N. ALBERG

CITY OF SEATTLE

Supplement

to

Standard Specifications

for

Municipal Public Works Construction

1976

and

Standard Plans
Tenth Edition

CITY OF SEATTLE

SUPPLEMENT

To

STANDARD SPECIFICATIONS

For

MUNICIPAL PUBLIC WORKS CONSTRUCTION

WASHINGTON STATE CHAPTER

AMERICAN PUBLIC WORKS ASSOCIATION

1975

Prepared By The City Engineer

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EXAMINED AND APPROVED BY THE

BOARD OF PUBLIC WORKS, APRIL 7, 1976

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Distributed by the City Engineer
910 Municipal Building
Seattle, Washington 98104
Price $3.00

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, 1975.

For every City of Seattle sponsored public works project, the supplements contained herein, the 1975 publication of Standard Specifications for Municipal Public Works Construction, the laws of the State of Washington, the Charter and ordinances of the City of Seattle, the project proposal, the project plans and the City of Seattle Traffic Control Manual for In-Street Work 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.

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DIVISION I - GENERAL REQUIREMENTS AND COVENANTS

DIV. I GENERAL REQUIREMENTS AND COVENANTS

Section 1-1.02 ENGINEER

Amend entire section as follows:

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.

Section 1-1.03 CONSULTING ENGINEER

Amend title to read:

Section 1-1.03 CONSULTANT

Amend as follows:

In the first line of the paragraph, change word "engineer" to consultant.

Section 1-1.06 SPECIAL PROVISIONS

Add the following sentence at the end of the section:

"The term general conditions are synonymous to special provisions."

Section 1-1.12 CONTRACT

Amend the second paragraph as follows:

The contract documents are complementary and what is called for by one shall be as binding as if called for by all. In case of discrepancies, specifications shall govern over plans. Supplemental specifications shall govern over standard specifications and special provisions shall govern over specifications and plans. Where appearing on plans or drawings, dimensions denoted by actual figures shall govern. In case of any ambiguity or dispute over interpretation of the provisions of the contract the decision of the Owner shall be followed by the contractor.

Section 1-1.18 WORK

In the third line of the paragraph after the word "thereto" add the words "shall be."

Section 1-1.20 LIQUIDATED DAMAGES

In the third line of the paragraph after the word "each" add the word "working."

Section 2-1.02 EXAMINATION OF PLANS, SPECIFICATIONS SITE OF WORK

After the 5th paragraph, add the following:

Disturbed soil samples are obtained using the Standard Penetration procedure in which a 2-inch O.D. split-spoon or Gow sampler is driven a distance of 18 inches by means of a 140 lb. hammer dropping 30 inches. Unless otherwise noted, the samples are taken at 5-foot intervals as shown on the log of each boring. Blow counts are taken for three successive 6-inch intervals and the number of blows required to drive the sampler the final 12 inches is recorded as the standard penetration resistance.

Section 2-1.03 INTERPRETATION OF CONTRACT DOCUMENTS

In the seventh line of the second paragraph after the figure "(5)" add the word "working."

Section 2-1.10 SUPPLEMENTAL PROPOSALS

Delete the 2nd paragraph in its entirety and substitute the following:

Where the proposal calls for alternates, additive and/or deduct, the Board of Public Works reserves the right to award the contract on the basis of the base bid and alternates, plus or minus, to determine the lowest bidder.

Section 2-1.13 REJECTION OF PROPOSAL

Following the sentence, in parenthesis, change Section 2-1.10 to read Section 2-1.06.

NEW SECTION

2-1.15A PREVENTION OF ENVIRONMENTAL POLLUTION AND PRESERVATION OF PUBLIC NATURAL RESOURCES

A. AIR POLLUTION

The Contractor shall not cause or allow the discharge of particulate matter, the emission of any air contaminants or odor bearing gases in excess of the limits specified under Regulation I of the Puget Sound Air Pollution Control Agency, Article 9 - Emission Standards.

The Contractor shall maintain air quality within the National Emission Standards for Hazardous Air Pollutants. Air pollutants being defined as that to which no ambient air quality standard is applicable and which in the judgment of the Administrator of the Environmental Protection Agency Clean Air Act may cause, or contribute to, an increase in mortality or an increase in serious irreversible or incapaciting reversible illness.

B. WATER POLLUTION CONTROL

"It shall be unlawful for any person to throw, drain, run or otherwise discharge into any of the waters of this state or to cause, permit or suffer to be thrown, run, drained, allowed to seep or otherwise be discharged into such waters any organic or inorganic matter that shall cause or tend to cause pollution of such waters". (RCW 90.48.080)

Section 29 of Ordinance 97016 stipulates the various types of discharge prohibited in the public sewer system or any drainage ditch in the City of Seattle.

In order to effectively control water pollution, erosion and related damage, the contractor will be expected to perform work of a temporary nature. This work might include but is not limited to the following water quality considerations:

Diversion of Uncontaminated Water: Storm water shall be diverted around the project to prevent pick up of silt. This may be accomplished by pumping, improvising ditches, lining channels or by placing metal, plastic or concrete gravity pipe.

Intercepting Ground Water: Surfacing ground water shall be intercepted and routed around construction site to prevent silt erosion by the use of gravel trenches, French drain tiles, well points, or intercepter ditch.

Turbid Water Treatment Before Discharge: Turbid water from the construction site shall be treated by settling before being discharged into a stream or other State waters. Turbidity may be removed by the use of lagoons or holding ponds, settling basins, overflow weir, polymer water treatment, discharging to ground surface, by percolation, evaporation or by passing through gravel, sand or fiber filters.

Filling: Only select sands and gravels shall be placed in direct contact with water.

Erosion Control: Erosion control shall be exercised by minimizing exposed areas and slopes. Plastic sheet cover shall be placed over exposed ground area to protect from rain erosion. Other alternative methods for erosion control under certain situations include netting, mulching with binder and seeding.

Chlorine Residual from Watermain Testing or Cleaning: Water containing chlorine residual from watermain testing and cleaning shall not be discharged directly into storm drains, streams or State waters. Chlorine water may be discharged into sanitary sewer or disposed on land for percolation. Chlorine residual may be reduced chemically with reducing agent such as sodium thiosulphate. Water shall be continually tested for chlorine residual.

Vehicle and Equipment Washing: Water used for washing vehicles and equipment shall not be allowed to enter storm drains, streams or other State waters unless separation of petroleum products, fresh concrete products or other deleterious material is accomplished prior to discharge. Detergent solution may be discharged into sanitary sewer or allowed to be held on the ground for percolation. Recirculation system for detergent washing is recommended. Steam cleaning units shall provide a device for oil separation.

Oil and Chemical Storage and Handling: Handling and storage of oil and chemicals shall not be made adjacent to waterway. The storage shall be made in dike tanks and barrels with drip pans provided under dispensing area. Shut-off and lock valves shall be provided on tanks. Shut-off nozzles shall be provided on hoses. Oil and chemicals shall be dispensed only during daylight hours unless the dispensing area is properly lighted. No disposal of waste shall be allowed on oil and chemical spills. Fencing shall be provided around oil storage. Locks shall be provided on valves, pumps and tanks.

In the event a sanitary sewer line is encountered and repair or relocation work is required, the Contractor shall provide blocking and sealing of the sanitary sewer line. Sanitary sewer flow shall be pumped out, collected and hauled by tank truck or pumped directly to a sanitary system manhole for discharge. The existing sewers shall be maintained by the contractor without interruption of service by the use of temporary sewer bypass. In addition, the excavated materials adjacent to the ruptured sanitary sewer line shall be removed from the project and deposited into refuse trucks for haul to a sanitary fill site. Equipment or tools in contact with the above materials shall be washed by pressure water lines and the attendant wash water discharged into a sanitary sewer line for transmission to a sewage treatment plant.

The Contractor shall also be responsible for temporary water pollution control measures at work areas (eg. equipment, storage sites, etc.) not located within the construction area.

Should rutting and erosion occur the Contractor shall be responsible for restoring damaged areas and for clean-up of eroded material including that in ditches and culverts.

In the event that work is suspended for an extended period of time, the contractor shall take all action necessary to control erosion, pollution and runoff during the shut down period.

Both State and Federal statutes are applicable to oil spills occurring in the State's navigable and interstate waters. Violations of the State and Federal laws are subject to penalty from both entities.

Federal statutes on oil spills were enacted under the Federal Water Pollution Control Act Amendments of 1972. A copy of these laws may be obtained by contacting: Office of Public Affairs, Region 10, U.S. Environmental Protection Agency, 1200 Sixth Avenue, Seattle, Washington 98101, Telephone 206/442-1203.

Some of the State statutes which apply to the spillage of oil and any other petroleum related product into the waters of Washington State are: RCW 90.48.315, 90.43.320, 90.48.325, and 90.48.330.

Some statutes on oil spills covering liability of the Contractor, penalty for violation, liability in damages for injury or death of fish, animals or vegetation are: RCW 90.48.335, 90.48.336, 90.48.338, 90.48.350, 90.48.910, and 90.48.142.

It shall be the responsibility of the Contractor to report all incidents of oil spills or contaminated discharges into State waters and immediately notify the City of Seattle Inspector, together with the following authorities: U.S. Coast Guard (Seattle) 284-2361 or 624-2902. If for any reason this agency cannot be reached, call the Department of Ecology at 885-1900.

In the event of a sanitary sewage spill, notification should also be made to the following: Seattle-King County Health Department, 583-2065; Metro, 284-5100.

Water Quality criteria for the State of Washington can be obtained by contacting: Department of Ecology, 15345 Northeast 36th Street, Redmond, Washington, 98052, Telephone 206/885-1900.

C. NOISE POLLUTION

The contractor shall take all reasonable measures for the suppression of noise resulting from his operations. Mobile engine driven cranes, loaders and similar material handling equipment; engines used in stationary service for standby power; and air compressors for high and low pressure service sahll be equipped with exhaust and air intake silencers designed for the maximum degree of silencing. The type of silencer required is that for use in critical noise problem locations such as high density residential, hotel and hospital areas.

The contractor shall conduct his performance of contract work consistent with the applicable regulations set forth in the Washington Administrative Code pursuant to the Washington Noise Control Act of 1974 and with applicable local noise control regulations.

D. LIABILITY

The contractor shall be liable for the payment of all fines and penalties resulting from his failure to comply with the Federal, State and local pollution control regulations set forth herein even though a City Inspector is on the job at the time of the violation.

All costs involved with these preventative measures are to be considered as incidental to the construction of this project and shall be included in the bid price for the various items which comprise this contract.

If the successful bidder must undertake additional work due to the enactment of new or the amendment of existing statutes, ordinances, rules or regulations occurring after the submission of the successful bid, the awarding agency shall issue a change order setting forth the additional work that must be undertaken, which shall not invalidate the contract. The cost of such a change order to the awarding agency shall be determined in accordance with the provisions of the contract for change orders or force accounts or, if no such provision is set forth in the contract, then the cost to the awarding agency shall be the contractor's costs for wages, labor costs other than wages, wage taxes, materials, equipment rentals, insurance and subcontracts attributable to the additional activity plus a reasonable sum for overhead and profit: PROVIDED, That such additional costs to undertake work not specified in the contract documents shall not be approved unless written authorization is given the successful bidder prior to his undertaking such additional activity.

Payment for all costs incurred in performing additional work as may be required will be made in accordance with Sections 9.03 or 9.04.

In the event there is a delay on a project and the delay is caused by litigation which exceeds six months, the contractor may then elect to terminate the contract and to delete the completion of the contract and receive payment in proportion to the amount of the work completed plus the cost of delay.

Section 3-1.01A BIDDING ERRORS

In the fourth line of the second paragraph after the words "The job then," change the word "shall" to "may."

Add the following paragraph:

The Owner will assess damages against the contractor, which will be considered on a case by case basis.

Section 3-1.05 FAILURE TO EXECUTE CONTRACT

Amend the entire section as follows:

Upon failure to enter into the contract and furnish the necessary bond within the time specified in Section 3-1.03, the proposal guaranty which accompanied the bid, whether in form of a bond, check or cash deposit, shall be forfeited to the Owner and the Owner shall re-advertise for such work.

Section 3-1.07B PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE

(change third paragraph to read)

Bodily injury liability coverage with limits of not less than $500,000 for bodily injury, including accidental death, any one person, and subject to that limit for each person, in an amount not less than $1,000,000 for each accident; and property damage coverage in an amount of not less than $100,000 for each accident.

Section 4-1.03 INCREASE OR DECREASE OF WORK

Delete the first sentence in the second paragraph.

Section 4-1.04 EXTRA WORK

Change the second paragraph to read as follows:

Extra work which involves a major change in the nature or scope of the contract must have the written consent of the surety on the bond.

Section 4-1.07 SALVAGE

Amend entire section as follows:

If indicated on the plans or in the special provisions, all castings, pipe and any other material taken from any of the discarded facilities shall be carefully salvaged and delivered to the Owner in good condition and in such order of storage as the Engineer may direct; otherwise, such material shall belong to the Contractor and be removed by him from the site.

Section 5-1.01 AUTHORITY OF ENGINEER

Add the following paragraph:

"The Engineer shall decide any and all questions which may arise as to the quality or acceptability of materials furnished and work performed and as to the rate of progress of the work, and all questions as to acceptable fulfillment and performance of the contract on the part of the Contractor and as to compensation. The decision of the Engineer in such matters shall be final."

Section 5-1.01B

This section shall be deleted.

Section 5-1.02 AUTHORITY AND DUTIES OF INSPECTORS

Amend first sentence in the second paragraph as follows:

An assistant will not be authorized to approve or accept any portion of the work constructed contrary to the plans and specifications, nor to issue any instructions contrary to the plans and specifications.

Section 5-1.03 COOPERATION BY CONTRACTOR

Add the following after the second sentence:

"Should the prime contractor elect not to appear on the job when only subcontract work is being performed the contractor shall, by letter to the engineer, delegate this responsibility to one person in each subcontractor firm. Delegation of such authority will not relieve the prime contractor the responsibility for all work and material furnished, nor shall this release the contractor of his obligations or liability under the contract and the contractor's bond."

New Section

Section 5-1.09A PROVISIONS FOR WATER COURSES, SEWERS AND DRAINS

The Contractor shall provide for the flow of all water courses, including streams, ditches, drains and combined sewers, intercepted during the progress of the work and shall completely restore the same in as good condition as he found them or shall make such final provisions for them as the City Engineer may direct. The Contractor shall not obstruct the gutter of any street but shall use all proper measures to provide for the free passage of surface water.

The Contractor shall make provisions to take care of all surplus water, mud, silt, slickings or other run-off pumped from excavations or resulting from sluicing or other operations, and shall be responsible for any damage or whatever nature resulting from his failure to provide for the adequate control of run-off.

No direct payment shall be allowed for the above work. Payment for the cost thereof shall be included in the prices bid for the various items which comprise the improvement.

Section 5-1.10 DAMAGE TO EXISTING IMPROVEMENTS AND UTILITIES

Add the Following:

In cases where a storm drain is to be located within a planting strip, the contractor shall be responsible to protect the existing curb, gutter and sidewalk from damage. If the planting strip is not sufficiently wide so that the tracks of the trenching machine will clear the curb and sidewalk, the contractor will be required to use timber pads of sufficient thickness, or other means approved by the Engineer, to protect the improvements.

The Contractor shall be required to demonstrate to the Engineer, the method or procedure he will follow in order to protect these existing improvements adequately before proceeding with construction of storm drains in the planting strip.

Section 5-1.12 MAINTENANCE OF WORK AFTER ACCEPTANCE

Delete the last sentence in the second and fourth paragraphs.

Section 5-1.15 VERBAL AGREEMENTS

Change title to read:

Section 5-1.15 ORAL AGREEMENTS

In the first and fifth lines of the paragraph, change the word "verbal" to "oral."

New Section

Section 6-1.01A OFFSHORE ITEMS CERTIFICATE

In accordance with Section 2, Chapter 139 Laws of Washington, 1967, the Contractor shall furnish the Owner a certificate setting forth the nature and source of offshore items in excess of Two Thousand Five Hundred Dollars ($2,500) which have been utilized in the performance of the contract. Offshore items shall mean those items procured from sources beyond the territorial boundaries of the United States including Alaska and Hawaii.

This certificate shall be delivered to the Owner upon completion of the contract. The retained percentage specified in Section 9-1.05 will be withheld until this certificate of offshore items is received by the Owner.

Section 6-1.02 SAMPLES AND TESTS

In the fifth paragraph, change USASI to ANSI, American National Standards Institute.

Section 6-1.03 SPECIAL METHODS OF TEST

Add the following to the end of the first paragraph:

"and from the Materials Laboratory of the Seattle Engineering Department."

Section 7-1.03 ACCIDENT PREVENTION

In the ninth line of the first paragraph after the words "General Safety Standards" add the following: "and other safety standards and rules applicable to the work,"

Amend the second paragraph as follows:

The work shall be performed in strict conformance with the requirements of the Occupational Safety and Health Act (OSHA) and the Washington Industrial Safety

and Health Act of 1973 (WISHA). In cases of conflict, the more stringent requirement shall apply.

Section 7-1.09 STATE SALES TAX

Add the following paragraph:

Items of the proposal indicated as not being subject to State Sales Tax as defined in Rule 171 of the State Revenue Act of 1935 shall have included in the prices bid, Business and Occupation Tax, Use Tax and Retail Sales Tax on all materials, equipment and supplies used or consumed in the performance of those items of the contract.

Section 7-1.15 MAINTENANCE OF TRAFFIC

Sections 7-1.15A, 7-1.15B, 7-1.15C, 7-1.15E, 7-1.15G, 7-1.15H, and 7-1.15I shall be deleted.

The following shall be added:

(The Contractor shall conduct all work and operations in street areas in accordance with the City of Seattle "Traffic Control Manual for In Street Work.")

Section 7-1.15D EXISTING TRAFFIC SIGNS AND FACILITIES

The first sentence shall be amended as follows:

The Contractor will make all necessary adjustments to traffic signals and traffic signal activators.

Amend the last sentence as follows:

Upon completion of the project, the Contractor will reset all such signs in their permanent location.

The following shall be added:

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, unless otherwise specified in the special provisions.

Section 7-1.15F LOCAL AND EMERGENCY TRAFFIC

The 2nd paragraph shall be deleted.

In the 3rd paragraph, delete the word "reasonable" in the 2nd and 4th lines.

Add the following:

Ingress to and egress from all properties shall be maintained as near as possible to that which existed prior to the commencement of construction. The contractor shall notify all property owners and/or tenants, where street and alley closures

or restrictions may interfere with their access, at least twenty-four (24) hours in advance for residential property and at least forty-eight (48) hours in advance for commercial property.

The contractor shall coordinate his activities with all disposal firms operating in the project area so that refuse disposal service will not be interrupted at any time.

Section 7-1.15J DUST CONTROL

Delete the 2nd sentence and add the following:

Dust control 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.

New Section

Section 7-1.15K STREET CLEANING

Contractors working dump trucks and/or other equipment on paved streets and roadways will be required to clean said streets if required by the City Engineer during the day at the conclusion of each day's operation.

If the streets are not properly cleaned and/or the condition of the excavation warrants, the City Engineer shall direct the Contractor to provide facilities to remove clay or other deposits from the tires or between wheels before trucks and/or other equipment will be allowed to travel over paved streets.

Any violation of the above requirements shall be sufficient ground for the City Engineer to order the streets in question cleaned by others, the cost of the operation to be paid by the Contractor.

All costs in connection with the above work shall be considered as incidental to the construction and payment shall be considered to be included in the prices bid for the various items comprising the improvement.

Section 7-1.16 TRAFFIC CONTROL WITHIN AND ABUTTING THE PROJECT

This section shall be deleted.

Section 7-1.17 TRAFFIC CONTROL SIGNS

This section shall be deleted.

Section 7-1.18 PROCEDURE FOR PROCURING SIGNS

This section shall be deleted.

Note: All deleted preceding sections pertaining to traffic are covered in the 1976 Edition of the City of Seattle Traffic Control Manual for In-Street Work. All costs for conducting work in accordance with this Manual shall be included in the unit bid prices in the proposal unless otherwise provided in the Special Provisions.

Section 7-1.22 SANITARY PROVISIONS

Add the following sentence:

Such accommodation shall also be made available for use by City employees assigned to the improvement.

Section 8-1.01 CONSTRUCTION SCHEDULE

Amend entire section as follows:

"After being awarded the contract, the Contractor shall prepare and submit to the Engineer for approval a progress schedule in form and substance satisfactory to the Engineer showing the proposed dates of commencement and completion of the various items of work and which will guarantee completion of the project within the time required.

When specified in the Special Provisions, a tentative progress schedule shall be submitted prior to the preconstruction conference and the final progress schedule shall be submitted within two weeks after the preconstruction conference. In all other cases, the progress schedule shall be submitted within two weeks after the date of the notice to proceed.

When specified in the Special Provisions, the progress schedule shall be in Critical Path or P.E.R.T. form.

The Contractor shall submit to the Owner for approval revised supplementary progress schedules conforming with the times of construction and delays which may have been encountered in the performance of the work. No payments will be made to the Contractor on any estimate until a progress schedule or supplemental revised progress schedule has been approved by the Owner.

The approval of the progress schedules by the Owner shall not relieve the Contractor of responsibility or waive or modify any provisions or requirements of the contract.

Adequate equipment and forces shall be made available by the Contractor to carry out the schedule to completion of the contract within the time specified in the Special Provisions."

Section 8-1.02 NOTICE TO PROCEED AND PROSECUTION OF THE WORK

Add the following paragraph:

"The Contractor shall also be responsible for securing all labor necessary for completion of the project within the time allowed. A shortage of labor in any job classification involved in the work will not be considered an unavoidable delay for which an extension of time will be allowed."

Section 8-1.04 SUSPENSION OF WORK FOR AN EXTENDED PERIOD OF TIME

Amend the first paragraph as follows:

"In the event that a suspension of work is ordered in writing by the Engineer for an extended period of time due to unsuitable weather, the work shall be placed in such condition that no damage will occur during the suspension period and all

roadways through the construction area that may have been affected by the work shall be placed in a safe, smooth and unobstructed condition for use by public traffic with access to abutting property. If, in the opinion of the Engineer the work interrupted by the suspension could have been performed prior to occurrence of the unsuitable weather had the Contractor diligently prosecuted the work when conditions were suitable, the cost of placing the work in the above conditions shall be borne by the Contractor. If, in the opinion of the Engineer, the work could not have been performed prior to the occurrence of the unsuitable weather, the cost of placing the work in the above conditions will be borne by the Owner as extra work in accordance with Section 9-1.03. If the Contractor fails to do the work as above specified, the Owner will perform such work and if the expense thereof is determined to be the Contractor's, the Owner will deduct the cost thereof from any moneys due or to become due the Contractor."

Delete second subparagraph in its entirety.

Section 8-1.05 CONTRACT TIME

Delete 2nd sentence of the first paragraph.

Beginning with the 3rd sentence in paragraph two, the remainder of the paragraph shall be amended to read as follows:

Legal holidays shall be: January 1st; February 12th, Lincoln's Birthday; the third Monday of February, being celebrated as the anniversary of the birth of George Washington; May 30th, Memorial Day; July 4th; Labor Day; the second Monday of October, to be known as Columbus Day; November 11th, Veterans' Day; Thanksgiving Day; Christmas Day and the day on which any general election is held throughout the state. Whenever any legal holiday falls on a Sunday, the following Monday shall be a legal holiday. Whenever any holiday falls on a Saturday, the preceding Friday shall be a legal holiday for City employees only and are working days with respect to the contract.

Delete the fourth paragraph.

Section 8-1.07 UNAVOIDABLE DELAYS

Add the following after the third paragraph:

"The contract period allowed for completion of the project has been extended sufficiently to allow for periods of normal inclement weather which should be expected during the contract period and during which periods work should be anticipated to be performed. If the contractor elects not to perform work during periods of normal inclement weather, he will not be entitled to an extension of time for periods of non-work.

"Abnormal inclement weather such as prolonged periods of snow, sub-freezing temperatures, above average rainfall or other unusual weather disturbances during which periods the Contractor elects not to perform work will be declared 'unworkable days due to weather conditions' which shall be an unavoidable delay for which he will be entitled to an extension of time."

Add the following at the end of the last paragraph:

"except as provided otherwise above."

Section 8-1.09 ASSIGNMENT OF CONTRACT AND SUBLETTING

Add the following at the end of the first paragraph:

Unless otherwise provided, the list of subcontractors for which the Contractor requests the Owners approval, is required within ten (10) days after award of contract.

A Contractor wishing to make changes in subcontractors during the progress of the work shall submit the request to the Owner for approval.

Section 8-1.12 OVERTIME WORK BY OWNER EMPLOYEES

Amend entire section to read as follows:

"If the contractor desires to perform contractual work on holidays, Saturdays and Sundays, and before 6:00 a.m. and after 7:00 p.m. Monday thru Friday, he shall apply to the Engineer's office in writing for permission to work such times. The Engineer is required to forward, except for Saturday work during normal hours, such requests with his recommendation to the Board of Public Works for their approval.

If the Board of Public Works determines that such work is essential, permission will be granted for performance of the work. The Engineer will determine whether Saturday work is essential, and if so determined, permission will be granted. Permission is not required to perform contractual work before or after the established normal straight time working hours between 6:00 a.m. and 7:00 p.m. Monday through Friday. The normal straight time eight (8) hour working period shall be established prior to commencing work on the project.

Engineering salaries during normal straight time working hours of City employees working on holidays occurring Monday through Friday will be paid entirely by the Owner.

The premium portion of Engineering salaries of employees of the City department charged with administation of the project and other City Departments working Saturdays, Sundays and other than normal straight time working hours Monday through Friday shall be borne by the Contractor. The premium portion shall consist of salaries in excess of normal straight time.

Salaries shall be at the rates established by the prevailing City Salary Ordinance. The costs of engineering salaries to be borne by the Contractor will be deducted from the Contractor's final payment estimate."

NEW SECTION

Section 9-1.02A MOBILIZATION

Mobilization shall consist of preparatory work and operations performed by the contractor, including, but not limited to, those necessary for the movement of his personnel, equipment, supplies and incidentals to the project site; for the establishment of his offices, buildings and other facilities necessary for work on the project; for premiums on bonds and insurance for the project, and for other work and operations which he must perform or costs he must incur before beginning production work on the various items on the project site. Mobilization

costs for major subcontracted work shall be considered to be included except when the Contractor can show by written pre-bid agreement with the subcontractor or by other acceptable evidence that these costs have been excluded.

Based on the lump sum contract price for "Mobilization," partial payments will be made as follows:

1. When 5% of the total original contract amount is earned from other bid items, 50% of the amount bid for mobilization, or 5% of the total original contract amount, whichever is the least, will be paid.

2. When 10% of the total original contract amount is earned from other bid items, 100% of the amount bid for mobilization or 10% of the total original contract amount, whichever is the least, will be paid.

3. Upon completion of all work on the project, payment of any amount bid for mobilization in excess of 10% of the total original contract amount will be paid.

Nothing herein shall be construed to limit or preclude partial payments otherwise provided by the contract.

Section 9-1.03 PAYMENT FOR EXTRA WORK

Add the following to this section:

"When extra work is performed and paid for by acceptable lump sum or mutually agreed prices, the Contractor or subcontractor actually performing the work will be limited to markups of 10% overhead plus 10% profit separately applied on direct costs of labor including employment taxes, fringe benefits and related labor costs on materials to be entered into the work, and on the ownership or rental costs of construction plant and equipment employed during the time of the extra work.

When extra work is performed by an approved subcontractor or a subcontractor to an approved subcontractor, each contractor superior to the subcontractor actually performing the work will be allowed in turn a percentage markup on the subordinate contractor's total cost including that contractor's markup based on the following schedule:

(a) On the first $10,000.00 of total cost (including markups) of extra work done by all subcontractors subordinate to the Contractor or a given subcontractor, and additional markup in the amount of 10% of the total cost including overhead and profit of the contractor performing the work will be allowed.

(b) When the accumulated total cost of extra work exceeds $10,000.00 including markups of all subcontractors subordinate to the Contractor or to a given subcontractor, an additional markup in the amount of 5% of the total cost including overhead and profit of the contractor performing the work will be allowed.

The above allowable markups shall cover bonding and insurance costs."

Section 9-1.05 PROGRESS PAYMENTS, FINAL PAYMENT, RETAINED PERCENTAGE

Amend the first two sentences of paragraph one 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 thirty (30) days after commencing work, and every thirty (30) days thereafter, if so entitled, for the duration of the construction and in accordance with the provisions of R.C.W. 60.28/010. These shall be based upon an approximate estimate of quantities of work completed and considered acceptable, multiplied by the unit prices or estimated percentages of lump sum prices established in the contract.

Chapter 38, 1st Extraordinary Session, 1970, Laws of Washington amending R.C.W. 60.28.010, .020 and .050 provides that at the option of the Contractor, (1) the retained percentage may be held in a fund by the public body until at least thirty (30) days following the final acceptance of the work, or (2) it may be placed in escrow with a bank or trust company by the public body until at least thirty (30) days following final acceptance.

Should the Contractor choose to adopt the above option (2), said Contractor shall, at the time he enters into a contract with the City, fully agree to the following stipulations on a form provided by the City and made a part of the contract for the work to be performed:

1. The Contractor assumes full responsibility to pay all costs which may accrue from escrow services and/or brokerage charges.

2. The Contractor further agrees to assume all risks in connection with the investment of said retained percentage in securities.

Retainage cannot be reduced for any reason below the five (5) percent minimum limit required by law.

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

Costs of materials, properly stored, protected and insured at the site of the work will be paid on monthly estimates as requested by the Contractor.

Delete Paragraph four.

Amend the last paragraph as follows:

Payment of the retained percentage shall be withheld for a period of thirty (30) days following the final acceptance by the Owner, and shall be paid the Contractor at the expiration of said thirty (30) days provided the following conditions are met.

a) An Offshore Items Certificate has been delivered to the Owner per Section 6-1.01A.

b) Releases have been obtained from the State Department of Labor and Industries, the State of Washington Employment Security Department, and all other departments and agencies having jurisdiction over the activities of the Contractor.

c) On contracts totaling more than Twenty Thousand Dollars ($20,000.00), a release has been obtained from the Washington State Tax Commission.

d) No claims, as provided by law, have been filed against the retained percentage.

In the event claims are filed, the Contractor shall be paid such retained percentages less an amount sufficient to pay any such claims, together with a sum sufficient to pay the cost of such action, and to cover attorney fees as determined by the Owner.

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DIVISION II - STREETS AND RELATED WORK

c) On contracts totaling more than Twenty Thousand Dollars ($20,000.00), a release has been obtained from the Washington State Tax Commission.

d) No claims, as provided by law, have been filed against the retained percentage.

In the event claims are filed, the Contractor shall be paid such retained percentages less an amount sufficient to pay any such claims, together with a sum sufficient to pay the cost of such action, and to cover attorney fees as determined by the Owner.

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DIVISION II - STREETS AND RELATED WORK

DIVISION II - STREETS AND RELATED CONSTRUCTION

Section 12-4 ORNAMENTAL AND DANGER TREES

Change title to read:

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 replaced 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.

Section 12-4.01 DESCRIPTION

This section shall be deleted.

Section 12-4.02 MEASUREMENT, ORNAMENTAL AND DANGER TREES

This section shall be deleted.

Section 12-4.03 PAYMENT

This section shall be deleted.

Section 13-1.01 CLASSIFICATION

Amend 1st paragraph to read as follows:

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.

Delete the 2nd paragraph.

Amend the 3rd paragraph to read as follows:

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. 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.

Delete paragraphs 5, 6 and 7.

Section 13-2.02C SEWERS AND APPURTENANCES

Amend 1st paragraph to read as follows:

In order to prevent the falling of earth or debris into sewer manholes in which construction work is being done, all existing manholes on grading and paving improvements shall be located and uncovered by hand work and a shield placed over the manhole channel. This shield shall remain in place until the grading or subgrading operation is completed. Within twenty-four (24) hours thereafter all earth or debris shall be carefully cleaned off and the shield removed. Special care shall be exercised to see that no earth or debris falls into the sewer channel. No direct payment shall be allowed for the above mentioned work. Payment for the cost thereof shall be included in the price bid for various items which comprise the improvement.

Section 13-3.10C EMBANKMENT CONSTRUCTION

1st sentence of the 4th paragraph, add "or below" after the work "above".
Also amend one-fourth (1/4") to read three-fourths (3/4").

Section 13-3.10E5 COMPACTION CONTROL TEST

Amend 1st paragraph as follows:

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

Amend 2nd paragraph as follows:

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.

Section 13-3.11 BORROW

Amend the 1st and 2nd paragraphs as follows:

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.

Paragraph three shall be deleted.

Section 13-3.12 STRIPPING QUARRIES AND PITS

This section shall be deleted.

Section 13-3.14 AERATION EQUIPMENT

This section shall be deleted.

Section 13-4 MEASUREMENT

Paragraph two shall read as follows:

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

Paragraph three shall be deleted.

Section 13-5 PAYMENT

Bid items 1, 4, 5, 6, 7, 8, 9, 10, 12, 14 and 17 shall be deleted.
Bid item 2 shall be amended to read as follows:

"Common Excavation," per cubic yard.

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 specified or as may be directed by the Engineer."

Paragraph three shall be deleted.

Paragraph eleven shall be deleted.

Paragraph twelve shall be deleted.

Paragraphs fourteen and fifteen shall be deleted.

Section 14 HAUL

This section shall be deleted in its entirety.

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."

Section 15-4 PAYMENT

Paragraph one, delete bid item No. 8.

Paragraph four shall be deleted.

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."

Section 16-2.01 WATER SUPPLY

Amend the first paragraph as follows:

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.

Delete the 2nd paragraph.

Section 16-2.02 REQUIREMENTS AND RESPONSIBILITY

Title shall be amended to read:

REGULATIONS FOR USE OF FIRE HYDRANTS

The entire section shall be amended as follows:

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 following 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 to be charged at the current rate.

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.

Section 16-3.03 WATER FOR SETTLING TRENCHES

This section shall be deleted in its entirety.

Section 16-4

This section shall be deleted.

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

Section 20 MINERAL AGGREGATES

Section 20-1 DESCRIPTION

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 6a.

Section 22 PRODUCTION FROM QUARRY AND PIT SITES

This section shall be deleted in its entirety.

Section 23-2.01 CRUSHED SURFACING

The 1st paragraph shall be amended to read as follows:

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.

The remaining paragraphs shall be deleted.

Section 23-2.02 BALLAST

The 1st and 2nd paragraphs shall be amended to read as follows:

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.

The remaining paragraphs shall be deleted.

Section 23-3.11 HOURS OF WORK

In the sixth line, after the word "contractor," add the following:

"obtains approval of the Owner for work conducted between the hours of 7:00 p.m. and 6:00 a.m. and"

Section 23-3.16D MAINTENANCE ROCK

This section shall be deleted.

NEW SECTION

Section 23-3.21 APPLICATION OF DUST PALLIATIVE

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

REQUIREMENTS FOR MINERAL AGGREGATES

Aggregate Type No.	Nature	Los Angeles Abrasion (Max.) Per	(Wet Sieving) 200	Sieve Analysis—Percent Passing By Weight: 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	6	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	.....	.....	.....	.....	.....	.....	.....	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	.....	.....	.....	.....	.....	1	...	.....	.....
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	.....	.....	.....	100	.....	.....	.....	.....	.....	..	...	.....	.....
8	Washed Gravel	30	0-1	.....	.....	.....	.....	5-20	.....	30-60	.....	.....	.....	.....	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	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	30	.....	.....
11	Sand Filler	...	0-15	.....	15-40	40-75	.....	90-100	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	..	40	.....
12	Pit Run Gravel	30	0-5	.....	.....	.....	0-8	.....	.....	.....	.....	.....	.....	.....	100	.....	.....	.....	.....	3	30	.....	.....
13	Pit Run Sandy Gravel	30	0-10	.....	.....	.....	.....	20-40	.....	.....	.....	.....	.....	.....	.....	100	.....	.....	.....	3	30	.....	.....
14	Ballast	30	0-9	.....	0-16	.....	.....	30-50	.....	.....	.....	.....	50-80	.....	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	.....	.....	100	.....	.....	.....	.....	.....	.....	.....	.....	..	...	.....	.....
17	Bank Run Gravel	...	0-5	.....	.....	.....	.....	25-75	.....	.....	.....	.....	.....	.....	.....	.....	.....	95-100	.....	..	...	.....	.....
18	Bank Run Gravel	...	0-10	.....	.....	.....	.....	25-75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..	...	.....	.....
‡•19	Bank Gravel (Class A)	...	0-5	.....	.....	.....	.....	25-75	.....	.....	.....	.....	.....	.....	.....	.....	.....	100	.....	..	....	50	1/3
‡•20	Bank Run Gravel (Class B)	...	0-10	.....	.....	.....	.....	25-75	.....	.....	.....	.....	.....	.....	.....	.....	.....	100	.....	..	....	30	2/3
••21	Crushed Gravel	30	.....	.....	.....	.....	.....	0-25	.....	.....	.....	45-70	85-100	.....	.....	100	.....	.....	.....	..	...	.....	.....
••22	Crushed Gravel	30	.....	.....	.....	.....	.....	0-25	.....	75-100	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.

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.

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."

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."

Section 24-2.01 SAND FILLER

The 2nd paragraph shall be amended as follows:

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

Section 24-2.02 CRUSHED FILLER

This section shall be amended as follows:

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.

Section 24-5 PAYMENT

Delete bid items No. 3 and No. 4.

Delete the 2nd paragraph.

Section 25-2 MATERIALS

This entire section shall be amended to read as follows:

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.

Section 25-5 PAYMENT

The last paragraph shall be deleted.

Section 26-2.01 CLASSES AND GRADING OF BANK RUN GRAVEL

This entire section shall be amended to read as follows:

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.

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

This entire section shall be amended to read as follows:

Bank run gravel furnished from sources provided by the Contractor, shall be produced from approved sources. 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 included by the Contractor in his unit contract price for "Bank Run Gravel, Class A or Class B."

Section 26-3.04 PIT OPERATIONS

This section shall be deleted.

Section 26-5 PAYMENT

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

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

Section 34-2.02A GENERAL REQUIREMENTS

In the 3rd paragraph delete the words "in accordance with the provisions of Section 22."

Section 34-2.02B TEST REQUIREMENTS

First line of the first table shall read as follows:

CLASS OF ASPHALT CONCRETE	B	G	D	E	F
% Fracture, size above U.S. No. 10	90	95	95	50	50

Add the following sentence:

Fractured aggregate shall have two or more mechanically fractured surfaces.

Section 34-2.02C GRADING OF MINERAL AGGREGATES

Add the following paragraph:

Requirements for mineral aggregates for asphalt concrete MC 250 and MC 800 shall be the same as for asphalt concrete Class B.

Section 34-2.03

Add the following paragraph:

Requirements for mineral aggregates for asphalt concrete MC 250 and MC 800 shall be the same as for asphalt concrete Class B.

For MC 250 and MC 800, the asphalt content shall be 4.0 to 5.0%.

Section 34-3.10 PRELEVELING FOR ASPHALT CONCRETE

Amend the 3rd paragraph as follows:

Add the words "Leveling Course" after "Asphalt Concrete Pavement Class...."

Section 34-3.12 JOINTS

The entire section shall be amended as follows:

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 nearly 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 of 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 (1-1/2) inches on either side of the joint. No painting shall be performed when the pavement is wet or damp.

Section 34-3.13 SURFACE SMOOTHNESS

The entire section shall be amended as follows:

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 (1/4) 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 (1/4) 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.

Section 34-3.20 TRAFFIC AND DETOURS

This section shall be amended as follows:

The maintenance of traffic and the handling and care of traffic signs shall meet the requirements outlined in the City of Seattle Traffic Control Manual for In Street Work or in the special provisions.

Section 34-5 MEASUREMENT AND PAYMENT

Amend bid item No. 3 by adding the words "or per ton."

Delete bid item No. 4 and insert the following:

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

Delete bid items 6, 7, 8 and 9.

Section 34-5.03 PRIME COAT AGGREGATE

In the first line in paragraph one, add "or per ton" after per cubic yard.

In the first line in paragraph four add "or by the ton" after the cubic yard.

Section 34-5.04 ASPHALT FOR TACK COAT

Delete this section and substitute the following:

Change title to read: ASPHLAT 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.

Section 34-5.06 MINERAL AGGREGATES IN STOCKPILE

This section shall be deleted.

Section 34-5.07 BLENDING SAND

This section shall be deleted.

Section 34-5.08 FURNISHING MINERAL FILLER

This section shall be deleted.

Section 34-5.09 WATER

This section shall be deleted.

Section 34-5.10 REMOVING EXISTING PAVEMENT

In the 5th line, delete the word "hereinbefore" and add the words "in Section 52" after specified.

Section 36-3.03 JOINTS

Change 10' intervals to 15' and add "or shall match existing transverse joints or cracks in existing pavement" at the end of first sentence.

At the end of the paragraph, add the following:

"Joints shall not be placed in conflict with curb dowels."

Section 37-2.02 CONCRETE AGGREGATES

Amend as follows:

Concrete aggregates shall be manufactured from sand and gravel.

Section 37-2.02C2 WEAR IN LOS ANGELES MACHINE

In the 3rd line of the paragraph, change 35 to 30.

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.

Section 37-2.13 JOINT-SEALANTS

At the end of the 1st paragraph, add the following:

"or the Materials Laboratory, Seattle Engineering Department, City Municipal Building, Seattle, Washington."

NEW SECTION

Section 37-3.04A COLORING CONCRETE

Cement concrete which is to be used to patch all existing cement concrete surfaces shall have added to it, at the time of mixing, a coloring agent which will produce a non-glare color satisfactory to the Engineer, and which shall be dry lamp black or approved equal in an amount not to exceed two (2) pounds per cubic yard of concrete.

All costs of furnishing and using a coloring agent shall be considered as incidental to the construction and shall be included in the bid prices of the various items comprising the project.

Section 37-3.06 CONSISTENCY OF CONCRETE

Add the following paragraphs:

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.

Section 37-3.08 READY MIXED CONCRETE

Fourth paragraph, Item No. 2 and the 1st paragraph under Item No. 3 shall be deleted.

NEW SECTION

Section 39-3.12A ROADWAY BALLAST

During periods of inclement weather the contractor shall furnish and place Type 2 material to protect the sub-grade prior to paving. This material is to be used only at the direction of the Engineer and is not intended as an aid to fine grading. Prior to placing the ballast the contractor shall remove and dispose of soft and unstable subgrade material. The ballast shall be compacted as specified in Section 15. Vibratory compactors will not be allowed.

This item will not be considered a major bid item.

Payment will be made at the price bid per ton for "Roadway Ballast," which shall be full compensation for furnishing and placing the material including removing and disposing of unsuitable material.

Measurement shall be by the ton at the point of loading. Duplicate copies of the weight bills shall be furnished the Engineer.

Section 39-3.18C SAWED CONTRACTION JOINTS

Add the following at the end of the 1st paragraph:

"Transverse joints shall be sawed at a maximum of sixty (60) foot intervals or such other spacing as directed by the Engineer, as soon as the cut can

be made without undue raveling of concrete. Intermediate joints shall be sawed thereafter."

Section 39-3.18D TRANSVERSE CONSTRUCTION JOINTS

In line 2 of paragraph 3, delete the words "extra concrete"

Section 39-3.18J LONGITUDINAL CONSTRUCTION JOINTS

2nd paragraph, 3rd line, after the words per linear foot add "for each edge,"

Section 39-3.20G EMULSIFIED ASPHALT

This section shall be deleted.

Section 39-3.22 CONCRETE PAVEMENT CONSTRUCTION IN SINGLE LANE

Title shall be amended to read as follows:

CONCRETE PAVEMENT CONSTRUCTION IN SINGLE, DOUBLE OR MULTIPLE LANES

The following shall be added to the first paragraph:

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 separate payment will be made for the thickened edge for 25-foot wide pavement, but the cost shall be included in the price bid for "Cement Concrete Pavement," per square yard.

