CITY OF NEWBERG
CITY RECORDER INDEX NO. 1602

CITY OF NEWBERG
ASPHALT OVERLAY PROJECT
CONTRACT DOCUMENTS
JANUARY, 1998

TABLE OF CONTENTS
ASPHALT OVERLAY PROJECT

		Pages in Section
CONTRACT DOCUMENTS		
	Advertisement for Bids	10
	Bid Documents	
	Contract for Construction	
	Performance - Payment Bond	
GENERAL PROVISIONS		34
Section 1	Definitions and Terms	
2	Proposal Requirements and Conditions	
3	Award and Execution of Contract	
4	Scope of Work	
5	Control of Work	
6	Control of Materials	
7	Responsibility to the Public	
8	Prosecution and Progress	
9	Measurement and Payment	
10	Requirements of Oregon Law for Public Contracts	48
SPECIAL PROVISIONS		2
Section 1	Length of Contract	
2	Liquidated Damages	
3	Pre-Construction Meeting	
4	Tree Trimming	
5	Water	
6	Changeover of Specifications	
7	Concrete Curb and Gutter Repair	
8	Prevailing Hand Work	
9	Leveling Course Asphalt, Class D	
10	Asphalt Overlay	
11	Pavement Reinforcing Fabric	
12	Adjust Manhole	
13	Adjust Valve Cover	
14	Shoulder Rock	
TECHNICAL PROVISIONS		106
Division 2	General Technical Requirements	
5	Street Technical Requirements	
6	Storm Drainage Technical Requirements	
7	Concrete Structures Technical Requirements	
PROJECT INFORMATION		6
	Project Map	
	Table of Streets	
	Straight Line Charts	
STANDARD DRAWINGS		13
ST-4	Curb and Gutter	
ST-7	Curb Ramp	
ST-8	Sidewalk - Type "A"	
ST-13	Driveway Apron and Curb Cut	
ST-14	Commercial Driveway	
ST-22	Asphalt Overlay Typical Section	
ST-23	Asphalt Pavement Repair	
ST-29	Manhole Adjustment	
S-1	Pipe Bedding	
S-2	Trench Backfill	
SD-1	Gutter and Curb Inlet Catch Basin Details	
SD-2	Frame and Grate	

BID

PLACE: CITY OF NEWBERG, OREGON

PROJECT: ASPHALT OVERLAY PROJECT

TO: MAYOR AND CITY COUNCIL
CITY OF NEWBERG, OREGON
719 E. FIRST STREET
NEWBERG, OREGON 97132

The undersigned, hereinafter called the Bidder, in compliance with your advertisement for bid offers to enter into a Contract with the City of Newberg, Oregon, hereinafter referred to as the Owner, to furnish all labor, materials, equipment, supplies and machinery to construct the project in accordance with the Contract Documents, within the time set forth therein, and at the prices stated below.

The Bidder declares that he has carefully examined the plans and specifications with related documents, that he has personally inspected the site of the proposed work; that he has satisfied himself as to the quantities involved including materials and equipment, and is familiar with all of the conditions surrounding the construction of the proposed project including availability of materials and labor.

The Bidder further declares that the Bid is made according to the provisions and under the terms of the Contract Documents, which are hereby made a part of this Bid, and that the prices below are to cover all expenses incurred in performing the work required under the Contract Documents of which this Bid is a part.

The Bidder agrees that if this Bid is accepted, he will, within ten calendar days after notification of acceptance, execute the Contract with the Owner; and will at that time deliver to the Owner the Performance and Payment Bond and insurance documents required herein, and will, to the extent of his Bid, furnish all labor, equipment and materials necessary to complete the work in the manner, in the time, and according to the methods as specified in the Contract Documents and required by the Community Development Project Manager.

The Bidder further agrees to begin work within ten calendar days after receipt of written "Notice to Proceed" from the Owner and to fully complete the project by **June 15, 1998**. Bidder further agrees to pay as liquidated damages, the sum of one hundred fifty dollars ($150.00) for each consecutive calendar day thereafter until the work shall have been finished. Sundays and legal holidays shall be excluded in determining days in default.

The Bidder further proposes to accept as full payment for the work proposed herein the amounts computed under the provisions of the Contract Documents and based on the following schedule of lump sum or unit price amounts, it being expressly understood that the unit prices are independent of the exact quantities involved. The Bidder agrees that the lump sum prices and unit prices represent a true measure of the labor and materials required to perform the work, including all allowances for overhead and profit for each type and unit of work called for in these Contract Documents.

City of Newberg
ADVERTISEMENT FOR BIDS
ASPHALT OVERLAY PROJECT

Sealed bids for the construction of the **Asphalt Overlay Project** in the City of Newberg, Oregon addressed to the Community Development-Project Manager, 719 E. First St., Newberg, Oregon 97132, will be received until **4:00 p.m.** prevailing time on the **26th day of January, 1998** at the Community Development Building, 719 E. First St., Newberg, Oregon at which time and place all bids will be opened and publicly read aloud by the undersigned or his designated representative.

The estimated quantities of work are: 3400 tons asphalt concrete (Class B, C, Class D Preleveling); 10,000 SY Pavement Reinforcing Fabric; 900 SY Street Reconstruction; 400 LF Concrete Curb and Gutter; 500 SF Concrete (sidewalks and driveways); 2 wheelchair ramps; 60 LF 10" DI Storm Drain Piping; 2 Catch Basins; and related work.

Plans and Specifications may be **obtained** at the Community Development Office, 719 E. First St., Newberg, Oregon 97132 at $25.00 for the set of documents. Plans and specifications may also be **examined** at the same location at no charge.

Bidders must be prequalified in conformance with Oregon Law ORS 279.039. Documentation of State approval must be submitted to the Owner at least seven days prior to the bid opening date.

No bid will be received or considered unless the bid contains statements by the bidder as a part of his bid, that the provisions required by ORS 279.348 through 279.363, as may be applicable, are to be complied with. Applicable state wage rates are included with the contract documents.

No bid for a construction contract shall be considered unless the bidder is registered with the Construction Contractors Board as required by ORS 671.530. Each Bid must contain a statement as to whether the bidder is a resident bidder, as defined by ORS 279.029.

Each bid must be submitted on the prescribed form in a sealed envelope, clearly marked that it is a bid, and with the Bidders name and the project title on the outside of the envelope. Each bid must be accompanied by a certified check or bid bond payable to the City of Newberg, Oregon, in an amount of not less than 10 percent of the total amount of the bid submitted. The successful Bidder will be required to furnish a bond for faithful performance on the contract in the full amount of the contract price.

The City of Newberg reserves the right to reject any or all bids, to waive informalities, and to accept the bid which is in the best interest of the City. No bidder may withdraw his bid for a period of thirty (30) calendar days after the date set for opening.

Michael Soderquist
Community Development Director

SCHEDULE OF PRICES
ASPHALT OVERLAY PROJECT

NO.	ITEM	ESTIMATED QUANTITY	UNIT PRICE FIGURES	UNIT PRICE IN WRITING	TOTAL AMOUNT
1.	10" DI Pipe, Class B Bedding/Backfill	60 LF	38.00	Thirty Eight and 00/100	2280.00
2.	Catch Basin	2 EA	825.00	Eight hundred twenty five and 00/100	1650.00
3.	Remove catch basin	1 EA	175.00	One hundred seventy five and 00/100	175.00
4.	10" DI Pipe conn. into existing catch basin	1 EA	350.00	three hundred fifty and 00/100	350.00
5.	Sawcut asphalt pavement	200 LF	1.00	one and 00/100	200.00
6.	Remove curb and gutter	400 LF	2.00	two and 00/100	800.00
7.	Remove concrete sidewalk	290 SF	1.00	One and 00/100	290.00
8.	Concrete Curb & Gutter (12" wide gutter) Restore planted areas	300 LF	19.00	nineteen and 00/100	5700.00
9.	Concrete Curb & Gutter, Reinforced	100 LF	20.00	twenty and 00/100	2000.00
10.	Driveway Approach, Reinforced Concrete	370 SF	7.00	Seven and 00/100	2590.00
11.	Concrete Sidewalk, 4" deep Restore planted areas	150 SF	6.00	Six and 00/100	900.00
12.	Wheelchair Ramp	2 EA	280.00	two hundred eighty and 00/100	560.00
13.	Excavate & Re-construct Street, 13.5" deep, 1.5" AC	900 SY	21.00	twenty one and 00/100	18900.00
14.	Asphalt Concrete Overlay,Class B (t=2.5")	1,800 TON	31.00	thirty one and 00/100	55,800.00
15.	Asphalt Concrete Overlay,Class C (t=1.5")	1,100 TON	34.00	thirty four and 00/100	37,400.00
16.	Pre-leveling Asphalt, Class D	500 TON	36.00	Thirty six and 00/100	18,000.00
17.	Tack Coat, CSS-1 Emulsified Asphalt	3 TON	260.00	two hundred sixty and 00/100	780.00
18.	Pavement Reinforcing Fabric	10,000 SY	1.00	one and 00/100	10,000.00

SCHEDULE OF PRICES
ASPHALT OVERLAY PROJECT

NO.	ITEM	ESTIMATED QUANTITY	UNIT PRICE FIGURES	UNIT PRICE IN WRITING	TOTAL AMOUNT
19.	Adjust Manhole Cover	13 EA	700.00	Seven hundred and 00/100	9100.00
20.	Adjust Valve Cover or Monument Cover	5 EA	75.00	Seventy five and 00/100	375.00
21.	Detour Signing, Collector Street	1 LS	2500.00	Two thousand five hundred and 00/100	2500.00
22.	Mobilization	1 LS	5000.00	Five thousand and 00/100	5000.00

TOTAL BID: One hundred seventy five thousand three hundred 175,350.00
Fifty and 00/100

BIDDERS NAME: MORSE BROS INC
ADDRESS: PO BOX 7 LEBANON OR 97355
PHONE/FAX: 390-6955 / 390-4904
SIGNATURE: Russ Rebo
PRINT NAME: RUSS REBO Construction Estimator

The undersigned Bidder hereby agrees that the provisions of ORS 279.348 to 279.356 will be complied with, so that the undersigned Bidder and Bidder's subcontractors will pay to their employees not less than the specified minimum prevailing rate of wage as determined by the Oregon Commissioner of the Bureau of Labor and Industries, and further agrees to pay such wages not less than once per week.

The above unit prices shall include all labor, materials, equipment, tools, overhead, profit, insurance, etc., to complete the work called for.

It is agreed that if the Bidder is awarded the Contract for the work herein proposed and shall fail or refuse to execute the Contract and furnish the required Performance- Payment Bond within the time herein proposed, then, in that event, the bid security deposited herewith shall be retained by the Owner as liquidated damages.

The Bidder understands that the Owner may reject any or all bids and waive any informalities in the bidding.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of thirty (30) calendar days after the scheduled closing time for receiving bids.

The Bidder acknowledges receipt of the following Addenda.

NO. one DATE 1-8-98
NO._____ DATE_____
NO._____ DATE_____
NO._____ DATE_____

The name of the Bidder submitting this Proposal is MORSE BROS., INC.
doing business at P.O. Box 7 (Street), Lebanon (City), OR (State), 97355 (Zip)
which is the address to which all communications shall be sent.

BIDDER'S PERFORMANCE BOND STATEMENT

MORSE BROS., INC., hereinafter referred to as Contractor, is
(Name of Contractor)
submitting a bid to the City of Newberg pursuant to the latter's advertisement for bids dated **January, 1998** for the **Asphalt Overlay Project.**

Contractor certifies that if awarded the Contract, Contractor has the financial ability to obtain a good and sufficient bond issued by a surety to Owner in a sum equal to the amount of the bid providing for the faithful performance of the Contract.

Contractor understands and agrees if Contractor fails to provide the performance bond, the Owner will reject such bid and the bid bond or security submitted with the subject bid will be forfeited. The Surety requested to issue the Performance Bond will be Safeco Ins Co
_____.
(Surety Company)

Contractor hereby authorizes Safeco Ins Co to disclose any information to
(Surety Company)
the Owner concerning Contractor's ability to supply a performance bond in the amount of the Contract.

In witness thereto the undersigned has set his hand this 19th day of Jan. 1998.

X _____
Signature of Bidder

STEPHEN FREY
ASSISTANT SECRETARY
Print Name

Title

(If Corporation)

In witness whereof the undersigned corporation has caused this instrument to be executed and the seal affixed by its duly authorized officers this ___ day of _____1998.

_____
Name of Corporation

By _____

Print Name

Title

Attest _____
Secretary

CONTRACT FOR CONSTRUCTION

THIS CONTRACT, made and entered into this 13th day of March, 1998, by and between the CITY OF NEWBERG, OREGON, a municipal corporation, hereinafter called the "OWNER", and

MORSE BROS., INC.

of PO Box 7

Lebanon OR 97355

hereinafter called the "CONTRACTOR".

WITNESS:

Said Contractor, in consideration of the sum to be paid him by the said Owner and of the covenants and agreements herein contained, hereby agrees at his own proper cost and expense to do all the work and furnish all the materials, tools, labor, and all appliances, machinery and appurtenances for the **Asphalt Overlay Project** to the extent of the Bid made by the Contractor on the 19th day of January 1998, all full compliance with Contract Documents referred to herein.

The Advertisement for Bid, the signed copy of the Bid made by the Contractor, the fully executed Performance and Payment Bond, the General Provisions, the Special Provisions, the Technical Provisions, entitled **Asphalt Overlay Project** dated January, 1998, are hereby referred to and, by reference, made a part of this Contract as fully as if the same were completely set forth herein.

In consideration of the faithful performance of the work herein embraced, as set forth in these Contract Documents, and in accordance with the direction of the Community Development Director and to his satisfaction to the extent provided in the Contract Documents, or as otherwise herein provided and based on the said Bid made by the Contractor, the Owner agrees to pay to the Contractor the amount bid as adjusted in accordance with the Contract Documents, and to make such payments in the manner and at the times provided in the Contract Documents.

The Contractor agrees to complete the work within the time specified herein and to accept as full payment hereunder the amounts computed as determined by the Contract Documents and based on the said Bid.

The Contractor agrees to indemnify and save harmless the Owner from any and all defects appearing or developing in the materials furnished and the workmanship performed under this Contract for a period of one year or such other time as applicable law may allow after the date of acceptance of the work in the Contract by the Owner.

In the event that the Contractor shall fail to complete the work within the time limits or the extended time limit agreed upon, as more particularly set forth in the Contract Documents, liquidated damages shall be paid at the rate of One Hundred and Fifty Dollars per consecutive calendar day. Sundays and legal holidays shall be excluded in determining days in default.

The provisions of ORS 279.350 relating to prevailing wage rates are made a part of this Contract as completely as if the same were fully set forth herein.

The Contractor shall pay a fee to the Oregon Bureau of Labor and Industries pursuant to the provisions of ORS 279.352. The fee is equal to one-tenth of one percent (0.1 percent) of the price of the contract, but not less than $100 nor more than $5000, regardless of the contract price. The fee shall be paid on or before the first progress payment or 60 days from the date work first began on the contract, whichever comes first. The fee is payable to the Bureau of Labor and Industries and shall be mailed or otherwise delivered to the Bureau at the following address:

Bureau of Labor and Industries
Wage and Hour Division
Prevailing Wage Unit
800 N.E. Oregon Street, #32
Portland, OR 97232

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed the day and year first herein above written.

CITY OF NEWBERG, OREGON

By Duane R. Cole

Print Name Duane R. Cole

City Manager
Title

CONTRACTOR MORSE BROS., INC.

By X Stephen Frey

Print Name STEPHEN FREY
ASSISTANT SECRETARY

Title

APPROVED AS TO FORM:

City Attorney

EXECUTED IN QUADRUPLICATE

BOND NO. 5923547

PERFORMANCE - PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we MORSE BROS., INC

A CORPORATION hereinafter called "Principal" and SAFECO INSURANCE COMPANY OF AMERICA
(Corp., Partnership, or Individual)
of SAFECO PLAZA, State of WASHINGTON, herein after called "Surety", are held firmly bound unto the City of Newberg, Oregon, hereinafter called "Owner" in the penal sum of ONE HUNDRED SEVENTY FIVE THOUSAND THREE HUNDRED FIFTY DOLLARS Dollars ($175,350.00) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain contract with the Owner, dated this ____ day of _____, 1998, a copy of which is hereto attached and made a part hereof for the construction of the **Asphalt Overlay Project.**

NOW THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extension thereof which may be granted by the Owner, with or without notice to the Surety, and if he shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, and shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contracts and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools consumed or used in connection with the construction of such work whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition of the terms of the contract or the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specification.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed this 13TH day of MARCH 1998.

× Stephen Frey
(Principal) Secretary STEPHEN FREY ASSISTANT SECRETARY

×
Principal MORSE BROS., INC.
R R Reinhard
Vice President

P.O BOX 7 (s)

LEBANON, OREGON 97355
(Address - Zip Code)

(SEAL)

_____

Witness as to Principal

_____

(Address - Zip Code)

ATTEST

SAFECO INSURANCE COMPANY OF AMERICA
Surety

Joyce C Blasingame
(Surety) ~~Secretary~~
JOYCE C. BLASINGAME, WITNESS

By _____
Attorney-in-fact
JEFFREY N. KING ATTORNEY-IN-FACT

(SEAL)

Joyce C Blasingame
Witness as to Surety
RKI INC JOYCE C. BLASINGAME, WITNESS
P.O BOX 157, LEBANON, OR 97355
(Address - Zip Code)

Note: Date of Bond must not be prior to the date of Contract. If Contractor is Partnership, all partners should execute bond.

k:\wp\tabby\wynooski\contract.doc

SAFECO®

POWER OF ATTORNEY

SAFECO INSURANCE COMPANY OF AMERICA
GENERAL INSURANCE COMPANY OF AMERICA
HOME OFFICE: SAFECO PLAZA
SEATTLE, WASHINGTON 98185

No. 4844

KNOW ALL BY THESE PRESENTS:

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint
**********JEFFRY N. KING; BARRY L. JOHNSON; JOYCE C. BLASINGAME; Lebanon, Oregon**********

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and **GENERAL INSURANCE COMPANY OF AMERICA** have each executed and attested these presents

this 20 day of February, 19 98.

R A Pierson
R.A. PIERSON, SECRETARY

W Randall Stoddard
W. RANDALL STODDARD, PRESIDENT

CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA:**

"Article V, Section 13. - FIDELITY AND SURETY BONDS . . . the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business . . . On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,
(i) The provisions of Article V, Section 13 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,
the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, R. A. Pierson, Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 13TH day of MARCH, 19 98.

SAFECO INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1953 STATE OF WASHINGTON

GENERAL INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1923 State of Washington

R A Pierson
R.A. PIERSON, SECRETARY

S-1787 9/97
S-974/EP 1/93

® Registered trademark of SAFECO Corporation.

GENERAL PROVISIONS

CITY OF NEWBERG
ASPHALT OVERLAY PROJECT

JANUARY, 1998

GENERAL PROVISIONS

SECTION 1.00 DEFINITIONS AND TERMS

Terms used or referred to herein are defined as follows:

1.01 BID

The offer of the bidder when submitted on the proposal form, properly signed and guaranteed.

1.02 BIDDER

Any individual, firm partnership, corporation or combination thereof acting directly or through a duly authorized representative, submitting a proposal on the work contemplated.

1.03 CHANGE ORDER

A written instruction to the Contractor, signed by the Engineer, prescribing any change in the work.

1.04 CONTRACTING AGENCY

The agency which has contracted for the performance of the work or for whom the work is being performed. Unless specifically stated otherwise, wherever in these documents the words "Contracting Agency" appear, it shall be understood to mean the City of Newberg, a Municipal Corporation, located in Yamhill County, Oregon.

1.05 CONTRACT

The written agreement covering performance of the work including formal contract, advertisement for bids, instructions to bidders, proposal with required affidavit, specifications, bonds, plans, and all other Contract Documents.

1.06 CONTRACTOR

The individual, partnership, corporation, or other entity entering into a contract with the Contracting Agency to perform the contemplated work. In the case of work being done under a permit issued by the Contracting Agency, the Permittee shall be construed to be the Contractor.

1.07 ENGINEER

The Engineer of the Contracting Agency, acting either directly or through his authorized representatives, and designated by the Contracting Agency to supervise the work during its execution.

1.08 HOUSE CONNECTION SEWER

Any sewer pipe line lying within an easement, public street or right of way which connects or is proposed to connect, a house sewer or any lot or part of a lot with a public sewer.

1.09 HOUSE SEWER

Any sewer pipe line which connects, or is proposed to connect, any building to a house connection sewer.

GENERAL PROVISIONS

1.10 INSPECTOR

An authorized representative of the Engineer of the Contracting Agency, limited to the particular duties entrusted by the Engineer.

1.11 LABORATORY

A materials testing laboratory operated by a public agency or if approved by the Engineer, any private, commercial testing laboratory.

1.12 LINEAL FOOT

Horizontal measurement as determined by engineers' station.

1.13 MAJOR ITEM

Any items or work and/or materials having an original contract value in excess of $500.00 or which exceeds ten (10) percent of the amount of the original contract, whichever is greater.

1.14 NOTICE TO PROCEED

A written notice to the Contractor from the Contracting Agency, designating the date by which the Contractor shall begin prosecution of the work.

1.15 PERSON

Any individual, firm, association, partnership, corporation, trust, or joint venture.

1.16 PLANS

The plans, profiles, cross sections, and drawings, or reproductions thereof, approved by the Engineer, which show the details of the work to be done.

1.17 PROPOSAL GUARANTY

Certified check or bidder's surety bond executed by a bonafide surety company, accompanying the Bid as a guarantee that the bidder will enter into a contract with the Contracting Agency for the performance of the work.

1.18 REFERENCE SPECIFICATIONS

Bulletins, standards, rules, methods of analysis or test, codes and specifications of other agencies, engineering societies, or industrial associations referred to in these specifications. All such references specified herein, refer to the latest edition thereof, including any amendments thereto which are in effect and published at the time of advertising for bids or issuing the permit for the project.

1.19 ROADWAY

That portion of the right-of-way or easement intended for use by vehicles.

GENERAL PROVISIONS

1.20 SANITARY SEWER

A sewer that carries liquid and water-carried wastes together with minor quantities of storm, surface, and groundwaters that are not admitted intentionally.

1.21 SEWER

A pipe or conduit that carries wastewater or drainage water.

1.22 SPECIAL PROVISIONS

Specific clauses setting forth conditions or requirements peculiar to the work which modify or supplement the standard specification.

1.23 SPECIFICATIONS

This term includes the standard specifications and specifications included herein by reference, any special or project specifications, and specifications included therein by reference, specifications on the plans referred to and specifications contained or referred to in supplemental agreements between the Contractor and the Contracting Agency.

1.24 STANDARD DRAWINGS

Drawings of structures or devices referred to on the plans or in specifications by title and/or an index number.

1.25 STATE

The State of Oregon.

1.26 STORM SEWER

A sewer that carries storm water and surface water, street wash and other wash waters, or drainage, but excludes domestic wastewater and industrial wastes. Also called storm drain.

1.27 STREET

Any road, highway, parkway, freeway, alley, walk or way.

1.28 SURETY

The bondsman, party or parties who may guarantee the fulfillment of the contract by bond.

1.29 UTILITY

Tracks, overhead or underground wires, pipe lines, conduits, ducts or structures, owned, operated, or maintained in or across a public right-of-way or private easement.

1.30 WORK

That which is proposed to be constructed or done under the contract.

GENERAL PROVISIONS

1.31 ABBREVIATIONS AND SYMBOLS

A.A.S.H.O. (AASHO) American Association of State Highway Officials; A.G.C. (AGC) Associated General Contractors of America; A.P.W.A. (APWA) American Public Works Association; A.S.T.M. (ASTM) American Society for Testing Materials; A.W.W.A. (AWWA) American Water Works Association; O.R.S. (ORS) Oregon Revised Statutes.

SECTION 2.00 PROPOSAL REQUIREMENTS AND CONDITIONS

2.01 INTERPRETATION OF PLANS AND SPECIFICATIONS

The Engineer will interpret the meaning of any part of the plans and specifications about which any misunderstanding may arise, and his decision will be final.

Should the Contractor become aware of any error or discrepancy in or between the plans and specifications, he shall refer the matter to the Engineer for adjustment before proceeding further with the work. Should the Contractor proceed with the work without referring the matter, he does so on his own responsibility.

2.02 FIELD CONDITIONS

Logs of test holes, ground water levels, and any accompanying soil reports as furnished by the Contracting Agency are furnished for general information only. The field conditions so set forth shall not constitute a representation or warranty, expressed or implied that such conditions are actually existent. Bidders shall make their own investigations and form their own estimates of the site conditions. The Contracting Agency will not be liable for any loss sustained by the Contractor as a result of any variance between conditions as set forth in the soil reports or as shown by the logs of test holes and the actual conditions revealed during the progress of the work or otherwise.

2.03 CONTRACT DOCUMENTS

The Contract Documents under which it is proposed to execute this work consist of the material bound herewith. These Contract Documents are intended to be mutually cooperative and to provide all details reasonably required for the execution of the proposed work. Any person contemplating the submission of a Bid and being in doubt as to the meaning or intent of said Contract Documents should request of the Engineer, in writing, an interpretation thereof. Any interpretation or change in said Contract Documents will be made only in writing, and a copy of such interpretation or change will be mailed or delivered to each person receiving a set of the Documents. The Contracting Agency will not be responsible for any other explanation or interpretation of said Documents.

2.04 TYPE OF BID

The Bid for the work contemplated is to be submitted on the form prescribed in the Bid.

2.05 PREPARATION OF BIDS

All blank spaces in the Bid form must be filled, in ink, in both words and figures where required. No changes shall be made in the phraseology of the forms or in the items mentioned here in. Written amounts shall govern in cases of discrepancy between the amounts stated in writing and the amounts stated in figures. In the case of error in extending unit prices in the bid, the correct extension of the

unit prices shall govern.

Any Bid shall be deemed informal which contains omissions, erasures, alterations or additions of any kind, or items uncalled for, or in which any of the items are obviously unbalanced, or which in any manner shall fail to conform to the conditions of the published Advertisement for Bids.

The Bidder shall sign his Bid in the blank space provided therefore. Bids made by corporations or partnerships shall contain names and addresses of the principal officers or partners. If the Bid is made by a corporation, it must be acknowledged by one of the principal officers thereof; if made by a partnership, by one of the partners.

2.06 SUBMISSION OF BIDS

All Bids must be submitted at the time and place and in the manner prescribed in the Advertisement for Bids. Bids must be made on the prescribed Bid forms and submitted with the Contract Documents.

2.07 WITHDRAWAL OF BID

Any bid may be withdrawn prior to the scheduled time for the opening of bids either by telegraph or written request, or in person. No bid may be withdrawn after the time scheduled for opening of bids unless the time specified in Section 3.01 has elapsed.

2.08 BID SECURITY

Bids must be accompanied by a certified check drawn on a bank in good standing, or a bid bond issued by a surety company authorized to issue such bonds in the State of Oregon, in an amount of not less than ten (10) percent of the total amount of the Bid submitted. This check or bid bond shall be given as a guarantee that if awarded the Contract, the successful Bidder will execute the attached Contract and furnish a properly executed Performance Bond in the full amount of the Contract price within the time specified.

The Contracting Agency reserves the right to retain the bid security of the three lowest bidders until the successful Bidder has signed and delivered the Contract, and furnished a one-hundred percent (100%) Performance Bond within the specified time; the next lowest bid may be accepted at the Owner's discretion whereupon the above instructions and requirements will apply to the said second bidder.

2.09 CONDITIONS OF WORK

Each Bidder must inform himself of the conditions relating to the regular execution of the work, and it is assumed that he will inspect the site and make himself thoroughly familiar with all the Contract Documents. Failure to do so will not relieve the successful Bidder of his obligation to enter into a Contract and complete the contemplated work in strict accordance with the Contract Documents.

Each Bidder must inform himself of all laws and statutes, both Federal and State, relative to the regular execution of the work, the employment of labor, protection of public health, the protection of private property, right-of-way, and access to the work, fire protection regulations, and similar requirements.

2.10 PREQUALIFICATION OF BIDDERS

Bidders who are in doubt as to their qualifications should refer to the requirements

regarding prequalification in the Advertisement for Bids for this contract. Prequalification requests must be submitted by the time stipulated in the Advertisement for Bids.

SECTION 3.00 AWARD AND EXECUTION OF CONTRACT

3.01 AWARD OF CONTRACT

After the Bids for the contemplated work have been opened and read as provided in these specifications, the respective totals thereof will be checked and compared by the Contracting Agency; and the results thereupon will be considered public information.

Unless otherwise stated in the Special Provisions or in the Advertisement for Bids the contract will be awarded within the forty-five (45) days after the opening of Bids to the lowest bidder meeting the qualifications required by law, including but not limited to the law relating to prequalification of bidders, and the requirements stated in the advertisement for bids, and instructions to bidders, and/or the specifications, and whose bid complies with all the prescribed requirements unless all bids are rejected. The Contracting Agency reserves the right to reject any and all bids and no bid shall be considered as being binding upon the Contracting Agency until the execution of the Contract; and failure of the Awardee to properly execute the awarded contract and furnish acceptable bonds and insurance as provided herein, shall be just and sufficient cause for the annulment of the award and the forfeiture of his proposal guaranty.

3.02 EXECUTION OF CONTRACT

The contract shall be signed by the successful bidder and returned together with the contract bonds and required insurance documents within 15 calendar days after the award of the contract unless otherwise stated in the Special Provisions or in the Advertisement for Bids, and after receipt of same by the Contracting Agency the proposal guarantees will be returned to all bidders. The Contractor shall carry all insurance which may be required by Federal and State laws by local ordinances, and by these specifications.

The attention of the Contractor is called to the fact that, when the United States Government participates in all or any portion of the cost of the work, the Federal laws authorizing such participation and the rules and regulations made pursuant to such laws must be observed by the Contractor. The work shall be subject to the inspection and approval of the authorized representatives of such Federal agencies as are created for the administration of these laws.

3.03 CONTRACT BONDS

Prior to the execution of the Contract, the Contractor shall file with the Contracting Agency a Performance Bond in the amount and for the purposes noted below, duly executed by a responsible corporate surety authorized to issue such bonds in the State of Oregon, which bond must in all respects comply with ORS 279.029 and ORS 279.526 Et. Seq. inclusive, and be satisfactory and acceptable to the Contracting Agency and he shall pay all premiums and costs thereof and incidental thereto to keep such bond in full force until one year after acceptance of the work in writing by the Contracting Agency.

The bond must be signed by both the Contractor and Surety and shall be in the sum of not less than 100% of the contract price to assure the claims of materialmen supplying materials to him, and of mechanics and laborers employed by him on the work required under these specifications.

Provided the Contractor shall faithfully and truly observe and comply with the terms, conditions, and

provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things by him undertaken, and within the time prescribed therein or as extended as provided in the applicable Standard Specifications, and shall indemnify and save harmless the Contracting Agency, its officers, employees, and agents, against any direct or indirect damages of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the said contract by the said Contractor or his subcontractors; and shall make payment promptly, as due, to all subcontractors and to all persons supplying to the Contractor or his subcontractors: equipment, supplies, labor, or materials for the prosecution of the work, or any part thereof, provided for in said contract, and shall pay all contributions or amounts due the State Industrial Accident Fund and the State Tax Commission; and shall pay all other debts, dues and demands incurred in the performance of the said contract and shall in all respects perform said contract according to law, then this obligation is to be void, otherwise to remain in full force and effect.

Non payment of the bond premium will not invalidate this bond nor shall the Contracting Agency be obligated for the payment thereof.

Should any surety or sureties upon said bonds or any of them become insufficient, said Contractor shall renew said bond or bonds with good and sufficient sureties within ten (10) days after receiving notice from the Contracting Agency that the surety or sureties are insufficient.

3.04 PROTECTIVE LIABILITY INSURANCE REQUIREMENTS AND PROPERTY INSURANCE

The Contractor shall furnish to the Contracting Agency in triplicate, a policy or certificate of protective liability insurance in which the Contracting Agency shall be named insured or be named in such insurance as an additional insured with the Contractor. In compliance with this provision, the Contractor may file with the Contracting Agency a satisfactory "blanket coverage" policy or certificate of insurance. The policy shall insure the Contracting Agency, its officers, employees and agents against all claims arising out of or in connection with the work to be performed and shall remain in full force and effective until the work is accepted by the Contracting Agency. The policy shall provide the following minimum limits.

Bodily Injury	$ 500,000 each person
	$ 500,000 each occurrence
Property Damage.	$ 500,000 each accident

Such policy shall provide coverage at least as broad as that provided in the Standard Form approved by the National Bureau of Casualty Underwriters together with such endorsements as are required to cover the risks involved. In addition, the Contractor shall furnish evidence of a commitment by the insurance company to notify the Contracting Agency of the expiration or cancellation of the insurance policies.

All policies of insurance or the certificate or other evidence thereof required to be purchased and maintained by Contractor will contain a provision or endorsement that the coverage afforded will not be cancelled or materially changed or renewal refused until at least thirty days prior written notice has been given to the Contracting Agency by certified mail.

3.05 CONTRACTING AGENCY'S IMMUNITY FROM LIABILITY

The Contractor shall save, keep and hold harmless, the Contracting Agency and all officers and agents thereof from all damages, costs or expenses in law or equity that may at any time arise or be set up because of damages to property or of personal injury received by reason of or in the course of performing said work, which may be occasioned by any negligence upon the part of the Contractor or any

of said Contractor's employees, or any subcontractor performing any of the work contemplated by the Contract.

The Contracting Agency shall not be liable or responsible for any accident, loss, or damage happening to the works referred to in the contract prior to the completion and acceptance thereof.

3.06 INDUSTRIAL ACCIDENT INSURANCE

The Contractor shall secure and maintain in full force and effect and bear the cost of complete Industrial Accident Insurance in accordance with the requirements of the Workmen's Compensation laws. The Contracting Agency, its officers, employees, or agents will not be responsible for any claims or suits in law or equity occasioned by this paragraph.

SECTION 4.00 SCOPE OF WORK

4.01 INTENT OF CONTRACT

The intent of the contract is to prescribe a complete work or improvement which the Contractor undertakes to do, in full compliance with the provisions and requirements of the contract. The Contractor for all or any part shall furnish all labor, materials, tools, equipment, transportation, necessary supplies and incidentals required to make each and every item complete as contemplated by the contract. Any deviation from these requirements must be stipulated in the SPECIAL PROVISIONS.

4.02 PLANS, SPECIFICATIONS AND WORK

The plans, together with specifications and other contract documents will govern the work to be done. Anything mentioned in the specifications but not shown on the plans and detailed drawings, or anything shown on the plans and detailed drawings but not mentioned in the specifications, shall be of like effect as though shown or mentioned in both.

Specifications and plans referred to in any of the contract documents shall be considered as being included in the document in which such reference is made. A reference to a particular specification or standard drawing in the contract documents shall refer to the version that is in force at the time of advertisement for bids.

In case of conflict, the order of precedence of the following documents in controlling the work shall be:

(1) Permits from outside agencies required by law.
(2) Special Provisions
(3) General Provisions
(4) Technical Provisions
(5) Plans

Change orders, supplemental agreements and approved revisions to plans and specifications will take precedence over contract documents listed above.

GENERAL PROVISIONS

4.03 PLANS AND SHOP DRAWINGS

The plans furnished and included with the specifications will show such details as may be necessary to comprehensively indicate the work that is proposed and the results that are intended to be accomplished. The Contractor shall keep a copy of the plans and specifications at the job site and access thereto shall, at all times, be accorded the Engineer. Any additional working drawings, detail plans, or shop drawings that may be required in connection with the prosecution or construction of any part of such work shall be supplied by and at the expense of the Contractor as they will not be accepted by the Engineer from suppliers or others.

When shop drawings are required in the various sections of the specifications or are requested by the Engineer, they shall be prepared in accordance with standard engineering practice. Shop drawings shall be of sufficient size and scale to clearly illustrate all details. Unless otherwise specified, shop drawings shall be submitted in quadruplicate to the office of the Engineer for approval or correction not less than 30 days before approved drawings will be required. One set will be returned to the Contractor marked "approved" or "approved as corrected". If changes are required, four copies of corrected shop drawings shall be delivered to the Engineer. No materials shall be furnished or work done on items requiring shop drawings prior to approval. Approval of shop drawings shall not relieve the Contractor from responsibility for errors or omissions of any sort in the shop drawing.

4.04 CHANGES AT THE CONTRACTOR'S REQUEST

Provision has been made in the specifications for certain specific changes in methods of construction which may be made at the Contractor's request and upon approval of the Engineer. Changes in the drawings and specifications, other than those specified herein, which do not materially affect the work, and which are not detrimental to the work or to the interests of the Contracting Agency as determined by the Engineer, may be granted to facilitate the work of the Contractor when such changes are requested in writing and submitted to the Engineer for approval. In the event such changes are granted, the changes shall be made without additional cost to the Contracting Agency, and the Contracting Agency reserves the right to receive an equitable adjustment in the contract price or contract time as a consideration for authorizing any such change.

4.05 ALTERATION OF QUANTITIES AND EXTRA WORK

The Contracting Agency reserves the right to make such increase or decrease in the quantity of any item of work or material to be performed or furnished under such contract, or to order the performance of such additional or extra work of a class not contemplated by the proposal as may be considered expedient or advantageous and essential to the satisfactory completion of proposed work and the full accomplishment of the intended purpose thereof, without thereby affecting the validity of the contract or contract bonds, and without giving notice to the surety of any such bond, unless the total bid price is increased more than 25%. In such cases the Contractor will be required to perform or furnish additional quantities or extra items of work or materials or to decrease the amount of work or materials to be performed or furnished under the contract or to omit portions thereof, and to furnish and provide the necessary labor and equipment to do so, when and as the Engineer may so order in writing within the limitations herein or by law provided. In the event that any such increase or decrease in the quantity of work or materials to be performed or furnished is so ordered, the amount to be paid the Contractor under his contract shall be correspondingly increased or decreased as the case may be, in proportion to the increased or decreased quantities of work or materials performed or furnished under such order.

4.06 ALTERATION OF QUANTITIES

In the event that the Contractor is directed by the Engineer to increase, decrease or omit portions of the work, and the total pay quantity for any items of work varies from the original contract quantity by 25% or less, payment will be made for the quantity of work performed at the contract unit price thereof.

If the total pay quantity for any item of work required under the contract varies from the original contract quantity by more than 25%, the compensation to the Contractor will be determined as follows:

If a change is made which, together with any previous changes in quantity, increases the quantity of any major item or decreases the quantity of any item more than 25% of the original contract quantity, the payment for the work in excess of the 25% increase over the original contract amount of that item will be determined by negotiation; at the option of the Engineer, payment for such excess will be made on the basis of "Extra Work" as hereinafter provided. Credit for decreases in the quantity of any item may be determined by negotiation but in no event shall the amount of credit exceed the contract unit prices for the omitted items.

4.07 LABOR

The cost of all labor used in performing the work under this contract shall be based on the prevailing wage scale as may be set forth in the Special Provisions for each particular craft or type of workman involved. Employer payments for payroll taxes and insurance, health and welfare, pension, vacation, and other similar purposes shall be included in this cost.

4.08 EXTRA WORK

Any new and unforeseen work will be classed as "Extra Work" when determined by the Engineer that said work is not covered by any of the contract items for which there is a bid price, or by a combination of such items.

Changes in the work involving either additional costs or credits for unforeseen additions or omissions in the work shall be made only subsequent to execution of a Change Order by the Engineer or by Supplemental Agreement issued by the Contracting Agency.

Payment of extra work on a lump sum or Unit Price basis required to be performed in accordance with the provisions of this section will be established by mutual agreement between the Contractor and the Engineer within the legal limits provided by State Laws or local ordinances. When no mutual agreement can be reached, payment will be made on a force account basis as hereinafter prescribed.

When the extra work is to be performed on a force account basis, the Contractor shall keep full and complete records of the cost of such work and shall permit the Engineer to have access thereto as may be necessary to assist in the determination of the compensation payable for such work. An itemized statement of such work shall be submitted to the Engineer for approval prior to submitting invoice for payment. The Contractor will be paid for labor, materials, and equipment rental as hereinafter prescribed. Only materials incorporated in the work will be paid for.

To the totals computed as hereinafter prescribed for labor, materials and equipment rental will be added 15% for overhead, profit and supervision. It is understood that labor, materials, and equipment may be furnished by the Contractor or the subcontractor or by others on behalf of the Contractor. However, when extra work to be paid for on a force account basis is performed by forces other than those of the

Contractor, the Contractor shall reach agreement with such other forces as to the distribution of the payment to be made by the Contracting Agency for such work and no additional payment will be made therefore.

4.08A LABOR

The cost of all labor used in performing extra work under this contract shall be in accordance with Section 4.07.

4.08B MATERIALS

The cost of materials incorporated in the work will be the cost to the purchaser, whether Contractor, Subcontractor or other forces, from the supplier thereof, except as follows:

a. If materials are procured by the purchaser by any method which is not a direct purchase from and a direct billing by the actual supplier to such purchaser, the cost of such materials shall be deemed to be the price paid to the actual supplier as determined by the Engineer. No markup except for actual costs incurred in the handling of such materials will be permitted.

b. If the materials are obtained from a supplier or source owned wholly or in part by the purchaser, payment therefor will not exceed the price paid by the purchaser, payment therefor will not exceed the price paid by the purchaser for similar materials furnished from said source on contract items or the current price of such materials delivered to the job site, whichever price is lower.

c. The Contracting Agency reserves the right to furnish such materials as it deems advisable, and the Contractor shall have no claims for costs and profit on such furnished materials.

4.08C EQUIPMENT RENTAL

The Contractor will be paid for the use of equipment on the basis of, but not exceeding the prevailing hourly rental rates established by the Oregon State Highway Department and recognized by the Associated General Contractors for the area where such equipment is required to be operated.

On any equipment for which no rental rate has been established by Oregon State Highway Department, or where the required operation of the equipment is less than four hours or in excess of one week, rental rates shall be proposed by the Contractor and agreed upon in writing by the Engineer prior to the start of force account work.

Equipment that is in operational condition and is standing by with the Engineer's approval for participation in force account work will be paid for at 50% of the agreed upon rental rate.

Rental time will not be allowed while equipment is inoperative due to breakdowns for periods in excess of 30 minutes. Rental time shall be computed in 1/2 hour increments. In computing rental time of equipment in actual operation, less than 30 minutes will be considered 1/2 hour.

The rental rates paid, as above provided, shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals. Operators of rented equipment will be paid for as provided under Section 4.08D.

All equipment shall, in the opinion of the Engineer be in good working condition and suitable for the purpose for which the equipment is to be used.

Unless otherwise specified, manufacturer's ratings and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

Individual pieces of equipment or tools having a replacement value of $50.00 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefore.

a. Equipment on the Work - The rental time to be paid for equipment on the work shall be the time the equipment is in operation on the extra work being performed and, in addition, shall include the time required to move the equipment to the location of the extra work and return it to the original location, except that moving time will not be paid for if the equipment is used at the site of the extra work on other than such extra work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power, except that no payment will be made if the equipment is used at the site of the extra work on other than such extra work.

b. Equipment Not on the Work - For the use of equipment moved in for the work and used exclusively for extra work paid for on a force account basis, the Contractor will be paid rental rates as agreed to, as provided in Section 4.08C above, and for the cost of transportation of the equipment to the location of the work and its return to its original location, all in accordance with the following provisions.

(1) The original location of the equipment to be hauled to the location of the work shall be agreed to by the Engineer in advance.

(2) The Contracting Agency will pay the costs of loading and unloading such equipment.

(3) The cost of transporting equipment in low bed trailers shall not exceed the hourly rates charged by established haulers or the applicable minimum established rates of the Oregon Public Utility Commission.

(4) The rental period shall begin at the time the equipment is unloaded at the site of the extra work, shall include each day that the equipment is at the site of the extra work, excluding Saturdays, Sundays and legal holidays unless the extra work is performed on such days, and shall terminate at the end of the day on which the Engineer directs the contractor to discontinue the use of such equipment. The maximum rental time to be paid per day shall not exceed 8 hours unless the equipment is in operation for a longer period of time.

(5) Should the Contractor desire the return of the equipment to a location other than its original location, the Contracting Agency will pay the cost of transportation in accordance with the above provisions, provided such payment shall not exceed the cost of moving the equipment into the location of the work.

(6) Payment for transportation, loading, and unloading equipment as above provided, will not be made if the equipment is used on the work in any other way than upon extra work paid for on a force account basis.

4.08D _ RECORDS

The Contractor shall maintain his records in such a manner as to provide a clear distinction between the direct cost of extra work paid for on the force account basis and the costs of the other operations performed in connection with the contract.

The Contractor shall furnish to the Engineer daily reports in duplicate of the extra work to be paid for on a force account basis. The reports shall itemize the materials used and shall set forth the direct cost of labor and the charges for equipment rental whether furnished by the Contractor, or subcontractor. The reports shall provide all names or identifications and classifications of workmen, the hourly rate of pay and hours worked together with the size, type, and identification number of equipment and hours of equipment operation. All reports shall be signed by the Contractor or his authorized representative.

Material charges shall be substantiated by vendors' invoices. Such invoices shall be submitted with the reports; or, if not available, they shall be submitted with subsequent reports. In the event said vendors' invoices are not submitted within 15 days after acceptance of the work, the Contracting Agency reserves the right to establish the cost of such materials at the lowest current price at which said materials are available in the quantities concerned delivered to the location of the work.

The Engineer will compare his records with the reports furnished by the Contractor, make any necessary adjustments and then compile the costs of extra work paid for on a force account basis on forms furnished by the Contracting Agency. When these extra work reports are agreed upon and signed by both parties, they shall become the basis of payment for the work performed.

4.09 CLEANUP AND DUST CONTROL

Throughout the period of construction, the Contractor shall keep the site free and clean from all rubbish and debris and shall promptly clean up all or any portion of the site when notified to do so by the Engineer. Care shall be taken to prevent spillage on the streets over which hauling is done, and any such spillage or debris deposited on streets due to the Contractor's operations shall immediately be cleaned up. The Contractor shall promptly remove any parts from the working area of all unused materials, surplus earth, and debris. Construction areas shall be left in a clean, neat and acceptable condition at the earliest time following completion of that portion of the work.

In the event that the Contractor fails to comply with the orders of the Engineer regarding cleanup, the Engineer may require the Contractor to cease progress on any or all parts of the work under contract until the unsatisfactory condition is corrected. The Engineer may order such cleanup work performed by others and the costs therefor deducted from payments due the Contractor. No additional compensation will be allowed as a result of such suspension.

During all phases of the construction work; the Contractor shall take precautions to abate dust nuisance by cleaning up, sweeping, sprinkling with water, or other means as necessary to accomplish results satisfactory with the Engineer.

Upon completion of the work and prior to final inspection the entire site of operations shall be cleared of equipment, unused materials and rubbish so as to present a clean and neat appearance. All costs of "Cleanup," including all charges for water, are to be absorbed in the prices bid for the various bid items.

4.10 VERMIN CONTROL

At the time of occupancy by the Contracting Agency, any structure or structures entirely constructed under the contract shall be free of rodents, insects, vermin and/or pests. Extermination work as may be necessary shall be arranged and paid for by the Contractor as part of the contract work within the contract time and shall be performed by a licensed agency and in accordance with the requirements of governing authorities. The Contractor shall be responsible for any injury to persons or property resulting from extermination work.

4.11 SANITARY PROVISIONS

The Contractor shall provide, and maintain in a neat and sanitary condition, such accommodations for the use of the employees as may be necessary to comply with all applicable laws, ordinances and regulations.

In the event of damage to the existing sewer facilities, or interruptions of existing sewage flows, the Contractor shall promptly dispose of any free sewage by pumping or other means. Sewage shall not be permitted to flow in the trenches or be covered by backfill. Continuous sanitary sewer service in closed conduits shall be maintained at all times.

SECTION 5.00 CONTROL OF WORK

5.01 SUPERVISION AND INSPECTION

The Engineer shall decide within the provisions of the specifications all questions which may arise concerning the quality or acceptance of materials furnished and work performed, and all questions concerning the acceptable fulfillment of the contract by the Contractor.

The Engineer or his representatives shall have access to the work at all times. The Contractor shall furnish all facilities for inspection at the construction site, and at shops or yards, and shall not cover up any work requiring inspection until the same has been approved by the Engineer. If work should be covered up before being inspected, the Contractor will be required to remove such portions of the work as may be necessary to disclose the part in question.

The Contractor shall be fully responsible for providing proper supervision and sufficient labor and equipment to accomplish the work and to complete the work within the contract time. The Contractor shall notify the Engineer 24 hours prior to commencing any work, or resuming work after shutdowns, except for normal resumption of work following Saturdays, Sundays, or Holidays. The Contractor shall maintain a local telephone for the duration of the contract, at his own expense, where he or his authorized representative may be reached directly or by message at all times; during and outside of working hours.

5.02 COOPERATION WITH OTHERS

Ordinarily, utility owners and Contracting Agency responsible for facilities located within the right-of-way will be required to complete any installation, relocation, repair, or replacement prior to commencement of work by the Contractor. However, when this is not feasible or practicable or the need for such work was not foreseen, such utility owners or Contracting Agency shall have the right to enter upon the right-of-way and upon any structure therein for the purpose of making new installations, changes or repair, and the Contractor shall so conduct his operations as to provide the time needed for such work to be accomplished during the progress of the improvement.

