings, attachments and hardware shall be galvanized in accordance with the requirements of ASTM Designation A 153. Other materials shall be galvanized as specified hereinafter.

The base material for the manufacture of steel pipes used for posts, braces, top rails and gate frames shall conform to the requirements of ASTM Designation A 53. The base material for the manufacture of steel H columns shall be good commercial quality weldable steel meeting the requirements of ASTM Designation A 7, except that the allowable maximum carbon content shall be 0.50 percent (.50%).

New Section

Section 58-2.01B Posts

Line posts shall be 1.95 inches x 2.25 inches hot-dip galvanized H column with a minimum weight of 4.0 pounds per linear foot, or two (2) inch nominal diameter hot-dip galvanized pipe with a nominal weight of 3.65 pounds per linear foot.

A tolerance of minus four per cent (4%) on the weight per linear foot of individual posts will be permitted provided that any three (3) posts selected at random from the stock proposed for use on the project have an average weight meeting the minimum specified above.

Gate posts shall be three and one-half (3-1/2) inches nominal diameter hot-dip galvanized pipe with nominal weight of nine and one-tenth (9.1) pounds per linear foot.

End, corner and pull posts (braced line posts) shall be two and one-half (2-1/2) inches nominal diameter hot-dip galvanized pipe with nominal weight of 5.79 pounds per linear foot.

All posts shall be fitted with an approved top so designed as to fit securely over the post and carry the top rail or cable. The base of the top fitting shall carry an apron around the outside of the post.

New Section

Section 58-2.01C Top Rails

Top rails shall be hot-dip galvanized pipe one and one-fourth (1-1/4) inch nominal diameter, nominal weight 2.27 pounds per linear foot, or one and one-half inch by one and five-sixth inch (1-1/2" x 1-5/6") H column, minimum weight two (2.0) pounds per linear foot. Couplings shall be outside sleeve type and at least seven (7) inches long.

New Section

Section 58-2.01D Cable

Top tension cable shall be three-eighths (3/8) inch diameter hot-dip galvanized seven (7) strand steel cable conforming to the requirements of ASTM Designation A 122, Common Grade. Galvanizing shall be Class A.

New Section

Section 58-2.01E Cable Attachments

All cable attachments shall be hot-dip galvanized steel unless otherwise specified. Shoulder eye bolts shall be five-eighths (5/8) inch diameter and of sufficient length to fasten to the type of posts used. Turnbuckles shall be of the shackle end type, one-half (1/2) inch diameter, with standard takeup to six (6) inches and provided with three-eighths (3/8) inch diameter pins. Thimbles shall be light weight wire rope thimbles for use with three-eighths (3/8) inch diameter cable. Wire rope clips shall have a U-bolt diameter of seven-sixteenth (7/16) inch for use with three-eighths (3/8) inch diameter cable. Anchor shackles shall be three-eighths (3/8) inch diameter with a minimum distance between eyes of eleven-sixteenth (11/16) inch and a pin diameter of seven-sixteenth (7/16) inch. Seizing shall be sixteen (16) gage galvanized annealed iron wire.

New Section

Section 58-2.01F Braces and Truss Rods

Compression braces shall be hot-dip galvanized material of the same type and size as the top rail. Tension truss rods shall be three-eighths (3/8) inch round galvanized rods with drop forged turnbuckles, or other approved type of adjustment.

New Section

Section 58-2.01G Fittings

Fittings shall be hot-dip galvanized malleable cast iron or pressed steel. Fittings for any particular fence shall be those furnished by the manufacturer of the fence.

New Section

Section 58-2.01H Chain Link Fence Fabric

Chain link fence fabric shall consist of eleven (11) gage wire (0.120 inch in diameter) for fences under sixty (60) inches in height (Type No. 2), or nine (9) gage wire (0.148 inch in diameter) for fences sixty (60) inches or over in height (Type No. 1)

The wire may be of aluminum alloy complying with the Aluminum Association requirements for alloy 6061-T94 or it may be iron or steel wire which shall meet all of the requirements of ASTM Designation A 392. Galvanizing shall be Class 1 and shall be done after weaving.

The wire shall be woven into approximately two (2) inch diamond mesh.

The width of the fabric shall be shown on the plans.

Chain link fence fabric shall be finished at top and bottom as shown on the plans, either with a "twisted and barbed" selvage or "knuckled selvage." Barbing shall be done by cutting the wire on the bias.

New Section

Section 58-2.01J Tie Wire

Tie wire shall be nine (9) gage aluminum wire or nine (9) gage galvanized wire meeting the requirements of ASTM Designation A 116. Galvanizing shall be Class 1.

New Section

Section 58-2.01K Chain Link Gates

Gate frames shall be constructed of not less than one and one-half (1-1/2) inch nominal diameter hot-dip galvanized pipe with nominal weight of 2.72 pounds per linear foot. The corners of the gate frame shall be fastened together and reinforced with a malleable iron fitting designed for the purpose, or they may be welded. Welding shall conform to the requirements of Section 112-3.33.

Cross trussing shall be three-eighths (3/8) inch galvanized iron adjustable rods.

Chain link fence fabric for filling the gate frame shall meet the requirements hereinbefore specified for chain link fence.

Each gate shall be furnished complete with necessary hinges, latch, and drop bar locking device designed for the type of gate posts and gate used on the project.

Gates with frames constructed of steel sections other than the pipe specified above and fabricated in such a manner as to form a gate of equal or better rigidity, may be used provided they are approved by the Engineer.