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.

Section 39-3.23 CONCRETE BASE PAVEMENT

This section shall be amended as follows:

Item No. (2) Delete last sentence.

Item No. (3) Delete.

Item No. (4) Amend as follows:

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

Section 39-3.29 EXTRA CONCRETE FOR ALLEY APPROACH RAMP

The 2nd paragraph shall be amended to read as follows:

Payment for placing and finishing such cement concrete ramps above plan grade of alley pavement will be made at the unit price bid per cubic yard for "Extra Concrete for Alley Approach Ramp" for the additional thickness of concrete required for construction of such ramps. Measurement for payment shall be by the cubic yard for the actual amount of extra concrete so placed.

NEW SECTION

Section 39-3.30 CEMENT CONCRETE ALLEY PAVEMENT

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

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 Division V, Structural and Related Specifications.

NEW SECTION

Section 39-3.30B CURB FOR ALLEY PAVEMENTS

Where types of curb are required along the sides of alley pavement in accordance with the plans or as directed by the City Engineer, the curb shall be constructed complete upon the top of the alley pavement and will be paid for as "Cement Concrete Alley Curb, Type 108C" per linear foot.

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

Measurement for Payment of curb constructed with alley pavement shall be by the linear foot for the actual length of the curb constructed on top of the alley pavement slab. The unit contract price shall be full compensation for all labor, tools, equipment, materials and incidental work necessary to construct the curb complete in place on top of the alley pavement.

NEW SECTION

Section 39-3.31 CONCRETE UNDERPINNING

Where directed by the City Engineer, existing concrete foundations left above grade shall be supported with concrete underpinning. Concrete shall be Class 5(3/4).

Measurement and Payment: Payment shall be made at the price bid per cubic yard for "Concrete Underpinning," which will be full compensation for the concrete, forms, excavation and backfilling.

Measurement shall be of the actual amount placed as computed by the City Engineer.

Section 39-4 MEASUREMENT AND PAYMENT

Add the following bid items:

(7) "Type 104B Alley Pavement Edge Wall," per cubic yard.
(8) "Type 104.1 Alley Pavement Support Wall," per cubic yard.
(9) "Cement Concrete Alley Pavement, (class, thickness)" per square yard.
(10) "Concrete Underpinning," per cubic yard.

Section 39-4.03 STEEL REINFORCING BARS

Add the following at the end of the 1st paragraph:

Reinforcing steel bars shall be used to reinforce pavement around castings, as directed by the City Engineer. Reinforcing steel shall be one-half (1/2) inch round deformed billet steel bars according to ASTM Designation A 615 Grade 40.

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.

Section 40-3.01D STRIPPING FORMS AND FINISHING

Amend as follows:

2nd line in 2nd paragraph, delete the words "For Type A Curb" and capitalize "the".

Section 40-3.01E CURING

Delete the 2nd and 3rd sentences in paragraph two.

Section 40-3.02 TYPE A AND TYPE B CURB

Title shall be amended to read CURB.

Delete references to Type A and B in paragraphs one, two and three.

Section 40-3.03 TYPE C AND TYPE D LOW CURB

This section shall be deleted.

Section 40-3.04 TYPE E SEPARATE CURB

This section shall be deleted.

Section 40-3.05 TRANSITIONAL CURB

This section shall be deleted.

Section 40-4 MEASUREMENT AND PAYMENT

Delete bid item No. 3
Add the following at the end of 2nd paragraph:
"and no deductions will be made for driveways."

Section 41-4 MEASUREMENT

Amend the entire section as follows:

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, excluding the area underneath the curb.

Section 41-5 PAYMENT

Delete bid items 2 and 3.

Section 42-3.01 EXCAVATION AND SUBGRADE

Amend the first sentence in paragraph one to read as follows:

Excavation for sidewalks shall be as described in Section 13-1.01, unless otherwise

provided for in the Special Provisions.

The following paragraphs shall be added to this section:

Quantities for the earthwork shall be computed to the top surface of the sidewalk and no additions or deductions shall be made for the volume of the sidewalk. Payment for the quantities of earthwork involved in the sidewalk subgrade and the preparation of the subgrade shall be included in the unit price bid for "Cement Concrete Sidewalk."

It is expected there will be sufficient suitable native material excavated from various portions of the improvement to fill low areas in the sidewalk subgrade and planting strip area when needed and no further payment will be allowed for fill material.

The contractor shall estimate for himself the amount of earthwork involved in excavating below the top surface of the sidewalk including subgrading and for excavation of planting strip area.

Section 42-3.03 PLACING AND FINISHING CEMENT CONCRETE SIDEWALK

Add the following at the end of the 4th paragraph:

"or to match adjacent existing sidewalk."

Section 42-3.03A DEPRESSED CURB (WHEELCHAIR RAMP)

Add the following:

The wheel chair ramp shall be measured and paid for as "Cement Concrete Sidewalk" and shall include the necessary earthwork.

The depressed curb shall be measured and paid as "Cement Concrete, Curb, Type 108C."

NEW SECTION

Section 42-3.05 SIDEWALK DRAINS

Where shown on the construction plans for sidewalks or directed by the Engineer, four (4) inch approved drain 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 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, 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 length 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 between concrete walks, curbs, paved planting strips and solid masonry or concrete walls where they abut.

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 placed in curved locations as required by the construction plans.

Contraction joints for sidewalks shall conform to the applicable requirements for expansion joints for pavement 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.

Section 42-5 PAYMENT

Add the following bid item:

7. "4-inch Sidewalk Drain (Depth)," per linear foot.

Section 43 CEMENT CONCRETE COMBINED SIDEWALK CURB AND GUTTER

Amend title to read:

Section 43 CEMENT CONCRETE COMBINED SIDEWALK, CURB, GUTTER AND MONOLITHIC CEMENT CONCRETE CURB AND SIDEWALK

Section 43-4 MEASUREMENT

Add the following paragraph:

Measurement for monolithic cement concrete curb and sidewalk shall be from the face of curb to back edge of sidewalk as shown on Standard Dwg. 114.1.

Section 44 PRECAST CONCRETE TRAFFIC CURB CLASS I, TRAFFIC BUTTONS, AND EXTRUDED TRAFFIC CURB

Amend title to read:

Section 44 PRECAST TRAFFIC CURB, TRAFFIC BUTTONS, AND EXTRUDED TRAFFIC CURB

Section 44-1 DESCRIPTION

Delete the words "Class I" from the lst line of the paragraph.

Section 44-2.01 PRECAST CONCRETE TRAFFIC CURB CLASS I, AND TRAFFIC BUTTONS

Amend title to read:

Section 44-2.01 PRECAST CONCRETE TRAFFIC CURB

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 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 (LAND 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, shipping 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 deop 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

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.

Section 44-3.01 PRECAST CONCRETE CURB AND TRAFFIC BUTTONS

Amend title to read:

Section 44-3.01 PRECAST CONCRETE TRAFFIC CURB

Section 44-3.01A4 PLACING CONCRETE

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

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.

Section 44-3.01A FINISH

Amend the first paragraph to read as follows:

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

Section 44-3.01A12 REPAIRING CURB

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

Section 44-3.01A13 IDENTIFICATION MARKING

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

Section 44-3.01A14 SHIPPING

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

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.

Section 44-3.01C INSTALLATION OF BUTTONS

This section shall be deleted.

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 displacement 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 develops 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.

Section 44-4 MEASUREMENT

This section shall be amended as follows:

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.

Section 44-5 PAYMENT

Amend bid items No. 1, No. 2 and No. 3 as follows:

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

Delete bid items No. 4 and No. 5.

Section 45 BLOCK PRECAST TRAFFIC CURB CLASS II

Amend title as follows:

Section 45 BLOCK PRECAST TRAFFIC CURB

Section 45-4 MEASUREMENT

This section shall be amended as follows:

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.

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.

Section 46-1 DESCRIPTION

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

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, constitute 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 with 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.

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 unused 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.

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, conduits, 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 47-2.01 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 STRAW

All straw mulch material shall be in an air dried condition free of noxious weeds, weed seeds, and other materials detrimental to plant life. Straw shall be seasoned before bailing or loading and shall be acceptable to the Engineer. Straw 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 water, the fibers in the mateiral will become uniformly suspended to form a homogenous slurry. When hydraulically sprayed on the ground, the material shall allow the absorption and percolation of moisture.

Each package of the cellulose fiber shall be marked by the manufacturer to show the air dry weight content. All mulch 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

Straw 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 47-2.07 EXCELSIOR MATTING

Excelsior matting shall be a machine produced mat of wood excelsior covered on one side with a woven netting of twisted paper composition.

The excelsior matting shall have a minimum dry weight of wood fibers of 0.8 pounds per square yard, plus or minus 5%. It shall be of uniform thickness, with the fiber evenly distributed over the entire area of the mat.

The woven netting shall have a 3 inch maximum mesh size.

The width of matting and net shall be 36 inches, and the rolls shall be approximately 150 feet long.

NEW SECTION

Section 47-2.08 SHEAR BOARDS

Where shear boards are required, as determined by the Engineer, they shall be furnished and installed by the Contractor. Details of the installation shall be similar to that shown in Standard Plan #206. Boards shall be 2 x 10 rough finished lumber. The top edge of the installed boards shall project two inches above the grade of the ground.

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

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 of the approved slopes shall begin immediately.

Seeding shall not be done during windy weather or when the ground is frozen. Seed 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 continuous agitation through paddle blades. It shall have an operating capacity sufficient to agitate, suspend and mix into a homogeneous slurry of the specified amount of seed and water or other material. 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.

(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 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 47-3.04A FERTILIZING

Fertilizer shall be applied in accordance with the procedures and requirements for seeding in Section 47-3.04 at the rates and analysis specified.

NEW SECTION

Section 47-3.05 SPREADING MULCH
47-3.05A STRAW

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 47-3.06 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 OR EXCELSIOR MATTING

Jute or excelsior matting shall be unrolled parallel to the flow of water immediately following the establishment of the finished grade. Seed and fertilizer shall be placed prior to the placing of excelsior matting. Where

more than one strip of jute matting is required to cover the given area, they shall overlap the adjacent mat a minimum of 4 inches. The excelsior matting shall be placed adjacent to the preceding strip. The ends of both jute and excelsior matting shall overlap at least 6 inches with the upgrade section on top. The up-slope end of each jute and excelsior strip of matting shall be staked and buried in a 6 inch deep trench with the soil firmly tamped against the mat. Three stakes per width of matting (one stake at each overlap) shall be driven below the finish ground line prior to backfilling of the trench. The Engineer may require that any other edge exposed to more than normal flow of water or strong prevailing winds be staked and buried in a similar manner. With the jute matting only, check slots, when specified, shall be placed between the ends of strips by placing a tight fold of the matting at least 6 inches vertically into the soil. These shall be tamped and stapled the same as up-slope ends. Check slots must be spaced so that one check slot or one end occurs within each 50 feet of slope. Rolling of jute matting, when specified, shall be with a grid type roller.

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 and excelsior 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 feet apart in three rows for each strip of matting, with one row along each edge and one 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 with 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 square feet 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 square feet 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 AND EXCELSIOR MATTING

The quantity of jute matting and excelsior matting to be paid for will be by the square foot 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

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

1. Furnishing and placing top soil, per cubic yard.
2. Placing top soil, per cubic yard.
3. Seeding and fertilizing, per square foot.
4. Hydro-seeding, per square foot.
5. Mulch (Type), per square foot.

6. Matting (Type), per square foot.
7. Soil conditioners, per ton.
8. Shear boards, per linear foot.

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 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, sunscalds, 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, caliper 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. Exception: All trees, whether furnished singly or bundled, shall be individually tagged with names, size, or caliper, etc., needed as shown above. Contractor may refer to State of Washington Department of Agriculture, Orders 1229 and 1230, Nursery Stock Standards, regarding labeling of plant material.

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 $_{p}$h 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 three (3) feet.

(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.

Staking of trees shall follow either Alternate A or Alternate B as follows:

Alternate A:

All deciduous and evergreen trees, over five feet in height, shall be staked at the time of planting. Deciduous trees up to sixteen (16) feet in height and evergreen shrubs or trees up to twelve (12) feet in height shall be staked with

a single 5/8-inch diameter deformed steel reinforcing bar ten feet long. The bar shall be driven into the ground at a distance of from one to three inches from the tree trunk. The bar shall penetrate at least one foot of undisturbed soil in a tree pit three feet deep, more if tree pit is more shallow. The bar and the tree shall be joined by three tree ties formed of twelve gauge wire in one loop which crosses itself between the tree and the bar. Before placing, a 4 to 8 inch length of good quality rubber garden hose shall be slipped over the wire to serve as a tree trunk protector. The wire shall be tied tightly to the deformed bar so as to prevent vertical movement but shall be loosely applied around the trunk. A one-quarter inch space should be allowed between the hose tie face and the tree trunk. The top most tie should be at a minimum height of 5 feet 10 inches with 1 foot 3 inches vertical spacing between the three ties (plus or minus one inch).

Other methods of staking will be considered as alternates but can be used only with the approval of the project engineer.

Alternate B:

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 two-inch by two inch by eight foot or ten foot maximum stake (2" x 2" x 8'), stained dark brown. The stake shall be placed in the tree pit 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 No. 12 galvanized wire 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 No. 12 galvanized wire 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 sixteen (16) feet in height and all evergreen shrubs or trees over twelve (12) feet in height shall be guyed with three (3) guy wires or cables. Guy wires shall be a strand of twelve (12) gauge wire passed through a loop of garden hose around the tree trunk at a point at least one-half (1/2) the height of the tree and fastened securely to a six foot 2 x 4 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 CLEANUP

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 PLANTING 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 to the depth shown. Mulch 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 Owner. 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 48-4 LANDSCAPE ESTABLISHMENT:

Scope of Work: The contractor shall maintain all landscaping within the limits of this project. Maintenance shall include the care and maintenance of all tree plantings and ground covers, removing weeds from ground cover area, and the general cleanliness of the area within the boundaries of the project.

It shall be the contractor's responsibility to maintain all the landscaped area of this contract from the time of installation until the project is accepted by the owner as complete. No separate payment will be made for maintenance performed from the time of installation to the date of acceptance by owner. The 365 calendar day maintenance period will begin on the day of completion of the landscaping by letter to the Board of Public Works.

General Provisions: The contractor shall furnish all materials and tools needed to do the work called for under this contract. This will include sprays, insecticides, weed killers, fertilizers, shears, rakes, brooms, and all other materials and tools needed to keep the area presentable and the trees healthy.

The contractor will be held responsible for all damage or loss of trees and ground covers caused by his inattention or carelessness. The contractor shall repair minor damage to trees caused by traffic, wind or other causes.

Engineering: The Engineer shall perform all engineering functions in connection with the work including inspection.

Failure to Perform: If the contractor fails to perform any of the work required under this contract, the owner may:

1. Cause the work to be done by others and the cost thereof to be deducted from the contractor's monthly payment or payments. Should the money due the contractor be insufficient to cover said cost, the owner shall have the right to recover the balance from the contractor.

2. Withhold a portion of the contractor's monthly payment or payments until the necessary work is accomplished. The amount to be withheld shall be determined by the Engineer.

3. Terminate the contract.

Trees and Ground Covers: Weeds shall be removed from the ground cover area as often as is necessary to maintain a presentable appearance.

Dead trees shall be removed as directed by the Engineer who shall record plants removed.

Pruning shall be done as directed by the Engineer so as to maintain a neat, healthy appearance, in accordance with good horticultural practice for that particular type of tree.

All weeds and branches removed during normal maintenance shall be disposed of by the contractor. Weed control may be accomplished by using a pre-emergent chemical herbicide such as simanize or casoron.

Watering: The quantity of water to be applied by each watering shall be approximately five gallons per tree.

All trees and ground covers shall be thoroughly watered as often as needed to keep the plants healthy.

The contractor shall furnish in writing, a watering schedule to the Engineer. Any change in the watering schedule shall require 24-hour advance notice. The

Engineer shall be notified immediately of any sprinkler system malfunction, major sprinkling repair and winterizing of the systems shall be the responsibility of the contractor.

The area around trees is to be kept weed-free. All undesirable growth is to be removed and disposed of by the contractor. Weed control in shrub beds and around the individual trees may be accomplished by using an approved pre-emergent chemical herbicide such as Simazine or Casoron or approved equal.

Pavement: Concrete pavement shall be hosed off with water regularly and otherwise kept clean and free from dirt and litter.

Water: In the event that water restrictions are established during the summer months, watering shall be scheduled as directed by the Engineer.

Mulch: Mulching material is to be applied and replaced as directed by the Engineer. The final mulch application must be made one (1) week prior to final inspection. Weeds shall be removed from the planting beds as often as is necessary to maintain a presentable appearance.

Cleanup: A general cleanup shall be made immediately after and as a part of all work done in the area. The cleanup shall include the entire area under this contract. Adjacent areas shall be cleaned to the extent that the work under contract may scatter litter. In addition, the contract area shall be cleaned of litter and debris at least every week or as directed by the Engineer. Such cleanup shall include the pickup and removal from the contract area of all clippings, trimmings, leaves, and all other litter and debris originating from any source whatsoever, and emptying the waste receptacles.

Inspection of Work: Work performed on the contract shall be regularly inspected by the Engineer. He may at any time request correction of or improvement of landscaping practices if they fall below contract standards. The contractor will be expected to make the necessary corrections within 72 hours of receipt of such request, which may be made either in writing, by telephone, or communicated in person to the contractor or his representative.

Payment: Payment will be made at the rate of 8 percent per month of the lump sum price bid for "Plant Establishment" for the first eleven months, and the remainder paid at the end of the establishment period. The contractor shall contact the Engineer on or before the 20th of each month, at which time he shall have completed the monthly establishment period. Work will be inspected about the 25th of each month, and if satisfactory, the monthly payment will be paid. The lump sum price bid will be full compensation for all labor, tools, materials, equipment and any other incidental items required to perform the work as specified.

In the event that no work is done, or the work is not corrected to the satisfaction of the Engineer, the monthly payment, or a portion thereof, will be forfeited.

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. "Furnishing and Placing Top Soil," per cubic yard.
5. "Placing Top Soil," per cubic yard.
6. "Furnishing and Placing Planting Soil," per cubic yard.
7. "Placing Planting Soil," per cubic yard.
8. "Planting Mulch," per cubic yard.
9. "Landscape Maintenance," per lump sum.

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 necessary 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 and equipment incorporated in the sprinkler system shall be new, undamaged, of standard quality and shall be subject to testing as specified herein. Materials shall meet the following requirements.

NEW SECTION

Section 49-2.01 PIPE AND FITTINGS

Pipe shall be galvanized iron, polyvinyl chloride, or polyethylene, as specified on the plans or in the special provisions.

NEW SECTION

Section 49-2.01A GALVANIZED PIPE AND FITTINGS

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.

All pipe fittings shall be standard threaded galvanized malleable iron fittings.

NEW SECTION

Section 49-2.01B PLASTIC PIPE AND FITTINGS

Plastic pipe, where indicated on the plans, shall be Polyvinyl Chloride (P.V.C.). PVC piping shall be 1120, Schedule 40. The PVC pipe shall conform to National Bureau of Standards PS 21-70 and ASTM D 1785, and shall be National Sanitation Foundation (NSF) approved.

The Engineer may require impact and quick burst tests of samples of the pipe after its arrival at the jobsite and acceptance of the pipe shall be subject to passing of the designated test.

Each length of PVC pipe is to be marked with an identifying extrusion "run" number and the manufacturer's name or trade name plus the pipe size and schedule.

Pipe shall be free from manufacturing defects in materials and workmanship. The pipe is to be guaranteed to operate within the limits of pressures and temperatures as required in the above specification.

Fittings shall be manufactured from PVC 1120 conforming to ASTM D 2466. The wall thickness of the fitting shall be equal to or exceed that of Schedule 40 pipe of similar size.

NEW SECTION

Section 49-2.01C POLYETHYLENE PIPE

Polyethylene pipe shall be Class 80, SDR 15, medium density polyethylene pipe, meet the requirements of ASTM D 2239, conform to U.S. Commercial Standard CS-255, and be National Sanitation Foundation (NSF) approved.

NEW SECTION

Section 49-2.02 CONTROL TUBING

Control tubing shall be copper refrigerator tubing meeting the current requirements of ASTM Designation B 280 in the size specified on the plans. Tubing and fittings shall be capable of withstanding a 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 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, unless specifically designated otherwise by the Engineer. 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 BOXES AND PROTECTIVE SLEEVES

All automatic control valves, flow control valves, pressure reducing valves and twin check valve units shall be provided with valve boxes. Valve boxes shall conform to the plans and shall be extendable to obtain the depth required. All manual drain valves and manual control valves shall be equipped with a protective sleeve and cap as shown 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 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

NEW SECTION

Section 49-2.07A MANUAL CONTROL VALVES

Manual valves shall be bronze or brass, angle type with hex brass union. Service rating shall be not less than 150 p.s.i. non-shock cold water. Valves shall be

designed for underground installation with suitable cross wheel for operation with a standard key. The Contractor shall furnish three suitable operating keys per contract. Valves shall have removable bonnet and stem assembly with adjustable packing gland and shall house long acme threaded stem to assure full opening and closing. Valve discs shall be full floating with replaceable seat washers.

NEW SECTION

Section 49-2.07B AUTOMATIC CONTROL VALVES

Automatic remote control valves shall be globe pattern with flanged or screwed connections as required. Screwed valves shall be provided with union connections.

Valves shall be of a "normally closed" design and shall be electric solenoid operated, having maximum rating of 6.5 watts utilizing 24 volt AC power. Solenoids shall be directly attached to the valve bonnets or body with all control parts and parts completely internal. Valves shall be of 150 lb. brass or bronze, or iron body bronze-mounted combination. The opening and closing speed of the valve shall be a minimum of 5 seconds for closure with a constant rate of closing and a minimum of 3 seconds for opening with a constant rate of opening and closing. A manual control bleed cock shall be included on the valve to operate the valve without the requirement of electric current. A manual shut-off stem with cross handle for wrench operation is required for 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. Automatic control valves and automatic controllers need not be of the same manufacturer.

NEW SECTION

Section 49-2.07C AUTOMATIC CONTROL VALVES WITH PRESSURE REGULATOR

The automatic control valve with pressure regulator shall be similar to the automatic control valve and shall also reduce the inlet pressure to a constant lower pressure regardless of supply fluctuations. The regulator must be fully adjustable.

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 of single piece construction of cast leaded semi-red brass alloy #5-A conforming to ASTM Designation B 145. Base of the valve shall have star lard female pipe threads. Design 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 double worm slots to allow smooth action in opening and losing 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 stainless steel double 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 of the size, type, and construction indicated 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 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 49-2.11 VACUUM BREAKERS

When called for in the plans and special provisions or as required by local ordinances, vacuum breakers meeting the following requirements shall be furnished and installed. All vacuum breaker installations are subject to inspection by authorized county or municipal authorities.

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 re-opened without spillage. Unless otherwise specified, the vacuum breaker shall be installed on the discharge side of the control valve six inches above the highest sprinkler head on the line. 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 approved check valves, inlet and discharge shut-off valves and field testing cocks. Assembly for various pipe sizes shall be according to local requirements or as

specified on plans and in the 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 49-2.12 CHECK VALVES

NEW SECTION

Section 49-2.12A CHECK VALVE

Check valves shall be heavy duty bronze or steel. The valves shall function by means of a hinged disc suspended from the body and able to close of its own weight. Valves shall be of the size as the pipes on which they are placed, unless otherwise specified, and shall have union or flanged connections. Service rating (for non-shock cold water) shall be 300 p.s.i. Manufacturer's name, type of valve and size shall be cast on the valve.

NEW SECTION

Section 49-2.12B DOUBLE CHECK VALVE UNIT

The unit shall be of a type approved by the Washington State Department of Social and Health Services. The double check valve shall be tested by backflow prevention device testers certified by the Washington State Department of Social and Health Services. Test records shall document that double check valves are in good operating condition prior to flushing and testing of sprinkler system mainline pipes. During the life of the contract, double check valve units will be tested annually, or more often if successive inspections indicate repeated failure. Double check valve units shall be repaired or replaced whenever they are found defective.

NEW SECTION

Section 49-2.13 PRESSURE REDUCING VALVES

Pressure reducing valves shall have a minimum of 150 p.s.i. working pressure with an adjustable outlet range of 20 to 70 p.s.i. The valves shall be factory set as shown on the plans. Pressure reducing valves shall be tested for safe operation at 175 p.s.i. non-shock cold water.

NEW SECTION

Section 49-2.14 FLOW CONTROL VALVES

Valve body materials shall be plastic or metal. Internal parts shall be stainless steel. Valves shall be factory set to plan flows. Valve shall have no external adjustment and be tamper proof where installed. 1/4 inch and smaller flow control valves shall have a minimum pressure absorption range of 2-32 p.s.i. 1-1/2 inch and larger flow control valves shall have a minimum pressure absorption range of 3-50 p.s.i.

Flow shall be controlled to $\pm$ 5% of plan volumes.

NEW SECTION

Section 49-2.15 AIR RELIEF VALVE

The air relief valve shall automatically relieve air and break a vacuum in the serviced pipe. Body materials shall be installed exactly at all high points.

NEW SECTION

Section 49-2.16 ELECTRICAL WIRE

All electrical control and ground wire shall be #14 irrigation control cable. All wiring to be used for connecting the auto-irrigation control cable and all wiring to be used for connecting the automatic remote control valve to the automatic controllers shall be Type "UF", 600 volt, solid copper, single conductor wire with PVC insulation and bear UL approval for direct underground burial feeder cable.

Insulation shall be 4/64-inch thick minimum covering of ICC-100 compound for positive waterproofing protection. The wire shall be single conductor solid copper wire. All control or "hot" wires shall be of one color (orange) and all common or "ground" wires shall be of another color (white).

Verification of wire types and installation procedures shall be checked to conform to local codes.

NEW SECTION

Section 49-2.17 METAL CONDUIT

Cast iron conduits shall be placed under all pavement in the locations shown on the plans. Sizes and installation shall be according to plans and details.

NEW SECTION

Section 49-2.18 WATER LOOPS

Water loops for the temporary irrigation systems shall be plastic and shall be constructed that watering is accomplished by oozing through the seam of the loop which shall be sewn with nylon thread. The loops shall be 16 inches in diameter unless otherwise specified. They shall have 60-inch leader tubes for connection with the water supply line. The leader tubes shall be seamless plastic and have an inside diameter of 3/64-inch, plus or minus 1/64-inch.

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. Trench bottoms shall be of sand or other suitable material free from rocks, stones, or any material which might damage the pipe. Trenches in rock or other material unsuitable for trench bottoms shall be excavated six (6) inches below the required depth and shall be backfilled to required depth with sand or other suitable material free from rocks or stones.

Care shall be exercised by the Contractor when excavating trenches near existing trees. Where roots are 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 2 inches and less in diameter, shall have the sides hand trimmed making a clean cut of the roots. All roots 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 24 hours unless adequately protected by moist burlap or canvas as directed by the Engineer.

NEW SECTION

Section 49-3.02 PIPING

All live main lines shall be a minimum of 24 inches below finished grade measured from the bottom of the pipe. Lateral or section lines shall be a minimum of 18 inches below finished grade or at a shallower depth as directed by the Engineer, measured from the bottom of the pipe. Pipes shall be sloped uniformly to drain. All live mains to be constructed 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. All jacking operations shall be performed as directed by the Engineer and conduit run at a depth below the pavement as may be so ordered. Where possible, mains and laterals or section piping shall be placed in the same trench.

Unless otherwise specified, it shall be the Contractor's responsibility to establish the locations of the drain valves during installation to insure complete drainage of the lateral and section lines.

NEW SECTION

Section 49-3.03 JOINTING

All galvanized steel pipe shall have sound, clean cut standard pipe threads well fitted. All pipe shall be 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 remade with new material. Caulking or thread cement to make joints tight will not be permitted.

P.V.C. plastic pipe couplings and fittings shall be handled and installed in accordance with the manufacturer's recommendation. The outside of the PVC pipe shall be chamfered to a minimum of 1/16 inch at approximately 22 degrees. Pipe and fittings shall be joined by solvent welding.

Chemicals used must penetrate the surface of both pipe and fitting which will result in complete fusion at the joint. Use solvent and cement only as recommended by the pipe manufacturer.

On plastic to metal connections, work the metal connection first. Use a non-hardening compound on threaded connections. Light wrench pressure is all that should be used. Connections between metal and plastic are to be threaded utilizing female threaded adapters only, not male adapters.

Polyethylene pipe and fittings shall be installed in accordance with the manufacturer's recommendations. The ends of the polyethylene pipe shall be cut square and inserted to the full depth of the fitting. Clamps for insert fittings shall be stainless steel.

NEW SECTION

Section 49-3.04 SPRINKLER INSTALLATION

Sprinkler heads located within lawn areas shall be installed on temporary high risers approximately 12 inches above finished grade. Once turf has been established the Contractor shall, upon written notice from the Engineer, lower the heads to final position as a part of the contract. Lowering of sprinkler heads shall be completed within 30 days after receipt of written notice. Final position of turf heads shall be between 1/2 and 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 6 inches from such structure.

Shrub heads, unless otherwise specified, shall be placed on high risers elevating them approximately 12 inches above finished grade. Lowering of shrub heads will not be required.

Final position of valve boxes, capped sleeves and quick coupler valves shall be between 1/2 and 1 inch above finished grade.

NEW SECTION

Section 49-3.05 WATER LOOPS

The water loops shall be placed so they encircle the base of the planted trees which should be centered within the loops.

NEW SECTION

Section 49-3.06 ELECTRICAL WIRE INSTALLATION

Wiring between the automatic controller and automatic valves can share a common neutral. Separate control conductors shall be run from the automatic controller

to each valve. A white colored wire shall be used for the neutral as specified in the National Electrical Code. Wire shall be installed adjacent to and attached to the irrigation mains by plastic tape or nylon ty-wraps.

All splice insulation shall consist of electrical conductors twisted and bonded by approved pressure connectors and contained in a rigid clear plastic epoxy filled mold. Splices will be permitted only at junction boxes, valve boxes, pole bases or at control equipment. A minimum of 2 feet excess of conductors shall be left at junction boxes and automatic control valves to facilitate splicing and inspection.

NEW SECTION

Section 49-3.07 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 hydrostatically tested at one hundred and fifty (150) p.s.i. static pressure with valves closed. When test pressure is applied for a period of not less than 30 minutes with a pressure loss of not more than 5 p.s.i. the section tested may be considered acceptable.

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 at maximum design operating pressure with risers capped and drain valves closed. Any pipe, fitting or joints showing leaks shall be separated, cleaned and remade. When test pressure is applied for a period of not less than 30 minutes with a pressure loss of not more than 5 p.s.i. the section tested may be considered acceptable.

All polyethylene piping shall be completely flushed, capped and tested before placing valves, heads, drains or leader tubes. Lines shall be tested for minimum periods of one hour at operating line pressures with drain valves closed. At the ends of the test periods, the installations shall be inspected for leaks and any such found shall be corrected by the Contractor and the lines retested. When conditions exist which interfere with visual inspections of lateral installations the Engineer may require that testing be done with pressure gauges installed on the lines. In this event the laterals shall be tested for minimum periods of one hour at static line pressure with risers capped and valves closed. Lines which show 5 p.s.i. or greater loss of pressures at the end of specified periods shall be rejected. The Contractor shall check the installation for leaks and retest the line as specified until leaks are stopped.

Water loop leader tubes shall be tested after installation at operating pressure of 1/2 hour.

These same testing procedures shall be used, at the discretion of the Engineer, to test all mainlines and laterals following the repair of any break or disruption of service of the system throughout the life of the contract.

All gauges used in the testing of water pressures shall be certified correct by an independent testing laboratory immediately prior to use on the project. Gauges shall be retested when directed by the Engineer.

Automatic controllers 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 49-3.08 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 49-3.09 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 P.V.C. Plastic Pipe shall have a sand cushion from 1 inch depth below the pipe to 2 inches above the pipe. Backfill from the bottom of the trench to approximately 6 inches above the pipe shall be by continuous compacting in such a manner that will not damage pipe or wiring and shall proceed evenly on both sides of the pipe. The remainder of the backfill shall be thoroughly compacted, except that heavy equipment shall not be used within 18 inches of any pipe. All backfill material shall be free of rocks, roots or other objectionable material. The top 6 inches of the backfill shall be of top soil material or the first 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.

Section 50-3.01 REFERENCE POINTS

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

Section 50-3.02 PRECAST CONCRETE MONUMENTS

This section shall be deleted in its entirety.

Section 50-3.03 POURED MONUMENT

This section shall be deleted in its entirety.

Section 50-4 MEASUREMENT AND PAYMENT

Delete bid items 1, 2 and 4.
In the 2nd paragraph, fourth line, delete the words "monuments and."

Section 52 - REMOVAL OF EXISTING STREET IMPROVEMENTS

Amend title to read as follows:

Section 52 - REMOVE, RELOCATE OR ABANDON EXISTING STREET IMPROVEMENTS

Section 52-2.01 GENERAL

Delete the 2nd paragraph.

Section 52-2.02 REMOVAL OF PAVEMENT

This section shall be amended as follows:

Existing pavement such as concrete, brick, cobblestone, or combinations of the various materials including asphalt 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.

If contractor elects to saw-cut the concrete pavement, the depth of saw-cut shall be one-half the depth of the pavement.

If contractor elects to line drill the concrete pavement, the spacing shall be on 6-inch maximum centers and the drill holes shall be perpendicular to the surface.

No separate payment will be made for sawing or line drilling and the cost thereof shall be included in the prices bid for the various items comprising this improvement.

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 non-rigid pavement, such as bituminous mixes as a surfacing upon earth or granular subgrades shall be removed as common excavation, except as may otherwise be provided in special provisions.

Section 52-2.02A PAVEMENT REMOVAL, CLASS A

This section shall be deleted in its entirety.

SECTION 52-2.02B PAVEMENT REMOVAL, CLASS AA

This section shall be deleted in its entirety.

Section 52-2.02C PAVEMENT REMOVAL, CLASS B

This section shall be deleted in its entirety.

Section 52-2.02D PAVEMENT REMOVAL, CLASS C

This section shall be deleted in its entirety.

Section 52-2.03 REMOVAL OF ASPAHLT 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.

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

Title to be amended as follows:

Section 52-2.07 ABANDON, REMOVE OR RELOCATE EXISTING MANHOLES, CATCH BASINS, INLETS AND SANDBOXES

The first two paragraphs of this section shall be amended as follows:

Where existing manholes, catch basin, inlets or sandboxes are noted on the plans or directed by the Engineer to be removed, relocated or abandoned, the contractor shall carry out the task in the manner outlined in Section 52-2.07A, B and C. Payment for removing, relocating or abandoning existing manholes, catch basins, inlets or sandboxes shall be made in accordance with the bid items in the proposal.

Where existing manholes, catch basins, inlets or sandboxes are located within the neat line of a trench excavation and are noted for removal or abandonment on the plan or when directed by the Engineer, the contractor shall remove such structure at no cost to the City. The removal of any such structure within the neat line of a trench excavation including time and material required to properly plug all pipe openings with Class 5 (3/4) concrete, shall be considered as incidental to the cost of constructing the new facility.

Delete the third paragraph.

NEW SECTION

Section 52-2.07A ABANDON EXISTING IMPROVEMENT

Section 52-2.07A1 ABANDON EXISTING MANHOLE

Where noted on the plans as "Abandon Existing Manhole," the contractor shall break down the top two feet below grade of the existing manhole, remove casting and plug the existing sewer pipe openings longitudinally in the pipe 12 inches with Class 5 concrete as elsewhere herein specified. The remainder of the manhole shall then be filled with Type 9 or Type 17 aggregate compacted to the satisfaction of the Engineer. Pavement patching shall be in accordance with Section 54.

NEW SECTION

Section 52-2.07A2 ABANDON EXISTING CATCH BASIN

The work required at all catch basins indicated to be abandoned shall include the dewatering and removal of debris from the catch basin structure; breaking down the structure to a depth of two (2) feet below the surface and disposing of all debris and salvageable material.

The existing outlet pipe shall be plugged by filling with Class 5 (3/4) concrete for a minimum longitudinal length of twelve inches. The remaining structure and void shall be filled with Type 9 or Type 17 mineral aggregate thoroughly compacted to preclude settlement.

Pavement patching shall be in accordance with Section 54.

NEW SECTION

Section 52-2.07A3 ABANDON EXISTING INLET

The work required at all inlets indicated to be abandoned shall include the removal of the existing grating, plugging of the outlet pipe by filling with Class 5 (3/4) concrete for a minimum length of 12 inches. The inlet shall be filled with Class 6.5 (1-1/2) H.E.S. concrete. The surface of the concrete shall match the grade of the existing paving and shall be brush-finished.

NEW SECTION

Section 52-2.07B REMOVE EXISTING IMPROVEMENTS

Section 52-2.07B1 REMOVE EXISTING MANHOLE

The work required at all manholes indicated for removal shall include the removal of the existing frame and cover and disposal of the manhole structure. All

connecting pipes shall be plugged by filling with Class 5 (3/4) concrete for a minimum longitudinal length of 12 inches. The remaining void shall be filled with suitable material as directed by the Engineer and thoroughly compacted to preclude settlement.

Pavement patching shall be in accordance with Section 54.

NEW SECTION

Section 52-2.07B2 REMOVE EXISTING CATCH BASIN

The work required at all catch basins indicated for removal shall include the removal of the existing frame and cover, existing outlet trap and disposal of the catch basin structure. All connecting pipes shall be plugged by filling with Class 5 (3/4) concrete for a minimum length of 12 inches. The remaining void shall be filled with suitable material as directed by the Engineer and thoroughly compacted to preclude settlement.

Pavement patching shall be in accordance with Section 54.

NEW SECTION

Section 52-2.07B3 REMOVE EXISTING INLET

The work required at all inlets to be removed to accommodate the installation of new catch basins and inlets shall include the removal of the existing grating and casting and removal of the concrete encasement. The casting and encasement may be removed in one unit and disposed of as excess material. If the inlet casting is separated from the encasement, the castings shall be salvaged as specified in Section 52-2.08.

The existing outlet pipe shall be removed as required for installation of the new catch basin or inlet and new connecting pipe.

NEW SECTION

Section 52-2.07C RELOCATE EXISTING IMPROVEMENTS

Section 52-2.07C1 RELOCATE EXISTING MANHOLE, CATCH BASIN OR INLET

Work required for relocation of existing manholes, catch basins or inlets shall be as specified in Sections 52-2.07B1, 52-2.07B2 and 52-2.07B3, for removal. Installation of these existing facilities at the new location, shall be done in accordance with the appropriate specifications outlined in Sections 63 and 64.

Section 52-2.08 SALVAGE

Add the following paragraph:

In all streets where stone blocks are encountered beneath asphalt surfacing, the contractor will take necessary steps to remove stone blocks and asphalt before cutting or drilling through concrete base. Contractor shall carefully remove with proper scooping equipment, the stone blocks and asphalt and haul them to the City's South Transfer Station. Prior to delivery, the Engineer shall be

notified in advance and arrangements will be made to have a representative of the Engineering Department at the station. The contractor will be responsible to see that all stone blocks encountered are delivered as specified above.

Section 52-3 MEASUREMENT AND PAYMENT

Delete bid items 1, 2, 3, 4, 5, 9, 10, 11, 12, 13, 14 and 15.

Add the following bid items:

1. "Remove Existing Pavement," per square yard.
2. "Remove Existing (Manhole, Catch Basin or Inlet,)" per each.
3. "Relocate Existing (Manhole, Catch Basin or Inlet,)" per each.
4. "Abandon Existing (Manhole, Catch Basin or Inlet,)" per each.

Amend the 2nd paragraph as follows:

The unit contract prices for such of the items as are included in the proposal shall be full compensation for all labor, tools, materials, excavation, backfill and compaction required to perform the work as specified.

Delete the 3rd paragraph and add the following:

"Where 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."

Section 53-2.03 CONTRACTOR TO SCHEDULE WORK

Delete the 2nd sentence.

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, in addition to payment for adjusting, 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."

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."

Section 53-3.01E ASPHALT RESURFACING PROJECTS

In the 2nd sentence, 4th line of the paragraph, change the word "and" to "or."

Section 53-3.05 FURNISHING CASTINGS

Add the following sentence:

"Ring extensions shall be in accordance with the Standard Drawing."

Section 53-4 MEASUREMENT AND PAYMENT

Amend bid item No. 1 as follows:

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

Delete bid items 4, 5, 6, 7, 8, 9, 10, 11 and 12.
Add the following bid items:

"Adjust Existing Manhole, Catch Basin or Valve Chamber With ( ) Ring Extension to Grade", per each.

"Adjust Existing Inlet With ( ) Ring Extension to Grade," per each.

"Adjust Existing Monument Frame and Cover with ( ) Ring Extension to Grade," per each.

"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.

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

Title shall be amended as follows:

Section 53-4.01 "ADJUST EXISTING MANHOLE, CATCH BASIN AND VALVE CHAMBER TO GRADE"

This section shall be amended to read as follows:

The unit contract price for "Adjust Existing Manhole, Catch Basin and 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.

Section 53-4.06 ADDITIONAL DEPTH SHAFTING FOR EXISTING MANHOLE

Amend title to read as follows:

Section 53-4.06 SHAFTING

This section shall be amended to read as follows:

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 valve 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.

Section 54-3.02 CEMENT CONCRETE PAVEMENTS

Add the following paragraph:

The contractor shall furnish, place and maintain until final settlement, to the satisfaction of the Engineer, a 2-inch thick crushed surfacing base course and a 2-inch thick cold asphalt plant mix patching over trench areas when and where

directed by the Engineer. Also, such temporary crushed base and asphalt concrete pavement may be required by the Engineer at any time the roadway is needed for vehicular traffic and permanent pavement cannot be placed. Stockpile of the crushed base and plant mix shall be provided on the site by the contractor. The contractor shall remove the temporary base and asphalt, clean the exposed face of the existing concrete, and restore the concrete pavement herein specified at the time directed by the Engineer.

Section 54-3.03 RIGID TYPE PAVEMENTS RESURFACED WITH ASPHALT CONCRETE

Add the following paragraph:

The material for tacking the bottom and sides of patches for asphaltic concrete shall be an emulsion called CRS-2. For sealing the edges after placing the asphaltic concrete patch, use a light cutback called RC 70, then sand the surface to prevent tracking.

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.

Section 54-4 MEASUREMENT AND PAYMENT

Add the following bid item:

4. "Cold Plant Mix for Temporary Pavement Patch," per ton.

Add the following paragraph:

Payment will be made at the price bid per ton for "Cold Plant Mix for Temporary Pavement Patch," which shall be full compensation for furnishing, stockpiling, placing, removing and disposal of the temporary pavement.

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 56-2.01 REPLACEMENT WITH NEW SOD

Sod: All sod shall comply with the State and Federal laws, including quarantines, with respect to inspection, plant diseases and insect infestation. Sod shipments shall have a certificate of origin and/or certification of approved treatement when shipment originates in known infected areas. All sod shipments shall contain a "State of Washington Nursery Inspection" sticker issued by the Washington State Department of Agriculture, Division of Plant Industries.

All sod shall be guaranteed to survive in a healthy condition through an establishment period of ninety (90) days. The establishment period shall commence on the date of acceptance of placed sod by the Engineer. All sod which, in the opinion of the Engineer, is not in a healthy growing condition at the end of the establishment period, shall be removed and replaced by the contractor at his own expense. Sod that is replaced shall be of the same mixture and grade as the surviving sod.

Sod shall be mature, densely-rooted grass and shall be free of weeds and reasonably free of objectionable grasses. Sod shall be cut to a uniform depth of 1-1/2 inches with an approved sod cutter.