Where two or more contractors are employed on related or adjacent work, each shall conduct his operations in such a manner as not to cause any unnecessary delay or hindrance to the other.

5.03 MUTUAL RESPONSIBILITY OF CONTRACTORS

The Contracting Agency may let other contracts on any portion of the site for any work not included in the contract.

The Contractor shall perform the work of the contract so that it will properly coordinate with and the work performed by other contractors. He also shall give the other contractors every reasonable opportunity to perform their work, store materials, and place equipment therefor, and fit their work to the work of other contractors. He shall furnish to the other contractors all information necessary in order tha they may properly connect and fit their work to his and in ample time, so that they may have reasonable opportunity to prepare their work accordingly. He shall make the work of the contract ready to receive th work of the other contractors at the time fixed therefor, and shall fit this work to that of the other contract at the times fixed therefore.

5.04 UTILITIES

Utilities for the purposes of these specifications shall be considered as including but not limited to: pipe lines, conduits, transmission lines, and appurtenances of Public Utilities and those of priv industry, businesses or individuals solely for their own use or for use of their tenants, and storm drains, sanitary sewers, irrigation facilities, street lighting, traffic signals, telephone, television, and fire alarm systems.

The Contracting Agency has by a search of known records, endeavored to locate and indicate c the drawings, all utilities which exist within the limits of work. However, the accuracy or completeness of utilities indicated on the drawings is not guaranteed. Service connections to adjacent property may or m not be shown on the drawings. It shall be the responsibility of the Contractor to determine the exact loca of all utilities and their service connections. The Contractor shall contact all utility owners and request th they locate and mark any existing utilities and their appurtenances and that service connections which m be affected by the contract work also be marked. In addition, the Contractor shall notify the Engineer as any utility, appurtenances, and service connections located by him which have been incorrectly shown o omitted from the drawings.

Unless otherwise specified the Contractor shall remove all interfering portions of utilities which a shown on the drawings as "abandoned" or "to be abandoned in place", and which interfere with the construction of the project. All costs involved in said removals shall be included in the prices bid for the various items of work. All such abandoned utilities removed by the Contractor, shall be included in the prices bid for the various items of work. All such abandoned utilities removed by the Contractor, shall be stored on the site where directed and shall remain the property of the owner utility company or Contracti Agency as determined by the Engineer.

Where utilities are shown on the drawings as "abandoned" or "to be abandoned in place", it shal be the Contractor's responsibility to contact the utility company involved, as required in Section 5.11 here prior to excavating around such utilities to ascertain that the abandonment of the utility has been comple

In certain cases where indicated on the drawings, the Contractor shall locate utilities in advance his construction operations. In these cases the Contractor shall backfill the excavations and shall constr either a temporary or permanent resurfacing over the backfill. The temporary resurfacing shall be constructed when the exploratory excavations are made in an area located within the proposed project excavation.

The permanent resurfacing when specified shall be constructed when the exploratory excavatio are made in an area located outside the proposed project excavation. Said permanent resurfacing shall of the type and thickness specified or as field conditions may otherwise require. In either case, the excavations shall be backfilled by the methods and to the relative density specified.

This work shall be performed as soon as practical after award of the contract and, in any event,

sufficient time in advance of construction to avoid possible delays to the Contractor's work. All costs for making such exploratory excavations (including the backfilling and the resurfacing as specified herein) shall be included in the prices bid for the various items of work.

Utilities which upon exploration, are found to interfere with the permanent project work will be relocated, altered, or reconstructed by others in accordance with the provisions of Section 5.05 herein, or the Engineer may approve and order changes in location, line or grade of structures being built in order to avoid the utilities. The cost of such changes will be paid for under applicable bid items or as "Extra Work" as provided under Section 4.08.

5.05 BY OTHER THAN THE CONTRACTOR

When it is stated in the detailed specifications or indicated on the drawings, that a utility is to be relocated, altered or reconstructed by other than the Contractor, the Contracting Agency will conduct all negotiations with the owners in respect to such work and the work shall be done at no cost to the Contractor.

Service connections which physically interfere with project structures or appurtenances, whether or not so stated or indicated, shall be relocated by other than the Contractor; except as otherwise specified or unless directed by the Engineer in accordance with Section 5.08.

5.06 BY THE CONTRACTOR UNDER A SPECIFIC CONTRACT ITEM

When bidding schedule contains a separate item covering the relocation, alteration, or reconstruction of a utility by the Contractor, the price bid for said item shall cover all costs involved in such work.

The drawings and detailed specifications will give the construction details for the work, and unless the time at which the work must be done is specified in the detailed specifications, the Contractor shall coordinate with the Engineer in respect to when the work is to be done.

5.07 BY THE CONTRACTOR BUT NOT UNDER A SPECIFIC CONTRACT ITEM

When the work on a utility is specified or indicated on the drawings to be done by the Contractor, but is not included as a separate contract item in the bidding schedule, the Contracting Agency will make all arrangements with the owner of the utility in respect to the construction details, however, the Contractor shall coordinate with the owner as to when the work is to be done. Any costs for such work shall be absorbed or included in the prices bid for the various contract items.

5.08 BY THE CONTRACTOR - SERVICE CONNECTIONS (EXCEPT SANITARY SEWER)

For the purpose of these specifications, service connections shall be construed to mean all, or any portion of, the conduit cable or duct which connects a utility main distribution line to the meter box of an individual user.

Except when shown on the drawings to be relocated by others, and except as otherwise specified herein, the alteration or permanent relocation of service connections which physically interfere with project structures, or appurtenances thereto, which are to be constructed under this contract shall, when directed by the Engineer, be arranged for by the Contractor in accordance with the requirements of the utility owner. The costs for such work will be paid for as "Extra Work" as per Section 4.08.

5.09 BY THE CONTRACTOR FOR HIS OWN CONVENIENCE

The temporary or permanent relocation or alteration of utilities including service connections, desired by the Contractor for his own convenience, shall be the Contractor's own responsibility and he shall make all arrangements regarding such work. The costs of such work shall be absorbed or included in the prices bid for the various contract items.

5.10 BY THE CONTRACTOR OR BY OTHERS - UNKNOWN UTILITIES DISCLOSED DURING CONTRACT WORK

In the event that a utility is disclosed subsequent to the award of the contract, such utility not being indicated on the drawings, or in the event that an existing utility is found to be in a materially different location than shown on the drawings and thus requires additional or more costly work on the part of the Contractor for its maintenance, relocation, or support, the necessary alteration, relocation, proper support and protection shall be done and paid for as follows:

a. When said utility is found to occupy the space to be occupied by a part of the permanent works to be constructed, or when utility is, in the opinion of the Engineer, in such close proximity to the new work as to require the relocation or alteration of said utility the Contracting Agency will arrange for such relocation or alteration, or require the Contractor to do so as "Extra Work" as per Section 4.08.

b. When any portion of a utility is in close proximity and more or less parallel to the structure or conduit and does not lie between the vertical planes or pay lines specified in subparagraph a., above, the Contractor shall advise the owner thereof, and in cooperation with the owner, provide and place the necessary support for proper protection to insure continuous and safe operation of the utility structure. All costs for such work shall be borne by the Contractor.

c. With the exception of service connections, when said utility lies within the excavation but does not intercept the permanent works to be constructed and the length of said utility between the vertical planes or pay lines specified in paragraph a., above, is less than five times the perpendicular distance between pay lines, the Contractor shall maintain the utility in place. The work of maintaining the utility in place shall be considered as "Extra Work" (see Section 4.08).

5.11 RESPONSIBILITY OF THE CONTRACTOR

The Contractor shall be held responsible for all costs for the repair of any and all damage to the contract work or to any utility (whether previously known or disclosed during the work), as may be caused by his operations. Utilities not shown on the drawings to be relocated or altered by others, shall be maintained in place by the Contractor. Utilities which are relocated by others in order to avoid interference with structures and which cross the project work shall be maintained in the relocation positions by the Contractor. All costs for such work shall be absorbed or included in the prices bid for the various contract items.

The Contractor shall notify the owners of all utilities at least 2 working days in advance of excavating around any of their structures.

5.12 DELAYS CAUSED BY FAILURE TO RELOCATE UTILITIES

Where parties other than the Contractor are responsible for the relocation of utilities and a delay in the Contractor's work is caused by the failure on the part of said parties to remove or relocate such utilities in time to prevent such delay, or by any action or lack of action on the part of the Contracting

Agency, it shall be understood that the Contractor shall not be entitled, as a result of such delay to his work, to damages or additional payments over and above the contract price. If delays in the Contractor's work are caused by the reasons mentioned herein, the Contractor shall be entitled to an extension of time. The length of such extension of time will be determined by the Engineer with consideration as to the effect of the delay on the project as a whole.

In order to minimize delays to the Contractor caused by the failure of other parties to relocate utilities which interfere with structures, the Contractor, after approval from the Engineer, may be permitted to temporarily omit the portion of work affected by the utility. The portion thus omitted shall be constructed by the Contractor immediately following the relocation of the utility involved.

5.13 PERMANENT SURVEY MARKERS

The Contractor shall notify the Engineer not less than seven days prior to starting work in order that the Engineer may take necessary measures to insure the preservation of survey monuments, stakes, and bench marks. The Contractor shall not disturb permanent survey monuments, stakes or bench marks without the consent of the Engineer, and shall notify Engineer and bear the expense of replacing any that may be disturbed without permission. Replacement shall be done or arranged for only by the Engineer.

When a change is made in the finished elevation of the pavement of any roadway in which a permanent survey monument is located, the Contractor shall, at his own expense, adjust the monument cover to the new grade unless otherwise specified.

5.14 LOT STAKES

Unless otherwise directed by the Engineer or shown on the plans, the Contractor shall preserve existing survey stakes that mark property lines and corners. Any stakes that become lost or disturbed by his operation shall be replaced at the Contractor's expense and by a Registered Land Surveyor.

5.15 SURVEY SERVICE

The Engineer will furnish and set construction stakes establishing lines and grades as determined necessary by the Engineer for all work indicated on the plans or required under the contract, including lines and grades for street excavation and fill, finished subgrade, finished base rock, curbs and gutters, walks, structures and utilities, and will furnish the Contractor all the necessary information relative to the lines and grades.

Line and grade stakes will be offset from the construction area. They will show the offset distances, stationing and required cut or fill to the finished grade or flow line as indicated on the plans or grade sheet. Upon request a copy of the grade sheet will be furnished to the Contractor. Grade stakes will be set by the Engineer to the finished grade of the subgrade and also of the base rock, or as determined necessary by the Engineer, and the tops of these stakes marked blue or red.

The Contractor shall construct the work in accordance with the Engineer's stakes and marks, making use of them before they are disturbed, and shall be charged with full responsibility for conformity and agreement of the work with such stakes and marks.

The Contractor shall be responsible for the preservation of construction survey stakes and marks for the duration of their usefulness during construction. If any construction survey stakes are lost or

disturbed, and in the opinion of the Engineer need to be replaced, such replacement shall be by the Engineer at the expense of the Contractor. The cost of replacing them shall be charged against, and all shall be deducted from, the payment of the work.

The Contractor shall give notice to the Engineer not less than two working days in advance of when he will require survey services in connection with the laying out of any portion of the work.

5.16 PRIVATE ENGINEERS

Surveying by private engineers on permit projects or any other work under the control of the Contracting Agency shall conform in all respects to the quality and practice required of the Contracting Agency's surveyor as set forth in Section 5.15 above.

5.17 LINE AND GRADE

All work during its progress and upon its completion, shall conform to the lines, elevations, and grades shown on the plans. Distances and measurements, except elevations and structural dimensions, are given and made on horizontal planes.

Three consecutive points set on the same slope shall be used together in order that any variation from a straight grade can be detected. If any such variation is found, it shall be reported to the Inspector; and, in the absence of such report prior to completion of grade, the Contractor shall be responsible for any error in the grade of the finished work.

5.18 PRESERVATION OF PROPERTY

The Contractor shall protect all public and private property including irrigation berms, insofar as it may be endangered by his operations, and he shall take every reasonable precaution to avoid damage to such property.

Public or private improvements of facilities within the right of way not designated for removal but visibly evident or correctly shown on the plans which are damaged or injured directly or indirectly by or on account of any act, omission, or neglect of the Contractor in the execution of the work shall be restored by the Contractor at his expense to a condition substantially equivalent to that existing before such damage or injury occurred, by repairing, rebuilding, or otherwise affecting restoration thereof, or if this is not feasible, a suitable settlement shall be made with the owner of the damaged property.

The Contractor shall give reasonable notice to occupants of buildings on property adjacent to the work to permit the occupants to remove vehicles, trailers, and other possessions as well as salvage or relocate plants, trees, fences, sprinkler systems, or other improvements in the right-of-way which are designated for removal or which might be destroyed or damaged by the Contractor's operations.

The Contractor shall be responsible for the protection of all designated trees and planted areas within the right-of-way. He shall also exercise care and conduct his operations so as to minimize damages to other planted areas.

5.19 DAMAGE TO RAILROADS

The provisions given elsewhere herein, which require the Contractor to protect property against damage, and which place upon the contractor all responsibility for damage to property, injury to persons, and loss, expense, inconvenience and delay to the owners of the property and others, shall be

understood to apply in connection with railway lines or railroads the same as in connection with other kinds of property. In the protection of railway lines and railroads, however, the Contractor will be required to exercise particular care to avoid any damage which might result in train wrecks or in delays in train service. In the performance of work in close proximity to railroad tracks, he shall consult with the railroad owners or officials in regard to means and methods of conducting the work, and unless the Engineer orders otherwise, he shall use in the performance of the work means and methods which are not unsatisfactory to said owners or officials and he shall at his own expense provide such trackwalkers and flagmen as the said owners and officials may deem necessary for the adequate protection of the railroad property and train service.

The Contractor shall be solely and directly responsible to the owners and operators of such properties for any damage, injury, expense, loss, inconvenience or delay which may result from the carrying out of the work to be done under this contract, and if the SPECIAL PROVISIONS so specify, he shall give bond or insurance in the amount therein specified to each corporation, company, partnership, or individual owning or operating any of the properties affecting, in guarantee of this responsibility. Any extension of time granted the Contractor in which to complete the contract shall not relieve him or his surety from this responsibility.

5.20 PROTECTION OF MATERIALS AND WORK

The Contractor shall provide and maintain substantial and adequate protection as necessary to protect new or existing work, and all items of equipment and furnishings, for the duration of the contract, except that by the Contracting Agency action the Contractor may be relieved of certain responsibilities for maintenance and protection of completed portions of the work as provided under Section 5.23, hereof.

Unless relieved of responsibility as provided under Section 5.21, the Contractor and his sureties shall be fully liable for any loss or damage to the works referred to in the contract, resulting from any cause whatsoever, including but not limited to fire, theft, vandalism, malicious mischief, or injury or damage by the elements, except for any loss or damage that may be occasioned by acts of God, acts of the public enemy, acts of governmental authorities, or any act, omission, or default of the Contracting Agency prior to completions of the project and final acceptance thereof by the Contracting Agency.

5.21 RELIEF FROM MAINTENANCE AND RESPONSIBILITY

Upon the request of the Contractor and with the approval of the Contracting Agency, or upon the request of the Contracting Agency, the Contractor will be relieved of the duty of maintaining and protecting certain portions of the work which are ready to be placed in service and which have been completed in accordance with the plans and specifications, including cleanup.

In addition, such action by the Contracting Agency will relieve the Contractor of responsibility for injury or damage to said completed portions of the improvement resulting from use by public traffic or from the action of the elements or from any other cause, excepting injury or damage resulting from the contractor's own operations or from his negligence. The Contractor will not be required to again clean up such portions of the improvement prior to field acceptance, excepting for such items of work that result from his operations. However, nothing in this section shall be construed as relieving the Contractor from the full responsibility for making good defective work or materials found to be defective.

5.22 STORAGE OF MATERIALS IN PUBLIC STREETS, ROADS, OR HIGHWAYS

Materials shall not be stored in streets, roads, or highways for longer than four working

days after being unloaded, unless a longer storage period is permitted by the Engineer. In the event that the rate of progress of construction is such that the materials stored in streets, roads, or highways are not installed in its final position within the time period stipulated hereinabove, the Contractor shall when so directed by the Engineer remove such materials to storage areas to be provided by the Contractor at his own expense.

Unless otherwise permitted by the Engineer, no storage of excavated material will be permitted in public streets, roads, or highway. After the placing of the backfill in said trench, all remaining excavated material shall be removed from the site of the work.

5.23 HISTORICAL AND ARCHAEOLOGICAL REPORTS

Where historical objects of archaeological and paleontological nature, including ruins, sites, buildings, artifacts, fossils and other objects of antiquity are encountered within the areas on which the Contractor's operations are performed, the Contractor shall postpone operations in the area, shall preserve such objects for disturbance or damage and shall notify the Engineer of their existence and location.

Upon receipt of such notification, the Engineer will arrange for the disposition of the objects or for the recording of data relative thereto, and will notify the Contractor when it is proper for him to proceed with the work in the affected area. If the Contractor is directed by the Engineer to perform any work in salvaging said objects, the Contractor shall do so on the "Extra Work" basis set forth in Section 4.08.

5.24 LIGHT, POWER, AND WATER

The Contractor shall furnish temporary light, power, and water complete with connecting piping, wiring, lamps, and similar equipment necessary for the work as determined by the Engineer. The Contractor shall install, maintain, and remove his temporary lines upon completion of work. All expenses in connection with temporary services and facilities shall be paid by the Contractor, unless specified differently in the SPECIAL PROVISIONS.

SECTION 6.00 CONTROL OF MATERIALS

6.01 MATERIALS AND WORKMANSHIP

All materials, parts and equipment furnished by the Contractor shall be new, high grade, and free from defects and imperfections unless otherwise hereinafter specified. Workmanship shall be in accord with the best standard practice. Both materials and workmanship shall be subject to the approval of the Engineer.

All materials and workmanship not conforming to the requirements of these specifications shall be considered as defective and will be rejected. Defective material whether in place or not, shall be removed immediately from the site of the work by the Contractor at his expense when so directed by the Engineer. No rejected material, the defects of which have been subsequently corrected, shall be used until approval in writing has been given by the Engineer.

In the event any defect in material or workmanship is of a minor nature and the Engineer determines that it is not of such consequence as to result in a dangerous and undesirable condition, or that the removal of such work would create a dangerous or undesirable condition, the Contracting Agency shall have the right to retain such work and make such deductions in the payment therefor as they determine reasonable and in the public interest. Such determination by the contracting Agency shall be final.

6.02 TEST OF MATERIALS

Except as may otherwise be provided, all testing that may be required by the Contracting Agency to determine the quality, fitness and suitability of such materials shall be performed under the direction and upon the order of the Engineer, and at no expense to the Contractor; samples being secured and tested wherever considered necessary by the Engineer. In those cases in which the Contractor is required to provide and bear the expense of such testing the specifications or drawings will definitely so state.

The Contractor at his own expense, shall deliver the materials for testing at the time and to the place designated by the Engineer.

6.03 TRADE NAMES AND EQUALS

Whenever in the specifications any particular materials, process, and/or equipment is indicated or specified by patent, proprietary, or brand name, or by name of manufacturer, such wording shall be deemed to be used for the purpose of facilitating description of the material, process, and/or equipment desired, and shall be deemed to be followed by the words "or approved equal". The lists of acceptable materials indicated in various sections of the specifications, or on drawings, for materials are not intended to be comprehensive lists, or in any order of preference. The Contractor may offer any material, process, and/or equipment which complies with the governing specification and which he considers to be equivalent to that indicated or specified.

The Contractor shall, before installation, submit data substantiating a request for substitution of "an equal" item. The Contractor shall, at his own expense, furnish information and/or data concerning the material and/or equipment offered by him as an equivalent to that specified or indicated by name, and if the Engineer shall so require, the Contractor, at his own expense, shall have the said material tested as to its quality, strength, physical, chemical, and/or other pertinent characteristics, including the durability, finish, efficiency, dimensions, service, and suitability to perform the function intended to be served by the material and/or equipment.

The method of performing the test or tests shall be subject to the approval of the Engineer, and the results of said tests shall be reported promptly to the Engineer, who shall evaluate the results thereof and shall determine whether or not the substitute material and/or equipment so tested is deemed to be equivalent, and his findings shall be final. Installation and use of the material shall not be made until such substitute material has been approved by the Engineer. If a substitute offered by the Contractor is not found by the Engineer to be equal to the material specified, or indicated, then the Contractor shall furnish and install the item specified or indicated by name.

The time specified for completion of the work under the contract shall not be affected by any circumstances whatsoever developing from the provisions of this section.

SECTION 7.00 RESPONSIBILITY TO THE PUBLIC

7.01 PUBLIC CONVENIENCE

The Contractor shall so conduct his operations as to offer the least possible obstruction and inconvenience to traffic, and he shall have under construction no greater amount of work than he can prosecute properly with due regard for the rights of the public.

GENERAL PROVISIONS

The Contractor shall obtain prior approval from the Engineer for the closing or partial closing of any street, alley or other public thoroughfare. He shall also give advance notice of such closure to all agencies providing emergency services, including police, fire and ambulance services.

Unless otherwise provided by the plans or project specifications or authorized by the Engineer, vehicular access to properties at established driveways and pedestrian access to building entrances shall be provided and maintained by the Contractor, except for such periods of time as may be reasonably necessary to expeditiously complete those construction operations which preclude such access.

The Contractor shall conduct his operations in a manner which will minimize interference with the normal use of property adjacent to the construction.

Occupants of property fronting on the street shall be given at least 24 hours advance notice that the entire street or half the street, as the case may be, will be closed to vehicular traffic whenever necessary for the normal prosecution of the work. Such notices shall be given by the Contractor unless otherwise directed by the Engineer, or otherwise specified in the SPECIAL PROVISIONS. Parking of cars may be prohibited on streets where construction work, such as grading or paving operations are in progress. When directed by the Engineer, traffic shall be controlled or routed through the construction area, such as maintaining controlled or one-way traffic over one-half of the street while construction is progressing on the other half.

In order that all unnecessary delay to the traveling public may be avoided where ordered by the Engineer, the Contractor shall provide and maintain temporary "No Parking" and/or detour signs, pilot cars and station competent flagmen whose sole duties shall consist of directing the movement of public traffic either through or around the work. Signs shall be of standard size and design as approved by the Engineer and shall comply with the requirements specified in Section 7.03 hereof. Such signs shall be removed as soon as practicable or when directed by the Engineer.

The cost of all work involved in providing for public convenience including detours, as set forth in this article shall be considered as included in the prices paid for the various contract items of work and no additional allowance will be made.

7.02 DETOURS

The Contractor shall construct and maintain temporary detours as shown on the plans or specified in the SPECIAL PROVISIONS, or as necessary to provide adequate passage of public traffic and for protection of his work, or as determined necessary by the Contracting Agency. Routing and width of detours shall be approved by the Engineer.

Unless otherwise specified, when a detour is required the Contractor shall be governed by the following:

1. One day duration

   (a) Passable - no gravel but graded
   (b) Water and maintain smooth and dust free

2. One day to one week duration

   (a) Gravel
   (b) Water and maintain smooth and dust free

3. More than one week - if on a major or secondary arterial street (if on a collector street, treatment No. 2 above will suffice)

(a) Gravel 2 in. and graded
(b) Penetration with a minimum of .30 gal. per square yard MC70
(c) Maintain with patching of chuck holes

4. General Conditions

(a) If maintenance is not performed, the Contracting Agency will do the maintenance and bill the Contractor at rates specified in Section 4.08 and 4.09.
(b) When directed by the Engineer detours shall be removed and all ditches, etc. restored before the permit is closed out. If restoration is delayed more than one week after completion of work, the Contracting Agency will restore the area and bill the Contractor.
(c) Before pavement is cut, the Engineer must approve the construction and barricading.
(d) Provisions for public convenience and public safety shall be maintained in compliance with Section 7.01 through 7.03 hereof.

The Engineer will reserve the right to estimate the expected time the detour will be in use and will order construction accordingly.

7.03 PUBLIC SAFETY

The Contractor shall erect and maintain temporary fences, traffic control signs, bridges, railing, lights, and barriers, taking all other necessary precautions, and place proper guards for prevention of accidents. In the event any of the above items becomes misplaced, damaged, or destroyed, they shall be replaced immediately in their proper location.

All warning signs, barriers, barricades, lights and performance of flagmen shall conform to the "Oregon Manual on Uniform Traffic Control Devices for Streets and Highway" issued by the Oregon State Highway Department; local ordinances; and existing published rules and/or traffic control manuals and regulations of the Contracting Agency.

The Contractor shall at all times keep open or backfilled excavations in a safe or protected condition. In the event of the existence of unsafe or hazardous conditions in the Contractor's work or operations, the Contractor shall immediately take such measures as are necessary to eliminate the conditions.

The cost for all work involved in providing for public safety as set forth in this article shall be considered as included in the prices paid for the various contract items of work and no additional allowance will be made.

7.04 FIRE HYDRANTS

Access shall be provided to all fire hydrants at all times. Pavements and sidewalks adjacent to fire hydrants shall be kept clean and clear of debris, materials and contractor's equipment. The Contractor shall not draw any water from a fire hydrant for use on the work other than for extinguishing fire, without first obtaining permission from the owner. Slow-closing valves will be required in connection with the use of fire hydrants. Unnecessary wasting or leakage of water shall not be permitted.

In the event a fire hydrant is damaged, or for any reason becomes inoperative, or is placed out of service due to the nature of the construction, it shall be the Contractor's responsibility to immediately notify the owner and the Engineer.

7.05 USE OF EXPLOSIVES

The use of explosives will be permitted only when authorized in writing by the Engineer unless otherwise stated in the SPECIAL PROVISIONS. Explosives shall be handled, used, and stored in accordance with the provisions and requirements of all applicable laws, ordinances, and regulations with respect thereto. The approval by the Engineer for the use of explosives shall not relieve the Contractor from his responsibility.

7.06 SAFETY

Construction materials, equipment, methods and workmanship shall be in accordance with applicable local ordinances and State laws. The Contractor shall comply with the lawful orders and codes issued by the Workmen's Compensation Board of the State of Oregon.

7.07 LABOR

The Contractor shall be bound by and comply with all applicable provisions of the Revised Statutes of the State of Oregon and shall keep informed of and observe and comply with, and cause all of his agents and employees to observe and comply with, all Federal, State, and local laws which in any way affect the conduct of the work in this contract.

None but competent workmen shall be employed on any work under these specifications; and any laborer, workman, mechanic, foreman, superintendent, or other person so employed who is found to be incompetent, intemperate, troublesome, disorderly or otherwise objectionable, or who fails or refuses to perform his work properly and in an acceptable manner, shall be removed from the job immediately upon notification in writing, and not again be employed on the work unless approved by the Engineer.

7.08 NONDISCRIMINATION OF LABOR

The attention of the Contractor is directed to the provisions of Chapter 659, Oregon Revised Statutes relative to unlawful employment practices and discrimination by employers against any employee or applicant for employment because of race, religion, color, or national origin. Particular reference is made to ORS 659.030, which states that it is unlawful employment practice for an employer, because of the race, religion, color, or national origin of any individual, to refuse to hire or employ or to bar or discharge from employment such individual or to discriminate against such individual in compensation or in terms, conditions, or privileges of employment.

In the event the contract is funded in whole or in part by federal funds, the Contractor shall comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the Secretary of Labor.

In the event of the Contractor's noncompliance with the nondiscrimination clauses of a contract so funded, or with any such rules, regulations, or orders the contract may be cancelled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts for federally assisted construction contracts, in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 14, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

GENERAL PROVISIONS

7.09 MINIMUM WAGE, PAYMENT OF LABORERS AND MATERIALMEN

The Contractor shall comply fully with ORS 279.348 through 279.363, which provide in part that "the hourly rate of wage to be paid by any contractor or subcontractor to workmen upon all public works shall be not less than the prevailing rate of wage for an hour's work in the same trade or occupation in the locality where such labor is performed".

The provisions of this law do not apply to workmen or to persons regularly employed on a monthly or per diem salary. The "prevailing rate of wage", for the purposes hereof, shall be the rate of hourly wage and overtime paid in the locality, as hereinafter defined, to the majority of workmen in the same trade or occupation; provided, however, that if there is not a majority in the same trade or occupation paid at the same rate, the average rate of hourly wage and overtime paid in the locality to workmen in the same trade or occupation shall be the prevailing rate, and provided further, than when a contractor or subcontractor is a party to a state-wide agreement in effect with any labor organization, the rate of wages as established in the agreement shall be considered to be the prevailing rate in the locality.

If the wage paid by any contractor or subcontractor to workmen is based on a period of time other than an hour, the hourly wage shall be mathematically determined by the number of hours worked in that period. The "locality", for the purposes hereof, shall be the largest city in the county or counties in which the work under the contract is performed.

In case any dispute arises as to what is the prevailing rate of wage for the same trade or occupation in the locality and that dispute cannot be settled by the parties involved, the dispute shall be referred to the Commissioner of the State Bureau of Labor, who will determine the prevailing rate of wage for the same trade or occupation in the locality.

The minimum wage rates applicable to the work to be done under the contract are those prescribed under the provisions of ORS 279.348 through 279.356 and laws amendatory thereto. The Contractor is reminded that a provision of these statutes requires the certification and filing of the payroll with the owner at each of the following times: (1) once before the payment of the first monthly estimate, (2) once immediately after any change in the wage rates, and (3) once before final payment is made.

Copies of prevailing wage rates may be obtained from the Bureau of Labor, 115 Labor and Industries Building, Salem, Oregon 97310.

The Contractor shall: 1) Make payment promptly, as due, to all persons supplying to such contractor labor or material for the prosecution of the work provided for in such contract. 2) Pay all contributions or amounts due the Industrial Accident Fund from such contractor or subcontractor incurred in the performance of the contract. 3) Not permit any lien or claim to be filed or prosecuted against the state, county, school district, municipality, municipal corporation or subdivision thereof, on account of any labor or material furnished. 4) Pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.167.

Before payment is made by or on behalf of the Contracting Agency of any sum or sums due under the contract, the Contractor or his surety and every subcontractor or his surety shall submit a statement in writing in a form prescribed by the State Labor Commissioner certifying under oath the hourly rate of wage paid each classification of workmen employed by him upon the work under the Contract, and further certifying that no workmen employed by him upon work has been paid less than the prevailing rate of wage or less than the minimum hourly rate of wage specified in the contract. These statements are to be submitted to the Engineer in the manner and at the times designated by him.

In case of conflict between any of the minimum hourly wage rates set forth in the schedule above referred to and other pertinent minimum hourly wage rates, as such other rates may have been set forth in the contract provisions in accordance with the federal regulations, the higher of the conflicting wage rates shall be applicable under the contract.

There is no representation on the part of the Contracting Agency that labor can be obtained at the hourly rates as may be shown in the SPECIAL PROVISIONS. It is the responsibility of bidders to inform themselves as to local labor conditions and prospective changes or adjustments of wage rates. No increases in the contract price shall be allowed or authorized on account of the payment of wage rates in excess of those listed.

If the Contractor fails, neglects, or refuses to make prompt payment of any claim for labor or services furnished to the Contractor or a subcontractor by any person, or the assignee of the person, in connection with the public works contract as such claim becomes due, the proper officer or officers of the public Contracting Agency may pay such claim and charge the amount of the payment against funds due or to become due the Contractor by reason of the contract. (Reference: ORS 279.314).

7.10 HOURS OF WORK, SATURDAY, SUNDAY, HOLIDAY AND OVERTIME WORK

The Contractor shall comply fully with ORS 279.334 of the Oregon Revised Statutes, which reads as follows: "In all cases where labor is employed by the state, county, school district, municipality, municipal corporation, or subdivision, through a contractor, no person shall be required or permitted to labor more than eight hours in any one day, or 40 hours in any one week, except in cases of necessity, emergency, or where the public policy absolutely required it, in which event, the person or persons so employed for excessive hours shall receive at least time and a half pay for all overtime in excess of eight hours a day, or for work performed on Saturday and on ...legal holidays."

However, if it is necessary for the Contractor to perform construction work on Saturdays, Sundays, legal holidays or outside the 8 hours regular working day, the Contractor shall first notify the Engineer of his intent to do so prior to commencing such "overtime work". In any event, all work shall be subject to approval of the Engineer. Prior to start of such work, the Contractor shall arrange with the Engineer for the continuous or periodical inspection of the work, surveys, and tests of materials when necessary.

7.11 PERMITS AND LICENSES

Except for private contracts or unless otherwise specified elsewhere in these specifications, the Contracting Agency will obtain all other permits and licenses and pay any fees connected therewith, having to do with his construction operations.

7.12 CLEARING AND BURNING PERMITS

The Contractor shall comply fully with ORS 477.685 which reads, in part, as follows:

"(1) Before clearing any right-of-way for any highway or railroad, or any power, commercial telegraph or telephone line, or for any transmission or transportation utility right-of-way on any forest land, whether upon his land or that of another, where the clearing would constitute a fire hazard, every person shall file with the forester a general description of the right-of-way to be cleared. The forester shall issue a written permit for such clearing. The permit shall set forth the precautionary conditions and manner under which the clearing shall be done."

"(2) A person engaged in clearing any right-of-way or forest land shall not place on adjoining

land or property any forest material or debris resulting from such clearing without the permission of the owner of the adjoining land."

7.13 LICENSING OF CONTRACTORS

The Contractor shall be licensed in accordance with all state and local requirements.

7.14 PATENTS, FEES OR ROYALTIES

In the event that any patented article, material or process is to be installed or used in the performance of the work as shown on the plans or particular specifications therefore, the Contractor shall pay the royalty chargeable, if any, and shall save, keep and hold the Contracting Agency harmless from any damage, costs and expenses by reason of any infringement of the patent thereof, and any loss to the Contracting Agency if enjoined from using such patented article or material and the incidental damage caused by the loss of use and damage to the Contracting Agency's property in removing same, and the cost of replacing the article or material the use of which is enjoyed. Provided further the Performance-Payment Bond for faithful performance shall be deemed to be expressly applied to this provision of the specifications.

7.15 LIABILITY FOR MONIES DUE STATE COMMISSIONS

The Contractor shall promptly pay all contributions or amounts due the State Industrial Accident Fund and the State Unemployment Compensation Trust Fund from such Contractor or his subcontractors, incurred in the performance of the contract.

The Contractor shall pay all sums of money withheld from his employees and payable to the Department of Revenue pursuant to ORS 316.162 to 316.212.

7.16 LIABILITY FOR AMOUNTS DUE HOSPITAL ASSOCIATIONS, ETC.

The Contractor shall comply fully with ORS 279.320 which reads in part as follows:

"...The Contractor shall promptly, as due, make payments to any person, co- partnership, association, or corporation, furnishing medical, surgical and hospital care or other needed care and attention, incident to sickness or injury, to the employees of such Contractor, of all sums which the Contractor agrees to pay for such services and all monies and sums which the Contractor collected or deducted from the wages of employees pursuant to any law, contract or agreement for the purpose of providing or paying for such service."

7.17 CONTRACTOR'S CONSTRUCTION EQUIPMENT

The Contractor shall furnish and maintain in good condition all equipment and facilities including stairs, ramps, runways, scaffolds, hoists, etc., as required for the proper execution and inspection of the work. All such equipment and facilities shall meet all requirements of all ordinances and laws applicable thereto.

7.18 RIGHT-OF-WAY

The right-of-way for the improvement will be provided by the Contracting Agency. Unless the plans or specifications show additional work area to be provided by the Contracting Agency, the Contractor shall make his own arrangements and pay all expenses for additional area required by him

outside the limits of the right-of-way.

7.19 BUREAU OF LABOR AND INDUSTRIES FEE

The Contractor is required to pay a fee to the Bureau of Labor and Industries pursuant to the provisions of ORS 279.352(2). The fee is one-tenth of one percent of the price of this contract, but not less than $100 or more than $5,000, regardless of the contract price.

SECTION 8.00 PROSECUTION AND PROGRESS

8.01 PROGRESS OF THE WORK

The Contractor shall commence the work within 10 calendar days after receiving notice to proceed, unless otherwise stated in the SPECIAL PROVISIONS, and shall diligently prosecute the same to completion within the time limit specified.

8.02 CONTRACTOR'S CONSTRUCTION SCHEDULE

Before starting work, the Contractor shall submit for approval his proposed construction schedule to the Engineer. In the event the Contractor desires to carry on operations in more than one location simultaneously he shall submit for approval a schedule therefor, two weeks in advance of beginning such operations. In the event that the Contractor's proposed construction schedule does not meet the necessary construction program schedule as determined by the Contracting Agency, he may be required to resubmit a schedule that shall conform to an approved program of construction operations. The Contractor must obtain from the Engineer written approval of a construction schedule prior to start of work.

8.03 SUSPENSION OF WORK

The Engineer shall have the authority to suspend work wholly or in part for such periods as may be necessary because of unsuitable weather or unforeseen conditions or the failure of the Contractor to carryout lawful orders to comply with any of the provisions of the contract. The Contractor shall immediately suspend work when so ordered, and he shall resume work after such suspension only on written instruction from the Engineer. Upon receipt of such instructions to resume work, he shall immediately proceed with the work.

If through the fault of the Contracting Agency, the Contractor must suspend operations and incurs expenses or sustains losses which could not have been avoided by the judicious handling of forces and equipment, and if by a diligent prosecution of the work he could not have completed the work before such suspension, the Contractor will be paid such amounts as may be agreed upon between the Contractor and the Contracting Agency to be a fair and reasonable compensation and a commensurate extension of contract time will be granted.

If work is suspended through no fault of the Contracting Agency, all such expenses and losses incurred by the Contractor during such suspensions of work shall be borne in full by him. In the event the Contractor fails to properly provide for public safety, traffic, and protection of the work, during periods of suspension of work, the Contracting Agency may elect to do so, and deduct the cost thereof from monies due the Contractor.

GENERAL PROVISIONS

8.04 TIME OF COMPLETION

The Contractor shall complete the work called for under the contract in all part and requirements within the number of calendar days set forth in the contract. Unless otherwise provided, all work shall be performed during normal working days. A working day is defined as any day except Saturdays, Sundays, legal holidays, days on which the Contractor is specifically required by the Contract to suspend construction operations, and days on which the Contractor is prevented from working by inclement weather or interference from utility relocation or alteration work.

Credit for inclement weather or interference from utility relocation or alteration work will be allowed only when the Contractor is prevented by such weather or utility work or conditions resulting immediately therefrom, from proceeding for at least five hours with at least 75% of the normal labor and equipment force engaged in the current controlling operation or operations. The current controlling operation or operations is to be construed to include any feature of the work which, if delayed at the time being considered, could delay the completion of the work beyond the contract period.

Should the Contractor prepare to begin work at the regular starting time in the morning of any day on which inclement weather or the conditions resulting from the weather, or the condition of the work, prevents the work from beginning at the usual starting time and the new crew is dismissed as a result thereof, the Contractor will not be charged for a working day whether or not conditions should change thereafter during said day and the major portion of the day could be considered suitable for such construction operations.

Determination of each nonworking day except Saturdays, Sundays, legal holidays, and days on which the Contractor is specifically required by the contract to suspend construction operations shall be made and agreed upon during such a day by conference between the Engineer and the Contractor. In the event of failure to agree, the Contractor will be allowed 15 days in which to file a written protest setting forth in what respects he differs from the Engineer. Otherwise the decision of the Engineer shall be deemed to have been accepted by the Contractor as correct.

8.05 LIQUIDATED DAMAGES

It is agreed by the parties of the contract that in case all of the work required under the terms of this contract is not completed within the number of calendar days as specified therefor in the contract or any lawful extension thereof as provided herein, damage will be sustained by the Contracting Agency as a result thereof, but to definitely determine and ascertain the actual amount of such damage, either before or after the occurrence thereof would be difficult and impractical. The sum stated in the SPECIAL PROVISIONS for liquidated damages for each and every calendar day that the completion of said work is delayed beyond the prescribed completion date, or lawful extension thereof, is hereby stipulated as being the nearest and most exact measure of such damage that can be fixed at this or any subsequent time; and when so assessed by the Contracting Agency, the Contractor shall become liable for and shall pay to the Contracting Agency as liquidated damages and not as a penalty said sum per day for each and every calendar day of such delay. When the amount of liquidated damages is not stated in the SPECIAL PROVISIONS it is agreed by the parties to the Contract that the amount of liquidated damages shall be One Hundred and Fifty Dollars ($150.00) per day for each and every day of such delay. The amount of such liquidated damages may be deducted by the Contracting Agency from any compensation due, or that may become due, the Contractor under his contract, and the Contractor and his sureties shall be liable for any excess.

It is further agreed that if the work is not finished and completed in all parts and requirements within the number of calendar days as specified therefor in the Contract or any lawful extension thereof as

provided herein, the Contracting Agency will have the right to extend the time for completion if to do so seems best to serve its interests; and in case said Contracting Agency decides to so extend the time limit for the completion of the work, it shall have further right to charge to the Contractor, his heirs, assigns, or sureties, all or any part as it may deem proper, the actual costs of engineering, inspection, supervision, and other overhead expenses, that are directly chargeable to the contract and accrue during the period of such extension, and deduct the amount thereof from the final payment for the work; provided, however, that the cost of the final survey and preparation of the final estimate will not be included in such charges.

In the event that the Contractor is directed to perform extra or additional work, the number of calendar days specified in the contract shall be extended by an amount determined by application to the original number of calendar days of the ratio that the value of the extra or additional work bears to the original contract value. Should the nature of the extra or additional work be such that the Contractor believes that a longer time extension should be granted than that computed by the above procedures, he may notify the Engineer in writing. The Contracting Agency may grant such additional time extension as it feels warranted.

Should any default, act or omission of the Contracting Agency, act of the State, act of public enemy or act of God, epidemic, quarantine restriction, strike, freight embargo, fire or flood cause any delay in the completion of the work the Contractor will not be assessed for liquidated damages nor engineering or other overhead charges for the period of such delay, provided that he shall, within ten (10) days subsequent to the beginning of any such delay, file a written report as to the cause thereof with the Engineer, who will ascertain the facts relative thereto and the extent of the delay, and whose finding in connection therewith shall be final and conclusive. The Contracting Agency shall not be liable to the Contractor for any damages on account of such delay.

8.06 RESPONSIBILITY OF CONTRACTOR AND OF CONTRACTOR'S REPRESENTATIVE ON THE WORKS

The Contractor shall give his personal attention and supervision to the work until same is entirely completed. In the absence of the Contractor from the work, he shall have a representative in charge who shall be competent to superintend and direct the progress of the work and who shall be authorized to receive instructions and to act for the Contractor on all matters relating to the work. The name, address and telephone number of this representative shall be sent by letter to the Engineer immediately after the awarding of the contract.

8.07 PROVISIONS RELATIVE TO DEFAULT BY CONTRACTOR

If, at any time, the Contractor shall neglect or refuse to prosecute the work with reasonable diligence, or should refuse or neglect to perform the work according to the drawings and specifications, as interpreted by the Engineer, the Contracting Agency will give him written notice to proceed. If the Contractor fails to comply with such notice within a period of seven (7) days, he shall be in default of the contract. The Contracting Agency will have the right, without further notice to the Contractor, and without voiding the Contract, to take possession of all materials, to complete the work, and to charge cost of so doing against the Contractor. Should the unpaid balance of the contract price exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expenses shall exceed the balance due the Contractor, the Contractor and his bondsmen agree to pay the excess to the Contracting Agency.

Notice, for the purposes of this section, may be served personally, or may be served by mail, addressed to the Contractor and his surety at their respective places of business as indicated in the contract documents.

The determination by the Engineer of the question as to whether any of the terms of the Contract or specifications have been violated, or have not been performed satisfactorily, shall be conclusive upon the Contractor, his surety, and any and all other parties who may have any interest in the Contract or any portion thereof.

The foregoing provisions of this section shall be in addition to all other rights and remedies available to the Contracting Agency under law.

8.08 TERMINATION OF CONTRACT

If Conditions encountered during the progress of the work make it impossible or impracticable to proceed with the work, the Contracting Agency may order the termination of the contract. Upon such termination, the Contracting Agency will pay the Contractor fair and reasonable compensation as agreed upon between the Contractor and the Contracting Agency. In the event that no agreement is reached between the Contractor and the Contracting Agency as to fair and reasonable compensation, the Contracting Agency will be liable to the Contractor only for the reasonable value of the work performed and any other actual costs sustained by the Contractor.

8.09 ADVERTISING

No advertising matter shall be attached or painted on surfaces of buildings, fences or canopies, except the names of contractors and subcontractors, with their addresses and the designation of their particular branch may be shown on signs of a removable type. Size and location of such signs shall be subject to approval of the Engineer.

8.10 ASSIGNMENT

No contract or any portion thereof, may be assigned without consent of the Contracting Agency except that money due the Contractor may be assigned as specified below.

The Contractor may assign money due or to become due him under the contract and such assignment will be recognized by the Contracting Agency, if given written notice thereof, to the extent permitted by law, but any assignment of money shall be subject to all proper set-offs and withholdings in favor of the Contracting Agency and to all deductions provided for in the contract, and particularly all money withheld, whether assigned or not, shall be subject to being used by the Contracting Agency for completion of the work in the event the Contractor should be in default therein.

8.11 SUBCONTRACTS

Names of subcontractors for all or any portion of the work shall be submitted to the Engineer prior to commencement of any subcontracted work. Such submittals shall state the types of work to be subcontracted and the names of the proposed subcontractors. Subcontracting all or any portion of the work shall not be construed to relieve the Contractor of any of his responsibility under the Contract.

No subcontractors will be recognized as such, and all persons engaged in the work of construction will be considered as employees of the Contractor. The Contractor will be held responsible for their work, which shall be subject to the provisions of the contract and specifications.

8.12 CERTIFICATE OF COMPLIANCE

The Contractor shall file with the Engineer, prior to the acceptance of the work, a certificate

in form substantially as follows: "I, (We) hereby certify that all work has been performed and materials supplied in accordance with the plans, specifications and contract documents for the above work, and that:

1. Not less than the prevailing rates of wages as ascertained by the Contracting Agency has been paid to laborers, workmen and mechanics employed on this work;

2. There have been no unauthorized substitutions of subcontractors; nor have any subcontracts been entered into without the names of the subcontractors having been submitted to the Engineer prior to the start of such subcontracted work;

3. No subcontract was assigned, transferred to, or performed by any subcontractor other than the original subcontractor, without prior notice having been submitted to the Engineer together with the names of all subcontractors.

4. All claims for material and labor and other service performed in connection with these specifications have been paid.

5. All monies due the State Industrial Accident Fund, the State Unemployment Compensation Trust Fund (ORS 279.510), the State Department of Revenue (ORS 316.162 to .212), hospital associations and/or others, (ORS 279.320), the State Bureau of Labor and Industries (ORS 279.352), have been paid."

SECTION 9.00 MEASUREMENT AND PAYMENT

9.01 METHODS OF MEASUREMENT

Materials and items of work which are to be paid for on the basis of measurement shall be measured in accordance with the methods stipulated in the particular sections herein covering materials or types of work.

When material is to be paid for on a volume basis and it would be impracticable to determine a volume by the specified method of measurement, or when requested by the Contractor and approved by the Engineer, the material will be weighed in accordance with the requirements specified for weight measurement and such weights will be converted to volume measurement for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities will be adopted.

Unless otherwise provided, when mineral aggregate or roadway material is being paid for by weight, deductions from pay quantities will be made for the weight of water in excess of 3% if the material is to be treated with bitumen, and 6% if the material is to be waterbound.

9.02 MEASUREMENT OF QUANTITIES FOR UNIT PRICE WORKS

Unless otherwise specified, linear or area quantities of work such as grading, landscaping, paving, curb, gutter, walk and other work of a similar nature shall be determined from measurements of dimensions of such work and computed in horizontal planes. However, linear quantities of underground cable, piling and timber, shall be considered as being the true length measured along the longitudinal axis thereof. For pipe work see related sections.

Volummetric quantities shall be determined by the average end area method.

9.03 UNITS OF MEASUREMENT

Measurements shall be in accordance with U.S. Standard Measures. A pound shall be avoirdupois. A ton shall be 2,000 pounds. The unit of liquid measure shall be the U.S. gallon.

9.04 CERTIFIED WEIGHTS

When payment is specified to be made on the basis of weight, the weighing shall be done on certified platform scales licensed in accordance with Chapter 618 Oregon Revised Statutes. The Contractor shall furnish the Engineer with licenses issued with the information required by Chapter 618 Oregon Revised Statutes. The Contractor shall pay all costs, if any, in connection with obtaining said information. The Contracting Agency will accept the certificates as evidence of the weight delivered.

9.05 PAYMENT

Once each month, the Engineer will make an approximate measurement of the work performed to that date and an estimate of the value thereof based on the contract prices. When the work has been satisfactorily completed, the Engineer will determine the final quantity of work performed and prepare the final estimate of the value thereof. The quantities listed in the bid schedule do not govern final payment. Payments to the Contractor shall be made only for the actual quantities of contract items performed in accordance with the plans and specifications and if upon completion of the construction these actual quantities show either an increase or decrease from the quantities given in the bid schedule, the contract unit prices will still prevail.

In unit price contracts, when an item for mobilization is included in the bid, this item shall include the cost of assembling of materials, plant, and equipment as set forth in said bid items, and as more fully described in the specifications. An evaluation for the purpose of payment for mobilization will be included in progress estimates in unit price contracts only when mobilizations is so set forth as an item in the bid. In such cases, the specifications will indicate a fixed sum or a percentage of the total bid price as a maximum that may be bid on this item.