New Section

Section 58-3 CONSTRUCTION

New Section

Section 58-3.01 CHAIN LINK FENCE AND GATES

New Section

Section 58-3.01A Posts

Posts shall be spaced at not more than ten (10) foot intervals. All intervals shall be measured center to center of posts. In general, in determining the post spacing, measurement will be made parallel to the slope of the existing ground and all posts shall be placed in a vertical position except where designated otherwise by the Engineer.

All posts on Type No. 1 fence, and the end posts, anchor line posts and pull posts on Type No. 2 fence shall be set in concrete Class C to the dimensions shown on the plans. All concrete footings shall be crowned so as to shed water. Line posts, except anchor line posts, on Type No. 2 fence shall be set in undisturbed earth either by driving or drilling. Driving shall be accomplished in such a manner as not to damage the post. Any voids around the post shall be backfilled with suitable material and thoroughly tamped.

Where solid rock is encountered without an overburden of soil, line posts shall be set a minimum depth of fourteen (14) inches, and end, corner, gate and pull posts a minimum of twenty (20) inches into the solid rock. The holes shall have a minimum width one (1) inch greater than the largest dimension of the post section to be set. The posts shall be cut before installation to lengths which will give the required length of post above ground, or if the Contractor so selects he may use an even length of post set at greater depth into the solid rock.

After the post is set and plumbed the hole shall be filled with grout consisting of one (1) part portland cement and three (3) parts clean, well graded sand. The grout shall be thoroughly worked into the hole so as to leave no voids. The grout shall be crowned to carry water from the post. Where posts are set in the above manner, concrete footings will not be required.

Where solid rock is covered by an overburden of soil or loose rock, the posts shall be set to the full depth shown on the plans unless the penetration into solid rock reaches the minimum depths specified above, in which case the depth of penetration may be terminated. Concrete footings shall be constructed from the solid rock to the top of the ground on Type No. 1 fence and on end, pull and anchor line posts on Type No. 2 fence. Grouting will be required on the portion of the post in solid rock.

"Pull posts" as used in these specifications shall be heavy weight line posts braced to adjacent line posts in the manner shown on the Standard Plan, and spaced at one-thousand (1,000) foot maximum intervals for Type No. 1 fence and at five hundred (500) foot maximum intervals for Type No. 2 fence.

End, gate, and end pull posts shall be braced to the adjacent line post, and corner and pull posts to the two adjacent line posts in the manner shown on the Standard Plan. Changes in line of thirty (30) degrees or more shall be considered as corners.

New Section

Section 58-3.01B Top Rail

Top rails shall pass through the ornamental tops of the line posts, forming a continuous brace from end to end of each stretch of fence. Lengths of top rail shall be joined by sleeve type couplings. Top rails shall be securely fastened to terminal posts by pressed steel fittings.

New Section

Section 58-3.01C Top Tension Cable

Top tension cable shall pass through the ornamental top of the line posts. One continuous length of cable shall be used between pull posts. The cable shall pass through the pull post top and down to the base of the next line post where it shall be attached to the base of the line post with a turnbuckle in the manner shown on the Standard Plan. Sufficient tension shall be applied to the cable to allow a maximum sag of one-fourth (1/4) inch between posts after the chain link mesh has been attached to the cable. The Contractor shall provide temporary bracing on pull posts when applying tension to one length of cable at a time, to prevent undue stresses in the pull post.

After tension has been applied to the cables, a wire rope clip shall be placed around both cables, one on each side of the pull posts, and the clips securely tightened. Clips shall be placed as close to the posts as possible to minimize the deflection of the post if one of the cables should be parted.

The cable shall be fastened to the top of the end pull post with an eye bolt through the post and a turnbuckle connecting the eye bolt to the cable. The end pull post shall be braced to the bottom of the end post with a short length of cable attached as shown on the Standard Plan. A length of cable shall connect the end pull post and the end post at the top and shall be connected to the posts as shown on the Standard Plan.

Eye bolts shall have a shoulder on the eye end and shall be provided with a nut and lock washer. Where the eye bolt is to be installed through a pipe section, two (2) lead washers and one (1) steel washer shall also be provided. A lead washer shall be placed against the shoulder of the eye, and a lead washer backed by the steel washer placed between the pipe and lock washer and the nut tightened sufficiently to seal the hole in the pipe.

A galvanized iron strap one-fourth (1/4) inch in thickness by two (2) inches in width, formed as shown on the Standard Plan, shall be provided for the attachment of eye bolts to the base of the H column post in order to take the strain of the cable tension off the web of the H column.

All holes drilled in the post sections shall be cleaned and painted as hereinafter specified for welded areas on gates before the eye bolts are installed.

The ends of all cables shall be seized with annealed iron wire passed around the end of cable and the line cable as shown on the Standard Plan. The seizing shall be at least one (1) inch in width.

New Section

Section 58-3.01D Chain Link Fabric

Chain link fabric on Type No. 1 fence shall be placed on the face of the post away from the highway, and on Type No. 2 fence on the face of the posts designated by the Engineer, except that on curves the fabric of both types of fence shall be placed on the face of the post which is on the outside of the curve.

The chain link fabric on Type No. 1 fence shall be placed approximately one (1) inch above the ground and on a straight grade between posts by excavating high points of ground. Filling of depressions will be permitted only upon approval of the Engineer. The fabric on Type No. 2 fence shall be placed a maximum of twelve (12) inches above the ground.