Grading: Areas to receive sod shall be cleared, grubbed and leveled to a depth of five (5) inches below grade. Three (3) inches of top soil shall be evenly spread over and cultivated into the top six (6) inches of existing soil and compacted to a depth of two (2) inches below grade. Top soil shall be placed according to Section 47-3.01 through 3.03 and Section 55 of the APWA Standard Specifications.

Placement: The sod shall be placed in accordance with standard horticultural practices. Immediately prior to placement of the sod, a 10-20-20 fertilizer shall be rototilled into the top six (6) inches of the soil at the rate of four pounds (4 lbs.) of available nitrogen per 1,000 square feet. Dry soil shall be moistened by sprinkling. All butt joints shall be staggered. On sloped areas, the sod shall be laid with the long dimension parallel to the top or the toe of slope. After placing, the sod shall be rolled and heavily watered by sprinkling.

Establishment: The contractor shall be responsible for watering and fertilizing the sod during the establishment period. Watering shall be scheduled to prevent drying of joints between sod strips. 6-2-4 fertilizer shall be applied at six (6) week intervals at the rate of 1 to 1-1/2 pounds of available nitrogen per 1,000 square feet per application.

Measurement and Payment: The unit contract price bid for "Sodding," per square foot, shall be full compensation for labor, materials, tools and equipment and for all incidental work necessary to complete the required sodding. The unit

contract price shall include but not be limited to: All costs of preparing earth surfaces, placing sod, and fertilization and maintenance. Measurement for payment shall be made by the square yard of sod actually installed.

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.

Seed mix and rate of application shall be as specified in the special provisions. Seed shall be properly raked in and protected with Horticulture Peat Moss one-fourth (1/4) inch thick.

During the lawn establishment period the Contractor shall accomplish the following minimum requirements:

1. Mowing shall be done as often as conditions dictate. Maximum height of lawn shall not exceed 3 inches. The cutting height shall be 1-1/2 inches with all cuttings removed.

2. Water application shall be accomplished each week from March through September. The rate and frequency of water application shall be directed by the Engineer, depending on weather and soil conditions.

All work performed under lawn establishment shall be performed by qualified turf management personnel and shall comply with good turf management practices.

Acceptance of lawn planting as herein specified shall be based on a uniform stand of grass and a uniform grade at the time of final inspection. Areas of 4 square feet or more that are bare or have a poor stand of grass and areas not having a uniform grade through any cause before final inspection, shall be regraded, reseeded or resodded and refertilized as herein specified at the Contractor's expense.

Section 57-2 CONSTRUCTION DETAILS

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 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 two sentences 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 5-1.13.

Sidewalks 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 as shown on City of Seattle Standard Plan File No. 857-78.

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 none 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-eights (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-eights (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-eights (3/8) inch diameter pins. Thimbles shall be light weight wire rope thimbles for use with three-eights (3/8) inch diameter cable. Wire rope clips shall have a U-bolt diameter of seven-sixteenth (7/16) inch for use with three-eights (3/8) inch diameter cable. Anchor shackles shall be three-eights (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-eights (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-eights (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 undistrubed 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 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 suitable 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, back-filling, 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.

NEW SECTION

Section 59 BEAM GUARD RAIL

NEW SECTION

Section 59-1 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 59-2 MATERIALS

NEW SECTION

Section 59-2.01 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 59-2.01A 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 Owner reserves the right, however, to require the Contractor to furnish samples of the steel proposed for use and to determine to the Owner's 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 59-2.02 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 59-2.02A TREATED TIMBER POSTS

Timber posts shall be square, eight (8) inches by eight (8) inches S4S and shall conform to the grade specified in Division V. 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 Division V.

NEW SECTION

Section 59-2.02B 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-eight (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 59-2.02B1 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 (temped, 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 59-2.02B2 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 59-2.02B3 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 59-2.03 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 59-2.04 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 59-3 CONSTRUCTION DETAILS

NEW SECTION

Section 59-3.01 ERECTION OF POSTS

The posts shall be set to the true line and grade of the street 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 59-3.02 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 59-3.03 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 59-4 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 59-5 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.

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.

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DIVISION III - SANITARY SEWERS AND STORM DRAINS

DIVISION III - SANITARY SEWERS AND STORM DRAINS

Section 60-3.01B CONCRETE PIPE, REINFORCED

Add the following at the end of the 3rd paragraph:

"The pipe shall be tested by the three-edge bearing method in accordance with ASTM C497."

Section 61-2 CLASSIFICATION

This section shall be deleted.

Section 61-2.01 TRENCH EXCAVATION AND BACKFILL, CLASS A

This section shall be deleted.

Section 61-2.02 TRENCH EXCAVATION AND BACKFILL, CLASS B

This section shall be deleted.

Section 61-2.03 TRENCH EXCAVATION AND BACKFILL, CLASS C

Title shall read:

Section 61-2.03 "TRENCH EXCAVATION AND BACKFILL IN SOLID ROCK"

In the first line of paragraph one, change the words "Class C" to "Solid Rock Excavation."

Section 61-3.01 EXCAVATION

In the 2nd paragraph after the word follows:, add the following:

(See standard drawing on Typical Trench Section)

Section 61-3.03A FOUNDATION PREPARATION

Method 2 Ballasting:

The last paragraph shall be amended as follows:

Where foundation material is required and is so indicated on the plans, all costs for its procurement and placement, including removal and disposal of the unsuitable material, shall be included in the unit contract price for "Foundation Material." Where foundation material is not shown on the plans and no bid item is included in the proposal, and it is determined by the Engineer that foundation material is required, payment for furnishing and placing the material, including removal and disposal of the unsuitable material, will be made in accordance with Section 9-1.03.

Section 61-3.03C BEDDING FOR RIGID CONDUITS

Delete the last sentence in the 3rd paragraph.

Section 61-3.03 C2 CLASS B BEDDING

In the 3rd line of the 2nd paragraph, change 27" to 30."

In the 8th line of the 2nd paragraph, change "springline" to "a point 6" above the top of the pipe."

Section 61-3.03 C3 CLASS C BEDDING

In the last line of the paragraph, change "lower quadrant" to "springline."

Section 61-3.03 C5 MATERIALS

Delete the entire section and add the following:

Materials shall be as indicated on the standard plans.

Section 61-3.05 BACKFILLING FOR SEWERS AND DRAINS

Delete the last paragraph.

Section 61-3.06A WATER SETTLING

This section shall be amended as follows:

Water settling will not be permitted, unless authorized in writing by the Engineer.

Section 61-3.06B MECHANICAL COMPACTION

The 1st paragraph shall be amended as follows:

When mechanical compaction is specified, backfill shall be placed in lifts of 12-inches or less and each lift shall be compacted to at least 95% of the maximum density as determined by the Compaction Control Test specified in Section 13-3.10E5. Water settling will not be permitted.

Section 61-3.07 BANK RUN GRAVEL FOR TRENCH BACKFILL

In the 6th and 7th lines of the paragraph, delete the wording "Bank Run Gravel, Class A or Class B as specified in Section 26-2" and substitute the wording "Type No. 17 Mineral Aggregate as specified in Section 20."

Section 61-3.11 TOP SOIL REMOVAL AND REPLACEMENT

Amend the entire paragraph as follows:

Removal of top soil and replacement of it shall be performed in accordance with the provisions of Section 55. Where no bid item is taken, the cost shall be considered as incidental to the contract.

Section 61-3.12 LAWN REMOVAL AND REPLACEMENT

Amend the entire paragraph as follows:

Removal of lawn and the replacement of it shall be performed in accordance with the provisions of Section 56. Where no bid item is taken, the cost shall be considered as incidental to the contract.

Section 61-4.01B MEASUREMENT BY THE CUBIC YARD

In the 1st paragraph under "width," delete both sentences and make reference to Section 61-3.01. Under "Depth," revise as follows: "The vertical measurement shall be for the actual compacted depth of imported backfill material placed."

Delete the 2nd paragraph pertaining to measurement.

Section 61-4.01C UNEXPECTED OBJECTS

This section shall be amended as follows:

Where unexpected objects such as stumps, railroad ties, buried pavement, etc. are encountered in the trench excavation and such unexpected objects causes the contractor delays and requires extra work or equipment for its removal and disposal, Section 4-1.05 shall apply.

Section 61-4.04 FOUNDATION MATERIAL

Amend this section as follows:

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.

Section 61-4.07 COMPACTING EQUIPMENT

This section shall be deleted.

Section 61-5 PAYMENT

This section shall be amended as follows:

Bid Items Nos. 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, 19 and 20 shall be deleted.

Section 62-3.10 TESTING FOR ACCEPTANCE

Title of this section was inadvertantly omitted. Place title immediately following the one sentence in Section 62-3.09B.

Section 62-3.10D AIR PRESSURE TEST FOR SEWERS AND STORM DRAINS CONSTRUCTED OF AIR-PERMEABLE MATERIALS

Delete the 2nd sentence under Item No. 2.

Section 62-4 MEASUREMENT

In the 4th line of the 1st paragraph after "center of" add the words "new or re-channeled."

In the 5th line of the 1st paragraph after the word "structures" add the words "or to manholes not channeled."

Add the following sentence:

Measurement for sewer payment is shown in diagram on Standard Plan No. 179.

Section 63-2.09B PRECAST MANHOLE SECTIONS

The 1st paragraph shall be amended as follows:

Standard precast sections shall consist of circular sections, in standard nominal inside diameters, 36", 48", and 72". Heights of sections shall be multiples of 12" at option of the manufacturer, excepting however, that each manufacturer shall produce at least three standard heights in each standard diameter. The nominal thickness of the 36" and 48" sections shall be 4", and the nominal thickness of the 72" sections shall be 6".

The following shall be added after the amended 1st paragraph:

Reinforcement for standard sections shall consist of a single cage of steel, placed at the approximate center of the wall of the section. The 36" and 48" standard sections shall have not less than 0.12 square inches, and the 72" standard sections not less than 0.17 square inches of circumferential steel per linear foot. The cage shall be circumferential steel per linear foot. The cage shall be welded at every circumferential wire, or lapped 40 diameters and tied. The welded splice shall develop a tensile strength of 50,000 psi of wire diameter.

Joints between sections shall be tongue and groove, and shall provide 1/2" nominal annular space and a minimum of 1-1/4" lap.

No more than two lift holes shall be cast into each section. Holes shall be so located as to not damage reinforcing or expose it to corrosion. At the manufacturer's option, steel loops may be provided for handling, in lieu of lift holes.

Section 63-2.09C PRE-CAST CONES

In the second line, change "86" to "36".

Section 63-3.02 BEDDING

This section shall be amended as follows:

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. 9 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.

Section 63-3.07 MONOLITHIC CONCRETE MANHOLES

Delete reference to "Type IV" in the 1st line of the paragraph.

Section 63-3.11 CHANNELS

Add the following paragraph:

Where necessary or noted on the plans, the contractor shall rebuild the channel of the existing manhole in such a manner as will provide for flow of sewage through the manhole bottom to the new pipe sewer. All costs incurred in re-channeling of existing manholes shall be considered as incidental to the contract, unless a bid is taken for this work.

Section 63-3.12 PIPE CONNECTIONS

In the 2nd line of the paragraph, delete the figure "1" after the word "within."

In the 3rd line, add the words "outside face" just ahead of "manhole structure."

After the first sentence, add the following:

No flexible joint will be placed closer than twelve (12) inches from the outside face of the manhole.

Delete the last sentence.

Section 64-2.02 TRAPS

Amend as follows:

Traps shall be constructed in accordance with the Standard Drawing.

Section 66-5 PAYMENT

Delete bid item No. 3.

Add the following bid item:

"Test Tees, (size)," per each.

Section 67-2.01 PIPE BED

Amend the 1st paragraph as follows:

The area upon which the embankment for the pipe bed is to be placed shall be stripped to the extent as directed by the Engineer and the cost thereof will be included in the cost of the pipe.

Section 66-5 PAYMENT

Delete bid item No. 3.

Add the following bid item:

"Test Tees, (size)," per each.

Section 67-2.01 PIPE BED

Amend the 1st paragraph as follows:

The area upon which the embankment for the pipe bed is to be placed shall be stripped to the extent as directed by the Engineer and the cost thereof will be included in the cost of the pipe.

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DIVISION IV - WATER DISTRIBUTION

DIVISION IV WATER DISTRIBUTION

Section 72-2.08 PIPE FITTINGS

Section 72-2.08A CAST IRON

This section shall be amended as follows:

After the first four words in the paragraph, "All cast iron fittings," add the words "except sleeves."

After the first sentence, add the following:

"Sleeves shall be of the long body type (10" minimum length) and shall conform to the above mentioned specifications."

Section 73-1.03 REMOVAL OF PAVEMENT FROM DRIVEWAYS AND SIDEWALKS

This entire section shall be amended to read as follows:

Removal of existing street improvements shall be performed as specified in Section 52.

Section 73-1.04 GRADE AND ALIGNMENT

First paragraph, 2nd sentence. At the end of the sentence, delete the words "special provisions" and substitute the words "standard plan."

Section 73-1.05 LOCATING AND MARKING UNDERGROUND UTILITIES

Change reference to Section Nos. to read "See Sections 5-1.09 and 5-1.10."

Section 73-2 TRENCH EXCAVATION

The 1st sentence in the 3rd paragraph shall be amended to read as follows:

"Work shall comply with the requirements of the Washington Industrial Safety and Health Act of 1973 (WISHA)."

Section 73-2.02 SOLID ROCK EXCAVATION

Delete the 1st paragraph and refer to Section 61-2.03.

At the end of the 3rd paragraph, change reference to Section 73-3.03 to read "Section 9-1.04."

Section 73-2.04 UNFORSEEN BURIED OBJECTS ENCOUNTERED IN TRENCH EXCAVATION ON GRADED STREETS

Delete this entire section and refer to Section 61-4.01C.

Section 73-2.07 COMPACTION OF BACKFILL

In the last line of the 1st paragraph, delete the words "water settling or."

Section 73-2.07A WATER SETTLING OF TRENCHES

This section shall be deleted.

Section 73-2.07B EQUIPMENT FOR WATER SETTLING TRENCHES

This section shall be deleted.

Section 73-2.07C SOURCE OF WATER FOR WATER SETTLING

This section shall be deleted.

Section 73-2.07D COMPACTION OF BACKFILL UNDER SPECIAL CONDITIONS

This section shall be amended to read as follows:

At locations where paved streets, driveways or sidewalks will be constructed or reconstructed over the trench, or where provided for in the special provisions or directed by the Engineer, the backfill shall be spread in layers and compacted as specified in Section 61-3.06.

Section 73-2.08 BANK RUN GRAVEL FOR TRENCH BACKFILL

In the first paragraph, delete the words "Class A or Class B" and change reference to Section 26 to Section 20.

Section 73-3.02 TRENCH EXCAVATION AND BACKFILL

Amend entire section as follows:

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, except where bank run gravel is ordered by the Engineer.

Section 73-3.03 SOLID ROCK EXCAVATION

Amend entire section as follows:

Payment for "Solid Rock Excavation" will be made in accordance with Section 9-1.04.

Section 73-3.04 REMOVAL AND REPLACEMENT OF UNSUITABLE MATERIAL

Delete the 1st paragraph.

In the 2nd paragraph, 1st line, after the word "available" add the words "as outlined in Section 73-2.05."

Amend the 3rd paragraph as follows:

The cost of compaction of suitable replacement material shall be included in the various items comprising the improvement.

Section 73-3.05 MECHANICAL TAMPING

This section shall be deleted.

Section 73-3.06 BANK RUN GRAVEL FOR TRENCH BACKFILL

In the 2nd paragraph, delete the last sentence and add the following:

"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."

Section 74-2.10 CONNECTIONS TO EXISTING MAINS

Add the following at the end of the 1st paragraph:

The contractor shall furnish the necessary excavation and material handling equipment and shall be available to assist in making the connection.

Section 74-2.12 FIELD TESTS

Delete the 2nd sentence in the 4th paragraph.

In the 5th paragraph, delete the word "gate" found in the 2nd, 3rd and 5th lines.

Section 74-2.12A TESTING SECTION WITH HYDRANTS INSTALLED

Amend Test No. 3 as follows:

Each hydrant shall be tested in accordance with requirements outlined in Section 74-2.12.

Section 74-2.12B TESTING EXTENSIONS FROM EXISTING MAINS

Delete the word "gate" in lines 2, 3, 5, 9 and 11 in paragraph one, lines 2, 6, 8 in paragraph two, and lines 2, 4 and 6 in paragraph three.

Section 74-2.13A FLUSHING

Amend the 1st sentence in the 2nd paragraph as follows:

Taps required for chlorination or flushing purposes will be furnished and installed by the Utility.

Section 74-3.02 PAYMENT FOR WATER MAINS AND WATER SERVICE CONNECTIONS

Amend the 2nd paragraph as follows:

Special Fittings used but not called for on the plans, will be paid for at the supplier's invoice cost plus 15% for overhead and profit. Special fittings called for on the plans but not used will be deducted from the Contractor's final estimate based on the current cost of the supplier of fittings used on the improvement.

Amend the 3rd paragraph as follows:

Pipe line accessories such as hydrants, hydrant connections, gate valves, etc., will be paid for separately as provided in Sections 77 and 75. Excavation and backfilling of trenches shall be incidental to the construction and shall be included in the various unit prices bid for pipe line accessories.

Section 74-3.05 TRENCH EXCAVATION AND BACKFILL FOR WATER SERVICE CONNECTIONS

This section shall be deleted.

Section 74-4 UNIT PRICE METHOD OF PAYMENT FOR WATER DISTRIBUTION MAIN CONSTRUCTION

This section shall be deleted.

Section 74-4.01 MEASUREMENT OF WATER MAINS FOR UNIT PRICE PAYMENT

This section shall be deleted.

Section 74-4.02 PAYMENT FOR WATERMAIN CONSTRUCTION UNDER UNIT PRICE METHOD

This section shall be deleted.

Section 75-1 DESCRIPTION

The last sentence in the 2nd paragraph shall be amended as follows:

All valves shall open counterclockwise.

3rd paragraph: Amend AWWA C504-70 to read AWWA C504-74.

The following paragraph shall be added:

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.

Section 76-1 DESCRIPTION

2nd line, 1st paragraph, delete the words "cast iron."

2nd line, 2nd paragraph, delete the word "gate."

3rd line, 2nd paragraph, delete the words "cast iron."

NEW SECTION

Section 76-2.01A PLASTIC VALVE BOXES

Plastic valve boxes shall be two piece, adjustable telescoping type with metal lid and flange or ring portion. They shall be suitable for use with 2" through 12" AWWA double disc, non-rising stem valves. Boxes shall be adjustable in length from a minimum of 28" to a maximum of 40". Minimum diameter of interior of either section shall be 6". Extension sections shall be available. Acceptable valve boxes shall be those manufactured by Handley Industries, Inc., Plymouth, or equal, and shall meet requirements as detailed on the standard drawing.

Section 76-3.06 CAST IRON VALVE BOXES

Amend title to read: Section 76-3.06 VALVE BOXES

1st sentence, 1st paragraph, delete the words "cast iron."

2nd and 3rd sentences, 1st paragraph, delete the word "gate."

1st sentence, 2nd paragraph, delete the words "cast iron."

3rd and 7th sentences, 2nd paragraph, delete the word "gate."

Section 76-4.01 PAYMENT FOR VALVE CHAMBERS

4th sentence, 2nd paragraph, delete the words "cast iron."

Section 76-4.02 PAYMENT FOR CAST IRON VALVE BOXES

Amend title to read: Section 76-4.02 PAYMENT FOR VALVE BOXES

1st and 4th sentences of the paragraph, delete the words "cast iron."

Section 77-2.05 HYDRANT DIMENSIONS

The 1st line of the section shall be amended to read as follows:

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

Section 77-2.07 SHACKLING LUGS

This section shall be amended as follows:

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

Section 77-2.10 PAINTING

2nd paragraph 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."

Section 77-3.01 SETTING HYDRANTS

Add the following paragraph:

Hydrant shackle rods, if used, shall be thoroughly cleaned and painted, after installation, with 2 coats of asphalt varnish, as specified in Section 77-2.10, or with such other bituminous paint as may be authorized by the Engineer.

Section 77-3.02 HYDRANT CONNECTIONS

This section shall be deleted.

Section 77-3.02A SHACKLE RODS

This section shall be deleted.

Section 77-3.02B AUXILIARY VALVES

All auxiliary valves shall conform to Section 75 in all respects and shall be installed in accordance with the standard drawing.

Section 77-3.04 MOVING EXISTING HYDRANTS

In the next to the last sentence, delete the following words:

"for hydrant setting Type A and Type B."

NEW SECTION

Section 77-3.07 RETAINING WALLS FOR HYDRANTS

Where directed by the Engineer, the contractor shall furnish and place broken concrete sidewalk slabs or rockery rock for bulkheads around hydrants in accordance with the standard drawing.

The broken concrete slabs shall be a minimum of 3-1/2 inches in thickness and not less than 3 feet x 3.5 feet in size. The slabs shall be set in level layers of the same thickness and the exposed face shall be as smooth as the shape and size of the slabs will permit.

The rockery rock shall be sound quarried rock, durable, free of cracks and the source of rock shall be approved by the Engineer before placement.

The backfill behind the slab or rockery shall be compacted earth from the job site as approved by the Engineer.

Measurement and Payment: Payment will be made at the unit price bid per square foot for, "Retaining Wall for Hydrant," which shall be full compensation for all labor, material and equipment to place the rockery rock or slab concrete in place.

Measurement shall be on the front face area in place.

Section 77-4.01 PAYMENT FOR FIRE HYDRANTS

This section shall be amended to read as follows:

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 hydrants all costs of every kind for six (6) inch auxiliary valves, valve boxes, castings, shackles, tie rods, peir blocks, coarse gravel, painting, and other items required for the complete installation of the hydrant as specified, excepting however, that the six (6) inch pipe connecting the hub and flange casting to the main will be paid for at the unit contract price per linear foot for "Hydrant Connection."

Section 78-1 GENERAL

The 1st paragraph shall be amended to read as follows:

Surface improvements such as pavement curb, curb and gutter and other like surface facilities that have been removed during the construction of watermains, shall be restored by the contractor as outlined in Sections 52 and 54.

The 2nd paragraph shall be deleted.

Section 78-2.01 REMOVAL OF EXISTING STREET IMPROVEMENTS

This section shall be amended as follows:

Removal and disposal of existing street improvements shall be done in accordance with Section 52.

Section 78-2.02 RESTORATION OF EXISTING STREET IMPROVEMENTS

Amend the 1st paragraph as follows:

Restoring of existing street improvements shall be as specified in Sections 52 and 54.

The 2nd and 3rd paragraphs shall be deleted.

Section 78-3.01 EXISTING STREET IMPROVEMENTS

The end of the first sentence shall be amended to read as follows:

"payment will be limited as specified in Section 73-2."

The 2nd sentence shall be amended as follows:

"Any surfaces requiring restoration outside of this limit which is removed or damaged by the contractor, shall be restored by him at his own expense."

Section 78-3.02 CEMENT CONCRETE CURB, CURB AND GUTTER

The 2nd sentence in the 1st paragraph shall be amended as follows:

"Measurement for payment will be restricted as outlined in Section 73-2."

The remainder of the section shall be deleted.

NEW SECTION

Section 79 WATER DISTRIBUTION PAY ITEMS

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

1. Clearing and Grubbing, per Lump Sum
2. Mobilization, per Lump Sum
3. (Gate or Butterfly) Valve, (size), per Each
4. Valve Chamber, Standard, per Each
5. Valve Chamber, Large, per Each
6. Valve Chamber Throat Extension, per Linear Foot
7. Valve Box, per Each
8. (size (type) (class) Watermain including Fittings, per Linear Foot
9. Hydrant, (size) Connection, per Each
10. (size) (type) (class) Hydrant Connection Pipe, per Linear Foot
11. Hydrant Extension Vertical, per Pound
12. Hydrant Extension Horizontal, per Pound
13. Resetting Existing Hydrants, per each
14. Moving Existing Hydrants, per each
15. Reconnecting Existing Hydrants, per each
16. 1-1/2-inch Blow-off Assembly, per Each
17. 1-1/2-inch Copper Pipe, per Linear Foot
18. Concrete Blocking, in place, per Cubic Yard
19. Retaining Wall for Hydrant, per Square Foot

Trench excavation and backfill and removal and replacement of existing improvements shall be accomplished in accordance with the provisions of Division III, except that pipe bedding will not be used.

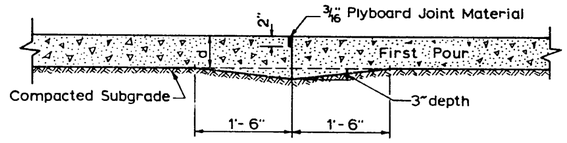
The cost of items not listed in the proposal shall be considered as incidental to the contract and no separate payment shall be made therefore.

Note: Standard Dwg. Nos. 122, 136, 137, 156, 158, 168, 169, 170, 178, 193 and 207 listed below can be found in the 1975 APWA book under APWA Dwg. number indicated.

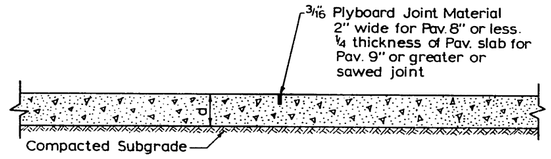
DIVISION VII STANDARD PLANS

Plan No.	Title
101	Types of Joints for Concrete Pavement
102	Arterial Pavement Sections
103	Residential Pavement Sections
104	Cement Concrete Alley Pavements
104.1	Cement Concrete Alley Pavement with Support Wall
104.1A	Cement Concrete Alley Pavement with Support WAll
106	Type 106 Driveway
107	Concrete Driveway Placed with Sidewalk Construction
108	Type 108 Curbs
110	Type 110 Curbs
112	Joints and Curb Dowels
113	Wheel Chair Ramp
114	Sidewalk Details
114.1	Monolithic Curb and Sidewalk
115	Cement Concrete Stairway Construction Details
116	Steel Pipe Handrail Construction Details
117	Sidewalk Drain
118	Monument Case
121	Pavement Patching
121.1	Typical Trench Sections
122	(APWA Dwg. #24) Extruded Asphalt Concrete Sections
123	Type 123 Traffic Curbs Precast Cement Concrete
124	Type 124 Traffic Curbs Block-Precast Cement Concrete
125	Type 125 Traffic Buttons
126	Type 126 Terminal Nosing Illuminated
127	Type 127 Terminal Nosing Illuminated
130	Type 130 Manhole
131	Concrete Block, Brick or Monolithic Concrete Manholes
132	Type 132 Manhole
133	Type 133 Manhole
134	Type 134 Manhole
135	Type 135 Manhole
136	(APWA Dwg. #39) Type 136 Manhole
137	(APWA Dwg. #43) Drop Connection
138	Ladder and Manhole Step
141	Type 141-24 inch Diameter Manhole Ring and Cover or Valve Chamber Ring and Cover
145	Manhole Ring Extensions
149	Location of Catch Basin with Inlets
150	Type 150 Catch Basin
151	Type 151 Catch Basin
152	Type 152 Catch Basin
153	Type 153 Catch Basin
153.1	Type 153 Catch Basin Installation

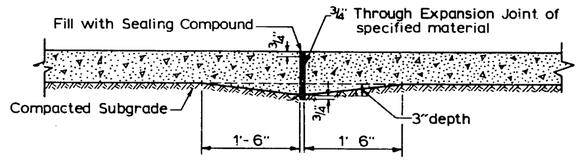
156	(APWA Dwg. #56) Catch Basin Inlet - Precast Cover and Extension Units
158	(APWA Dwg. #49) Type 158 Inlet Frame and Grate
162	Type 162 Outlet Trap
163	Type 163 Outlet Trap
164	Type 164 Inlet Castings and Assembly
164.1	Type 164 Inlet Installation
165	Type 165 Inlet
165.1	Type 165 Inlet Installation
166	Type 166 Inlet
166.1	Type 166 Inlet Installation
167	Inlet Extension for Type 164 Inlet
168	(APWA Dwg. #48) Type 168 Inlet Frame
169	(APWA Dwg. #46) Type 169 Inlet Frame
170	(APWA Dwg. #48) Type 170 Inlet Grate
171	Type 171 Inlet Top Catch Basin
175	Vertical Connection
176	Sanitary Side Sewer Installation
177	Pipe Bedding
178	(APWA Dwg. #61) Sewer Construction Details
179	Sewer Payment Diagram
180	Type 180 Hydrant Setting - Residential
180.1	Type 180.1 Hydrant Setting - Residential
181	Type 181 Hydrant Setting - Business District
182	1-1/2 inch Blow-off Assembly
183	Type 183 Valve Chamber Masonry Construction
184	Type 184 Valve Chamber - Precast
184.1	Type 184.1 Valve Chamber - Precast
185	Type 185 Valve Chamber
187	25-1/2-inch Valve Chamber Ring and Cover
188.1	Mechanical Joint Hydrant Tee
189	6-inch Hub and Flange Shackled
190	6-inch Hub and Flange Mechanical Joint
191	Valve Box
191.1	Plastic Valve Box
192	Concrete Blocking - General
193	(APWA Dwg. #73) Block For Convex Vertical Bends
194	Watermain Payment Diagram
195	Watermain Construction Detail
200	Half Section Grading
201	Beam Guard Rail
206	Shear Board Installation
207	(APWA Dwg. #63) Temporary Pedestrian Crossing
209	Standard Location for Underground Utilities
212	Twin Danger Light
212.1	Twin Danger Light Installation
214	Restricted Overhead Clearance Sign
215	Abbreviations
215.1	Abbreviations
216	Standard Symbols
216.1	Standard Symbols
216.2	Standard Symbols
216.3	Standard Symbols
216.4	Standard Symbols
216.5	Standard Symbols
216.6	Standard Symbols
217	Elevations and Datums



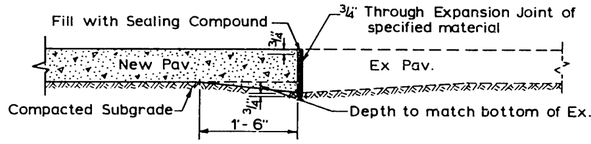
Construction Joint
Longitudinal or Transverse



Contraction Control Joint
Longitudinal or Transverse



Expansion Joint
New Construction



Expansion Joint
Between Old & New Construction

DO NOT SCALE

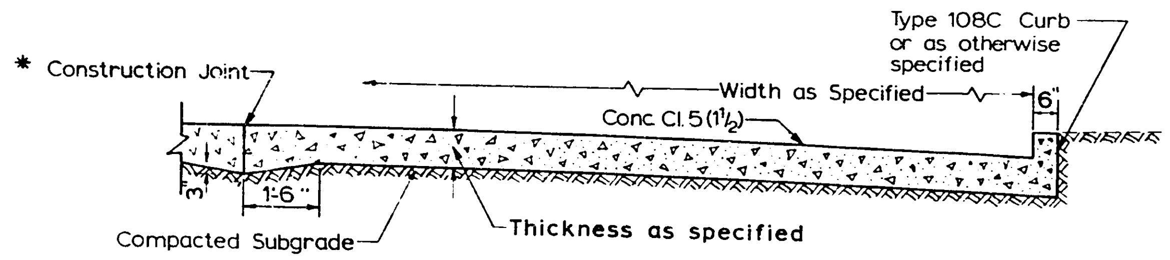
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Types of Joints
for Concrete Pavement

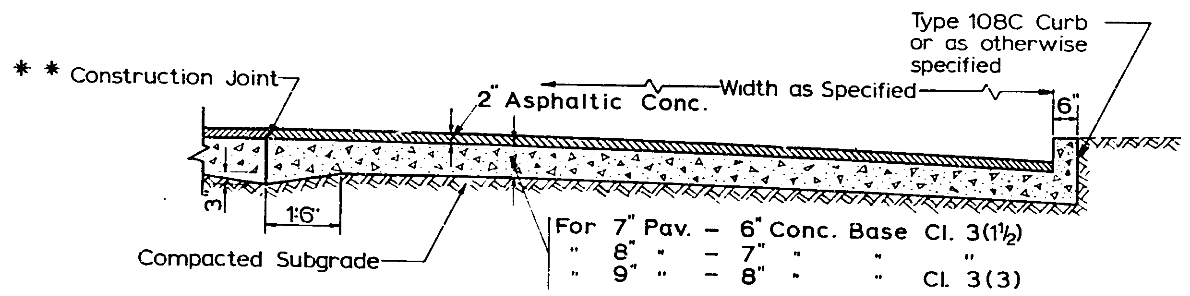
Revised 4-5-67

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 _____ CHAIRMAN
ATTEST: _____ SECRETARY

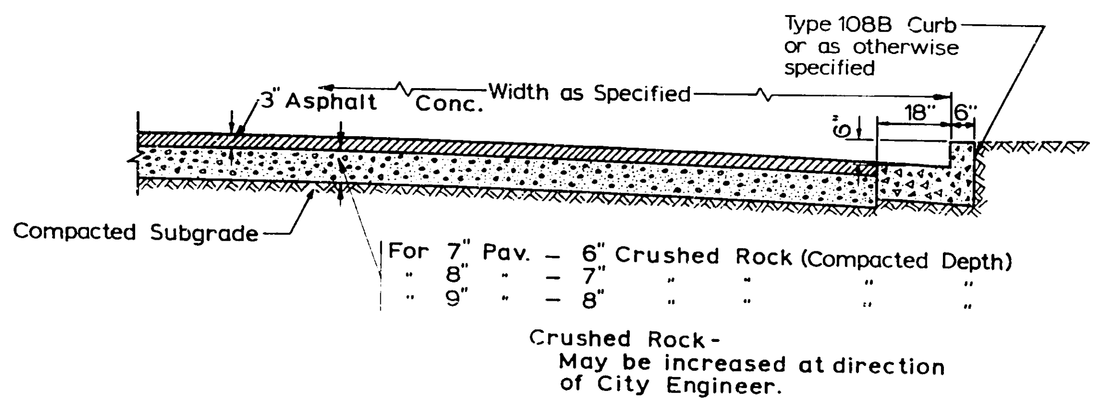
Standard Plan No. 102



102 A-Cement Concrete Pavement



102 B-Asphalt Concrete on Cement Concrete Base



102 C-Asphalt Concrete on Crushed Rock Base

* Construction Joint when roadway is paved in two or more lanes.
Contraction Joint when entire roadway width is paved in single operation.

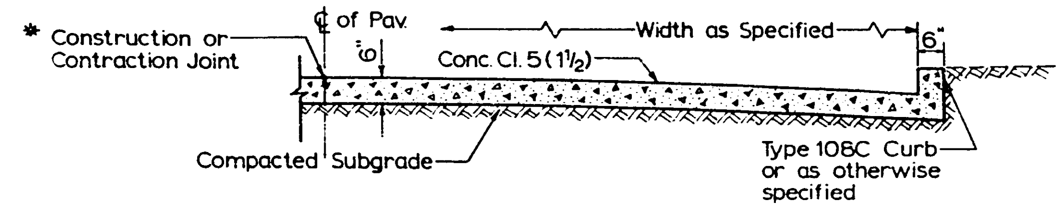
* * Construction Joint when base is placed in two or more lanes.

For spacing of Construction or Contraction Joints see Std. Specs. Sec. 39-3.18.

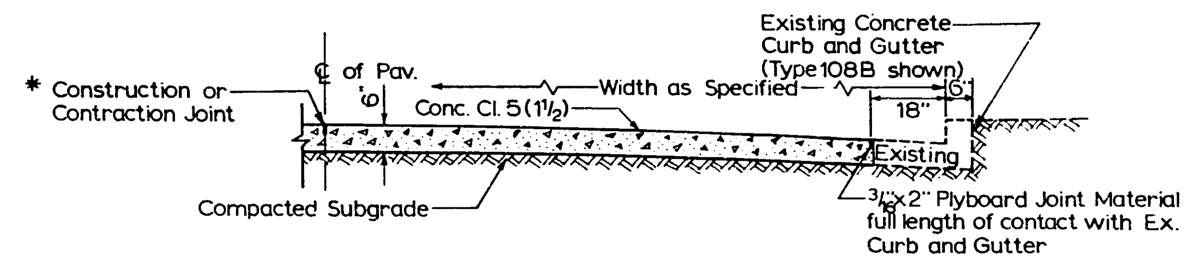
DO NOT SCALE

Revised	Revised	
5-1-70	1-6-65	CITY OF SEATTLE DEPARTMENT OF ENGINEERING Arterial Pavement Sections APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 ______ CHAIRMAN ATTEST: ______ SECRETARY

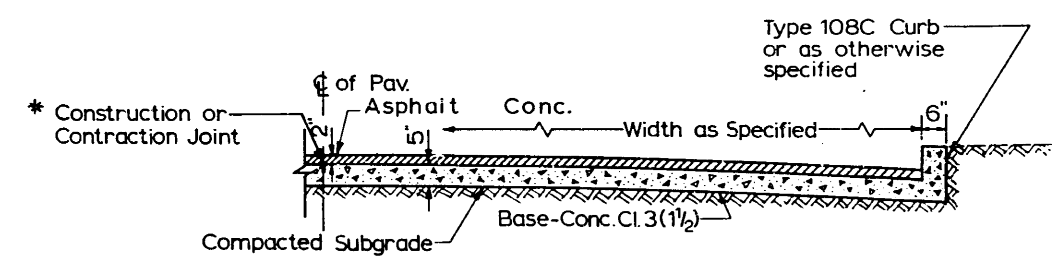
Standard Plan No. 103



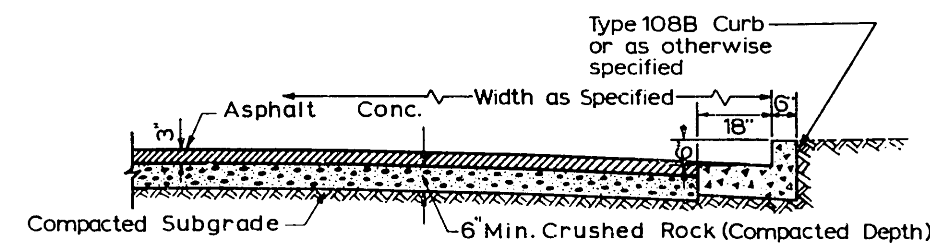
103A-Cement Concrete Pavement with Integral Curb



103B-Cement Concrete Pavement, Curb and Gutter Existing



103C-Asphalt Concrete on Cement Concrete Base



103D-Asphalt Concrete on Crushed Rock Base

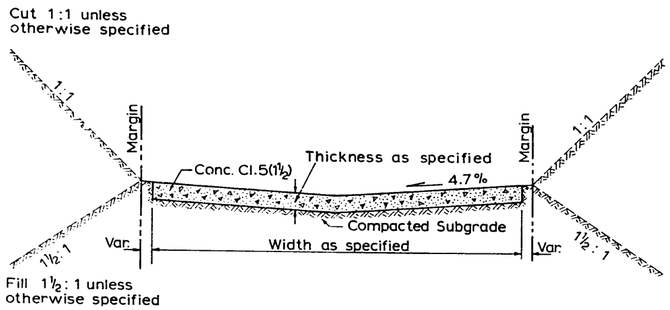
For spacing of Construction or Contraction Joints See Std. Specs. Sec. 39-3.18.

* When Construction Joint thickened edge required.

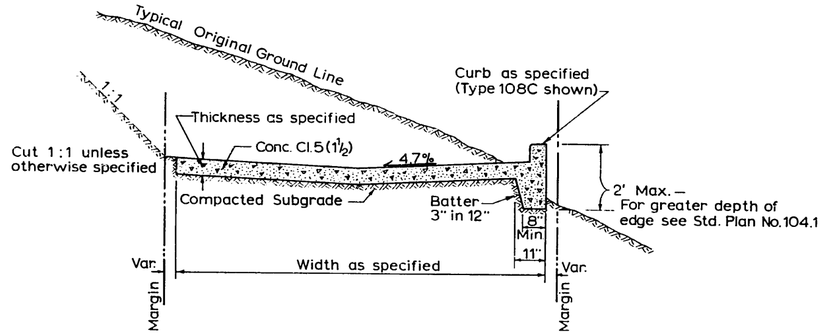
DO NOT SCALE

Revised	Revised	
5-1-70	1-6-65	CITY OF SEATTLE DEPARTMENT OF ENGINEERING Residential Pavement Sections APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 ______ CHAIRMAN ATTEST: ______ SECRETARY

Standard Plan No.104



104 A - Cement Concrete Alley Pavement



104 B - Cement Concrete Alley Pavement For Shallow Embankment Area

Note:
When alley pavement is 18' or wider place contraction joint along centerline of alley.

DO NOT SCALE

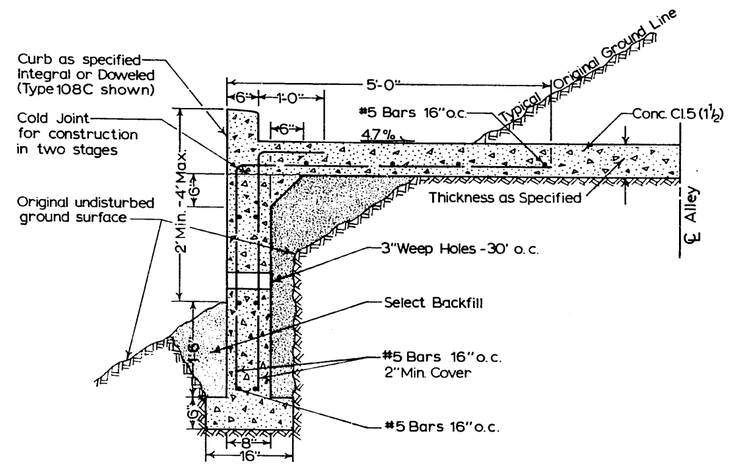
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

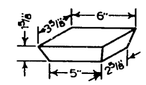
Cement Concrete Alley Pavements

Revised 4-7-76
Revised 5-1-70

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 — CHAIRMAN
ATTEST: — SECRETARY

Standard Plan No.104.1





Base of Support Wall to be bearing on firm undisturbed earth.

Back form for Support Wall may be omitted and concrete placed against native earth when ground conditions permit.

Cold joint, when construction is not integral with alley slab, shall be at level with base of alley pavement slab, with Shear Key indentations spaced 18" on centers.

Beveled block for forming Shear Key in wall section to be made from standard 2"x4"x6" wood or other suitable material.