In accordance with ORS Chapter 279, from each progress and final estimate, except on contracts for County roads and bridges, or unless otherwise required by the SPECIAL PROVISIONS, applicable Federal or State laws or local ordinances, 5% will be deducted and retained by the Contracting Agency, and the remainder less the amount of all previous payments will be paid to the Contractor.

At the expiration of 30 days from the date of acceptance of the work by the Contracting Agency, provided that the Contractor has furnished the Contracting Agency satisfactory receipts for all labor and material bills and waivers or liens from any and all persons holding claims against the wage rates as required by Section 279.354, Oregon Revised Statutes, the amount deducted from the final estimate and retained by the Contracting Agency will be paid to the Contractor, with the exception of such amounts as are required by law to be further retained.

Payments for work or materials performed or furnished under an assessment proceedings contract will be made as provided in the particular proceedings or legislative act under which such contract was awarded.

SECTION 10.00 REQUIREMENTS OF OREGON LAW FOR PUBLIC CONTRACTS

To any extent that they are not already incorporated into the Contract Documents the terms and conditions of ORS 279.310 to ORS 279.575 are an integral part of this Contract and Contract Documents, and incorporated herein at this point by reference.

COPY

PREVAILING WAGE RATES

for

Public Works Contracts in Oregon



BOLI

OREGON BUREAU OF LABOR AND INDUSTRIES

Jack Roberts
Commissioner
Bureau of Labor and Industries

Effective July 1, 1997

Oregon

BUREAU
OF LABOR
AND INDUSTRIES

July 1, 1997

Jack Roberts
Commissioner

This booklet contains the prevailing wage rates for non-residential building and construction trades in the State of Oregon. These rates are effective July 1, 1997, and have been determined in accordance with ORS 279.348 through ORS 279.365. Rates are published in their entirety twice each year, although specific occupational rates may be amended more frequently

Prevailing wage rates are the minimum wages that must be paid to all workers employed in the construction, reconstruction, major renovation or painting of any public works. Copies of these rates must be incorporated into all bid specifications when the advertisement for a public works contract is issued. A provision that prevailing wage rates be paid must also be put in the contract. The rates in effect at the time the bid specifications are first advertised are those that apply for the duration of the project, with one exception; if during the bidding process the prevailing wage rates change, the public contracting agency has the option of amending the bid specifications to reflect such changes.

Legislative changes in the state's prevailing wage rate law are highlighted on page 7 of this publication.

If you identify any errors in the rates published, please bring them to the attention of the Prevailing Wage Rate Coordinator in Portland (731-4074). If you have any questions about the manner in which the prevailing wage rates are enforced, contact the Wage and Hour Division in Portland (731-4074).

JACK ROBERTS
Commissioner
Bureau of Labor and Industries

PORTLAND
800 NE Oregon St. # 32
Portland, OR 97232
(503) 731-4200
FAX (503) 731-4069

EUGENE
165 E 7th Street, Suite 220
Eugene, OR 97401
(541) 686-7623
FAX (541) 686-7980

BEND
1250 NE 3rd, Suite B105
Bend, OR 97701
(541) 388-6330
FAX (541) 388-6273

MEDFORD
700 E Main, Suite 105
Medford, OR 97504
(541) 776-6270
FAX (541) 776-6284

SALEM
3865 Wolverine St. NE; E-1
Salem, OR 97310
(503) 378-3292
FAX (503) 373-7636

PENDLETON
200 Hailey Ave., Suite 308
Pendleton, OR 97801
(541) 276-7884
FAX (541) 276-2950

AN EQUAL OPPORTUNITY EMPLOYER

Oregon

BUREAU
OF LABOR
AND INDUSTRIES

July 1, 1997

Jack Roberts
Commissioner

This booklet contains the prevailing wage rates for non-residential building and construction trades in the State of Oregon. These rates are effective July 1, 1997, and have been determined in accordance with ORS 279.348 through ORS 279.365. Rates are published in their entirety twice each year, although specific occupational rates may be amended more frequently

Prevailing wage rates are the minimum wages that must be paid to all workers employed in the construction, reconstruction, major renovation or painting of any public works. Copies of these rates must be incorporated into all bid specifications when the advertisement for a public works contract is issued. A provision that prevailing wage rates be paid must also be put in the contract. The rates in effect at the time the bid specifications are first advertised are those that apply for the duration of the project, with one exception; if during the bidding process the prevailing wage rates change, the public contracting agency has the option of amending the bid specifications to reflect such changes.

Legislative changes in the state's prevailing wage rate law are highlighted on page 7 of this publication.

If you identify any errors in the rates published, please bring them to the attention of the Prevailing Wage Rate Coordinator in Portland (731-4074). If you have any questions about the manner in which the prevailing wage rates are enforced, contact the Wage and Hour Division in Portland (731-4074).

JACK ROBERTS
Commissioner
Bureau of Labor and Industries

PORTLAND
860 NE Oregon St. # 32
Portland, OR 97232
(503) 731-4200
FAX (503) 731-4069

EUGENE
165 E 7th Street, Suite 220
Eugene, OR 97401
(541) 686-7623
FAX (541) 686-7980

BEND
1250 NE 3rd, Suite B105
Bend, OR 97701
(541) 388-6330
FAX (541) 388-6273

MEDFORD
700 E Main, Suite 105
Medford, OR 97504
(541) 776-6270
FAX (541) 776-6284

SALEM
3865 Wolverine St. NE; E-1
Salem, OR 97310
(503) 378-3292
FAX (503) 373-7636

AN EQUAL OPPORTUNITY EMPLOYER

PENDLETON
200 Hailey Ave., Suite 308
Pendleton, OR 97801
(541) 276-7884
FAX (541) 276-2950

TABLE OF CONTENTS
July 1, 1997

General information ---------- 1-3

Commonly asked questions ---------- 4-6

Booklet Note ---------- 7
Sample Language ---------- 8
Apprenticeship Rule Change Letter dated April 29, 1997 ---------- 9-12
July rate determination for:
Heavy-Entire State
Highway-Entire State and
Non-residential building **(exluding Coos, Curry, Douglas & Josephine Counties)** ---------- 13-26

Construction categories: ---------- 27-28

July rate determination for
Non-residential building in the counties of:
Coos, Curry, Douglas & Josephine ---------- 29-31

List of debarred contractors ---------- 32-33

Forms necessary to comply with ORS 279.348 through ORS 279.375 will be found in the back of this booklet.

Contractors are encouraged to use the forms provided as master copies, and to keep on file for prevailing wage rate projects.

THIS INFORMATION IS AVAILABLE IN AN ALTERNATE FORMAT

ANNOUNCEMENT

The prevailing wage rates contained in this booklet generally reflect non-residential building, heavy, and highway construction rates determined for Oregon by the Secretary of Labor of the United States pursuant to the Davis-Bacon Act; certain changes have been made to better reflect prevailing practices in Oregon. Pursuant to ORS 279.348 to ORS 279.380, these rates have been adopted for use on public works contracts in Oregon. If you have specific questions regarding how rates are determined or if you would like a copy of this booklet, please contact:

Prevailing Wage Rate Coordinator
Bureau of Labor and Industries
Wage and Hour Division
800 NE Oregon St. # 32
Portland, OR 97232
(503)731-4074

The first copy is free. Additional copies are available for $2.00 each.

GENERAL INFORMATION

Information in this section and in the "Commonly Asked Questions" is meant to provide a convenient reference to Oregon's Prevailing wage rate Law. **It is not a complete statement of the laws and rules.**

If you have questions about the enforcement of prevailing wage rates, please contact the Wage and Hour Division. Division offices may be reached at the following phone numbers:

Bend	(541)388-6330	Portland	(503)731-4074
Eugene	(541)686-7623	Salem	(503)378-3292
Medford	(541)776-6270		

Apprentices and Trainees

Apprentices and trainees may be employed on public works projects. To qualify as an apprentice or trainee, the worker must be registered in a bona fide apprenticeship or training program of the U.S. Department of Labor, Bureau of Apprenticeship and Training (BAT) or with any State Apprenticeship and Training Agency recognized by BAT. For information call (503) 731-4072. The apprentice or trainee must receive all **fringe benefits*** and a percentage of the journeyman's wage rate which is listed in this booklet. This rate may be different than the rate contained in the Apprenticeship Standards for the trade. The correct percentage shall be determined by the appropriate apprenticeship or training committee. All other workers must receive rates as published.

*** SEE APRIL 29, 1997 NOTICE REGARDING TEMPORARY ADMINISTRATIVE RULE RELATING TO PAYMENT OF FRINGE BENEFITS TO APPRENTICES AND TRAINEES. (PAGES 9-12)**

Zone Pay

In certain trades, the basic hourly rate of pay progressively increases based upon the distance between the job site and a designated landmark; this is commonly referred to as zone pay. To determine the hourly wage, find the correct zone based on the number of road miles the job site is from the closest designated city (based either on distance from city hall or from geographical center of the city, depending on the trade) and add the amount for that zone to the basic hourly rate. Zone pay, unlike travel pay, is the basic hourly wage upon which overtime is computed.

Bid Specifications

The specifications for every public works contract must include the current prevailing wage rates in effect at the time the specifications are first advertised. A statement incorporating the existing rates by reference will not satisfy this requirement (ORS 279.352). **All contracts and all contract specifications for a public work are required to include a provision stating that the fee shall be paid to the Bureau of Labor. Sample language is included in this booklet.**

NOTE: **If a public agency fails to include a provision that a contractor and any subcontractor shall comply with ORS 279.350 in the advertisement for bids, the request for bids, the contract specifications, the accepted bid or elsewhere in the contract documents, the liability of the public agency for unpaid wages shall be joint and several with any contractor or subcontractor that had notice of the requirement to comply.**

Fringe Benefits

Payments for fringe benefits are in addition to the basic hourly rate. The term "fringe benefits" refers to payments such as:

a) medical or hospital care; pensions on retirement or death; compensation for injuries or illness resulting from an occupational activity, or insurance to provide any of the foregoing;
b) unemployment benefits, life insurance, disability and sickness insurance or accident insurance;
c) vacation and holiday pay;
d) defraying costs of apprenticeship or other similar programs; and
e) other such bona fide benefits.

For the purpose of prevailing wage rates, fringe benefits do not include any benefits which may be required by federal, state or local law (e.g. Workers' Compensation, Unemployment Insurance, etc.).

Every contractor or subcontractor that provides for or contributes to a health and welfare plan or a pension plan, must post notice describing such plans in a conspicuous and accessible place on the project.[ORS 279.350(5)] Fringe benefits may be paid to the worker in cash or to a third party administering a fringe benefit program. When an hourly rate in excess of the required prevailing base rate is paid, the amount by which the rate is exceeded may be credited toward payment of fringe benefits.

Overtime

Senate Bill 234 was signed into law by the governor and became effective on June 9, 1997. It applies to contracts entered into on or after June 9, 1997. This legislation revised the provisions of ORS 279.334 regarding when payment of overtime is due for work performed on a public works job. The new law requires the payment of overtime for work performed in excess of 8 hours in a day or 40 hours in any one week when the work week is five consecutive days, Monday through Friday; or 10 hours a day or 40 hours in any one week when the work week is four consecutive days, Monday through Friday. Overtime must also be paid for all work performed on Saturday, Sunday and the following other legal holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

SB 234 also requires employers to give written notice to employees who perform work on public works contracts either at the time of hire or before commencement of work on the contract, or by posting a notice in a location frequented by employees, of the number of hours per day and days per week that employees may be required to work.

Overtime is calculated at not less than one and one-half times the basic hourly rate as determined by the Commissioner of Labor (not including fringe benefits which are paid at the straight rate for every hour worked). In the computation of overtime, travel pay does not need to be included, but zone pay differentials do.

GENERAL INFORMATION (CONTINUED)

Overtime (Continued)

Contractors who violate the requirements of the law are liable to the employees affected in the amount of their unpaid overtime wages and in an additional amount equal to the unpaid overtime wages as liquidated damages. Additionally, if the violation resulted from willful falsification of payroll records, the contractor shall be liable to the employees affected in the amount of their overtime wages and in additional amount equal to twice the unpaid overtime wages as liquidated damages.

NOTE: Contractors who are signatory to a collective bargaining agreement may be subject to different overtime requirements (ORS 279.334(3)).

Certification of Payroll

The law requires every contractor and subcontractor to file certain information on wages paid to each worker employed on a public works contract. This statement must completely and accurately reflect payroll records for the work week immediately preceding the submission. A contractor or subcontractor must complete and submit the certified statement contained on Form WH-38 as well as the information required on the weekly payroll. **Form WH-38 and instructions for completing it are included in this booklet.** The schedule for submitting payroll information is as follows: Once within 15 days of the date the contractor or subcontractor first began work on the project; once before the final inspection of the project by the public contracting agency; in addition, for projects exceeding 90 days, submissions are to be made at 90 day intervals. When work on a project starts and finishes in 15 days or less, the contractor or subcontractor which performed the work shall submit a payroll and certified statement form which accurately and completely sets out the payroll for all the work performed on the project. **Payroll information is to be filed with the public contracting agency.** The payroll information must be kept by the contractor and or subcontractor for three years.

COMMONLY ASKED QUESTIONS

1) What are "prevailing wage rates?"

A prevailing wage rate is the minimum wage, including fringe benefits, to be paid workers employed on contracts for public works. Different rates are established for specific trades and specific geographical areas.

2) Who must be paid "prevailing wage rates?"

All employees of a contractor or subcontractor engaged on a public works project when the total price of the project is **$25,000** or more must receive at least the prevailing wage rate (PWR) for time worked on the project, unless otherwise exempt.

Office/clerical employees and supervisory employees who are supervisory only and do not perform any hands-on labor are not required to be paid the PWR. A person who owns and operates his/her own truck on construction projects (Owner/Operator) is not required to be paid the PWR. **This does not include owner-operators of any other type of equipment such as bulldozer, scrapers, backhoes, cranes, drilling rigs, or welding machines.**

3) What about contracts when Federal funds are used?

When more than $2,000 of federal funds are involved, the contract is usually subject to the provisions of the federal Davis-Bacon Act, not Oregon PWR statutes. (Further information may be obtained from the U.S. Department of Labor, Wage and Hour Division, Portland, Oregon (503-326-3057).) In the event that federal funds are involved, but the contract is not regulated under the Davis-Bacon Act, Oregon's prevailing wage rate statutes may apply (ORS 279.348 - 279.380). **Oregon statutes pertaining to overtime requirements apply on both state and federally regulated contracts. (ORS 279.334).**

4) I don't have a pension fund. How do I calculate fringe benefits?

Workers must receive at a minimum the sum of the basic hourly rate plus all fringe benefits for each hour worked on a public works contract. Fringe benefits may be paid either to a third party trust account or in cash directly to the worker.

5) My employees receive health benefits. Do I get credit for the health benefit when I prepare my payroll on a public works project?

Yes. Any expenditures an employer makes for bona fide employee benefits can be charged against the fringe benefit payments designated in the prevailing wage rate booklet. To learn how to compute the correct hourly charge, call the Wage and Hour Division (503-731-4074).

6) What if the employees are not paid on an hourly basis?

All workers must receive at least the basic hourly rate of wage and fringe benefits for each hour worked on the project. If an employee is paid other than on an hourly basis, the equivalent hourly rate (for both wages and fringe benefits) must still be at least equal to the rates published.

7) How do I classify workers?

Virtually all of the job classifications/trades normally used in the non-residential construction industry are represented by the job classifications used in this PWR publication. These classification titles should be used according to common practice. If you need residential construction rates, or if you have questions about how to classify workers, contact the Prevailing Wage Rate Coordinator at (503)-731-4074.

Laborers who do basic work requiring no specific skills, training, or knowledge are generally classified as Group 1 Laborers. (Note that Landscapers are classified as Laborers, and Ornamental Ironworkers are classified as Ironworkers.)

COMMONLY ASKED QUESTIONS (Continued)

8) When are new rates determined? How long are they effective?

Prevailing wage rates are determined once each year by the Commissioner of the Bureau of Labor and Industries. The Commissioner may amend the rates at any time. The rates are usually amended at least once each year. The rates in effect at the time the bid specifications are first advertised are those that apply for the duration of the contract, with one exception. If during the bidding process the prevailing wage rate changes, the public contracting agency (not the contractor) has the option of amending the bid specifications to reflect such changes.

9) How do I post prevailing wage rates?

Every contractor or subcontractor employing workers on a public works project is required to post the applicable prevailing wage rates in a conspicuous and accessible place in or about the work-site. Rates need to be posted for the duration of the job. Contractors and subcontractors who intentionally fail to post the PWR can be made ineligible to receive any public works contract for up to three years.

10) What can I do about a contractor who is not complying with Oregon's PWR law?

File a complaint with the nearest office of the Oregon Bureau of Labor and Industries (see list of offices on page 1), or contact the Wage and Hour Division, Bureau of Labor and Industries, 800 NE Oregon St. # 32, Portland, Oregon 97232 (503-731-4074). You may also complain to the contracting agency, which has the contractual authority to pay PWR claims directly to a contractor's or subcontractor's workers (ORS 279.314).

11) What happens to contractors who do not comply with PWR statutes?

Contractors and subcontractors who pay less than the prevailing wage rates may be liable to the workers affected for the amount found due plus an equal amount as liquidated damages (ORS 279.356). **Also, the law now provides for a civil penalty of up to $5,000 for any violations of the prevailing wage rate laws, including ORS 279.348 to 279.380 and the prevailing wage rate administrative rules pursuant to those statutes.** Contracting agencies have the contractual authority to withhold payments due or to be due to the contractor or subcontractor in order to pay the unpaid prevailing wages directly to the worker (ORS 279.314).

Contractors and subcontractors who intentionally refuse to pay the prevailing wage rate to workers employed on public works or to post the PWR on the job site may be determined to be ineligible to receive any public works contracts for a period of up to three years (ORS 279.361). Workers employed by the contractor or subcontractors have a right of action against the surety of the prime contractor for any unpaid prevailing wages.

A list is kept of all contractors, subcontractors, and other persons ineligible to receive public works contracts and subcontracts. When a contractor or subcontractor is a corporation, the individual officers and agents of the corporation can be debarred in addition to the corporation. As a result, individuals who intentionally fail to pay or post the PWR are prevented from simply moving from one corporation to another.

In addition, ORS 279.073, provides that any person that loses a competitive bid for a construction contract may bring an action for damages against the person who is awarded the contract, if the losing bidder can establish that the winner has knowingly violated any one of several laws, including the requirement to pay prevailing wage rates while performing work under the contract. The losing bidder is entitled to recover, as liquidated damages, 10% of the losing bid amount, or $5,000, whichever is greater, plus reasonable attorney fees.

12) How much do I pay apprentices?

To qualify as an apprentice, the worker must be registered in a bona fide apprenticeship program of the U.S. Department of Labor, Bureau of Apprenticeship and Training (BAT) or with any State Apprenticeship Agency recognized by BAT. For information call (503) 731-4072. The apprentice is to receive all **fringe benefits*** and a percentage of the journeyman's wage rates.

listed in this booklet. This rate may be different than the rate contained in the Apprenticeship Standards for the trade. The correct percentage shall be determined by the appropriate apprenticeship committee. All other workers receive rates as published.

*** SEE APRIL 29, 1997 NOTICE REGARDING TEMPORARY ADMINISTRATIVE RULE RELATING TO PAYMENT OF FRINGE BENEFITS TO APPRENTICES AND TRAINEES. (PAGES 9-12)**

13) What records must I keep? For how long?

Contractors and subcontractors are required to keep records necessary to determine if prevailing wage rates were paid. These records must include the Payroll and Certified Statement Form (WH-38) as well as the following: The name and address of each employee; the work classification(s) of each employee; the rate(s) of wages and fringe benefits paid to each employee; the rate(s) of fringe benefit payments made in lieu of those required to be provided to each employee; total daily and weekly compensation paid to each employee; daily and weekly hours worked by each employee; apprenticeship and training agreements; any payroll and other such records pertaining to the employment of employees upon a public works contract.

Administrative rules on prevailing wage rates require that these records be kept for a period of three (3) years from the completion of the public work contract. Other legal considerations may require retention of records for a period greater than 3 years. Records relating to public works contracts must be maintained separately from records relating to private projects/contracts.

14) What forms are public agencies required to file with the Bureau of Labor and Industries?

Public agencies are required to prepare and file a list of every public improvement that the agency intends to fund during the subsequent budget period with the Commissioner of the Bureau of Labor and Industries (ORS 279.023[2]). If, after the original filing, the agency plans additional public improvements, a revised list is to be submitted (OAR 839-16-008[2]).

The "Notice of Award of Public Works Contract" is to be filed with the Wage and Hour Division within 30 days of the date when a contract is awarded which requires the payment of prevailing wage rates (i.e., is regulated under ORS 279.348 to 279.380). **Civil Penalties may be assessed for failure to file this Notice.**

Copies of the "Planned Public Improvement Summary" (Form No. WH-118), the "Capital Improvement Project Cost Comparison Estimate" (WH-119), and the "Notice of Award of Public Works Contract" (WH-81) can be found at the back of this booklet.

15) Does a contracting agency have any power to enforce payment of prevailing wage rates on its public works projects?

Yes. According to ORS 279.314, all public contracts for work or services must contain a clause or condition permitting the contracting agency to pay a worker's past due wage claim, charging the payment against funds due or to become due to the contractor.



All forms necessary to a public works project are printed in their entirety and provided in the back of this booklet. The instruction sheet WH-38A, is provided to assist contractors in completing the Payroll/Certified Statement.

A synopsis of Legislative changes affecting most public agencies which award contracts for public works projects and the contractors working on those projects is given below.

- The threshold for PWR projects is now $25,000.
- Contractors receiving public works contracts must pay a fee equal to one-tenth of one percent of the total contract price of the project.
- All contracts and contract specifications must contain a provision stating that the fee shall be paid to the Bureau.
- Contractors are no longer required to send copies of the certified payroll statements to the Bureau.
- Public contracting agencies may not divide projects to avoid compliance with the PWR law.
- Civil penalties of up to $5,000 may now be assessed for any violation of the PWR law or the administrative rules.
- Effective June 9, 1997, overtime requirements revised. *See "General Information" pages 2 & 3.*
- Effective September 1, 1996, Truck Driver coverage criteria changed.
- Effective April 29, 1997, fringe benefits for apprentices in specific occupations amended.

FOR MORE INFORMATION CONCERNING THESE CHANGES, CALL THE PREVAILING WAGE RATE COORDINATOR AT (503) 731-4074, EXT. 250.

WE HAVE ATTEMPTED TO MAKE ALL CHANGES NOTICEABLE BY PRINTING THEM IN BOLD TYPE.

Oregon

BUREAU
OF LABOR
AND INDUSTRIES

April 29, 1997

To: Interested Parties

From: Christine N. Hammond
Administrator
Wage and Hour Division

Jack Roberts
Commissioner

Re: Adoption of Temporary Prevailing Wage Rate Rules Relating to Fringe Benefits Paid to Apprentices and Trainees

Attached for your information is a copy of temporary prevailing wage rate (Division 16) administrative rules relating to the payment of fringe benefits to apprentices and trainees. These temporary rules were filed and became effective on April 29, 1997. The rules will be in effect through October 25, 1997, unless amended sooner.

The temporary rules provide that the rate of pay required to be paid for fringe benefits to registered apprentices and trainees be not less than the rate paid to the majority of apprentices and trainees in the same trade or occupation as determined by the commissioner. The rules also provide that if there is no majority in the same trade or occupation, apprentices and trainees must be paid the full amount of fringe benefits as determined by the commissioner.

Prior to the adoption of these temporary rules, the rules relating to the payment of fringe benefits to apprentices required apprentices and trainees to be paid the full amount of fringe benefits paid to journeymen. The agency has now determined that the prevailing practice in a limited number of trades is to pay apprentices and trainees a *percentage* of certain fringe benefits paid to journeymen, rather than the full amount. Accordingly, the temporary rules will now permit payment of a percentage of the fringe benefits paid to journeymen in those trades where there is a clear showing that the prevailing practice is to pay registered apprentices such a percentage.

For more information, or to request a determination by the commissioner pertaining to fringe benefits to be paid to apprentices, contact the Wage and Hour Division, Prevailing Wage Rate Unit, at (503) 731-4074, ext. 250.

g:\whd\admin\intpart.sam

PORTLAND
800 NE Oregon St. # 32
Portland, OR 97232
(503) 731-4200
FAX (503) 731-4069

EUGENE
165 E 7th Street, Suite 220
Eugene, OR 97401
(541) 686-7623
FAX (541) 686-7980

BEND
1250 NE 3rd, Suite B105
Bend, OR 97701
(541) 388-6330
FAX (541) 388-6273

MEDFORD
700 E Main, Suite 105
Medford, OR 97504
(541) 776-6270
FAX (541) 776-6284

SALEM
3865 Wolverine St. NE; E-1
Salem, OR 97310
(503) 378-3292
FAX (503) 373-7636

PENDLETON
200 Hailey Ave., Suite 308
Pendleton, OR 97801
(541) 276-7884
FAX (541) 276-2950

AN EQUAL OPPORTUNITY EMPLOYER

BEFORE THE COMMISSIONER

OF THE

BUREAU OF LABOR AND INDUSTRIES

OF THE

STATE OF OREGON

In the Matter of Rules Pertaining to Prevailing Wage Rates and Fringe Benefits Paid to Apprentices	)))	TEMPORARY RULES

Title: Payment of Prevailing Rate of Wage

Rule Number: OAR 839-016-0035

839-016-0035 (1) Every contractor or subcontractor employing workers on a public works project shall pay to such workers no less than the prevailing rate of wage for each trade or occupation, as determined by the Commissioner, in which the workers are employed.

(2) Every person paid by a contractor or subcontractor in any manner for the person's labor in the construction, reconstruction, major renovation or painting of a public work is employed and must receive no less than the prevailing rate of wage, regardless of any contractual relationship alleged to exist. Thus, for example, if partners are themselves performing the duties of a worker, the partners must receive no less than the prevailing rate of wage for the hours they are so engaged.

(3) Persons employed on a public works project and who are spending more than 20% of their time during any workweek in performing duties which are manual or physical in nature as opposed to mental or managerial in nature are workers and must be paid the prevailing rate of wage. Mental or managerial duties include but are not limited to administrative, executive, professional, supervisory or clerical duties.

(4) Persons employed on a public contract for the manufacture or furnishing of materials, articles, supplies or equipment (whether or not a public agency acquires title to such materials, articles, supplies or equipment during the course of the manufacture or furnishing, or owns the materials from which they are manufactured or furnished) are not workers required to be paid the

1Note: Material in [brackets] and *italics* is material that is deleted. Material that is **underlined** and **bold** is material to be added.

prevailing rate of wage unless the employment of such persons is performed in connection with and at the site of public work.

(5) Persons employed on a public works project who are employed by a commercial supplier of goods or materials must be paid no less than the prevailing rate of wage when the work is performed at the "site of work" as that term is defined in OAR 839-016-0004(19) or when the work is performed in fabrication plants, batch plants, barrow pits, job headquarters, tool yards or other such places that are dedicated exclusively or nearly so to the public works project.

(6) Persons employed on a public works project by the construction contractor or construction subcontractor to transport materials or supplies to or from the public works project are required to be paid the prevailing wage rate for work performed in connection with the transportation of materials or supplies at the "site of work" as that term is defined in OAR 839-016-0004(19).

(7) Persons employed on a public contract for service work as opposed to construction work are not workers required to be paid the prevailing rate of wage.

(8) Every apprentice, as defined in these rules, must be paid not less than the appropriate percentage of the applicable journeyman's wage rate and [*all*] fringe benefits as determined pursuant to ORS 279.348 to 279.363. Any worker listed on a payroll at an apprentice wage rate, who is not an apprentice as defined in these rules shall be paid not less than the applicable prevailing rate of wage for the classification of work actually performed. In addition, if the total number of apprentices employed exceeds the ratio permitted in the applicable standards, all apprentices so employed shall be paid not less than the applicable journeyman's prevailing wage rate for work actually performed.

(9) Every trainee, as defined in these rules, must be paid not less than the appropriate percentage of the applicable journeyman's wage rate and [*all*] fringe benefits determined pursuant to ORS 279.348 to 279.363. Any worker listed on a payroll at a trainee wage rate, who is not a trainee as defined in these rules shall be paid not less than the applicable prevailing rate of wage for the classification of work actually performed. In addition, if the total number of trainees employed exceeds the ratio permitted in the applicable standards, all trainees so employed shall be paid not less than the applicable journeyman's prevailing wage rate for work actually performed.

2Note: Material in [brackets] and *italics* is material that is deleted. Material that is **underlined** and **bold** is material to be added.

Title: Payment of Fringe Benefits

Rule Number: 839-016-0040

839-016-0040 (1) Each contractor and subcontractor required to pay workers the prevailing rate of wage must pay no less than the hourly rate of pay and fringe benefits as determined by the Commissioner.

(2) The rate of pay for fringe benefits paid to apprentices and trainees shall be not less than such rate paid to the majority of such apprentices and trainees in the same trade or occupation as determined by the commissioner. If there is no majority in the same trade or occupation, as determined by the commissioner, apprentices and trainees shall be paid the full amount of the fringe benefits.

[*(2)*] **(3)** The requirements of section (1) of this rule are met when the amount of the fringe benefit or benefits is paid to the worker, in cash, in lieu of a third party administering a fringe benefit or benefits program.

[*(3)*] **(4)** When a contractor or subcontractor pays an hourly rate of pay which exceeds that which is determined by the Commissioner, the amount by which the rate is exceeded may be credited toward payment of the amount of fringe benefits determined by the Commissioner for the trade or occupation.

[*(4)*] **(5)** When a contractor or subcontractor pays a rate for any one fringe benefit which exceeds that which is determined for the fringe benefit, the amount by which the rate is exceeded may be credited toward payment of the amount to be paid for all fringe benefits as determined by the Commissioner for the trade or occupation.

[*(5)*] **(6)** When a contractor or subcontractor pays an amount for fringe benefits which exceeds that which is determined by the Commissioner the amount by which it exceeds the determination may be credited toward payment of the hourly rate of pay as determined by the Commissioner.

g:\whd\pwr\temprule

3Note: Material in [brackets] and *italics* is material that is deleted. Material that is **underlined** and **bold** is material to be added.

OREGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

ASBESTOS WORKERS

Installation of insulation on mechanical systems for Thermal and Acoustical purposes, also the installation of fire stop penetrations on Electrical and Mechanical Systems.

Journeyman Asbestos Worker	**23.98**	**6.38**

Removal of regulated material on mechanical systems* which are not going to be scrapped.**

o Hazardous Materials Handler Mechanic	13.75	3.50

* Mechanical systems include pipes, boilers, ducts,flues, breaching, grease ducts and acid ducts. This also includes all labor connected with the handling and distribution of materials for these systems.

** The removal of all regulated materials from mechanical systems is exclusively the work of Hazardous Materials Handlers, unless the mechanical systems are going to be scrapped. Laborers do all removal of regulated materials on mechanical systems to be scrapped and any non mechanical(walls,ceilings,floors,beams etc.) insulation. They also do loading of any regulated material after it has been removed, bagged and tagged, as well as cleanup at the removal site and all work done at the disposal site. Persons performing the removal of regulated materials are classified as Group 3 Laborers.

NOTE: Regulated materials are those materials that are regulated for the purpose of protecting the environment or for personal protection by either E.P.A., O.S.H.A., DEQ or Federal O.S.H.A.

BOILERMAKERS	**24.07**	**9.31**

BRICKLAYERS/STONEMASONS

THIS TRADE IS TENDED BY "TENDERS TO MASONS" -PG. 24

Area 1 (add $0.75 per hour to Fringe for Refractory repair work.)	**23.86**	**6.71**
Area 2 (add $0.75 per hour to Fringe for Refractory repair work.)	22.12	5.88

Area 1

Baker	Hood River	Multnomah	Wallowa
Benton (a)	Lincoln (a)	Polk	Wasco (a)
Clackamas	Linn (a)	Sherman	Washington
Clatsop	Malheur (a)	Tillamook	Yamhill
Columbia	Marion	Umatilla	Gilliam
Morrow	Union		

BRICKLAYERS/STONEMASONS(Continued)

Area 2

Benton (b)	Douglas	Josephine	Linn (b)
Crook	Grant	Klamath	Malheur (b)
Coos	Harney	Lake	Wasco (b)
Curry	Jackson	Lane	Wheeler
Deschutes	Jefferson	Lincoln (b)	

a) North half
b) South half

CARPENTERS

Zone 1 (Base Rate):

o Group 1	**22.44**	**7.00**
o Group 2	**22.59**	**7.00**
o Group 3	**22.94**	**7.00**
o Group 4	**23.09**	**7.00**
o Group 5	**22.94**	**7.00**
o Group 6	**23.09**	**7.00**
o Group 7	**23.44**	**7.00**

Zone Differential for Carpenters
(Add to Zone 1 Rate)

Zone 2	.85
Zone 3	1.25
Zone 4	1.70
Zone 5	2.00
Zone 6	3.00
Zone 7	**5.00**

Zone 1: Projects within 30 miles of City Hall in the Cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 60 miles.
Zone 5: More than 60 miles but less than 70 miles.
Zone 6: More than 70 miles but less than 100.
Zone 7: More than 100 miles from the city hall of the employee's home local.

Reference cities for Group 1 and 2 Carpenters

Albany	Eugene	Longview	Portland
Astoria	Goldendale	Madras	Port Orford
Baker	Grants Pass	Medford	Reedsport
Bend	Hermiston	McMinnville	Roseburg
Brookings	Hood River	Newport	Salem
Burns	Klamath Falls	Oregon City	The Dalles
Coos Bay	LaGrande	Ontario	Tillamook
Corvallis	Lakeview	Pendleton	Vancouver

Zones for Groups 3 and 4 Carpenters are determined by the distance between the project site and **either**
1) the worker's residence; *or*
2) City Hall of a reference city
for the appropriate group shown, whichever is closer.

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

CARPENTERS (Continued)

Reference Cities for Group 3 and 4 Carpenters

Eugene Medford Portland Vancouver
Longview North Bend The Dalles

Zones for Groups 5, 6 and 7 Carpenters are determined as follows:

1. For those workers who reside within zone 1 of a reference city below, their zone pay differential shall be computed based upon the distance from the city hall of that city to the project site.

2. For those workers who reside nearer to the project than is the city hall of any reference city below, the mileage from their residence to the project may be used in computing their zone pay differential.

3. The zone pay differential for all other projects shall be computed from the city hall of Longview, North Bend, or Portland, whichever is closer to the project.

Reference Cities for Groups 5, 6 and 7

Astoria Eugene Newport Salem
Bend Klamath Falls Portland The Dalles
North Bend Medford Roseburg Longview

Group 1

Auto. Nailing Machine
Carpenters
Form Stripper
Manhole Builders
Non-irritating Ins.
Cabinet & Shelving
Installers (wood or steel)

Group 2

Floor Layers & Finishers
Stationary Power Saw Operators
Wall & Ceiling Insulators
Irritating Insulation

Group 3

Millwrights
Machine Erectors
Machinists

Group 4

Millwright/Welders
(Certified Welders receive $0.25/hour over Group 3)

Group 5

Bridge, Dock & Wharf Builders
Piledrivermen

Group 6

Boom Men

Group 7

Marine Piledriver

CEMENT MASONS

THIS TRADE IS TENDED BY "CONCRETE LABORERS" PG. 17

Zone 1 (Base Rate)		
o Group 1	21.61	7.00
o Group 2	22.00	7.00
o Group 3	22.00	7.00
o Group 4	22.39	7.00

CEMENT MASONS (Continued)

Group 1 Cement Masons, finishing, hand chipping and patching grouting, end pointing, screed setting, plugging, filling bolt holes, dry packing, setting curb forms, planks, stakes, lines and grades.

Group 2 Composition Workers (includes installation of epoxy & other resinous toppings), and Power Machine Operators.

Group 3 Cement masons working on suspended, swinging and/or hanging scaffold.

Group 4 Cement Masons performing work of both Group 2 and Group 3 at the same time.

Zone Differential for Cement Masons
(Add to Zone 1 Rate)

Zone 2	.65
Zone 3	1.15
Zone 4	1.70
Zone 5	2.75

Zone 1: Projects within 30 miles of City Hall in the cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 80 miles.
Zone 5: More than 80 miles.

Cities

Bend Eugene Medford Salem Vancouver
Corvallis Longview Portland The Dalles

DIVERS & DIVERS' TENDERS

o Divers	55.15	7.00–
o Divers' Tenders	24.71	7.00

Depth Pay and Enclosure Pay are added to the Divers' Basic Hourly Rate to obtain the Total Hourly Rate for the diver.

Basic Hourly Rate	+	Hourly Depth Pay	+	Hourly Enclosure Pay	=	Divers' Total Hourly Pay

o Divers' Depth Pay

Depth of Dive	Hourly Depth Pay
50-100 ft	([total ft- 50] x $1.00)/hr.
100-150 ft	$ 50 + ([total ft-100] x $1.50)/hr.
150-200 ft	$125 + ([total ft-150] x $2.00)/hr.

ADE	BASIC HOURLY RATE	FRINGE BENEFITS

ERS & DIVERS' TENDERS (Continued)

ivers' Enclosure Pay(working without vertical escape)

tance Travelled the Enclosure — Hourly Enclosure Pay

5 - 50 ft	$ .50/hr
50 - 100 ft	$ .63/hr
100 - 150 ft	$ 2.13/hr
150 - 200 ft	$ 4.63/hr
200 - 300 ft	$ 4.63 + ([total ft-200]x $.05)/hr
300 - 450 ft	$ 9.63 + ([total ft-300]x $.10)/hr
450 - 600 ft	$24.63 + ([total ft-450]x $.20)/hr

EDGING

ne 1 (Base Rate):

Leverman (Hydraulic, Dipper, Floating Clamshell)	26.71	6.85
Asst. Engineer (including: WatchEngineer, Welder, Mechanic, Machinist)	25.91	6.85
Tenderman (Boatman, Attending Dredge Plant);		
Fireman	25.32	6.85
Fill Equipment Operator	24.79	6.85
Assistant Mate (Deckhand);		
Oiler	23.16	6.85

ne Differential for Dredging (Add to Zone 1 Rate)

Zone 2	2.00
Zone 3	3.00

ne 1: Center of job site not more than30 miles from the City Hall of Portland
ne2 More than 30 miles but not more than 50
ne 3 Over 50 miles

YWALL/WETWALL

Drywall (Accoustical and Drywall Applicator)	20.58	8.02
Wetwall (Lather)	19.56	9.04

ECTRICIANS

ea 1:

Electricians	20.44	5.45
Cable Splicers	22.48	5.51

ea 2:

Electricians	25.20	7.59
Cable Splicers	26.46	7.62

ea 3: 23.30 8.45

ea 4:

Electricians	25.90	6.98
Cable Splicers	28.94	7.05

ELECTRICIANS (Continued)

Area 5:		
o Electricians	25.50	8.92
o Cable Splicers	26.25	8.94
Area 6:		
o Electricians	23.05	7.44
o Cable Splicers	23.05	7.44

Area 1	Area 2	Area 2(cont)	Area 3
Malheur	Baker	Umatilla	Coos
	Gilliam	Union	Curry
	Grant	Wallowa	Lincoln
	Morrow	Wheeler	**Douglas (a)
			Lane (a)

Area 4	Area 5	Area 5(cont)	Area 6
Benton	Clackamas	Washington	Harney
Crook	Clatsop	Yamhill (d)	Jackson
Deschutes	Columbia		Josephine
Jefferson	Hood River		Klamath
Lane (b)	Multnomah		Lake
Linn	Sherman		**Douglas (b)
Marion	Tillamook		
Polk	Wasco		
Yamhill(c)			

a) Those portions lying west of a line running North and South from the NE corner of Coos County to the SE corner of Lincoln County
b) That portion lying east of a line running North and South from the NE corner of Coos County to the SE corner of Lincoln County
c) South half
d) North half

ELEVATOR CONSTRUCTORS

Area 1

o Mechanic	26.89	6.85 + a
o Helper	18.82	6.64 + a
o Probationary Helper	13.45	.36

Area 2

o Mechanic	28.27	6.89 + a
o Helper	19.79	6.67 + a
o Probationary Helper	14.14	.38

a) Plus 8% of basic hourly rate for employees with more than 5 years of service; 6% of basic hourly rate for 6 months to 5 years of service.

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
EVATOR CONSTRUCTORS (Continued)		
Area 1: Umatilla, Wallowa, Union, Baker		
Area 2: All Remaining Counties		
LAZIERS		
Area 1	22.87	4.94
(Add $1.00 to base rate if safety belt is required by State safety regulations)		
(Add $4.00 to base rate for work done from a non-motorized single-man bosun chair)		
rea 2	14.86	4.94
(Add $0.50 to base rate if working at over 35 feet of free fall in height)		
Area 1: All Counties except Malheur		
Area 2: Malheur		
IGHWAY / PARKING STRIPERS	20.43	4.09
IRONWORKERS	21.50	9.92
Structural, Reinforcing, Ornamental, Riggers, Fence Erectors, Signal Men		
LABORERS		
Zone 1 (Base Rate):		
o Group 1	18.34	7.05
o Group 2	18.72	7.05
o Group 3	19.04	7.05
o Group 4	19.30	7.05
o Group 5	16.55	7.05

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Hazardous Waste Site. A Group 1 base rate is used for General Laborer on such a site. For further information on this, call the Prevailing Wage Rate Coordinator at 731-4074.

Zone Differential for Laborers

(Add to Zone 1 Rate)

Zone 2	.65
Zone 3	1.15
Zone 4	1.70
Zone 5	2.75

LABORERS (Continued)

Zone 1: Projects within 30 miles of City Hall in the Cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 80 miles.
Zone 5: More than 80 miles.

Reference Cities

Albany	**Burns**	**Hermiston**	**Portland**
Astoria	**Coos Bay**	**Klamath Falls**	**Roseburg**
Baker City	**Eugene**	**Medford**	**Salem**
Bend	**Grants Pass**	**Pendleton**	**The Dalles**

Group 1

Asphalt Plant Laborers	Guardrail, Median Rail (c)
Asphalt Spreaders	Landscape or Planting Laborer
Batch Weighman	Leverman or Aggregate Spreader (d)
Broomers	Loading Spotter
Brush Burners/Cutters	Material Yard Man (e)
Carpenter Tender	Powderman Assistant
Car & Truck Loaders	Railroad Track Laborers
Change-House Man	Ribbon Setters (f)
Chipper Operator (a)	Rip Rap Man (Hand Placed)
Choke Setter	Road Pump Tender and moving
Clean-up Laborers ***	Sewer Laborer
Curing, concrete	Signalman
Demolition, wrecking (industrial) ***	Skipman
Driller Assistant	Slopers
Dry-shack Man	Sprayman
Dumpers, road oiling crew	Stake Chaser
Dumpmen for grading crew	Stockpiler
Elevator Feeders	Tie Back Shoring
Fence Builder	Timber Faller/Bucker (Hand Labor)
Fine Graders	Toolroom Man (Job Site)
Fire Watch	Weight-Man-Crusher (g)
Form Strippers (b)	
General Laborer ***	

a) Pittsburg or similar types
b) Not swinging stages
c) Reference Post, Guide Post, or Right-of Way Marker
d) Flaherty, and similar types
e) Including electrical
f) Including steel forms
g) Aggregate when used

*** Laborers can tear off roofs, clean up or handle roofing materials only when at least one new story is added or in demolition work, where no reroofing will occur.

ADE	BASIC HOURLY RATE	FRINGE BENEFITS

BORERS (Continued)

up 2

plicators (a)
ish Cutters (b)
ners
oker Splicer
ry Power Spreader(c)
an up Nozzleman-
reen Cutter (d)
ncrete Laborers
ncrete Power Buggyman
usher Feeder
molition/Wrecking (e)
nnite Nozzleman Tender
Gunite or Sandblasting
Pot Tender
Handlers/Mixers (f)
Pipe Doping & Wrapping
Post Hole Digger, Air, gas or electric
Power Tool Operators (g)
Sand Blasting (wet)
Stake Setter
Tampers
Vibrating Screed

a) Including Pot Tender for same, applying protective material by hand or nozzle on utility lines or storage tanks on project

b) Power saw

c) And similar types of spreaders

d) Concrete, rock, etc.

e) Charred Materials

f) Of all materials of an irritating nature including cement and lime

g) Includes, but not limited to: Dry Pack Machine, Jackhammer, Chipping Guns, Paving Breakers

oup 3

Asbestos Removal
Bit Grinder
Concrete Saw Operator
Drill Doctor
Drill Operators (a)
Laser Beam (b)
Manhole Builder
Nippers & Timbermen
Nuclear Plant Worker
Lead Shield
Power Saw Operators (c)
Sand Blasting (dry)
Sewer Timberman
Track Liners (d)
Tugger Operator
Vibrators(all)
Water Blaster
Welder

l) Air Tracks, Cat Drills, Wagon Drills, Rubber-mounted drills, and other similar types

) Pipe laying, applicable when employee assigned to move, set up, align Laser Beam.

:) Bucking and falling

n) Anchor Machines, Ballast Regulators, Multiple Tampers, Power Jacks

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

LABORERS (Continued)

Group 4

Asphalt Rakers
Concrete Nozzlemen
Grade Checker
High Scalers, Strippers, Drillers (a)
Laser Beam (Tunnel), applicable when employee assigned to move, set-up, align laser beam
Loop Installation
Motorman - Dinky Locomotive
Pipe Layers (all)
Powder Men
Shield Operator
Tunnel Bull Gang (Above Ground)
Tunnel Chuck Tenders
Tunnel Miners
Tunnel Muckers/Brakeman/Concrete Crew/Bull Gang (Underground)
Tunnel Powderman

a) Covers work in Swinging Stages, chairs or belts, under extreme conditions unusual to normal drilling, blasting, barring-down, or sloping and stripping

Group 5

Clean-up Laborers (building only)***
Demolition, Wrecking, & Moving (building only)***
Flagger

*** Laborers can tear off roofs, clean up or handle roofing materials only when at least one new story is added or in demolition work, where no reroofing will occur.

LIMITED ENERGY ELECTRICIANS

May only be used for electrical work not exceeding 100 va in Class II and III installations (as defined in Article 725 of the National Electrical Code):

Area 1	20.05	6.55
Area 2	20.05	6.55
Area 3	**16.79**	**4.25**
Area 4	**16.79**	**4.25**
Area 5	**16.79**	**4.25**
Area 6	**16.79**	**4.25**
Area 7	**16.79**	**4.25**
Area 8	**16.79**	**4.25**
Area 9	20.05	6.55
Area 10	**16.79**	**4.25**
Area 11	**16.79**	**4.25**
Area 12	20.05	6.55
Area 13	20.05	6.55
Area 14	20.05	6.55

LIMITED ENERGY ELECTRICIANS (Continued)

Area 1 Clatsop, Columbia, Tillamook
Area 2 Clackamas, Multnomah, Washington, Yamhill (north half)
Area 3 Marion, Polk, Yamhill (south half)
Area 4 Benton, Lincoln, Linn
Area 5 Lane
Area 6 Douglas
Area 7 Coos, Curry
Area 8 Jackson, Josephine
Area 9 Hood River, Sherman, Wasco
Area 10 Crook, Deschutes, Jefferson
Area 11 Klamath, Lake, Harney
Area 12 Gilliam, Grant, Morrow, Umatilla, Wheeler
Area 13 Baker, Union, Wallowa
Area 14 Malheur

LINE CONSTRUCTION

Area 1:

	BASIC HOURLY RATE	FRINGE BENEFITS
o Group 1	26.91	6.44
o Group 2	24.27	6.35
o Group 3	18.83	5.15
o Group 4	20.91	5.23
o Group 5	18.26	5.14
o Group 6	17.15	5.09

Area 2:

o Cable Splicers	23.38	5.24
o Journeyman Lineman	21.20	5.16
o Line Equip. Mech. (Right-of-way)	17.98	5.01
o Line Equip. Oper.	17.98	5.01
o Groundman	13.15	4.80

Area 1 All counties except Malheur County
Area 2 Malheur County

Group 1

Cable Splicers
Leadman Pole Sprayer

Group 2

Certified Lineman Welder
Heavy Line Equipment Man
Lineman
Pole Sprayer

Group 3

Tree Trimmer

Group 4

Line Equipment Man

Group 5

Head Groundman
Jackhammer Man
Powderman

Group 6

Groundman

MARBLE SETTERS (Includes Granite)

THIS TRADE IS TENDED BY "TILE, TERRAZZO, BRICK MARBLE FINISHERS" PG. 25

	BASIC HOURLY RATE	FRINGE BENEFITS
Area 1	24.86	6.71
Area 2	23.12	5.88

Area 1

Baker	Hood River	Multnomah	Wallowa
Benton (a)	Lincoln (a)	Polk	Wasco (a)
Clackamas	Linn (a)	Sherman	Washington
Clatsop	Malheur (a)	Tillamook	Yamhill
Columbia	Marion	Umatilla	
Gilliam	Morrow	Union	

Area 2

Benton (b)	Douglas	Josephine	Linn (b)
Crook	Grant	Klamath	Malheur (b)
Coos	Harney	Lake	Wasco (b)
Curry	Jackson	Lane	Wheeler
Deschutes	Jefferson	Lincoln (b)	

a) North half
b) South half

PAINTERS & DRYWALL TAPERS

Area 1

	BASIC HOURLY RATE	FRINGE BENEFITS
o Brush, Roller	14.51	2.99
o Spray and Sandblasting	15.11	2.99

Area 2

o Brush Painting	18.46	3.14

(Add $0.60 to base rate for spray, sandblasting,other pressure blasting over 3000 psi, and steam cleaning.)
(Add $0.50 to base rate for work over 60 ft high on swing stage, mechanical climber, spider, or bucket truck.)

o Drywall Tapers	22.80	5.83

Area 1 Malheur County
Area 2 Remaining Counties

PLASTERERS

o Nozzleman	23.41	5.86
o Swinging scaffold	22.41	5.86
o all other work	21.91	5.86

EGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

\DE	BASIC HOURLY RATE	FRINGE BENEFITS
MBERS & STEAMFITTERS/PIPEFITTERS		
1 (Both)	22.19	6.67

Zone Differential for Area 1 Plumbers & Steamfitters/Pipefitters

(Add to Zone 1 Rate)

Zone 2	$ 1.20 per hour
Zone 3	$ 1.70 per hour
Zone 4	$ 2.50 per hour
Zone 5	$ 3.55 per hour
Zone 6	$30.32 per day

1: Projects within 15 miles of City Hall in the Cities listed below.
2: More than 15 but less than 30
3 More than 30 but less than 40
4 More than 40 but less than 50
5 More than 50 but less than 100
6 More than 100 miles

ith distances in Zone 6, 100 miles and beyond, there shall minimum of one hundred fifty-one dollars and sixty cents 51.60) per week or thirty dollars and thirty-two cents 0.32) per day worked.

erence Cities

se, Idaho
In Falls, Idaho

2 (Both)	27.30	9.05
3 (Both)	26.15	8.25

Area 1	Area 2	Area 3
Baker	Grant (b)	All remaining
Harney (a)	Morrow	counties
Malheur	Umatilla	
	Wallowa	
	Union	

Except Northwest Portion
Except Southwest Corner

VER EQUIPMENT OPERATORS

e 1 (Base Rate):		
o Group 1	22.96	7.15
o Group 2	22.55	7.15
o Group 3	21.85	7.15
o Group 4	21.38	7.15
o Group 5	20.82	7.15
o Group 6	19.13	7.15

POWER EQUIPMENT OPERATORS (Continued)

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Hazardous Waste Site. For further information on this, call the Prevailing Wage Rate Coordinator at 731-4074.