The fabric shall be stretched taut and securely fastened to the posts. Fastening to end, gate, corner, and pull posts shall be with stretcher bars and fabric bands spaced at one (1) foot intervals. The fabric shall be cut and each span attached independently at all pull and corner posts. Fastening to line posts shall be with tie wire, metal bands or other approved method, attached at fourteen (14) inch intervals. The top edge of the fabric shall be fastened to the top rail with tie wires spaced at eighteen (18) inch intervals, or to the top tension cable with tie wires placed at two foot six-inch (2'–6") intervals.

Rolls of wire fabric shall be joined by weaving a single strand into the ends of the rolls to form a continuous mesh.

New Section

Section 58-3.01E Chain Link Gates

Chain link fabric shall be fastened to the end bars of the gate frame by stretcher bars and fabric bands, and to the top and bottom bars of the gate frames by tie wires in the same manner as specified hereinbefore for the chain link fence fabric, or by other standard methods if approved by the Engineer.

Welded connections on gate frames where the spelter coating has been burned shall be thoroughly cleaned by wire brushing and all traces of the welding flux and loose or cracked spelter removed. The clean areas shall then be painted with two (2) coats of zinc oxide-zinc dust paint compounded in a sutiable vehicle in the ratio of one (1) part zinc oxide to four (4) parts zinc dust by weight.

The drop bar locking device for the metal gates shall be provided with a twelve (12) inch round by eighteen (18) inch deep footing of Class C concrete, crowned at the top and provided with a hole to receive the locking bar. The depth of the penetration of the locking bar into the footing shall be as specified by the manufacturer of the locking device.

New Section

Section 58-3.01F Cement Concrete Mowing Strip

The bottom of the fence shall be provided with a cement concrete mowing strip in accordance with the cross section detail as shown on the plan. The cement concrete mowing strip shall be centered on the fence. Concrete shall be "Class 5 (3/4)" and shall be placed on a subgrade which has been thoroughly compacted. Prior to placing the concrete, the subgrade and forms shall be thoroughly wetted.

The concrete mowing strip may be poured after the completion of concrete bases forming a neat continuous slab surface. A one-quarter (1/4) inch through expansion joint shall be placed in the slab opposite each post.

The surface of the concrete shall be troweled smooth with a steel trowel. Edges shall be edged to a radius of one-quarter (1/4) inch. Concrete shall be cured in accordance with Section 39-3.20.

New Section

Section 58-4 MEASUREMENT

Chain link fence will be measured by linear foot of completed fence, exclusive of openings.

Measurement of the cement concrete mowing strip shall be the actual length constructed measured on the slope.

New Section

Section 58-5 PAYMENT

Payment will be made for such of the following bid items as are included and shown in any particular contract:

1. "Chain Link Fence Type No. 1," per linear foot.
2. "Chain Link Fence Type No. 2," per linear foot.
3. "Double 14' Chain Link Gate," per each.
4. "Double 20' Chain Link Gate," per each.
5. "Cement Concrete Mowing Strip," per linear foot.

Payment for the various items specified above shall be full compensation for furnishing all labor, materials, tools and equipment necessary or incidental to the construction of the complete fence, gates, including excavation, backfilling, tamping, concrete footings, miscellaneous hardware, smoothing the irregularities of the ground at the fence site, clearing the line for the fence, and disposing of all debris to the satisfaction of the Engineer.

Page 89 Section 60-1 DESCRIPTION

Pipe used in sanitary sewer and storm drain construction, unless otherwise specified, shall be of cement concrete, vitrified clay, cast iron or asbestos cement. Culvert pipe, unless otherwise specified, shall be concrete. All sanitary sewer and storm drain pipe shall have flexible gasketed joints unless otherwise specified.

Page 89 Section 60-3.01B Concrete Pipe, Reinforced

The final paragraph shall be amended to read as follows:

"Both bells and spigots shall be reinforced in pipe thirty inches (30") or more in diameter and the spigot ends shall have a groove to contain an O-ring type solid rubber gasket."

Page 89 Section 60-3.01E1 Bituminous Coated Paved Invert Metal Pipe

The words "paved invert" shall be deleted from the first line of the first paragraph.

Part B. Thickness of coating shall be amended by deleting the second sentence.

New Section

Section 60-3.01E1A Bituminous Coated Paved Invert Galvanized Corrugated Steel Pipe

Bituminous coated paved invert galvanized corrugated steel pipe shall conform to requirements of Section 60-3.01E1 and, in addition, an additional bituminous material shall be added to the bottom quarter of the circumference, or as otherwise specified to form a smooth pavement with a minimum thickness of one-eighth inch (1/8") above the crests of the corrugations.

Page 90 Section 60-3.02A Flexible Gasketed Joints

First sentence in the fourth paragraph shall be amended to read as follows:

"Gaskets used with corrugated metal pipe with bands of the 'Angle-Lug,' 'Rod and Lug' or 'U-Bolt' types shall be made of three-eighths inch (3/8") thick by six inch (6") minimum width closed cell synthetic sponge rubber per ASTM Designation D1056, grade SCE-43L, fabricated in the form of a cylinder with a diameter of approximately ten per cent (10%) less than the nominal pipe size."

Add the following paragraph after paragraph five:

"Gaskets used with Type No. 4 bands shall be O-ring gaskets of material meeting ASTM C443 of thirteen-sixteenth (13/16) inch minimum cross sectional diameter. The gaskets, if specified, are to be placed in the first annular groove at the pipe ends."