DO NOT SCALE

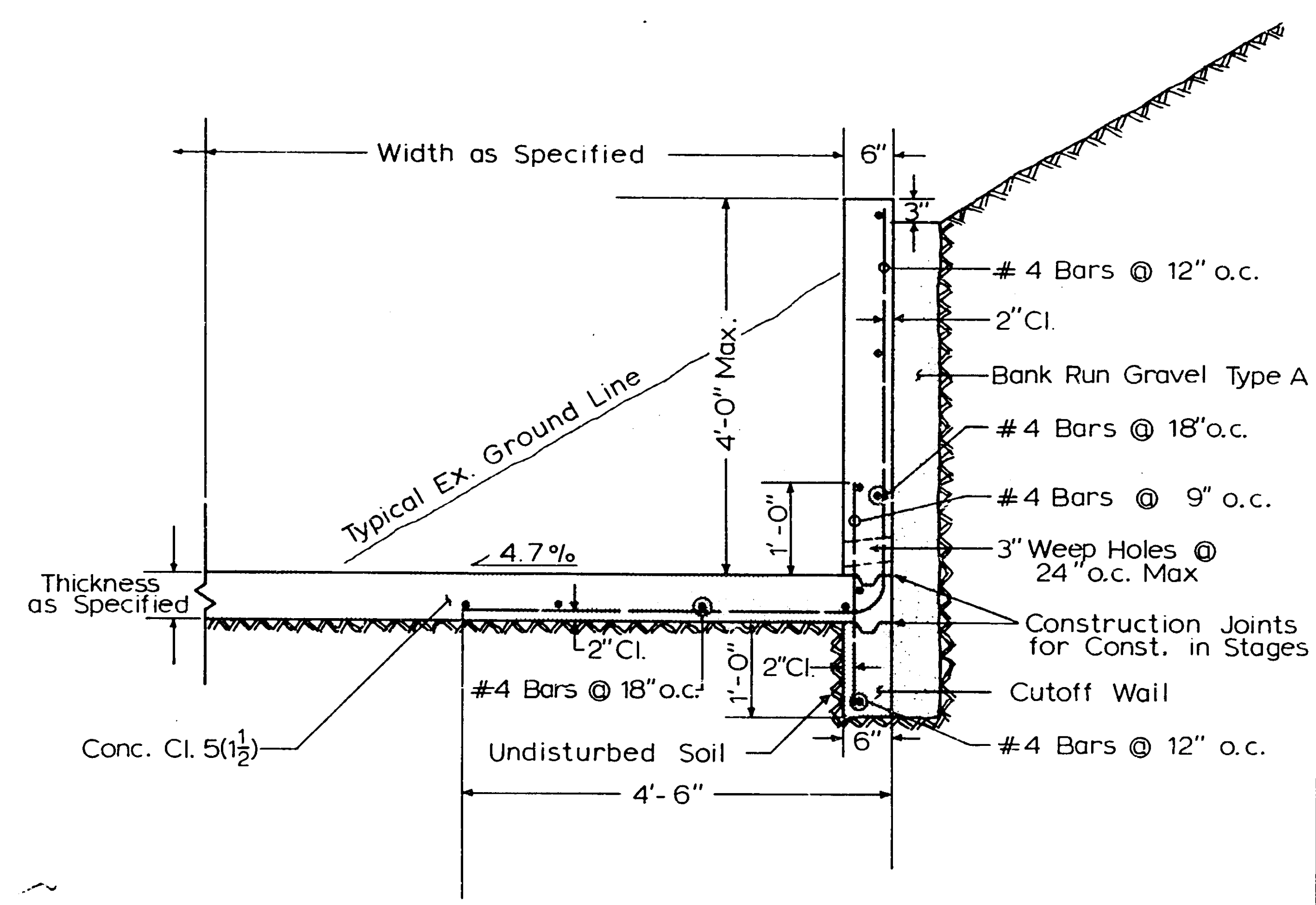
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Cement Concrete Alley Pavement with Support Wall

Revised 5-1-70
Revised 4-5-67

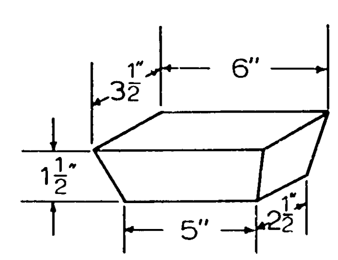
APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 — CHAIRMAN
ATTEST: — SECRETARY

Standard Plan No. 104.1A



Notes:

1. Provide Cutoff Wall:
   a) When Wall Height Exceeds 2'-0".
   b) When Alley Pav. Width is Less Than 16'-0".
   c) When Type 104.1 Support Wall is Required on the Opposite Side of the Alley.
2. Provide Wall Expansion Joints at 24' o.c. Max.
3. Back Form for Support Wall May be Omitted and Conc. Placed Against Native Earth When Ground Conditions Permit.
4. Construction Joint: When Construction of Wall is not Integral With the Alley Pav., a Construction Joint Shall be Provided at the Top and/or Bottom of the Alley Pav. Slab With the Shear Key Indentations Spaced 18" o.c. See Detail of Shear Key Form at Right.



Beveled Block for Forming Shear Key in Wall Section to be Made From Std. 2"x4"x6" Wood or Other Suitable Material. See Note 4 at Left.

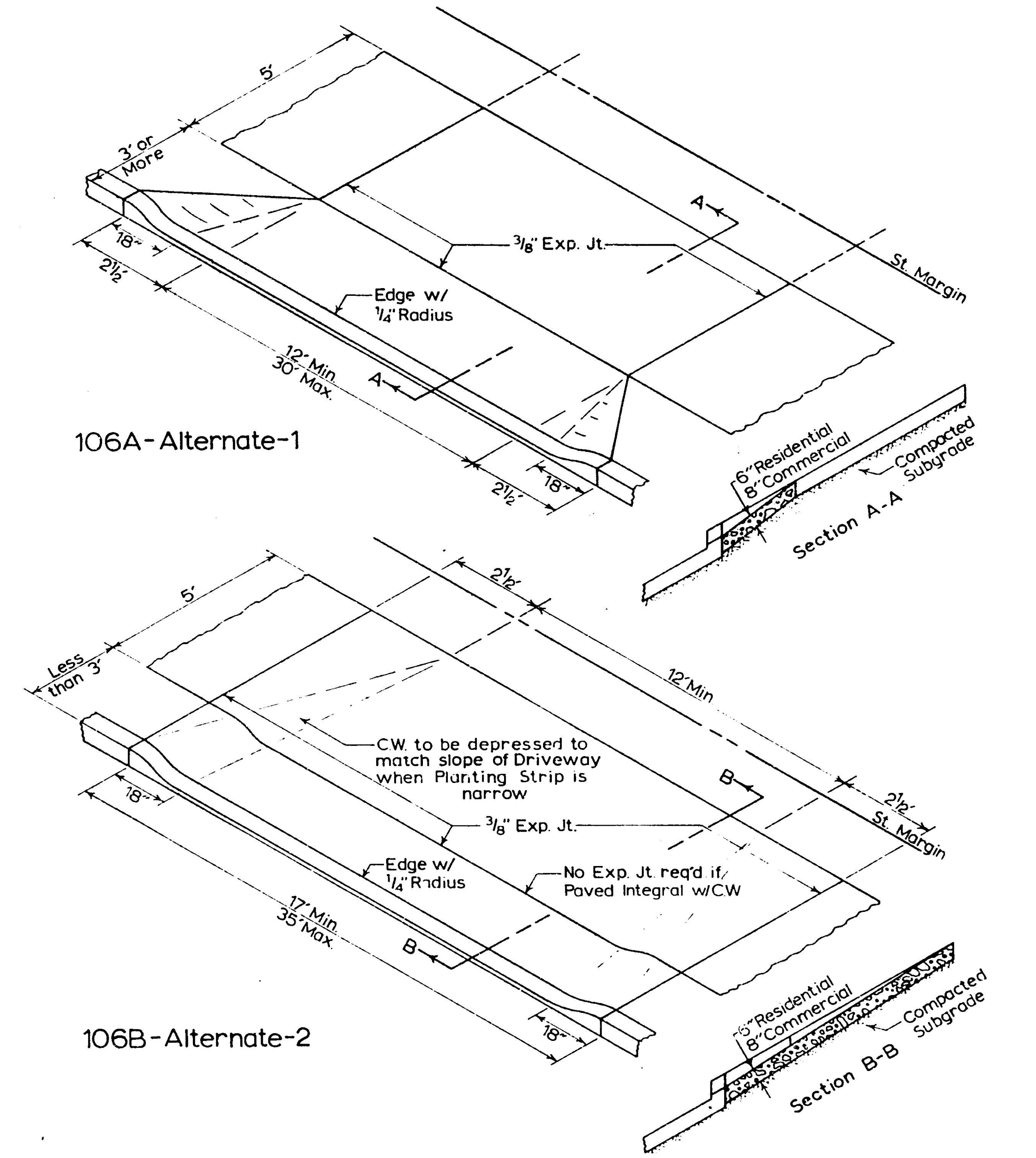
DO NOT SCALE

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

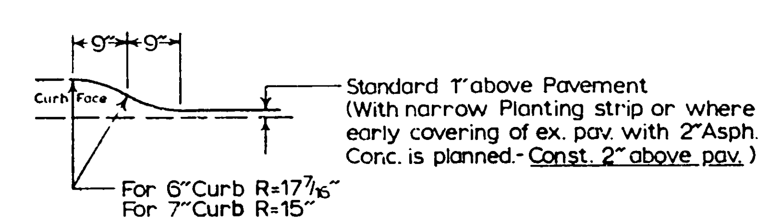
Cement Concrete Alley Pavement with Retaining Wall

APPROVED BY THE BOARD OF PUBLIC WORKS
4/7/1976 [signature] CHAIRMAN
ATTEST: [signature] SECRETARY

Standard Plan No. 106



Conc. Cl. 5(1½) or Cl. 5(¾) at Contractor's option



DO NOT SCALE

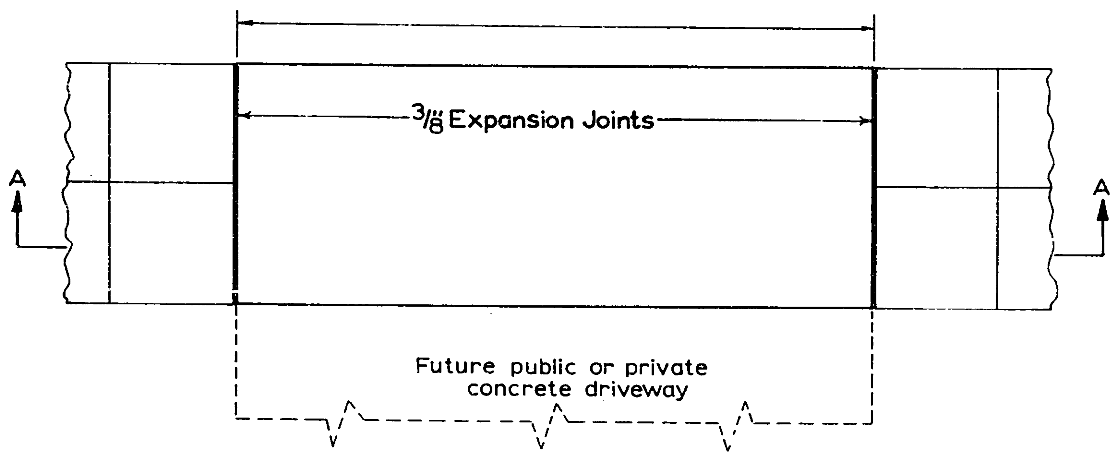
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

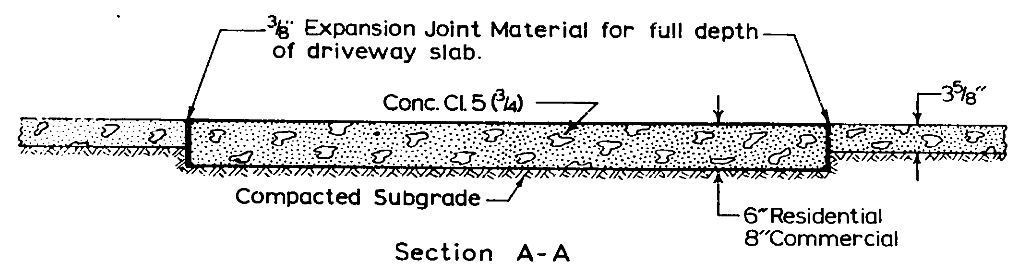
Type 106 Driveway

Revised 5-1-70

APPROVED BY THE BOARD OF PUBLIC WORKS
4-5 1967 [signature] CHAIRMAN
ATTEST: [signature] SECRETARY

Standard Plan No.107



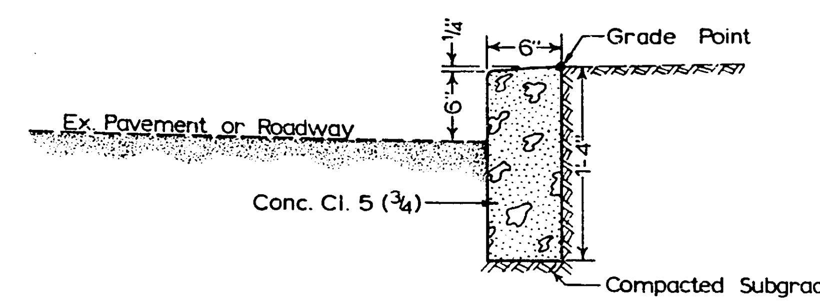


Section A-A

DO NOT SCALE

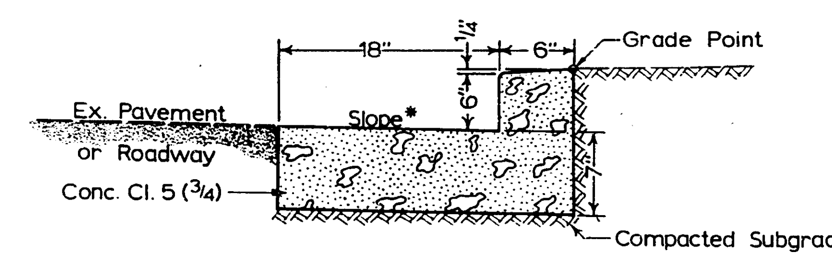
Revised 5-1-70	CITY OF SEATTLE DEPARTMENT OF ENGINEERING
	Concrete Driveway Placed With Sidewalk Construction
	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 ______ CHAIRMAN ATTEST: ______ SECRETARY

Standard Plan No.108

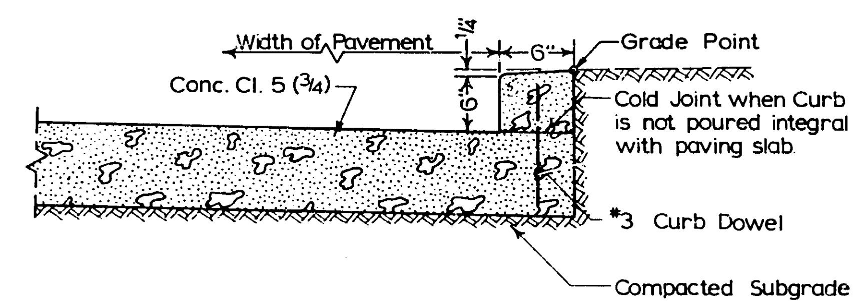


108A Curb

(For Monolithic Curb and Sidewalk See Std. Plan No. 114.1)



108 B-Curb and Gutter



108C Curb

For Type 108A Curb placed along edge of existing pavement 3/16" Expansion Joints shall be placed for full depth of curb to match location of joints in existing pavement.

*Gutter shall be sloped the same as adjacent pav.

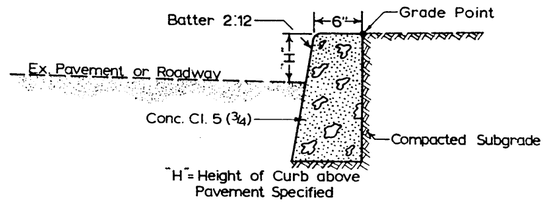
For spacing of Contraction Joints see Std. Specs. Sec. 40-3.01F

For Curb Dowels see Std. Specs. Sec. 39-3.15

DO NOT SCALE

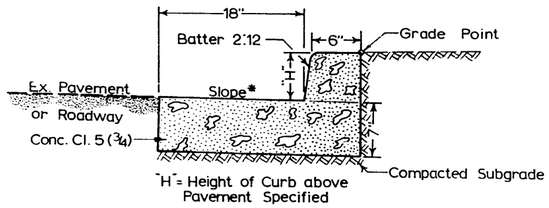
Revised 5-1-70 Revised 4-5-67	CITY OF SEATTLE DEPARTMENT OF ENGINEERING
	Type 108 Curbs
	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 ______ CHAIRMAN ATTEST: ______ SECRETARY

Standard Plan No.110

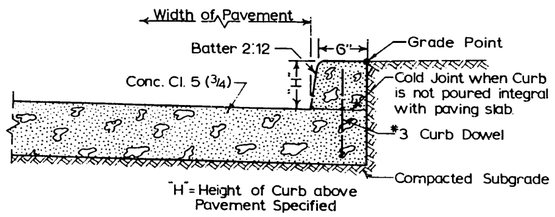


110A Curb

(For Monolithic Curb and Sidewalk See Std. Plan No.114.1)



110 B-Curb and Gutter



110 C Curb

For Type 110A Curb placed along edge of existing pavement 3/16" Expansion Joints shall be placed for full depth of curb to match location of joints in existing pavement.

* Gutter shall be sloped the same as adjacent pav.

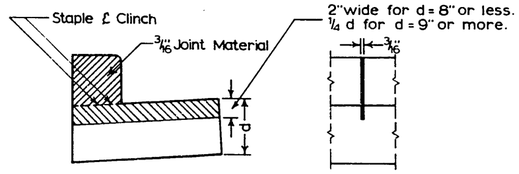
For spacing of Contraction Joints see Std. Specs. Sec. 40-3.01F

For Curb Dowels see Std. Specs. Sec. 39-3.15

DO NOT SCALE

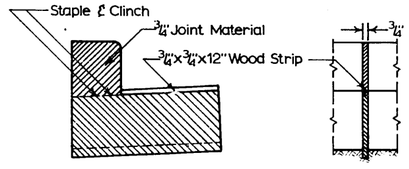
Revised 5-1-70	CITY OF SEATTLE	
Revised 4-5-67	DEPARTMENT OF ENGINEERING	
	Type 110 Curbs	
	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 — CHAIRMAN; ATTEST: — SECRETARY	

Standard Plan No.112



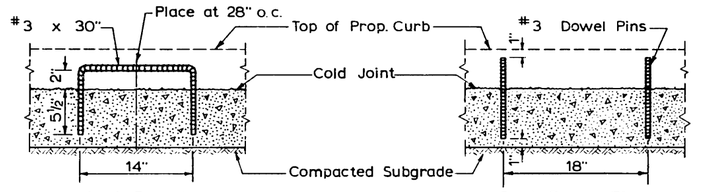
Contraction Joint For Type B Curb or Curb & Gutter

Other Types of Curbs Vary According to Required X-Section



Expansion Joint For Type B Curb or Curb & Gutter

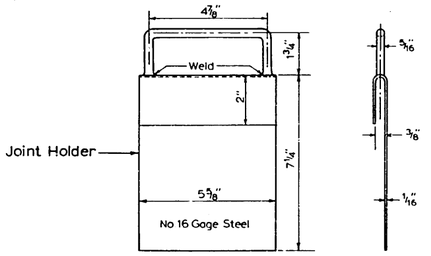
Other Types of Curbs Vary According to Required X-Section



Curb Dowel
For Residential Pavement with a Curb Height of 6"

Curb Dowel Pins
For Arterial Pavement with a Curb Height of 9" or Greater

Dowels For Dowelled Curb Construction



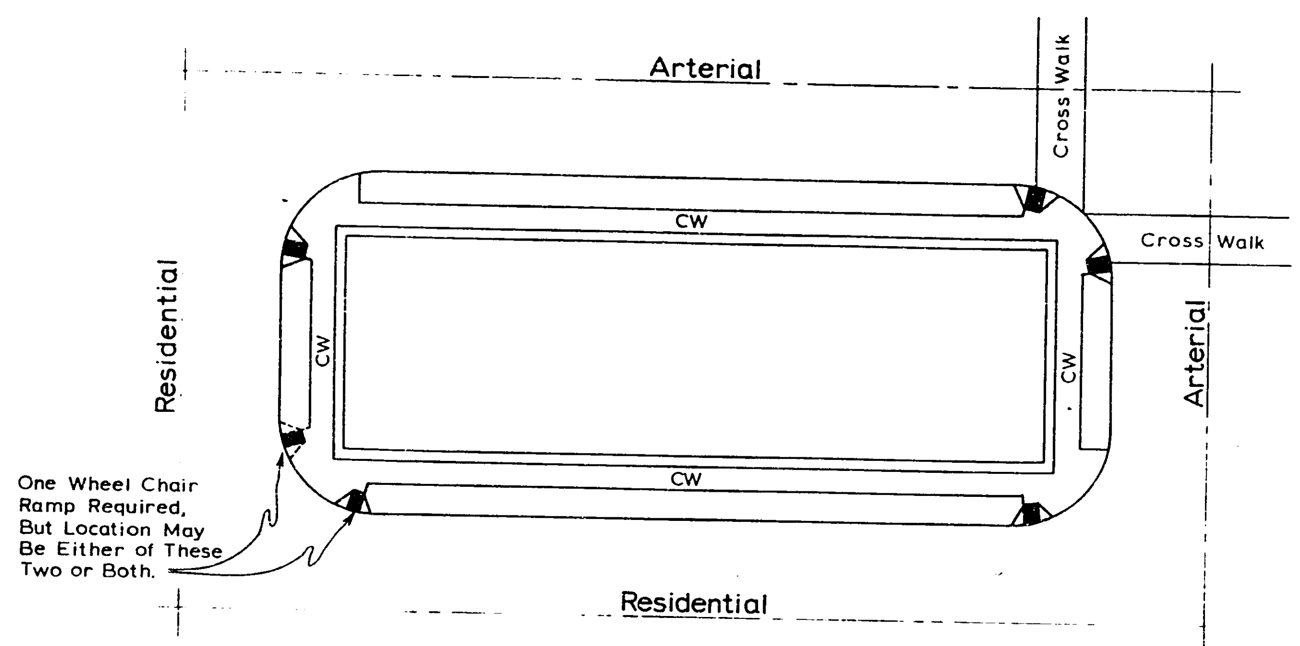
Details as shown for Type 108 Curb.
Cut Joint Material to match Type 110 Curb.

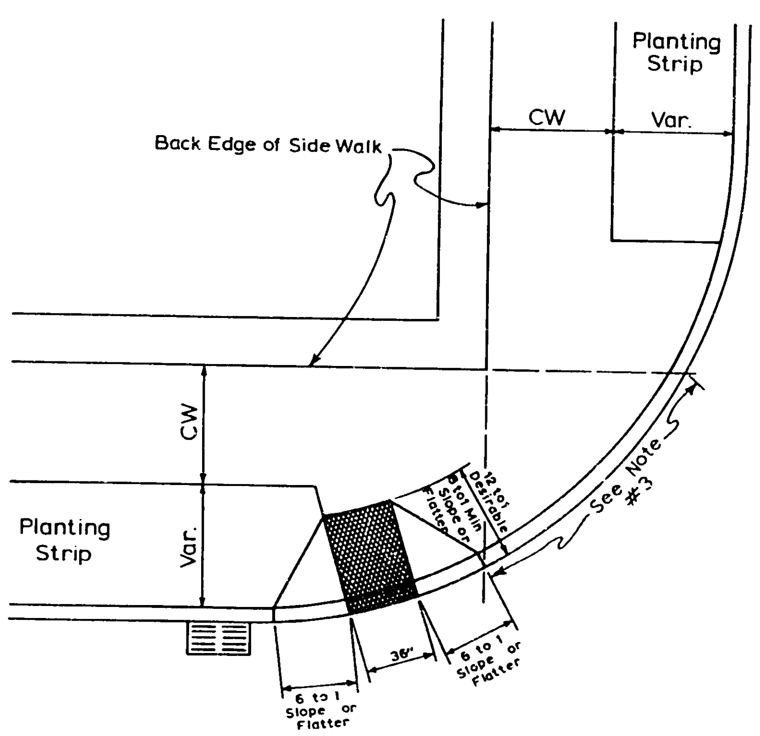
DO NOT SCALE

Revised 5-1-70	CITY OF SEATTLE	
Revised 4-5-67	DEPARTMENT OF ENGINEERING	
	Joints and Curb Dowels	
	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 — CHAIRMAN; ATTEST: — SECRETARY	

Standard Plan No. 113

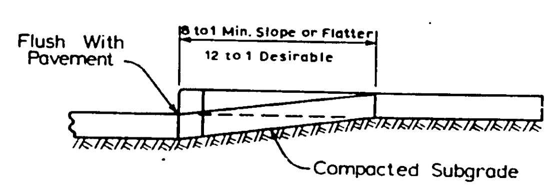
Typical Wheel Chair Ramp Locations



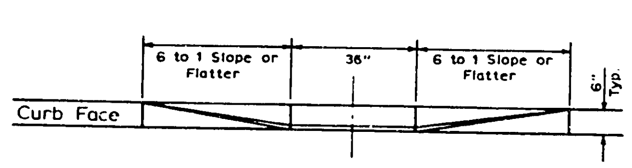


Notes

1. Inlets Shall Be Outside the Wheel Chair Ramp (24" Min. Clearance from Ramp).
2. The Wheel Chair Ramp Shall Be Moved Away from the Crosswalk to Avoid Conflicts with Hydrants, Poles, Inlets, or Other Utilities, Except Where the Street Grade Exceeds 4%.
3. Wheel Chair Ramp Should Not Encroach into the Area Formed by the Projection of the Back Side of the Side Walks (As Shown) Without Approval of the City Engineer. Min Curb Distance between Any Two Ramps Is 6 Ft.
4. The Ramp Must Have A Course Textured Surface Approved By the City Engineer.
5. All Signalized Intersections Should Be Treated As Arterial-Arterial.

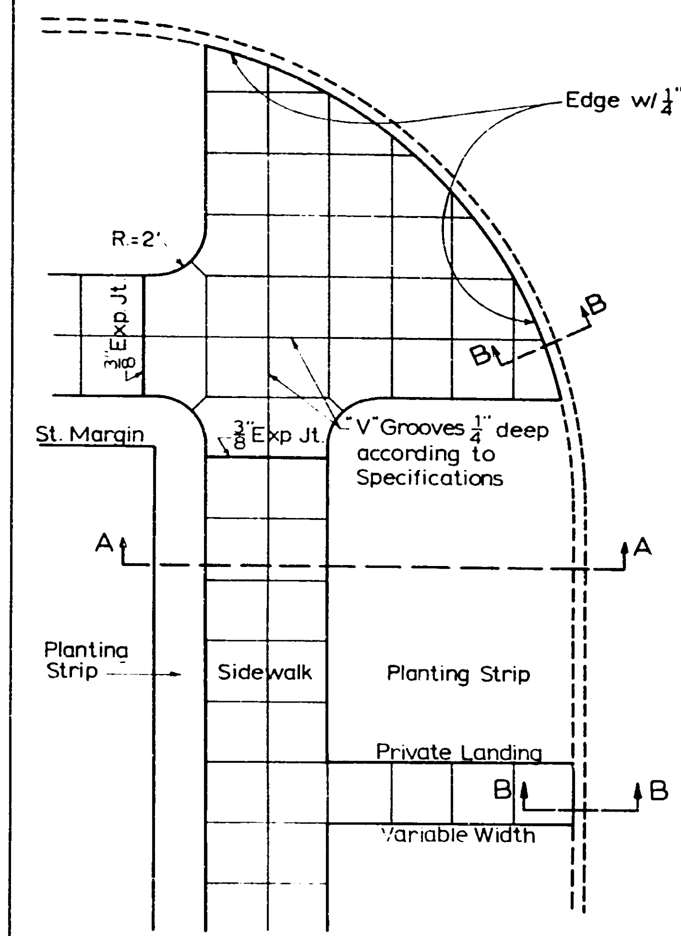


DO NOT SCALE

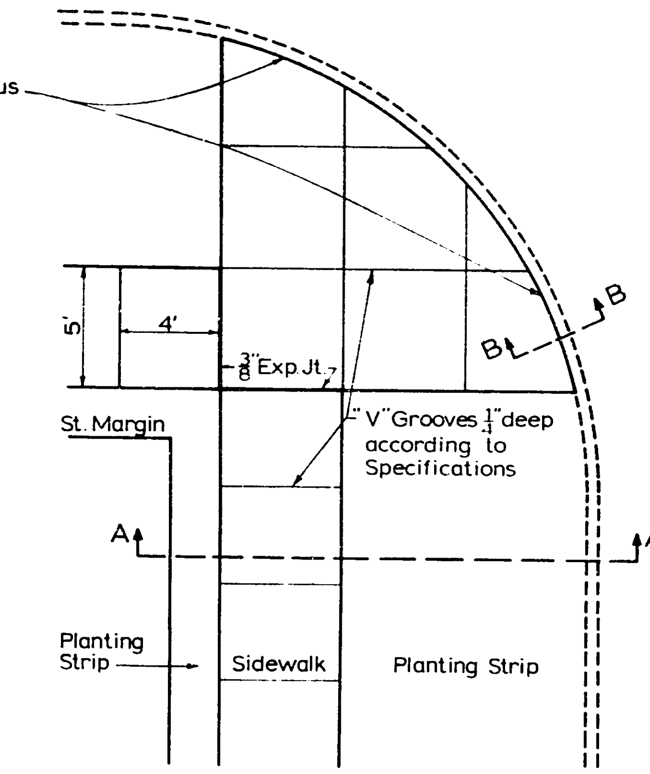


Rev.	CITY OF SEATTLE DEPARTMENT OF ENGINEERING
4-7-76	Wheel Chair Ramp
	APPROVED BY THE BOARD OF PUBLIC WORKS 1/28/1975 [signature] CHAIRMAN ATTEST: [signature] SECRETARY

Standard Plan No. 114

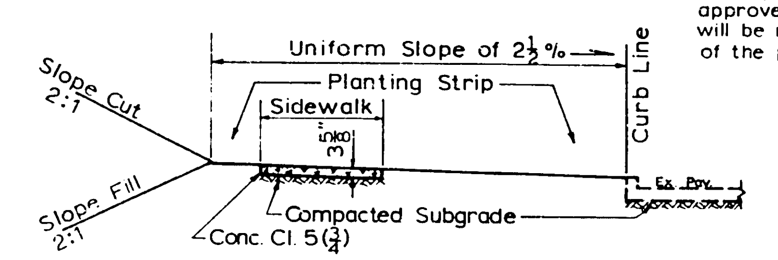


Type 114 A

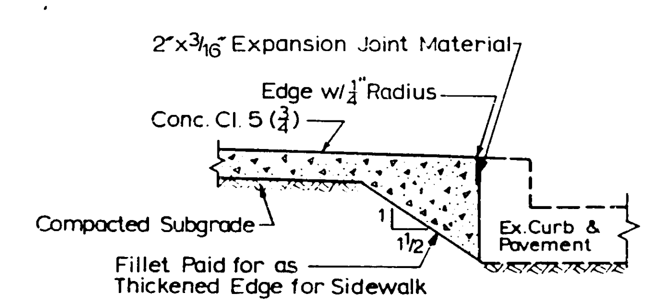


Type 114 B

When planting strip pavement is approved, Dummy joint material will be required at the perimeter of the planting strip pavement.



Section A-A

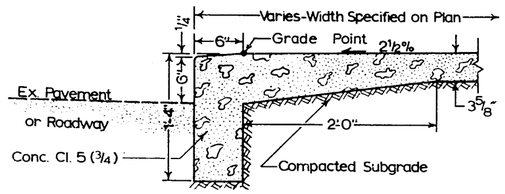


Section B-B

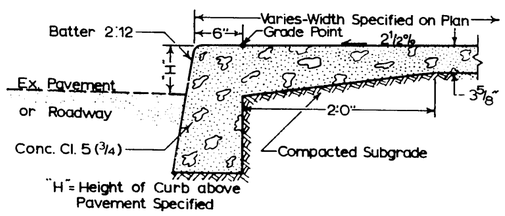
DO NOT SCALE

Revised	CITY OF SEATTLE DEPARTMENT OF ENGINEERING
4-7-76 / 5-1-70	Sidewalk Details
	APPROVED BY THE BOARD OF PUBLIC WORKS 4-5 1967 [signature] CHAIRMAN ATTEST: [signature] SECRETARY

Standard Plan No. 114.1



114.1 A-Type 108 Curb



114.1 B-Type 110 Curb

Vertical Backface of Curb shall be formed against native earth where practical, otherwise by Backform left in place.

Surface marking of C.W. begins from longitudinal Curb marking 6" from Face of Curb.

DO NOT SCALE

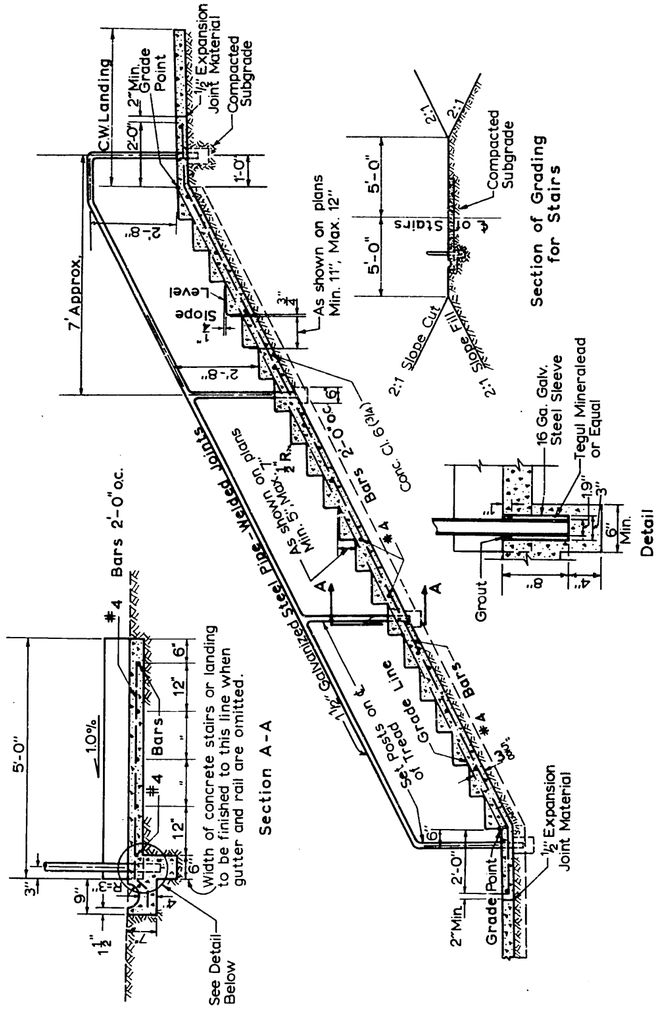
Revised	5-1-70
Revised	4-5-67

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Monolithic Curb and Sidewalk

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 Chairman
ATTEST: Secretary

Standard Plan No. 115



DO NOT SCALE

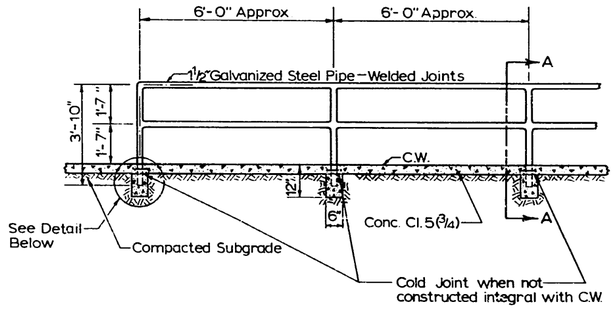
Revised	4-7-76
Revised	5-1-70
Revised	4-5-67
Revised	1-6-65

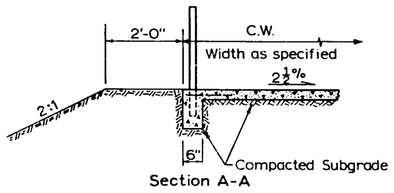
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

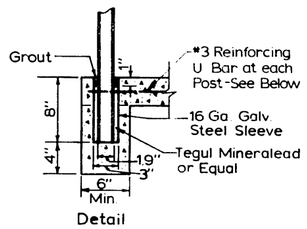
Cement Concrete Stairway Construction Details

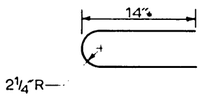
APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 Chairman
ATTEST: Secretary

Standard Plan No. 116









DO NOT SCALE

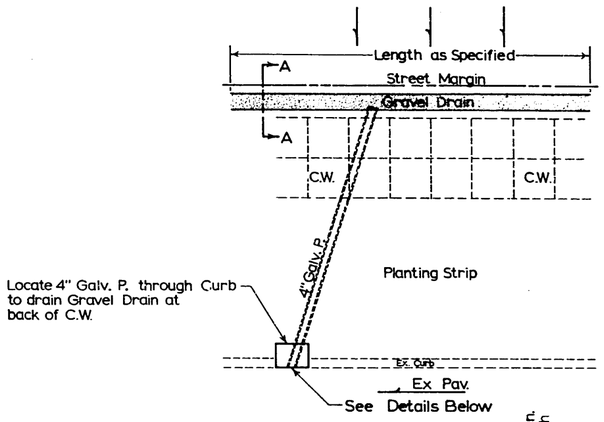
Revised	4-7-76
Revised	5-1-70
Revised	4-5-67
Revised	1-6-65

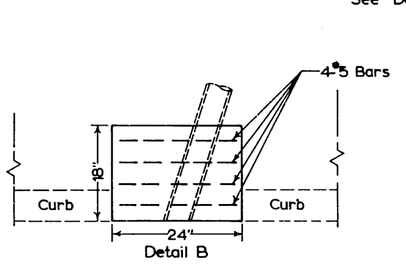
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

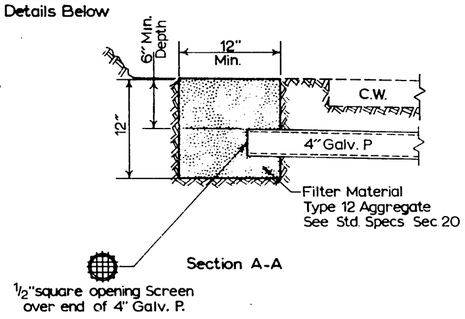
Steel Pipe Handrail Construction Details

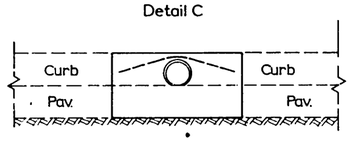
APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 CHAIRMAN
ATTEST: SECRETARY

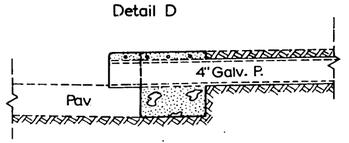
Standard Plan No. 117











When Curb is existing remove and replace as shown.

DO NOT SCALE

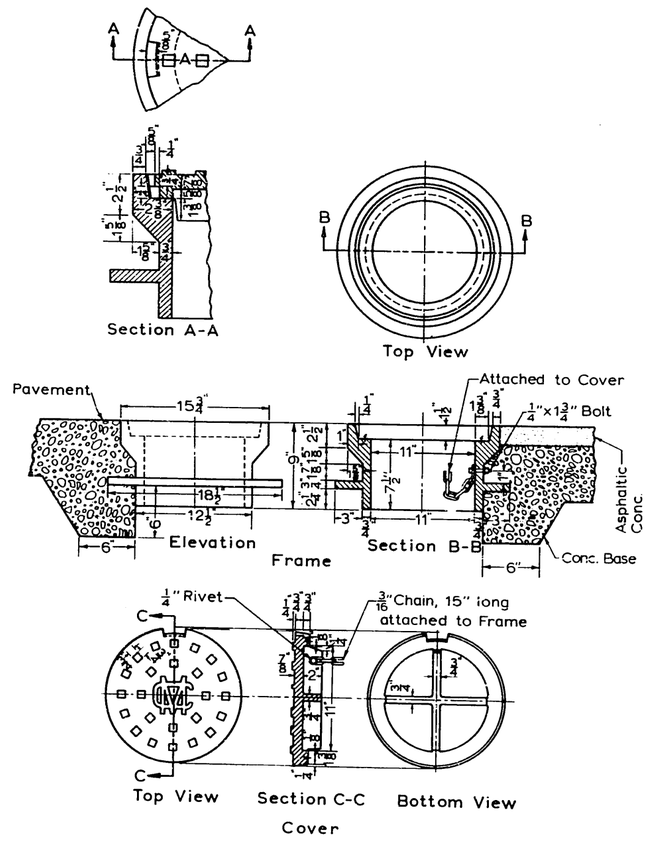
Revised	5-1-70
Revised	4-5-67
Revised	1-6-65

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Sidewalk Drain

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No.118



Frame and Cover shall be tested for accuracy of fit and shall be marked in sets for delivery.

All Castings to have a bituminous coating according to Std. Specs. Sec. 63.208.

DO NOT SCALE

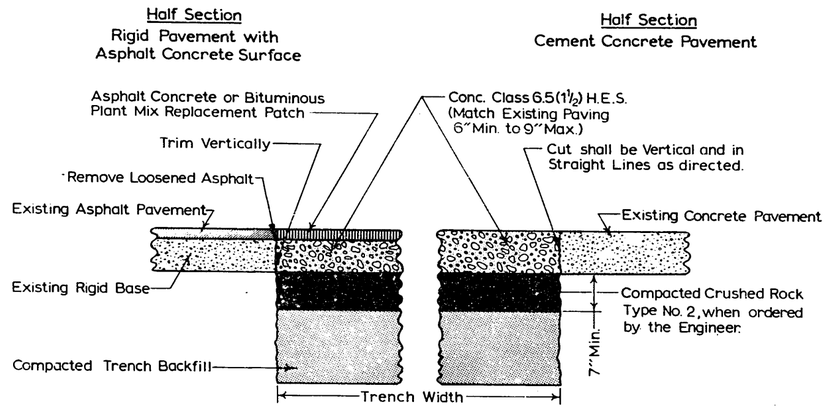
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Monument Case

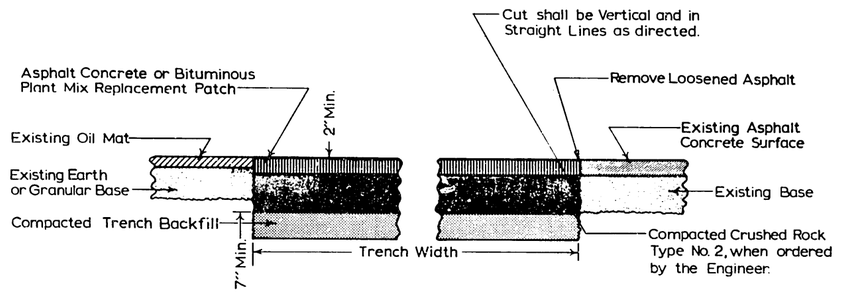
Revised 4-7-76

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 — CHAIRMAN
ATTEST: — SECRETARY

Standard Plan No. 121



Typical Patch for Rigid Pavement



Typical Patch for Flexible Pavement

DO NOT SCALE

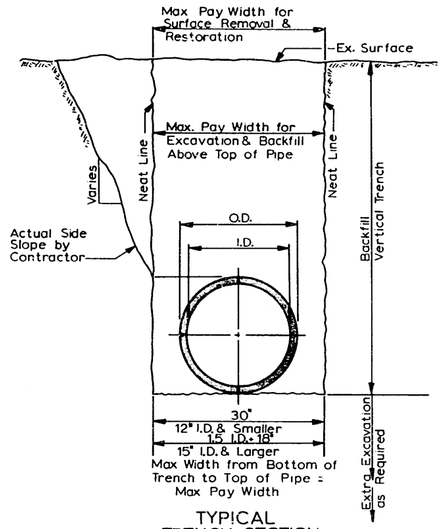
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Pavement Patching

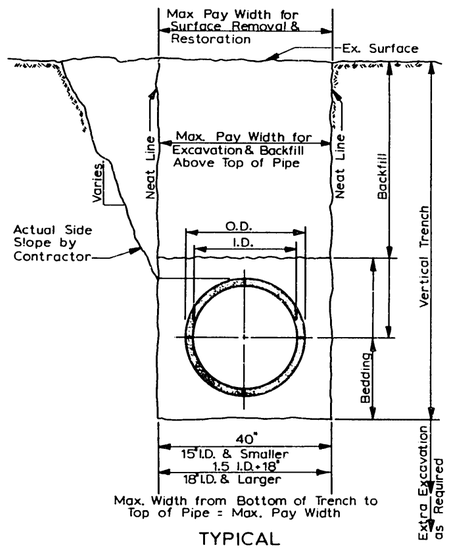
Revised 4-7-76
Revised 5-1-70
Revised 4-5-67

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 — CHAIRMAN
ATTEST: — SECRETARY

Standard Plan 121.1



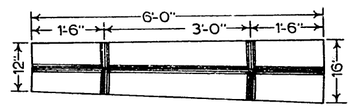
TYPICAL
TRENCH SECTION
(WATERMAINS)



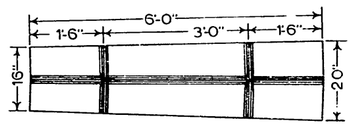
TYPICAL
TRENCH SECTION
(SEWERS)

CITY OF SEATTLE DEPARTMENT OF ENGINEERING
TYPICAL TRENCH SECTION
APPROVED BY THE BOARD OF PUBLIC WORKS 4/7/, 1976. Chairman ATTEST: Secretary

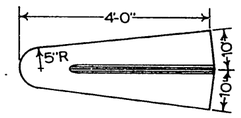
Standard Plan No. 123



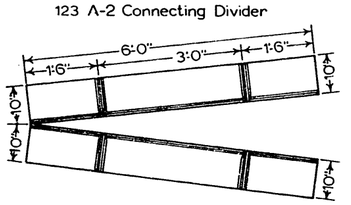
123 A-1 Connecting Divider



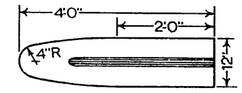
123 A-2 Connecting Divider



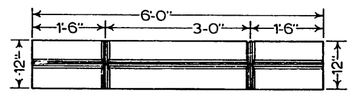
123 A Nosing



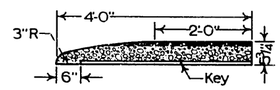
123 A Straight Section



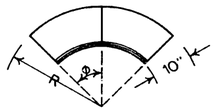
123 C Nosing



123 C Curb

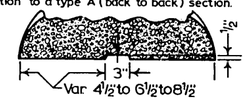


Section A℄C Nosing

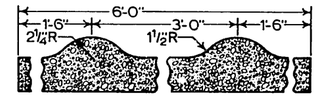


123 A Radial Curb
See Table Below Left

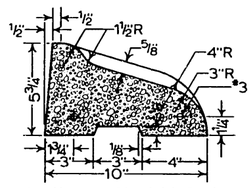
The main body of the curb and the longitudinal rib shall form a uniform transition from a type C section to a type A (back to back) section.