ZONE RATES
(Add to Zone 1 Rate)

Zone 2	1.50
Zone 3	3.00

ZONE DESCRIPTIONS

Portland to Salem Metropolitan Area

Zone 1:
Projects within the boundary of a region described as follows: Those portions of Multnomah, Clackamas, and Marion Counties which are West of the western boundary of Mt. Hood National Forest and West of Mile Post 30 on Interstate 84 and West of Mile Post 30 on State Highway 26 and West of Mile Post 30 on Highway 22. Also those portions of Washington County East of Highway 47, and of Yamhill County East of Highway 47 and Hwy. 99W.

Zone 2:
Projects outside of any Zone 1, but less than 50 miles from the Portland city hall.

Zone 3:
Projects outside of any Zone 1 or 2, and more than 50 miles from the Portland city hall.

Albany, Eugene, Roseburg, Grants Pass, Medford

Zone 1:
Projects within 30 miles of the City Hall of the above cities.

Zone 2:
Projects outside of any Zone 1 and more than 30 miles but less than 50 miles from the city hall.

Zone 3:
Projects outside of any Zone 1 or 2, and more than 50 miles from the city hall.

Longview, Coos Bay, Klamath Falls, Bend

Zone 1:
Projects within 20 miles of the City Hall of the above cities.

Zone 2:
Projects outside of any Zone 1, and more than 20 but less than 40 miles from the city hall.

Zone 3:
Projects outside of any Zone 1 or 2, and more than 40 miles from the city hall.

OREGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

POWER EQUIPMENT OPERATORS (Continued)

Astoria, The Dalles, Pendleton, LaGrande, Baker, Ontario, McMinnville

Zone 1 :
Projects within 5 miles of the city hall of the above cities.
Zone 2:
No Zone 2 for these cities.
Zone 3:
Projects outside of any Zone 1 or 2, and more than 5 miles from the city hall.

ASPHALT

6 Plant Oiler
6 Plant Fireman
6 Pugmill Operator (any type)
6 Truck mounted asphalt spreader, with screed
4 Screed Operator
6 Extrusion Machine Operator
2 Asphalt Plant Operator (any type)
4 Asphalt Paver Operator
6 Roller Operator (any asphalt mix)
4 Diesel-Electric Engineer, Plant
5 Asphalt Burner and Reconditioner Operator anytype),84
4 Roto-Mill, pavement profiler operator, under 6 foot lateral cut
5 Roto-Mill, pavement profiler, ground man
2 Roto-Mill, pavement profiler operator, 6 foot lateral cut and over

BLADE

6 Blade Operator, pulled type
4 Blade Operator
4 Blade Operator, Finish
4 Blade Operator, externally controlled by electronic, mechanical hydraulic means
4 Blade Operator, multi-engine
2 Auto Grader or "Trimmer" Operator

BULLDOZERS

4 Bulldozer Operator
4 Drill Cat Operator
4 Side-Boom Operator
2 Tandem bulldozer operator (quadnine and similar type, D-11)
4 Bulldozer Operator, twin engine (TC 12 and similar type, D-10)
4 Cable-Plow Operator (any type)

CLEARING

4 Log Skidder Operator
4 Chipper Operator
4 Incinerator Operator
4 Stump Splitter Operator
4 Faller/Buncher Operator

POWER EQUIPMENT OPERATORS (Continued)

COMPRESSORS

6 Compressor Operator (any power), under 1,250 cu. ft.total capacity
5 Compressor Operator (any power), over 1,250 cu. ft. capacity)

COMPACTORS - Self-Propelled

5 Compactor Operator, including vibratory
5 Wagner Patcor Operator or similar type (without blade)
4 Compactor Operator, with blade
4 Compactor Operator, multi-engine

CONCRETE

6 Plant Oiler
6 Assistant Conveyor Operator
6 Conveyor Operator
6 Mixer Box Operator (C.T.B., dry batch, etc.)
6 Cement Hog Operator
6 Concrete Saw Operator
6 Concrete Curing Machine Operator (riding type)
6 Wire Mat or Brooming Machine Operator
5 Combination Mixer and Compressor Operator, gunite work
5 Concrete Batch Plant Quality Control Operator
5 Beltcrete Operator
5 Pumpcrete Operator (any type)
5 Pavement Grinder and/or Grooving Machine Operator (riding type)
4 Mixer Mobile Operator
5 Cement Pump Operator, Fuller-Kenyon and similar
5 Concrete Pump Operator
5 Grouting Machine Operator
4 Screed Operator
4 Concrete Cooling Machine Operator
5 Concrete Mixer Operator, single drum, any capacity
2 Batch Plant and/or Wet Mix Operator, 1 and 2 drum
1 Batch Plant and/or Wet Mix Operator, 3 units or more
5 Cast in place pipe laying machine
5 Maginnis Internal Full Slab Vibrator Operator
5 Concrete Finishing Machine Operator, Clary, Johnson, Bidwell, Burgess bridge deck or similar type
5 Curb Machine Operator, Mechanical Berm, Curb and/or Curb and Gutter
5 Concrete Joint Machine Operator
5 Concrete Planer Operator
5 Tower Mobile Operator
5 Power Jumbo Operator setting slip forms etc., in tunnels
5 Slip Form Pumps, power driven hydraulic lifting device for concrete forms
5 Concrete Paving Machine Operator
5 Concrete Finishing Machine Operator
5 Concrete Spreader Operator
4 Concrete Paving Road Mixer
2 Automatic Concrete Slip Form Paver Operator

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

OWER EQUIPMENT OPERATORS (Continued)

ONCRETE (Continued)

Concrete Canal Line Operator
Concrete Breaker
Reinforced Tank Banding Machine (K-17 or similar types)
Concrete Profiler, Diamond Head

RANE

Oiler
Truck Crane Oiler-Driver, 25 ton capacity or over
Fireman, all equipment
A-Frame Truck Operator, single drum
Tugger or Coffin Type Hoist Operator
Helicopter Hoist Operator
Hoist Operator, single drum
Elevator Operator
A-Frame Truck Operator, double drum
Boom Truck Operator
Chicago Boom and similar types
Lift Slab Machine Operator
Boom Type lifting device, 5 ton capacity or less
Cherry Picker or similar type crane-hoist, 5 ton capacity or less
Hoist Operator, two drum
Hoist Operator, three or more drums
Derrick Operator, under 100 ton
Hoist Operator, stiff leg, guy derrick or similar type, 50 ton and over
Cableway Operator, up to 25 tons
Bridge Crane Operator, Locomotive, Gantry, Overhead
Cableway Operator, 25 tons and over
Helicopter Operators, when used in erecting work

HYDRAULIC CRANE OPERATOR
Hydraulic Boom Truck Operator, Pittman
Hydro Crane Operator, under 50 tons
Hydro Crane Operator, 50 tons through 89 tons
Hydro Crane Operator, 90 tons through 199 tons
Hydro Crane Operator, 200 tons and over

TOWER/WHIRLEY OPERATOR
Tower Crane Operator
Whirley Operator, under 90 tons
Whirley Operator, 90 tons and over

LATTICE BOOM CRANE OPERATOR
Lattice Boom Crane Operator, under 50 tons
Lattice Boom Crane Operator, 50 tons through 89 tons, and less than 150 ft boom
Lattice Boom Crane Operator, 90 tons through 199 tons, and/or 150 ft -200 ft boom
Lattice Boom Crane (Operator, 200 tons and over, and/or over 200 ft boom

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

POWER EQUIPMENT OPERATORS (Continued)

CRUSHER

6 Crusher Oiler
6 Crusher Feederman
4 Generator Operator
4 Diesel-Electric Engineer
4 Grizzley Operator
2 Crusher Plant Operator

DRILLING

6 Drill Assistant
6 Auger Oiler
5 Churn Drill and Earth Boring Machine Operator
4 Drill Doctor
4 Boring Machine Operator
4 Driller - Percussion, Diamond, Core, Cable, Rotary and similar type
4 Cat Drill (John Henry)

FLOATING EQUIPMENT

6 Deckhand
6 Boatman
5 Fireman
4 Diesel-Electric Engineer
4 Jack Operator, elevating barges
4 Barge Operator, self-unloading
4 Piledriver Operator (not crane type)
4 Floating Clamshell, etc. Operator, under 3 cu. yd.(only for construction projects - otherwise see Dredging)
4 Floating Crane (derrick barge) Operator, less than 30 tons
2 Floating Clamshell, etc. Operator, 3 cu. yd. and over (only for construction projects - otherwise see Dredging)
2 Floating Crane (derrick barge) Operator, 30 tons but less than 150 tons
1 Floating Crane, 150 tons and over

FORK LIFT

6 Self-Propelled Scaffolding Operator (excluding working platform)
6 Fork Lift or Lumber Stacker Operator
6 Ross Carrier Operator
5 Lull Hi-Lift Operator or similar type
5 Fork Lift, over 5 tons
3 Rock Hound Operator

GENERATORS

4 Generator Operator
4 Diesel-Electric Engineer

GUARDRAIL EQUIPMENT

6 Oiler
6 Auger Oiler
6 Oiler, combination guardrail machines
4 Guardrail Punch Operator (all types)

OREGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

POWER EQUIPMENT OPERATORS (Continued)

GUARDRAIL EQUIPMENT (Continued)

6	Guardrail Punch Oiler	
4	Guardrail Auger Operator (all types)	
4	Combination Guardrail machines. i.e. punch, auger etc.	

HAZARDOUS WASTE REMOVAL

5	Assistant to the Engineer (Oiler)	
4	Assistant Incinerator Control Board Operator	
3	Incinerator Control Board Operator	

HEATING PLANT

6	Temporary Heating Plant Operator	
4	Surface Heater and Planer Operator	

HYDRAULIC HOES

5	Hydraulic Backhoe Operator, wheel type 3/8 cu. yd. and under with or without front end attachments 2-1/2 cu. yd. and under (Ford, John Deere, Case type)	
4	Hydraulic Backhoe Operator, Track Type 3/8 cu.yd. (Note: Over 3/8 cu. yd. takes Shovel Classification rate)	

LOADERS

6	Bobcat, Skid Steer (under 1 cubic yard)	
6	Bucket Elevator Loader Operator, Barber-Greene and similar types	
5	Loaders, rubber-tired type, 2-1/2 cu. yd. and under	
5	Elevating Grader Operator, Tractor Towed requiring Operator or Grader	
4	Belt Loader Operator, Kolman and Ko Cal types	
4	Loader Operator, front end and overhead, 2-1/2 cu. yd. and under 4 cu. yd.	
4	Elevating Loader Operator, Athey and similar types	
4	Elevating Grader Operator, Sierra, Euclid or similar types	
3	Loader Operator, 4 cu. yd. but less that 6 cu. yd.	
2	Loader Operator, 6 cu. yd. and over	

OILERS

6	Oiler	
6	Guardrail Punch Oiler	
6	Truck Crane Oiler-Driver, 25 ton or over	
6	Auger Oiler	
6	Grade Oiler, required to check grade	
5	Service Oiler (Greaser)	
6	Grade Checker	

PILEDRIVERS

Use Crane rates when driving or pulling piling)

4	Hammer Operator	
4	Piledriver Operator (not crane type)	

POWER EQUIPMENT OPERATORS (Continued)

PIPE LINE - Sewer Water

6	Tar Pot Fireman	
6	Tar Pot Fireman (power agitated)	
6	Hydraulic Pipe Press Operator	
5	Hydra Hammer or similar types	
5	Pavement Breaker Operator	
4	Pipe Cleaning Machine Operator	
4	Pipe Doping Machine Operator	
4	Pipe Bending Machine Operator	
4	Pipe Wrapping Machine Operator	
4	Boring Machine Operator	
4	Back Filling Machine Operator	

PUMPS

6	Pump Operator, any power	
6	Hydrostatic Pump Operator	
5	Pump Operator, more than 5 (any size)	
5	Pot Rammer Operator	

RAILROAD EQUIPMENT

6	Brakeman	
6	Oiler	
6	Switchman	
6	Motorman	
6	Ballast Jack Tamper Operator	
5	Locomotive Operator	
5	Ballast Regulator Operator	
5	Ballast Tamper Multi-Purpose Operator	
5	Track Liner Operator	
5	Tie Spacer Operator	
5	Shuttle Car Operator	

REMOTE CONTROL

2	Remote controlled earth-moving equipment	

REPAIRMEN, Heavy Duty

6	Parts Man (Tool Room)	
6	H.D. Repairman Assistant	
6	Welder's Assistant	
4	Diesel-Electric Engineer (Plant or Floating)	
4	Bolt Threading Machine Operator	
4	Drill Doctor (Bit Grinder)	
4	H.D. Mechanic	
4	H.D. Welder	
4	Machine Tool Operator	
4	Combination H.D. Mechanic-Welder, when dispatched and/or when required to do both	
4	Welder - Certified, when dispatched and/or required	

OREGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

POWER EQUIPMENT OPERATORS (Continued)

RUBBER-TIRED SCRAPERS

4 Rubber-tired Scraper Operator, single engine, single scraper
4 Self-loading, paddle wheel, auger type under 15 cu. yd.
4 Rubber-tired Scraper Operator, twin engine
4 Rubber-tired Scraper Operator, with push-pull attachments
3 Rubber-tired Scraper Operator, with tandem scraper
2 Rubber-tired Scraper Operator, with tandem scrapers, multi -engine
4 Self-loading, paddle wheel, auger type 15 cu. yd. and over, single engine
3 Self-loading, paddle wheel, auger type, finish and/or 2 or more units

SHOVEL, DRAGLINE, CLAMSHELL, BACKHOE, SKOOPER, ETC., OPERATOR

6 Oiler
6 Grade Oiler (required to check grade)
6 Grade Checker
6 Fireman
4 Diesel-Electric Engineer
4 Stationary Drag Scraper Operator
4 Shovel, Dragline, Clamshell, Hoe etc., Operator under 3 cu. yd.
4 Grade-all Operator
2 Shovel, Dragline, Clamshell, Hoe etc., Operator 3 cu. yd. and over

SIGNALMAN

6 Bell Boy, phones, etc., Operator
6 Helicopter Radioman (ground)

SURFACING (BASE) MATERIAL

6 Roller Operator, grading of base rock (not asphalt)
5 Roller Operator, Oiling, C.T.B.
6 Tamping Machine Operator, mechanical, self-propelled
6 Hydrographic Seeder Machine Operator, straw, pulp or seed
5 Rock Spreaders, self-propelled
5 Pulva-mixer or similar types
4 Blade Mounted Spreaders, Ulrich and similar types
5 Chip Spreading Machine Operator
5 Lime Spreading Operator

SWEEPERS

6 Broom Operator, self-propelled
5 Sweeper Operator (Wayne type) self-propelled

POWER EQUIPMENT OPERATORS (Continued)

TRACTOR - RUBBER TIRED

5 Tractor Operator, rubber-tired, 50 H.P. Flywheel and under
4 Tractor Operator, rubber -tired, over 50 H.P. Flywheel
4 Tractor Operator, with boom attachment
4 Rubber-tired Dozers and Pushers (Michigan, Cat, Hough type)

TRENCHING MACHINE

6 Oiler
6 Grade Oiler (required to check grade)
5 Trenching Machine Operator, maximum digging capacity 3 ft. depth
4 Trenching Machine Operator, maximum digging capacity over 3 ft. depth
4 Back Filling Machine Operator
2 Wheel Excavator
2 Canal Trimmer
2 Band Wagon (in conjunction with wheel excavator)

TUNNEL

4 Mucking Machine Operator
6 Conveyor Operator (any type)
4 Shield Operator
6 Air Filtration Equipment Operator
6 Dinkey Operator
6 Oiler
4 Tunnel Boring Machine Operator

WELDING MACHINES

6 Welding Machine Operator

UNDERWATER EQUIPMENT

2 Underwater Equipment Operator, remote or otherwise, when used in construction work

ROOFERS

(Installation and removal of sheetmetal roofing is done by sheetmetal workers.)

Area 1:		
o Roofers	19.75	5.55
o Handling coal tar pitch	21.73	5.55
Area 2:		
o Roofers	17.64	5.78
(Add $2.00 per hour to Fringe for work with irritable Bituminous material.)		

REGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
ROOFERS (Continued)		
Area 3:		
o Roofers	14.85	4.07
(Add $1.50 per hour to Fringe for work with irritable Bituminous material.)		
Area 4:		
o Roofers	16.00	6.05
(Add $2.00 per hour to Fringe for work with irritable Bituminous material.)		
Area 5:		
o Roofers	16.92	5.60
(Add $3.00 per hour to Fringe for work with irritable Bituminous material.)		

Area 1	Area 1(cont)	Area 2	Area2(cont)
Baker	Multnomah	Benton	Klamath
Clackamas	Sherman	Coos	Lake
Clatsop	Tillamook	Crook	Lane
Columbia	Wasco	Curry	Lincoln
Jefferson	Washington	Deschutes	Linn
Gilliam	Wheeler	Douglas	Marion
Grant		Harney	Polk
Hood River		Jackson	Yamhill
		Josephine	

Area 3	Area 4	Area 5
Malheur	Umatilla	Morrow
	Union	
	Wallowa	

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
SHEETMETAL WORKERS		
Area 1	22.28	8.49
(Add $1.00 to base rate for work performed on any swinging platform, swinging chair, or swinging ladder) (Add $1.00 to base rate for work with lead or installing material in a plant that uses lead in any form to manufacture a product, (excluding soldering)). (Add $1.00 to base rate for work performed in a confined space as defined by OSHA.)		
Area 2	19.66	6.15
(Add $1.75 to base rate for work performed whenever it is possible for worker to fall 30 feet or more) (Add $1.75 to base rate for work performed in an area where epoxy resins or other injurious chemicals are being applied)		
SHEETMETAL WORKERS (Continued)		
Area 3	23.43	7.25
(Add $1.00 to base rate for work where it is necessary to wear a chemically activated face mask) (Add $1.00 to base rate for work where employees required to wear a fresh air mask due to nuclear related work) (Add $.45 to base rate for work on a swinging stage, swinging scaffold or bosun chair in excess of 30 feet above the ground)		
Area 4	19.92	5.65
Area 5	19.80	5.77

Area 1

Benton	Gilliam	Linn	Tillamook
Clackamas	Grant	Marion	Wasco
Clatsop	Harney	Multnomah	Washington
Columbia	Hood River	Polk	Wheeler
Crook	Jefferson	Sherman	Yamhill
Deschutes	Lincoln		

Area 2	Area 3	Area 4	Area 5
Baker	Morrow	Douglas	Coos
Malheur	Umatilla	Jackson	Curry
	Union	Josephine	
	Wallowa	Klamath	
		Lake	
		Lane	

SOFT FLOOR LAYERS	19.70	5.25 + a
a) plus 4% of basic hourly rate for employees with less than one year of service, 6% for those with more than one year.		
SPRINKLER FITTERS	21.40	6.28
TENDERS TO MASON TRADES	20.39	6.00
o Tenders to Bricklayers and Stone Masons. Mortar Mixers: (Add $0.50 to base rate for refractory work) (Add to base rate an amount equal to that received for safety belt requirements or other unusual job conditions by the mechanic this worker is tending)		

OREGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
TENDERS TO PLASTERERS	19.09	6.00
TILE SETTER/ TERRAZZO WORKER	22.18	5.80

THIS TRADE IS TENDED BY "TILE, TERRAZZO, BRICK & MARBLE FINISHERS"

(Add $.50 to base rate if safety belt required by State safety regulations.)
(Add $1.00 to base rate if work involves epoxy,furnane, alkor acetylene black grouting or waterproof membrane.)

TILE, TERRAZZO, BRICK & MARBLE FINISHERS	16.77	4.27

- Assists Tile Setters, Brick Layers, Marble Masons, and Terrazzo Workers by striking, sawing, cleaning, washing or grouting. Does not lay or set any material.
(Add $.50 to base rate if safety belt required by State safety regulations.)
(Add $1.00 to base rate if work involves epoxy, furnane, alkor acetylene black grouting or waterproof membrane.)
(Add $0.75 to fringe for refractory repair work.)

TRUCK DRIVERS

Zone 1 (Base Rate):

o Group 1	20.32	7.60
o Group 2	20.44	7.60
o Group 3	20.57	7.60
o Group 4	20.82	7.60
o Group 5	21.04	7.60
o Group 6	21.19	7.60
o Group 7	21.39	7.60

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Hazardous Waste Site. For further information on this, call the Prevailing Wage Rate Coordinator at 731-4074.

Zone Differential for Truck Drivers
(Add to Zone 1 Rate)

Zone 2	.65
Zone 3	1.15
Zone 4	1.70
Zone 5	2.75

Zone 1: Projects within 30 miles of City Hall in the Cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 80 miles.
Zone 5: More than 80 miles.

TRUCK DRIVERS (Continued)

Reference Cities

Albany	Eugene	Longview	Portland
Astoria	Goldendale	Madras	Port Orford
Baker	Grants Pass	Medford	Reedsport
Bend	Hermiston	McMinnville	Roseburg
Brookings	Hood River	Newport	Salem
Burns	Klamath Falls	Oregon City	The Dalles
Coos Bay	LaGrande	Ontario	Tillamook
Corvallis	Lakeview	Pendleton	

Work	Group
A-Frame or Hydra-lift Truck w/load bearing surface	1
Battery Rebuilder	1
Bus or Man-Haul Driver	1
Concrete Buggies (Power operated) Drivers and Helpers handling sacked concrete—add 15¢ per hour	1
Dump Trucks, Side, End and Bottom Dumps, including Semi-Trucks and trains or combinations thereof:	
Up to and inc. 10 cu. yds	1
Over 10 cu. yds. and inc. 30 cu. yds	3
Over 30 cu. yds. and inc. 50 cu. yds	4
Over 50 cu. yds. and inc. 60 cu. yds	5
Over 60 cu. yds. and inc. 80 cu. yds	6
Over 80 cu. yds. and inc. 100 cu. yds	7
Dumpsters or Similar Equipment—all sizes	2
Flaherty Spreader Driver or Leverman	2
Lift Jitneys, Fork Lifts—all sizes—used in loading, unloading & transporting material on job site	1
Loader and/or Leverman on Concrete Dry Batch Plant, manually operated	1
Low Bed Equipment, Flat Bed Semi-Truck and Trailer or Doubles transporting equipment or wet or dry materials	2
Lubrication Man, Fuel Truck Driver, Driver, Tireman, Wash Rack, Steam Cleaner or combination	1
Lumber Carrier, Driver-Straddle Carrier—used in loading, unloading and transportation of material on job site	2
Oil Distributor Driver or Leverman	2
Pilot Car	1
Slurry Truck Driver or Leverman	1
Solo Flat Bed and Misc. Body Truck, 0-10 tons	1

TRUCK DRIVERS (Continued)

Work	Group
Transit Mix and Wet or Dry Mix Trucks:	
5 cu. yds. and under	1
Over 5 cu. yds. and inc. 7 cu. yds	2
Over 7 cu. yds. and inc. 11 cu. yds	3
Over 11 cu. yds. and inc. 15 cu. yds	4
Team Drivers	1
Tireman, full-time basis	1
Truck Assistant	1
Truck Mechanic—Welder—Body Repairman	3
Truck Mechanic Assistant	1
Water Wagons (Rated Capacity) up to:	
3000 gallons	1
3000 to 5000 gallons	2
5000 to 10,000 gallons	3
10,000 to 15,000 gallons	4
Winch Truck—takes classification of truck on which winch is mounted	

WELDERS: RIGGERS

Receive rate for craft performing operation to which welding and rigging are incidental.

THE INFORMATION ON THE FOLLOWING PAGES (27-31) IS TO BE USED FOR PUBLIC WORKS PROJECTS IN THE COUNTIES OF COOS, CURRY, DOUGLAS AND JOSEPHINE ONLY. INCLUDED IS INFORMATION TO ASSIST THE CONTRACTOR WITH CORRECT RATE APPLICATION.

When determining which rate is applicable for projects in Coos, Curry, Douglas or Josephine Counties, it is necessary to determine whether the project is "non-residential," "heavy," or "highway" construction. If more than one of the categories make up 20% or more of the total project cost, separate wage determinations must be used for each of the different types of construction. Conversely, if any of the construction categories makes up over 80% of the total cost of the project, that category will define the appropriate wage determination to be applied to the entire project.

NON-RESIDENTIAL BUILDING CONSTRUCTION

Alterations and additions to non-residential bldgs.
Apartment buildings (5 stories or over)
Arenas (enclosed)
Auditoriums
Automobile parking garages
Banks and financial buildings
Barracks
Churches
City halls
Civic centers
Commercial Buildings
Courthouses
Detention facilities
Dormitories
Farm buildings
Fire stations
Hospitals
Hotels
Industrial buildings
Institutional buildings
Mausoleums
Motels
Nursing & convalescent facilities
Office buildings
Out-patient clinics
Passenger & freight terminal
Post office
Power Plants
Prefabricated buildings
Remodeling buildings
Renovating buildings
Repairing buildings
Restaurants
Schools
Service stations
Shopping centers
Stores
Subway stations
Theaters
Warehouses
Water & Sewage treatment plant (buildings only)

HEAVY CONSTRUCTION

Antenna towers
Bridges (major bridges designed for commercial navigation)
Breakwaters
Caissons (other than building or highway)
Canals
Channels
Channel cut-offs
Chemical complexes or facilities (other than bldgs.)
Cofferdams
Coke ovens
Dams
Dikes
Docks
Drainage projects
Dredging projects
Electrification projects (outdoor)
Flood control projects
Industrial incinerators
Irrigation projects
Jetties
Kilns
Land drainage (not incidental to other construction)
Land reclamation
Levees
Locks, waterways
Oil refineries
Pipe lines
Ponds
Pumping stations (prefabricated drop-in units)
Railroad construction
Reservoirs
Revetments
Sewage collection and disposal lines
Sewers (sanitary, storm, etc.)
Shoreline maintenance
Storage tanks
Swimming pools (outdoor)
Subways
Tipples
Tunnels
Unsheltered piers and wharves
Viaducts (other than highway)
Water mains
Waterway construction
Water supply lines (not incidental to building)
Water and sewage treatment plants (other than buildings)
Wells

HIGHWAY CONSTRUCTION

Alleys
Airport runways
Bituminous treatments
Bridle paths
Concrete pavement
Curbs
Excavation & embankment (for road construction)
Fencing (highway)
Grade crossing elimination (overpass or underpass)
Guardrails on highway
Highway signs
Highway bridges (overpasses, underpasses, grade separation)
Medians
Parking lots
Parkways
Resurfacing streets and highways
Roadbeds
Roadways
Shoulders
Sidewalks
Stabilizing courses
Storm sewer(incidental to road construction)
Street paving
Surface courses
Taxiways
Trails

AD	BASIC HOURLY RATE	FRINGE BENEFITS

BESTOS WORKERS
tall ion of insulation on mechanical
stems for Thermal and Acoustical purposes, also the tallation of fire stop penetrations on Electrical and ch ical Systems.

urneyman Asbestos Worker	23.98	6.38

mo al of regulated material
mechanical systems* which
not going to be scrapped.**

H zardous Materials Handler Mechanic	13.75	3.50

M chanical systems include pipes, boilers, ducts, flues breaching, grease ducts and acid ducts. This also includes all labor connected with the h dling and distribution of materials for these s tems.

The removal of all regulated materials from m chanical systems is exclusively the work of Hazardous Materials Handlers, unless the mechanical systems are going to be scrapped. L borers do all removal of regulated materials on m chanical systems to be scrapped and any non mechanical(walls,ceilings,floors,beams etc.) in ulation. They also do loading of any regulated m terial after it has been removed, bagged and tagged, as well as cleanup at the removal site and all work done at the disposal site. Persons p rforming the removal of regulated materials a classified as Group 3 Laborers.

*OTE: Regulated materials are those materials that are regulated for the purpose of protecting the environment or for personal protection by either E.P.A., O.S.H.A., DEQ or Federal O.S.H.A.

OILERMAKERS	24.07	9.31
RIC LAYERS/STONEMASONS	22.12	5.88

IS TRADE IS TENDED BY "TENDERS TO MASONS" -PG. 30

AR ENTERS	13.20	3.67
EMENT MASONS	10.00	0.00

RY ALL/WETWALL

ywall (Accoustical and ywall Applicator)	20.58	8.02
Wetwall (Lather)	19.56	9.04

ELECTRICIANS
Coos, Curry, Douglas (western portion)

o Electricians	23.30	8.45

Josephine, Douglas (eastern portion)

o Electricians	23.05	7.44
o Cable Splicers	23.05	7.44

ELEVATOR CONSTRUCTORS

o Mechanic	28.27	6.89 + a
o Helper	19.79	6.67 + a
o Probationary Helper	14.14	.38

a) Plus 8% of basic hourly rate for employees with more than 5 years of service; 6% of basic hourly rate for 6 months to 5 years of service.

GLAZIERS	22.87	4.94

(Add $1.00 to base rate if safety belt is required by State safety regulations)
(Add $4.00 to base rate for work done from a non-motorized single-man bosun chair)

INSULATORS (BAT AND BLOWN)	7.85	0.00
IRONWORKERS	21.50	9.92

o Structural, Reinforcing, Ornamental, Riggers, Fence Erectors, Signal Men

LABORERS	9.10	4.65
LIMITED ENERGY ELECTRICIANS	16.79	4.25

May only be used for electrical work not exceeding 100 va in Class II and III installations (as defined in Article 725 of the National Electrical Code):

PAINTERS	13.00	0.00

PLASTERERS

o Nozzleman	23.41	5.86
o Swinging scaffold	22.41	5.86
o all other work	21.91	5.86

OREGON DETERMINATION 97-04 CONSTRUCTION TYPE: NON-RESIDENTIAL BUILDING - COOS, CURRY, DOUGLAS AND JOSEPHINE COUNTIES ONLY

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
PLUMBERS & STEAMFITTERS/PIPEFITTERS	26.15	8.25
POWER EQUIPMENT OPERATORS		
Backhoes	12.94	1.56
Bulldozers	13.50	1.56
Loader	13.50	1.56
ROOFERS	8.00	0.00
SHEETMETAL WORKERS		
Coos, Curry	19.80	5.77
Douglas, Josephine	19.92	5.65
SOFT FLOOR LAYERS	19.70	5.25 +a

a) plus 4% of basic hourly rate for employees with less than one year of service, 6% for those with more than one year.

SPRINKLER FITTERS	21.40	6.28
TENDERS TO MASON TRADES	20.39	6.00

o Tenders for Bricklayers and Stone Masons. Mortar Mixers.
(Add $0.50 to base rate for refractory work)
(Add to base rate an amount equal to that received for safety belt requirements or other unusual job conditions by the mechanic this worker is tending)

TENDERS TO PLASTERERS	19.09	6.00
TILE SETTER/ TERRAZZO WORKER	22.18	5.80

THIS TRADE IS TENDED BY "TILE, TERRAZZO, BRICK & MARBLE FINISHERS"

(Add $.50 to base rate if safety belt required by State safety regulations.
(Add $1.00 to base rate if work involves epoxy,furnane, alkor acetylene black grouting or waterproof membrane.)

TILE, TERRAZZO, BRICK & MARBLE FINISHERS	16.77	4.27

o Assists Tile Setters, BrickLayers,Marble Masons, and Terrazzo Workers by striking, sawing, cleaning, washing or grouting. Does not lay or set any material.
(Add $.50 to base rate if safety belt required by State safety regulations.
(Add $1.00 to base rate if work involves epoxy, furnane, alkor acetylene black grouting or waterproof membrane.)
(Add $0.75 to fringe for refractory repair work.)

TRUCK DRIVERS

Zone 1 (Base Rate):

o Group 1	20.32	7.60
o Group 2	20.44	7.60
o Group 3	20.57	7.60
o Group 4	20.82	7.60
o Group 5	21.04	7.60
o Group 6	21.19	7.60
o Group 7	21.39	7.60

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Hazardous Waste Site. For further information on this, call the Prevailing Wage Rate Coordinator at 731-4466

Zone Differential for Truck Drivers (Add to Zone 1 Rate)

Zone 2	.65
Zone 3	1.15
Zone 4	1.70
Zone 5	2.75

Zone 1: Projects within 30 miles of City Hall in the Cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 80 miles.
Zone 5: More than 80 miles.

Reference Cities

Albany	Eugene	Longview	Portland
Astoria	Goldendale	Madras	Port Orford
Baker	Grants Pass	Medford	Reedsport
Bend	Hermiston	McMinnville	Roseburg
Brookings	Hood River	Newport	Salem
Burns	Klamath Falls	Oregon City	The Dalles
Coos Bay	LaGrande	Ontario	Tillamook
Corvallis	Lakeview	Pendleton	

TRUCK DRIVERS (Continued)

Work	Group
A-Frame or Hydra-lift Truck w/load bearing surface	1
Battery Rebuilder	1
Bus or Man-Haul Driver	1
Concrete Buggies (Power operated)	1
Drivers and Helpers handling sacked cement—add 15¢ per hour	
Dump Trucks, Side, End and Bottom Dumps, including Semi-Trucks and trains or combinations thereof:	
Up to and inc. 10 cu. yds	1
Over 10 cu. yds. and inc. 30 cu. yds	3
Over 30 cu. yds. and inc. 50 cu. yds	4
Over 50 cu. yds. and inc. 60 cu. yds	5
Over 60 cu. yds. and inc. 80 cu. yds	6
Over 80 cu. yds. and inc. 100 cu. yds	7
Dumpsters or Similar Equipment all sizes	2
Flaherty Spreader Driver or Leverman	2
Fork Jitneys, Fork Lifts—all sizes—used in loading, unloading & transporting material on job site	1
Loader and/or Leverman on Concrete Dry Batch Plant, manually operated	1
Low Bed Equipment, Flat Bed Semi-Truck and Trailer or Doubles transporting equipment or wet or dry materials	2
Lubrication Man, Fuel Truck Driver, Driver, Tireman, Wash Rack, Steam Cleaner or combination	1
Lumber Carrier, Driver-Straddle Carrier—used in loading, unloading and transportation of material on job site	2
Oil Distributor Driver or Leverman	2
Pilot Car	1
Slurry Truck Driver or Leverman	1
Solo Flat Bed and Misc. Body Truck, 0-10 ton	1

TRUCK DRIVERS (Continued)

Work	Group
Transit Mix and Wet or Dry Mix Trucks:	
5 cu. yds. and under	1
Over 5 cu. yds. and inc. 7 cu. yds	2
Over 7 cu. yds. and inc. 11 cu. yds	3
Over 11 cu. yds. and inc. 15 cu. yds	4
Team Drivers	1
Tireman, full-time basis	1
Truck Assistant	1
Truck Mechanic-Welder-Body Repairman	3
Truck Mechanic Assistant.	1
Water Wagons (Rated Capacity) up to:	
3000 gallons	1
3000 to 5000 gallons	2
5000 to 10,000 gallons	3
10,000 to 15,000 gallons	4
Winch Truck—takes classification of truck on which winch is mounted	

WELDERS; RIGGERS

Receive rate for craft performing operation to which welding and rigging are incidental.

OREGON DETERMINATION 97-03/04 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE.
AMENDMENT EFFECTIVE JULY 1, 1997 NON-RESIDENTIAL BLDG. INCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
BRICKLAYERS/STONEMASONS		
Area 2	22.62	6.38
MARBLE SETTERS		
Area 2	23.62	6.38
ROOFERS		
Area 4	17.00	6.05
Area 5	17.60	5.60

OREGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE. HIGHWAY-ENTIRE STATE.
AMENDMENT EFFECTIVE OCTOBER 1, 1997 NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

ELECTRICIANS

Area 1

o	Electricians	20.87	5.84
o	Cable Splicers	22.96	5.93

LINE CONSTRUCTION

Area 2

o	Cable Splicers	24.81	5.85
o	Journeyman Lineman	22.50	5.76
o	Line Equip. Mech. (Right-of-way)	19.08	5.61
o	Line Equip. Oper.	19.08	5.61
o	Groundman	13.96	5.39

PLUMBERS & STEAMFITTER/PIPEFITTERS

Area 3 (Both)**	26.15	8.10

**The above rate for Plumbers & Steamfitter/Pipefitters is also in effect for "NON-RESIDENTIAL BUILDING" in Coos, Curry, Douglas and Josephine Counties.

ROOFERS

Area 1

o	Roofers	19.75	5.30
o	- Handling coal tar pitch	21.73	5.30

SOFT FLOOR LAYERS**	19.85	5.30 + a

**The above rate for Soft Floor Layers is also in effect for "NON-RESIDENTIAL BUILDING" in Coos, Curry, Douglas and Josephine Counties.

POWER EQUIPMENT OPERATORS

ZONE PAY CHANGES ONLY:

FOR THE FOLLOWING METROPOLITAN COUNTIES:

MULTNOMAH; CLACKAMAS; MARION; YAMHILL; WASHINGTON AND COLUMBIA:

(A) ALL JOBS OR PROJECTS LOCATED IN MULTNOMAH, CLACKAMAS AND MARION COUNTIES, WEST OF THE WESTERN BOUNDARY OF MT HOOD NATIONAL FOREST AND WEST OF MILE POST 30 ON INTERSTATE 84 AND WEST OF MILE POST 30 ON STATE HWY 26 AND WEST OF MILE POST 30 ON HWY 22 AND ALL JOBS LOCATED IN YAMHILL COUNTY, WASHINGTON AND COLUMBIA COUNTY SHALL RECEIVE ZONE 1 PAY FOR ALL CLASSIFICATIONS.

(B) ALL JOBS OR PROJECTS LOCATED IN THE AREA OUTSIDE THE IDENTIFIED BOUNDARY ABOVE, BUT LESS THAN 50 MILES FROM THE PORTLAND CITY HALL SHALL RECEIVE ZONE 2 PAY FOR ALL CLASSIFICATIONS.

(C) ALL JOBS OR PROJECTS LOCATED MORE THAN 50 MILES FROM THE PORTLAND CITY HALL, BUT OUTISDE THE IDENTIFIED BORDER ABOVE, SHALL RECEIVE ZONE 3 PAY FOR ALL CLASSIFICATIONS.

FOR THE FOLLOWING CITIES:

ALBANY; BEND; COOS BAY; EUGENE; GRANTS PASS; KLAMATH FALLS; MEDFORD AND ROSEBURG

(A) ALL JOBS OR PROJECTS LOCATED WITHIN 30 MILES OF THE RESPECTIVE CITY HALL OF THE ABOVE MENTIONED CITIES SHALL RECEIVE ZONE 1 PAY FOR ALL CLASSIFICATIONS

(B) ALL JOBS OR PROJECTS LOCATED MORE THAN 30 MILES AND LESS THAN 50 MILES FROM THE RESPECTIVE CITY HALL OF THE ABOVE MENTIONED CITIES SHALL RECEIVE ZONE 2 PAY FOR ALL CLASSIFICATIONS.

(C) ALL JOBS OR PROJECTS LOCATED MORE THAN 50 MILES FROM THE RESPECTIVE CITY HALL OF THE ABOVE MENTIONED CITIES SHALL RECEIVE ZONE 3 PAY FOR ALL CLASSIFICATIONS.

Oregon

BUREAU
OF LABOR
AND INDUSTRIES

LIST OF CONTRACTORS INELIGIBLE TO RECEIVE PUBLIC WORKS CONTRACTS

Publication Date: July 1, 1997



Jack Roberts
Commissioner

To: All Oregon Contracting Agencies

Pursuant to ORS 279.361, contractors on this list are ineligible to receive public works contracts. These contractors and subcontractors, as well as any firm, corporation, partnership or association in which the contractor or subcontractor has a financial interest are ineligible to receive public works contracts until removed from this list.

If you have questions regarding the list or for the most current information regarding persons ineligible to receive prevailing wage contracts, please contact the Prevailing Wage Rate Cordinator, (Portland) 731-4074 Ext. 250.

	CONTRACTOR NAME	DATE PLACED	REMOVAL DATE
1.	Craig Yundt, Registered Agent and President and **AC & C Electrical Enterprises, Inc.** 2130 NW York Portland, OR 97210	May 10, 1996	May 9, 1999
2.	Robin Allen Daniel Allen **A C & E Electric Company** 3363 Silverton Road NE Salem, OR 97301	December 1, 1994	November 30,1997
3.	Wayne C. Everett and **Equipment Erection Specialties, Inc.** 8645 SE Roots Road Clackamas, OR 97015	October 15, 1995	October 14, 1998

PORTLAND
800 NE Oregon St. # 32
Portland, OR 97232
(503) 731-4200
FAX (503) 731-4069

EUGENE
165 E 7th Street, Suite 220
Eugene, OR 97401
(541) 686-7623
FAX (541) 686-7980

BEND
1250 NE 3rd, Suite B105
Bend, OR 97701
(541) 388-6330
FAX (541) 388-6273

MEDFORD
700 E Main, Suite 105
Medford, OR 97504
(541) 776-6270
FAX (541) 776-6284

SALEM
3865 Wolverine St. NE; E-1
Salem, OR 97310
(503) 378-3292
FAX (503) 373-7636

PENDLETON
200 Hailey Ave., Suite 308
Pendleton, OR 97801
(541) 276-7884
FAX (541) 276-2950

AN EQUAL OPPORTUNITY EMPLOYER

LIST OF CONTRACTORS INELIGIBLE TO RECEIVE PUBLIC WORKS CONTRACTS

Publication Date: July 1, 1997

	CONTRACTOR NAME	DATE PLACED	REMOVAL DATE
4.	**Malar Construction, Inc.** 4470 S.W. Hall Blvd, #317 Beaverton, OR 97005	November 23, 1994	November 22,1997
5.	Michael A. McSweeney dba **Michael A. McSweeney Construction** P.O. Box 1573 Rogue River, OR 97537	February 25, 1997	February 24,2000
	Edward R. Romayor and **Portland Custom Interiors, Inc.** 4330 SE Milwaukie Avenue Portland, OR 97202	April 28, 1995	April 27, 1998
6.	Haskell F. Tallent, dba **Sound Construction of Reno** 34773 Seavey Loop Road Eugene, OR 97405	October 14, 1994	October 13, 1997

Jack Roberts, Commissioner
Bureau of Labor and Industries

BUREAU OF LABOR AND INDUSTRIES - WAGE AND HOUR DIVISION

INSTRUCTIONS FOR COMPLETING PAYROLL/CERTIFIED STATEMENT FORM,
WH-38 (Rev 6/97)

General: This form provides for the contractor's showing of the payroll and all monies paid to the employees, whether as basic rates or as cash in lieu of fringe benefits, and provides for the contractor's representation in the payroll/certified statement that he/she is paying other benefits required by the contract and not paid as cash in lieu of fringe benefits. Detailed instructions concerning the preparation of the form follow:

Complete the box at the top of the form. Complete the appropriate prime contractor or subcontractor box. Be sure to enter the date the contract was first advertised for bid. If you are not sure of this date, contact the Public Contracting Agency.

Column 1 - Name, Address, and Social Security number of Employee: The employee's full name must be shown on each payroll submitted. The employee's address must also be shown on the first payroll submitted. The address need not be shown on subsequent payrolls unless the address changes. Although not required, space is available in the name and address section so that Social Security numbers can be listed.

Column 2 - Trade Classifications: List the classification found in the Bureau of Labor and Industries' publication "Prevailing Wage Rates for Public Works Contracts in Oregon," which is most descriptive of the work actually performed by the employee. Give the group number for those worker classifications which include such information. Consult the worker classifications and minimum prevailing wage rate schedule set forth in contract specifications. Refer to the appropriate prevailing wage rates in effect at the time the contract was first advertised for bid for information regarding trade classifications, basic hourly rates, and hourly fringe benefits. Indicate which workers are apprentices, if any, and give their current percentage, trade classification, and group number when applicable. If additional worker classifications are deemed necessary, contact the contracting public agency. If an employee works in more than one worker classification, use the highest rate for all hours worked, or use separate line entries to show hours worked, rate of pay, and fringe benefit for each classification.

Column 3 - DAY AND DATE: Enter the day of the week (M, T, W, Th, F, S, Su) in the top row of boxes, and the number of the day of the month below.

- HOURS WORKED EACH DAY: **Enter overtime hours in the row marked "OT". See ORS 279.334 and page 2 of this booklet for changes in the overtime requirements.**

Column 4 - Total Hours: Enter separately the total number of overtime hours and straight time hours worked by each listed classification during this pay period; overtime ("OT") on top, straight time ("S") immediately below.

Column 5 - Basic Hourly Rate of Pay: Enter the basic hourly rate and the overtime hourly rate (if any) paid the employee in the appropriate overtime and straight time boxes. Payment of not less than one and one half times the basic or regular rate paid is required for overtime under ORS 279.334.

Column 6 - Hourly Fringe Benefit Paid as Wages to the Employee: Enter any additional cash paid directly to the employee in lieu of fringe benefits. It is not necessary to pay time and a half for overtime work on those wages which are paid in lieu of fringe benefits.

Column 7 - Gross amount earned: Enter the gross wages earned by the worker in this classification for all listed straight time hours, all listed overtime hours, and including all additional amounts paid directly to the employee.

Column 8 - Total Deductions, FICA, FED, STATE, ETC: Enter the total amount of deductions withheld from each employee for just those hours reported on this payroll/certified statement for this project. All deductions must be in accordance with the provisions of ORS 652.610.

Column 9 - Net Wages Paid for Week: Enter the amount of wage actually paid to the employee after subtracting the total deductions reported in Column 8 from the gross amount earned shown in Column 7.

INSTRUCTIONS FOR COMPLETING PAYROLL/CERTIFIED STATEMENT FORM,
WH-38 (Rev 6/97)

Column 10 - Hourly Fringe Benefit Paid to Party, Plan, Fund or Program: Enter the hourly amount of fringe benefits paid to each individually approved party, plan, fund or program for each employee. List these amounts separately on the lines provided. Any contactor who is making payments to approved parties, plans, funds or programs in amounts less than the required hourly fringe benefit is obligated to pay the difference directly to the employee as wages in lieu of fringe benefits, and to show that amount in Column 6 of this form.

Column 11 - Name of Benefit Party, Plan, Fund or Program: Enter the name of the party, plan, fund or program that corresponds to the amount shown as an hourly fringe benefit in Column 10.

Summary - In order to determine if the wages and fringe benefits being certified by this statement are sufficient to meet prevailing wage rate requirements, the following check may be performed:

1. Consider each Trade Classification listed in Column 2.

2. For that Trade Classification, take the sum of:
   a) the Basic Hourly Rate of Pay (Column 5),
   b) the Hourly Fringe Benefit Paid as Wage to Employee (Column 6),
   c) and the Hourly Fringe Benefit Paid To Party, Plan, Fund or Program (Column 10).

3. This sum must equal or exceed the sum of the Basic Hourly Rate (including zone pay and special wage differentials, if any) and the Fringe Benefit as they are listed for that Trade Classification in the appropriately dated issue of the Bureau of Labor and Industries publication Prevailing Wage Rates for Public Works Contracts in Oregon.

◆◆◆

NOTICE TO CONTRACTORS: YOU ARE NO LONGER REQUIRED TO SUBMIT COPIES OF THE PAYROLL/CERTIFIED STATEMENT TO THE BUREAU OF LABOR AND INDUSTRIES. THE STATEMENT MUST BE SUBMITTED TO THE PROJECT CONTRACTING AGENCY.