Page 90 Section 60-3.02B1 Coupling Bands for Corrugated Galvanized Steel Pipe

Add the following item No. 4.

4. The type of bands described as "Type No. 4 band" shall be fabricated sixteen (16) gage galvanized steel bands which mesh into the second annular corrugated from the end of each pipe section. The bands shall be at least ten (10) inches wide. The gaskets shall be as described in Section 60-3.02A, if required. The band shall lap on itself at its longitudinal joints (or joints if 2-piece), and shall be tightened by bar and strap connectors. Two one-half (1/2) inch diameter bolts are required per connector. The bars shall be anchored to the band by fourteen (14) gage tension straps spot welded or arc welded to the band.

Page 91 Section 61-1 DESCRIPTION

Trench excavation and backfill shall include all excavation, back-filling, disposal of surplus and unsuitable material, and all other work incidental to the construction of trenches, except rock excavation including any additional excavation which may be required for manholes or other structures forming a part of the pipe line and not otherwise classified as "Structure Excavation."

Page 91 Section 61-2 CLASSIFICATION

This section shall be deleted.

Page 91 Section 61-2.01 TRENCH EXCAVATION AND BACKFILL, CLASS A

This section shall be deleted.

Page 91 Section 61-2.02 TRENCH EXCAVATION AND BACKFILL, CLASS B

This section shall be deleted.

Page 91 Section 61-2.03 TRENCH EXCAVATION AND BACKFILL, CLASS C

Title shall read:

"TRENCH EXCAVATION AND BACKFILL IN SOLID ROCK"

Solid Rock Excavation shall cover the removal and disposal of solid rock, i.e. ledge rock that requires systematic drilling and blasting for its removal and also boulders exceeding one-half cubic yard in volume. All ledge rock, boulders or stones shall be removed to provide a minimum clearance of six inches (6") under the pipe.

Hard pan, hard clay or glacial till will not be classified as solid rock excavation. Sandstone, siltstone, shale or other sedimentary rocks which are soft, weathered or extensively fissured will not be classified as solid rock excavation. Soft rock is defined as one which has a modulus of elasticity of less than 200,000 psi or unconfined compressive strength at field moisture content of less than 2,000 psi.

All materials removed shall be replaced with satisfactory waste materials from adjacent trenches or from imported bedding or backfill, as determined by the Engineer. All costs for backfilling including the use of select material if required shall be considered as incidental to this item.

Page 91 Section 61-2.04 TRENCH EXCAVATION AND BACKFILL, CLASS D

This section shall be deleted.

Page 92 Section 61-3.01 EXCAVATION

The first sentence in paragraph three shall be amended as follows:

"In unimproved areas trenches must be of sufficient width to permit proper jointing of the pipe and backfilling of material along the sides of the pipe."

After the third paragraph, the following shall be added:

"Wherever a trench is excavated in paved roadway, sidewalk, or other improved area, a vertical trench section will be required with the maximum trench width at the surface of the ground not to exceed the width called for below the crown of the pipe as specified above. If the Contractor exceeds this width, he will be required to pay for any additional select backfill material, if required, and any additional surface improvements which are not covered by Section 52-2.01.

Page 92 Section 61-3.03B Classification of Bedding

Bedding for sewer and drain pipes shall be three classes as shown on Standard Plan No. 177. Class B bedding shall be placed, unless otherwise provided in the special provisions or directed by the Engineer.

Where unauthorized excavation occurs below that required for Class B bedding in accordance with the standard plan and it does not exceed six inches (6") more than required for Class B bedding the Contractor may replace the unauthorized excavation at his expense with Class B bedding material in lieu of foundation material as specified in Section 61-3.03D.

Page 92 Section 61-3.03B2 Class B Bedding

Class B bedding for pipe shall conform to the cross section details shown on Standard Plan No. 177. The bottom of the trench as excavated shall be graded properly to provide a uniform depth of bedding material below the outside diameter of the pipe.

The unit contract price per linear foot for Class B bedding shall be full compensation for furnishing all labor, equipment, and material necessary to place the Class B bedding as required on the plans or directed by the Engineer.

Page 92 Section 61-3.03B3 Class C Bedding

Class C bedding shall meet the requirements outlined for Class B bedding except that bedding material need be placed only to approximately the horizontal diameter of the pipe.

Page 92 Section 61-3.03B4 Class D Bedding

This section shall be deleted.

Page 92 Section 61-3.03D Foundation Material and Placement

Where unsuitable native foundation materials have been removed from excavations, an approved replacement foundation material shall be placed to the required thickness. Such foundation material shall conform to Type No. 2 or Type No. 7 mineral aggregate of Section 20, as called for on the plans, the special provisions, or as determined by the Engineer.

Where foundation material is required, all costs for its procurements and placement, including removal and disposal of the unsuitable material, shall be included in the unit contract price per cubic yard for "Foundation Material."

Page 93 Section 61-3.05 BACKFILLING

The first paragraph shall be deleted.

Page 93 Section 61-3.06 COMPACTION OF TRENCH BACKFILL

This section shall be amended to read as follows:

"The trench backfill shall be compacted to 95% of the maximum density as determined by the "Compaction Control Test" specified in Section 13-3.10E5. Compaction shall be obtained by means of water settling, mechanical tamper, vibrating compactor or other methods approved by the Owner.