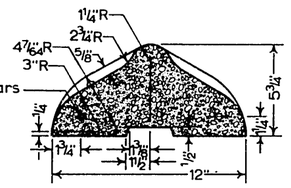
Section-A Connecting Dividers



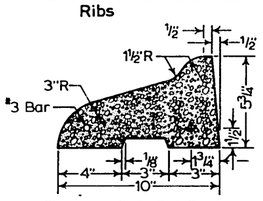
Longitudinal Section Thru Transverse Ribs



Section-A Straight Curb



Section-C Curb

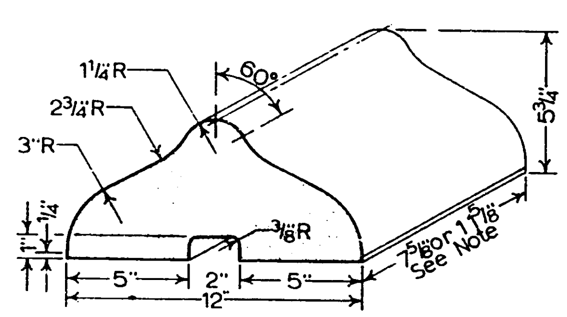


Section-A Radial Curb

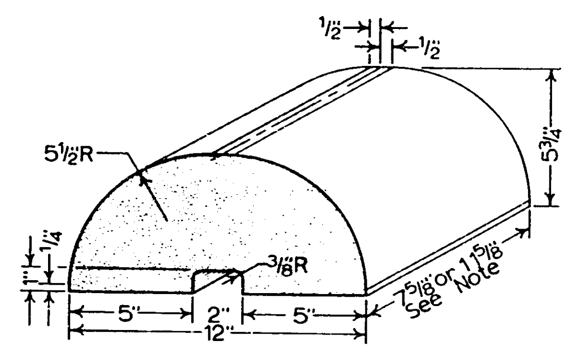
DO NOT SCALL

123 A Radial Curb		
Unit	Radius	Curb Return Angle (φ) Multiple
R1	1'-3"	45°00'
R2	1'-10"	30°00'
R3	2'-6"	22°30'
R4	5'-0"	11°27.54'
R5	10'-0"	5°43.77'
For Radii greater than 10' use segments of straight curb.		

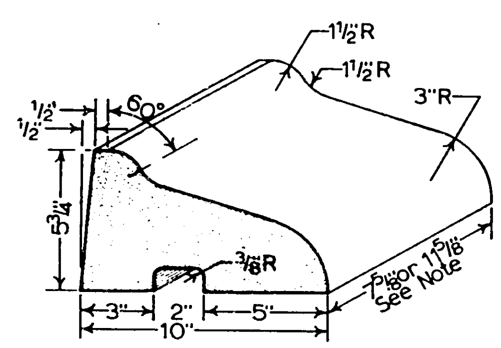
CITY OF SEATTLE DEPARTMENT OF ENGINEERING
Type 123 Traffic Curbs Precast Cement Concrete
APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 Chairman ATTEST: Secretary



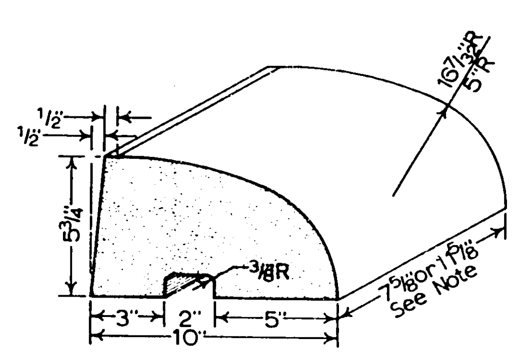
124 C-Block



124 C-Reflector Block



124 A-Block



124 A-Reflector Block

With 7⅝" Blocks every sixth Block may be a Reflector Block or as otherwise specified.

With 11⅝" Blocks every fourth Block may be a Reflector Block or as otherwise specified.

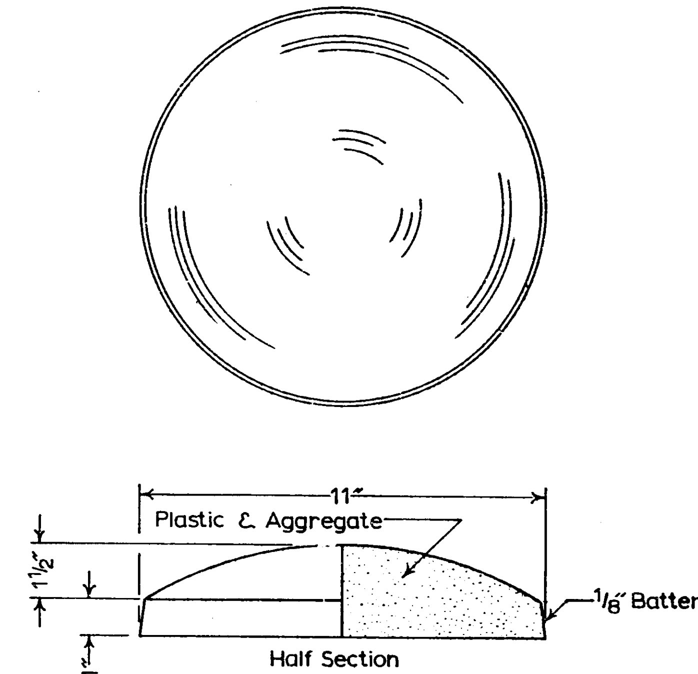
DO NOT SCALE

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

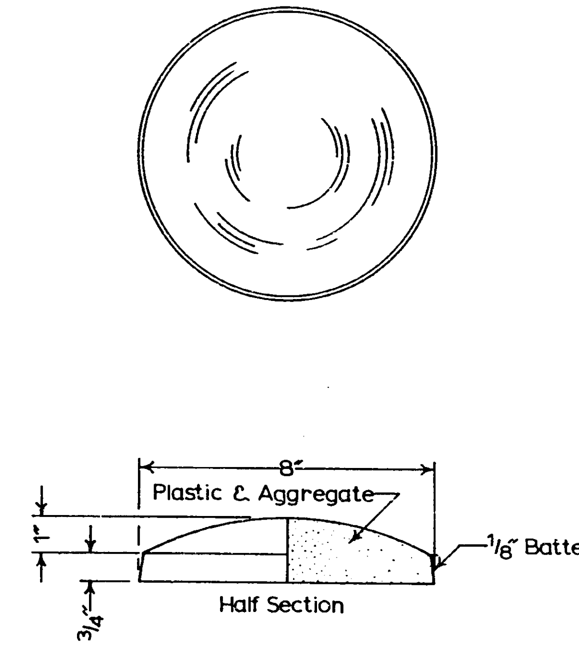
Type 124 Traffic Curbs
Block-Precast Cement Concrete

Revised 5-1-70

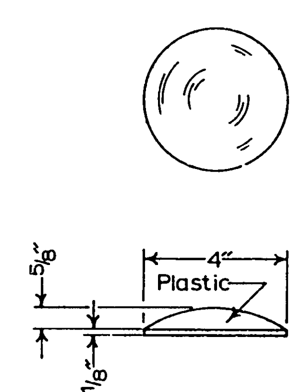
APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 ____ CHAIRMAN
ATTEST: ____ SECRETARY



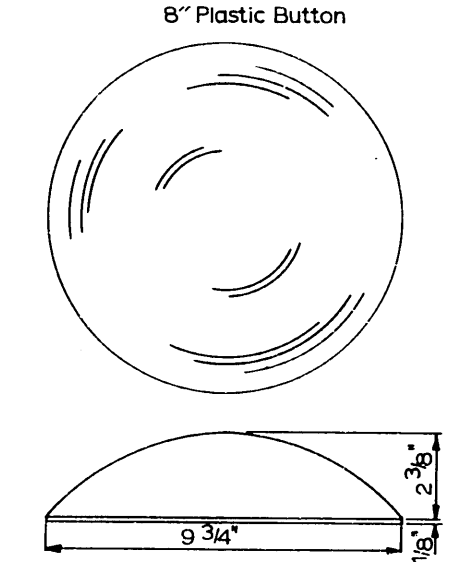
Type 125A
11" Plastic Button



Type 125B
8" Plastic Button



Type 125C
4" Lane Marker



Type 125D
9 3/4" Plastic Button

DO NOT SCALE

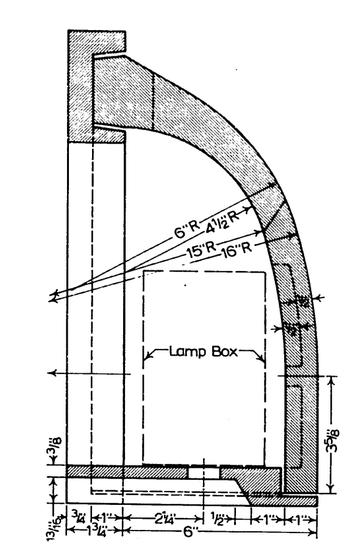
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 125
Traffic Buttons

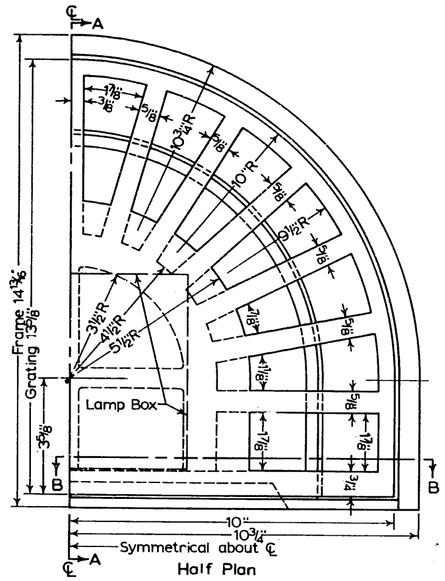
Revised 4-7-76

APPROVED BY THE BOARD OF PUBLIC WORKS
7 - 8 - 1970 ____ CHAIRMAN
ATTEST: ____ SECRETARY

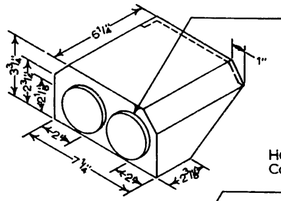
Standard Plan No.126

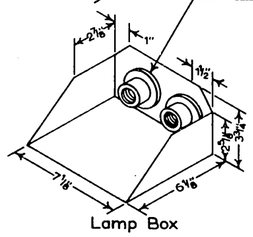


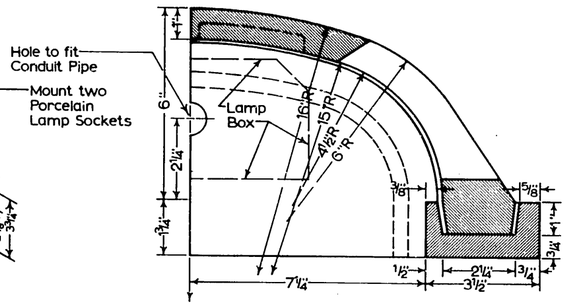
Section A-A



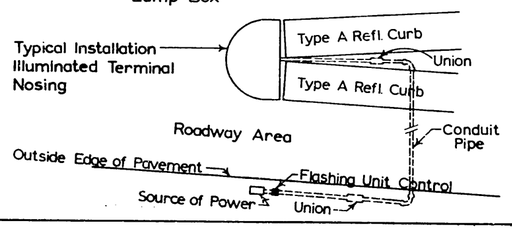
Half Plan





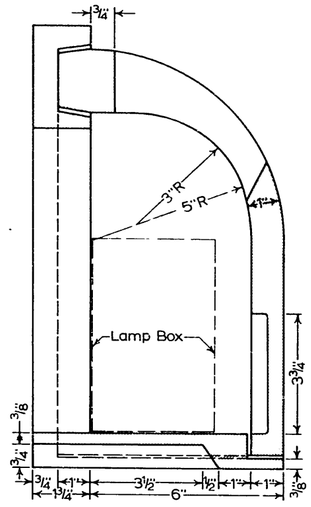


Section B-B

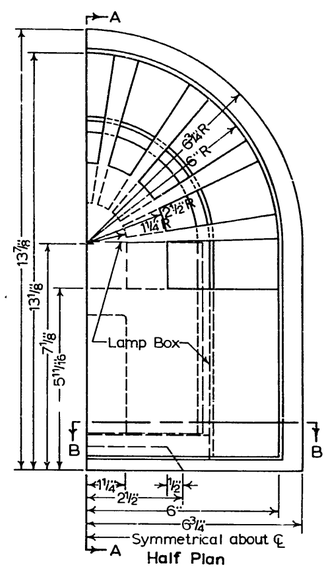


CITY OF SEATTLE DEPARTMENT OF ENGINEERING
Type 126 Terminal Nosing Illuminated
APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 — CHAIRMAN ATTEST: — SECRETARY

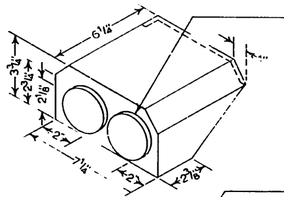
Standard Plan No.127

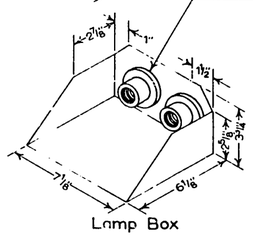


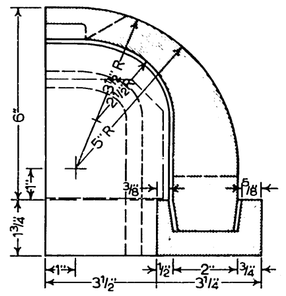
Section A-A



Half Plan

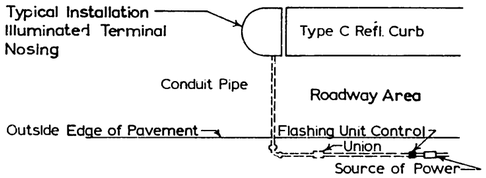






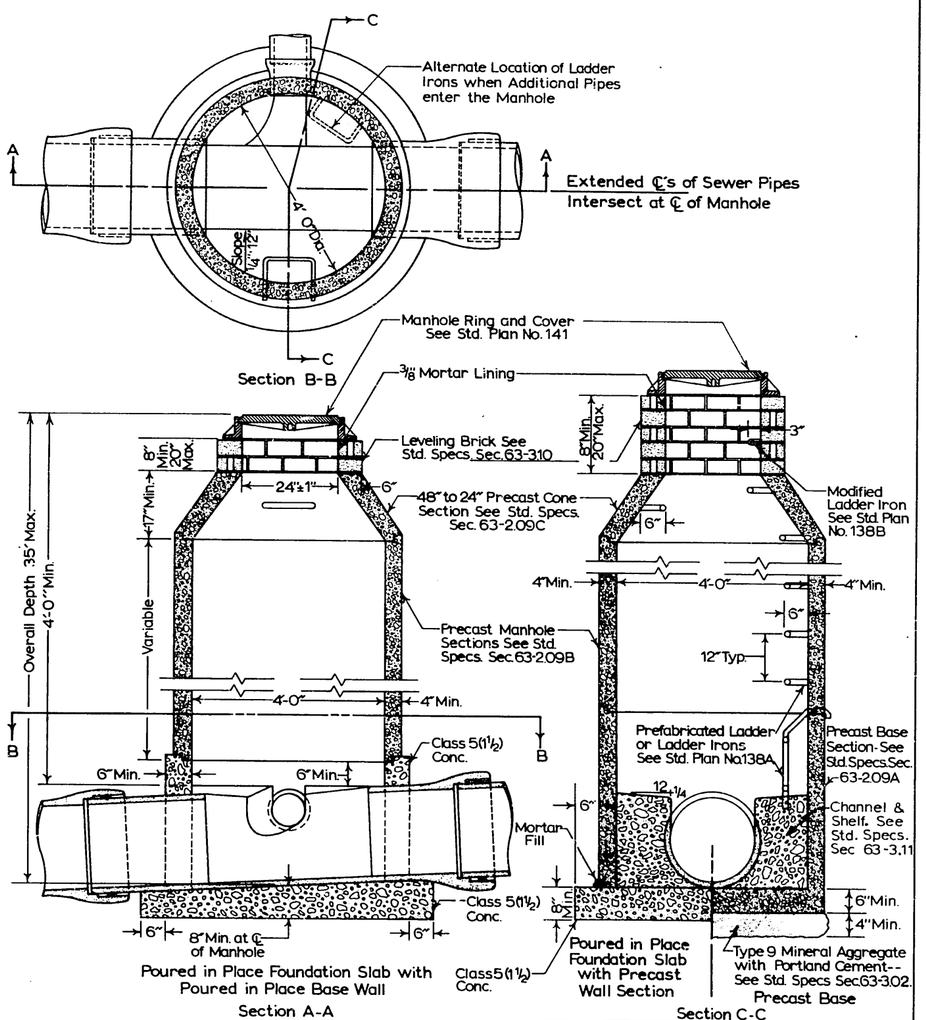
Section B-B

DO NOT SCALE



CITY OF SEATTLE DEPARTMENT OF ENGINEERING
Type 127 Terminal Nosing Illuminated.
APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 — CHAIRMAN ATTEST: — SECRETARY

Standard Plan No. 130



Notes

1. Maximum Pipe Diameter=21"
2. See Std. Specs. Sec. 63 for further requirements.
3. When overall depth of Manhole is less than 7'-0", a Type 134 Manhole may be substituted for the Type 130 Manhole.
4. For Max. Dimension From M.H. to Pipe Joint, See Std Spec Sec 63-3.12.

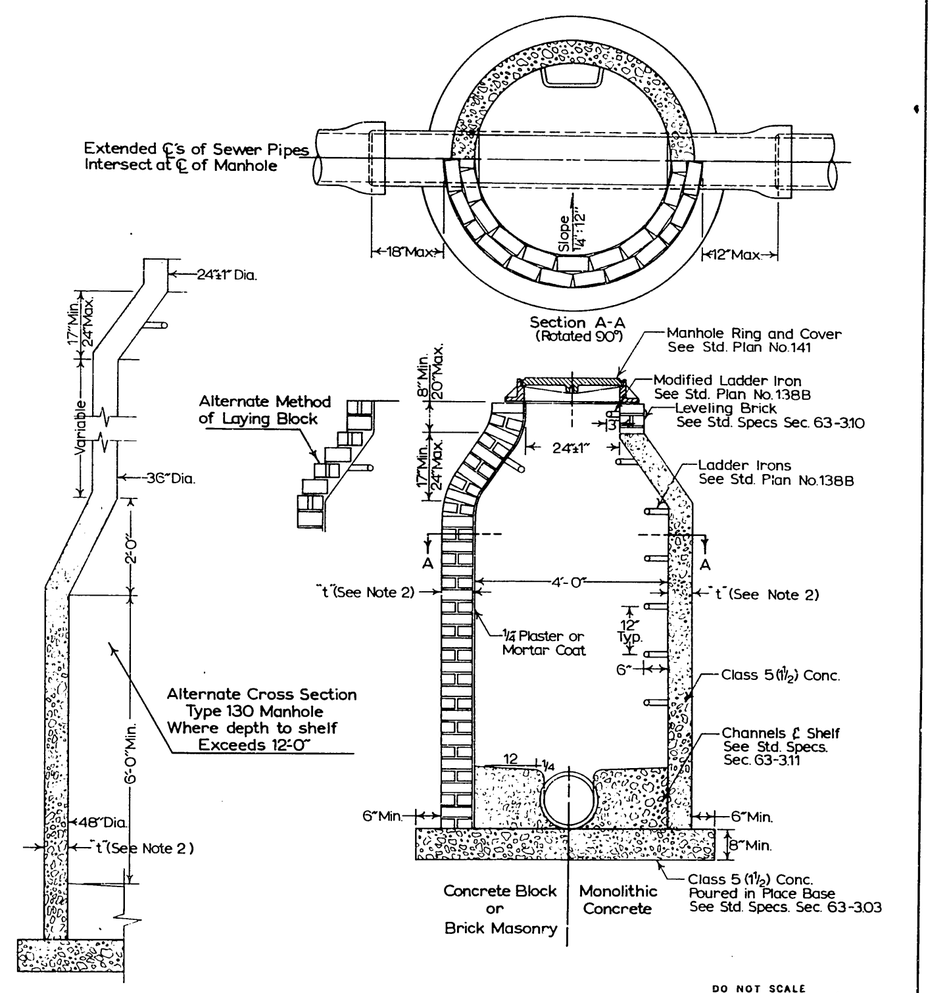
Revised	4-7-76
Revised	4-5-67
Revised	1-6-65

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 130 Manhole

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 _____ CHAIRMAN
ATTEST: _____ SECRETARY

Standard Plan No. 131



DO NOT SCALE

Notes

1. Inside dimensions of Manhole shall conform to dimensions of the Type Manhole designated.
2. Values of "t"
   Cement Concrete t=6"
   Concrete Blocks t=6"
   Brick t=8"
3. See Std. Specs. Sec. 63 for further requirements.

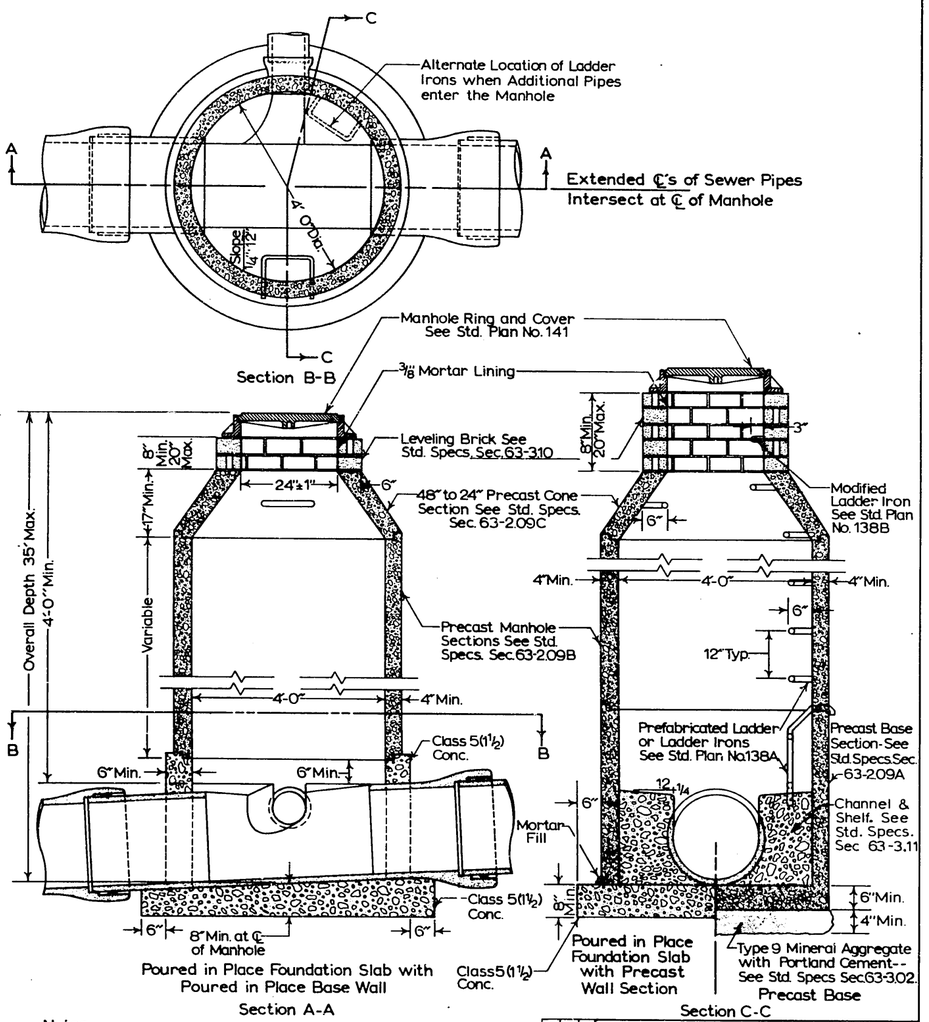
Revised	4-5-67
Revised	1-6-65

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Concrete Block, Brick or Monolithic Concrete Manholes

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 _____ CHAIRMAN
ATTEST: _____ SECRETARY

Standard Plan No. 130



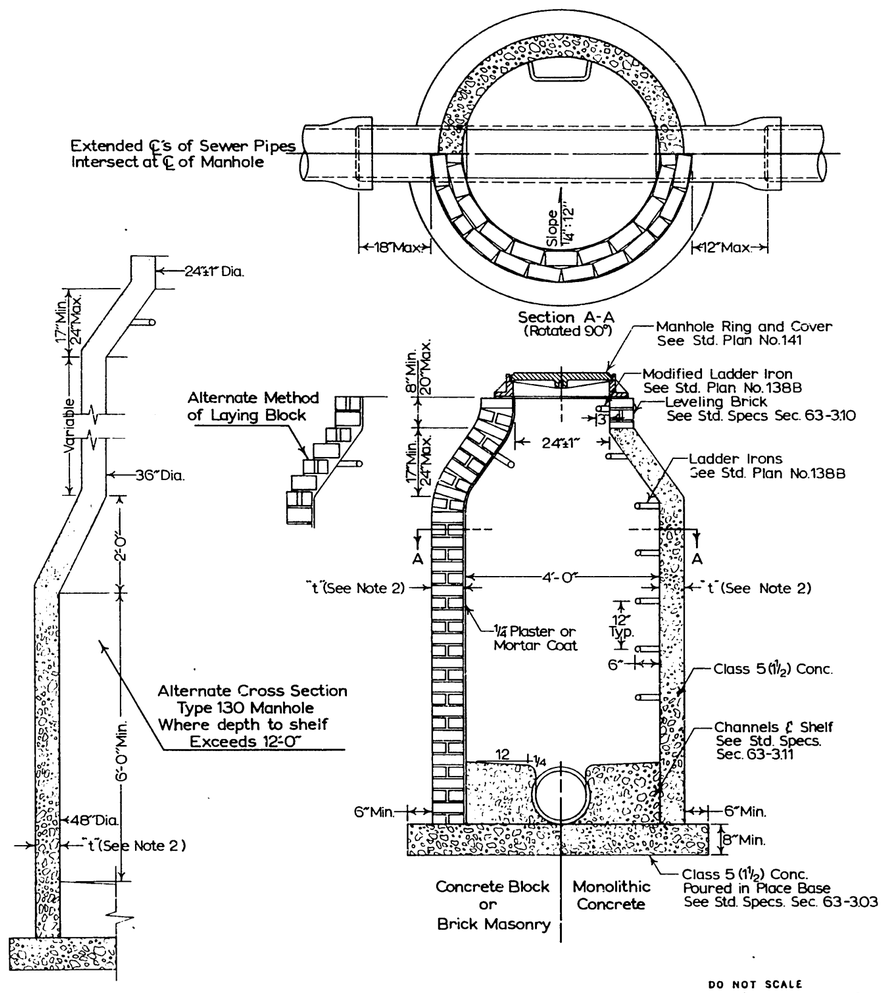
Notes

1. Maximum Pipe Diameter=21"
2. See Std. Specs. Sec. 63 for further requirements.
3. When overall depth of Manhole is less than 7'-0", a Type 134 Manhole may be substituted for the Type 130 Manhole.
4. For Max. Dimension From M.H. to Pipe Joint, See Std Spec Sec 63-3.12.

Revised	4-7-76	CITY OF SEATTLE
Revised	4-5-67	DEPARTMENT OF ENGINEERING
Revised	1-6-65	Type 130 Manhole

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 6, 1966 _____ CHAIRMAN
ATTEST: _____ SECRETARY

Standard Plan No. 131



DO NOT SCALE

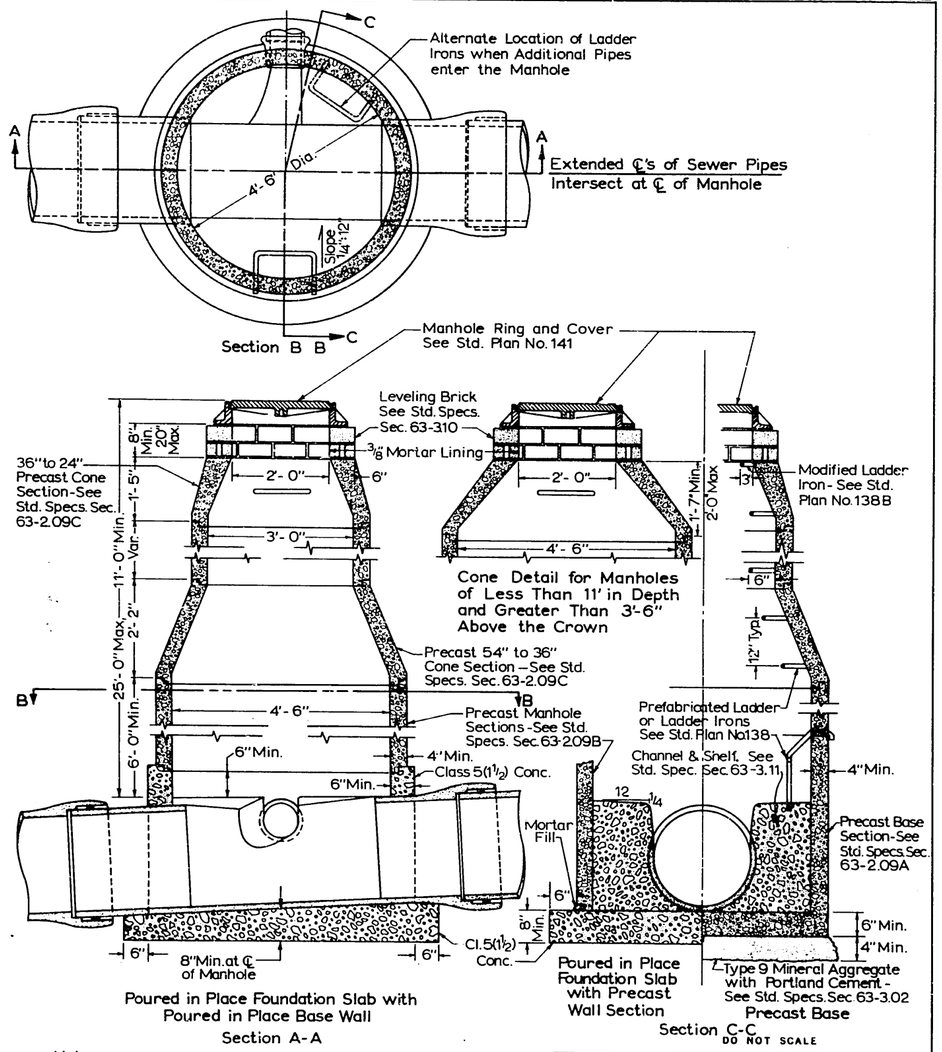
Notes

1. Inside dimensions of Manhole shall conform to dimensions of the Type Manhole designated.
2. Values of "t"
   Cement Concrete t=6"
   Concrete Blocks t=6"
   Brick t=8"
3. See Std. Specs. Sec. 63 for further requirements.

Revised	4-5-67	CITY OF SEATTLE
Revised	1-6-65	DEPARTMENT OF ENGINEERING
		Concrete Block, Brick or Monolithic Concrete Manholes

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 6, 1966 _____ CHAIRMAN
ATTEST: _____ SECRETARY

Standard Plan No. 132



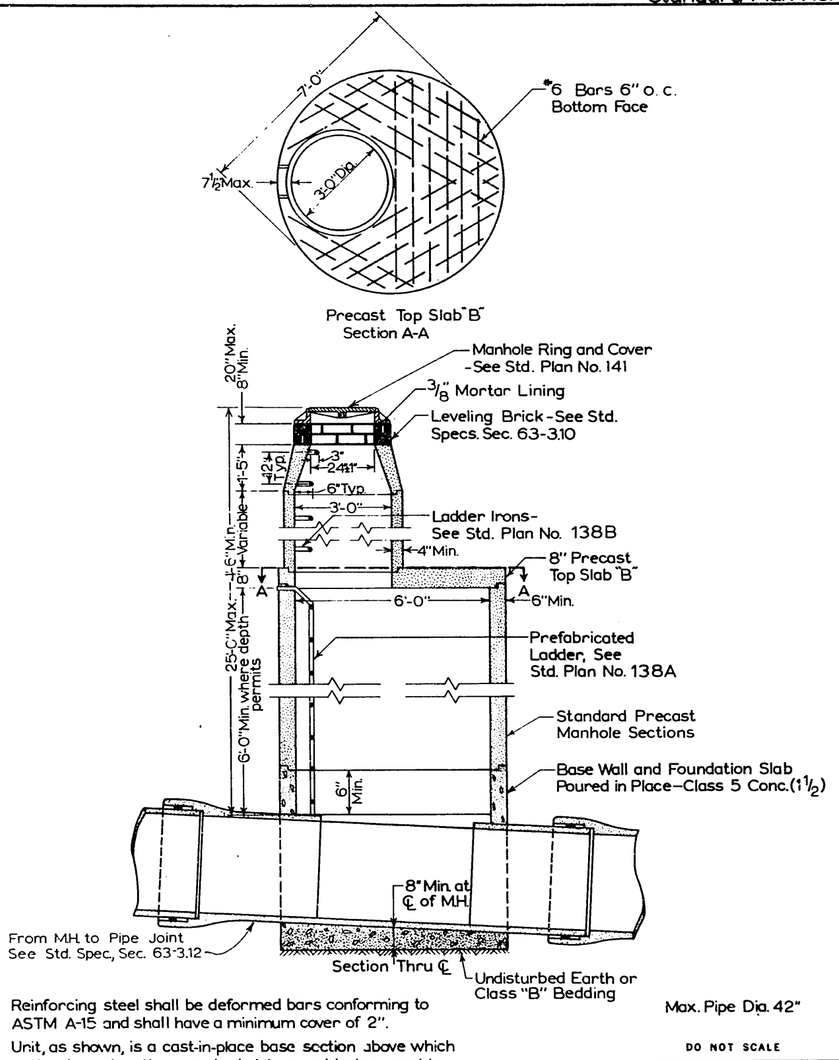
DO NOT SCALE

Notes

1. Maximum Pipe Diameter=36"
2. See Std. Specs. Sec. 63 for further requirements.
3. For Manholes constructed of alternate materials see Std. Plan No. 131.
4. The maximum dimension from Manhole to pipe joint See Std Specs Sec 63-3.12.

Revised 4-7-76	CITY OF SEATTLE
Revised 4-5-67	DEPARTMENT OF ENGINEERING
Revised 1-6-65	Type 132 Manhole
	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 CHAIRMAN ATTEST: SECRETARY

Standard Plan No. 133



Reinforcing steel shall be deformed bars conforming to ASTM A-15 and shall have a minimum cover of 2".

Unit, as shown, is a cast-in-place base section above which optional construction may be brick, conc. block or cast-in-place construction at Contractor's option, unless otherwise provided in the proposal.

Construct manholes in accordance with Section 63 of the Std. Specifications.

Base walls all cast-in-place for 12" and larger pipe.

Allow flexible joints of unreinforced pipe to deflect. No concrete on, around or under joint.

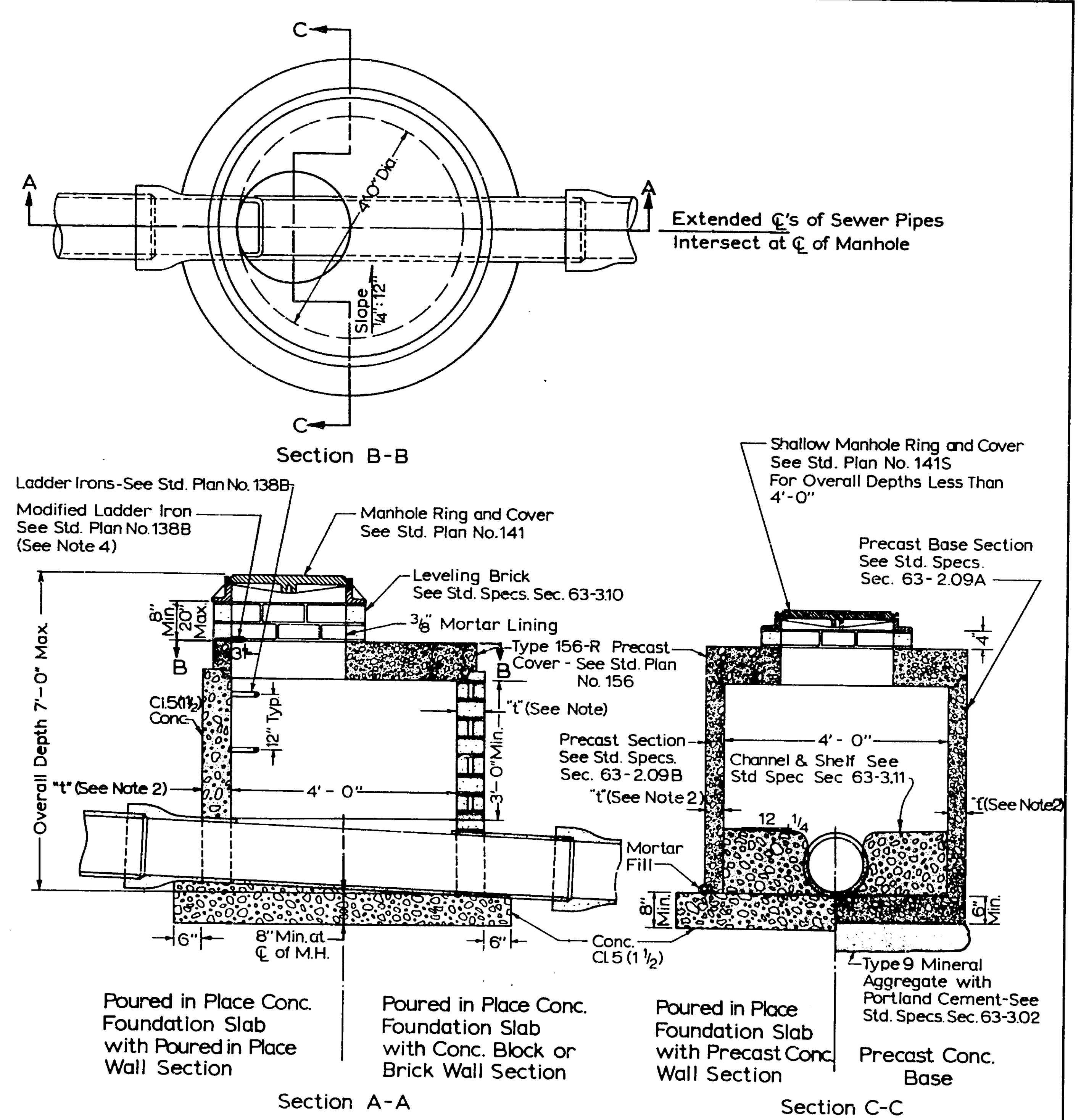
All lift holes and joints to be filled with mortar.

Max. Pipe Dia. 42"

DO NOT SCALE

Revised 4-7-76	CITY OF SEATTLE
Revised 5-1-70	DEPARTMENT OF ENGINEERING
Revised 4-5-67	Type 133 Manhole
Revised 1-6-65	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 CHAIRMAN ATTEST: SECRETARY

Standard Plan No. 134



NOTES:

1. For Max Dimension MH to Pipe Joint. See Std Specs Sec 63-3.12
2. Maximum Pipe Diameter = 21"
3. Values of "t"

Precast Concrete	"t" = 4" Min.
Cement Concrete	"t" = 6"
Concrete Block	"t" = 6"
Brick	"t" = 8"

4. See Std. Specs. Sec. 63 for further requirements.
5. No Ladder Irons required when overall depth is less than 4'-0".

DO NOT SCALE

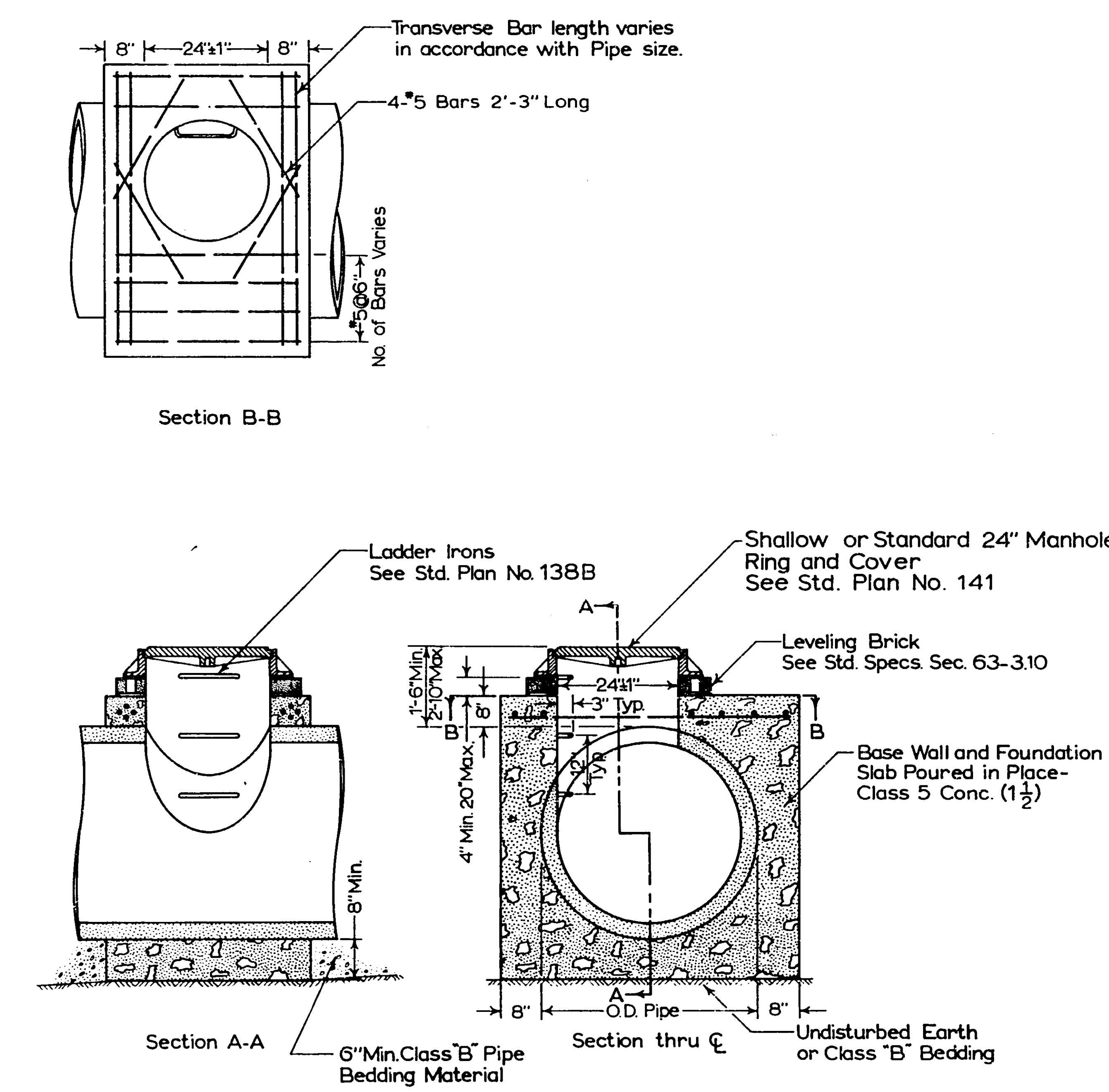
Revised 4-7-76 | Revised 5-1-70 | Revised 4-5-67 | Revised 1-6-65

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 134 Manhole

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 6, 1964 ______ CHAIRMAN
ATTEST: ______ SECRETARY

Standard Plan No. 135



Pipe Dia. 24" Min. - 42" Max.