BUREAU OF LABOR AND INDUSTRIES
WAGE AND HOUR DIVISION

PAYROLL/CERTIFIED STATEMENT FORM WH-38
FOR USE IN COMPLYING WITH ORS 279.354

PRIME CONTRACTOR ☐ **FIRST** ☐ **90 DAY** ☐ **LAST** ☐
SUBCONTRACTOR ☐

Business Name (DBA): CCB Registration Number: Project Name: Project Number:

Phone: ( )
Street Address:
Mailing Address:

Type Of Work:
Project Location:
Project County:

Date Pay Period Began: Date Pay Period Ended:

THIS SECTION FOR PRIME CONTRACTORS ONLY
Public Contracting Agency Name:
Phone: ( )
Date Contract Specifications First Advertised For Bid:
Contract Amount

THIS SECTION FOR SUBCONTRACTORS ONLY
Subcontract Amount:
Prime Contractor Business Name (DBA):
Phone: ( ) CCB Registration Number:
Date You Began Work On The Project:

(1)	(2)		(3) DAY AND DATE							(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
NAME, ADDRESS AND SOCIAL SECURITY NUMBER OF EMPLOYEE	TRADE, CLASSIFICATION (INCLUDE GROUP # IF APPLICABLE)		HOURS WORKED EACH DAY							TOTAL HOURS	BASIC HOURLY RATE OF PAY	HOURLY FRINGE BENEFIT PAID AS WAGE TO EMPLOYEE	GROSS AMOUNT EARNED	TOTAL DEDUCTION FICA, FED, STATE, ETC	NET WAGE PAID FOR WEEK	HOURLY FRINGE BENEFIT PAID TO PARTY, PLAN, FUND OR PROGRAM	NAME OF BENEFIT PARTY, PLAN, FUND, OR PROGRAM
		OT															
		S															
		OT															
		S															
		OT															
		S															
		OT															
		S															

THIS FORM CONTINUED ON REVERSE

(1)	(2)	(3) DAY AND DATE							(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
NAME, ADDRESS AND SOCIAL SECURITY NUMBER OF EMPLOYEE	TRADE, CLASSIFICATION (INCLUDE GROU # IF APPLICABLE)								TOTAL HOURS	BASIC HOURLY RATE OF PAY	HOURLY FRINGE BENEFIT PAID AS WAGE TO EMPLOYEE	GROSS AMOUNT EARNED	TOTAL DEDUCTION FICA, FED, STATE, ETC.	NET WAGE PAID FOR WEEK	HOURLY FRINGE BENEFIT PAID TO PARTY, PLAN, FUND OR PROGRAM	NAME OF BENEFIT PARTY, PLAN, FUND, OR PROGRAM
		HOURS WORKED EACH DAY														
		OT														
		S														
		OT														
		S														
		OT														
		S														
		OT														
		S														

CERTIFIED STATEMENT

I _____, _____ DO HEREBY STATE:
(NAME OF SIGNATORY PARTY) (TITLE)

(1) THAT I PAY OR SUPERVISE THE PAYMENT OF THE PERSONS EMPLOYED BY; _____ ON THE _____
(CONTRACTOR, SUBCONTRACTOR OR SURETY) (BUILDING OR WORK)
THAT DURING THE PAYROLL PERIOD COMMENCING ON THE _____ DAY OF _____, 19_____, AND ENDING THE _____ DAY OF _____, 19_____
ALL PERSONS EMPLOYED ON SAID PROJECT HAVE BEEN PAID THE FULL WEEKLY WAGES EARNED, THAT NO REBATES HAVE BEEN OR WILL BE MADE EITHER DIRECTLY OR INDIRECTLY TO OR ON BEHALF OF SAID _____ FROM THE FULL WEEKLY WAGES EARNED BY ANY PERSON, AND THAT NO DEDUCTIONS HAVE BEEN MADE EITHER DIRECTLY OR INDIRECTLY FROM THE FULL WAGES EARNED BY ANY PERSON, OTHER THAN PERMISSIBLE DEDUCTIONS AS SPECIFIED IN ORS 652.610, AND DESCRIBED AS FOLLOWS:

_____

(2) THAT ANY PAYROLLS OTHERWISE UNDER THIS CONTRACT REQUIRED TO BE SUBMITTED FOR THE ABOVE PERIOD ARE CORRECT AND COMPLETE; THAT THE WAGE RATES FOR WORKERS CONTAINED THEREIN ARE NOT LESS THAN THE APPLICABLE WAGE RATES CONTAINED IN ANY WAGE DETERMINATION INCORPORATED IN THE CONTRACT; THAT THE CLASSIFICATION SET FORTH THEREIN FOR EACH WORKER CONFORMS WITH WORK PERFORMED.
(3) THAT ANY APPRENTICES EMPLOYED IN THE ABOVE PERIOD ARE DULY REGISTERED IN A BONA FIDE APPRENTICESHIP PROGRAM REGISTERED WITH A STATE APPRENTICESHIP AGENCY RECOGNIZED BY THE BUREAU OF APPRENTICESHIP AND TRAINING, UNITED STATES DEPARTMENT OF LABOR, OR IF NO SUCH RECOGNIZED AGENCY EXISTS IN A STATE, ARE REGISTERED WITH THE BUREAU OFAPPRENTICESHIP AND TRAINING, UNITED STATES DEPARTMENT OF LABOR.

I HAVE READ THIS CERTIFIED STATEMENT, KNOW THE CONTENTS THEREOF AND IT IS TRUE TO MY KNOWLEDGE.

_____ _____
NAME AND TITLE SIGNATURE

NOTE TO CONTRACTORS: YOU MUST ATTACH COPIES OF THIS FORM TO EACH OF YOUR PAYROLL SUBMISSIONS ON THIS PROJECT. SEE THE BOLI PUBLICATION PREVAILING WAGE RATES FOR PUBLIC WORKS CONTRACTS IN OREGON FOR INSTRUCTIONS ON COMPLETING THIS FORM.

[redacted] FILE THIS FORM WITH THE CONTRACTING AGENCY [redacted]

BUREAU OF LABOR AND INDUSTRIES
NOTICE OF AWARD OF PUBLIC WORKS CONTRACT
(For use by Public Agencies in Complying with ORS 279.363)

1. CONTRACTING AGENCY INFORMATION

Name _____ Agency Number _____

Address _____

City, State, Zip _____

Agency Representative _____ Phone _____

2. CONTRACT INFORMATION

Project Name _____ Project Number _____

Project Manager Name _____ Fax Number _____

Phone Number _____

Project Location (Street(s), City, State) _____

Project County _____ Contract Amount _____

Source of Funds (i.e. 100% Federal Funds, 50/50 Federal/State, 100% Local, etc.) _____

Note: If this project is Federally funded and subject to the Davis Bacon Act, do not submit this form to the Oregon Bureau of Labor and Industries. If Federal funds are involved, but the project is subject to Oregon prevailing wage rate, please specify.

Date Contract Specifications First Advertised for Bid _____

Date Contract Awarded _____ Date Work Expected to Begin _____

Date First Progress Payment Due _____ Expected Date of Completion _____

3. PRIME CONTRACTOR INFORMATION

Name _____

Address _____

City, State, Zip _____ Phone _____

Construction Contractors Board Registration Number _____

Workers' Comp. Insurance Company _____

Workers' Comp Policy/Binder Number _____

THIS FORM WILL BE RETURNED TO THE CONTRACTING AGENCY FOR CORRECTION AND RESUBMITTAL IF INCOMPLETE.

RETURN THIS COMPLETED FORM TO:

Bureau of Labor and Industries
Wage and Hour Division Rm 1160
Prevailing Wage Section
800 NE Oregon # 32
Portland, OR 97232
(503) 731-4074, ext. 233 Fax: (503)731-4606

Bureau of Labor and Industries
Prevailing Wage Rate Unit
800 N.E. Oregon St., # 32
Portland, OR 97232
Phone: (503) 731-4074, Fax: (503) 731-4623

PUBLIC WORK CONTRACT FEE INFORMATION FORM

(For use by contractors in complying with ORS 279.375)

THIS FORM TO BE USED FOR PROJECTS AWARDED AFTER SEPTEMBER 9, 1995 ONLY

Contractors: Please complete and mail this form to BOLI at the above address, along with the appropriate fee (1/10th of 1% of the contract price*) payable to BOLI. **MINIMUM FEE IS $100.00, MAXIMUM FEE IS $5,000.00. Without the following completed information, the bureau may be unable to properly credit you for payment received.**

BUSINESS NAME (DBA) _____ **CCB #** _____

MAILING ADDRESS: _____ **PHONE:** (___) _____
(STREET OR PO BOX #)

_____
(CITY, STATE, ZIP)

PROJECT NAME: _____

PROJECT NUMBER: _____ **PROJECT LOCATION:** _____

AGENCY AWARDING CONTRACT: _____

AGENCY CONTACT PERSON: _____ **PHONE:** (___) _____

CONTRACT AMOUNT: _____ **DATE AWARDED:** _____ **DATE WORK BEGAN:** _____

*(Contract amount X .001)

(Please duplicate this form for future use)

Bureau of Labor and Industries
Prevailing Wage Rate Unit
800 N.E. Oregon St., # 32
Portland, OR 97232
phone: (503) 731-4074, ext. 250
FAX: (503) 731-4623

PUBLIC WORKS CONTRACT FEE ADJUSTMENT FORM

THIS FORM TO BE USED FOR RECONCILIATION OF FEES ON COMPLETION OF PUBLIC WORKS PROJECTS

(As required by ORS 279.375 and OAR 839-16-210)

Contractors: Please complete and mail this form to BOLI at the above address, after completion of the public works project and not less than 30 days after the final payment by the contracting agency. Contractors are required to determine the final contract price, including all change orders or other adjustments to the original contract price and to calculate the adjusted prevailing wage rate fee, based on the revised contract price. Documentation must be included to support the final contract price. The prevailing wage rate fee, .001, (1/10th of 1%) shall be applied to the final contract price, with credit taken for fees already submitted. The contractor must submit the additional fee payable to BOLI with the adjustment form or requests for refund if applicable. NO ADDITIONAL FEE WILL BE CHARGED, NOR A REFUND MADE, ON ANY RECONCILED AMOUNTS UNDER $100.00.

BUSINESS NAME (DBA) _____ **CCB #** _____

MAILING ADDRESS: _____ **PHONE:** ( ) _____
(STREET OR PO BOX #, CITY, STATE, ZIP)

PROJECT NAME: _____

PROJECT NUMBER: _____ **PROJECT LOCATION:** _____

AGENCY AWARDING CONTRACT: _____ **DATE AWARDED:** _____

FINAL CONTRACT AMOUNT: _____ **FINAL FEE DUE*:** _____
(Include all change orders and adjustments to the contract price)
*(Final Contract amount X .001)

ORIGINAL CONTRACT AMOUNT: _____ **INITIAL FEE PAID*:** _____
*(Contract amount X .001)

BALANCE DUE: _____ **REFUND DUE:** _____
(Final contract fee less initial fee paid)

Sample Calculation:

Final Contract Amount:	$400,000.00	Final Fee Due:	$400.00
Original Contract Amt:	-300,000.00	Initial Fee Paid:	-300.00
Total Adjustment:	$100,000.00	Amount Due or Refund Due:	$100.00

*Documentation may consist of change orders or other contract documents substantiating the amount of the contract.

(Please duplicate this form for future use)

PLANNED PUBLIC IMPROVEMENT SUMMARY

FISCAL YEAR_____ - _____ _____ PAGE_____ OF_____

(Name of State or Local Government Agency)

Project Number	Project Name	Project Type	Project Location	Estimated Project Cost	Agency or Contract Work

ORS 289.023 generally states that not less than 30 days prior to adoption of its budget for the subsequent budget period, each public agency shall prepare and file with the Commissioner of the Bureau of Labor and Industries a list of every public improvement known to that agency that the agency plans to fund in the budget period. If the agency decides to use its own equipment and personnel for construction projects estimated to cost more than $50,000, the agency shall show that the decision conforms to the policy of the State of Oregon that public agencies shall make every effort to construct public improvements at the least cost to the public agency, and the public agency shall cause to be kept and preserved a full, true and accurate account of the costs of performing the work including all engineering and administrative expenses and a reasonable estimate of the cost, including investment cost, of the equipment used. NOTE: This Improvement Summary together with the project estimate and least cost determination constitutes a public record available in the usual manner for public review or copying. Mail a copy of this public improvement summary to: Wage and Hour Division, 800 NE Oregon St., # 32, Portland, Oregon 97232.

FORM WH-118 (Rev 6/96)

CAPITAL IMPROVEMENT PROJECT COST COMPARISON ESTIMATE

_____
(Name of State or Local Government Agency)

DEPARTMENT:
PROPOSED YEAR:
PROJECT DESCRIPTION:

PROJECT NAME:

FUND:
PROJECT NUMBER:

Rough Quantity Estimate	Units	Work Class Description	Agency Force Estimate		Agency Contract Estimate	
			Unit Cost	Total Cost	Unit Cost	Total Cost
				$		$

Estimated Construction Period _____

_____ determines that (Agency Forces)(Contractor) can perform this work at the least cost.
(Name of Agency) (cross out one)

FORM WH - 119 (Rev 6/96)

_____
(Agency Official)

SPECIAL PROVISIONS

CITY OF NEWBERG
ASPHALT OVERLAY PROJECT

JANUARY, 1998

SPECIAL PROVISIONS

1. **Length of Contract.**
Construction must be substantially completed by June 15, 1998.

2. **Liquidated Damages.**
The amount of liquidated damages shall be One Hundred Fifty Dollars ($150) per calendar day.

3. **Pre-Construction Meeting.**
A pre-construction meeting will be scheduled by the Engineer after the contract has been awarded, and before issuance of the Notice to Proceed. The Contractor shall provide the following: a detailed construction schedule; insurance certificates; material certifications.

4. **Tree Trimming.**
All tree branches or foliage which will hinder the proper placement of the surfacing shall be removed by the Contractor by pruning and sealing the cut ends, or by tying back in a manner approved by the Engineer.

5. **Water.**
Construction water shall be from any domestic supply approved by the City. To obtain water from a City fire hydrant, a permit is required for a construction water meter installed by the City. To obtain a meter, contact the Project Inspector.

6. **Concrete Curb & Gutter Repair.**
This item consists of removing and reconstructing concrete curb & gutter that is deteriorated or deformed. Locations are tabulated below.

Method: Sawcut curb & gutter and two feet width of pavement. Reconstruct pavement according to Standard Drawing ST-23, "Asphalt Pavement Repair". Reconstruct curb & gutter according to Standard Drawing ST-4. Backfill curb with select material, restore existing surfacing. If the surface is plantings or barkdust, backfill top 6 inches with topsoil. If surface is grass, re-seed, cover with peatmoss, and provide one good watering.

Measurement will be per linear foot of curb & gutter. The unit price shall include sawcutting, excavation, restoration of the asphalt pavement, restoration of the backfill surface, and all tasks included in this item.

CONCRETE CURB & GUTTER REPAIR			
STREET	**LOCATION**	**SIDE OF STREET**	**EST. LENGTH (Ft)**
3RD	Harrison to RR Xing	North	15
TOTAL			15

7. **Preleveling Asphalt Hand Work.**
Small localized areas shall be preleveled by hand work prior to applying the Leveling Course, as directed by the Engineer. Preleveling Asphalt Hand Work shall be included in payment for the bid item Leveling Course Asphalt.

8. **Leveling Course Asphalt, Class D.**
The purpose for this work is to remove unevenness from the pavement in preparation for the asphalt overlay. Ride the screed of the self-propelled paving machine on the existing pavement surface from high point to high point. The locations for the leveling course are listed in the "Table of Streets".

9. **Asphalt Overlay.**
Construct asphalt concrete overlay as listed in the "Table of Streets". Refer to Standard Drawing ST-22.

SPECIAL PROVISIONS

10. Pavement Reinforcing Fabric.

Place non-woven Pavement Reinforcing Fabric according to Standard Drawing ST-22 on streets tabulated in the "Table of Streets". Specifications are listed in the table below.

PAVEMENT REINFORCING FABRIC		
PROPERTY	**TEST**	**MIN. VALUE**
Tensile Strength (Lbs)	ASTM-1682	80
Elongation (%)	ASTM-1682	50
Asphalt Retention (Gal/SY)	ODOT TM-817	0.20
Melting Point (°F)	ASTM-276	300

11. Adjust Manhole.

Adjust the frame with concrete adjustment rings. Make the final adjustment using shims and cement mortar. Refer to Standard Drawing ST-29.

12. Adjust Valve Cover.

Pry loose and raise the telescoping valve box with levers, using sufficient care so as not to break it. If a valve box is broken in this process, it shall be replaced at the contractor's expense following paving.

K:\WP\ADMIN\MISC\TABBY\SPECS\OVERLAY.PRJ\SPECPROV.1

TECHNICAL PROVISIONS

CITY OF NEWBERG
ASPHALT OVERLAY PROJECT

JANUARY, 1998

DIVISION TWO
GENERAL TECHNICAL REQUIREMENTS

****

201 MOBILIZATION

****

201.01 DESCRIPTION

This section covers, but is not limited to, work necessary to obtain all bonds, insurance, licenses, and permits; move in personnel and equipment; set up all offices, buildings, and facilities; provide all required light, power, and water; install project information signs if required; prepare for construction complete; demobilize, including removal of all facilities and clean up; and all other work to successfully complete the project which is not covered in other bid items.

201.02 MATERIALS

Provide all materials required to accomplish the work as specified.

201.03 CONSTRUCTION/GENERAL REQUIREMENT

Set up construction facilities in a neat and orderly manner within designated or approved work area. Provide for an acceptable material and equipment storage area. Supply all labor and equipment necessary to accomplish the work as specified. Conform to applicable requirements of Section 105 of GENERAL REQUIREMENTS, including, but not limited to, (1) required notifications, (2) protection of surveying monuments and other markers, (3) temporary traffic control, (4) temporary utility connections, (5) protection of property, (6) water and air pollution, and (7) noise.

201.04 MEASUREMENT AND PAYMENT

201.04.01 Lump Sum Basis

When mobilization is listed as a separate pay item on the Proposal, it will be paid for on a lump sum basis. Normal retainage will be deducted from partial payments.

Partial payments for Mobilization under the Contract will be made under the following schedule:

1. When 5 percent of the total original contract amount is earned from other bid items, 50 percent of the amount bid for Mobilization, or 5 percent of the total original contract amount, whichever is the least, less normal retainage, will be paid.

2. When 10 percent of the total original contract amount is earned from other bid items 100 percent of the amount bid for Mobilization, or 10 percent of the total original contract amount, whichever is the least, less normal retainage, will be paid.

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

The above schedule of progress payments for Mobilization shall not be construed to limit or preclude partial payments otherwise provided by the Contract.

201.04.02 Incidental Basis

When not listed in the Proposal, all Mobilization costs will be considered incidental work for which no separate payment will be made.

****

202 TEMPORARY TRAFFIC CONTROL

****

202.01 DESCRIPTION

This section covers all work necessary to conduct construction operations so as to offer the least possible obstruction and inconvenience to the public and to protect pedestrian and vehicular traffic.

202.02 UNIFORM TRAFFIC CONTROL DEVICES

Provide barricades, signs, and traffic control devices built in conformance with the Manual on Uniform Traffic Control Devices (current edition), published by the U.S. Department of Transportation, and the Oregon supplements to the Manual published by the Oregon Department of Transportation.

202.03 CONSTRUCTION

202.03.01 General

Use flag persons and provide and maintain such signs, barricades, warning lights, and other traffic control devices in conformance with the manuals referenced in Subsection 202.02.01. Adequately warn the public at all times of existing conditions on all streets affected by work operation.

Patrol the construction area at least twice daily and reset all disturbed signs and traffic control devices immediately. Remove or cover non applicable signs when not needed. Prior to closing or partial closing of any street, conform to Subsection 105.04 NOTIFICATION OF UTILITIES AND AGENCIES.

202.03.02 Traffic Control Within the Project

Formulate and submit a traffic control plan and a work schedule to minimize the disruption of traffic. Plan shall be submitted at the pre-construction conference. If no conference is held, plan shall be submitted at least 10 days in advance of beginning work. Obtain approval of plan and schedule from Engineer before commencing work. Allow traffic to pass through the work with as little inconvenience and delay as possible.

The traffic control plan shall contain a complete signing plan for semi-permanent and portable signs, barricades, and other traffic controls, provisions to keep the signs or devices current with the construction activities and the illumination of all detours and obstructions during hours of darkness. Be responsible for furnishing, installing, and maintaining all traffic control devices. Maintain these devices at all times including non-working hours.

Provide approved access to private properties at all times, except during stages of construction when it is impractical to perform construction and maintain access to private property simultaneously, as determined by the Engineer. When access is to be denied notify occupants of affected properties at least 24 hours in advance.

When, in the judgment of the Engineer, vehicular parking is a hazard to through traffic or to the work, furnish and place NO PARKING signs on any street which is directly involved in the construction work.

Only one intersection will be closed at a time without prior approval by the Engineer. The Contractor will notify Police and Fire departments in the jurisdiction of the closing and opening of streets. Pedestrian detours shall not exceed one block in length and all foot bridges will be provided with adequate handrails.

202.03.03 Construction and Maintenance of Detours

Construct and maintain temporary detours for protection of the work and the safe passage of traffic around work area.

Conform to requirements for detours in Subsection 107.12 of the Safety Requirements.

202.03.04 Flagging Requirements

The Contractor shall provide and maintain such signs, barricades and warning lights as are necessary to warn and protect the public at all times on highways, roads or streets affected by work operations. In addition, the Contractor shall also provide all necessary flag persons and guards necessary to warn and protect the public. Each flagger on duty shall wear an orange or yellow colored hard hat and an orange colored or fluorescent red-orange or fluorescent yellow-orange colored vest and shall be equipped with a highly visible, reflectorized "Stop-Slow" hand sign conforming to current standards for daylight use; and with illuminated stand area, of high visibility for night use.

202.03.05 Dust Control

Contractor shall be responsible for maintaining adequate dust control during and after construction and prior to acceptance by the Owner. The contractor shall apply a fine spray of water or other approved dust pallative to unpaved surfaces. Paved surfaces shall be broomed with power brooms (i.e., street sweepers) to control dust.

202.04 MEASUREMENT AND PAYMENT

202.04.01 Lump Sum Basis

When listed in the Proposal as a separate pay item, payment for Temporary Traffic Control will be made on a lump sum basis.

202.04.02 Incidental Basis

When not listed in the Proposal for separate payment, all Temporary Traffic Control will be considered incidental work for which no separate payment will be made.

****

203 CLEARING AND GRUBBING

****

203.01 DESCRIPTION

This section covers work necessary to clear, remove, and dispose of all debris and vegetation such as stumps, trees, logs, roots, shrubs, vines, grass, and weeds within the designated limits, to preserve from injury or defacement such objects and vegetation as are designated to remain in place, and to perform final clean-up of the designated area.

Clearing is defined as cutting of trees, bushes, vines, and other vegetative growth at or above ground surface and removal from the site of all such cut or down vegetation.

Grubbing shall consist of the elimination of wooden and vegetative matter occurring at or below ground surface including, but not limited to, stumps, trunks, roots, canes, stems, debris remaining from clearing work, and sticks having a diameter of one inch or more.

Review with the Engineer the location, limits, and methods to be used prior to commencing work under this section.

Removal of man-made structures, including, but not limited to, concrete slabs, walls, vaults, footings, asphaltic surfaced areas, and graveled areas, shall be included in payment for excavation or excavation and backfill as provided in Subsection 204.03.04, and will not be included in Clearing and Grubbing.

As indicated in Subsection 105.08 PROTECTION OF PROPERTY, occupants of buildings adjacent to the work shall have salvage rights to plants, trees, shrubs, fences, and other improvements in the right-of-way. Contractor shall notify adjacent property owners. Contractor does not assume ownership of clearing and grubbing items until after fulfilling the requirements of Subsection 105.08, and Subsection 203.03.02 TIMBER SALVAGE.

203.02 MATERIALS

Explosives used for clearing and/or grubbing shall be fresh, stable material manufactured to the standards of the "Institute of Makers of Explosives", and shall conform to the applicable requirements of ORS Chapter 476 and 480.

203.03 CONSTRUCTION

203.03.01 General

Obtain the required permits as specified in Subsection 105.08, PROTECTION OF PROPERTY, and perform clearing work in conformance thereto.

Remove trees and plants as designated within the area of work, and remove all sod, topsoil, and organic earth within designated areas.

Remove and stockpile as directed, all topsoil that is free of roots, rocks, and other objectionable material and is determined by the Engineer to be suitable for future use. Take reasonable care to prevent topsoil from becoming mixed with subsoil. Contractor shall provide imported topsoil per Subsection 206.02.04 at its sole expense if existing topsoil is not adequately segregated as determined by the Engineer.

203.03.02 Timber Salvage

203.03.02A Trees in Street Right-of-Way

The adjacent property owner shall have the right to any trees felled in the right-of-way adjacent to owner's property. Contractor shall notify adjacent property owners by mail or doorhanger at least 48 hours prior to felling trees. Trees shall be stacked and decked on owner's property or removed from the construction site if the owner does not reserve the right of ownership.

203.03.02B Trees on City-Owned Property

Owner reserves the right to merchant timber as designated in the Contract Documents and as marked at the project site by the Engineer. Assume ownership, remove, and dispose of all other timber. Cut,

trim, and handle marked merchantable timber in such a manner as to ensure the best sale value to Owner and dispose of resulting waste materials as hereinafter specified.

203.03.03 Protection of Existing Vegetation

Protect all trees, shrubbery, and other vegetation, not designated for removal, from damage caused by the work. Cut and remove trees and branches only where approved. When directed, remove branches other than those required to provide a balanced appearance of any tree. Contractor will provide adequate protection for trees, shrubbery, and other vegetation adjacent to the work area which are to remain, as indicated on the plans. No roots projecting into the excavation will be cut except in the presence of the Project inspector. All roots authorized to be cut will be cut neatly, with a sharp tool to avoid torn root endings. Remove branches only as directed by the Engineer and treat scars with approved tree sealant.

203.03.04 Clearing

Clear the area above the natural ground surface of all vegetation and objectionable materials. Cut timber and timber growth so that no stump extends above ground surface more than 6 inches. Prune all limbs over paved streets to an elevation fourteen feet above the pavement on arterial and collector streets, and eleven feet above the pavement on residential streets. Prune all limbs over sidewalks to an elevation seven feet, six inches above the sidewalk. All such pruning shall be done in accordance with accepted arboricultural standards, and shall be approved by the Engineer.

203.03.05 Clearing Borrow and Waste Disposal Areas

Clear areas designated as borrow and waste disposal areas to designated limits and dispose of all waste as herein specified.

203.03.06 Grubbing and Stripping

Completely remove all stumps and roots within the limits of required excavations and fill areas. No stumps or portion thereof shall come within three (3) feet of fill subgrades or slope surfaces. Use of explosives for stump removal shall conform to requirements of Subsection 203.02. Obtain any and all permits required for use of explosives from controlling jurisdiction.

On areas to be occupied by fills, remove all grass, roots, and embedded wood to a depth not less than 3 feet below subgrade or slope surface on which the fill is to be constructed.

On excavation areas, remove all roots and embedded wood to a depth not less than 1 foot below subgrade or slope surface through which excavation is required.

203.03.07 Disposal of Waste Material

Remove and dispose of all waste material or debris from the site. Obtain all necessary permits for disposing of waste materials. Copies of such permits shall be provided the Engineer prior to disposal.

203.03.08 Backfilling and Clean-up

In areas not subject to future excavations or filling, fill all holes and depressions caused by clearing and grubbing with material acceptable to the Engineer and reshape area to drain properly and to conform to adjacent undisturbed topography.

Leave work area in a clean and sightly condition, free from litter and debris.

203.03.09 Removal and Replacement of Signs, Mailboxes, Posts, etc.

Contractor will be responsible for the removal and replacement of all signs, mailboxes, posts, etc. when not specifically designated otherwise by the Engineer. Contractor to contact property owner prior to removal and reinstallation of mailbox. Mail boxes in work area must be temporarily moved to allow clearing and excavation as well as easy access by mailman and residents. Upon completion of excavation, mail boxes shall be permanently replaced behind curb to postal service regulations.

203.04 MEASUREMENT AND PAYMENT

203.04.01 Lump Sum Basis

When shown in the Proposal, payment for clearing and grubbing will be made on a lump sum basis for all clearing and grubbing within the limits specified.

203.04.02 Incidental Basis

When not listed in the Proposal for separate payment, all clearing and grubbing will be considered incidental work for which no separate payment will be made.

****

204 EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL

****

204.01 DESCRIPTION

204.01.01 GENERAL

This section covers work necessary for excavation, construction of embankment, foundation stabilization, pipe bedding, pipe zone backfill, trench backfill, and disposal of material required in construction of streets, sewers, water mains, storm drains, structures, and appurtenances thereto.

204.01.02 Unclassified Excavation

Unclassified excavation is defined as all excavation, regardless of type, nature, or condition of materials encountered unless separately designated. The Contractor shall assume full responsibility to estimate the kind and extent of various materials to be encountered in order to accomplish the work.

204.01.03 Rock Excavation

Rock excavation is defined as the removal of all material which by actual demonstration cannot, in Engineer's judgment, be reasonably excavated with equipment comparable to types listed in TABLE 1 and equipped with rippers or similar approved equipment and which is, in fact, systematically drilled and blasted or broken by power-operated tools designed for rock excavation. Engineer may waive the demonstration if material encountered is well-defined rock. The term Rock Excavation shall be understood to indicate a method of removal and not a geological formation.

TABLE 1

Manufacturer	Model	Minimum Net Horse Power	Type of Excavation
Caterpillar	225	125	Trench
John Deere	690	125	Trench
Case	125B/980B	125	Trench
Caterpillar	D8	300	Grading and Structural

In trenches, boulders or pieces of concrete below grade larger than 1/2 cubic yard will be classified as rock if drilling and blasting or other approved methods are actually used for their removal from the trench. If material which would be classified as rock by the above definition is mechanically removed without blasting, breaking, or splitting, it will be considered unclassified excavation and will be paid for as such at the unit price bid, or if larger equipment is specifically brought in for the sole purpose of rock removal, as defined above, then such removal will be considered rock excavation and will be paid for as such at the unit price bid.

204.01.04 Trench Excavation

Trench Excavation is defined as removal of all material encountered in the trench to the depths and widths as shown and, unless otherwise classified by the Engineer, shall be considered unclassified or rock excavation.

204.01.05 Embankment

Embankment is defined as furnishing, placing, and compacting embankment materials to the depth and configuration as shown.

204.01.06 Foundation Stabilization

Foundation stabilization is defined as the removal of unsuitable material in the bottom of an excavation as directed by the Engineer and replacement with specified material for support of a roadbed, pipe, main, conduit, structure, or appurtenances thereto.

204.01.07 Vacant

204.01.08 Pipe Zone

Pipe zone is defined as the full width of the trench from 6-inches below outside of the pipe barrel to a point 12-inches above the top outside surface of the pipe barrel as shown on the appropriate Standard Drawing.

204.01.09 Trench Backfill

Trench backfill is defined as furnishing, placing, and compacting backfill material in the trench between the top of the pipe zone and the bottom of the pavement base or ground surface. Trench backfill will be classified as either native or select backfill.

204.02 MATERIALS

204.02.01 Embankment Materials

Provide embankment materials of approved earth, sand, bank-run or river-run gravel or combinations

thereof, which can be compacted to the densities specified free of peat, humus, muck, frozen ground, organic matter, or other materials detrimental to construction of firm, dense, and sound embankments.

204.02.02 Foundation Stabilization

Use foundation stabilization consisting of gravel or crushed aggregate ranging in size from 6 inch-minus to 3/4 inch-minus as specified. Material shall be well graded from coarse to fine, and free from excessive clay or organic material.

204.02.03 Vacant

204.02.04 Pipe Zone Material

Use pipe zone material consisting of 3/4" - 0" crushed aggregate or sand, as noted on the plans or in the special provisions.

Pipe zone material shall be as specified for crushed aggregate material in Section 204.02.06B CRUSHED AGGREGATE.

204.02.05 Native Backfill Material

Use native material excavated from within limits of the project that can be compacted to the density specified and free from vegetation and other deleterious material containing no frozen ground.

Maximum particle size shall be as shown, except for trench backfill, wherein the particle size shall not exceed 6 inches in diameter.

204.02.06 Select Backfill Material

Use imported granular material for backfill consisting of bank-run or river-run gravel from an approved source, sand, or crushed aggregate as specified.

204.02.06A Bank-Run and River-Run Gravel

Use imported bank-run or river-run gravel from an approved source. Approval of material from a location does not mean approval of the entire site, but only as material continues to meet specification. Material shall be well- graded sandy gravel free from roots, clay balls, organic material, and debris. Maximum size of material shall be six (6) inches. No more than five (5) percent by weight shall pass the No. 200 sieve. The material shall have a minimum uniformity coefficient of 8, and a minimum permeability coefficient of 10-3 cm/sec.

204.02.06B Crushed Aggregate

Coarse and fine aggregates shall conform to requirements of Section 205 MATERIALS and to additional requirements contained herein.

Base aggregates to be incorporated in the work shall have a sand equivalent of not less than 30 when tested in conformance with AASHTO T 176.

Base aggregate shall meet the requirements for Liquid Limit and Plasticity Index of Subsection 205.02.12C FINE AGGREGATE.

The base aggregates shall be uniformly graded from coarse to fine and shall conform to one or another of the following grading requirements as specified:

	Separated Sizes				
	2½" – 0	2" – 0	1½" – 0	1" – 0	¾" – 0
Sieve Size	Percentages (by weight)				
3"	100				
2½"	95 – 100	100			
2"		95 – 100	100		
1½"			95 – 100	100	
1¼"	55 – 75				
1"		55 – 75		90 – 100	100
¾"			55 – 75		90 – 100
½"				55 – 75	
3/8"					55 – 75
*¼"	30 – 45	30 – 45	35 – 50	40 – 55	40 – 60

*Of the fraction passing the 1/4-inch sieve, 40 percent to 60 percent shall pass the No. 10 sieve.

For determination of sizes and grading conform to AASHTO T 27.

Where 1"-0 base aggregate is approved for use, at least 70 percent (by weight) of the material passing through the 1/4" sieve but retained on the No. 10 sieve shall have at least one mechanically fractured face.

Materials will be subject to acceptance as follows:

Construction Method	Time of Acceptance
Stationary plant mixed	Immediately following mixing
Travel plant mixed	After mixing and before laying
Road mixed	After mixing and before compacting

Acceptance will be based on periodic samples taken following mixing.

For trench backfill, the maximum particle size shall not exceed 1-1/2" in pipe zone.

204.02.06C Sand

1. Use sand consisting of fine granular material, naturally produced by the disintegration of rock, or produced from crushed gravel, and reasonably free of organic material, mica, clay, and other deleterious substances.

2. Use dredge sand produced from river dredging and reasonably free of organic material, mica clay, and other deleterious substances.

The grading of sand used for backfill shall be as follows, or as approved by the Engineer:

	Percentage Passing by Weight	
Sieve Size	Coarse Sand	Fine Sand
1"	100	100
3/8"	95 – 100	...
#4	80 – 100	90 – 100
#30	10 – 30	...
#100	...	2 – 10
#200	0 – 8	0 – 4
Sand Equivalent	50 min.	50 min.

3. When using sand as imported granular trench backfill material, material must be able to stand on a minimum 60° angle from horizontal following compaction to specified density unless otherwise approved by the Engineer. For the purpose of this specification, specified density will be a minimum of 95% of relative density as determined by the appropriate City of Newberg standard test at optimum moisture.

204.02.07 Imported Topsoil

Unless specified otherwise, imported topsoil shall be used. Provide natural, fertile, friable topsoil, representative of local productive soil, and 90 percent free of clay lumps or other foreign matter larger than 2-inch diameter, not frozen or muddy, with pH 5.0 to 7.0, and not less than 3 percent humus as determined by loss on ignition of moisture-free samples dried at 100 degrees C. Gravel portion (particles larger than 2 mm) shall not exceed 15 percent of total volume. Imported topsoil shall be free of quack grass, horsetail, and other noxious vegetation and their seeds. Should such regenerative material be present in the soil all resultant growth, both surface and root, shall be removed and replaced to original specifications at the Contractor's expense within 2 years of acceptance of the work.

204.02.08 Native Topsoil

When specified, use topsoil from the site, properly stored and protected and free from grass, debris, overburden and roots, sticks, hard clay, and stones which will not pass a 1-inch square opening.

204.02.09 Water

Use water which conforms to requirements of Section 205 MATERIALS TYPES AND USE. Provide water at the Contractor's sole expense. Whenever City water is to be used, the Contractor shall obtain a meter issued by the City.

204.02.10 Explosives

Use explosives which are fresh, stable materials manufactured to the standards of the "Institute of Makers of Explosives", and conforming to applicable requirements of ORS Chapters 476 and 480.

204.03 CONSTRUCTION

204.03.01 Excavation

Excavate, remove, and dispose of all formations and materials, natural or man-made, irrespective of nature or conditions, encountered within limits hereinafter defined or as specified, necessary for construction

of the project. Method of excavation used is optional. Overbreak shall be removed at the Contractor's expense. Use hand methods for excavation that cannot be accomplished without endangering existing or new structures or other facilities.

Furnishing, installing, and removal of all shoring, sheeting, and bracing as required to support adjacent earth banks and structures, and for the safety of the public and of all personnel working in the excavation shall be the Contractor's responsibility and shall be considered incidental to the construction.

204.03.02 Rock Excavation and Explosives

204.03.02A Depth of Excavation

Excavate to the depths designated or as shown on the appropriate plan or standard drawing. Correct over-excavation with compacted material as directed at no additional expense to Owner. In trenches for sewers, and water mains or conduits, remove all material necessary to provide a minimum clearance of 6 inches under the pipe and replace with bedding material in conformance with Subsection 204.02.04 PIPE ZONE MATERIAL.

204.03.02B Methods and Records Required

Before rock removal by systematic drilling and blasting or other methods will be permitted, notify Engineer who, with Contractor or its representative, will determine the amount of material to be removed as rock excavation and will record the information. Then drill, blast, or break with power-operated tools specially designed for rock excavation, and excavate the material.

204.03.02C Use of Explosives

Obtain any and all permits required for use of explosives required by the City of Newberg, and other governing agencies.

Use of explosives shall be avoided as far as practicable, and in no case shall tunnel blasting methods be used. Such blasting as must be done shall be controlled in a manner which will avoid possible shattering or loosening of materials back of lines to which the excavations are to be made. All blasting shall be supervised and/or done by a state certified powder person. Be responsible for any and all damages to property or injury to persons resulting from blasting, or accidental or premature explosions that may occur in connection with the use of explosives. Give adequate warning to all affected persons and adjacent property owners prior to blasting.

Where excavations in hard, solid rock are to be made to depths of 10 feet or more, blasting thereof shall be done by the presplitting or preshearing method unless other methods are approved by Engineer.

204.03.02D Trench Blasting

When blasting rock in trenches, cover area to be shot with blasting mats or other approved type of protective material that will prevent scattering of rock fragments outside of the excavation.

204.03.03 Preservation of Existing Improvements

Conduct operations in such a manner that existing streets, utilities, railroad tracks, structures, and other facilities which are to remain in place will not be damaged, as specified in Section 105. Furnish and install cribbing and shoring, or whatever means are necessary to support material carrying existing facilities, or to support the facilities themselves, and maintain such supports until no longer needed.

Protect temporary facilities, until they are no longer required, and remove and dispose of temporary supports and other protective means when they are no longer required.

204.03.04 Excavation of Existing Improvements and Miscellaneous

Unless otherwise specifically provided for, excavation or excavation and backfill includes all excavating, removing, hauling, and depositing, including but not limited to, existing pavements, walks, driveways, surfaces, slabs, curbs, gutters, and similar cement concrete structures, bituminous materials, all rock or gravel road surfacing materials, abandoned sewers, pipes and conduits, logs, piling, footings, foundations, vaults, and chambers, when such materials are within the limits of excavation.

Remove remaining ends of abandoned pipes, or portions of other items partially removed under this work, which would be left exposed after final excavation, to a minimum of one (1) foot below the finished grade or elevation. Plug or seal ends of abandoned pipes in backfill or embankment areas. Storm drain pipe shall be reconnected as directed by the Engineer.

Payment for all work in this section and repair of any damage will be considered incidental to the work and included under bid items for Excavation, Excavation and Backfill, or other specified earthwork items.

204.03.05 Limits of Excavation

Excavate to the depths and widths designated, allowing for forms, shoring, working space, base material, and finish topsoil where required. Do not excavate deeper than elevation shown. Excavation carried below grade lines shown or established without approval shall be replaced with compacted foundation stabilization material at the Contractor's expense. Over-excavation under footings shall be filled with concrete of a strength equal to that of the footing, and cuts below grade shall be corrected by similarly cutting adjoining areas and creating a smooth transition, all at the Contractor's expense. When the precise location of subsurface structures is unknown, locate such structures by hand excavation prior to utilizing mechanical excavation equipment.

204.03.06 Slope Grading

Make slopes free of all exposed roots, unstable rock, and loose stones exceeding 3 inches in any dimension. Shape tops of banks to circular curves with, in general, not less than a 6-foot radius, unless rock makes such work impractical. All surfaces shall be neatly and smoothly trimmed.

204.03.07 Foundation Stabilization

If, in the judgment of the Engineer, material in the bottom of an excavation is unsuitable for supporting foundations, piers, retaining walls, cribbing, sewers, pipes, or similar facilities, over-excavate as directed and backfill to required grade with thoroughly compacted foundation stabilization material conforming to Subsection 204.02.02.

204.03.08 Disposal of Excess Material

Excavated materials not suitable or not required for backfill or embankment shall be deposited at predesignated sites specified or sites supplied by the Contractor. An embankment permit may be necessary within the City of Newberg for any embankment exceeding 50 yards before the Contractor places any excavated material from City projects on any property. The Contractor shall make all arrangements for disposal of excess material, obtain the necessary permits when not provided by the City at predesignated sites, and bear all cost or retain any profit incidental to such disposal.

204.03.09 Temporary Location of Excavated Materials

Place excavated material, specified for embankment or backfills and not excess material, only within the construction easement, right-of-way, or specified working area. Pile in such a manner that it will cause a minimum of inconvenience to the public. Furnish the Engineer a copy of written approval from each property owner prior to stockpiling material on private property outside of easements. Conform to all Federal, State, and local codes governing the safe loading of trenches with excavated material.

Provide free access to all fire hydrants, water valves, and meters, and leave clearance to enable free flow of storm water in all gutters, conduits, and natural watercourses.

204.03.10 Surface Removal and Replacement for Trenches

204.03.10A Removal and Replacement of Topsoil

When specified and where trenches within easements cross lawns, garden areas, pasture lands, cultivated fields, or other areas on which topsoil conditions exist, remove all topsoil to a depth of at least 12 inches for the full width of the trench to be excavated. Stockpile topsoil to one side of the easement in a location and do not mix with remaining excavated material. Replace and compact removed topsoil in the top of backfilled trench to the depth removed.

Maintain finished grade of topsoil level with area adjacent to the trench until final acceptance by the Engineer. Repair damage to adjacent topsoil caused by work operations. Remove all rock, gravel, clay, and any other foreign materials from surface; regrade, and add topsoil as required.

In lieu of stockpiling topsoil, Imported Topsoil as defined in Subsection 204.02.07 may be substituted and replaced to the actual depth removed at the Contractor's expense. If, in the opinion of the Engineer, the Contractor does not take precautions to protect the stockpiled topsoil from contamination by rocks, clay, excess water, etc., the Contractor will import topsoil meeting the requirements of Section 204.02.07 at his own expense.

Payment for removing, stockpiling, and replacing topsoil in the trench is included in the bid item, Trench Excavation and Backfill.

204.03.10B Removal of Pavement, Curbs, Driveways, and Sidewalks

Cut all asphalt pavement to full depth with a pavement saw or other suitable pavement cutter prior to excavation of trenches.

Saw Portland Cement concrete pavement, curbs, and sidewalks to a minimum depth of four (4) inches or half the concrete thickness, whichever is greater. Subsequent removal may be accomplished by using a jackhammer. Full depth cut by pavement saw can be done at the option of the Contractor. Use of any machine utilizing a falling or swinging weight in the form of a "headache ball" will not be permitted.

Width of cut shall be as shown on the plans or standard drawings. Remove all loose, undermined or damaged pavement. Remove all pavement between the trench and curb, pavement edge or construction joint whenever the cut is two (2) feet or less from the curb, pavement edge, or construction joint. Prior to paving, all loose, cracked, sunken or otherwise damaged edges will be saw cut in continuous straight cuts. Straight line saw cut lengths will not be less than 50 feet. Cut angles will not exceed 15 degrees.

Pavement and concrete materials removed shall be hauled from the site and not used for trench backfill. Replacement of pavement, curb, and sidewalk shall conform to the requirements of Subsection 212 RESURFACING.

204.03.11 Trench Excavation and Shoring

204.03.11A Maximum Length of Open Trench

Length of trench excavated in advance of the pipe laying shall be kept to a minimum, and in no case shall it exceed two hundred (200) feet unless otherwise authorized. The length of unrestored work area and total unfinished trench construction shall not exceed a length of 800 feet, for each main line pipe laying operation unless otherwise authorized. Trench construction will not be considered completed until all restoration is completed. If the unfinished trench or restoration exceeds 800 feet in length, the main line construction shall be suspended and shall not be resumed until authorized by the Engineer.

In no case will any trench be left unfinished or uncovered overnight or outside working hours.

A section of trench shall be considered as unfinished until excavation, construction, backfilling, compaction, gravel road restoration, Portland Cement concrete pavement, minimum of first lift of asphaltic concrete pavement or cold patch, and cleanup operations have been completed. Cleanup of backfilled and construction area shall include resurfacing and cleaning of area so as to allow use of trench and adjacent construction area for normal use as required in Section 207 RESTORATION AND CLEANUP.

204.03.11B Trench Width

The maximum trench width at the ground surface will be kept to a minimum necessary to install the pipe in a safe manner. Trenches shall be of sufficient width to allow for shoring and permit proper joining of pipe and compaction of the backfill material along the sides of the pipe. Minimum trench width of unsheeted trenches shall provide a clear working space of at least six inches on each side of the outside diameter of the pipe bell. Sheeting requirements shall be independent of trench widths.

Trench width at the top of the pipe will be the pipe I.D. plus 18 inches, except where specifically shown on the Drawings, or specified in the Special Specifications. The pipe will be centered in the trench on line and grade at all times. When authorized by the Engineer, the Contractor may use pipe of greater strength or install a superior pipe bedding in lieu of maintaining the trench widths shown. If maximum width shown is exceeded by Contractor (without written authorization), the Contractor shall provide pipe of a higher strength designation, a higher class of bedding, or both, as approved by the Engineer, at no expense to the Owner.

Make the excavation for manholes and other structures wide enough to provide a minimum of twelve (12) inches between sides of structure and sides of excavation.

Confine top width of trench to dedicated rights-of-way or construction easements. Special written agreements to extend width may be made by the Contractor with affected property owners, provided such agreements are approved by the Engineer.

204.03.11C Grade

Excavate trench to lines and grades shown or as established by the Engineer, with proper allowance for pipe thickness, pipe bedding, and foundation stabilization. The subgrade upon which bedding is to be placed shall be firm, undisturbed, and true to grade. If the trench is over-excavated, restore to grade with thoroughly compacted foundation stabilization material or pipe bedding material at the Contractor's expense. Place material over full width of the trench in compacted layers to established grade with allowance for pipe bedding.

204.03.11D Shoring, Sheeting, and Bracing of Trenches

Sheet and brace trench when necessary to prevent caving and to protect adjacent structures, property, workers, and the public. Increase trench widths by the thickness of the sheet and maintain sheeting

until pipe has been placed and backfilled at the pipe zone. Remove shoring and sheeting as backfilling is done, in a manner that will not damage the pipe or permit voids in the backfill. All sheeting, shoring, and bracing of trenches shall conform to the safety requirements of the Federal, State, or local agency having jurisdiction. The most stringent of these requirements shall apply.

204.03.12 Dewatering

Furnish, install, and operate all necessary machinery, appliances, and equipment to keep excavations free from water during construction. Remove and dispose of all water entering the trench excavation continuously during the time the trench is being prepared for the pipe laying, during the pipe laying, when concrete is being placed, and until the backfill has been completed. Dewater and dispose of water so as to prevent injury to public or private property, or nuisance or menace to the public. Drainage of trench water through the pipeline under construction is prohibited unless otherwise approved by the Engineer. At all times have on hand sufficient pumping equipment and machinery in good working condition for all ordinary emergencies, including power outage. Have available at all times competent workers for operation of the pumping equipment. Control surface runoff to prevent entry or collection of water in excavations.

Control ground water such that softening of the bottom of excavations or formation of "quick" conditions or "boils" during excavation shall be prevented. Design and operate dewatering systems so as to prevent removal of natural soils and so that ground water level outside the excavation is not reduced to the extent that would damage or endanger adjacent structures or property.

Before dewatering is started, submit to the Engineer a statement of the method, installation, and details of the dewatering system proposed to be used. Open and cased sumps shall not be used as primary dewatering for excavations deeper than 3 feet below static water table.

Release ground water to its static level in such a manner as to maintain the undisturbed state of natural foundation soils. Prevent disturbance of compacted backfill and flotation or movement of structures, water mains, sewers, and other utilities.

Dewatering shall be considered as incidental to, and all costs included in, the various contract pay items in the Proposal.

204.03.13 Compaction

Compaction shall be by mechanical methods only.