All costs incurred in performing the required compaction of trench backfill shall be included in the unit contract price "per linear foot" for each class, size and type of pipe."

Page 93 Section 61-3.06A Water Settling

This section shall be amended to read as follows:

"Water settling, when permitted, shall be performed as specified in Section 16, entitled Water."

Page 93 Section 61-3.06C Vibratory Compactor

Delete all of the section except the first sentence in the first paragraph.

Page 93 Section 61-3.07 BANK RUN GRAVEL FOR TRENCH BACKFILL

Wherever a trench is excavated in paved roadway, sidewalk, or other area where minor settlement would be detrimental and where the native excavated material is not suitable for compaction as backfill, the trench shall be backfilled with Type No. 17 mineral aggregate as specified in Section 20, except that one hundred per cent (100%) of the material shall pass the three (3) inch square opening.

Payment for Type No. 17 backfill will be made at the unit bid contract price. Payment for mechanical tamping as required will be made as provided in Section 61-3.06.

New Section

Section 61-3.10 PRESERVATION OF EXISTING TREES

Preservation of existing trees shall be perfromed in accordance with the provisions of Section 12-4.

Page 94 Section 61-4.01B Measurement By the Cubic Yard

The final paragraph shall be amended to read as follows:

"The unit contract price per cubic yard for 'Trench Excavation and Backfill (pipe size),' shall be full compensation for all labor, materials, tools and equipment required to excavate and backfill the trench in accordance with the plans and specifications. The unit contract price does not, however, include the work and expense of bank run gravel, foundation material and bedding material."

Page 94 Section 61-4.04 FOUNDATION MATERIAL

Foundation material will be measured by the cubic yard, as determined by cross section based on the trench width as specified in Section 61-4.01B.

Page 94 Section 61-4.06 MECHANICAL TAMPERS AND VIBRATORY COMPACTORS

This section shall be delted.

Page 94 Section 61-5 PAYMENT

Bid Item No. 1 through 8 shall be deleted.

Bid Item Nos. 9 and 10 shall be replaced by the following:

"Bank Run Gravel for Trench Backfill, Type No. ( )," per cubic yard.

Bid Item Nos. 11, 12 and 13 shall be replaced by the following:

"Pipe Bedding (Class) (Size) Pipe," per linear foot.

Bid Item Nos. 15, 16, 17, 18 and 19 shall be deleted.

Add the following bid item:

"Trench Excavation and Backfill in Solid Rock," per cubic yard.

Page 95 Section 62-3.08 PIPE JOINTING

The first paragraph shall be amended to read as follows:

"All sanitary sewer and storm sewer pipe shall have flexible gasketed joints unless otherwise specified."

Page 95 Section 62-3.08B Gasket Type Joints

The first paragraph shall be revised as follows:

"All extensions, additions and revisions of the sewer system, unless otherwise indicated in the special provisions, shall be made with sewer pipe jointed by means of a flexible gasket which shall be fabricated and installed in accordance with the specifications that follow. The material specifications of all approved flexible gasketing shall be in accordance with Section 60 of the special provisions."

Page 97 Section 62-3.10E Payment for Tests

The second and third paragraphs shall be deleted.

Page 99 Section 63-2.08 CAST IRON FRAMES AND COVERS

The following paragraph shall be added after the second paragraph:

"A bituminous coating equivalent to Preservation Paint Co. No. 25-22 Black Dip Paint shall be applied to all surfaces. The Owner shall have the right to require inspection and approval of all castings prior to painting."

Page 100 Section 63-2.09A Base Sections

Reference to Type 1 in line one of first paragraph shall be deleted.

Page 100 Section 63-2.10 SHOP FABRICATED CORRUGATED METAL MANHOLES

Delete the designation "Type V" in line one.

Page 100 Section 63-2.11 MONOLITHIC CONCRETE MANHOLES

Monolithic concrete manholes that differ from the inside dimensional requirements of the standard plans shall be submitted to the Engineer by the Contractor for approval prior to their construction. Walls of monolithic concrete manholes shall be six inches (6") minimum thickness, and the base shall be eight inches (8") minimum thickness, and steps shall be spaced twelve inches (12").

Page 101 Section 63-3.02 BEDDING

Manholes constructed with precast base sections, unless otherwise provided in the special provisions or directed by the Engineer, shall be placed to grade upon a four inch (4") thickness of Type No. 7 mineral aggregate of Section 20, mixed with four (4) sacks of portland cement per cubic yard of mineral aggregate, with sufficient water added to form a stabilized layer. The mixed material shall be placed across the entire width of the manhole base excavation and leveled so as to provide bearing contact with the entire bottom area of the precast base section.

Page 101 Section 63-3.06 BLOCK OR BRICK MANHOLES

The last sentence in the first paragraph shall be amended as follows:

"Ladder rungs shall be as specified for precast manholes."

Page 101 Section 63-3.07A Type 1-A

(Title shall read: MANHOLE WITH PRECAST BASE)

Page 101 Section 63-3.07B Type 1-B and Types IV-A-1 and IV-B-1

(Title shall read: MANHOLE WITH CAST-IN-PLACE BASE SECTIONS)

Page 101 Section 63-3.08 MONOLITHIC CONCRETE MANHOLES

Delete the words "Type III" in the first sentence.

Page 101 Section 63-3.09 SHOP FABRICATED CORRUGATED METAL MANHOLES

Delete the designation "Type V" in the first sentence.