Reinforcing Steel shall be deformed bars conforming to ASTM A-15 and shall have a min. cover of 2".

Construct manholes in accordance with Section 63 of the Std. Specifications.

DO NOT SCALE

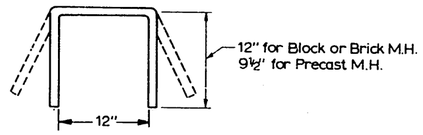
Revised 4-5-67 | Revised 1-6-65

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 135 Manhole

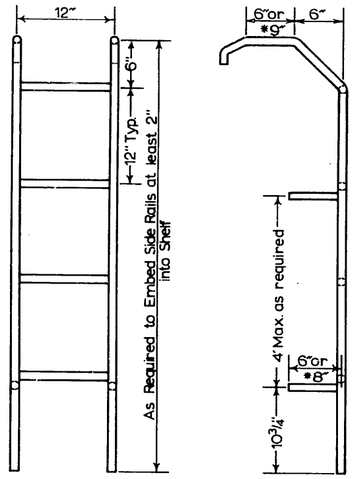
APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 6, 1964 ______ CHAIRMAN
ATTEST: ______ SECRETARY

Standard Plan No.138



Legs may be parallel or approximately radial at option of manufacturer except that all steps in any manhole shall be similar.

138 B - Manhole Step



138 A - Prefabricated Ladder

*Larger Dimension when Ladder is used with Precast Reducing Slab.

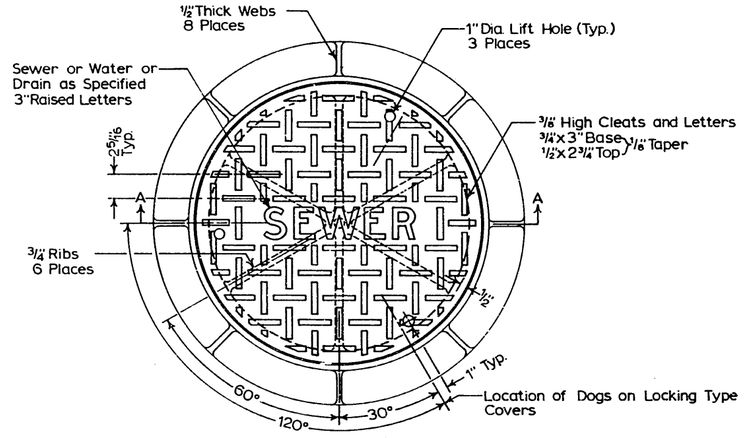
Rungs and Irons to be deformed or non-skid.

Materials for Aluminum Ladder Irons and Prefabricated Ladders, or Galvanized Deformed Bar Ladder Irons and Prefabricated Ladders, shall conform to the specifications therefor in Section 63-2.02A and Section 63-2.02B, respectively.

DO NOT SCALE

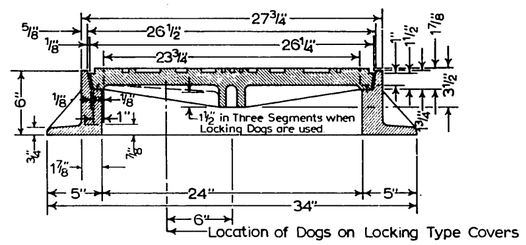
Revised 4-7-76	CITY OF SEATTLE
Revised 5-1-70	DEPARTMENT OF ENGINEERING
Revised 4-5-67	Ladder and Manhole Step
Revised 1-6-65	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 CHAIRMAN ATTEST: SECRETARY

Standard Plan No. 141



Ring and Cover shall be tested for accuracy of fit and shall be marked in sets for delivery.

All Castings to have a bituminous coating according to Std. Specs. Sec. 63.208.



Section A-A

Designate Nodular Iron as Type 141N
(Nodular Iron To Be Used For Cover Only)

Designate Locking Cover as Type 141L
(For Locking Device See U.S. Govt. Patent Office Design Patent No. 2697389)

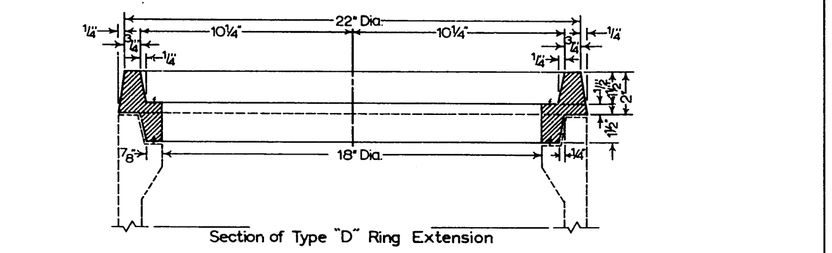
Designate Shallow Ring as Type 141S
(For Shallow Ring 6" Dimension to be 4")

Combinations of Type Designations May Be Used
(Type 141-LNS – Type 141 Locking Cover, Nodular Iron, Shallow Ring)

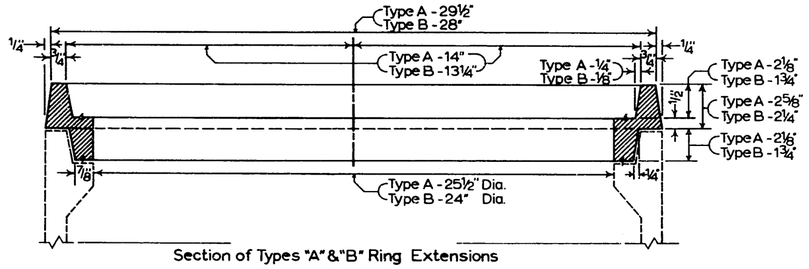
DO NOT SCALE

Revised 4-7-76	CITY OF SEATTLE
Revised 4-5-67	DEPARTMENT OF ENGINEERING
	Type 141-24 Inch Diameter Ring and Cover
	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 CHAIRMAN ATTEST: SECRETARY

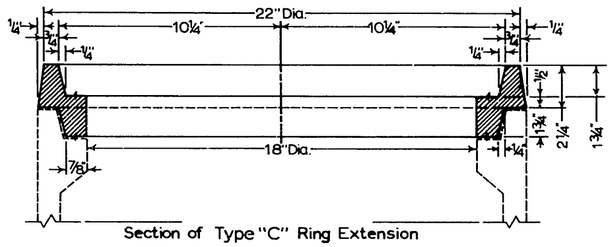
Standard Plan No. 145



Section of Type "D" Ring Extension



Section of Types "A" & "B" Ring Extensions



Section of Type "C" Ring Extension

Manhole ring extension shall be tested for accuracy of fit. See Std. Specs. Sec. 113.

All Castings to have a bituminous coating according to Std. Specs. Sec. 63.208.

DO NOT SCALE

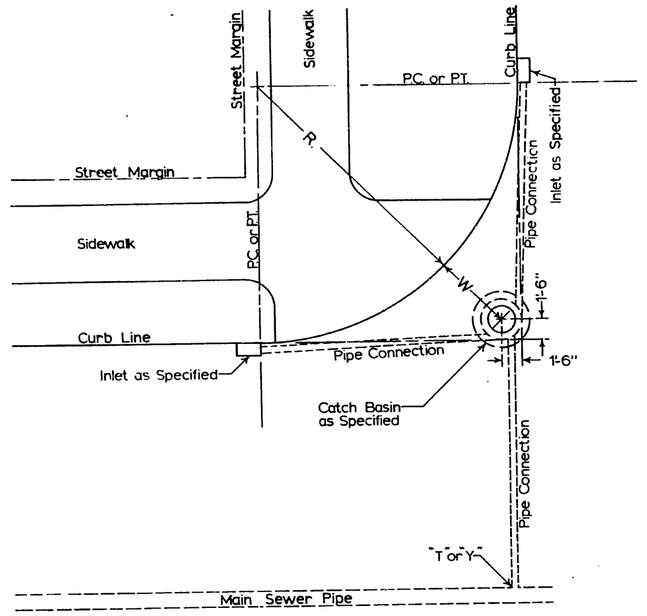
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Manhole Ring Extensions

Revised 4-5-67

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 — CHAIRMAN
ATTEST: — SECRETARY

Standard Plan No. 149



Distance "W" for Catch Basin location varies according to "R" as located by the City Engineer for making satisfactory pipe connections, and to clear other underground utilities.

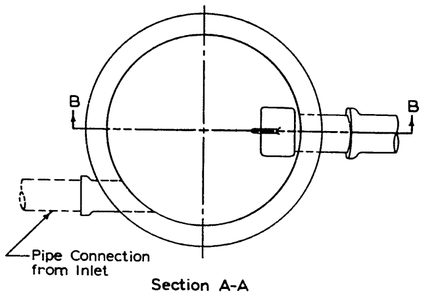
DO NOT SCALE

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

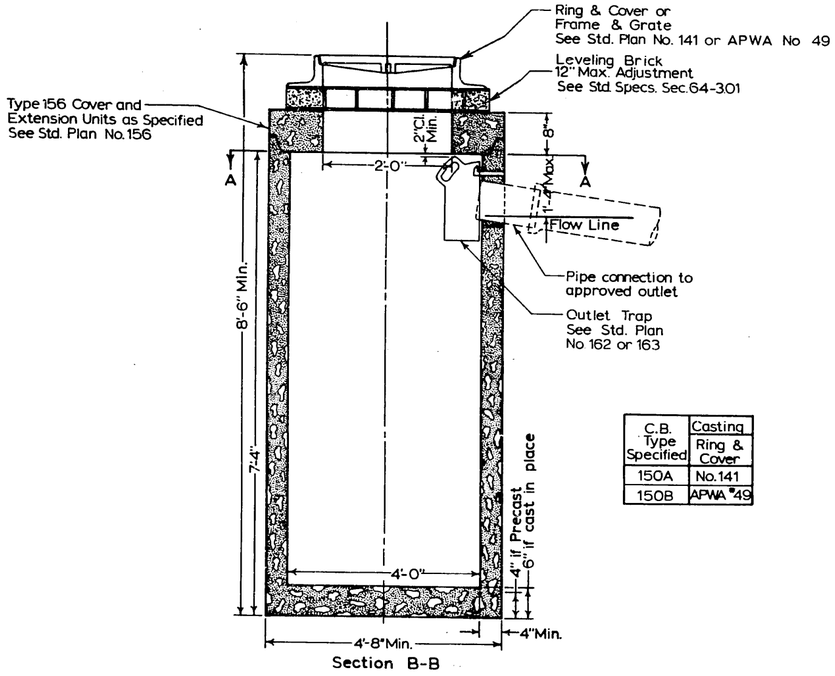
Location of Catch Basin with Inlets

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 — CHAIRMAN
ATTEST: — SECRETARY

Standard Plan No.150



Section A-A



C.B. Type Specified	Casting Ring & Cover
150A	No.141
150B	APWA #49

Section B-B

All lift holes and joints to be filled with mortar.

DO NOT SCALE

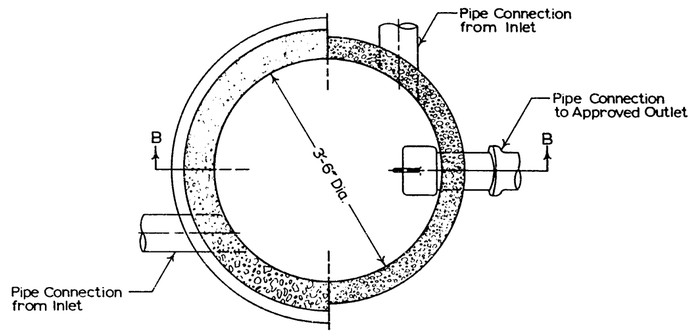
Revised	Revised	Revised
4-7-76	5-1-70	4-5-67

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

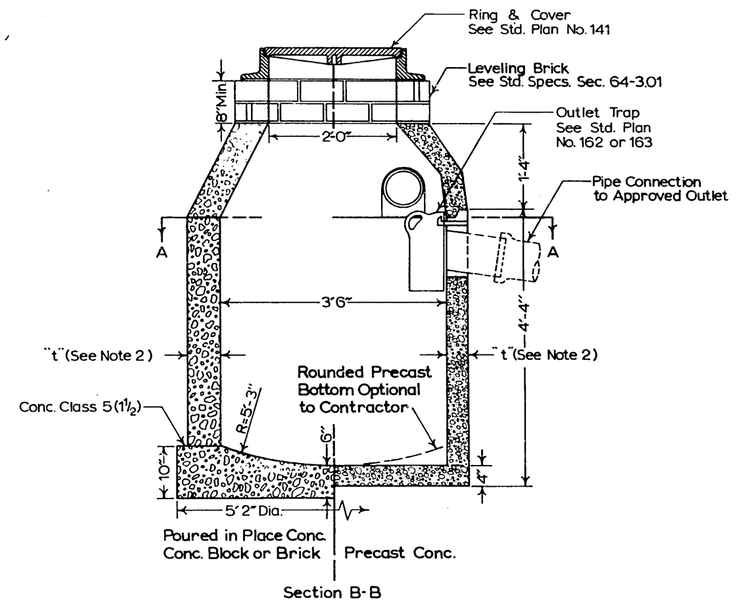
Type 150 Catch Basin

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No.151



Section A-A



Section B-B

Notes
1. Invert of Inlet Pipes must be above invert of Outlet Pipe.
2. Values of "t"
   Cement Concrete t=6"
   Concrete Blocks t=6"
   Brick t=8"
   Precast Concrete t=4" Min.
3. See Std. Specs. Sec. 64 for further requirements.

DO NOT SCALE

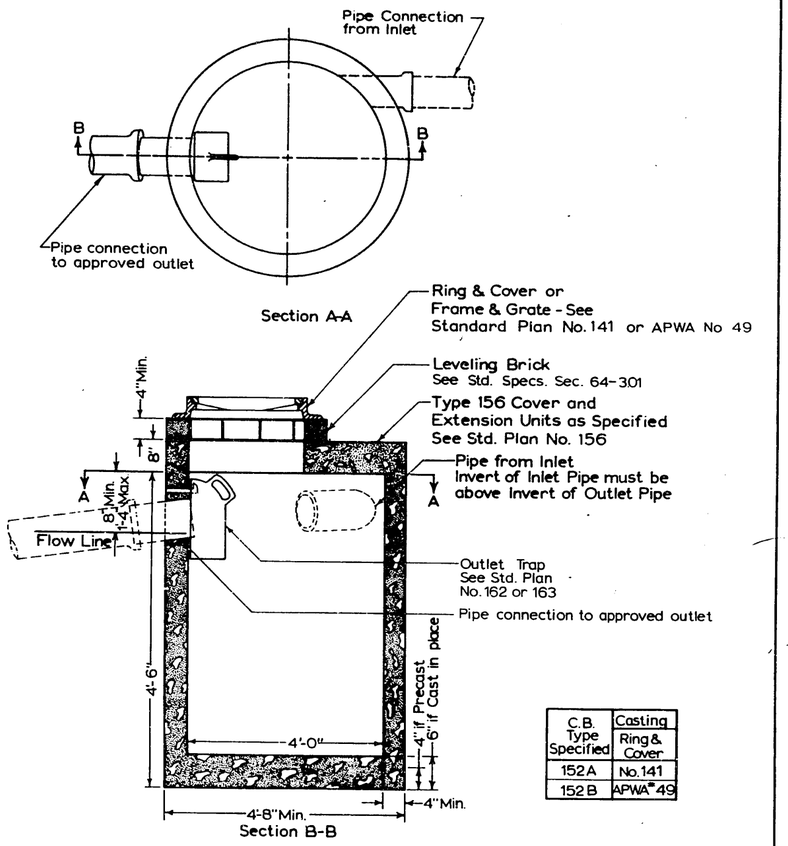
Revised	Revised
5-1-70	4-5-67

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 151 Catch Basin

APPROVED BY THE BOARD OF PUBLIC WORKS
19 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No. 152



C.B. Type Specified	Casting Ring & Cover
152 A	No. 141
152 B	APWA 49

Inlet or Manhole Ring and Cover to be placed over trap.

Openings in grate to be placed parallel to direction of flow.

All lift holes, joints, and opening for Outlet Pipe to be filled with mortar or brick chip and mortar.

DO NOT SCALE

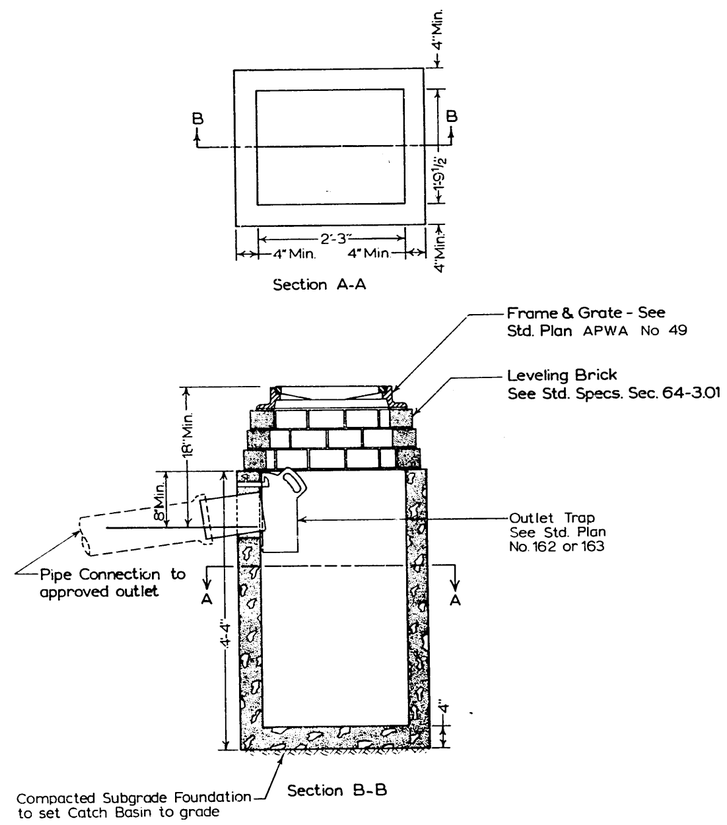
Revised	4-7-76
Revised	5-1-70
Revised	4-5-67
Revised	1-6-65

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 152 Catch Basin

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 _____ CHAIRMAN
ATTEST: _____ SECRETARY

Standard Plan No. 153



All lift holes and joints to be filled with mortar.

For installation see Std. Plan No. 153.1

Compacted backfill shall be placed around Catch Basin before pipe connection is made.

DO NOT SCALE

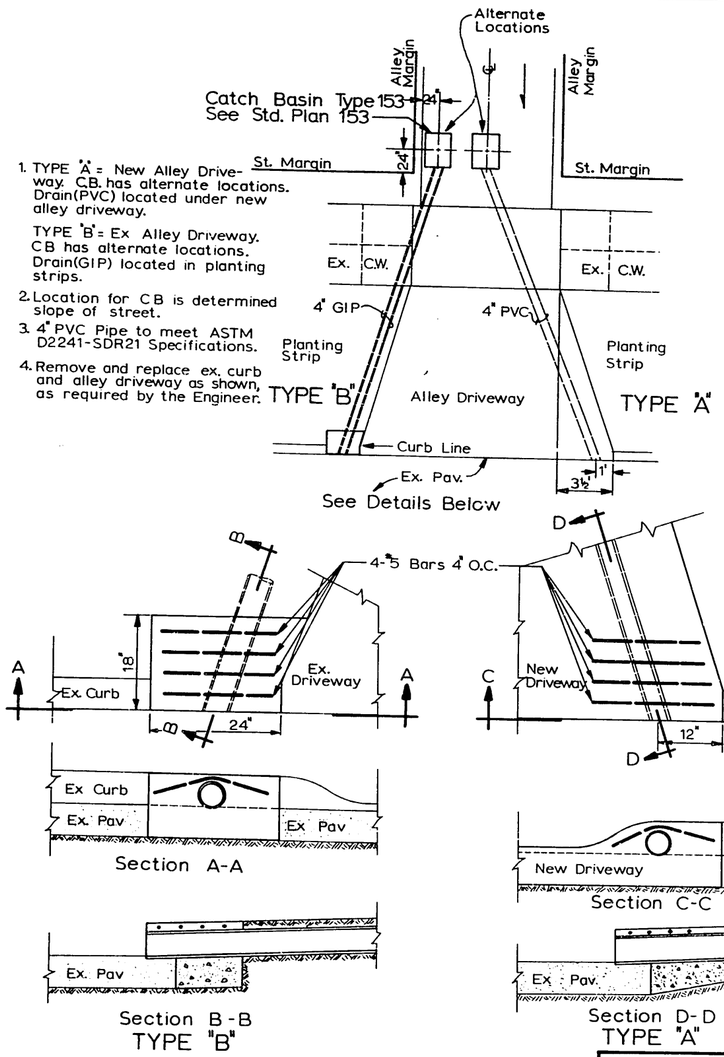
Revised	4-7-76
Revised	5-1-70
Revised	4-5-67
Revised	1-6-65

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 153 Catch Basin

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 _____ CHAIRMAN
ATTEST: _____ SECRETARY

Standard Plan No 153.1



1. TYPE "A" = New Alley Driveway. C.B. has alternate locations. Drain(PVC) located under new alley driveway.

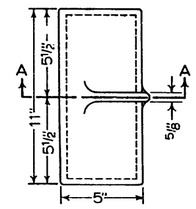
   TYPE "B" = Ex Alley Driveway. C.B has alternate locations. Drain(GIP) located in planting strips.
2. Location for C.B is determined slope of street.
3. 4" PVC Pipe to meet ASTM D2241-SDR21 Specifications.
4. Remove and replace ex. curb and alley driveway as shown, as required by the Engineer.

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

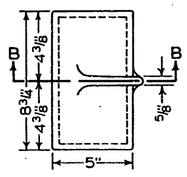
Type 153 Catch Basin Installations

APPROVED BY THE BOARD OF PUBLIC WORKS
4/1/, 1976 Jack Westrick CHAIRMAN
ATTEST: Judy L McFarlane SECRETARY

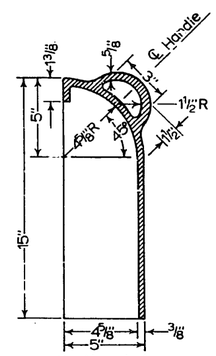
Standard Plan No.162



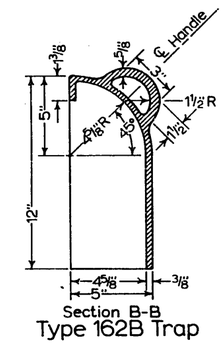
Top View Type A Trap



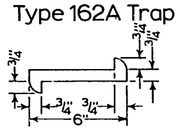
Top View Type B Trap



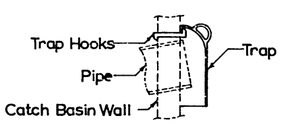
Section A-A
Type 162A Trap



Section B-B
Type 162B Trap



Trap Hook
Trap Hooks may be round or square in cross-section.



Trap Installation

Type 162A Trap to be used with 8" I.D. Outlet Pipe.

Type 162B Trap to be used with 4" or 6" I.D. Outlet Pipe.

Trap may be Cast Iron ASTM Designation A48 Class 25 or Cast Steel ASTM Designation A27 Grade 70-36.

All Castings to have a bituminous coating according to Std. Specs. Sec. 63-2.08.

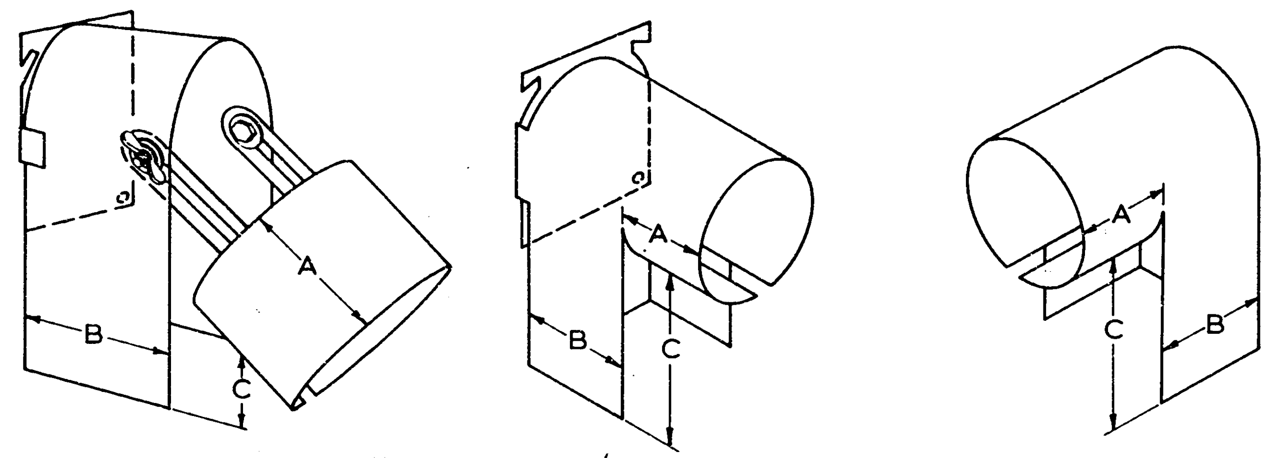
DO NOT SCALE

Revised 4-5-67
Revised 1-6-65

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 162 Outlet Trap

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 6, 1964 CHAIRMAN
ATTEST: SECRETARY



TYPE 163A
Adjustable With Gate

TYPE 163B

TYPE 163C

Dimensions With Or Without Gate

Size	A	B	C Max	Gauge
4"	3"	3"	3.75"	18
6"	4"	5"	4.5"	14
8"	4"	6.5"	5.5"	14

Size	A	B	C	Gauge
4"	3"	3"	3"	18
6"	4"	5"	4"	14
8"	4"	6.5"	4"	14
10"	4"	8"	4"	14
12"	5"	10"	4"	Body 14 Collar 12

Type 163A is to be used only where the catch basin outlet pipe makes an angle of more than 10° with the horizontal. Type 163B or Type 163C is to be used only where the catch basin outlet pipe makes an angle of less than 10° with the horizontal.

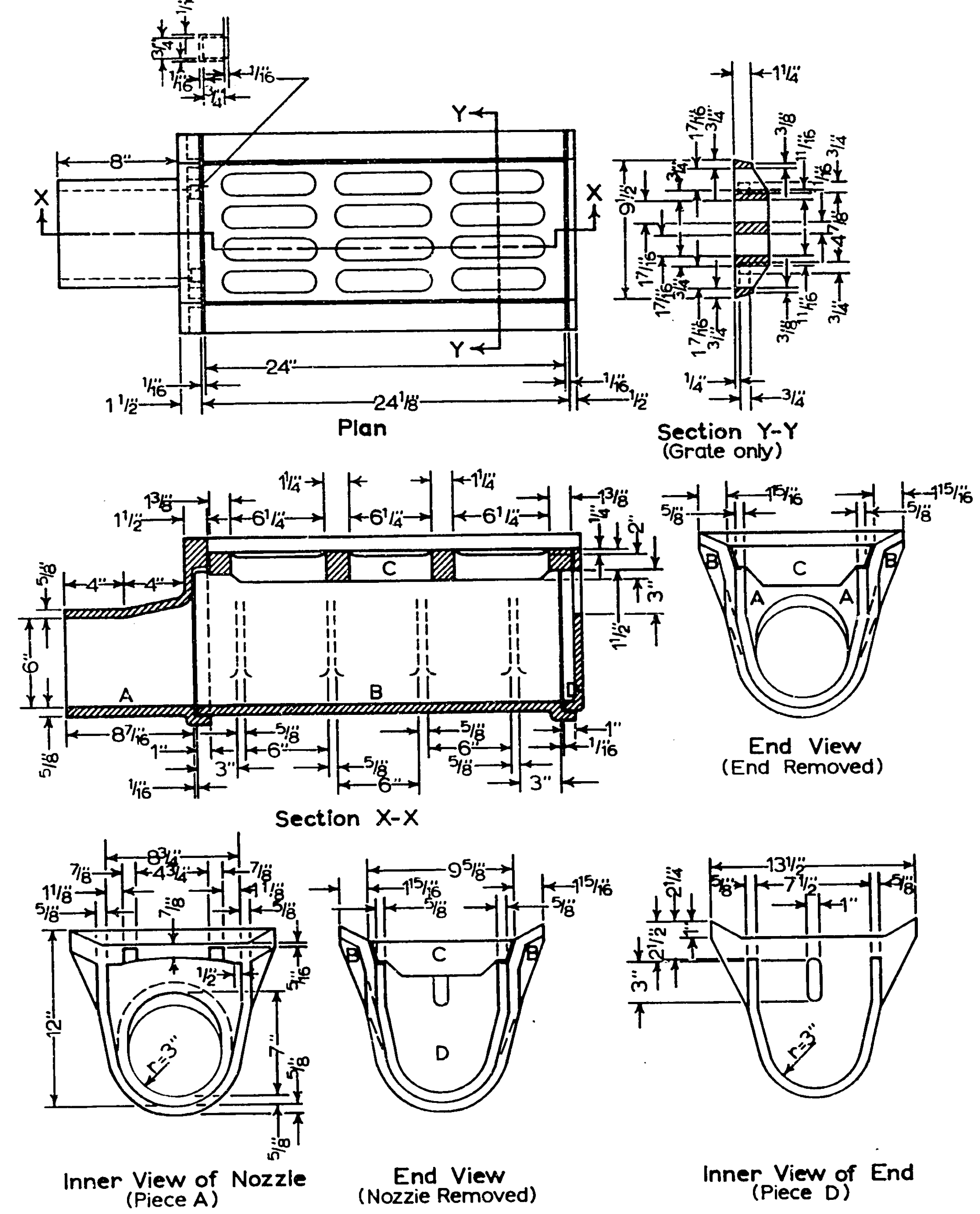
The Aluminum Self-Locking Trap may be used, at the option of the contractor, as an alternate to Type 162A and Type 162B traps as shown on Standard Plan No. 162.

DO NOT SCALE

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 163 Outlet Trap

APPROVED BY THE BOARD OF PUBLIC WORKS
7-8-1970 CHAIRMAN
ATTEST: SECRETARY



For Inlet Installation see Std. Plan No.164.1.

All Castings to have a bituminous coating according to Std. Specs. Sec. 63.208.

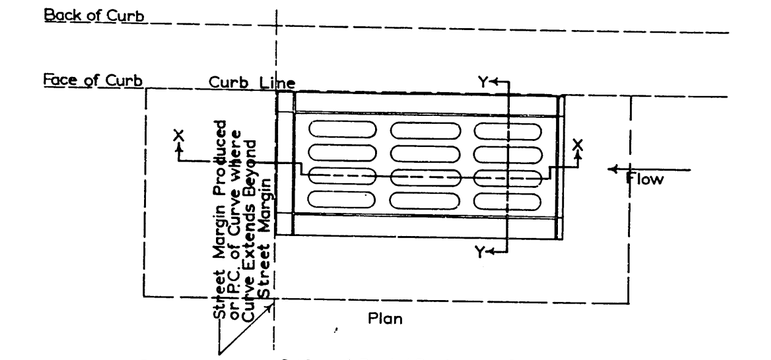
DO NOT SCALE

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 164 Inlet
Castings and Assembly

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No.164.1



Frame and Grate are to be set so the Curb Face will not interfere with removal of Grate.

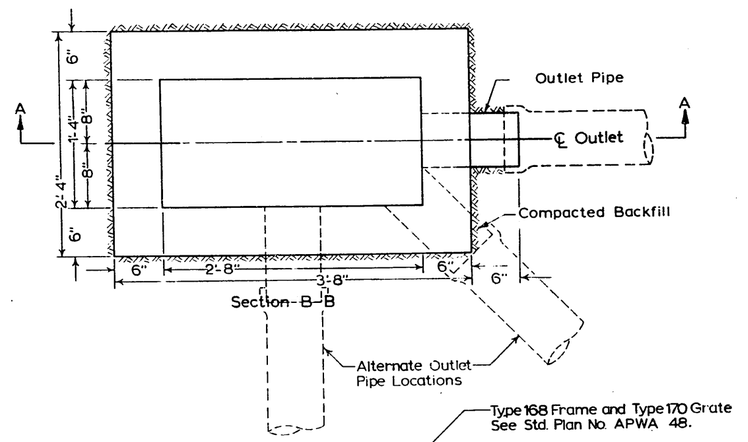
DO NOT SCALE

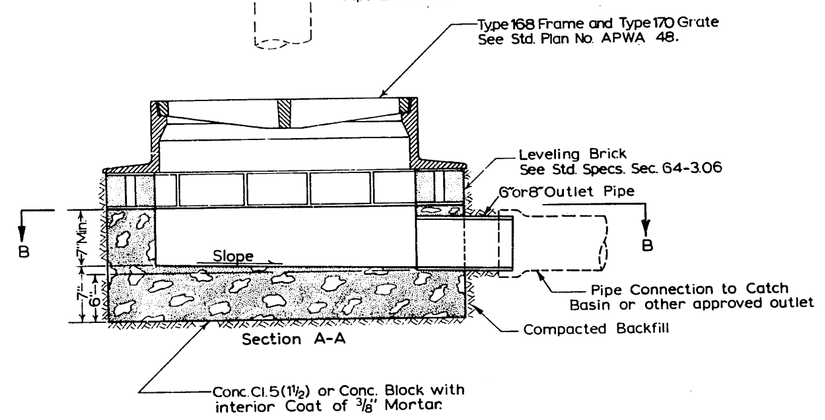
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 164 Inlet Installation

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No.165





Cast Outlet Pipe of Inlet included in payment for Inlet.

Pipe Connection payment separate from payment for Inlet.
See Std. Specs Sec. 69-3.04

For Inlet Installation See Std. Plan No.165.1

DO NOT SCALE

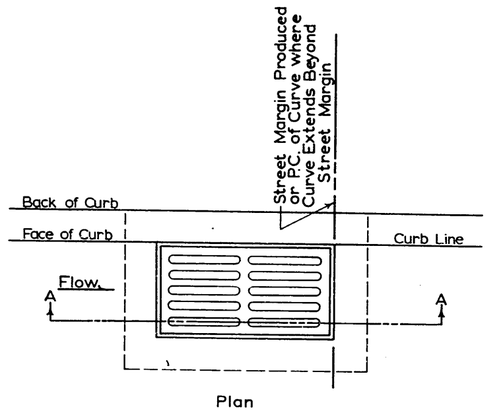
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 165 Inlet

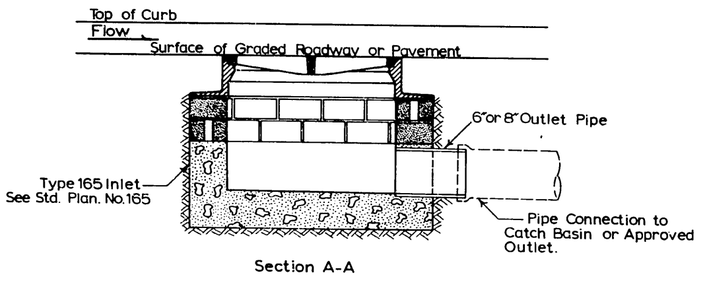
APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 CHAIRMAN
ATTEST: SECRETARY

Revised 4-7-76
Revised 5-1-70
Revised 4-5-67

Standard Plan No.165.1



Plan



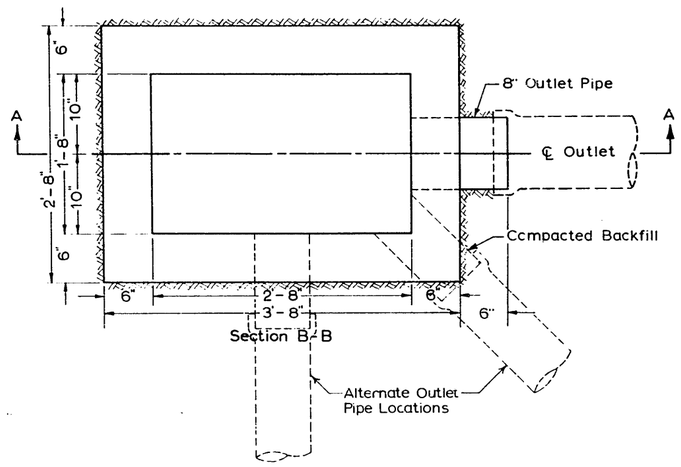
Section A-A

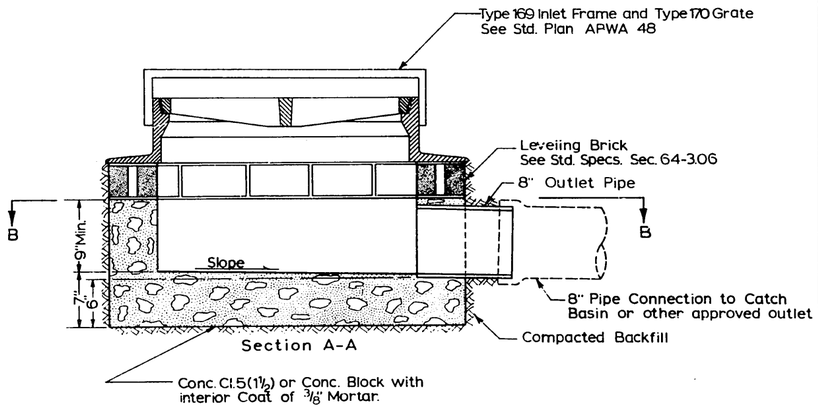
Frame and Grate are to be set so the Curb Face will not interfere with removal of Grate

DO NOT SCALE

Revised 5-1-70	CITY OF SEATTLE
Revised 4-5-67	DEPARTMENT OF ENGINEERING
	Type 165 Inlet Installation
	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 CHAIRMAN ATTEST: SECRETARY

Standard Plan No.166





Cast Outlet Pipe of Inlet included in payment for Inlet

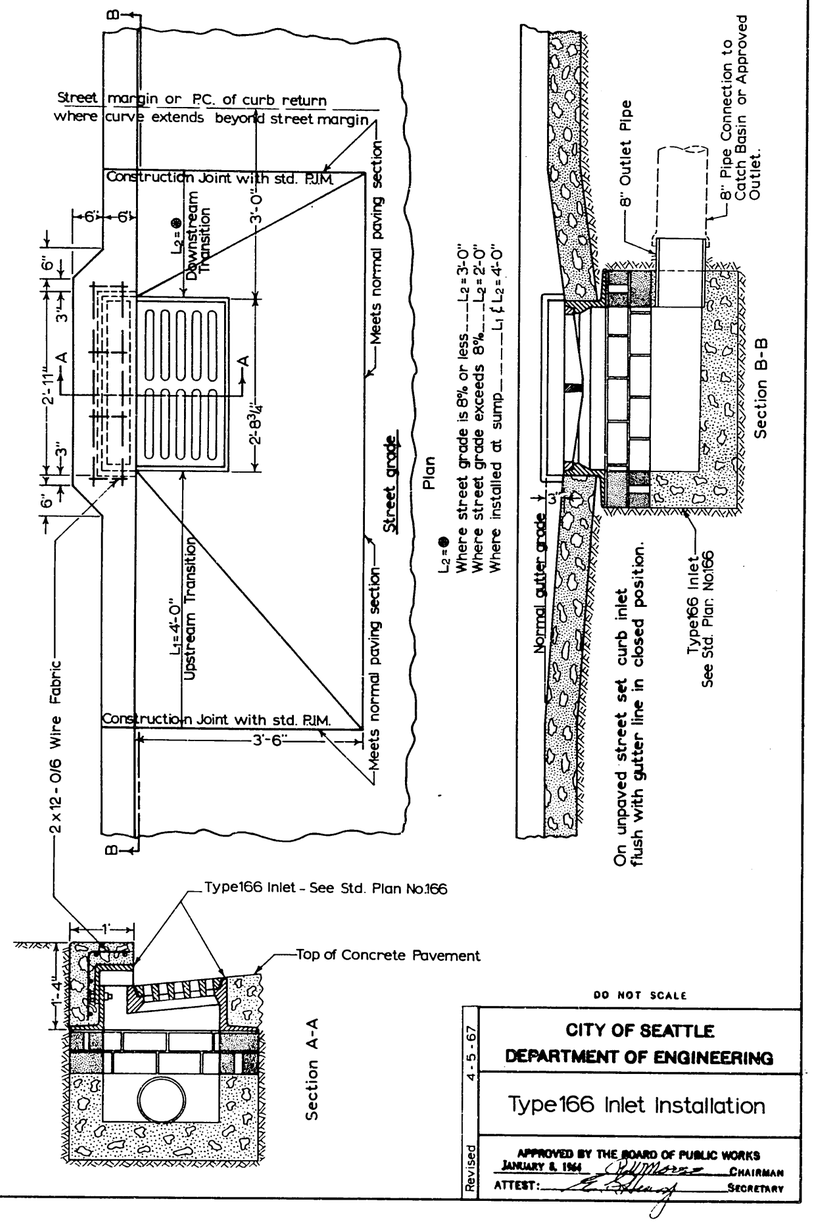
Pipe Connection payment separate from payment for Inlet.
See Std. Specs. Sec. 69-3.04

For Installation See Std. Plan No. 166.1

DO NOT SCALE

Revised 4-7-76	CITY OF SEATTLE
Revised 5-1-70	DEPARTMENT OF ENGINEERING
Revised 4-5-67	Type 166 Inlet
	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 CHAIRMAN ATTEST: SECRETARY

Standard Plan No.166.1



DO NOT SCALE

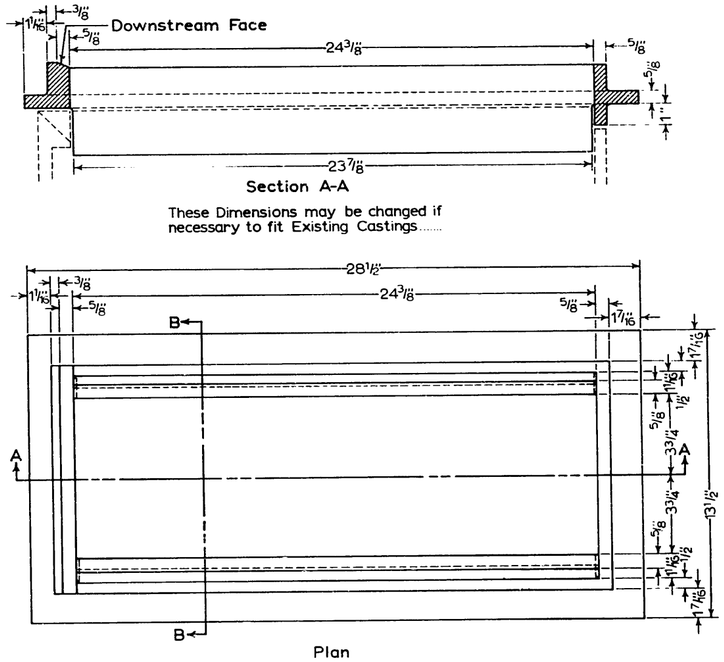
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

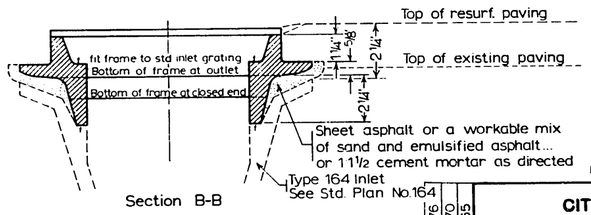
Type166 Inlet Installation

Revised 4-5-67

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No.167





Inlet extension shall be tested for accuracy of fit.