Compaction equipment shall be of suitable type and adequate to obtain the amount of compaction specified. Compaction equipment shall be operated in strict accordance with the manufacturer's instructions and recommendations and shall be maintained in such condition that it will deliver the manufacturer's rated compactive effort. Compaction equipment for granular materials shall be vibratory plate or vibratory drum compactors.

Any settlement noted in backfill, embankment, or in structures built over the backfill or embankment within the 2-year warranty period in accordance with the GENERAL REQUIREMENTS will be considered to be caused by improper compaction methods and shall be corrected at the Contractor's expense. Structures damaged by settlement shall be restored to their original condition by the Contractor at the Contractor's expense.

204.03.14 Embankment

204.03.14A Roadway Embankment

Preparation of Embankment Foundations:

Prior to construction of embankments, excavate and dispose of unstable material or unsuitable foundation material. Limit excavation to lines, grades, and cross sections shown. Backfill basements, trenches, and holes which occur within embankment limits with specified material. Compact natural ground underlying embankments to the depth of grubbing or a minimum of 12 inches to density specified for the embankment material to be placed.

Embankment Construction:

Construct embankments to the lines and grades shown. Deposit material in layers not exceeding 8 inches deep across the full width of the embankment. Place material in continuous horizontal layers. Compact each lift to at least 95 percent of maximum dry density as determined by ASTM D1557/AASHTO T-180.

In embankments, the compacted materials within 3 feet of established subgrade elevation shall have a density in place of not less than 95% of relative maximum density, and below 3 feet shall have a density in place of not less than 90% of relative maximum density, and will show no appreciable deflection or adverse reaction under the compacting equipment during compaction.

If the surface of the prepared foundation or the compacted surface of a preceding lift is too dry or smooth to bond properly with the next layer of material, moisten or scarify, or both, before the next layer of material is placed. Compact slopes of all embankments thoroughly, and true to line and grade.

Do not place embankment material when the material, foundation, or previously placed embankment material is frozen. Embankment material shall not be placed in final position until moisture in excess of optimum moisture has been removed. Water settling of embankments will not be permitted.

204.03.14B Pipeline Embankment

Where pipelines are to be placed within an embankment, construct the embankment to its final specified elevation prior to trench excavation for the pipeline. Place pipe bedding and pipe zone materials in accordance with applicable portions of Subsection 204.03.16 and 204.03.17. Place trench backfill material as specified in Subsection 204.03.17 for TRENCH BACKFILL AND COMPACTION.

Additional Pipe Cover:

In locations where insufficient pipe cover exists, place excess excavated trench material suitable for embankment over the pipe to provide a minimum cover of 3 feet. Compact as required for underlying trench backfill.

204.03.14C Embankment for Structural Foundations

Deposit specified materials free from roots, organic material, trash, and stones larger than 3-inch diameter in uniform lifts across the full width of the embankment. Compact each lift to 95 percent of maximum dry density as determined by ASTM D 1557/AASHTO T180.

204.03.15 Pipe or Conduit Pipe Zone Bedding

Construct bedding in conformance with the appropriate Standard Drawing.

Class A pipe zone bedding consists of a pipe cradle of Portland Cement concrete as shown on the appropriate Standard Drawing. Bottom of trench shall be fully compacted before placement of pipe or cradle. Place concrete in such a manner that no dirt or foreign material become mixed with the concrete. Allow concrete sufficient time to reach initial set before any additional backfill material is placed in the trench. Conform to applicable provisions for Concrete Encasement in DIVISIONS 3 and 6 - SANITARY SEWERS and

STORM DRAINS.

Class B pipe zone bedding consists of leveling the bottom of the trench or top of the foundation material and placing pipe bedding select material to the horizontal centerline (springline) of the pipe. Bedding select material shall be placed in at least two lifts. Place the first lift to provide the minimum depth of bedding select material shown on the appropriate Standard Drawing before the pipe is installed. Spread smoothly to proper grade so that pipe is uniformly supported along the barrel. Excavate bell holes at each joint to permit proper assembly and inspection of the entire joint. Bedding under pipe shall provide a firm, unyielding support along the entire pipe length. Place subsequent lifts of not more than 6 inches thickness up to the horizontal centerline of the pipe. Bring lifts up together on both sides of the pipe and carefully work under pipe haunches.

Class A, B; and C pipe zone bedding shall be considered to include full width of excavated trench from the bottom of the trench or top of the foundation stabilization material to the top of the bedding.

Particular attention must be given to the area from the invert to the horizontal centerline of the pipe or top of the bedding to ensure that firm support is obtained to prevent any lateral movement of the pipe during the final backfilling of the pipe zone.

204.03.15A Bedding for Flexible Sewer Pipe

Material for bedding sewer pipe shall be as specified. Place in more than one lift. Material for pipe bedding PVC pipe shall be 3/4" - 0" or crushed rock placed a minimum of 6" under the pipe to 6" over the top of the pipe. First lift shall provide the minimum thickness per Standard Drawing No. 402 under any portion of the pipe or 4", whichever is greater, and be placed before the pipe is installed. Spread smoothly so that the pipe is uniformly supported along the barrel. Install subsequent lifts of not more than 6 inch thickness to the top of pipe zone and individually compact to either 90 percent density as determined by AASHTO 180 (delete paragraph 5.1), or 70 percent relative density as determined by ASTM D 2049. Engineer will select test method appropriate for material used.

204.03.15B Bedding for Water Pipe

Place bedding to a minimum thickness of 6 inches below the outside bottom of the pipe barrel or conduit and compact with mechanical vibrating or impact tampers to 95 percent of maximum density as determined by AASHTO 180 (delete paragraph 5.1), or 70 percent relative density, as determined by ASTM D 2049. Engineer will select test method appropriate for material used. For coal tar coated steel pipe, 3/4" - 0" bedding material is not acceptable.

204.03.16 Pipe Zone Placement

Place pipe zone material carefully around the pipe in 6-inch layers and compact to a minimum of 90 percent maximum dry density as determined by ASTM D1557/AASHTO T-180. Pipe zone material for water pipe shall be compacted to a minimum of 95 percent of maximum dry density as determined by ASTM D 1557/ AASHTO 180. Prevent pipe from movement either horizontally or vertically during placement and compaction of pipe zone material.

204.03.17 Trench Backfill and Compaction

204.03.17A General

For bidding purposes, the type of backfill to be used above the pipe zone is indicated on the Drawings. The right is reserved to modify the use, location, and quantities of the type of backfill during construction as the Engineer considers to be in the best interest of the Owner. Payment will be made based on the type of backfill installed.

Trench backfill above the pipe zone will be either imported or native for the purpose of payment:

Select and Approved Granular Native Backfill will, generally, be limited to streets and roadways and in similar areas where subsequent trench settlement must be held to a minimum. The Engineer will make the determination of acceptability of the granular native materials.

Native backfill will, generally, be limited to use in unsurfaced or unimproved areas.

When backfill is placed mechanically, push the backfill material onto the slope of the backfill previously placed and allow to slide down into the trench. Do not push backfill into the trench in such a way as to permit free fall of the material until at least 2 feet of cover is provided over the top of the pipe. Under no circumstances allow sharp, heavy pieces of material to drop directly onto the pipe or the tamped material around the pipe. Do not use backfill material larger than 6 inches in any dimension.

Take reasonable precautions to prevent excavated material which is designated to be used for backfill from becoming wet and exceeding the critical moisture limits. If native material does become wet and exceeds the critical moisture limits due to the Contractor's operations, replace with imported granular material at the Contractor's expense.

204.03.17B Select Backfill

Backfill the trench above the pipe zone with imported granular backfill material. Compact the entire trench depth in suitable lifts not to exceed 18 inches in depth with mechanical vibrating compactors with sufficient compactive effort to meet the specified density. Determine the type of equipment, method of placing lifts, and the amount of compacting effort required to prevent subsequent settlement. Compaction with hydrahammer equipment will not be approved.

The top 3 feet of select backfill shall be compacted to 95 percent of maximum relative density as determined by ASTM D4253 and D4254 for bar-run or river-run gravels. For one (1) inch-minus crushed aggregate, compact to 95 percent of maximum dry density as determined by ASTM D1557/AASHTO T-180.

In the zone below the top 3 feet of backfill, except water line trenches, compact to 90 percent of maximum dry density as determined by ASTM D1557/AASHTO 180.

Any subsequent settlement of the finished surface during the warranty period shall be considered to be a result of improper or insufficient compaction and shall be promptly repaired by the Contractor at the Contractor's expense.

204.03.17C Native Backfill

Backfill the trench above the pipe zone with excavated trench material.

In untraveled areas and as shown on the Construction Drawings, leave the trench with the backfill material level with the existing ground for the entire width of the trench. Material will be compacted to a minimum of 85 percent maximum dry density as determined by ASTM D1557/AASHTO T-180. Any deficiency of backfill material which becomes apparent after settlement and within the warranty period shall be corrected by regrading, and adding additional material where required. Unless otherwise directed by Subsection 204.03.11A, remove rocks larger than 2 inches in any dimension from the upper 8 inches of the backfill.

204.03.17D Compaction Testing

Sampling and testing of materials for determination of compliance with the specified compaction requirements may be taken at any location and time as the Engineer may determine. Excavate test pits in the backfill as directed by the Engineer for the purpose of testing the backfill compaction. At the option of the

Engineer, density tests may be taken on a lift of compacted backfill immediately before placing the next lift. All costs in connection with excavating test pits, providing and installing safety shoring as required to protect the testing person, and standby time during field density test shall be considered incidental to backfill and shall be included in unit prices bid for the various items involved.

When compaction testing has been performed by the Engineer and the required density has not been obtained by the Contractor, the Contractor shall bear all costs for all subsequent retesting in the areas of non-compliance. All testing shall be performed by the testing laboratory of the Engineer. The Engineer shall keep an accurate account of the time spent for the testing laboratory to perform retesting. The Contractor shall be totally responsible for rescheduling compaction testing with the Engineer. Any and all tests associated with delays due to retesting shall be the sole responsibility of the Contractor.

If required density has not been obtained, remove the backfill from the trench, replace with backfill, and recompact as many times as it is necessary to obtain the required specified minimum densities.

204.03.17E Trench Maintenance

In graveled areas, maintain surface of the backfilled trench level with the adjacent and existing grade, before and after the area is opened to traffic, with 1-inch minus crushed aggregate material. In paved areas, cold mix asphalt pavement shall be used until the final pavement replacement is completed. The cold mix asphalt or steel plating shall be in place at the end of each workday.
Place cold mix asphalt in conformance with Section 209 RESURFACING.

Maintain backfilled trench surface between any two successive manholes until the following operations have been completed and accepted by the Engineer:

1. Service connections installed, backfilled, and compacted.
2. Construction of manholes and appurtenances.
3. Air testing.
4. Cleanup and restoration of all physical features, including concrete curbs, gutters, and driveways.
5. Utilities restored to their original condition or better.
6. All work required between the two manholes accomplished.

Maintain backfilled trench surface between any two successive valves until the following operations have been completed and accepted by the Engineer:

1. Service connections installed, backfilled, and compacted.
2. Valves, valve boxes, and hydrants installed.
3. Hydrostatic testing.
4. Flushing and disinfection.
5. Cleanup and restoration of all physical features, including concrete curbs, gutters, and driveways.
6. Utilities restored to their original condition or better.
7. All work required between the two valves accomplished.

Do not undertake final pavement replacement until all items outlined above have been completed and accepted.

Maintenance of backfilled trenches is considered as incidental to this item of work, and payment for such maintenance will be considered as included in payment for Excavation and Backfill.

204.04 MEASUREMENT AND PAYMENT

204.04.01 Unclassified Excavation

All unclassified excavation will be measured on a cubic yard basis, or on a linear foot basis for trench excavation and backfill when so shown in the Proposal, all in original position prior to excavation. The quantity measured for payment will include only material excavated from within the limits defined herein. Any additional excavation outside of these limits, unless ordered in writing by the Engineer, shall be considered as having been made for Contractor's benefit and will be considered as incidental to the work. Excavation required for the volume displaced by new concrete curbs, driveway, sidewalks, steps, and pathways shall be considered incidental to the work and no payment will be made for removal of this material.

204.04.01A Roadbed and Slope Excavation

Pay quantities shall be computed to the neat lines of cross sections as staked or as otherwise specified.

204.04.01B Trench Excavation and Backfill

General

Length of all trenches will be measured horizontally along center of pipe or conduit from center-to-center of valves, fittings, couplings, manholes, structures, or end of pipe or conduit, whichever is applicable. Measurement through structures will be deducted if the Proposal carries a separate item of structure excavation applicable to the structures.

Measurement and payment for trench excavation and backfill shall include all work specified herein, or not specifically paid for in other pay items. No separate measurement and payment for trench excavation and native backfill shall be made for waterline projects. See Division 4, Subsection 404.01.

The price per linear foot for trench excavation and backfill shall be considered full compensation for the removal, protection, and replacement if damaged or interfering portions of existing sewers, storm drains, waterlines and other improvements; the plugging or removing of abandoned conduit and structures; the excavations of the trench; disposal of excess excavation; the control of ground and surface waters; the preparation of subgrade; backfilling the trench; removing, stockpiling, and replacing topsoil; and all other work necessary to install the pipe or conduit, complete in place.

Gravity Sanitary Sewers and Storm Drains

When contained in the Proposal, trench excavation and backfill will be paid for on a linear foot basis for type and depth of backfill used, with depth being measured from original ground or paved surface to invert of the pipe. The price bid per linear foot shall include the excavation required to provide space for the pipe bedding and any excavation and backfill necessary to widen the trench for installation of manholes and appurtenances.

For sanitary sewers and storm drains, depth figures shown in the Proposal are inclusive to the nearest 0.1 foot, that is, a trench depth measured as 11.9 feet will be paid for at the unit price for excavation 10 to 12 feet deep. At trench depth measured as 12.0 feet will be paid for at the unit price for excavation 12 to 14 feet deep. Depths measured at less than 8 feet will be included in the base depth of range of zero to 8 feet. Depth of trench will be measured at intervals of 50 feet along the centerline of the trench, and the ends. Depths will be interpolated between each 50-foot station or the ends if the line is less than 50 feet long.

Pressure Sewers, Waterlines, and Conduits

Payment for trench excavation and backfill will be made at the respective unit prices per linear foot stated in the Proposal for the trench excavation, the type of backfill used, and all incidental work, including

all extra excavation required to provide space for pipe bedding and shall also include any incidental excavation and backfill necessary to widen the trench for installation of branch-line fittings and appurtenances.

For waterline installations, payment for trench excavation and native backfill will be included within the "Installation of Pipe" (Subsection 404.01) bid item.

204.04.01C Imported Select Backfill

If a portion of the native material is approved as a granular backfill material in areas requiring such, there may be a need for additional granular backfill to be imported. Compensation will be on a cubic yard ("neat-line", in place) or linear foot basis.

All projects where select backfill is used in the trench section, payment shall be by the cubic yard unit price in place. The units shall be computed by multiplying the neat width of the trench, as defined by Standard Drawings, times the depth of the backfill between the asphalt concrete restoration section and the pipe zone, times the horizontal length of the trench to which the backfill is added. If all dimensions are in feet, divide the resulting volume by twenty-seven (27) for cubic yards.

204.04.02 Rock Excavation

204.04.02A Structural Rock Excavation

Rock excavation will be measured on a cubic yard basis for the actual quantity removed within the limits of excavation as defined for unclassified excavation. Quantity for payment shall be the amount approved by the Engineer.

204.04.02B Roadbed and Slope Rock Excavation

Rock excavation will be measured on a cubic yard basis for the actual quantity removed within the limits of excavation as defined for unclassified excavation. Quantity for payment shall be the amount approved by the Engineer.

204.04.02C Trench Rock Excavation

Rock excavation will be measured on a cubic yard basis as follows:

Length

Length will be the entire horizontal distance where rock is encountered measured on a linear foot basis along the centerline of the trench.

In sewer trenches, manholes and other structures will be excluded and will be measured separately. Measurement will commence at the first location where rock is encountered and continue to the point where rock terminates.

In trenches for water mains, valves, fittings, couplings, or structure locations will be included in the linear measurement, unless the Proposal carries a separate item that is applicable to the structures.

Width

For sewers and water mains, the width for payment of trench rock excavation shall be the inside pipe diameter plus 2 feet.

Depth

Measurement for depth will be the vertical distance from the top of the rock to the bottom of the rock or a depth that is 6 inches below the sewer pipe or watermain, whichever is less. Depth will be measured at intervals of 25 feet for sewers and 50 feet for water mains along the centerline of the trench, beginning at the first location that rock is encountered, and the average depth between measuring points will be the depth used for computing depth of rock.

Payment for rock excavation will be based on the unit price per cubic yard stated in the Bid and will be paid in addition to the payment for trench excavation and backfill except for water mains, where the volume paid for rock excavation will be deducted from the volume paid for common trench excavation. Payment for rock excavation shall include full compensation for all work necessary to excavate the rock material. No payment will be made for rock excavated below the required grade or outside the widths mentioned above.

Rock excavation quantities for manholes and other structures shall be computed from the actual profile depth as above, multiplied by the area within a line parallel to and one foot outside of the actual outside dimensions of the manhole or structure base.

204.04.03 Hard Surface Removal and Replacement for Trenches

Measurement and payment for the removal and replacement of Portland Cement concrete pavement, asphaltic concrete pavement and surfaces, curbs, driveways, and sidewalks shall conform to the provisions of Section 209 RESURFACING.

Payment for removal will be covered under excavation unless specifically stated otherwise in this document.

204.04.04 Embankment

Measurement for payment for embankment compacted in place will be made on a cubic yard basis. Computation of volume for payment will be based on field measurement of the actual number of cubic yards constructed within limits shown or directed. Where applicable, this shall be within neat lines of the staked cross section.

No payment will be made for quantities required due to subsidence or settlement of ground or foundation, for settlement of materials within the embankment or for shrinkage, settlement, washout, slippage, or loss regardless of cause, subject however to the provisions of RESPONSIBILITY OF CONTRACTOR in Section 105 of the GENERAL REQUIREMENTS.

No deduction will be made for piers, columns, pipes, or miscellaneous construction features constructed within embankment limits.

Payment shall constitute full compensation for all work and all materials used, whether obtained from the site of work or imported.

Trench excavation, bedding, and backfill placed in the compacted embankment will be paid for separately for the particular item and class of construction.

204.04.05 Foundation Stabilization

Payment for this item will be based on the unit price per cubic yard stated in the Proposal. Measurement will be based upon a trench pay width of the inside pipe diameter plus 2 feet. Payment for this item shall constitute full compensation for all materials, labor, equipment, and incidentals necessary to furnish materials at the site and for placing and compacting it and for the extra depth of excavation required below the pipe base grade structure or roadway to provide for a stable base. This item is to provide for unstable base encountered in the progress of the work and shall be used only under the direction of the Engineer. Foundation

stabilization will only be paid in those areas where the Engineer has given written direction for installation.

204.04.06 Bedding for Sewers, Water Mains, and Conduits

Payment for pipe bedding will be included in the linear foot payment for pipe as specified in Section 301 and/or Section 404.

204.04.07 Pipe Zone Backfill

Payment for pipe zone backfill will be included in the linear foot payment for pipe as specified in Section 301 and/or Section 404.

204.04.08 Riprap and Filter Blanket

Riprap and filter blanket material will be measured for payment on a cubic yard or ton basis only when listed in the Proposal as a separate bid item, or when directed by the Engineer. Measurement will be based upon individual trip tickets of actual truck measure furnished to the Engineer for the cubic yards or tons used under this item. Trip tickets shall be presented to the Engineer for signature on the day the material is delivered. No payment will be allowed on trip tickets not so validated by the Engineer.

Payment for riprap and filter blanket shall include all work necessary to furnish and place the material complete. When not listed in the Proposal, payment for riprap and filter blanket shall be incidental to other items of work.

204.04.09 Imported Topsoil

Measurement and payment for the imported topsoil will be made on a cubic yard or ton basis and only when listed in the Proposal as a separate bid item. Measurement will be based upon individual trip tickets of actual truck measure furnished to the Engineer for the cubic yards or tons used under this item. Trip tickets shall be presented to the Engineer for signature on the day the material is delivered. No payment will be allowed on trip tickets not so validated by the Engineer.

Payment for imported topsoil shall constitute full compensation for all work necessary to furnish materials on site, placing material, and for full compaction in place.

204.04.10 Shoring, Sheeting, and Bracing

Shoring, sheeting, and cribbing, including all work and materials expended in furnishing, placing, and removing such shoring, sheeting, and cribbing necessary to complete the excavation shall be considered incidental to the pay item for excavation.

204.04.11 Dewatering

Dewatering shall be considered as incidental to and included in the pay item for excavation.

****

205 MATERIALS - TYPES AND USE

****

205.01 DESCRIPTION

This section covers certain types of materials and their use that are common to appropriate forms of construction contained throughout Divisions 3 through 6.

205.02 MATERIALS

205.02.01 General

Unless specified otherwise in the Contract Documents or Standard Drawings, materials contained herein will be used in required work.

205.02.02 Portland Cement Concrete

Use concrete having a 28 day design strength of 3,300 PSI for curbs, sidewalks, and poured in place manholes and catch basins, and 4,000 PSI for PCC pavement per AASHTO T-22 and T-23 with 1-1/2 inch maximum size aggregate.

High early strength concrete (Type III cement) shall be used when patching trenches in Portland Cement concrete pavement.

Use Type II cement concrete for all sewer and water main construction and appurtenances thereto.

Portland Cement concrete shall be sampled and tested in accordance with the following ASTM test methods:

1.	Sampling Fresh Concrete	C172
2.	Obtaining Drilled Cores	C42
3.	Molding and Curing Specimens	C31
4.	Compressive Strength	C39
5.	Flexural Strength	C78
6.	Slump	C143
7.	Air Content	C173 or C231
8.	Unit Weight Yield	C138
9.	Setting of Mortar	C191 or C266

205.02.03 Cement Mortar

Use either standard premixed mortar conforming to ASTM C 387, or mortar proportioned with 1 part Portland Cement to 2 parts clean, well-graded sand which passes a 1/8-inch screen and which conforms to AASHTO M 45. Admixtures may be used, but do not exceed the following percentages of cement by weight: Hydrated lime - 10 percent and diatomaceous earth or other inert materials - 5 percent. Testing shall conform to the OSHD test for mortar strength.

205.02.04 Cement Grout

205.02.04A Type "A" Grout

Utilize grout which consists of 1 part Portland Cement, 3 parts of clean and well-graded sand. Use minimum amount of water to produce a thick, creamy consistency.

205.02.04B Type "B" Grout

Where type "B" grout is specified, use a mixture consisting of 1 part Portland Cement, 5 parts of clean and well-graded sand, and 7 parts pea gravel, by volume.

205.02.05 Steel Reinforcement

Use steel deformed bars conforming to ASTM A 615, Grade 40, except that longitudinal bars in continuously reinforced concrete pavement shall be Grade 60. See Section 702 REINFORCEMENT.

205.02.06 Dowels

Utilize steel dowels which conform to ASTM A 306 Grade 70. Where specified, dowels shall be coated with plastic or other approved material for bond prevention. See Section 702 REINFORCEMENT.

205.02.07 Structural Joint Material

Use preformed and poured joint fillers conforming to requirements of Subsection 701.02.06 JOINT MATERIALS. For joints in Portland Cement concrete pavement, curbs, gutters, driveways, sidewalks, and pathways, refer to DIVISION 5 - STREETS.

205.02.08 Curing Materials for Portland Cement Concrete

Conform to one or more of the following requirements for curing materials; choice of method to be used is dependent on weather and existing conditions:

1.	White Burlap – Polyethylene Sheets	AASHTO M 171
2.	Waterproof Paler	AASHTO M 171
3.	White – Pigmented Liquid Membrane-Forming Compound **	AASHTO M 148
4.	White Polyethylene Film	AASHTO M 171
5.	Burlap Cloth (Jute or Kenaf)	AASHTO M 182

**Required for PCC curbs, but do not use on bridges or box culverts. Test in accordance with the OSHD modified procedure.

205.02.09 Epoxy Cement

Epoxy cement shall be a two-compound epoxy resin adhesive conforming to requirements of AASHTO M 235.

205.02.10 Portland Cement

Furnish one or more of the following types as specified:

Type I – For general use when special properties of other type cements are not required.

Type IA – Air-entraining cement for same uses as Type I, where air-entrainment is desired.

Type II – For use when moderate sulfate resistance or moderate heat of hydration is desired.

Type IIA – Air-entraining cement for same uses as Type II, where air-entrainment is desired.

Type III – For use when high early strength is desired.

Type IIIA – Air-entraining cement for same use as Type III, where air-entrainment is desired.

Portland Cement shall conform to AASHTO M 85 for low alkali cement except as follows:

1. Total alkali content (sodium and potassium oxide calculated as $Na_2O+0.658K_2O$) shall not exceed 0.6 percent.

2. Types I, IA, III, or IIIA must contain a maximum of 10 percent tricalcium aluminate.

3. Time-of-setting tests shall be by either the Gillmore Test or the Vicat Test or both, as Engineer may elect.

When not otherwise specified, use Type I. Contractor, at his option, may use Type III Portland Cement (high early strength) in lieu of Type I in the identical quantity specified for the latter.

Differing brands or types of cement, or the same brand or type of cement from different plants shall not be mixed during use nor be used alternately. Cement may be sampled either at the plant or site of work at the option of the Engineer.

205.02.11 Water

Water used in all work must be reasonably clean and free of oil, salt, acid, alkali, sugar, vegetable matter, or other substances injurious to the finished product. Use water conforming to AASHTO T 26 for mixing and curing Portland Cement concrete, mortar, or grout. Water of approved potable quality may be used without test.

205.02.12 Aggregates

205.02.12A General

Aggregates shall be subject to approval at the source or at the actual stockpile from which the aggregate is taken for incorporation in the work. During production of the aggregate, provide samples of each size for testing if requested by the Engineer. On the basis of testing, modify or adjust crushing and screening operations to bring each separate size of aggregate within gradings, proportions, and quantities as specified.

In all stages of production, transporting, and stockpiling, handle aggregates in such a manner as will prevent the segregation of materials and the intermingling of separate gradings or kinds of aggregates.

Grading of designated aggregate sizes shall conform to the requirements of appropriate forms of work contained within applicable sections throughout these Specifications.

The determination of sizes and grading of aggregate shall conform to AASHTO T 27 and AASHTO T 11.

205.02.12B Coarse Aggregates

Coarse aggregates shall be natural or crushed rock or gravel which is retained on a No. 4 sieve and free from flat, elongated, soft, or disintegrated pieces, vegetable material, or other deleterious matter.

Use crushed rock or crushed gravel for coarse aggregate in aggregate bases and all asphalt construction requiring coarse aggregate. Total deleterious matter shall not exceed 2 percent by weight.

Use crushed rock, natural gravel, or other inert materials of similar characteristics, or combinations thereof, for coarse aggregate in Portland Cement concrete. Do not allow amount of deleterious substances in Portland Cement concrete to exceed the following amounts:

Lightweight pieces	0.25% (by weight)
Friable particles	0.25% (by weight)
Material passing No. 200 sieve	1.00% (by weight)
Wood waste	0.05% (by weight)

Use coarse aggregates having weighted percentages of loss which do not exceed 12 percent by weight when subjected to five alternations of the sodium sulfate soundness test (AASHTO T 104).

Fracture of Gravel

When crushed gravel is furnished, it shall have at least one mechanically fractured face on not less than the following percentages (by weight) of the material retained on a No. 4 sieve.

Type of Use	Percentages
Asphalt Concrete Pavement	75
Asphalt Surface Treatment	95
Asphalt Treated Bases	75
Aggregate Bases – 1"- 0" crushed gravel	70

Durability

The source material from which coarse aggregate is produced shall meet the following qualifying test requirements:

Test	Test Method	Requirements
Degradation:		
Passing No. 20 sieve	OSHD Standard	30% Max.
Sediment Height	OSHD Standard	3" Max.
Abrasion	AASHTO T 96	35% Max.

Also, other sampling and testing of coarse aggregate shall be in accordance with the following methods:

Sampling	AASHTO T 2
Materials Passing No. 200 sieve	AASHTO T 11
Sieve Analysis	AASHTO T 27
Soundness	AASHTO T 104
Friable Particles	AASHTO T 112
Lightweight Pieces	AASHTO T 113
Fracture	OSHD Standard

205.02.12C Fine Aggregate

Use fine aggregate consisting of finely crushed rock or gravel, fine sand, and other finely divided natural and inert mineral matter, thoroughly washed, and free of clay, loam, shale, alkali, vegetable matter, and other deleterious matter. Do not mix fine aggregate from different geological sources, and do not store in the

same pile nor use alternately in the same class of construction or mix.

Portland Cement concrete shall contain fine aggregate which has a deleterious material content not exceeding the following limits:

Friable Particles	1% (by weight)
Lightweight Particles	1% (by weight)
Material Passing No. 200 Sieve	1% (by weight)

When this fine aggregate for Portland Cement concrete is subject to five alternations of the sodium sulfate soundness test (AASHTO T 104), weighted percentage of loss must not exceed 10 percent by weight.

Asphalt cement concrete and surface treatments shall contain fine aggregate having a weighted loss of not more than 15 mass percent when sodium sulfate is used or 20 mass percent when magnesium sulfate is used in five cycles of the soundness test. Total deleterious matter shall not exceed 2 percent by weight.

Use fine aggregates which meet the durability requirements for coarse aggregates contained hereinbefore, and which meet the following Liquid Limit and Plasticity Index requirements:

Quality	Test Method	Requirement
Liquid Limit	AASHTO T 89	NP or 33 Max.*
Plasticity Index	AASHTO T 90	NP or 6 Max.*

*When tested as specified, both the liquid limit and the plasticity index test results shall conform to the following:

Percent of Material Passing No. 40 Sieve	AASHTO T 89 Liquid Limit (Maximum)	AASHTO T 90 Plasticity Index (Maximum)
0.0 to 5.5, inclusive	33	6
5.1 to 10.0, inclusive	30	5
10.1 to 15.0, inclusive	27	4
15.1 to 20.0, inclusive	24	3
20.1 to 25.0, inclusive	21	2
Over 25.0	21	O or N.P.

Sampling and testing fine aggregate shall conform to the following methods:

1.	Sampling	AASHTO T 2
2.	Material Passing No. 200 Sieve	AASHTO T 11
3	Organic Impurities	AASHTO T 21
4.	Sieve Analysis	AASHTO T 27
5.	Mortar Strength	ASTM C 109
6.	Soundness	AASHTO T 104
7.	Friable Particles	AASHTO T 112
8.	Lightweight Pieces	AASHTO T 113
9.	Sand Equivalent	AASHTO T 176

205.02.13 Asphalt Materials

205.02.13A General

Unless otherwise specified herein or in applicable subsections, types and grades of material shall conform to the current Oregon State Highway Division's "Specifications for Asphalt Materials" for Light Duty AC obtainable from the Engineer of Materials, ODOT, Salem, Oregon 97310.

205.02.13B Asphaltic Cement

Use PBA-2 grade asphalt that meets OSHD requirements for Light Duty AC.

205.02.13C Tack Coat

Asphalt shall consist of CSS-1 or CSS-1h emulsified asphalts.

205.02.13D Slurry Seal

Use CCS-1H cationic emulsified asphalt.

205.02.14 Geotextiles

DESCRIPTION: Geotextiles will be accepted for use in various applications according to the provisions of this section.

DEFINITIONS:

(a) **GEOTEXTILE** - A fabric manufactured specifically for use in civil engineering applications. Fibers used in the manufacture of geotextiles consist of long chain synthetic polymers. At least 85 percent by weight of the long chain polymers are polyolephins, polyesters, or polyamides.

1) **DRAINAGE GEOTEXTILE** - For installation in subsurface drains or other drainage locations.

2) **EMBANKMENT GEOTEXTILE** - For installation within or under embankments for stabilization.

3) **RIPRAP GEOTEXTILE** - For installation behind and beneath riprap, buttresses, inlays, shear keys, and erosion control applications.

4) **WALL GEOTEXTILE** - For construction of retained earth walls.

5) **SUBGRADE GEOTEXTILE** - For installation on subgrades and in other material separation applications.

6) **PAVEMENT OVERLAY GEOTEXTILE** - For installation beneath an asphalt concrete overlay.

(b) **MACHINE DIRECTION** - The long, or warp, direction of the geotextile. The cross-machine, or fill, direction is perpendicular to the machine direction.

(c) **NON-WOVEN GEOTEXTILE** - A textile produced by bonding and/or interlocking of fibers by mechanical, heat, or chemical means.

(d) **ROLL** - Unit of continuous geotextile without transverse seams as furnished by the manufacturer. Roll size may vary between manufacturers and types of geotextiles.

ACCEPTANCE REQUIREMENTS:

(a) **GENERAL REQUIREMENTS** - The geotextile shall:

- Be composed of a polymeric yarn or fiber oriented into a stable network which retains its relative structure during handling, placement, and design service life.
- Meet or exceed the properties outlined under Geotextile Property Values.
- Be free of any chemical treatment or coating which might significantly reduce permeability.
- Have the selvage finished so the outer fibers are prevented from pulling away from the fabric.
- Be free of defects or tears.
- Be resistant to ambient temperatures, acid and alkaline conditions, micro-organisms and insects.
- Be for the intended purpose and have dimensional stability.

(b) Base the actual minimum average roll values furnished by the manufacturer on representative test results from the manufacturing plant which produced the rolls, and shall meet or exceed each of the specified minimum values. Clearly label all rolls as being part of the same production run certified as meeting all applicable requirements.

GEOTEXTILE PROPERTY VALUES

Minimum Value

Geotextile Property Test Method	Drainage (1) Geotextile Type 1/Type 2	Riprap (1) Geotextile Type 1/Type 2	Subgrade Geotextile	Embankment Geotextile	Wall (1) Geotextile	Pavement (1) Overlay Geotextile
Grab tensile strength minimum in each principal direction - ASTM D4623	80 lb/180 lb	200 lb/260 lb	180 lb	230 lb	----	80 lb
Grab Elongation - ASTM D 4632	15%	15%	----	----	----	50%
Burst Strength, Diaphragm method - ASTM D 3786 Mod. (OSHA TM 814) (TF 25 Method 3)	130 psi/290 psi	320 psi/430 psi	290 psi	430 psi	----	----
Puncture Strength - ASTM D 4833 or ASTM D 3787 Mod. (OSHD TM 816)	35 lb/80 lb	80 lb/110 lb	80 lb	110 lb	----	----
Apparent opening size (AOS), U.S. Std. Sieve - ASTM D 4751 (CW-02215 Corps of Engr.)	No. 70 sieve or smaller opening	No. 70 sieve or smaller opening	No. 30 sieve or smaller opening	No. 30 sieve or smaller opening	(2)	----
Water permeability - ASTM D 4491	0.1 cm/sec	0.1 cm/sec	0.005 cm/sec	0.005 cm/sec	(2)	----
Ultraviolet stability - ASTM D 4355 at 500 hours	----	70% strength retained	----	----	70% strength retained	----
Wide strip tensile strength - ASTM D 4595	----	----	----	----	(2)	----
Asphalt retention - OSHD TM 817 (TF25 Method 3) (3)	----	----	----	----	----	0.20 gal/sq. yd.
Melting point - ASTM D 276	----	----	----	----	----	300° F

205.03 CONSTRUCTION

205.03.01 Description

This work consists of furnishing and placing geotextiles in drains, under embankments, for embankment reinforcement, under riprap, buttresses, inlays, shear keys and erosion control applications,

behind retaining structures, over roadbed subgrades, and beneath pavement overlays as shown on the plans and at other locations as directed.

205.03.02 Geotextile Installation Requirements

Acquisition and Storage - Provide complete rolls of geotextile as furnished by the manufacturer and protect against damage and deterioration. Store all geotextile rolls in a dry place and off the ground at all times according to ASTM D 4873. Cover all rolls and partial rolls with a dark protective covering when received. The geotextile will be rejected for use if the Engineer determines it has defects, deterioration, or has been damaged.

Placement:

(1) Surface Preparation - Prepare the surface receiving the geotextile to a smooth condition free of obstructions, depressions and debris unless otherwise directed. Do not drag the geotextile on the ground or mishandle in any way.

Loosely place the geotextile without wrinkles so placement of the overlying material will not tear the geotextile. Lap or sew the geotextile at the ends and sides of adjoining sheets as specified.

(2) On Slopes - Place the geotextile with the machine direction oriented up-down the slope. Lap the upper sheets over the top of the lower sheets. When the geotextile is placed on a slope steeper than 6:1, securely anchor the laps to the ground surface with pins or stakes as necessary to prevent slippage and tearing of the geotextile. Start placement of fill material on the geotextile at the toe of the slope and proceed upwards.

(3) Where Exposed To Water - If geotextiles are placed under water or in areas where water will flow, the geotextile may be placed with the machine direction parallel to the direction of water flow instead of the placement direction specified. Overlap sheets so the upstream sheet is placed over the top of the downstream sheet. Adequately secure the geotextile to prevent slippage. As the geotextile is placed under water, place the backfill material on it to the required thickness. Do not place geotextile more than 50 feet ahead of the specified cover material.

Overlaps - Minimum overlap requirements for geotextiles are:

GEOTEXTILE APPLICATION	MINIMUM OVERLAP REQUIREMENTS, INCHES
Drains	12
Embankment Stabilization	24
Geotextile Wall Reinforcement	24
Pavement Overlays	**
Riprap and Rock Buttresses	24
Roadbed Subgrade Stabilization	24

* Refer to 00350.44
** Use sufficient overlap to insure closure, but not more than 6 inches.

If the Engineer determines the specified overlap is not sufficient, increase the overlap to provide adequate coverage or sew the geotextile together in the field. If field sewn, the provision of 00350.20 and 00350.40(d) apply.

Field Seams:

(1) General - Obtain the Engineer's approval before field seaming and stitching. Sew field seams with polymeric thread consisting of polypropylene, polyester, or kevlar, and as resistant to deterioration as the geotextile being sewn. Use a color of thread that contrasts with the geotextile being sewn so the stitches are exposed for inspection when the geotextile is placed.

(2) Seam Type - Obtain the geotextile manufacturer's recommendation for the type of seam and stitch to be used. If the Contractor does not obtain and provide the foregoing technical information, use a "J" seam with at least 3 stitches per inch. The flat, or prayer, seam may be used for repair of damaged in-place geotextile.

Protection of Geotextile - Protect the geotextile at all times from ultraviolet (UV) rays, contamination by surface runoff, and construction activities.

Traffic or construction equipment will not be permitted directly on the geotextile except as authorized.

When placed for construction, cover the geotextile with specified cover material as soon as possible. Do not leave in uncovered condition for more than 5 days, except when used with temporary retained earth walls and asphalt overlays.

Place cover material on the geotextile in a manner that the geotextile is not torn, punctured, or shifted. Use a minimum 6 inches thick cover layer or twice the maximum aggregate size, whichever is thicker. End-dumping cover material directly on the geotextile will not be permitted.

Limit construction vehicles in size and weight so rutting in the initial layer above the geotextile is not more than 3 inches deep or 1/2 the layer thickness, whichever is lesser. Turning of vehicles on the first layer will not be permitted.

Repair of Geotextile - Repair or replace all torn, punctured, or contaminated goetextiles during construction at no cost to the Division. Repair by placing a patch of the specified geotextile over the affected area. Overlap the existing geotextile with the patch. Where geotextile seams are required to be sewn, repair any damaged sheet by sewing unless otherwise indicated on the plans or special provisions or as directed.

205.03.02A Drainage Geotextile

When used in trenches for drains, place the geotextile in the trench as shown on the plans to loosely conform to the shape of the trench with no wrinkles or folds.

205.03.02B Embankment Geotextile

Construct embankment stabilization according to details shown on the plans. Place the geotextile layers so the geotextile machine direction is transverse to the embankment centerline. Spread the geotextile so all slack and wrinkles are eliminated.

205.03.02C Riprap Geotextile

Place geotextile behind and beneath riprap, buttresses, inlays, shear keys, and erosion control applications according to the details shown. Demonstrate to the satisfaction of the Engineer that the combination of the rockfill drop height and the thickness of any aggregate cushion, when specified or required, are adequate to not puncture or damage the geotextile when placing the riprap or stone embankment material. In addition, the following limits apply:

	Maximum Drop Height, Feet	
Size of Rock Material	Onto Geotextile	Onto an Aggregate Cushion Blanket
Greater than 200 lbs.	0	3
200 lbs. or less	3	3

After placing the riprap, backfill all voids in the riprap face so the geotextile is completely covered and not visible.

205.03.02D Wall Geotextile

(a) General - Begin wall construction at the lowest portion of the excavation and place each layer horizontally as shown on the plans. Complete each layer in its entirety before the next layer is started. Seams will be allowed only at the wall face. Either overlap geotextile sheets perpendicular to the wall or sew seams parallel to the wall face. Stretch the geotextile in a perpendicular direction to the wall face to eliminate slack before backfilling.

(b) Forming the Wall - Use a temporary form system at the wall face during construction. A typical temporary form system and a sequence of wall construction required are shown in the plans. Use pegs, pins, or the manufacturer's recommended method as approved by the Engineer, in combination with the forming system, to hold the geotextile in place until the cover material is placed.

(c) Backfill for Wall Construction - Compact the backfill for the wall within the limits shown or directed. Compact each layer to 95 percent of maximum density as determined by OSHD TM 109. Maintain the water content to within +/- 3 percent of the optimum moisture content. Sheepsfoot rollers and vibratory rollers or other rollers with protrusions will not be allowed within 3 feet of the wall face. Compact this area using approved light mechanical tampers, without damaging or distorting the wall facing or reinforcing layers.

205.03.02E Subgrade Geotextile

For roadbed subgrade separation, prepare the subgrade according to Section 501.

Correct geotextile failures, as evidenced by soil pumping or roadbed distortion, by removing any covering material in the affected area and placing a geotextile patch on the exposed geotextile. The patch shall overlap the exposed geotextile a minimum of 12 inches. Cover the patch with the specified cover material and compact before proceeding.

205.03.02F Pavement Overlay Geotextile

(a) General - Place geotextile and pavement overlay in four basic steps:

- Surface preparation
- Sealant application
- Geotextile placement
- Overlay placement

As outlined according to Section 508.

205.04 MEASUREMENT AND PAYMENT (GEOTEXTILE)

Square Unit Basis (Measurements) – Each geotextile installation will be measured along the lines and grades of the installation to the nearest square yard of surface area actually covered according to the plans or as

required, except for drainage and wall geotextile applications.

The number of square yards of drainage geotextile will be computed by multiplying the length of the trench where geotextile is used by the perimeter of the trench as determined from the neat lines shown, or as directed.

Geotextile walls will be measured to the nearest square foot of wall face computed by multiplying the length times the sloped height of the wall.

No separate measurement will be made for constructing laps, seams, joints, or patches unless more than the specified lap is ordered, in which case the added lap width will be measured.

Square Unit Basis (Payment) – The accepted quantities for geotextiles will be paid for at the contract price per unit of measurement for the following items:

	UNIT OF PAY ITEM	MEASUREMENT
(a)	Drainage Geotextile	Square Yard
(b)	Embankment Geotextile	Square Yard
(c)	Riprap Geotextile	Square Yard
(d)	Wall Geotextile	Square Foot
(e)	Subgrade Geotextile	Square Yard
(f)	Pavement Overlay Geotextile	Square Yard

Item (d) includes all backfilling costs and geotextile as shown on the plans.

Item (f) includes preparation work, sealant, and geotextile.

Payment will be payment in full for all equipment, tools, labor, and incidentals necessary to complete the work. No separate payment will be made for constructing laps, seams, joints, and patches unless the Engineer orders additional amounts over the minimum. For laps wider than the minimum or specified width, payment will be made for the added lap width at the contract unit prices.

If the Engineer orders geotextiles with properties more stringent than specified, price adjustment for the difference in material cost only will be allowed.

****

206 LANDSCAPING AND LANDSCAPE RESTORATION

****

206.01 DESCRIPTION

This Section covers the work necessary for: (A) finish grading, addition of topsoil, fertilizer, and weed control, establishment of lawns or grass areas by sod or seeding, and maintenance of lawn or grass areas, complete; (B) mulching, fertilization, and planting of ground cover, establishment of nursery stock, such as trees, shrubs, and small plants, and maintenance of ground cover and nursery stock, complete; (C) irrigation system and subsurface drainage, complete.

206.02 MATERIALS

206.02.01 Plants

Names of plants to conform to standardized names of the American Joint Committee on Horticultural Nomenclature. Names of varieties not included therein conform to names generally accepted in the nursery trade. Provide plants which are nursery-grown with habit of growth that is normal for the species, sound, healthy, vigorous, and free from insects, diseases, and injuries and equal to or exceeding measurements specified, measured before pruning with branches in normal position. Provide sizes and methods of handling according to the code of standards recommended by the AAN.

206.02.02 Seed

Provide tested grass and legume seed from blue tag stock and from the latest crop available. Deliver each variety or mixture in standard containers labeled in accordance with Oregon State laws and U.S. Department of Agriculture rules and regulations under the Federal Seed Act. Provide with label showing the following: seed variety, percentage of purity, germination, maximum weed content, and date of test (must be within 9 months of date of delivery). Seed must be tested as set forth in the General Seed Certification Standard by the Oregon State University Certification Board. Mold or evidence of container having been wet or otherwise damaged will be cause for rejection of each lot of seed.

206.02.03 Sod

Provide grass sod from certified or approved source, strongly rooted, and free of pernicious weeds. Sod should be composed of several seed varieties excluding blue and bent grass varieties.

206.02.04 Topsoil

206.02.04A Native Topsoil

Save, store, protect, and reuse approved native topsoil taken from the top 12 inches of the excavation. Ensure that topsoil is free from grass, overburden and roots, sticks, hard clay, and any stones which will not pass a 1-inch square opening. Wherever native topsoil cannot be saved or is not satisfactory for reuse, use imported topsoil conforming to Subsection 204.02.07 IMPORTED TOPSOIL, but only with the approval of the Engineer.

206.02.05 Sand

Conform to the requirements of Subsection 205.02.12C FINE AGGREGATE.

206.02.06 Organic Material for Soil Amendment

Use a peat consisting of natural residue formed by decomposition of reeds, sedges, or mosses from freshwater site. Peat must be free from lumps, roots, stones, and capable of absorbing at least 4 times its dry weight of water. It must contain organic matter not less than 90 percent on a dry weight basis, and have a maximum moisture content at time of delivery of 65 percent by weight.

206.02.07 Lime

Provide a lime composed of ground dolomitic limestone not less than 85 percent total carbonates and magnesium, ground so that 50 percent passes 100 mesh sieve and 90 percent passes 20 mesh sieve. Coarser material may be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing 100 mesh sieve.

206.02.08 Subdrains

Use perforated PVC drain pipe, meeting the requirements of Subsection 601.02.04 PVC PIPE, unless otherwise specified, and as approved by the Engineer.

206.02.09 Irrigation and Water Systems

206.02.09A Pipe

Use copper pipe, Type K hard copper, conforming to ASTM B 88, with commercially pure wrought copper solder joint fittings. Make joints with 95-5 wire solder, ASTM B 32, grade 95 TA. The use of cored solder will not be permitted.

Use PVC pipe (SDR-PR), conforming to ASTM D 2241, and fittings of PVC with deep socket dimensions conforming to ASTM D 2466.

206.02.09B Gate Valves

Install the following gate valves: up to and including 3-inch with bronze bodies, 4-inch and larger with either bronze or iron bodies, all having bronze stems, bronze seat rings, and bronze disc faces, and conforming to ASTM B 62.

206.02.09C Pressure Reducing Valves

Use adjustable, heavy duty bronze pressure reducing valves. Must have approved stainless steel or monel strainer to permit quick cleaning or replacement without dismantling or removing the valve from the line and with integral or independent union.

206.02.09D Control Valves

Provide manual control valves of brass or bronze for underground installation. Valves shall have cross or slot type handle for operation with a standard key, a removable bonnet and stem assembly, an adjustable packing gland, a rising stem to assure full opening of the valve, renewable disc-type washer seat, and integral or independent union.

Use electrically operated control valves of bronze, brass, or stainless steel. These shall be of the normally closed type, having an open or close time greater than 4 seconds, and capable of manual control during power failure. Provide with a motor assembly or operating parts which are removable without disturbing the valve body. Must be all waterproof for underground burial, and with integral or independent union for supply line connection.

206.02.09E Quick-Coupling Valves

Supply one-piece or two-piece body type, locking cap, having body of approved heavy duty brass or bronze, watertight before and after the coupler is inserted, and designed so that the valve seat is closed before the coupler is removed. Provide valve couplers, keys, and hose swivels of compatible design to quick-coupling valves.

206.02.09F Risers

Connect sprinkler heads and quick-coupling valves to galvanized steel pipe water supply lines with galvanized steel pipe risers. Heads and valves connected to plastic pipe water supply lines shall, in addition, be provided with an approved swing joint.

206.02.09G Vacuum Breakers

Install bronze-bodied machined valve seat, with working pressure rating to 150 PSI. Provide pressure type vacuum breaker as an assembly consisting of vacuum breaker, 2 gate valves, check valve union, and nipples, as approved.

206.02.09H Backflow Preventers

Use either reduced pressure or double check valve assemblies, as indicated in Contract Documents, of a type and size approved by the Owner.