Page 102 Section 63-3.13 BACKFILL

The first sentence shall be amended as follows:

"Backfill around the manhole shall be hand-placed and tamped with select or native material up to an elevation of six inches (6") above the crown of all entering pipes."

Page 102 Section 63-5 PAYMENT

The third line in the first paragraph shall be amended as follows:

"excess of ten (10) feet, plus a unit price per linear foot" etc.

Page 102 Section 64-2.02 TRAPS

Traps shall be constructed in accordance with the standard drawing.

Page 102 Section 64-3 CONSTRUCTION DETAILS

Delete the last paragraph.

Page 103 Section 64-4.01 CATCH BASIN AND INLET

Measurement for catch basins and inlets will be made on a per each basis for the type of catch basin or inlet constructed, as shown on the standard plans.

No measurement for excavation and backfill for catch basins will be made. All costs therefor shall be incidental to their construction, except where classified backfill materials are authorized. Such items shall be paid for by appropriate bid items in the proposal, as described in other sections pertaining thereto.

No measurement for excavation for inlets will be made; all costs therefor shall be incidental to the construction.

Page 103 Section 64-5 PAYMENT

Payment will be made for such of the following bid items as are included in the proposal:

1. "Catch Basin Type( )," per each
2. "Inlets Type ( )," per each.
3. "Mineral Aggregate for Trench Backfill, Type No. ( )," per cubic yard.

The above unit bid contract prices shall be payment in full for all labor, materials, tools, and any other work necessary of whatsoever nature it may be to complete the work item as described in accordance with the construction plans and these standard specifications.

Bid items for catch basins shall not include pipe connections outside the catch basin walls for connecting inlets

located entirely away and separate from the catch basin, or the pipe connection between the catch basin outlet casting spigot and the sewer to which it is connected. These items will be paid for as separate contract bid items in the proposal, as specified in Section 69.

Page 103 Section 64-5.01 CATCH BASIN AND INLET
This section shall be deleted.

Page 103 Section 64-5.02 TRAP
This section shall be deleted.

Page 105 Section 66-1 DESCRIPTION
A side sewer is considered to be that portion of a sewer line that will be constructed between a main sewer line and a residence or other buildings in which the disposal originates. It does not include any of the internal piping or connecting appurtenances, the installations of which is controlled by a municipal code, ordinance or regulation.
The general requirements for construction of sewers in other sections of these specifications shall apply for construction of side sewers unless they are inconsistent with any of the provisions of this particular section and the specifications shall apply alike to all side sewers on public rights of way and private property.

Page 105 Section 66-3.02 EXCAVATION AND BACKFILL
Excavation and backfilling for side sewers shall conform to the requirements of Section 61, excepting that no backfill in excess of that required to hold the pipe in true alignment shall be placed prior to the inspection.

Page 106 Section 66-3.06A Inspection
Side sewer shali meet the inspection and leakage requirements specified in Section 62, except as noted for backfill in Section 66-3.02.

Page 106 Section 66-3.07A Requirements
Item No. 1 shall be amended as follows:

1. Pipe and Connections. Side sewer shall be not less than six inches (6") in diameter unless otherwise specified. No roof drain, area drain, or subsurface drain shall be connected to a side sewer which is connected to a separate main line sanitary sewer.

Add Item No. 5 and 6:

5. Minimum Cover. For minimum cover above side sewer pipe in streets, refer to Section 66-3.03A and Standard Plan No. 176.

6. Under circumstances where sanitary sewers must cross over the watermain, the sewer pipe shall be of cast iron pipe with no joint within nine (9) feet of the watermain.

Page 106 Section 66-5 PAYMENT
Delete Bid Item No. 3.

New Section

Section 69-3.01A CONNECTIONS TO EXISTING STORM AND SANITARY SEWERS.

When making a connection to an existing storm or santiary sewer line, or manhole the Contractor shall excavate and expose the existing facility where shown on the plan. In the event there is no existing tee or wye, the actual graft or insertion of a tee or other connection shall be made by the Owner.

Page 107 Section 69-4 MEASUREMENT
Delete the final paragraph.

Page 107 Section 69-5 PAYMENT
Delete Bid Item No. 4.

Page 109 Section 72-2.02 ASBESTOS-CEMENT PIPE
This section shall be deleted.

Page 110 Section 73-1.04 GRADE AND ALIGNMENT
The second sentence in paragraph one shall read as follows:

"Trenches for the pipe shall be opened in accordance with the lines and grades given or to the standard depth of cover provided in Standard Plan 209."

Page 111 Section 73-2.07 COMPACTION OF BACKFILL
The following two paragraphs shall be added:

"The backfill shall be compacted to ninety-five percent (95%) of the maximum density determined by the 'Compaction Control Test' specified in Section 13-3.10E5.
Compacting of the trench backfill shall be considered incidental to the construction and all costs in connection therewith shall be included in the unit price bid for the pipe in place."

Page 111 Section 73-2.07C Source of Water for Water-Settling
Source of water will depend upon local conditions and shall be as provided in Section 16 of City of Seattle special provisions.

Page 111 Section 73-2.08 BANK RUN GRAVEL FOR TRENCH BACKFILL
Paragraph one shall read as follows:

"Selected backfill material shall consist of bank run gravel as specified in Section 20 excepting, however, that one hundred percent (100%) of the material shall pass the two and one-half (2-1/2) inch square opening."