All Casting to have a bituminous coating according to Std. Specs. Sec. 63-2.08

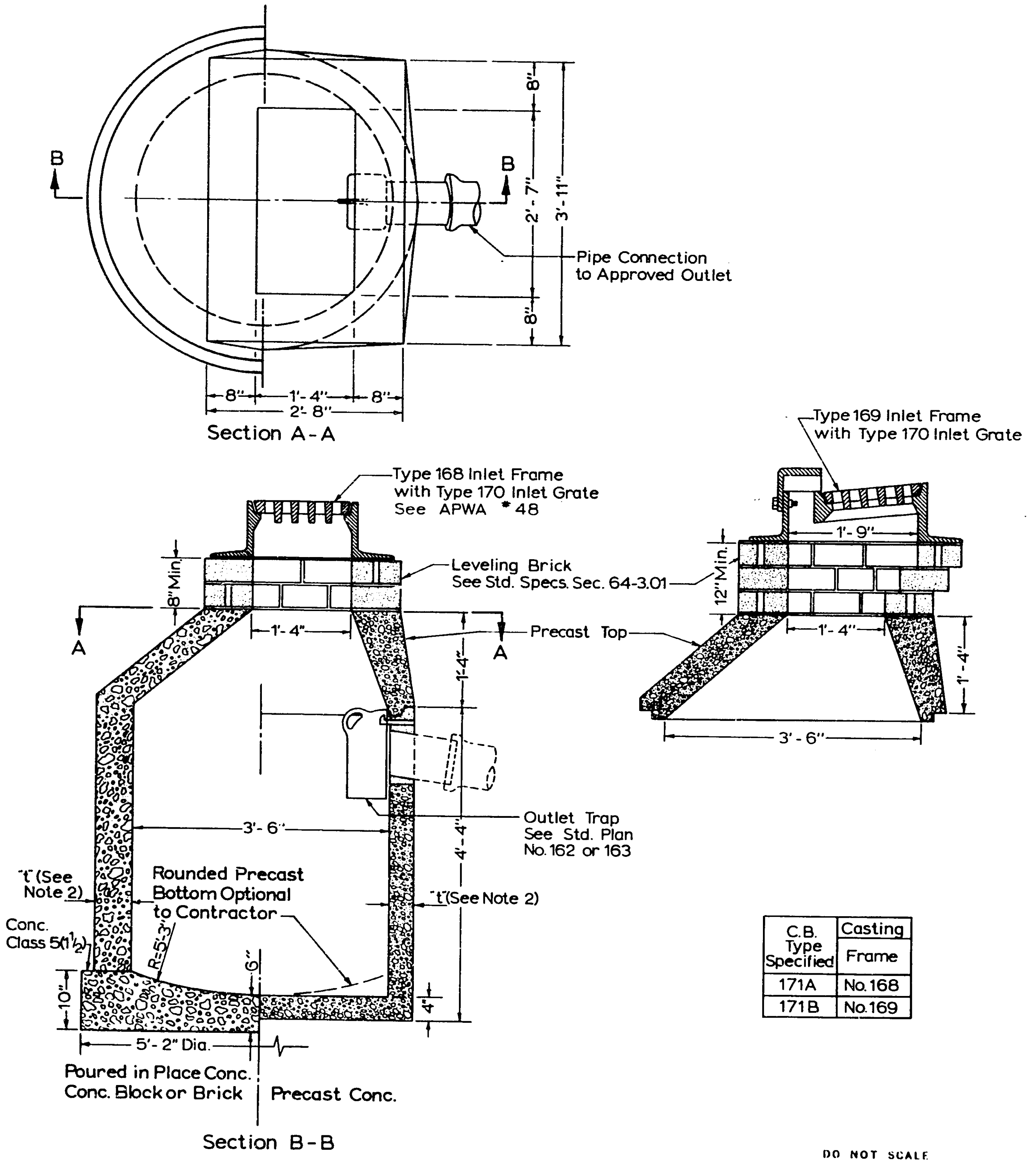
DO NOT SCALE

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Inlet Extension for Type 164 Inlet

Revised 4-7-76
Revised 5-1-70
Revised 1-6-65

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 CHAIRMAN
ATTEST: SECRETARY



C.B. Type Specified	Casting Frame
171A	No. 168
171B	No. 169

DO NOT SCALE

Notes

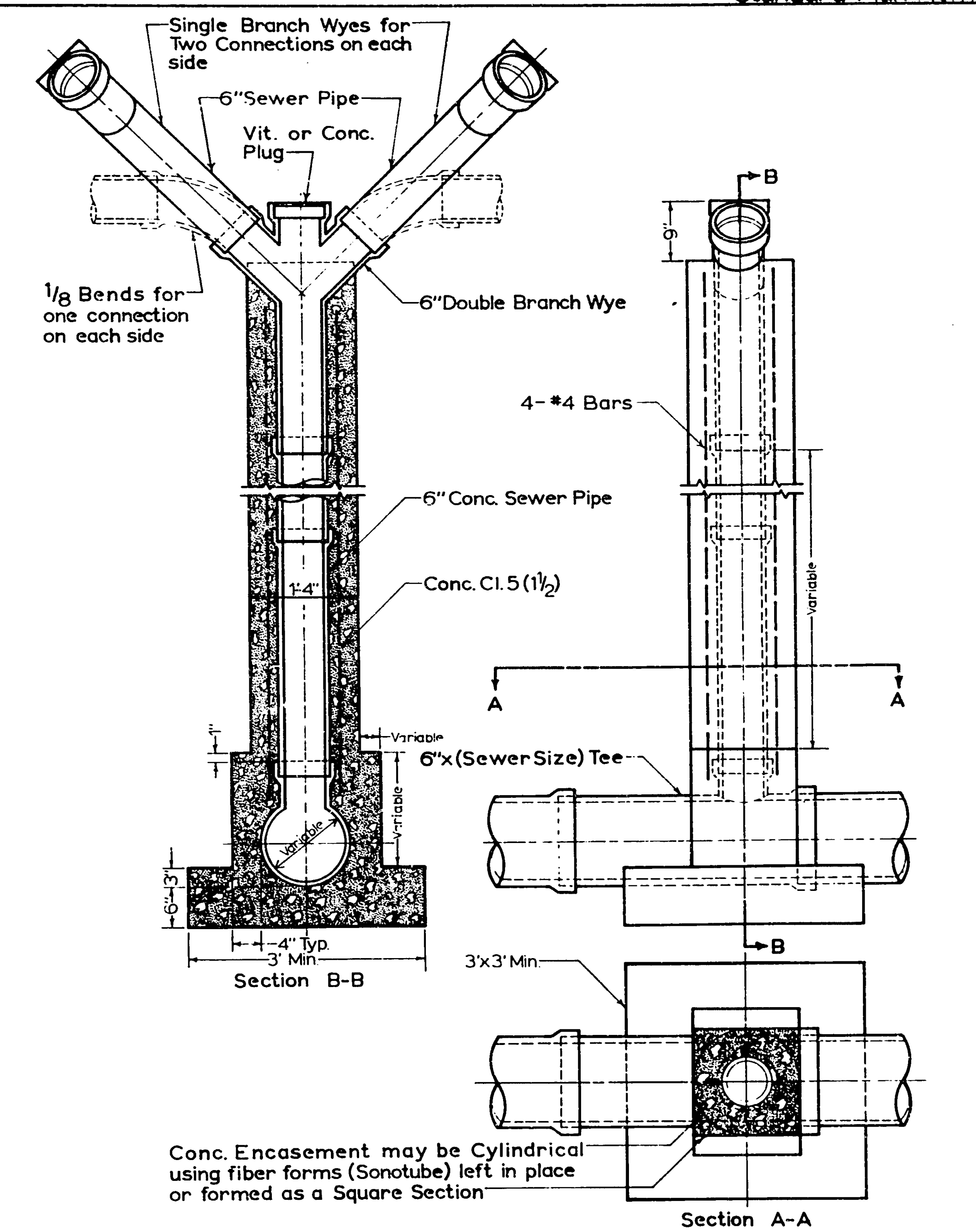
1. See Std. Specs. Sec. 64 for further requirements.
2. Values of "t"
   Cement Concrete t=6" Brick t=8"
   Concrete Blocks t=6" Precast Concrete t=4" Min.
3. Type 168 Inlet Frame shall be set as shown on Std. Plan No. 165.1
4. Type 169 Inlet Frame shall be set as shown on Std. Plan No. 166.1

Revised 4-7-76
Revised 5-1-70
Revised 4-5-67

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 171 Inlet Top Catch Basin

APPROVED BY THE BOARD OF PUBLIC WORKS
______ 19__ ______ CHAIRMAN
ATTEST: ______ SECRETARY



DO NOT SCALE

Reinforcing steel shall be deformed bars conforming to ASTM A-15 and shall have a minimum cover of 2".

Revised 5-1-70

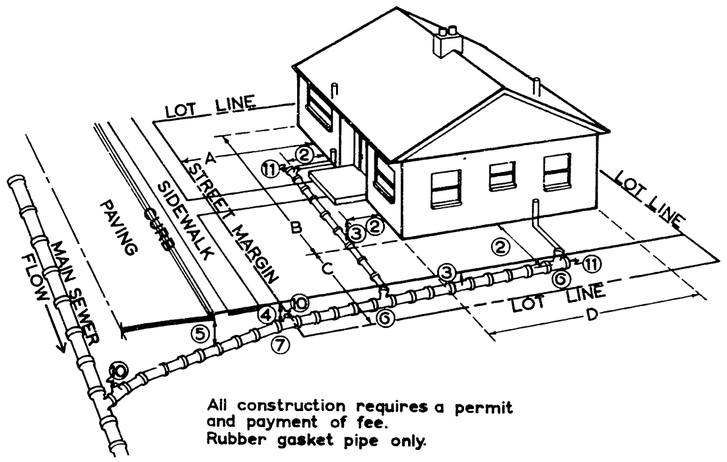
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Vertical Connection

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 ______ CHAIRMAN
ATTEST: ______ SECRETARY

Standard Plan No.176

All construction to be in accordance with current Side Sewer Ordinance.

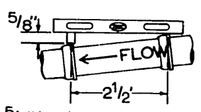


All construction requires a permit and payment of fee.
Rubber gasket pipe only.

Complete legal description of property and dimensions A, B, C, and D that show the size and location of the house are mandatory for issuance of permit.

1. All house plumbing outlets must be connected to the sewer. No downspouts or storm drainage may be connected, except to separate storm drain.
2. **30" min. distance from house.**
3. **18" min. coverage of pipe.**
4. **30" min coverage at property line.**
5. **5' min coverage at curb line.**
6. Lay pipe in straight line between bends. Make all changes in grade or line with $\frac{1}{8}$ bend or wye. 90° change with wye and $\frac{1}{8}$ bend.
7. Standard 4" to 6" increaser.
8. **6" sewer pipe--min. size in street, and elsewhere as directed.**
9. **4" sewer pipe--min. size on property. 2% min. grade, 100% (45°) max. grade.**
10. Test "T" with plug.
11. **Conc. or Vit. plug.**
12. **Construction in street must be done by a licensed sewer contractor.**

Method of obtaining 2% min. grade.

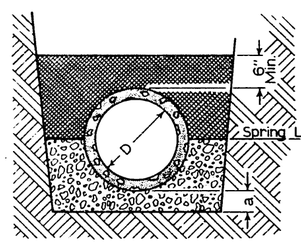


Attach $\frac{5}{8}$" knob or piece of scrap material to level. Lay level on bells of pipe with knob pointing in direction of flow. Level bubble must read level. Attach straight board to short levels to reach both bells.

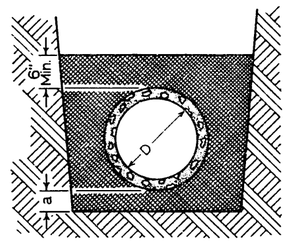
DO NOT SCALE

Revised 5-1-70	**CITY OF SEATTLE**
Revised 4-5-67	**DEPARTMENT OF ENGINEERING**
	Sanitary Side Sewer Installation
	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 CHAIRMAN ATTEST: SECRETARY

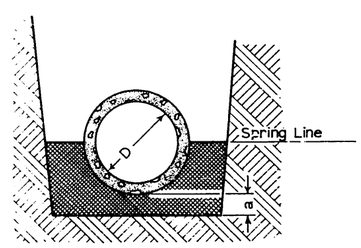
Standard Plan No. 177



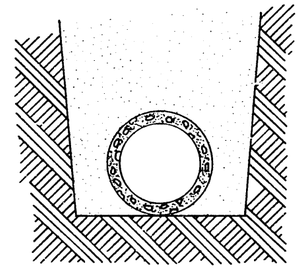
Class "A" Bedding
(Concrete Bedding)



Class "B" Bedding



Class "C" Bedding



Type 9 aggregate
See Std. Specs. Sec. 20.

Concrete Class 4 ($1\frac{1}{2}$)

Select Native Material

a=4" When "D" is less than 30"

a=6" When "D" is 30" or more.

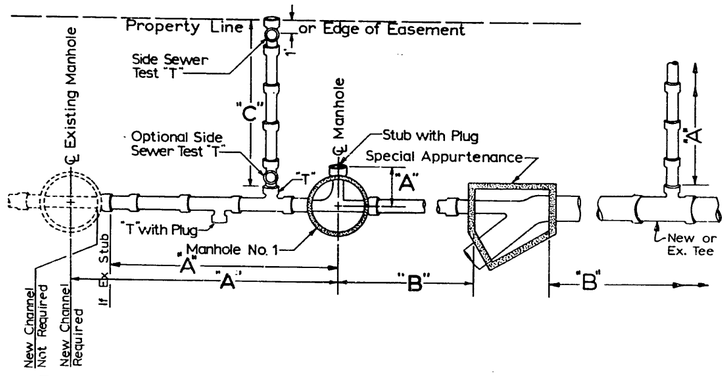
Reinforcement shall be specified on the Construction Drawing for Class "A" Bedding.

Concrete shall have a maximum water-cement ratio of 8:2 and a minimum cement factor of 4.

DO NOT SCALE

Revised 4-7-76	**CITY OF SEATTLE**
Revised 4-5-67	**DEPARTMENT OF ENGINEERING**
Revised 1-6-65	Pipe Bedding
	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 CHAIRMAN ATTEST: SECRETARY

Standard Plan No. 179



Payment Shall Be Made For :

1. Pipe diameters "A," "B" or "C" – Per Linear Foot.
2. Tees or Wyes of proper size, type and with plug – Unit price each in addition to unit price per foot for "A," "B" or "C."

All Pipe shall be measured on the slope along the ℄ of Pipe.

DO NOT SCALE

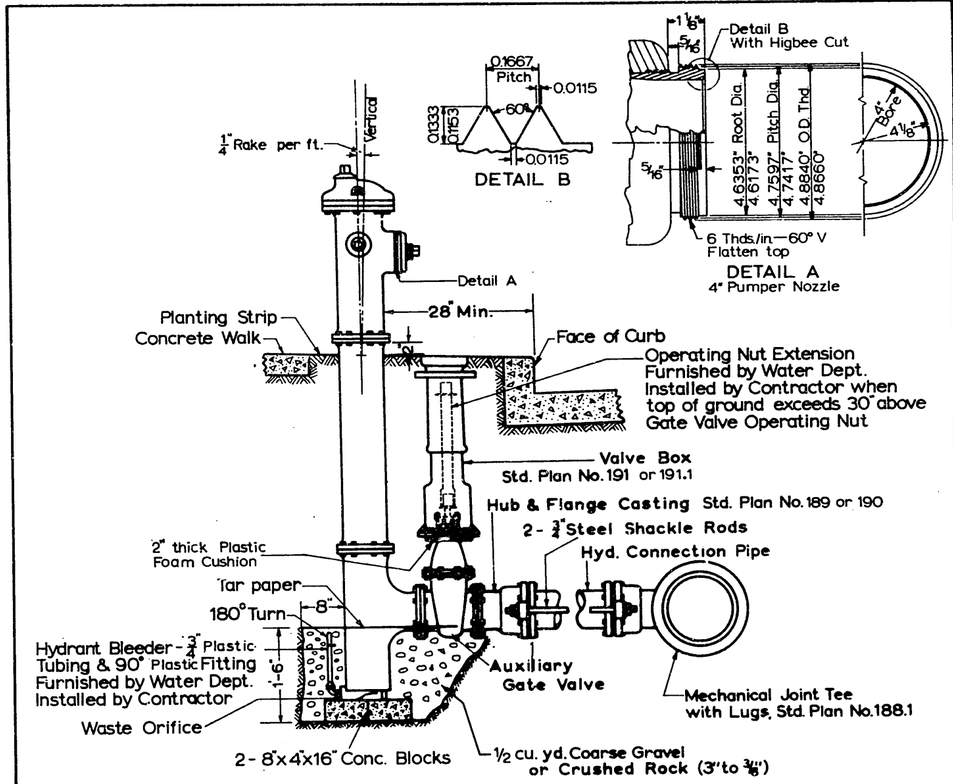
Revised	4-7-76
Revised	4-5-67
Revised	1-6-65

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Sewer Payment Diagram

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 6, 1964 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No. 180



All fire hydrant threaded nipples such as the 2 1/2 in. discharge ports and the 4 in. pumper nozzle shall be equipped with the blunt start or Higbee Cut.

The 2 1/2 in. nipples shall be in accordance with the National Fire Protection Association Bulletin No. 194, dated 1963.

Hydrant tees shall be set horizontally — connection shall be level.

DO NOT SCALE

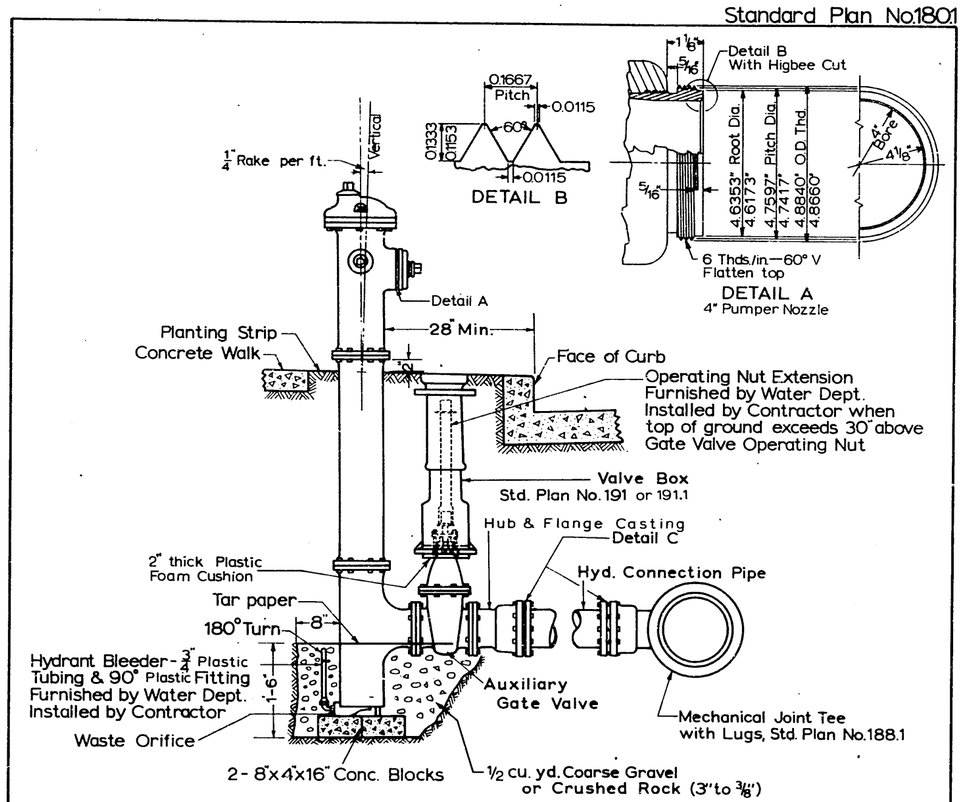
Revised	4-7-76
Revised	5-1-70
Revised	4-5-67
Revised	1-6-65

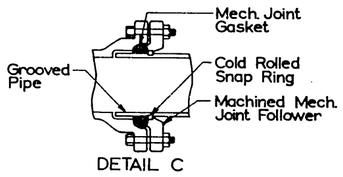
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 180 Hydrant Setting - Residential

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 6, 1964 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No.180.1





DETAIL C

All fire hydrant threaded nipples such as the 2 1/2 in. discharge ports and the 4 in. pumper nozzle shall be equipped with the blunt start or Higbee Cut.

The 2 1/2 in. nipples shall be in accordance with the National Fire Protection Association Bulletin No. 194, dated 1963.

Hydrant tees shall be set horizontally— connection shall be level.

DO NOT SCALE

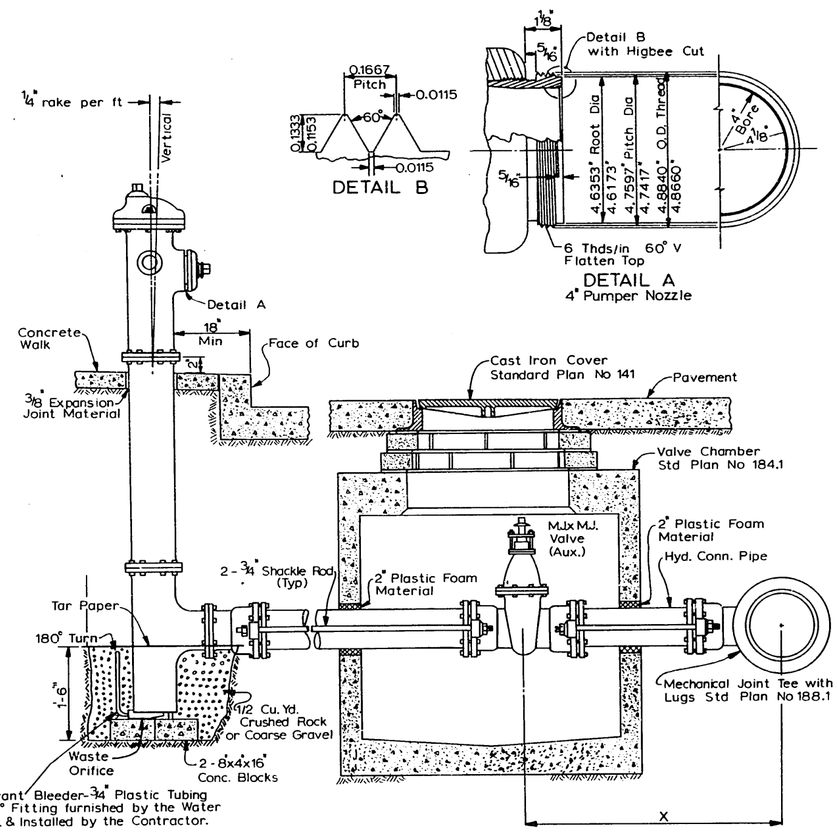
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 180.1 Hydrant Setting - Residential

Revised 4-7-76

APPROVED BY THE BOARD OF PUBLIC WORKS
7-8-70 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No. 181



MAIN SIZE	X
12" & Under	4'-0"
20" & Under	4'-6"
24" & Under	4'-9"
30" & Under	5'-0"

All fire hydrant threaded nipples, such as the 2 1/2" discharge ports and the 4" pumper nozzle, shall be equipped with the blunt start or the Higbee Cut.

The 2 1/2" nipples shall be in accordance with the National Fire Protection Association Bulletin No. 194, dated 1963.

Hydrant tees shall be set horizontally- connection shall be level.

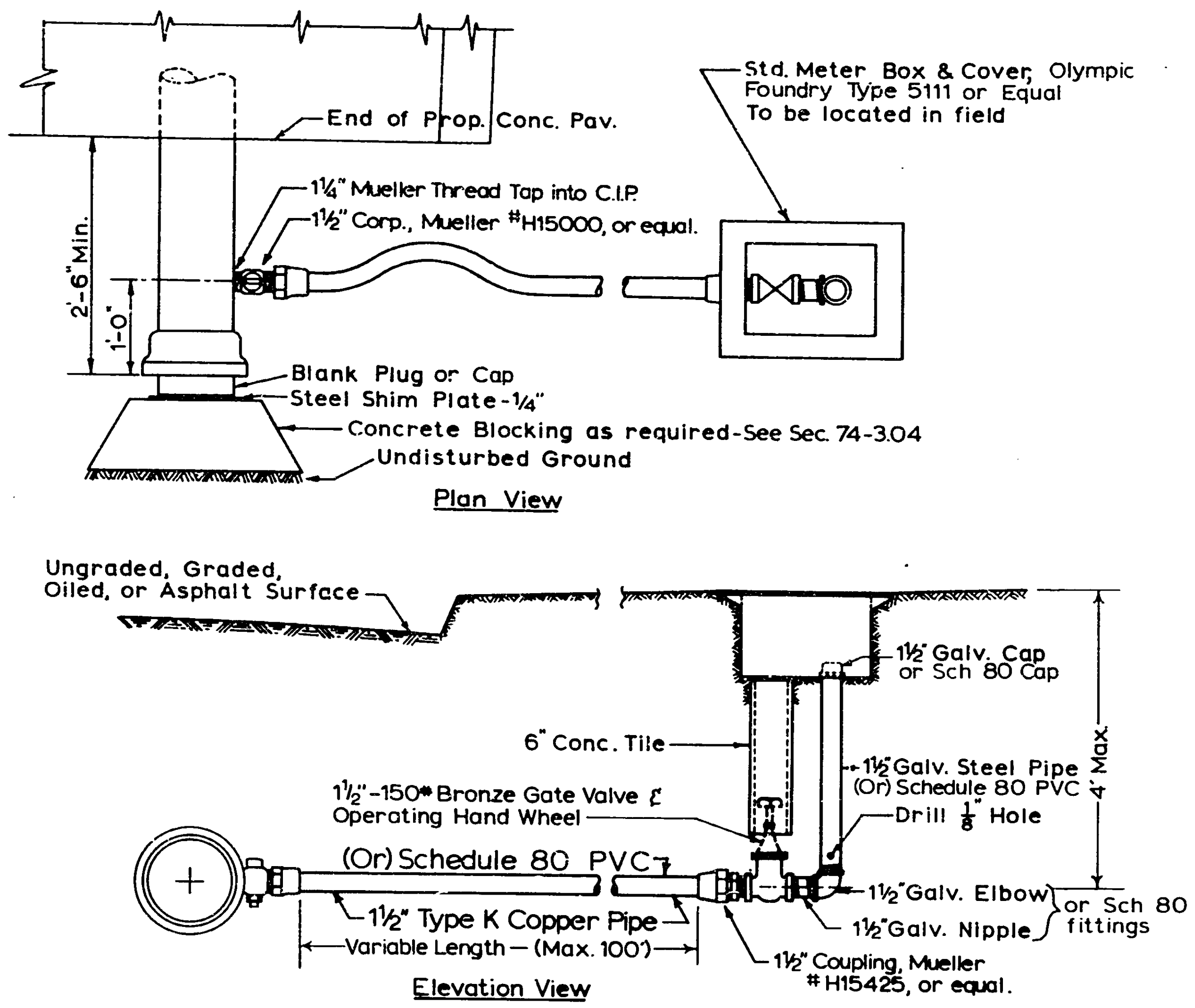
DO NOT SCALE

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 181 Hydrant Setting- Business Dist.

APPROVED BY THE BOARD OF PUBLIC WORKS
4/1/, 1976 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No.182



1½ BLOW-OFF DETAIL FOR C.I.PIPE – 6 INCH AND LARGER
(D.I. PIPE)

FOR 4" PIPE use 1"x1¼" Mueller Thread Corp. #H10003 ₤ 1¼" I.P. to 1½" Copper Adapter #15450.

DO NOT SCALE

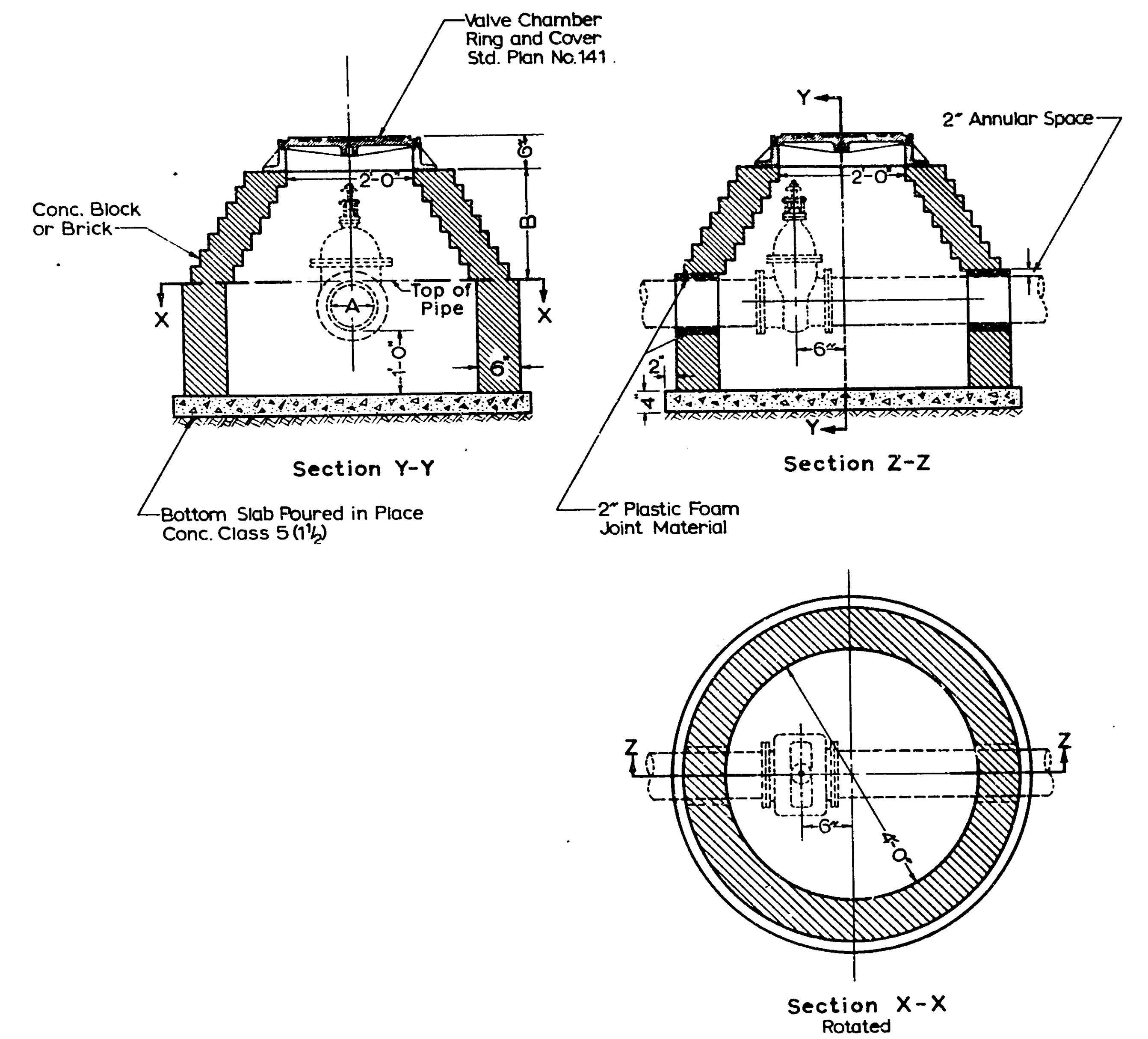
Revised 4-7-76	Revised 4-5-67	Revised 1-6-65

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

1½ inch Blow-off Assembly

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 ______ CHAIRMAN
ATTEST: ______ SECRETARY

Standard Plan No.183



When "A" Pipe Dia. is 4", 6" or 8"
"B"=2'-0" Min.

When "A"-Pipe Dia. is 12"
"B"=2'-8" Min.

DO NOT SCALE

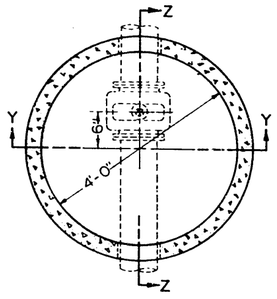
Revised 4-7-76	Revised 5-1-70	Revised 4-5-67	Revised 1-6-65

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

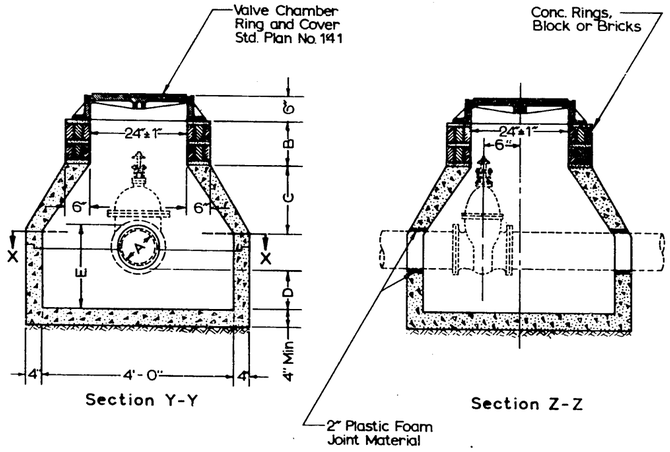
Type 183 Valve Chamber-Masonry Construction

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 ______ CHAIRMAN
ATTEST: ______ SECRETARY

Standard Plan No. 184



Section X-X



Section Y-Y

Section Z-Z

Concrete - Compressive strength 3000 p.s.i. at 28 days.

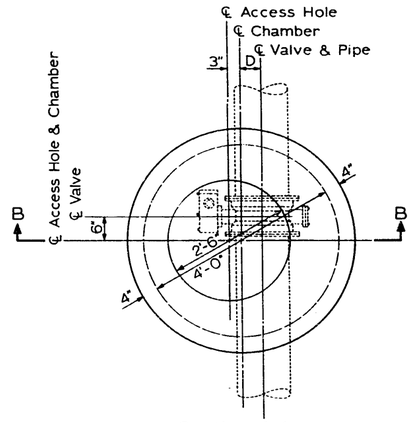
When "A"-Pipe Dia. is 4", 6", or 8"
"B"=6" Min.
"C"=1'-4" Max.
"D"=10" Min.
"E"=1'-9" Max.

When "A"-Pipe Dia. is 12"
"B"=1'-2" Min.
"C"=2'-1" Max.
"D"=12" Min.
"E"=2'-3" Max.

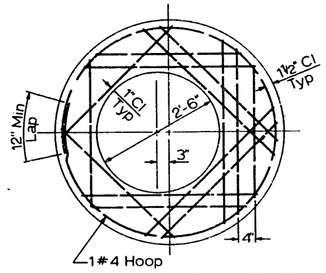
DO NOT SCALE

Revised	4-7-76	CITY OF SEATTLE
Revised	5-1-70	DEPARTMENT OF ENGINEERING
Revised	4-5-67	Type 184 Valve Chamber- Precast
Revised	1-6-65	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 6, 1964 CHAIRMAN ATTEST: SECRETARY

Standard Plan No. 184.1

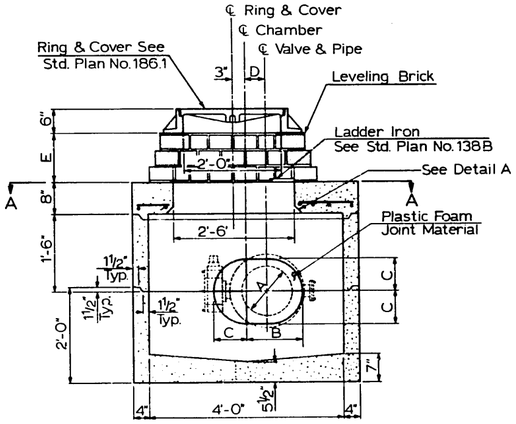


Section A-A

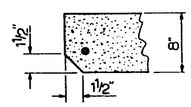


All Bars shall be # 4 Spaced 3" O.C. Except where Noted

Reinforcing Plan



Section B-B



Detail A

Butterfly Valves:

When "A" Pipe Dia. is 4", 6" or 8":
"B" = 11½"
"C" = 6½"
"D" = 5"
"E" = 7½"

When "A" Pipe Dia. is 12":
"B" = 1'-1½"
"C" = 8½"
"D" = 5"
"E" = 10½"

Gate Valves:

When A Pipe Dia. is 4", 6" or 8":
"B" = 11½"
"C" = 6½"
"D" = 0
"E" = 7½"

When "A" Pipe Dia. is 12":
"B" = 1'-1½"
"C" = 8½"
"D" = 0
"E" = 1'-5½"

NOTE: Butterfly valve installation shown. If gate valve is used or if dimension "E" is greater than shown, additional ladder irons and/or alternate location of ladder irons shall be as specified by the Engineer.

All Steel shall be Deformed Bars Conforming to ASTM A15

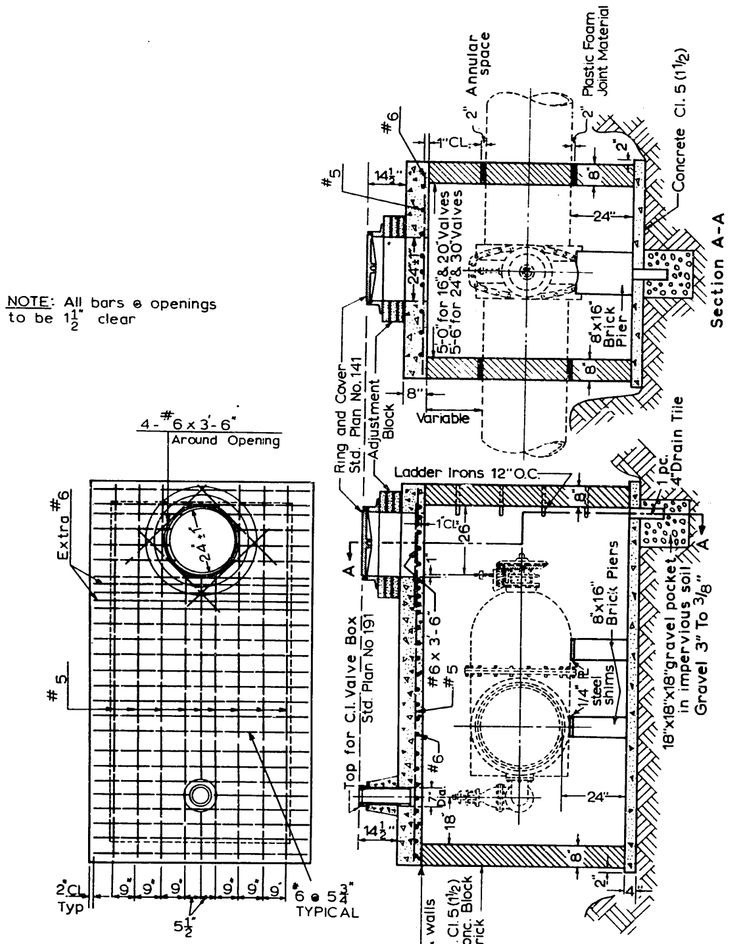
Conc. compressive strength = 3000psi @ 28days

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 184.1 Valve Chamber Precast

APPROVED BY THE BOARD OF PUBLIC WORKS
4/7/1976 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No. 185



Concrete for top slab shall be class B f'_c = 3000psi steel reinforcing bars shall conform to ASTM A615 grade 40. Max. aggregate size shall be 3/4".

DO NOT SCALE

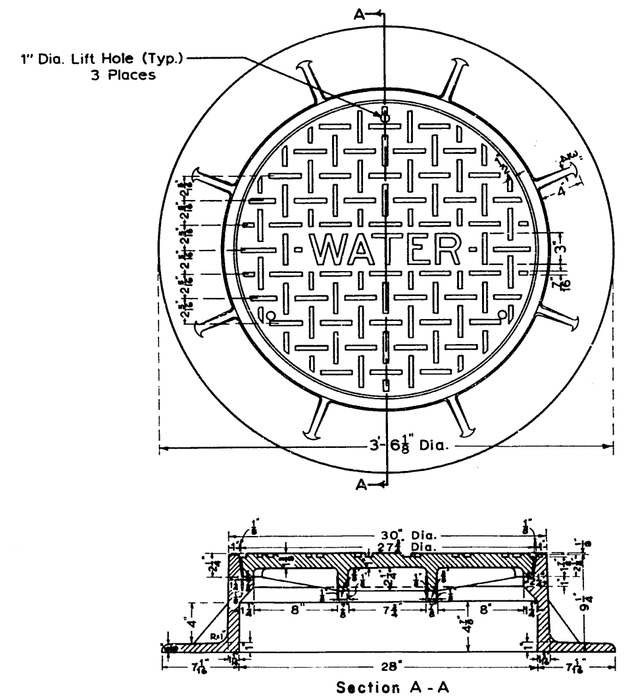
Revised	4-7-76
Revised	4-5-67
Revised	1-6-65

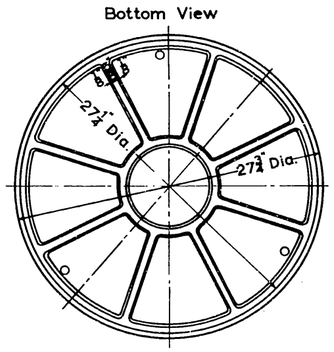
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 185 Valve Chamber

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 6, 1964 _____ CHAIRMAN
ATTEST: _____ SECRETARY

Standard Plan No. 187





Ring and Cover shall be tested for accuracy of fit and shall be marked in sets for delivery.

All Castings to have a bituminous coating according to Std. Specs. Sec. 63-2.08.