206.02.10 Fertilizer

Use fertilizer conforming to the recommended content as provided for in 206.03.02 SOIL TEST. Furnish fertilizer in moisture-proof bags with weight and the manufacturer's certified analysis of the contents showing the percentage for each ingredient. Furnish fertilizer in a dry condition free from lumps and caking, in a uniform granular or palletized form, of standard commercial grade conforming to all State and Federal regulations and to the standards of the Association of Official Agricultural Chemists. Fertilizer may be furnished in bulk form if an approved transfer hopper is provided.

206.02.11 Mulch and Ground Covers

Use one or more of the following types of mulch:

1. Organic mulch of clean ground Douglas fir or hemlock bark graded so that 50 percent consists of particles larger than 1/4-inch, but not exceeding 1-inch, and 20 percent will pass a No. 10 sieve.

2. Stone mulch of screened washed bank gravel with rounded pebbles. Submit sample for approval of color and size.

3. Fiber-glass mulch of approved commercial grade fiber-glass yarn mat.

4. Straw mulch of threshed straw of oats, wheat, or rye, free from seed of noxious weeds or clean salt hay.

5. On steep slopes use approved mesh to reinforce mulch or plantings such as fiber mulch of heavy, twisted jute mesh or other material as approved, with openings between strands approximately 1-inch square.

6. Spray mulch of a verdyol complex, with nontoxic, 100 percent organic water soluble powder binding agent with silva fiber used in hydraulic seeding operations.

206.02.12 Tie Downs

Use one or more of the following materials as the need arises:

1. Eye-bolt masonry anchors of galvanized steel, with approved lead shield or flush shell for setting into masonry joint or concrete.

2. Wood stakes, 2-inch by 2-inch by 96-inch, clear straight cedar, or approved.

3. Wire of 12 gauge, pliable galvanized steel, for guys, or for fastening trees to stakes.

4. Hose for guy wire encasement will be of 2-ply reinforced rubber garden hose, having a

minimum 5/8-inch diameter threaded openings fitted with screw eyes.

5. Turnbuckles will be zinc-coated, with a 6 1/2-inch lengthwise opening, and 3/8-inch diameter threaded openings fitted with screw eyes.

206.02.13 Soil Sterilant

Soil sterilant shall be as approved by the Engineer for the purpose specified and shall be applied conforming to manufacturer's recommendations.

206.03 CONSTRUCTION

206.03.01 General

Conform to the manufacturer's and supplier's recommendations and instructions and to accepted practices in the industry.

206.03.02 Soil Test

If directed by the Engineer, have a soil test performed before the project schedule is submitted. The test may be performed by any Oregon State University County Extension Agent or by any other approved soils testing laboratory. The soils analysis shall provide a chemical analysis of the soil and recommendations for soil improvement for the vegetation to be grown. The recommendations shall be used to select the particular fertilizer and soil improvement materials to be used prior to planting.

206.03.03 Lawns and Grass

206.03.03A Project Schedule

Within 20 calendar days of the date specified for commencement of work, submit for approval a time schedule indicating dates for beginning and completion of the following operations:

1. Delivery of Materials
2. Preparation of Seedbed
3. Planting Grass
4. Maintenance

206.03.03B Delivery, Handling, and Storage of Sod

Deliver sod immediately on lifting and after lawn bed is prepared for planting. Protect sod from drying by covering during delivery to protect from sun and wind. Store materials only in designated areas.

If sod is not laid within 2 days of delivery, spread out flat with grass side up in cool place and keep moist. Rolled or stacked sod that becomes yellow will not be accepted.

206.03.03C Preparation of Subgrade

After rough grading is completed and before topsoil is spread, apply lime and/or super phosphate as determined by soil analysis, and mix to a depth of 4 to 6 inches. Conform to manufacturer's recommendations for applying lime and super phosphate simultaneously, and schedule application or applications accordingly.

206.03.03D Subsurface Drainage

Lay drainage pipe on firm bed of gravel with minimum fall of 0.5 percent and located as shown on the plans. Place pipe at a minimum depth of 24 inches and not any deeper than required to produce minimum fall. Cover backfill with fiberglass mat to prevent infiltrations of soil. Backfill trenches with gravel to within 4 inches of subgrade.

Place other drain materials in conformance with the applicable requirements in DIVISION 5 - SEWERS. Complete backfilling of trenches with a 4-inch layer of coarse sand and tamp for compaction, as approved.

206.03.03E Topsoil and Finish Grading

Spread topsoil and soil conditioner over the prepared rough grade using a rubber-tired tractor with grader blade or equivalent, weighing a maximum of 3 1/2 tons. Imported topsoil must be incorporated with at least a 2-inch layer of subsoil. Thoroughly mix the applied materials to a depth of 8 inches using a disc or cultivator over the entire area in two directions at right angles. Rake topsoil areas to a uniform grade so that all areas drain, as shown on the plans or as approved. Remove all trash and any stones exceeding 2 inches in diameter from the area to a depth of 2 inches prior to preparation and planting grass.

206.03.03F Soil Sterilant

Apply specified soil sterilant at the rate recommended and by the method approved by the manufacturer or as specified.

206.03.03G Seeding

Plant grass seed only at times when local weather and other conditions are favorable to the preparation of the soil and to the germination and growth of grass seed. Sow grassed areas evenly with a mechanical spreader at the recommended rate and method approved by Oregon Department of Agriculture Extension Service. Method of seeding may be varied, as approved, however, the responsibility to establish a smooth, uniformly grassed area will not be waived. Hydroseeding will be permitted, unless otherwise specified.

206.03.03H Sodding

Before sod is laid, correct soft spots and irregularities in grade of the prepared bed, as approved. Lay sod, and tamp or roll so that no voids occur. Water sod thoroughly. Complete sod surface true to finished grade, even and firm. On slopes steeper than 1 to 2, fasten sod with wooden pins 6 inches long driven through the sod into the soil, flush with the top of the sod at approved intervals.

206.03.03I Mulching and Protection of Slopes

Mulch all areas with a slope from 5 percent to 20 percent by spreading a uniform light cover of straw mulch over the seeded area at a rate of 1 1/2 tons per acre.

In areas with a slope steeper than 20 percent, and up to 25 percent, install erosion control netting. In non-turf areas, cover netting with fir bark mulch.

Mulch all areas with a slope steeper than 25 percent with spray mulch applied at a rate of 15 gallons per 1,000 square feet after wetting the ground with water penetrating at least 1 inch deep.

Protect new seeded area from pedestrian traffic. Unless otherwise approved, erect a fence of 2-inch by 2-inch posts 4 feet high spaced 10 feet on center and strung with jute, hemp, or a single strand of No. 12 gauge wire marked with cloth strips at 3-foot intervals between posts.

206.03.03J Maintenance

Begin maintenance immediately after each portion of lawn is planted and continue for 8 weeks after all lawn planting is completed.

Water to keep surface soil moist. Repair washed out areas by filling with topsoil, fertilizing, and seeding. Replace mulch on banks when washed or blown away. Repair fencing as needed. Mow to 2 inches after grass reaches 3 inches in height, and mow frequently enough to keep grass from exceeding 2 1/2 inches. Weed by local spot application of selective herbicide only after first planting season when grass is established.

206.03.03K Lawn Guarantee

If, at the end of the 8-week lawn maintenance period, a satisfactory stand of grass has not been produced, immediately renovate and reseed the unsatisfactory portions of lawn, or when approved, reseed at the beginning of the next planting season. If a satisfactory stand of grass develops by June 1st of the following year, the lawn will be accepted. If the lawn is not accepted, a complete replanting will be required during the ensuing planting season. A satisfactory stand is defined as a lawn or section of lawn that has:

1. No bare spots larger than 3 square feet.
2. Not more than 10 percent of the total area with bare spots larger than 1 square foot.
3. Not more than 15 percent of the total area with bare spots larger than 6 inches square.

206.03.03L Inspection for Acceptance

Submit a written notice eight weeks after the start of maintenance on the last section of completed lawn. Within 15 days of such written notice the Engineer will make an inspection of the lawn to determine if a satisfactory stand of grass has been produced.

206.03.04 Trees, Shrubs and Ground Cover

206.03.04A Delivery, Preparation and Storage

Dig plants designated as Balled and Burlapped in the Contract Documents with firm, natural balls of earth of diameter and depth sufficient to encompass the fibrous and feeding root system required for full recovery of the plant. Firmly wrap balls with burlap and bind with twine, cord, or wire mesh. Where necessary to prevent breaking or cracking of the ball during the process of planting, or where the tree exceeds 4 inches in diameter, secure the ball to a platform. Meet or exceed AAN Standards, current edition.

Dig bare root plants during dormant period to remove earth with the least possible injury to the fibrous root system. Cover the roots with thick coating of mud immediately after digging by puddling or wrapping in wet straw, moss, or other suitable packing material for protection until delivery.

Furnish container grown plants with self-established root systems sufficient to hold earth together after removal from the container but not root-bound. Plants shall have grown for at least 3 months in the container with inside diameter specified. Meet or exceed AAN Standards, current edition.

If plants are not in the dormant state, spray with anti-desiccant to cover foliage as recommended by manufacturer, prior to digging the plants. During shipment, protect the plants with tarpaulin or other

approved covering to prevent excessive drying from the sun and wind.

Cover balls of balled and burlapped plants, and containers of container grown plants, which cannot be planted immediately upon delivery, with moist mulch to protect from drying. Plant or heel-in bare root plants immediately upon delivery. Water plants as necessary to prevent drying until planted. Do pruning only at the time of planting.

Open and separate all bundles of heeled-in bare root plants before the roots are covered. Avoid leaving air pockets among the roots.

206.03.04B Soil Conditioning

After the specified chemical analysis report for topsoil is received, prepare the topsoil mixture for plant pits and beds by thoroughly mixing the approved topsoil with soil conditioner materials, fertilizer, and lime. Thoroughly mix with rotary mixer or other approved method in the following proportions:

	Required Mixture		Parts by Volume		
Topsoil Classification by Clay Content	Top Soil	Sand	Peat	Fertilizer*	Lime
Clay 5 - 10 Percent	4	0	1 LB/CY	(½) LB/CY	(1)
Clay 10 - 15 Percent	2	2	1 LB/CY	(½) LB/CY	(1)
Clay 15 - 25 Percent	2	4	1½ LB/CY	(½) LB/CY	(1)

*Adjust in accordance with Soil Test chemical analysis report.

Store and protect topsoil mixture and other materials at designated area of the site. Protect topsoil mixture from excessive leaching by covering with tarpaulin if stored for more than 6 weeks.

206.03.04C Planting Procedures

Within 20 calendar days after receiving the notice to proceed, submit a time schedule for approval indicating dates for commencement and completion of the following operations:

1. Tagging of plants in the nurseries
2. Survey and staking of plant locations
3. Delivery of topsoil and other materials
4. Digging and preparation of plant pits and beds
5. Delivery of trees and plants to the site
6. Planting of trees and other plants
7. Fertilization and application of pre-emergent herbicide
8. Guying, staking and mulching
9. Completion of work for start of guarantee period

At least 20 days before start of the guarantee period, submit a schedule of proposed maintenance operations indicating the number of man-hours contemplated for each operation by season during autumn, winter, spring and summer.

Locate new planting where shown on plans, except make approved adjustments where obstructions below ground are encountered or where changes have been made in the construction. Place no planting, except ground cover, closer than 18 inches to pavements and structures. Dig plant pits and have soil mixture for planting ready before plants are delivered. Excavate circular pits with vertical sides a minimum of two feet greater than the diameter of the ball. For trees, shrubs, and vines excavate pits to depth sufficient to accommodate ball or roots when plant is set to finished grade. Place 3 inches of compacted soil mixture in the bottom of pit. Set plants upright and face as approved to give the best appearance or relationship to adjacent structures. Remove wire, burlap, and surplus binding from top and sides of balls. Spread roots in normal position. Cut all broken or frayed roots off cleanly. Place prepared soil mixture and compact carefully to avoid injury to roots and to fill voids. When hole is nearly filled, add water as necessary and allow to soak away. Fill hole to finished grade. When directed by Engineer, form shallow saucer around plant by placing ridge of topsoil around edge of pit two feet greater than diameter of ball. After ground settles, fill with additional soil to level of finished grade.

Plant trees before surrounding smaller plants and covers are placed. Position trees as shown on plans or, where spacing dimensions or locations are not clear, as approved.

Plant shrubs on centers as shown on plans with spacing adjusted if required to evenly fill bed using specified quantity of plants.

Plant hedges on centers as shown on plans. Excavate trenches a maximum of 4 inches deeper and 12 inches wider than spread of roots or diameter of balls. Make adjustments to spacing if necessary to fill trench evenly with the quantity of plants shown on plans.

Plant ground covers in beds having minimum 8 inch of prepared soil mixture. Treat ground cover beds with soil fumigant, after preparation for planting, but before any plants are installed within bed area, to destroy weed seeds. Apply according to Manufacturer's directions, delaying planting for the recommended minimum period to allow dissipation of herbicide. Space plants as shown on plans. Mulch and water immediately after planting.

Plant bulbs in ground cover beds to recommended depths for each bulb type as shown on plans.

Provide trees and planting beds with 3 inch layer of fir or hemlock bark mulch within 2 days after planting and keep at this depth throughout maintenance period. Mulch to entirely cover area of saucer around each tree.

Use four guys equally spaced as shown on plans for all trees greater than 4 inches in diameter.

Use three guys equally spaced as shown on plans for all trees 4 inches in diameter or less.

Where shown on plans, wrap trunks of trees spirally from ground line to height of second branches. Make all wrappings neat and snug and hold material in place by raffia cord at top and bottom.

206.03.04D Pruning and Repair

At completion of planting work, prune and repair injuries at all plants. Limit amount of pruning to minimum necessary to remove dead or injured twigs and branches and to compensate for the loss of roots as a result of planting operations. Do not change natural habit or shape of plant. Make cuts to branch collar, leaving no stubs. On all cuts over 3/4 inch in diameter and bruises or scars on bark, trace the injured cambium back to living tissue and remove. Smooth and shape wounds so as not to retain water. Coat with approved tree wound paint.

206.03.04E Plant Guarantee

Guarantee all plants for a minimum of 1 year to be alive and in vigorous growing condition at the end of guarantee period. Guarantee period shall extend 1 year from date of Acceptance of Work as defined in Subsection 101.01 DEFINITIONS. Remove unsatisfactory plants and replace with plants of the same kind, quality and size as originally provided as specified. Guarantee all plant replacements to be alive and in vigorous growing condition 1 year after replacement. Bear all costs of replacement except for replacements resulting from removal, loss or damage due to occupancy of project in any part, vandalism or acts, of neglect on part of others. Replace plants that die immediately, unless during a season unfavorable for planting. When season is unfavorable, plant during the first month of the next favorable planting season.

206.02.04F Maintenance

Begin maintenance immediately after each plant is installed and continue to maintain until the end of the guarantee period.

Perform the following operations: (1) Watering as often as required to maintain capillary water within 2 inches of the soil surface around plants, (2) weeding of plant beds, planting saucers and plantpockets to keep free of weeds, using approved selective herbicide according to the Manufacturer's directions for use, and/or weeding by hand methods, (3) mulching monthly to replenish mulch and keep at required 2 inch minimum depth, (4) tightening and repairing guys to keep trees erect and supported without damage to bark, (5) resetting plants to proper grades or upright position, (6) restoration of planting saucers, (7) seasonal spraying to control disease or insect pests that may impair plant vigor.

Replace plants required by the plant guarantee on a regular monthly basis, except during the months of December, January and February.

206.03.05 Irrigation Systems

206.03.05A General

Install components of the irrigation system as shown and as recommended by the equipment manufacturers. All sprinkler runouts shall be evenly graded to the drain points shown on plans. Piping beneath paved areas shall have a minimum cover of 30 inches. Construct irrigation system in areas to receive topsoil after topsoil is spread, compacted, and rough graded. Copper tubing may be bedded using excavated material. Bed PVC pipe in sand, as shown on plans and backfill to a minimum of 3 inches above the pipe with sand. Determine the final number and location of sprinkler heads after grading is complete, such that complete coverage of all sprinkled areas is provided. Flush out system thoroughly and pressure test before installing sprinkler heads. Adjust flow on each head for proper coverage.

Repair and replace irrigation parts and winterize as necessary.

206.03.05B Copper Tubing

Cut tubing square and remove burrs. Clean both inside of fittings and outside of tubings with steel wool and muriatic acid before sweating. Take care to prevent annealing of fittings and hard-drawn tubing when making connections. Mitering of joints for elbows and notching of straight runs of pipe for tees will not be permitted.

206.03.05C PVC Pipe

Cut, make up, and install PVC pipe in accordance with the manufacturer's recommendations, as approved. Lay PVC pipe using the practice of snaking from one side of the trench to the other, 1 cycle per 40 feet or less. Use strap wrenches for tightening threaded plastic joints. Take care not to over-tighten fittings.

Do not lay PVC pipe when the temperature is below 40° F. Sprinklers and valves shall be installed in accordance with the manufacturer's recommendations, as approved.

206.04 MEASUREMENT AND PAYMENT

206.04.01 Incidental Basis

When not specified or shown as a separate pay item in the proposal, payment for all landscape work is considered to be incidental to the construction.

206.04.02 Unit Price Basis

When so listed in the Bid, payment for the landscaping items will be made on a unit price basis for the number of items actually placed and accepted.

206.04.03 Lump Sum Basis

When so listed in the Bid, measurement and payment will be made at the contract lump sum pay item for Landscaping, complete.

****

207 RESTORATION AND CLEANUP

****

207.01 DESCRIPTION

This section covers the work necessary to restore and clean up the site, and remove all construction equipment, refuse, and unused materials of any kind resulting from project activities.

207.02 MATERIALS

Provide all materials required to accomplish the work as specified.

207.03 CONSTRUCTION

207.03.01 Surface Dressing

Slopes, sidewalk areas, planting areas, and roadway shall be smoothed and dressed to the required cross section and grade by means of a grading machine insofar as it is possible to do without damaging the work or existing improvements, trees, and shrubs. Unless specified otherwise, the maximum slope shall be 2 to 1 in cut and fill. Supplement machine dressing by hand work as necessary.

Upon completion of the cleaning and dressing, the project shall appear uniform in all respects. Grade all areas true to line and grade as shown. Excavated areas adjoining new walkways and curbs shall be backfilled with top soil. Where the existing ground is below the sidewalk and curb, fill and dress the area to the walk. Wherever fill material is required in the planting area, make finish surface high enough to allow for final settlement. Surface improvements other than topsoil which are adjacent to new walkways or curbs, such as asphalt paving or brickwork, shall be replaced with like materials.

207.03.02 Removal of Materials

Remove and dispose of all excavated or construction materials, equipment, and trash of all kinds resulting from the work. Where brush and trees have been disturbed, remove and dispose of or restore same as directed by the Engineer at the Contractor's expense.

207.03.03 Cleaning Drains

Clean all drainage facilities such as inlets, catch basins, culverts, and open ditches of all excess material or debris which is the result of the work.

207.03.04 Cleaning Paved Surfaces and Appurtenances

Clean all pavement surfaces, whether new or existing within the limits of the project. All haul routes will be kept free of dust, dirt, gravel, and debris at all times. Clean existing improvements such as curbs, gutters, walls, sidewalks, castings for manholes, monuments, water gates, lamp poles, vaults, signs, and other similar installations.

Flush the street with a pressure type flusher and hand broom or flush all sidewalks.

207.03.05 Restoring Planted Areas

Hand-rake and drag all former grasses and/or planted areas leaving disturbed areas free from rocks, gravel, clay, or any other foreign material and ready, in all respects, for seeding. The finished surface shall conform to the original surface, be free-draining and free from holes, rough spots, or other surface features detrimental to a seeded area.

207.03.06 Restoring Mobilization, Borrow and Disposal Areas

Clean all properties which were disturbed during construction of the project. Dispose of all uprooted stumps, felled trees, brush, excess excavation, rock, discarded materials, rubbish, and debris. Remove all plant, equipment, tools, and supplies and restore the property occupied to a neat, clean, and orderly condition, in equal or better condition to that existing before move in.

207.03.07 Removal of Signs

Do not remove warning, regulatory, guide, or project signs prior to formal acceptance, except as directed.

207.03.08 Restoring Curbs, Sidewalks and Driveways

Repair or replace all curbs, sidewalks, driveways, and other structures damaged during construction of the work. Construct curbs, sidewalks, driveways, and other structures in conformance with the applicable requirements in DIVISION FIVE - STREET TECHNICAL REQUIREMENTS.

207.04 MEASURE AND PAYMENT

207.04.01 Lump Sum Basis

When restoration and cleanup is listed as a separate pay item on the Proposal, it will be paid for on a Lump Sum Basis.

207.04.02 Incidental Basis

When not listed in the Proposal for separate payment, all restoration and cleanup will be considered incidental work for which no separate payment will be made.

THE REST OF THIS PAGE WAS INTENTIONALLY LEFT BLANK

****

209 RESURFACING

****

209.01 DESCRIPTION

This section covers the work necessary to replace all pavement, pavement base, curbs, sidewalks, rock surfacing and other surface features damaged either directly or indirectly by the operations incidental to the construction of sewers, storm drains, water distribution systems, and conduits.

209.02 MATERIALS

209.02.01 Asphalt Concrete

Use hot mix asphalt concrete Class C mix conforming to the requirements for hot mix asphalt concrete in Section 505 ASPHALT CONCRETE PAVEMENT and Section 205 MATERIALS - TYPES AND USE.

209.02.02 Vacant

209.02.03 Vacant

209.02.04 Vacant

209.02.05 Pavement Base

THE REST OF THIS PAGE WAS INTENTIONALLY LEFT BLANK

Use pavement base material for resurfacing trenches which conform to Section 503 AGGREGATE BASES.

209.02.06 Forms

All forms shall conform to requirements for forms in DIVISION 7 - CONCRETE STRUCTURES.

209.02.07 Rock Surfacing

Rock surfacing shall be 1-1/2-inch or 1-inch minus crushed aggregate as specified in Section 204.02.06B.

209.02.08 Subgrade

Subgrade material shall conform to the requirements for subgrade in Section 501 SUBGRADE.

209.02.09 Joint Materials

209.02.09A Preformed Expansion Joint Fillers for Concrete

Preformed expansion joint fillers for concrete shall conform to the requirements of AASHTO M 153 or AASHTO M 213 except those furnished under AASHTO M 213 shall be tested in conformance to ASTM D 1751. Fillers conforming to AASHTO M 213, except the binder, if other than bituminous material, may be used provided they otherwise meet this specification and they have been demonstrated to be rot and vermin proof for a period of at least 5 years. Unless otherwise specified or called for by the plans, the kind furnished may be one or another of the above specified as the Contractor may elect.

209.02.09B Preformed Elastomeric Joint Seals

Preformed elastomeric joint seals shall conform to the requirements of AASHTO M 220.

209.02.09C Poured Filler

Poured filler for concrete joints shall conform to the requirements of AASHTO M 173 (ASTM D 1190).

209.02.09D Rubber Gaskets for Concrete Pipe and Precast Section Joints

Rubber gaskets for use in concrete pipe and precast manhole section joints shall conform to the requirements of AASHTO M 198 except that rubber gaskets for use in concrete siphon pipe joints shall conform to the composition and property requirements set forth in ASTM C 361.

209.02.09E Joint Mortar for Concrete Pipe Joints and Precast Manhole Section Joints

Joint mortar shall consist of one part Portland cement and two parts approved sand with water as necessary to obtain the required consistency. Mortar shall be used within 30 minutes after its preparation unless conditions during use necessitate a shorter time.

209.02.09F Plastic Compound for Precast Manhole Section Joints

Compound for use in precast manhole section joints shall be a putty-like, preformed homogeneous blend of hydrocarbon resins and rubber or plasticizing materials with not more than 50% by weight of inert mineral filler. The compound shall be specifically manufactured for the intended use and shall

be pliable at temperatures between 32°F and 135°F. A specimen at 77°F and 1/2" square in cross section shall stretch at least 1-1/2 inches before rupture when tested with the apparatus described in ASTM D 113. It shall adhere firmly and cohesively to the precast manhole sections when the compound-sealed joint is flexed to its maximum extent. The compound shall be accompanied by and used with such primer solution as the manufacturer of the compound may recommend. Compound conforming to Federal Specification SS-S-00210 (GSA-FSS) is representative of an acceptable material.

209.02.09G Water Stop

Water stop shall be either plastic or rubber as the Contractor may elect conforming to the following:

(a) Plastic - Polyvinylchloride water stop shall be manufactured to the dimensions called for on the plans from virgin polyvinylchloride (P.V.C.) compound. No reclaimed P.V.C. will be allowed. The water stop shall have the following properties:

	ASTM Test Method	Specification
Tensile, PSI	D 412	1800
Elongation %	D 412	350
100% Modulus, PSI	D 412	760
Low Brittle Temperature	D 746	50°F
Cold Bend Test*	No Failures	

*Samples maintained at -70°F for two hours, then bent quickly around a 1/4" mandrel to 180°.

The supplier shall furnish test samples of the material from which his water stop is to be manufactured. Samples shall be in sheet form having a uniform thickness of from 1/16 to 1/8 inch and having a total area of not less than 2 sq. ft. Each sample shall be comprised of pieces not smaller than 6 in. x 6 in.

(b) Rubber - Rubber water stop shall be manufactured to the dimensions shown on the plans in such a manner that the finished product shall have an integral cross section which will be dense, homogeneous, and free from porosity and other imperfections. The water stop shall have the following properties:

Hardness - The shore A Durometer hardness shall be 60 to 70 when tested in accordance with ASTM D 2240.

Elongation - Minimum of 450%.

Tensile strength - Minimum of 3000 pounds per square inch.

Water absorption - Maximum of 55% by weight after immersion in water for two days at 158°F.

Tensile strength after aging - The test specimen, after accelerated aging of 7 days at 158°F, shall retain not less than 80% of the original tensile strength. The tensile strength of the test specimen, after accelerated aging of 48 hours in oxygen at 158`F and tensile stress of 300 pounds per square inch, shall be not less than 80% of the original tensile strength.

Compression set - After 22 hours at 158°F shall be not more than 30% when tested in accordance with ASTM D 395, method B.

Specific gravity - 1.17 ± 0.03.

Defects - Minor surface defects such as surface peel covering less than one square inch, surface cavities or bumps less than one-quarter inch in longest lateral dimensions and less than one-sixteenth inch deep will be acceptable.

209.03 CONSTRUCTION

209.03.01 Street Maintenance

Maintain all trenches as specified under Section 204 EXCAVATION, EMBANKMENT, BEDDING AND BACKFILL.

209.03.02 Temporary Cold Mix Asphalt

All excavations on hard surfaces shall be paved with a temporary cold mix asphalt patch at the end of each workday.

Place and compact temporary cold mix asphalt to a minimum depth of one inch over the backfilled and compacted trench areas as specified under Section 204 EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL. Spread with a mechanical spreading machine, or place by hand methods. Distribute into place by means of shovel or suitable forks and spread with rakes in a loose layer of uniform density.

After spreading, the mixture shall be thoroughly and uniformly compacted with a power-driven roller capable of providing compression of 200 to 300 pounds per linear inch as soon as raking is complete. Compact areas inaccessible to the roller by tamping. After compaction, the temporary cold mix asphalt shall have the minimum thickness specified and shall match the adjacent existing grade. The temporary cold mix asphalt patch shall be maintained such that a continuous surface will exist without depressions or potholes.

209.03.03 Pavement Base

Place pavement base to the specified depth; when not specified, place to a compacted depth of 12 inches. Bring the top of the pavement base to a smooth, even grade at a distance below finished grade equivalent to the required pavement depth.

Compact the pavement base with mechanical vibratory or impact tampers to a density of not less than 95 percent of the maximum dry density as determined by ASTM D1557/AASHTO T-180.

209.03.04 Asphalt Concrete Pavement

209.03.04A Tack Coat

Tack coat all edges of existing pavement, manhole and clean-out frames, inlet boxes and like items. Apply an asphalt tack coat to the base lift of asphalt at a rate of 0.05 to 0.15 gallons per square yard prior to placing the second lift when the time between placing the second lift is greater than four hours after placement of the initial lift.

209.03.04B Asphalt Concrete Placement

Saw cut the existing pavement a minimum of 6 inches from the edge of the existing pavement at the side of the trench. The saw cut shall be a straight line and shall follow lines parallel to the pipe centerline to remove any pavement which has been damaged or which is broken and unsound. The saw-cut pavement edges shall be free of irregularities. Provide a smooth, sound edge for joining the new pavement. Excavate the material immediately below the cutback area and replace with 1"-0" compacted crushed gravel base.

Place the asphalt concrete on the prepared subgrade over the trench to the specified depth, or the depth of the adjacent pavement, whichever is greater. When a prime coat is specified, place asphalt concrete after the prime coat has set. Place the asphalt concrete in a minimum of two lifts. Maximum thickness for any one lift of pavement shall not exceed 2 1/2 inches. The minimum thickness for placement of compacted pavement shall not be less than 1 inch. Spread and level the asphalt concrete with hand tools or by use of a mechanical spreader, depending upon the area to be paved. Bring the asphalt concrete to the proper grade and compact by rolling or the use of hand tampers where rolling is impossible or impractical.

Roll with power rollers capable of providing compression of 200 to 300 pounds per linear inch. Begin the rolling from the outside edge of the replacement progressing toward the existing surfacing, lapping the existing surface at least 1/2 the width of the roller. If existing surfacing bounds both edges of the replacement, begin rolling at the edges of the replacement, lapping the existing surfacing at least 1/2 the width of the roller, and progress toward the center of the replacement area. Overlap each preceding track by at least 1/2 the width of the roller and make sufficient passes over the entire area to remove all roller marks and to produce a smooth, uniform surface. Density requirements for asphalt concrete pavement shall conform to those in Section 505 ASPHALT CONCRETE PAVEMENT.

Finished surface of the new compacted paving shall be flush with the existing surface and conform to the grade and crown of the adjacent pavement.

209.03.04C Seal Coat

Immediately after the new paving is completed, apply a seal coat of liquid asphalt conforming to Subsection 205.02.13, ASPHALT MATERIALS, to all joints between the new and original asphalt pavement. The seal coat shall be a minimum of 12 inches in width and shall be centered on the joint. The liquid asphalt shall be applied to the point that it begins to run off. The minimum application rate shall be 1.7 gallons per 100 linear feet.

Immediately after the liquid asphalt has been applied and before the asphalt has solidified, cover the seal coat asphalt with clean-dry masonry sand. The sand shall be applied in a layer thick enough to prevent tracking of seal coat. Before opening the street to traffic, the Contractor shall clean up all loose sand.

209.03.04D Surface Smoothness

The top surface of the asphalt concrete pavement, when tested with a 12-foot straightedge furnished and operated by the Contractor, shall not vary by more than 0.02 foot either parallel to or perpendicular to the centerline. The Engineer will observe this testing and may require additional testing. The means of correction of a surface that does not meet the smoothness requirements shall have the approval of the Engineer.

When tests show the pavement is not within the above tolerances, the Contractor shall take immediate action to correct equipment or procedures in his paving operation to eliminate the unacceptable pavement roughness.

Any surface irregularities exceeding the above tolerances shall be corrected by the Contractor using a method or methods listed herein and approved by the Engineer.

Corrective Action - Corrective measures by the Contractor requiring one or more of the following actions approved by the Engineer shall be performed on deficient areas:

1. Remove and replace the surface course.
2. Place an overlay of a thickness approved by the Engineer.
3. Grind the pavement surface utilizing diamond blades up to maximum depth of 0.3 inch and apply an emulsion fog coat as directed by the Engineer.

All corrective work shall be completed within 10 working days following notification from the Engineer that the pavement does not meet the specified tolerances, unless otherwise directed by the Engineer.

All corrective work, including furnishing of materials, shall be performed at the Contractor's expense and no adjustment in contract time will be made for corrective action work.

209.03.04E Weather Conditions

Asphalt concrete mixtures shall be placed on dry prepared surfaces when the air temperature in the shade and the surface temperature is not less than those specified in the following table:

SURFACE TEMPERATURE LIMITATIONS

Compacted Thickness of Individual Courses	Travel Lanes/ Wearing Course	All Other Courses
Less than 1-1/2 inches	60°F	55°F
1-1/2 inches to 2-1/2 inches	50°F	45°F
Over 2-1/2 inches and other	40°F	35°F

Placing of any mixture during rain or other adverse weather conditions normally will not be permitted, except that mix in transit at the time these adverse conditions occur may be laid if the mix is of proper temperature, if the mix has been covered during transit, if placed on a foundation free of pools, or flow of water and if all other requirements of these specifications are met. Asphalt concrete mixtures shall not be placed when the underlying layer is frozen, or when, in the opinion of the Engineer, weather conditions either existing or expected will prevent the proper handling, finishing, or compaction of the mixtures.

Do not apply asphalt for tack coat when the surface temperature is less than 50 degrees F.

209.03.04F Protection of Structures

Provide whatever protective coverings may be necessary to protect the exposed portions of bridges, culverts, curbs, gutters, posts, guard fences, road signs, and any other structures from splashing oil and asphalt from the paving operations. Remove any oil, asphalt, dirt, or any other undesirable matter that may come upon these structures by reason of the paving operations.

Where existing structures (e.g., water valve boxes, manholes, catch basins, or other underground utility appurtenances) are within the area to be surfaced, make the resurfacing level with the top of the existing finished elevation of these facilities. The Contractor shall be responsible for adjusting the existing structures as specified in ADJUSTMENT OF EXISTING STRUCTURES TO GRADE (See Section 511 of Street Technical Requirements). Consider any delays experienced from such obstructions as incidental to the paving operation. No additional payment will be made. Protect all covers during asphalt

application.

209.03.04G Excess Materials

Dispose of all excess materials. Make arrangements for the disposal and bear all costs or retain any profit incidental to such disposal.

209.03.05 Portland Cement Concrete Pavement

Pavement replaced shall be the same thickness as that removed, or a minimum of 6 inches. Protect the newly placed concrete from traffic for a period of at least 7 days.

Saw cut the existing pavement a minimum of 6 inches from the edge of the existing pavement at the side of the trench. The saw cut shall be a straight line following lines parallel to the pipe centerline and shall remove any pavement which has been damaged or which is broken and unsound. The saw cut pavement edges shall be free of irregularities. Provide a smooth, sound edge for joining the new pavement.

Handle, place, finish and cure concrete pavement in conformance with the applicable provisions of Section 506 PORTLAND CEMENT CONCRETE PAVEMENT.

209.03.06 Rock Surfacing

Place rock surfacing only where shown or directed on streets, driveways, parking areas, street shoulders, and other areas disturbed by the construction. Spread the rock by tailgating and supplement by hand labor where necessary. Level and grade the rock surfacing to conform to adjacent existing grades and surfaces as directed.

209.03.07 Concrete Driveways, Sidewalks and Curbs

Replace concrete driveways, sidewalks and curbs to the same section, width, depth, line and grade as that removed or damaged. Saw broken or jagged ends of existing concrete on a straight line and to a vertical plane. Prior to replacing the concrete sections properly backfill and compact the backfill to prevent subsequent settlement.

Replace concrete driveways and sidewalks between scored joints unless otherwise directed by the Engineer. Provide a minimum 2-inch thick compacted leveling course of clean 3/4" - 0" minus crushed aggregate. All concrete replacement work shall be completed prior to the placement of adjacent asphalt concrete. Restoration and clean up shall be as specified under Section 207.

Construct forms to match existing. Place concrete and finish exposed surfaces similar to adjacent surface in conformance with Section 507 CURBS, GUTTERS, DRIVEWAYS AND SIDEWALKS.

209.04 MEASUREMENT AND PAYMENT

209.04.01 Temporary Cold Mix Asphalt

Payment for temporary cold mix asphalt pavement placed in all paved areas to be maintained over trench backfill shall be based on the unit price per linear foot stated in the Proposal.

The unit price will include all work and materials required to place and maintain the surface. If not included in the proposal then it will be considered incidental to the work and included in the unit price for pavement replacement.

209.04.02 Rock Surfacing

Payment for replacement of rock surfacing shall be based on the unit price per ton or cubic yard as stated in the Proposal. The quantity of rock replaced shall be the actual number of tons or cubic yards used as directed by the Engineer, and shall be based on weight tickets from state certified weigh stations. The Contractor will supply certified conversion factors to get from ton to cubic yard. Trip tickets shall be presented to the Engineer for his signature on the date of use. No payment will be allowed on trip tickets not so validated by the Engineer. The unit price for the rock shall include payment for excavating to provide space for the rock if necessary and disposal of all excess excavated material.

209.04.03 Asphalt Concrete and Portland Cement Pavement Placement

When the pipe centerline crosses, or is under or at, the edge of existing pavement, payment for asphalt concrete and Portland cement concrete pavement will be based on the unit price per square yard stated in the Proposal for each. The number of square yards will be measured by the Engineer. The pay width for determining square yardage will be as shown on the plans.

The unit prices shall include payment for excavation and dig out required to provide space for the surfacing and compacted crushed rock, preparation of the trench, surfacing, disposal of all excess excavated materials, temporary cold mix asphalt, if not a separate pay item, and all other work required to complete the resurfacing. The crushed rock base and leveling course, crushed rock for the dig out area, and seal coat will also be considered as included in the bid price per square yard for pavement replacement as stated in the Proposal.

209.04.04 Sidewalk and Driveway Replacement

Payment for sidewalk and driveway replacement will be based on the unit price bid per square foot, as stated in the Proposal. No differentiation will be made between concrete and asphalt sidewalks.

The leveling course will be considered as included in the bid price for sidewalk and driveway replacement, as stated in the Proposal.

Payment for replacing damaged sidewalks and driveways lying parallel to the pipe centerline shall be based on the unit price per square foot as stated in the Proposal. Payment will, however, be limited to sidewalks and driveways replaced within three feet of the pipe centerline. All sidewalks and driveways damaged outside these limits shall be replaced at the expense of the Contractor.

The leveling course shall be included in the bid price per square foot as stated in the Proposal.

209.04.05 Curb Replacement

Payment for replacing concrete curbs, curb and gutter, or gutter sections shall be based on the unit price bid per linear foot of for each crossing, as stated in the Proposal.

No differentiation for payment will be made between curb and monolithic curb and gutter sections.

Payments for replacing curbs lying parallel to the pipe centerline shall be based on the unit price per linear foot as stated in the Proposal. Payment will, however, be limited to curbs replaced within three feet of the pipe centerline. All curbs damaged outside these limits shall be replaced at the expense of the Contractor. No differentiation for payment will be made between curb and monolithic curb and gutter sections.

209.04.06 Removal and Replacement of Culverts, Storm Drains or Catch Basins

Payment for the removal and replacement of existing culverts or storm sewers lying parallel to and within three feet of pipe centerline will be based on the unit price per linear foot, irrespective of size, as stated in the Proposal. Payment shall be considered to include full compensation for all work and material required to remove and replace the pipe and restore the culvert or storm sewer to at least its original condition and function. Replacement of existing culvert headwalls will also be included in this payment.

Payment for removal and replacement of catch basins will be based on the unit price for each, regardless of size or shape, as stated in the Proposal. Payment shall be considered to include full compensation for all work required to remove and replace the catch basins and restore the basins to their original condition and intended function.

END OF DIVISION

DIVISION FIVE
STREET TECHNICAL REQUIREMENTS

****

501 SUBGRADE

****

501.01 DESCRIPTION

This section covers work necessary for preparation of the subgrade, complete. See also Section 203 for CLEARING AND GRUBBING, and Section 204 for EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL.

Subgrade is defined as the area of new or existing roads, streets, alleys, driveways, sidewalks, or locations upon which additional materials are to be placed as a part of work covered in other Sections or by future work. Where applicable, subgrade may be considered to extend over the full width of the specified base course.

501.01.01 Untreated Subgrade

The material placed in fills or unmoved from cuts in the normal grading of the roadbed and which is brought to true line and grade, shaped and compacted as required by these specifications to provide a foundation for the pavement structure.

501.02 MATERIALS

501.02.01 Water

Conform to the requirements in Subsection 205.2.11 Water.

501.03 CONSTRUCTION

501.03.01 PREPARATION

In advance of setting line and grade, complete clearing and grubbing as specified in Section 203 of these specifications. Drain all depressions or ruts which contain water. Blade and shape subgrade to remove irregularities and secure a uniform surface.

Subgrade upon which pavement, sidewalk, curb and gutter, driveways, or other structures are to be directly placed shall not vary more than .10 foot from the specified grade and cross section. Subgrade upon which subbase or base material is to be placed shall not vary more than .10 foot from the specified grade and cross section at any point. Variations within the above specified tolerances shall be compensating so that the average grade and cross section specified are met.

In advance of setting line and grade, the Contractor shall clear and dispose of brush, weeds, vegetation, grass and debris from the subgrade. The Contractor shall drain all depressions or ruts which contain water.

Prior to starting subgrade work, including backfill, all underground work contemplated in the area of the subgrade shall be completed. This requirement includes work on the contract, work to be

performed by the owner or by others.

The Contractor shall remove all soft or otherwise unsuitable material as directed and replace with approved material from the excavation. The Contractor shall compact to a line one foot beyond the edge of paving, curb or form.

Subgrade areas which cannot be compacted to specified density, but in the judgment of the engineer otherwise meet the requirements herein, may be removed and aerated or stabilized with an approved soil stabilizing material, all at no additional expense to the Owner.

Subgrade materials which cannot be compacted to specified density because of excess moisture shall be dried out to bring materials to the optimum moisture content. The Contractor shall aerate, drain, rehandle, or by other means at his option remove the excess moisture. Unless otherwise specified in the special conditions, all costs involved in the removal of excess moisture from the subgrade material will be considered incidental and be included in the various other items of work in the Proposal.

501.03.02 Grading of Areas Not to be Paved

When specified, areas within and adjacent to the project which are intended for lawns, planting areas, flower beds and similar uses shall be finished with four (4) inches of topsoil and graded smooth as directed. Topsoil, for such finishing shall be fertile, loamy natural surface soil consisting of sands, silts, clays and organic matter and shall be free of toxic substances, weeds, roots, refuse, sticks, large rocks or lumps. Topsoil available from required excavation shall be used to the greatest extent possible in this work and the provisions of Section RW-02, prohibiting the premature disposal of suitable materials shall apply to topsoil materials.

501.03.03 Overexcavation and Foundation Stabilization

When, in the opinion of the Engineer, unsuitable material or other conditions are discovered which render the subgrade, unable to be compacted to the specified density, then the Engineer may order the Contractor to remove and dispose of the unsuitable material and then backfill with crushed rock as specified in the applicable portions of Section 204 EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL.

501.03.04 Embankment Construction

The Contractor shall place embankments and fills of all kinds in approximately horizontal layers of a maximum of 8 inches in thickness and compact each layer separately and thoroughly to the density specified.

In the immediate vicinity of curbs, walks, driveways, inlets, manholes and similar structures, in holes and where embankment and fill materials cannot be reached by the normal compacting equipment, the Contractor shall compact to specified density by approved methods.

Where embankments are constructed predominantly of rock fragments, the Contractor shall place material in layers of the thickness as directed, but not greater than three feet. Placing of individual rock fragments having dimensions greater than three feet will be permitted provided that they have no dimensions greater than six feet, that clearances between adjacent fragments provide adequate space for the placing and compacting of material in horizontal layers as specified, and that no part comes within four feet of subgrade. The Contractor shall distribute and manipulate rock so that the interstices between the larger pieces are filled with smaller places, forming a dense and compact mass.

The Contractor shall exercise caution to ensure that embankment construction and fill does not move, endanger or overstress any structure. The Contractor shall place and compact embankments

at the end of bridges prior to the time that work begins on the bridge.

Embankments shall not be constructed when the embankment material, or the embankment on which it would be placed is frozen.

501.03.05 Slides and Slipouts

Material outside the planned roadway or ditch slopes which is unstable and constitutes potential slides, in the opinion of the Engineer, material which has come into the roadway, channel or ditch, and material which has slipped out of new or old embankments shall be excavated and removed. The material shall be excavated to designated lines or sloped either by benching or in such manner as directed by the Engineer. Such material shall be used in the construction of the embankments or disposed of as directed by the Engineer.

The above provisions shall not be so construed as to relieve the Contractor of his obligation to maintain all slopes true and smooth.

501.03.06 Slopes

Excavation and embankment slopes shall be finished in conformance with the lines and grades shown on the plans.

501.03.07 Finishing and Cleanup

All roadbeds, planting areas, ditches, embankments and other areas on which earthwork is performed shall be trimmed reasonably close to established lines, grades, and cross sections and shall be finished in a thoroughly workmanlike manner. They shall be kept free, throughout the work, of debris and foreign matter of all kinds and prior to final acceptance the entire right-of-way shall be cleaned up and finished as directed.

501.03.08 Compaction and Density Requirements

The density of compacted materials in place will be determined by AASHTO T191, and the maximum density by AASHTO T99 OR T180 as specified.

The Contractor shall compact all embankments, fills and backfills within three feet of established subgrade elevation to a minimum density in place of 95 percent of maximum density. Below said three-foot limit, compaction shall be a minimum density in place of 90 percent of maximum density.

Roadbed cuts and foundations for structures to a depth of 1 foot below established subgrade or foundation elevation shall be three-inch maximum material and shall be compacted to a minimum density in place of 95 percent of maximum density.

501.04 MEASUREMENT AND PAYMENT

501.04.01 Measurement

501.04.01A Incidental Work

No measurement will be made for work involved in draining water from the subgrade, smoothing the subgrade in preparation for staking, or blading, shaping, and compacting the subgrade including roadbed materials to a depth of 12 inches below the subgrade, to final line, grade, and cross section. All work involved in these processes will be considered incidental to and included in the various other items of work in the Proposal.

Water used in the work (compaction, dust control, etc.) will be considered incidental to and included in the various other items of work in the Proposal.

501.04.01B Untreated Subgrade

No measurement and payment will be made for preparation of untreated subgrade unless otherwise provided.

501.04.01C Overexcavation and Foundation Stabilization

Measurement for overexcavation will be made on cubic-yard basis for quantities removed, and foundation stabilization will be made on a ton basis for the number of tons of crushed rock used to backfill the overexcavated areas, as weighed on approved and tested scales. Trip tickets shall be given to Engineer as specified in Subsection 503.04.01C.

501.04.01D Embankment Measure

"Embankment in Place" will be measured by the cubic yard in embankment as set forth in the two paragraphs which follow.

The pay quantities of "Embankment in Place" will be determined by cross-section measurement of the material in place in final embankment position in the work as specified and in accordance with the directions of the Engineer. The pay quantities of "Embankment in Place" will be limited to the neat lines of specified cross-sections, lines, grades, and slopes and above the ground or base elevations existing at the time embankment construction thereon begins. The pay quantities will not include additional quantities required due to subsidence and settlement of the ground or foundation, to settlement of materials within the embankments, or to shrinkage, settlement, washout, slippage, or loss regardless of cause.

There will be no measurement of overhaul on "Embankment in Place" materials.

501.04.02 Payment

501.04.02A Overexcavation and Foundation Stabilization

Payment for overexcavation will be made on a cubic-yard basis, and foundation stabilization will be made on a ton basis for crushed rock incorporated in the work.

501.04.02B Embankment in Place

Payment for "Embankment in Place" will comprise full compensation for the excavating, selecting, handling, hauling, placing, and compacting of the materials and all other costs incurred in the construction of the embankments involved.

****

502 WATERING

****

502.01 DESCRIPTION

This section covers work necessary to furnish and apply water for roadway excavations, fills, subgrades, roadbeds, backfill, subbases, bases, and surfacings, and water used for the alleviation or prevention of dust within the project limits.

502.02 MATERIALS

502.02.01 WATER

Water shall be free of silts and other deleterious matter. Make all necessary arrangements and pay all costs for obtaining water. Maintain an adequate supply of water at all times to complete the required work.

502.03 CONSTRUCTION

The Contractor shall make all arrangements necessary for the procurement of water and its application. The Contractor shall obtain a hydrant meter from the Engineer for the purposes of measuring all water used on the project.

Water by means of tank trucks equipped with spray bars, by hose and nozzle, or by other approved equal means which ensure uniform and controlled application. The use of splash boards will not be permitted without prior approval.

Perform watering at any hour of the day and on any day of the week as necessary.

502.04 PAYMENT

502.04.01 WATER ON INCIDENTAL BASIS

When neither specified nor shown in the Proposal for separate payment, all water will be considered incidental to the other items of work and no separate payment will be made.

****

503 AGGREGATE BASES

****

503.01 DESCRIPTION

This section covers work necessary to furnish and place one or more courses of aggregates and water, as base, on a prepared surface.

503.02 MATERIALS

Aggregates for aggregate base shall be crushed gravel or crushed rock. Aggregate for subbase shall be crushed gravel or crushed rock including sand.

503.02.01 Aggregate

Coarse and fine aggregates shall conform to requirements of Section 205 MATERIALS - TYPES AND USE and to additional requirements contained herein.

503.02.02 Sand Equivalent

Base aggregates to be incorporated in the work shall have a sand equivalent of not less than 30 when tested in conformance with AASHTO T 176.

503.02.03 Liquid Limit and Plasticity

Base aggregate shall meet the requirements for Liquid Limit and Plasticity Index of Subsection 205.02.12C FINE AGGREGATE.