Page 111 Section 73-3.02 TRENCH EXCAVATION AND BACKFILL
Full compensation for "Trench Excavation and Backfill" shall be regarded as included in the unit prices bid per linear foot for "Watermain" of the various sizes and classes as listed in the proposal of the contract, except where bank run gravel is required.

Page 112 Section 73-3.06 BANK RUN GRAVEL FOR TRENCH BACKFILL
The following shall be added:
"Payment for mechanical tamping or other approved method of compaction shall be included in the unit price bid for the material in place."
"Payment shall also include the cost of disposing of the unsuitable material."

Page 112 Section 74-2.03 LAYING OF PIPE ON CURVES
Delete reference to asbestos-cement pipe.

Page 113 Section 74-2.07A Couplings for Asbestos Cement Pipe
This section shall be deleted.

Page 114 Section 74-2.07B Cleaning and Assembling Joint
This section shall be deleted.

Page 114 Section 74-207C Short Lengths and Field Cut Joints
This section shall be deleted.

Page 114 Section 74-2.08B Coupled Pipe 4-Inch and Larger
Next to last paragraph shall read as follows:

"Pipe for outdoor service above ground shall be protected with one coat primer and one coat coal tar paint approved by the Engineer."

Page 115 Section 74-2.12 FIELD TESTS
Paragraph three shall read as follows:

"The Contractor shall furnish all labor and equipment necessary to make the tests except for pressure gauges which will be furnished by the Engineer."
Paragraph four shall be deleted.

Page 115 Section 74-2.13A Flushing
Sections of pipe to be disinfected shall first be flushed to remove any solids or contaminated material that may have become lodged in the pipe. If no hydrant is installed at the end of the main, then a tap shall be provided large enough to develop a velocity of at least 2.5 fps. in the main.
Taps required for chlorination or flushing purposes will be furnished and installed by the Owner. Where dry calcium hypochlorite is used for disinfection of the pipe, flushing shall be done after disinfection.
The Contractor shall be responsible for disposal of treated water flushed from mains and shall neutralize the waste water for protection of acquatic life in the receiving water before disposal into any natural drainage channel. However, disposal may be made to any available sanitary sewer provided the rate of disposal will not overload the sewer.

Page 117 Section 74-3.02 PAYMENT FOR WATERMAIN AND WATER SERVICE CONNECTIONS
Paragraph three shall be amended to read as follows:

"Full compensation for excavation and backfilling of trenches, pipeline, accessories such as hydrants, hydrant connections, gate valves, etc., shall be regarded as included in the item or items necessitating construction in such manner."

Page 117 Section 74-3.05 TRENCH EXCAVATION AND BACKFILL FOR WATER SERVICE CONNECTIONS
This section shall be deleted.

Page 117 Section 74-4.01 MEASUREMENT OF WATERMAINS FOR UNIT PRICE PAYMENT
This section shall be deleted.

Page 117 Section 74-4.02 PAYMENT FOR WATERMAIN CONSTRUCTION UNDER UNIT PRICE METHOD
This section shall be deleted.

Page 117 Section 75-1 DESCRIPTION
The valves shall be suitable for ordinary waterworks service intended to be installed in a normal position on buried pipe lines for water distribution systems.
The minimum requirements for all gate valves shall, in design, material, and workmanship, conform to the standards of the AWWA C500-61. All materials used in the manufacture of waterworks gate valves shall conform to the AWWA Standards designed for each material listed. All gate valve operating stems shall be equipped with a two-inch (2") operating nut. All gate valves shall open counter-clockwise.
The Owner will accept only gate valves of the following manufacturers as approved by the Board of Standardization conforming to these specifications:

Rensselair, Stockham, Ludlow, Iowa, M&H, Darling, Crane, Pacific States, RP&C, Mueller and Kennedy in sizes twelve (12) inch or less, and any other approved by the Board of Standardization prior to the date of contract.

Page 117 Section 75-2.04 GATE VALVES 16-INCH AND LARGER

Second sentence in paragraph two shall read as follows:

"The valves shall be equipped with by-passes and gate valves of the sizes adopted as standard in the specifications of AWWA."

The following shall be added:

"Prior to shipment, three certified copies of performance tests, complying with Section 25 of the AWWA C-500 Standard Specifications shall be submitted to the Engineer."

"The Contractor shall furnish, to the Engineer for approval, shop drawings of double square bottom gate valves."

Page 119 Section 77-2.05 HYDRANT DIMENSIONS

The dimensions and details shall be as shown on the standard drawings.

The second sentence in the last paragraph shall read as follows:

"Caps shall be threaded to fit the corresponding nozzles and shall be fitted with suitable resilient neoprene gaskets for positive water tightness under test pressure."

Page 120 Section 77-2.07 SHACKLING LUGS

Lugs for harnessing the hydrant to the main in the street shall be provided as shown on the standard drawing.

Page 120 Section 77-2.10 PAINTING

Paragraph two shall be amended to read as follows:

"The outside of the hydrant above the finished ground line after backfilling is completed, shall be thoroughly cleaned and then painted with one (1) coat of Hydrant Green paint, Farwest Paint Co., X-158, or equal."

Page 120 Section 77-3.01 SETTING HYDRANTS

Paragraph one shall be amended to read as follows:

"Where shown on the plans or where designated by the Engineer, hydrants shall be installed in accordance with the details shown on Standard Plan 180 or 180A."

The following shall be added:

"Joints for the hydrant setting 180A shall be as manufactured by Pacific Water Works Supply Co., Inc., or approved equal, and shall be installed in accordance with the manufacturer's specifications."