DO NOT SCALE

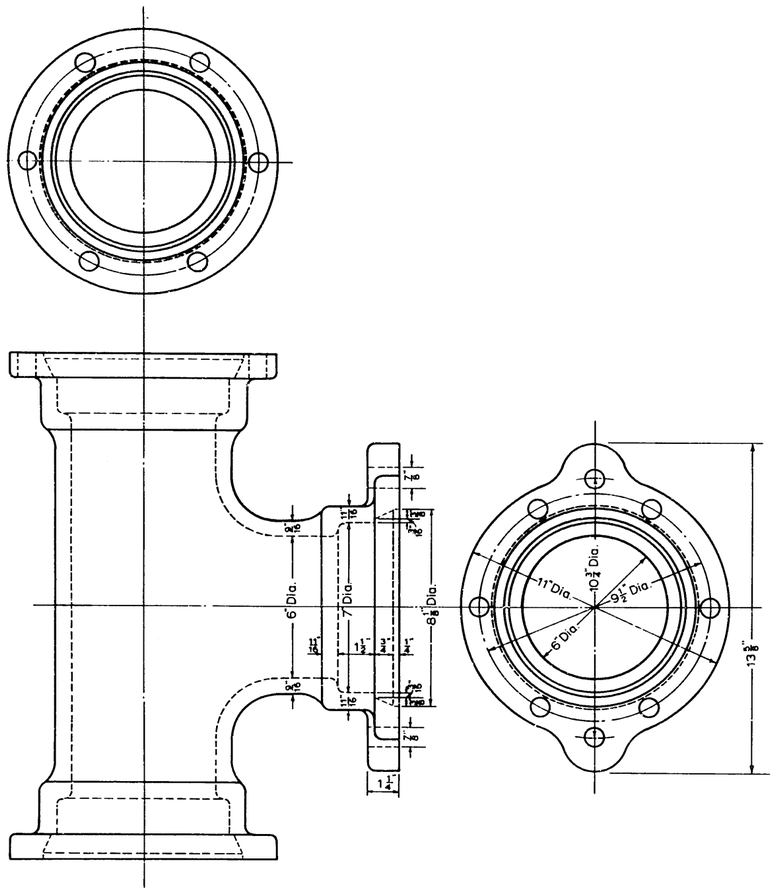
Revised	4-7-76
Revised	1-6-65

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Type 187 – 25 1/2 inch Valve Chamber Ring and Cover

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 6, 1964 _____ CHAIRMAN
ATTEST: _____ SECRETARY

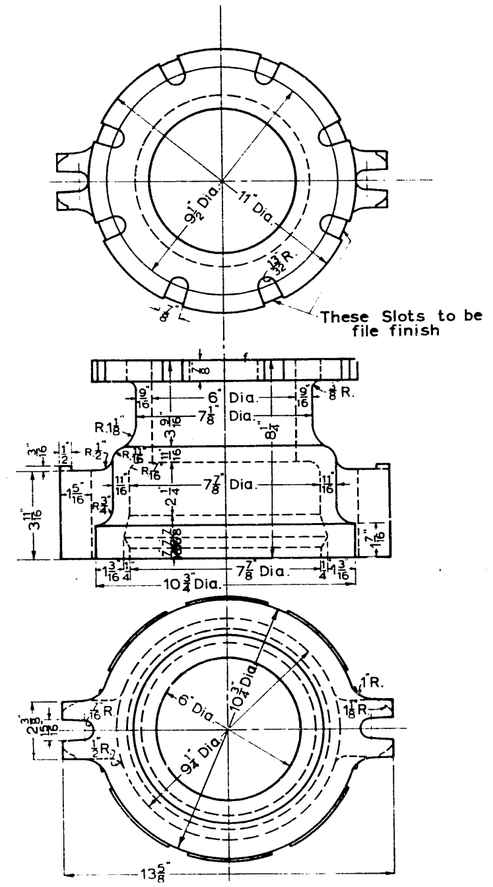
Standard Plan No. 188.1



DO NOT SCALE

CITY OF SEATTLE DEPARTMENT OF ENGINEERING
Mechanical Joint Hydrant Tee
APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 CHAIRMAN ATTEST: SECRETARY

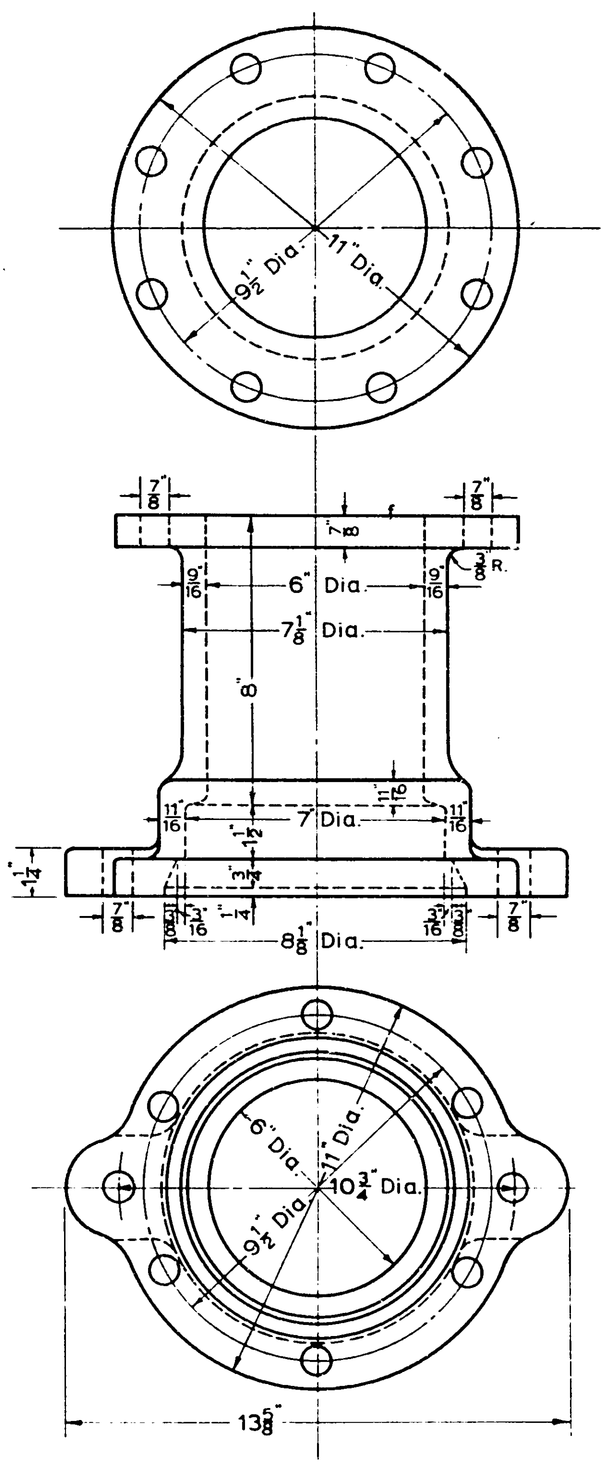
Standard Plan No. 189



Approximate Weight 70 lbs.

DO NOT SCALE

CITY OF SEATTLE DEPARTMENT OF ENGINEERING
6 Inch Hub and Flange Shackled
APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 CHAIRMAN ATTEST: SECRETARY

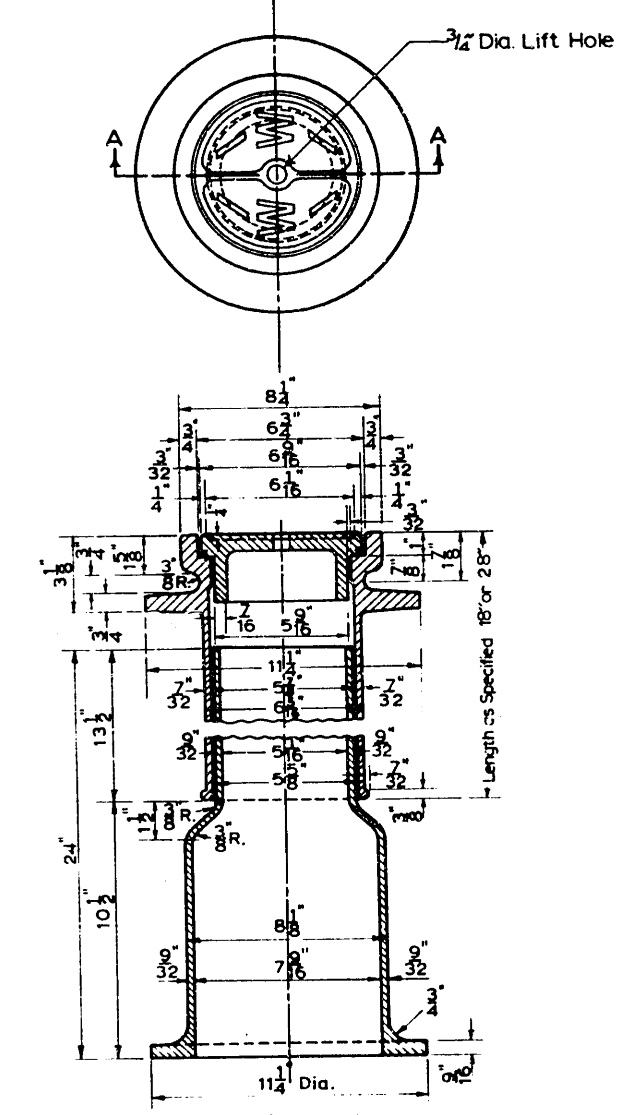


DO NOT SCALE

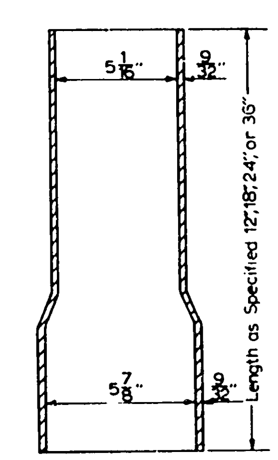
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

6 Inch Hub and Flange Mechanical Joint

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 ______ CHAIRMAN
ATTEST: ______ SECRETARY



Section A-A



Extension Piece

Frame and Cover shall be tested for accuracy of fit and shall be marked in sets for delivery.

All Castings to have a bituminous coating according to Std. Specs. Sec. 63.208.

DO NOT SCALE

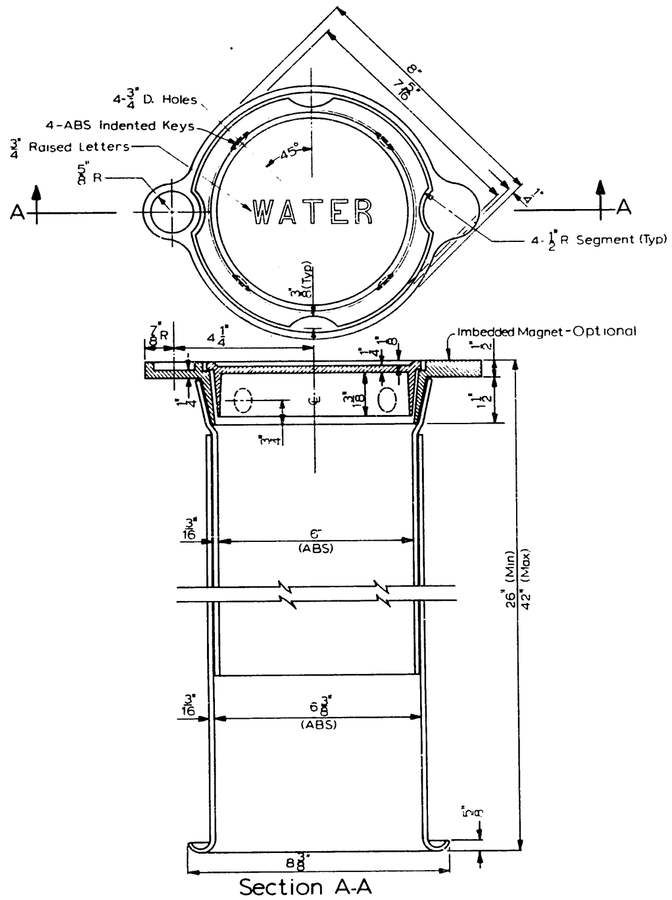
Revised	4-7-76
Revised	1-6-65

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Cast Iron Valve Box

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 ______ CHAIRMAN
ATTEST: ______ SECRETARY

Standard Plan No. 191.1



Section A-A

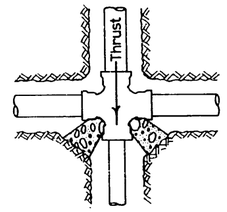
1. Frame and Cover shall be tested for accuracy of fit and marked in sets for delivery.
2. Frame and Cover are Cast Iron and shall have a bituminous coating per Std. Spec., Sec. 63-2.08
3. This drawing is not intended to restrict or eliminate the consideration of "equivalent" or "approved equal" plastic valve boxes.

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

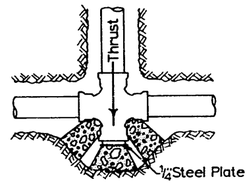
Plastic Valve Box

APPROVED BY THE BOARD OF PUBLIC WORKS
4/7/76 Chairman
ATTEST: Secretary

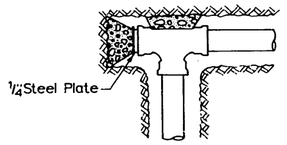
Standard Plan No. 192



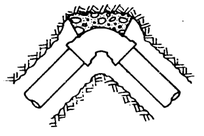
Unbalanced Cross



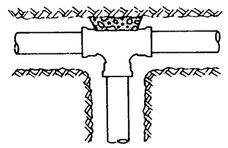
Cross with Shackled Plug



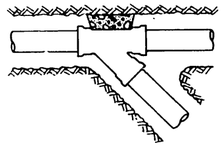
Plugged Tee



Horizontal Bend



Tee



Y Branch

All Blocking to be Concrete Cl. 5 ($1\frac{1}{2}$)

Location and Size of Blocking as determined by the City Engineer.

All Blocking to bear against undisturbed native ground.

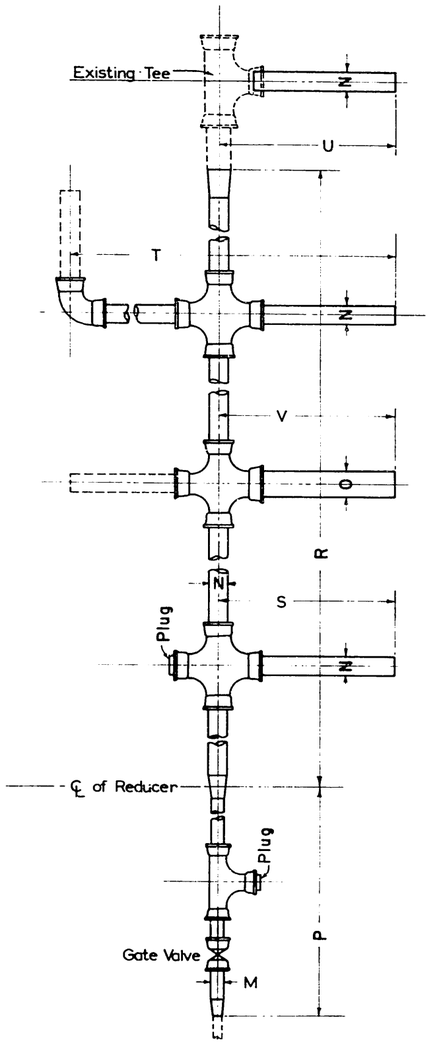
DO NOT SCALE

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Concrete Blocking - General

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 6, 1954 Chairman
ATTEST: Secretary

Standard Plan No. 194

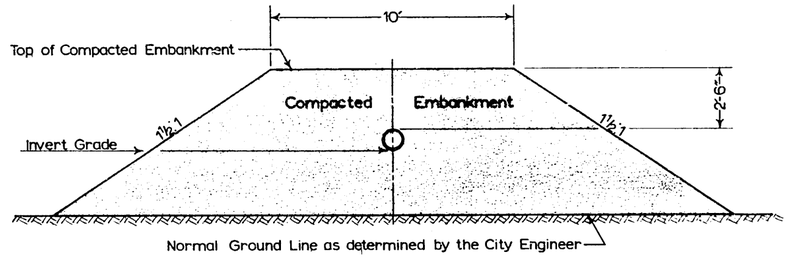


Payment will be made for
P- linear feet of pipe of diameter "M"
R,-S,-T,& U-linear feet of pipe of diameter "N"
V- linear feet of pipe of diameter "O"
See Specifications for Details and for Alternate Method.

DO NOT SCALE

Revised 4-5-67	CITY OF SEATTLE DEPARTMENT OF ENGINEERING
	Watermain Payment Diagram
	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 CHAIRMAN ATTEST: SECRETARY

Standard Plan No. 195

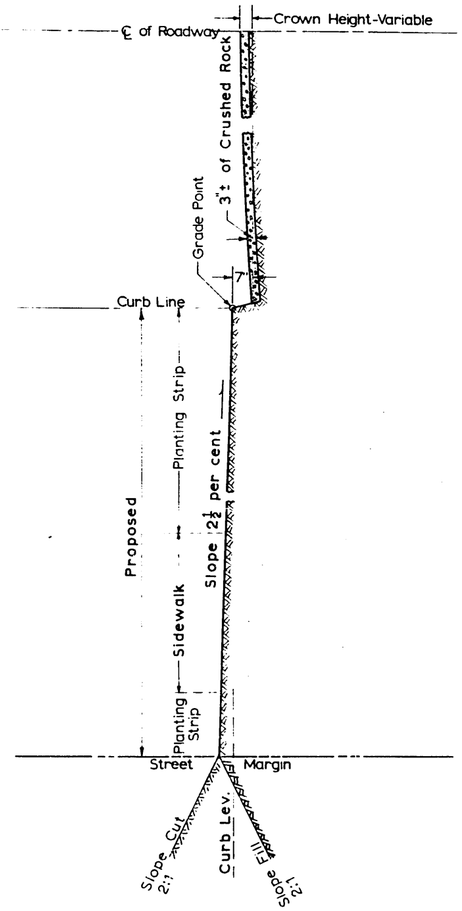


Watermains Constructed in Fill

DO NOT SCALE

Revised 1-6-65	CITY OF SEATTLE DEPARTMENT OF ENGINEERING
	Watermain Construction Detail
	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 CHAIRMAN ATTEST: SECRETARY

Standard Plan No. 200



DO NOT SCALE

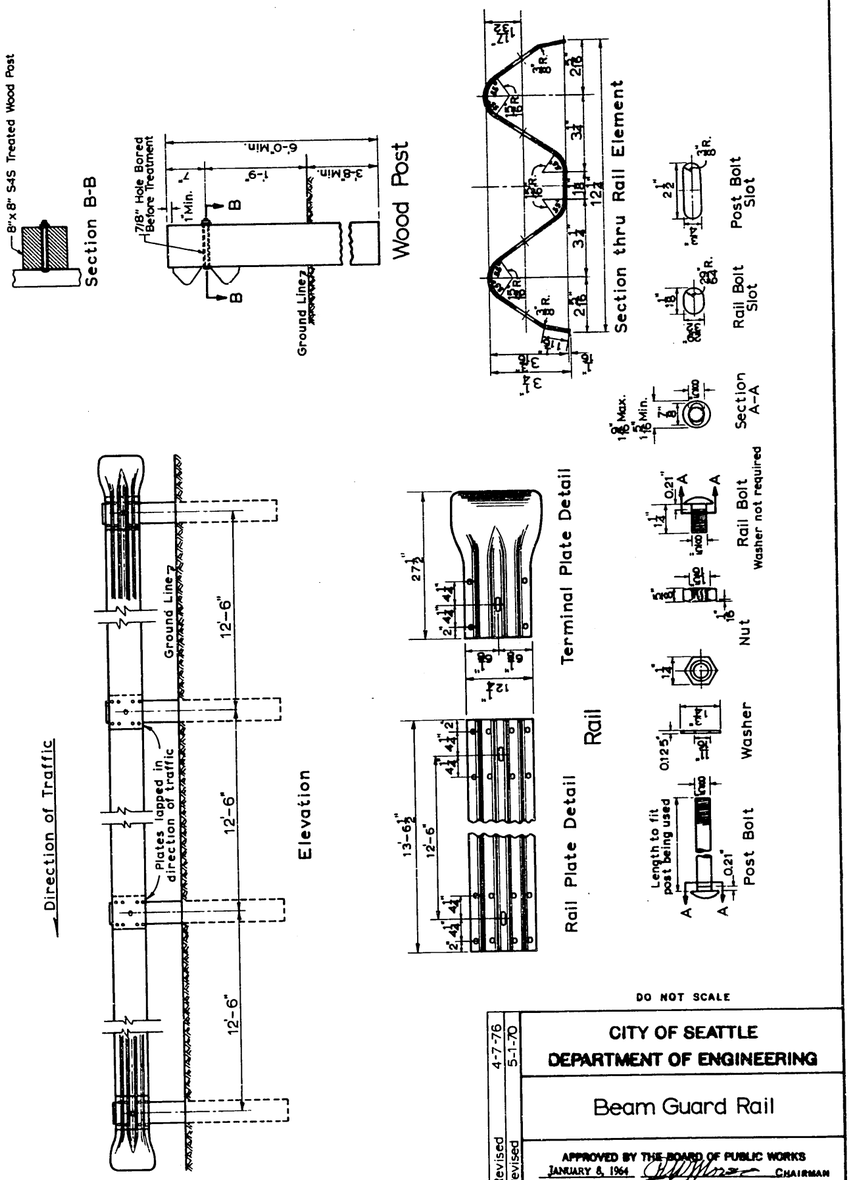
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Half Section Grading

Revised

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No. 201



DO NOT SCALE

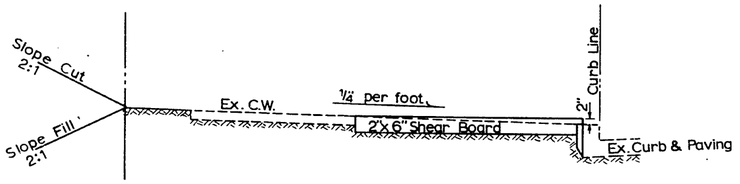
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

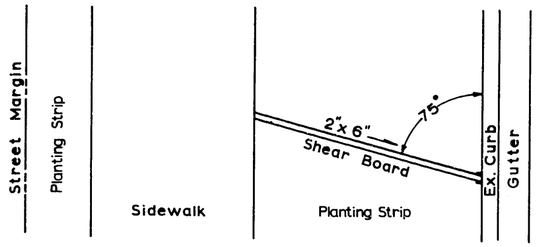
Beam Guard Rail

Revised 4-7-76
Revised 5-1-70

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No.206





DO NOT SCALE

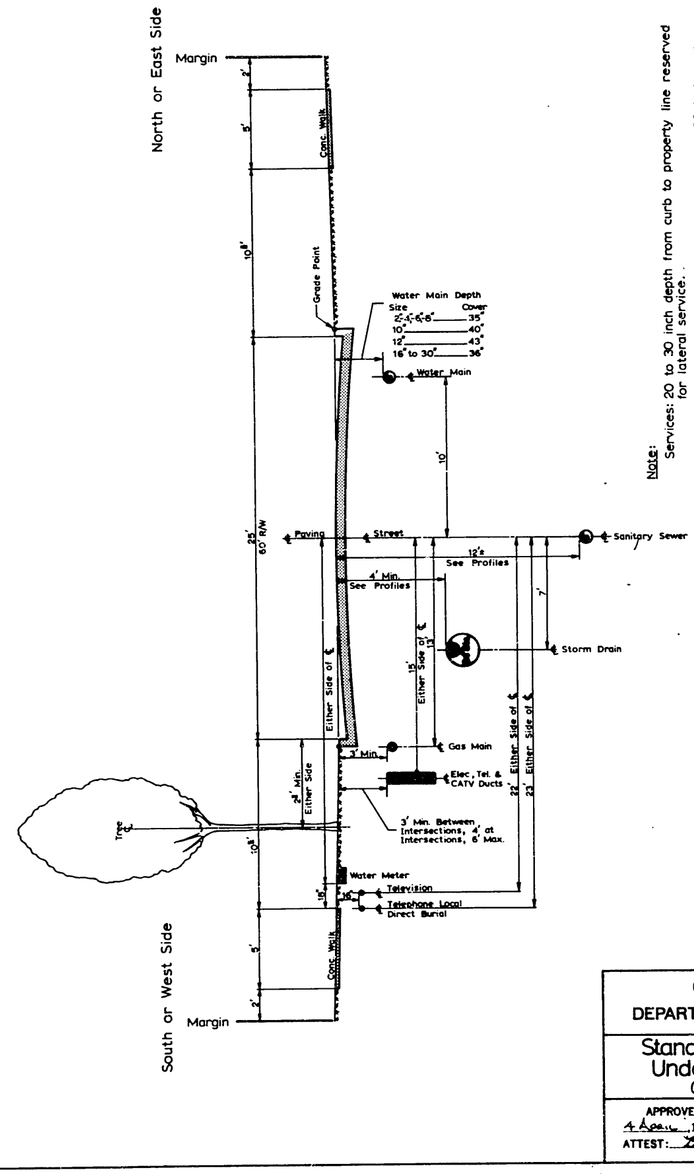
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Shear Board Installation

Revised 4-7-76

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 6, 1966 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No. 209



Note:
Services: 20 to 30 inch depth from curb to property line reserved for lateral service.

Sanitary side sewer minimum cover is 30 inches at property line and 60 inches at the curb.

Service drain may run under the sidewalk, thru the curb or thru above reserved space.

Electric power, gas, telephone, television and trees will be installed in the same relation to the curb on streets with pavements in excess of 25 feet.

Storm drains will be permitted in the area under the planting strip or under the concrete walk where the roadway has permanent pavement. Other utilities may be placed above the storm drain.

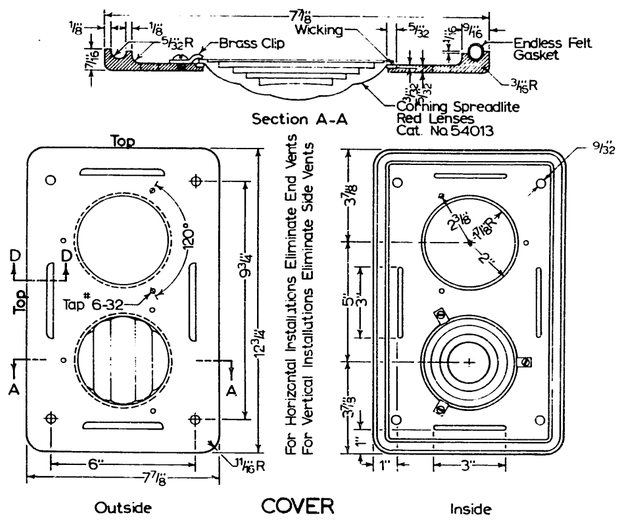
DO NOT SCALE

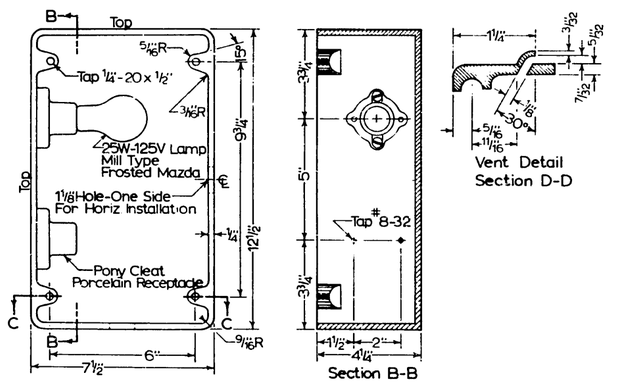
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

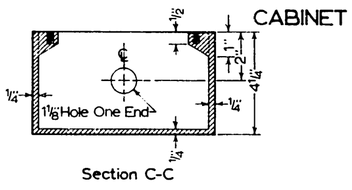
Standard Locations for Underground Utilities
(Residential Street)

APPROVED BY THE BOARD OF PUBLIC WORKS
4 April 1975 CHAIRMAN
ATTEST: SECRETARY

Standard Plan No.212







CABINET

Material - Cast Iron

For Installation See Std. Plan No. 212.1

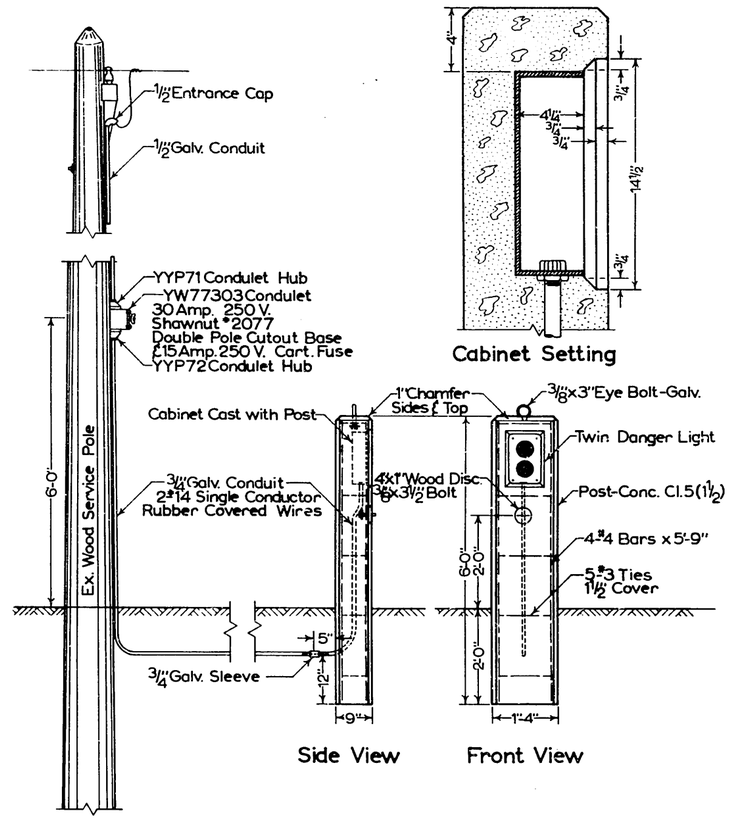
DO NOT SCALE

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Twin Danger Light

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 — CHAIRMAN
ATTEST: — SECRETARY

Standard Plan No.2121



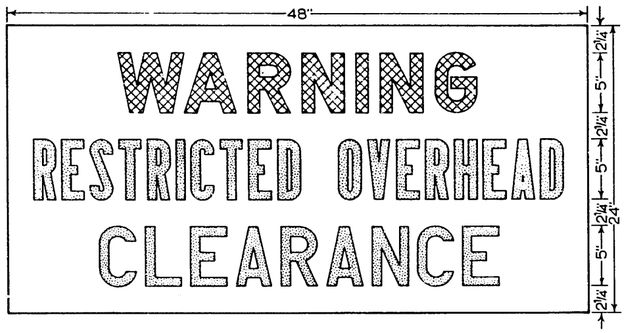
DO NOT SCALE

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Twin Danger Light Installation

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 — CHAIRMAN
ATTEST: — SECRETARY

Standard Plan No.214



= Red = White Background

= Black

NOTES:

The Contractor shall erect restricted overhead clearance signs for the benefit of railway traffic when they are called for in the special provisions. These signs shall be fully reflectorized.

In general, the signs shall be erected as a protection when the vertical clearance will be restricted to less then 22'-6", measured from the top of the highest rail.

The signs shall be mounted on the outside face of the falsework at the center of the span over the tracks and above the restricted overhead clearance line.

All cost for the furnishing, erection and dismounting of the signs shall be considered as incidental to the improvement and no separate payment will be made.

DO NOT SCALE

Revised 5-1-70	CITY OF SEATTLE DEPARTMENT OF ENGINEERING
	Restricted Overhead Clearance Sign
	APPROVED BY THE BOARD OF PUBLIC WORKS JANUARY 8, 1964 — CHAIRMAN ATTEST: — SECRETARY

Standard Plan No. 215

Abbreviations

Aban	Abandon(ed)	GM	Gas Meter
Adj	Adjust	GSP	Galvanized Steel Pipe
Al	Aluminum	GV	Gate Valve
AV	Air Valve	HB	Horizontal Bend
Asph	Asphalt	HH	Handhole
ABW	Asphalt Bike Way	HPG	High Pressure Gas
AW	Asphalt Walk	HPS	High Pressure Sodium Luminaire
Avg	Average	Hyd	Hydrant
BfV	Butterfly Valve	Inl	Inlet
BO	Blow Off	IE	Invert Elevation
Br	Brick	Inv	Invert (Line)
Blkhd	Bulkhead	IP	Iron Pipe
Bsmt	Basement	LIT	Large Inlet Top
BV	Ball Valve	Loc	Location, Locate
CB	Catch Basin	Log	Steam Log
CC	Concrete Culvert	MH	Manhole
C&G	Curb and Gutter	MVL	Mercury Vapor Luminaire
Ch	Chamber	ℳ	Monument Line
CIP	Cast Iron Pipe	Pav	Pavement
Cl.	Class	PDP	Perforated Drain Pipe
CMP	Corrugated Metal Pipe	Prop	Proposed
Conc	Concrete	PS	Pipe Sewer Combined
CBW	Concrete Bike Way	PSD	Pipe Storm Drain
Cd	Conduit	PSS	Pipe Sewer Sanitary
Conn	Connect	R	Radius
Cr	Cross	RCP	Reinforced Concrete Pipe
CR	Curb Radius	RD	Roof Drain
CW	Concrete Walk	Reconn	Reconnect
℄	Center Line	Red	Reducer
DIP	Ductile Iron Pipe	Reloc	Relocate
Dwy	Driveway	Rem	Remove
Ecc	Eccentric	Repl	Replace
ECb	Electrical Cable	Ret	Retire(d)
ECd	Electrical Conduit	RIT	Round Inlet Top
ED	Electrical Duct	RR	Railroad
El.	Elevation	R&R	Remove and Replace
EMH	Electrical Man Hole	R/W	Right of Way
Esmt	Easement		
EV	Electrical Vault		
Ex	Existing		
FACb	Fire Alarm Cable		
Flr	Floor		
FM	Force Main		
G	Gas		
GIP	Galvanized Iron Pipe		

CITY OF SEATTLE DEPARTMENT OF ENGINEERING
Abbreviations
APPROVED BY THE BOARD OF PUBLIC WORKS 4/7/, 19— — CHAIRMAN ATTEST: — SECRETARY

Abbreviations

SB	Sand Box
SCL	Seattle City Light
SD	Service Drain
SED	Seattle Engineering Department
Sl.	Sleeve
SS	Side Sewer Combined
SSS	Side Sewer Sanitary
Stl P	Steel Pipe
SWD	Seattle Water Department
℄	Survey Line
T	Tee
Tel	Telephone
TCb	Telephone Cable
TCd	Telephone Conduit
TD	Telephone Duct-
Temp	Temporary
TH	Test Hole
TMH	Telephone Manhole
TrSB	Traffic Signal Box
TrSP	Traffic Signal Pole
TVCb	Television Cable
VB	Vertical Bend
VC	Vertical Curve
VCh	Valve Chamber
w/	With
W	Watermain
WM	Water Meter
WMR	Watermain Radius
WCR	Wheel Chair Ramp
WSP	Wood Stave Pipe
WU	Western Union
WWF	Welded Wire Fabric

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Abbreviations

APPROVED BY THE BOARD OF PUBLIC WORKS
4/7, 1976 Paul G Wistrand CHAIRMAN
ATTEST: Betty L. McGraw SECRETARY

ITEM	EXISTING	CONSTRUCT	PEN	PEN	FORMAT NO. *
Cement Concrete Pavement	6" Conc	6" Conc Pav	00	2½	7008
Asphalt Concrete Pavement	2" Asph/6" Conc	8"-102B Pav	00	2½	7045
Asphalt Concrete Surfacing	2" Asph	2" Asph	00	2½	7045
Cement Concrete Walk	CW	CW	00	2½	7111
Wheel Chair Ramp		WCR WCR	00	2½	7111
Cement Concrete Bike Way	3" CBW	3" CBW	00	2½	7111

* OR EQUAL

APPROVED BY THE BOARD OF PUBLIC WORKS
4/7, 1976 Paul G Wistrand CHAIRMAN
ATTEST: Betty L. McGraw SECRETARY

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

APPROVED BY THE BOARD OF PUBLIC WORKS
CHAIRMAN
ATTEST: SECRETARY

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN	CONSTRUCT	PEN	* FORMATT NO.
Asphalt Concrete Bike Way	3" ABW	00	3" ABW	2½	7045
Grading	Graded	00	To Be Graded	2½	
Grade	22.3% (SMALL 00)		22.3% (LARGE 00)	00	
Vertical Curve	V|C (SMALL 00)	00	V|C (LARGE 00)	00	
Manhole		0	MH-7	2	See Pipe Usage
Inlet-Type 164		0			
Inlet-Type 165		0		1	
Inlet-Type 166		0		1	
Catch Basin, Round Inlet Top		0		1	
Catch Basin, Type 151		0		1	
Catch Basin, Type 153		0		1	
Catch Basin, Type 171A		0		1	
Catch Basin, Type 171B		0		1	
Concrete Culvert	12" CC	0	12" CC	2	

* OR EQUAL

Standard Plan No 216.1

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CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN	CONSTRUCT	PEN	* FORMATT
Pipe Sewer Combined < 12" Dia	8" PS	0	8" PS	3	
Pipe Sewer Combined ≥ 12" Dia	24" PS	0	24" PS	2	7045
Side Sewer Combined	6" SS	0	6" SS	3	
Pipe Sewer Sanitary < 12" Dia	10" PSS	0	10" PSS	3	
Pipe Sewer Sanitary ≥ 12" Dia	24" PSS	0	24" PSS	2	7060
Side Sewer Sanitary	6" SSS	0	6" SSS	3	
Pipe Storm Drain < 12" Dia	8" PSD	0	8" PSD	3	
Pipe Storm Drain ≥ 12" Dia	24" PSD	0	24" PSD	2	7063
Service Drain	8" SD	0	8" SD	3	
Inlet & CB Connection		0	8"	3	
Sand Box	SB	0	SB	2	
Watermain < 8" Dia	6" W	0	6" W	3	
Watermain <12" Dia	8" W	0	8" W	4	
Watermain ≥12" Dia	12" W	0	12" W	2	7046
Bend		0	8"-11¼° Bend	1	
Cross		0	8"x8"x6"x6" Cr.	1	
Tee		0	8"x8"x6" T	1	
Plug		0	or	1	

* OR EQUAL

Standard Plan No 216.2

APPROVED BY THE BOARD OF PUBLIC WORKS
4/7/76
ATTEST: CHAIRMAN
SECRETARY

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN	CONSTRUCT	PEN	FORMAT*
Hydrant		0		1	
Gate Valve		0	4" GV	1	
Gate Valve w/Chamber		0	8" GV w/Ch	2	
Gate Valve w/ 185 Chamber		0	16" GV w/Ch	1&2	
Reducer		0	8"-4" Red		
Air Valve		0		2	
Blow Off		0	1 1/2" BO	2	
Water Meter	WM	0	WM	2	
Transmission Pole	XP	00	XP	00	
Metal Pole w/ (MVL)		00		00	
(HPS)		00		00	
Strain Pole		00		00	
Combined Lighting and Strain Pole (MVL)		00		00	
(HPS)		00		00	
Traffic Signal Mast Arm Pole		00		00	
Combined Lighting and Signal Mast Arm Pole (MVL)		00		00	
(HPS)		00		00	

* OR EQUAL

Standard Plan No 216.3

APPROVED BY THE BOARD OF PUBLIC WORKS
4/7/76
ATTEST: CHAIRMAN
SECRETARY

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN	CONSTRUCT	PEN	FORMAT*
Pedestrian Push Button Foundation	PPBF	00	PPBF	00	
Pedestrian Signal Foundation	PSF	00	PSF	00	
Signal Control Foundation		00		00	
Handhole	HH	00		00	
Utility Wood Pole	PP	00		00	
City Wood Pole	PP	00		00	
Utility Wood Pole w/(MVL)	PP	00		00	
(HPS)	PP	00		00	
City Wood Pole w/(MVL)	PP	00		00	
(HPS)	PP	00		00	
Utility Wood Pole w/ Anchor	PP C	00	C	00	
Utility Guy Pole w/Anchor	GP C	00	GP C	00	
Utility Guy Pole w/o Anchor	GP	00	GP	00	
Street Lighting Standard	LP	00			
Electrical Cable (Direct Burial)	2" ECb	0			
Electrical Conduit	1" ECd	0			
Electrical Duct	12"x12" ED	0			
Combined Electrical & Telephone Duct	12"x12" ED-TD	0			
Traffic Signal Conduit	2" TrCd	0			

* OR EQUAL

Standard Plan No 216.4

Standard Plan No 216.5

ITEM	EXISTING	PEN CONSTRUCT PEN PRESTYPE*
Telephone Cable (Direct Burial)	2" TCb	
Telephone Conduit	3" TCd	
Telephone Duct	12"x12" TD	
Television Cable (Direct Burial)	2" TVCb	
Steam Log	14" Log	
Steam Vault	STEAM VAULT	
Gas Main	12" G	
Gas Valve		
Gas Meter	GM	
Gas Regulator	G Reg	
(Gas=All Petroleum Lines)		
Monument		①
Brass Plug		
Tack		
Hub		
Center Line		5598
Monument Line		5598
Survey Line		
Permant Easement Line		0
Construction Easement Line		1
Dimension Line		
Match Line		

* OR EQUAL

① P4050

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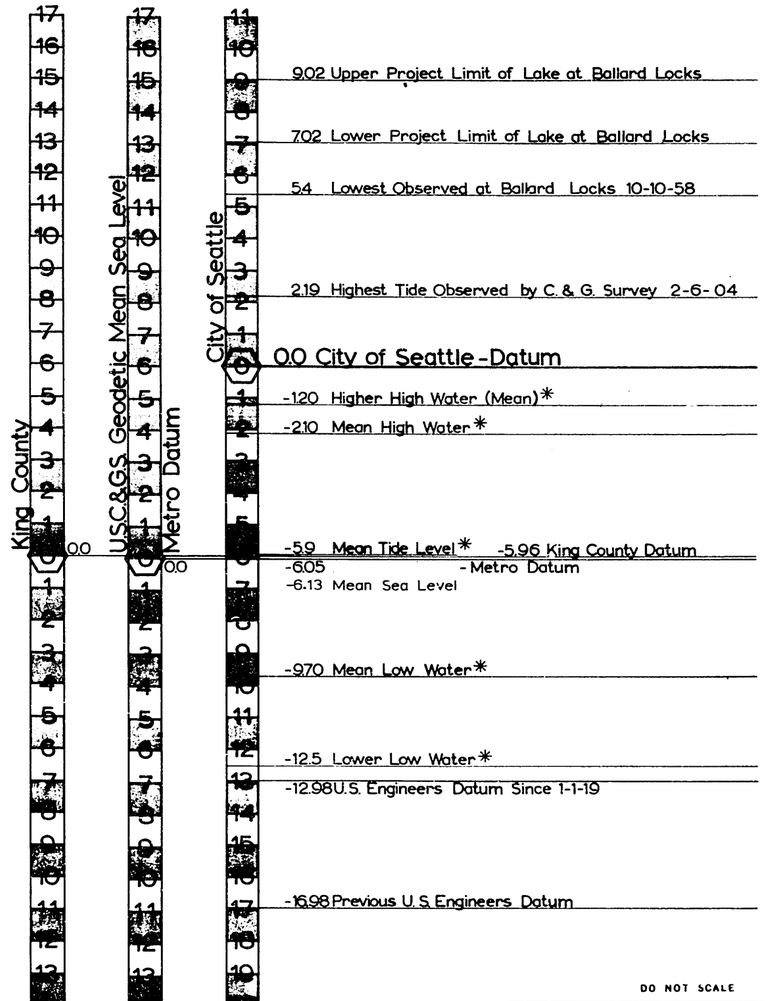
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

Standard Plan No.217



* These elevations vary according to tidal observation. For the latest figures call the U.S.C.G.S. Office.

DO NOT SCALE

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Elevations and Datums
11-13-62

Revised 4-7-76

APPROVED BY THE BOARD OF PUBLIC WORKS
JANUARY 8, 1964 CHAIRMAN
ATTEST: SECRETARY

APPROVED BY THE BOARD OF PUBLIC WORKS
4/7/ CHAIRMAN
ATTEST SECRETARY

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN	CONSTRUCT	PEN	PRESTYPE *
Small Ditch or Stream	Ditch	00	Ditch	2	
Large Ditch or Stream	Ditch	00	4' Ditch →	2	
Chain Link Fence	× × × ×	00			
Wood Fence	// // // //	00			
Building	①	00			①
Tree < 12" Dia		00			
Tree ≥ 12" Dia		00			
Rockery		00			
Guard Rail		00			
Ground, Grade Line		0		0	
City of Seattle Datum North Arrow	CITY of SEATTLE DATUM N ①			①	①
Abandon(ed).	2"ECd (Aban)	00	Aban. 2" ECd	0	
Retired	6" G (Ret)	00			
Lot & Ownership Lines		00			
Right of Way Line		2½			
State Highway R/W	State R/W ①	2½			①
Test Hole and Number	TH-7 ①	0			①

① P4050

* OR EQUAL

Standard Plan No 216.6