"All costs in connection with furnishing and installing the joints shall be included in the unit price bid for "Hydrants," including the cost of providing the grooves in the pipe. The pipe connection shall be measured and paid for as provided in Section 77-4."

Page 120 Section 77-3.02 HYDRANT CONNECTIONS

Hydrant connections shall consist of a section of six (6) inch cast iron pipe between the main tee fitting and the hub and flange fitting, as shown on the standard plans.

Page 120 Section 77-3.02A Shackle Rods

Paragraph one shall be amended as follows:

"Hydrant connections shall be shackled with steel rods of size, shape and arrangements as indicated in the detail drawing for hydrant settings shown on Standard Plan No. 180."

Page 120 Section 77-3.04 MOVING EXISTING HYDRANTS

In the next to the last sentence, the following words shall be deleted: "For Hydrant Setting Type A and Type B."

Page 120 Section 77-4.01 PAYMENT FOR FIRE HYDRANTS

Payment will be made at the unit contract price per each for "Hydrant, Six (6) Inch Connection" which shall be full compensation for the hydrant in place. As incidental thereto, the Contractor shall include in his unit contract prices of the hydrants all costs of every kind for six (6) inch auxiliary gate valves, castings, shackles, tie rods, pier blocks, coarse gravel, painting, and other items required for the complete installation of the hydrant as specified, excepting however, that the six (6) inch cast iron pipe connecting the hub and flange casting to the main will be paid for at the unit contract price per linear foot for "Watermains."

Page 133 Section 105-2.01 METAL RETAINING WALLS

Add the following:

"Metal retaining walls may be plain or fiber bonded as specified."

Page 135 Section 106-2.05 PRESTRESSED HOLLOW CONCRETE PILING

Under "Pile Lengths," the following shall be added:

"Payment will be made at the unit contract price per cubic yard for "Concrete Class AX," and per pound for "Steel Reinforcing Bars," which prices shall be full compensation for the cast-in-place section of the pile."

Also add the following at the end of the section:

Payment

"Payment will be made at the unit contract price per linear foot for "Furnishing Prestressed Hollow Concrete Piling (size)" which price will be full compensation for the piling at the site. This price shall include the furnishing of all metal reinforcement, tools, equipment, labor, prestressing cable and all other items and expenses necessary for casting and transporting the piles as shown and noted on the plans and as outlined herein."

Page 139 Section 106-3.04A2 MANDREL DRIVEN STEEL SHELLS

In the third line of the last paragraph, the word "prevent" shall read "permit."

Page 150 Section 111-2.01 DEFORMED STEEL BARS

The first paragraph shall be amended to read as follows:

Deformed steel bars for concrete reinforcement shall conform to the requirements of ASTM Designation A 615; Grade as designated on the plans. Bars shall be made by the open-hearth process, the electric furnace process, or the oxygen process.

Page 152 Section 111-3.06C Welding

The fourth paragraph shall be amended to read as follows:

Preheat and interpass temperatures of A615 Steel shall not be less than 250°F.

Page 163 Section 116-2.02B Formula No. A-1-57 Red Lead Shop Coat for Steel

This section shall be amended to read as follows:

Formula A-7-70 Shop Coat for Steel

Basic lead silico chromate	54.7	parts
Red iron oxide	3.4	"
Pigment suspending agent	0.34	"
Raw linseed oil	11.3	"
Alkyd resin varnish	21.8	"
Mineral Spirits	7.79	"
Cobalt naphthenate (6% Co)	0.075	"
Manganese naphthenate (6% Mn)	0.15	"
Zirconium dry (6% Zr)	0.50	"
Antiskin agent	0.068	"
Weight per gallon (minimum)	13.4	lbs.
Grind (Minimum)	4	
Drying time (for test purposes)	18	hrs.
Viscosity at 70° F	82± 3	K.U.
Sag index	6	

Test requirements: Prior to manufacture.

Page 164 Section 116-2.02H Formula B-1-57 First Field Coat for Steel (Red Lead)

This section shall be amended to read as follows:

Formula B-7-70 First Field Coat for Steel

Basic lead silico chromate	54.7	parts
Red iron oxide	3.0	"
Lampblack	0.37	"
Pigment suspending agent	0.34	"
Raw linseed oil	11.3	"
Alkyd resin varnish	21.8	"
Mineral spirits	7.79	"
Cobalt naphthenate (6% Co)	0.075	"
Manganese naphthenate (6% Mn)	0.15	"
Zirconium dry (6% Zr)	0.50	"
Antiskin agent	0.068	"
Weight per gallon (min)	13.4	lbs.
Grind (minimum)	4	
Drying time (for test purposes)	18	hrs.
Viscosity at 70°F	82± 3	K.U.
Sag index	6	

Test requirements: Prior to manufacture.

DIVISION VI–STANDARD FORMS

The following standard forms contained in the 1969 publication of Standard Specifications for Municipal Public Works Construction are void.

Page 184 Standard Form No. 8
Page 185 Standard Form No. 9
Page 186 Standard Form No. 10
Page 187 Standard Form No. 11
Page 188 Standard Form No. 12

DIVISION VII–STANDARD PLANS (DRAWINGS)

All Standard Plans and Drawings contained in the 1969 publication of Standard Specifications for Municipal Public Works Construction are superseded by City of Seattle Standard Plans and Drawings found in City of Seattle Standard Plans, 1970 supplement.