503.02.04 Grading Requirements

The base aggregates shall be uniformly graded from coarse to fine and shall conform to one or another of the following grading requirements as specified:

XXXXX Separated Sizes

Sieve Size	2½" – 0	2" – 0	1½" – 0	1" – 0	¾" – 0
	Percentages (by weight)				
3"	100				
2½"	95 – 100	100			
2"		95 – 100	100		
1½"			95 – 100	100	
1¼"	55 – 75				
1"		55 – 75		90 – 100	100
¾"			55 – 75		90 – 100
½"				55 – 75	
3/8"					55 – 75
*¼"	30 – 45	30 – 45	35 – 50	40 – 55	40 – 60

*Of the fraction passing the 1/4-inch sieve, 40 percent to 60 percent shall pass the No. 10 sieve.

For determination of sizes and grading conform to AASHTO T 27. Where 1"-0 base aggregate is approved for use, at least 70 percent (by weight) of the material passing the 1/4" sieve but retained on the No. 10 sieve shall have at least one mechanically fractured face.

503.02.05 Accceptance

Materials will be subject to acceptance as follows:

Construction Method	Time of Acceptance
Stationary plant mixed	Immediately following mixing
Travel plant mixed	After mixing and before laying

Road mixed	After mixing and before compacting

Acceptance will be based on periodic samples taken following mixing, or gradation test reports supplied by the Contractor.

503.03 CONSTRUCTION

503.03.01 Preparation of Subgrade

Ensure that all surfaces and materials on which subbase or base is to be constructed are firm and have been prepared as specified in the applicable portions of Section 501 SUBGRADE.

503.03.02 Mixing

Mix to provide a homogeneous mixture of unsegregated and uniformly dispersed materials which will compact to not less than 95 percent maximum density as specified in Subsection 503.03.04. Add water during mixing in amount sufficient to provide optimum moisture content plus or minus two percentage points.

503.03.03 Placing

503.03.03A Weather Limitations

When the weather is such that satisfactory results cannot be secured, the Contractor shall suspend operations. Place no surfacing materials in snow or on a soft, muddy, or frozen subgrade. Owner will not be liable to damages or claims of any kind or description by reason of operations being suspended due to weather limitation.

503.03.03B Equipment

Furnish equipment that will provide for efficient and continuous operations insofar as practicable.

Aggregate bases shall be deposited on the roadbed at a uniform quantity per linear foot so that the Contractor will not resort to spotting, picking up, or otherwise shifting of aggregate base material. Segregation of aggregates shall be avoided and the material as spread shall be free of pockets of coarse or fine material.

Spreading equipment shall have an adjustable screed or strike-off assembly and it may have a receiving, mixing, and distribution system. It may be a complete and integral unit, self-propelled and powered; a crawler-track or wheeled type tractor intimately combined with a receiving, mixing, spreading, and screeding unit attached thereto; or a heavy-duty self-propelled grader, of an approved type, equipped with at least an eight-foot blade. Equipment shall be capable of spreading or striking off material to the designed line, grade, and transverse slope with surface texture of uniform appearance without excessive segregation or fracture of material.

Spreading equipment may be provided with an automatic control system if Contractor so elects or if specified.

503.03.03C Thickness of Lifts

If the required compacted depth of the base course exceeds six inches, construct in two or more layers of approximately equal thickness. Maximum compacted thickness of any one layer shall not exceed six inches. Place each layer in spreads as wide as practicable and to full width of the course before a succeeding layer is placed.

503.03.04 Compaction

At the time compaction begins, the materials shall be at optimum moisture content, plus or minus 2%. Compaction of each layer shall continue until a density of 95% of Relative Maximum Density has been obtained according to OSHD TM 106 and OSHD TM 306C. Water shall be added to the materials, as necessary during the compaction, to maintain the proper moisture content and upon completion of each layer, the Contractor shall maintain the materials in specified conditions until it is covered by the following layer or course.

503.03.05 Surface Finish

Surface of the base shall parallel the established cross section and grade for the finished surface within 0.04 foot. The finished surface of base, when tested with a 12-foot straight edge shall not vary from the testing edge by more than 0.04 foot at any point.

503.04 MEASUREMENT AND PAYMENT

503.04.01 Measurement

503.04.01A Square Yard Basis

Measurement of aggregate base made on a square yard basis will be made of width and length of each separately constructed strip of aggregate base incorporated in the work and accepted, wherein width is the design width or edge-to-edge width of aggregate base, whichever is the lesser, and length is from end to end along the center of the strip. Measurement shall be on the surface of the aggregate base to the nearest 0.1 foot and the square yardage shall be to the nearest full square yard.

Extra thickness of aggregate base, when directed by the Engineer, will be measured by conversion on a proportionate volume basis to an equivalent number of square yards of specified standard thickness of base.

503.04.01B Cubic Yard In Place Basis

Measurement of aggregate base made on a cubic yard in place basis will be made taking depth tests or cores at the rate of 1 depth test for each 300 square yards of base course, or by means of average end areas on the complete work computed from elevations to the nearest 0.01 foot. On individual depth measurements, thicknesses more than 1/2-inch in excess of that shown shall be considered as specified thickness.

503.04.01C Ton Basis

Measurement made on a ton basis will be for the number of tons of aggregate base, as weighed on approved and tested scales. Give trip tickets to the Engineer for his signature as the material is delivered. Each trip ticket shall show the date and time of delivery, truck number, driver's name, net weight of material, and will be considered as valid delivery receipts only when signed by the Engineer. Deductions in weight will be made at the point of weighing for moisture in excess of the optimum moisture content determined for the material being supplied.

503.04.02 Payment

Payment will be made on square yard, cubic yard, or ton basis as shown on the Proposal.

****

507 CURBS, GUTTERS, DRIVEWAYS, AND SIDEWALKS

****

507.01 DESCRIPTION

This section covers work necessary for the construction of curbs, gutters, combination curb and gutter, combination of curb, gutter and sidewalk, islands, traffic separators, driveways, sidewalks, and pathways hereinafter referred to collectively as structures.

The respective structure names are specific in their use and refer specifically to those names as shown.

507.02 MATERIALS

507.02.01 General

Materials shall conform to requirements of Section 205 MATERIALS - TYPES AND USE and to additional requirements contained herein.

THE REST OF THIS PAGE WAS INTENTIONALLY LEFT BLANK

507.02.02 Portland Cement Concrete for Extrusions

Grade the combined aggregates within the following limits:

Sieve Sizes	Total Passing Percent by Weight
½"	100
3/8"	75 - 100
No. 4	50 - 75
No. 16.	20 - 40
No. 30	12-23
No. 50	5 - 15
No. 100	0 - 5

507.02.03 Portland Cement Concrete

Portland Cement concrete shall conform to Subsection 205.02.02 except that extruded curbs and/or gutters shall have a maximum slump of 2".

507.02.04 Aggregate

Aggregate materials for base, foundation, courses, leveling courses, or bedding shall conform to 1"-0" gradation in Section 503 AGGREGATE BASES.

507.03 CONSTRUCTION

507.03.01 Preparation of Base

507.03.01A Earthwork

When roadway earthwork is called for in connection with other items of work under the same contract which includes structure construction under this section, all excavation, backfilling, and berm construction for the structures and in the vicinities thereof as required or as shown shall conform to applicable requirements of Section 204 EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL.

507.03.01B Aggregate Foundation or Bedding

Construct sidewalk structures on aggregate foundation course or bedding of selected granular material as specified.

When structures are to be constructed on areas where approved aggregate material is already in place, such materials may be salvaged and reused as bedding.

Foundation courses or beddings involving the furnishing of new materials shall be constructed in conformance to the applicable requirements of Section 503 AGGREGATE BASES.

507.03.01C Base for Portland Cement Concrete

All bases upon which new cement concrete structures are to be constructed shall be firm and free of all deleterious matter. Dampen thoroughly surfaces upon which new cement concrete is to be placed. No payment will be made for water and the work of placing base materials. The cost of preparing bases shall be considered as incidental to the construction of structures.

When new concrete is placed by the mechanical extrusion method, vertical dowel fastening to underlying concrete or asphalt may be eliminated and the bond between new concrete and underlying concrete or asphalt provided with epoxy cement applied in conformance with the manufacturer's recommendations as approved. Spread epoxy at a rate which will provide a thorough coating to the surface with all voids and depressions filled. Place new structure on the epoxy cement within 15 minutes after spreading.

507.03.02 Forms

507.03.02A Forms

Conform to requirements for Forms in Section 701 CONCRETE STRUCTURES.

507.03.03 Equipment

Plant and equipment requirements as described in Section 505 ASPHALT CONCRETE PAVEMENT and Section 506 PORTLAND CEMENT CONCRETE PAVEMENT may be modified as approved, when circumstances warrant. For asphalt sidewalks or islands, spread asphalt concrete by small or special pavers, by spreader boxes, or by blade graders. Compact with small, self-propelled rollers, vibratory compactors, or mechanical tampers. Spread or compact the mixture by hand methods only when approved.

The machine for extruding cement concrete curb or asphalt concrete curb shall be of the self-propelled type equipped with a material hopper, distributing screw, and adjustable curb forming devices capable of placing and compacting cement concrete or asphalt concrete to the lines, grades, and cross section as shown, in an even homogeneous manner. Cement concrete curb shall be free of honeycomb and cracks.

Set top of curb grade by an offset guide line using the survey marks established by the Engineer. The forming tube portion of the extrusion machine shall be readily adjustable vertically during the forward motion of the machine to provide, when necessary, a variable height of curb conforming to the predetermined curb grade. A grade line gauge or pointer shall be attached to the machine in such manner that a continual comparison can be made between the curb being placed and established curb grade as indicated by the offset guide line.

In lieu of the above method for maintaining the curb grade, the extrusion machine may be operated on approved rails or forms set at the proper relative grade.

507.03.04 Placing Material

No asphalt or concrete shall be placed until the surface and forms, where used, have been inspected and approved.

507.03.04A Portland Cement Concrete

Construct Portland Cement concrete structures between specified forms or by an mechanical extrusion method, as the Contractor may elect. If forms are used, maintain a 2- to 4-inch slump, and thoroughly compact and strike off. If the structures are constructed by a mechanical extrusion method, maintain a maximum slump of two inches. Feed cement concrete into the extruding machine at a uniform rate and operate the machine under sufficient restraint in a forward motion to produce a well-compacted mass of concrete.

507.03.05 Finishing

507.03.05A General

Construct all structures within 1/4 inch of true line and within 1/4 inch of established surface grade, cross section and slope, and within 1/4 inch of specified thickness, and all finished surfaces shall be free from humps, sags, or other irregularities. When a straightedge 10 feet long is laid on a finished surface, the surface shall not vary more than 0.02 feet from edge of the straightedge. At no time shall the concrete surface be allowed to pool water.

Where Portland Cement concrete sidewalks or pathways are to be placed around or adjacent to manholes, pipe inlets, or other miscellaneous structures, form around the miscellaneous structure and allow a minimum of 18" of clearance, after the sidewalk is poured and cured, adjust miscellaneous structures to grade and finish placing the sidewalk or pathway.

507.03.05B Portland Cement Concrete

Sidewalks and Other Structures:

Finish surface of concrete to grade and cross section with a bull float, trowel smooth, score if required, then finish with a broom. Use floats of not less than 10 feet in length for straight grade sections and not less than 5 inches in width. Finish concrete adjacent to expansion joints with an edger tool. Light brooming shall be transverse to the line of traffic, and if water is necessary, it shall be lightly applied to the surface immediately in advance of brooming.

The surface of concrete sidewalks shall be marked into rectangles with a scoring tool which will leave the edges rounded. Scoring and dimensions shall be as shown on the appropriate Standard Drawing or as directed. Sidewalks shall have a slope of 1/4 inch per foot from the top of curb to the back of walk unless otherwise shown.

Curbs:

Remove forms after the concrete has taken initial set and while the concrete is still green. Minor defects shall be repaired with mortar containing one part Portland Cement and two parts sand. Plastering will not be permitted on the faces and exposed surfaces. Honeycombed and other structurally defective concrete shall be removed and replaced at no expense to OWNER. While the concrete is still green, finish exposed surfaces as required to provide a uniform texture and smooth surface.

When constructing precast concrete curbs, the proportions of sand, gravel and cement, the type of forms used, and the method of compacting the concrete in the forms shall all be such that as dense, smooth and uniform a surface as is practicable for a concrete masonry unit will be obtained on the finished curb units. The faces that are to be exposed shall be free from chips, cracks, air holes, honeycomb or other imperfections except that if there be no more than 5 percent of the curb units having slight cracks, small chips not larger than 1/2 inch, or air holes not more than 1/2 inch in diameter or depth, the imperfections will not be deemed grounds for rejection.

Furnish and install a minimum of two 3-inch PVC Sch. 40 pipe curb drains to serve each lot. Blockouts shall be of adequate size to accommodate a 3-inch PVC drain pipe. PVC pipe shall conform to ASTM D 2241. Curb drains will be considered incidental work for which no separate payment will be made.

507.03.06 Curing Portland Cement Concrete

After the concrete has been placed and finished in curb structures, as specified, it shall be cured by application of a white pigmented liquid membrane-forming compound applied uniformly to the damp concrete

by pressure spray methods, or by keeping the concrete protected and moist for at least 72 hours. The concrete structure shall be kept from contact and strain for at least 7 days.

Curing of concrete in all other structures shall conform to the requirements for Curing in Section 506 PORTLAND CEMENT CONCRETE PAVEMENT.

507.03.07 Joints in Portland Cement Concrete

Contraction Joints in Walks and Incidental Surfacing:

Form transverse contraction joints of the weakened plane or dummy type in the exposed surfaces of cement concrete walks and incidental surfacings at such locations as are required to confine the contraction joint spacing to a maximum of 15 feet. The joints shall be formed to a depth of 1/3 of the thickness of concrete and to a width of about 1/8 inch. Joint edges shall be tooled.

Contraction Joints in Curbs:

Place contraction joints in curbs at intervals not exceeding 15 feet. Contraction joints shall be of the open joint type and shall be provided by inserting a thin, oiled steel sheet vertically in the fresh concrete to force coarse aggregate away from the joint. The steel sheet shall be inserted 1/2 the depth of the curb. After initial set has occurred in the concrete and prior to removing the front curb form, the steel sheet shall be removed with a sawing motion. Finish top of curb with a steel trowel and finish edges with a steel edging tool. Contraction and expansion joints of curbs should coincide with joints in sidewalks and streets.

Expansion Joints:

Transverse expansion joints for curbs shall be provided opposite abutting expansion joints in abutting Portland cement concrete, over expansion joints in concrete underlying the new concrete, and at each point of tangency in the structure alignment. Additional transverse expansion joints shall be provided at other locations as required to confine the expansion joint spacing to the maximum distance indicated on the plans. The width of joint and thickness of filler shall match those of the joints in abutting or underlying concrete, and elsewhere shall be not less than 1/2 inch. Each expansion joint shall be at right angles to the structure alignment, normal to the structure surface, and shall provide complete separation of new concrete.

Expansion joints for sidewalks and driveways shall be provided between driveways and Portland cement concrete pavements, transversely in walks at a distance of six to eight feet in from curbs which occur at walk ends, transversely in walks opposite expansion joints in adjoining curbs and elsewhere at such locations in the walk that the distance between transverse expansion joints does not exceed 45 feet; around poles, posts, boxes, and other fixtures which protrude through, into or against the structures; and alongside or transverse to the new surfacing at such locations and frequencies as is necessary to provide for expansion of both new and abutting Portland cement concrete.

Width of joint and thickness of filler shall not be less than 1/2 inch, and where the new concrete surfacing abuts other surfacing, shall be not less than 3/4 inch. Generally, transverse expansion joints shall be at right angles to the alignment, vertical to the surface, and shall provide complete separation of new concrete.

Requirements Near Existing Structures:

Cut back existing curbs, walks, driveways and other such structures to permit the new construction and where the new structures are to be constructed against or within 4 inches of the end, edge or side of other structures, the new construction shall include the construction of approved connections therewith, using the same kind of concrete as is used in the new construction. Make the joint between the old and new material with a saw cut.

507.03.08 Dowels, Tie Bars, Reinforcing

Provide metal reinforcing bars and wire fabric reinforcement when and as shown. When shown, provide and place dowels with "slip sleeves" as load transfer mediums. Provide and place dowels, but without "slip sleeves," as fastenings or ties between new concrete and existing underlying concrete when shown. Provide tie bars when shown. Place reinforcing, dowels and tie bars in conformance to the applicable requirements in Section 702 REINFORCEMENT.

507.04 MEASUREMENT AND PAYMENT

507.04.01 Measurement

507.04.01A Curbs

Curb will be measured on a linear foot basis along the face of the curb for the actual length constructed.

507.04.01B Combination Curb and Gutter

Combination curb and gutter will be measured on a linear foot basis along the face of the curb for the actual length constructed.

507.04.01C Curb, Gutter and Sidewalk

For purposes of measurement and payment, the combined curb, gutter and sidewalk will be considered as two component sections.

The first component, sidewalk, shall comprise that portion of the combined section beginning 6 inches behind the face of curb and shall be measured on a square yard basis for the actual square yards of sidewalk constructed.

The second component, curb and gutter, shall comprise the portion of the combined section beginning at the back of curb and through the gutter section, and shall be measured on a linear foot basis for the actual linear feet of curb and gutter constructed.

507.04.01D Precast Concrete Curb

Precast concrete curb will be measured on a linear foot basis along the face of the curb constructed, or on a per each basis for the actual number of precast concrete curb sections constructed.

507.04.01E Concrete Valley Gutter

Concrete valley gutter will be measured on a square yard basis for the actual square yards of gutter constructed.

507.04.01F Traffic Islands

Traffic islands will be measured by component parts of curb, and sidewalks as described above for combined curb, gutter and sidewalk.

507.04.01G Driveways, Sidewalks and Pathways

Measurement of Portland Cement or asphalt concrete driveways, sidewalks or pathways will

be made on a square yard basis on the actual surface of the specified thickness concrete or asphalt completed and accepted.

507.04.01H Sawed Joints

Sawed joints will be measured on a linear foot basis for each joint sawed, cleaned, and sealed as specified and directed.

507.04.01I Aggregate Base

Pay quantities of aggregate base material will be measured as set forth in Section 303 AGGREGATE BASES.

507.04.02 Payment

Payment will be made for any or all of the following items when listed as pay items in the Proposal for any particular contract and will include full compensation for all labor, materials, and equipment:

	Payment Item	Unit of Measure
1.	Curb (specify asphalt or concrete)	Per L.F.
2.	Precast Concrete Curb	Per L.F. or EA.
3.	Concrete Curb and Gutter	Per L.F.
4.	Sidewalk	Per S.Y.
5.	Concrete Valley Gutter	Per S.Y.
6.	Driveways and Sidewalks (specify thickness)	Per S.Y.
7.	Sawed Joints	Per L.F.*
8.	Aggregate Base	Per C.Y.*

*When neither specified or shown in the Proposal for separate payment, it shall be considered incidental to the other items of work and no separate payment will be made.

****

508 GEOTEXTILE FABRICS

****

508.01 GENERAL

This work consists of furnishing and placing geotextile fabrics in on subgrades (0 subgrade geotextile) and beneath an asphalt overlay (pavement overlay geotextile) as shown on the plans or as directed by the Engineer.

508.02 MATERIALS

Geotextile materials shall conform to Subsection 205.02.14.

508.02.01 Vacant

508.02.02 Vacant

508.03 CONSTRUCTION

508.03.01 General

General requirements for placement of geotextile shall be in accordance with Subsection 205.03.01.

508.03.02 Subgrade Geotextile

For roadbed subgrade separation, prepare the subgrade according to Section 501.

Correct geotextile failures, as evidenced by soil pumping or roadbed distortion, by removing any covering material in the affected area and placing a geotextile patch on the exposed geotextile. Cover the patch with the specified cover material and compact before proceeding.

508.03.03 Pavement Overlay Geotextile

(a) GENERAL - Place geotextile and pavement overlay in four basis steps:

- Surface preparation
- Sealant application
- Geotextile placement
- Overlay placement

(b) WEATHER LIMITATIONS - Do not place sealant and geotextile unless the weather limitations of 00745.40 are met, as appropriate, except the minimum air temperature shall be 50°F for paving grade asphalt sealant placement and 60°F for asphalt emulsion sealant placement.

(c) SURFACE PREPARATION - Prepare the pavement surface on which the sealant is to be placed according to specifications and the following:

- Clean and fill cracks exceeding 1/8 inch width with an approved bituminous crack filler.

- Repair minor irregularities or depressions as directed.

- Allow crack filling material to cure before placing geotextile.

- Where the pavement is severely cracked, rutted, deformed, or otherwise distressed, place a leveling course as directed instead of extensive surface preparation

(d) SEALANT APPLICATION - Use a normal paving grade asphalt. A cationic or anionic emulsion may be used as approved. Do not use cutbacks or emulsions which contain solvents.

Uniformly spray the asphalt sealant at normal application temperature by means of a pressure distributor on the prepared dry pavement surface. Apply at the normal rate of 0.20 to 0.30 gallon per square yard or as recommended by the geotextile manufacturer as directed.

If using emulsions, increase the application rate 50 percent or as directed. Some underlying surfaces may require a higher application rate. Within street intersections, on steep grades, or in other zones where vehicle speed changes are commonplace, reduce the normal application rate by 20 percent or as directed.

The target width of sealant application shall be geotextile width plus 6 inches. Apply the sealant only as far in advance of geotextile installation as appropriate to insure a tacky surface at the time of geotextile placement. Place geotextile the same day as the sealant. Do not allow traffic on the sealant. Clean

excess asphalt from the road surface.

(e) GEOTEXTILE PLACEMENT - Place the geotextile into the sealant using mechanical or manual laydown equipment capable of providing a smooth installation with a minimum amount of wrinkling or folding before the sealant loses tackiness. When asphalt emulsions are used, allow the asphalt to separate from the water (break) before placing the geotextile.

Slit wrinkles or folds exceeding 1 inch and lay flat. Shingle-lap not more than 6 inches in the direction of the paving. Broom and/or pneumatic roll to maximize geotextile contact with the pavement surface. Additional hand-placed sealant material may be required at laps as determined.

Limit traffic to necessary construction equipment and emergency vehicles on the geotextile before and during paving unless otherwise directed. Turn the paver and other vehicles gradually. Keep turning to a minimum to avoid geotextile movement and damage. Avoid abrupt starts and stops.

(f) OVERLAY PLACEMENT - Place the overlay the same day the geotextile is placed. Remove sealant that bleeds through the geotextile. Do not windrow asphalt concrete material on the geotextile ahead of the paving machines. Do not use an asphalt concrete material pickup machine. In the event of rain, the contractor shall place sand over uncovered fabric to absorb sealant.

508.04 MEASUREMENT AND PAYMENT

Payment for the work in this section shall be in accordance with Subsection 205.04 by the square yard in place. Measurement will be to the nearest square yard. No allowance will be made for material in laps and seams. This payment shall constitute full compensation for all materials and work as specified within.

THE REST OF THIS PAGE WAS INTENTIONALLY LEFT BLANK

****

510 VACANT

****

****

511 ADJUSTMENT OF EXISTING STRUCTURES TO GRADE

****

511.01 DESCRIPTION

This section covers the work necessary for adjusting tops of existing structures (e.g., manholes, sumps, catch basins, inlets, valve boxes, meter boxes, monument boxes, and similar structures) to required elevation and/or horizontal alignment complete. See Subsection 403.03.06 for adjustment of new structures to grade.

511.02 MATERIALS

511.02.01 GENERAL

Materials used in adjustment of existing structures may be materials salvaged from the existing installation and brought to a condition approved for reuse by the Engineer.

511.03 CONSTRUCTION

THE REST OF THIS PAGE WAS INTENTIONALLY LEFT BLANK

511.03.01 Excavation and Backfill

Excavation shall be unclassified and shall include whatever materials are encountered to the depths as shown.

Saw cut around structures to be adjusted when pavement work has been completed. Do not use a jack hammer for pavement cutting. Replace pavement to previous density and grade. See Standard Detail Drawing No. 513.

Backfill shall be done in accordance with the applicable requirements of Section 204.

511.03.02 Salvage of Frames, Covers, and Grates

Metal frames, covers, grates, and fittings may be salvaged from structures to be adjusted or abandoned, and if of suitable size and condition, as determined by the Engineer, may be reused in the work.

Salvaged components to be reused shall be cleaned of foreign material by solvents, sand blasting, or other methods that will not harm the component but will restore it to a nearly new condition. Salvaged frames, covers, and grates not reused on the project shall become the property of the Owner.

511.03.03 Raising Tops of Masonry Structures

After existing frames, covers, and grates have been removed, expose the top surface on which new mortar or concrete is to be placed and chip away at least 1/2-inch to expose firm concrete. The new surface shall be cleaned by brushing and shall be moistened with water at the time of placing new concrete. New concrete shall then be placed to required grade and cured at least 3 days, after which the frame shall be seated in fresh mortar and brought to the proper grade.

Masonry of bricks or concrete blocks shall be raised with new bricks, blocks, mortar, or combinations thereof or with Portland Cement concrete, as conditions may require. Concrete boxes may be lifted and placed on precast concrete box extensions, on new brick, or on cast-in-place concrete as may be suitable.

Mortar for building up existing masonry shall not be placed to a a depth exceeding 1 inch. Concrete shall not be placed to a depth of less than 4 inches. To conform to these requirements, existing shells or walls of structures to be raised shall be cut down as necessary to provide space for the new construction.

Fabricated metal rings or plates may be furnished and used in adjustment work, provided the metal and its fabrication design is at least equal to specified characteristics of strength and support required of the covers or grates to be placed, that uniform bearing of bearing surfaces is assured, and positive provision is afforded against displacement when in service.

511.03.04 Lowering Tops of Masonry Structures

Where the top of an existing masonry structure is to be lowered, the masonry portion of the structure shall be exposed to required depth, cut off, or removed to an elevation below that established for the bottom of metal frame or cover which is to be reset on masonry and shall then be built up with mortar, concrete, brick, or concrete blocks, or with metal rings or plates to required elevation and top design. Joining of new material to old, minimum thicknesses of new mortar and concrete, limitations, curing, and other details shall be as specified in Section 701.

511.03.05 Adjusting Metal Structures

Metal inlets, valve boxes, meter boxes, monument boxes, or other like structures shall be raised or lowered to grade normally by resetting the entire structure on firm foundation. In the case of raising the

structure to a point where it would not enclose or protect its contents, add extensions of like design below the original structure. Contractor may replace the structure with a new structure of adequate design as approved and at the Contractor's sole expense. Salvaged structures not reused on the project shall become the property of the Owner. Metal structures shall meet the surface smoothness requirements of Section 212.03.04D. Conform to applicable Sections of DIVISION THREE - SANITARY SEWER TECHNICAL REQUIREMENTS and DIVISION FOUR - WATER TECHNICAL REQUIREMENTS.

511.04 MEASUREMENT AND PAYMENT

511.04.01 Measurement and Payment Incidental

When no pay item is listed in the Proposal, all work will be considered as incidental to the other pay items and no separate payment will be made.

511.04.02 Measurement as Units in Place

When listed in the Proposal, measurement will be the actual number of manholes, sumps, catch basins, inlets, valve boxes, meter boxes, monument boxes, and other like structures adjusted under this Section, measured as units in place, completed and accepted. Separate measurement will be made of each specific type or of each separate grouping of types of structures for which separate items are shown in the Proposal. Required earthwork, backfill, replacement of base drains, stone bases, pavements, and other miscellaneous work will be considered as incidental to the adjusting work and no separate measurement thereof will be made.

511.04.03 Payment as Units in Place

When listed in the Proposal, the accepted units in place will be paid for at the applicable Contract unit price per each for the particular pay items listed below and shown in the Proposal.

	Pay Item	Unit of Measurement
1.	Adjusting Manholes	Each
2.	Reconstructing Concrete Manholes	Each
3.	Adjusting Inlets	Each
4.	Adjusting Boxes	Each

Items 1 and 2 above refer to manholes, sumps, and like structures designed to permit human entry and working space therein, and to confine and control the flow of pipe-conveyed liquids; which structures are herein collectively referred to as manholes.

Item 1 above applies to manholes, regardless of the kind of materials of which they are composed and regardless of design, type, or depth, which have had the tops thereof adjusted as specified; except as Item 2 is applicable as hereinafter provided.

Item 2 above refers to monolithic concrete manholes which, in having their tops adjusted as specified, have necessarily had their entire existing cones destroyed and new cones constructed, or had their entire existing top slabs destroyed and new slabs constructed, or precast manholes which have necessarily had adjustments made below the cone.

Item 3 above refers to inlets and catch basins, defined as structures designed to receive surface water through grates and orifices and to discharge said waters under control through pipes and is applicable to such structures regardless of their designs, types, or sizes.

Item 4 refers to valve boxes, meter boxes, monument boxes, and other like structures, which are

comprised of a box-like body and removable cover provided for the protection of and access to meters, valves, markers, monuments, shut-offs, and similar items. If a protective coating is required on the new metal used in the work, the coating shall be provided as an incidental item without separate or additional compensation.

END OF DIVISION

THIS PAGE WAS INTENTIONALLY LEFT BLANK

DIVISION SIX
STORM DRAINAGE TECHNICAL REQUIREMENTS

****

601 PIPE AND FITTINGS (STORM DRAINS)

****

601.01 DESCRIPTION

This section covers the following work:

1. Gravity and storm sewer pipe
2. Culverts
3. Perforated pipe underdrains
4. Fittings

601.02 MATERIALS

601.02.01 General

Use all storm sewer pipe and fittings of the size, strength, material and joint type specified on the Drawings and/or the Proposal. Use jointing material as hereinafter specified for each pipe material. Each piece of pipe shall be clearly identified as to strength, class and date of manufacture. The manufacturer or fabricator shall furnish appropriate certification, based on manufacturer's routine quality control tests, that the materials in the pipe and fittings meet the requirements specified herein. Strength, permeability, hydrostatic tests and pipe joints will be used as the basis of acceptance as described under Proof Tests herein.

It is not intended that materials listed herein are to be considered equal or generally inter changeable for all applications. The Engineer shall determine the materials suitable for the project and so specify.

Use pipe and fittings of one type of material throughout; no interchanging of pipe and fittings will be allowed.

Do not coat pipes for storm sewers internally or externally with any substance of any type in an attempt to improve its performance when air tested.

601.01.02 Concrete Pipe

601.02.02A Nonreinforced Concrete Pipe

Nonreinforced concrete pipe shall conform to ASTM C 14 Class as shown or specified and the following additional requirements:

1. Cement shall be Type II conforming to ASTM C 150.
2. The minimum Portland Cement content shall be 564 pounds per cubic yard.
3. The water/cement ratio shall not exceed 0.49.
4. The Contractor shall provide the Engineer with a Certificate of Compliance from the pipe manufacturer that the pipe and concrete mix conform in all respects to these specifications and other nonconflicting requirements of the referenced ASTM Specifications.

601.02.02B Reinforced Concrete Pipe

Reinforced concrete pipe shall conform to ASTM C 76 Class as shown or specified with Wall B design and the following additional requirements:

1. Cement shall be Type II conforming to ASTM C 150.
2. The minimum Portland Cement content shall be 564 pounds per cubic yard.
3. The water/cement ratio shall not exceed 0.49.
4. Elliptical reinforcing is not permitted.
5. The area of the outer circular reinforcing cage shall not be less than 75 percent by the inner cage.
6. The Contractor shall provide the Engineer with a Certificate of Compliance from the pipe manufacturer that the pipe and concrete mix conform in all respects to these specifications and other nonconflicting requirements of the referenced ASTM Specifications.

601.02.02C Perforated Concrete Pipe

Perforated concrete pipe and fittings shall conform to ASTM C 444 and applicable requirements of ASTM C14 and C76 as modified herein, class and end type as specified.

601.02.03 Ductile Iron Pipe

Ductile iron pipe centrifugally cast of 60-42-10 iron shall conform to ANSI A21.51 Class 150 or AWWA C151, with Push-on Joint or Mechanical Joints as specified, conforming to ANSI Specification A21.11/AWWA C111. Ductile iron pipe shall be lined with cement mortar and seal coated in accordance with ANSI Standard A21.4/AWWA C104.

When specified, tube type polyethylene encasement shall conform to ANSI A21.5/AWWA C105.

601.02.04 PVC Non-pressure Pipe and Perforated PVC Pipe

PVC sewer pipe shall conform to ASTM D 3034 SDR 35. Perforated PVC pipe shall conform to ASTM D 1785, Schedule 40. The perforations shall consist of 2 rows of 2-inch slots. The slots shall be transverse to the axis of the pipe. Two rows of slots shall be 120 degrees on centers. Slot size shall be 0.4 inches.

601.02.05 Corrugated Aluminum Alloy Pipe

Corrugated aluminum alloy pipe and coupling bands of the gauges and types as shown or specified shall conform to the material, fabrication, and inspection requirements of AASHTO M 196, Type I or Type II, and AASHTO M 197. Recorrugate the ends of Helical corrugated pipe to receive annular bands at each joint.

601.02.06 Flared End Sections

Precast concrete flared-end sections shall conform to the requirements for Reinforced Concrete Pipe herein specified. The area of steel reinforcement per linear foot of flared-end section shall be at least equal to the minimum steel requirements for circular reinforcement in circular pipe for the internal diameter of the circular portion of the flared-end section. Submit all details of construction to the Engineer.

Use prefabricated aluminum flared-end sections conforming to AASHTO M 197.

601.02.07 Bituminous Coating

When specified, completely coat the inside and outside surfaces of corrugated pipe with bituminous

material conforming to AASHTO M 190 Type A, with a minimum thickness of 0.05 inch at the crest of the corrugations.

601.02.08 Paved Inverts

When specified, bituminously coat the bottom one-half and pave the inside surface of the corrugated metal pipe for 1/4 of its circumference with bituminous material conforming to AASHTO M 190 Type B to provide a flat invert centered in the bottom of the pipe. The pavement, except where the upper edges intersect the corrugations, shall have a minimum thickness of 1/8 inch above the crests of the corrugations. Suitably mark the outside of the pipe on both ends to clearly designate the centerline of the top of the pipe.

601.02.09 Jointing Materials

Only lubricants for jointing materials approved by the manufacturer shall be used.

Furnish in duplicate a certified statement from the manufacturer of the gaskets, setting forth the basic polymer used in the gaskets and results of the tests of the physical properties of the compound. Gaskets shall be shipped in containers with identification of the batch from which the gaskets were fabricated.

601.02.09A Concrete Pipe

Rubber gaskets for bell and spigot pipe shall conform to ASTM C 443. Use captive gasket in groove design for pipe 24-inch diameter and larger. Mortar for tongue and groove pipe shall conform to section 205 MATERIALS.

601.02.09B Cast Iron and Ductile Iron Pipe

Rubber gaskets shall conform to ANSI A21.11/AWWA C111.

601.02.09C PVC Pipe

Rubber gaskets for PVC pipe shall conform to ASTM F 477.

601.02.10 Proof Tests

601.02.10A General

The intent of this requirement is to prequalify a joint system, components of which meet the joint requirements, as to the water tightness capability of that joint system. This proof test shall be understood to apply to all storm drains which are to be tested for water tightness prior to acceptance. Material and test equipment for proof testing shall be provided by the manufacturer. Joints shall meet the requirements of yard testing specified below. The pipe manufacturer shall submit results of the yard tests made, certified by a testing agency acceptable to the Engineer. In general, each pipe material and joint assembly shall be subject to the following three proof tests at the discretion of the Engineer:

1. **Pipe in Straight Alignment.** No less than three nor more than five pipes selected from stock by the Engineer or the testing agency shall be assembled according to the manufacturer's installation instructions with the ends suitable plugged and restrained against internal pressure. The pipe shall be subjected to 13 PSI hydrostatic pressure for 10 minutes. Free movement of water through the pipe joint or pipe shall be grounds for rejection of the pipe.

2. **Pipe in Maximum Deflected Position.** A test section shall be deflected as described hereinafter for each pipe material. The pipe shall be subjected to 10 PSI hydrostatic pressure for 10 minutes. Free movement of water through the pipe joint or pipe wall shall be grounds for rejection of the pipe.

3. **Joints Under Differential Load.** The test section shall be supported on blocks or otherwise as described hereinafter for each pipe material. There shall be no visible leakage when the stressed joint is subjected to 10 PSI internal hydrostatic pressure for 10 minutes.

601.02.10B Concrete Pipe

For deflected position, create a position 1/2-inch wider than the fully assembled position, on one side of the outside perimeter of each joint.

For differential load test, assemble three pipes according to the manufacturer's instructions in straight alignment with the ends suitably plugged and restrained against internal hydrostatic pressure. The end pipes of the test section shall be supported on blocks or otherwise so that the center pipe is suspended freely between the adjacent pipe and bearing only the joints. The pipe section shall be filled with water and a load of 150 pounds per inch of pipe diameter, in addition to the weight of the pipe, shall be supplied over an arc of not less than 120 degrees along a longitudinal distance of 12 inches immediately adjacent to one of the joints. For pipe 24-inch and larger, the applied load shall be reduced by 1/2 of the weight of water in the suspended pipe.

601.02.10C Cast Iron Pipe and Ductile Iron Pipe

For deflected position, create a position 1/2-inch wider than the fully compressed section on one side of the outside perimeter.

For differential load, support so that one of the pipes is suspended freely between adjacent pipe, bearing only on the joints. Apply a force per the following table along a longitudinal distance of 12 inches, immediately adjacent to one of the joints.

PIPE SIZE	FORCE - POUNDS	PIPE SIZE	FORCE - POUNDS
4 inches	1,000	15 inches	3,700
6 inches	1,500	18 inches	4,400
8 inches	2,000	21 inches	5,000
10 inches	2,500	24 inches	5,500
12 inches	3,000	and over	—

601.02.10D PVC Pipe

PVC pipe joints shall be tested by and meet the requirement of ASTM C 3212 for gravity sewers and ASTM D 3139 for pressure sewers.

601.02.11 Fittings

601.02.11A PVC Pipe

In connecting PVC pipe to manholes, use resilient connectors in conformance with ASTM C923.

601.02.12 Couplings, Bands and Fittings for Corrugated Metal Pipe

Use couplings, bands and fittings conforming to AASHTO M 196.

601.03 CONSTRUCTION

601.03.01 Excavation and Backfill

Conform to the requirements of Section 204 EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL. All excavation shall be unclassified.

601.03.02 Line and Grade for Gravity Storm Sewers

Do not deviate from line or grade, as established by the Engineer, more than 1/2 inch for line and 1/4 inch for grade, provided that such variation does not result in a level or reverse sloping invert. Measure for grade at the pipe invert, not at the top of the pipe, because of permissible variation in pipe wall thickness. Establish line and grade for pipe by the use of lasers or by transferring the cut from the offset stakes to batter boards at maximum intervals of 50 feet.

601.03.03 Pipe Distribution and Handling

Distribute material on the job no faster than it can be used to good advantage. Unload pipe only by means recommended by the pipe manufacturer. Do not unload pipe of any size by dropping to the ground. Do not distribute more than one week's supply of material in advance of laying, unless approved.

Pipe shall not be unloaded or stored in the public right-of-way or easement unless it has been certified and accepted by the Engineer. Inspect all pipe and fittings prior to lowering into trench to ensure no cracked, broken, or otherwise defective materials are used. Clean ends of pipe thoroughly. Remove foreign matter ad dirt from inside of pipe and keep clean during and after laying.

Use proper implements, tools, and facilities for the safe and proper protection of the work. Lower pipe into the trench in such a manner as to avoid any physical damage to the pipe. Remove all damaged pipe from the job site. Do not drop or dump pipe into trenches.

601.03.04 Pipe Laying and Jointing of Pipe and Fittings

601.03.04A General

Proceed with pipe laying upgrade with spigot or tongue ends pointing in direction of flow. Place pipe in such a manner as to ensure a continuous and uniform bearing and support for the full length of the pipe between joints. Take care to properly align the pipe before forced entirely home. Upon completion of pipe laying all pipe joints shall be in the "home" position, which is defined as the position where the least gap (if any) exists, when the pipe components that comprise the join are fitted together as tightly as the approved joint design will permit. Gaps at pipe joints shall not exceed that allowed by the manufacturer's recommendations. For curved sewers the normal gap will be the gap existing when the pipe joints are in the "home" position as described above, for the pipe in the specified deflected position. After installation, prevent movement from any cause including uplift or floating.

Take special care to prevent movement of the pipe after installation when laid within a movable trench shield.

When laying operations are not in progress, protect the open end of the pipe from entry of foreign material and block the pipe to prevent movement or creep of gasketed joints.

Plug or close off pipes which are stubbed out for manhole construction or for connection by others.

Provide all sewer pipes, 36 inches or smaller in diameter, entering or leaving manholes or other structures, with flexible joints within 18 inches of the exterior wall. Pipes larger than 36 inches in diameter

shall have this flexible joint within a distance from the exterior wall equal to one-half the inside pipe diameter.

When cutting and/or machining the pipe is necessary, use only tools and methods recommended by pipe manufacturer.

When shown or approved to deflect pipe from a straight line, either in the vertical or horizontal plan, or when long-radius curves are shown, the amount of deflection shall not exceed that specified or approved by the Engineer. The pipe manufacturer's recommendation will serve as a guide, but the decision of the Engineer shall be final.

601.03.04B Concrete Pipe

Use rubber ring gasket joints unless mortar joints are specifically specified. When mortared joints are used, the entire joint for the full circumference of the pipe shall be completely filled with mortar. The surfaces of the pipe joint shall be brushed clean prior to mortaring. Fill the exterior of the joint with mortar and in the case of bell and spigot joints, fill to an angle of 45 degrees.

601.03.04C Corrugated Metal Pipe

Repair all damaged areas of the protective coating with material equal to the original and permit to dry or solidify before backfilling.

601.03.05 Perforated Pipe Underdrains

601.03.05A Trench Excavation and Backfill

Conform to applicable requirements in Section 204 EXCAVATION, EMBANKMENT, BEDDING AND BACKFILL. All excavation shall be unclassified.

601.03.05B Pipe Bedding

Provide a minimum 4-inch bedding of 1 1/2" - 3/4" rock as specified in Subsection 701.02.02C under perforated drain pipe, or as shown. Hand grade the bedding to proper grade ahead of pipe laying. Provide a firm, unyielding support along the entire pipe length.

601.03.05C Backfill at the Pipe Zone

Backfill the pipe zone with 1 1/2" - 3/4" rock as specified in Section 701.02.02C hand placed simultaneously on both sides of the pipe for the full trench width.

601.03.05D Backfill Above the Pipe Zone

Use 1 1/2" - 3/4" rock as specified in Subsection 701.02.02C for backfill above the pipe zone, unless otherwise specified.

601.03.05E Laying and Jointing Perforated Pipe

Securely fasten together perforated pipe with couplings, fittings, or bands as specified by the manufacturer for the type of the pipe used. Close upgrade ends of all subsurface drain pipe with approved plugs to prevent entry of soil materials.

Begin pipe laying normally at the outlet end of the pipe line. The lower segment of pipe shall be in contact with the shaped bedding throughout its full length. Bell or groove ends of rigid pipe and outside circumferential laps of flexible pipe shall be placed facing the upgrade end.

Lay all perforated pipe, except perforated PVC pipe, with perforations facing down, unless otherwise specified or directed. Place perforated PVC Drain Pipe with slots facing up.

Inspect all pipe prior to lowering into the trench and, if necessary, clean off any material tending to plug the perforations of the pipe. Carefully lower all pipe and fittings into the trench to avoid any contamination of the filter bedding material.

601.03.06 Flared End Sections

Construct flared end sections in accordance with the details and dimensions shown, except that minor variations may be accepted to permit the use of the manufacturer's standard prefabricated sections and methods of fabrication. Conform excavation, bedding and backfill to applicable requirements herein for the adjacent pipe or drain to be joined.

601.03.07 Pipe Coupling Adapters

Use flexible mechanical compression joint coupling with No. 305 stainless steel bands manufactured by Joints, Inc., Fernco Joint Sealer or equal.

601.03.08 Concrete Closure Collars

Only where specified on Drawings, construct concrete closure collars in conformance with the details provided. Wash pipe to remove all loose material and soil from the surface on which the concrete will be placed. Wet nonmetallic pipe thoroughly prior to placing the collars. Construct forms with materials that will ensure that no concrete shall enter the line. Make entire collar in one placement, and do not place collars in water. After the collars are placed and have taken their initial set, cure by covering with well-moistened earth. Do not backfill the trench until the concrete has sufficient strength.

601.03.09 Culverts

Remove and replace culverts in conformance to all applicable requirements of this section and Section 204 EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL.

601.03.10 Testing Storm Drains

601.03.10A General

1. Leakage or infiltration tests for storm drains will not be required unless called for on Drawings or in the Special Specifications.

2. The City may, at no additional expense to the Contractor, make a televised inspection of the storm drain pipe. Any defects in material or workmanship shall be satisfactorily corrected prior to final acceptance of the work.

3. When the quality of materials used or workmanship performed during the construction of storm drains is in doubt for any reason, the Engineer may require the storm drain and all applicable appurtenances to be tested. When so ordered, the storm drain shall be required to pass the same air test as specified for sanitary sewers in Subsection 301.03.10 Testing.

601.03.10B Cleaning Prior to Testing and Acceptance

Prior to final testing, acceptance and final manhole-to-manhole inspection of the storm sewer system by the Engineer, ball, flush and clean all parts of the system. Remove all accumulated construction debris, rocks, gravel, sand silt, and other foreign material from the storm sewer system at or near the closest

downstream manhole. If necessary, use mechanical rodding or bucketing equipment.

Upon the Engineer's final manhole-to-manhole inspection of the storm sewer system, if any foreign matter is still present in the system, reflush and clean the sections and portions of the liens as required.

601.03.10C Repairs

Repair or replace, in a manner satisfactory to the Engineer, any section of pipe not meeting the test requirements, or which has leakage.

Infiltration of ground water in an amount greater than herein specified, following a successful air test as specified, shall be considered as evidence that the original test was in error or that subsequent failure of the pipeline has occurred. Correct such failures occurring within the warranty period in a manner satisfactory to the Engineer at the Contractor's sole expense.

The Contractor, in contracting to do this work, agrees that the leakage allowances as indicated herein are fair and practical.

601.03.11 Deflection Test for PVC Pipe

Perform a deflection test for all storm drains and culverts constructed of PVC pipe after the trench backfill and compaction has been completed. The test shall be conducted by pulling an approved solid pointed mandrel or variable deflection measuring gauge through the completed pipeline a minimum of 30 days after compaction is completed. The diameter of the mandrel shall be 95 percent of the internal pipe diameter. Conduct testing on a manhole-to-manhole basis and only after the line has been completely flushed clean with water. Locate and repair any sections failing to pass the test and retest the section, at the Contractor's sole expense.

601.03.12 Television Inspection of Storm Drains

Upon completion of all storm drain construction, repairs, cleaning, and required tests, notify the Engineer that all lines are ready for televiewing inspection.

Subsequent to being notified, the Owner shall commence examination of lines or may waive the television inspection. Findings will be recorded. Correct all deficiencies at the Contractor's sole expense.

Upon correction of deficiencies revealed by televiewing, notify the Engineer; the same steps listed above may be repeated until all work is acceptable.

The City of Newberg may, at its own option, perform a deflection test at the same time it performs its television inspection.

601.04 MEASUREMENT AND PAYMENT

601.04.01 Storm Drain Pipe

Measurement and payment for storm drain pipe, including culverts and pipe stubouts from manholes, will be made on a linear foot basis for the various classes, types and sizes of pipe listed in the Proposal and as actually installed. All pipe will be measured horizontally from center-to-center of manholes or to the ends of the pipe, whichever is applicable. No deductions will be made for fittings or for structures.

Payment shall constitute full compensation for the pipe in place, including trench excavation, furnishing, placing and compacting pipe bedding and pipe zone material, native backfill material, testing, and plugs.

601.04.02 Perforated Pipe Underdrains

Measurement and payment for perforated drain pipe will be made on a lineal foot basis for the type and size of pipe installed as shown in the Proposal. Length will be measured as total length of pipe installed, including fittings measured along the pipe centerline. Payment shall constitute full compensation for trench excavation, special filter material for pipe bedding and trench backfill, and all other work specified to complete the installation of the perforated drain pipe complete in place.

601.04.03 Flared End Sections

Measurement and payment for flared end sections will be made on a unit price basis for each type and size actually installed as shown in the Proposal. Payment shall include full compensation for the flared end section complete in place including concrete cutoff walls and toe plates, when required.

601.04.04 Concrete Closure Collars

Measurement and payment for concrete closure collars will be made at the unit price each as shown in the Proposal and actually constructed. Payment shall include full compensation for all materials, equipment and labor necessary to complete the work. If not listed in the Proposal, then they will be considered incidental to the other work.

601.04.05 Field Fabricated Connections

Measurement and payment for field fabricated connections will be made at the unit price each for the type and size as shown in Proposal. Payment shall include full compensation for all materials, equipment and labor necessary to complete the work. If not shown in the Proposal, then they will be incidental to the other work.

****

602 MANHOLES, INLETS AND CONCRETE STRUCTURES

****

602.01 DESCRIPTION

This section covers the work necessary for the construction of the following items:

1. Manholes
2. Sumps
3. Inlets and Catch Basins
4. Anchor Walls
5. Special Concrete Structures
6. Concrete Encasement

602.02 MATERIALS

602.02.01 Base Rock

One inch minus base rock, conforming to the requirements for aggregate base material in Section 204.02.06 SELECT BACKFILL MATERIAL.

602.02.02 Forms

Forms for exposed surfaces shall be steel or plywood. Others shall be matched boards, plywood or other approved material. Form all vertical surfaces. Trench walls, large rock or earth shall not be used as form material.

602.02.03 Concrete and Reinforced Steel

Concrete and reinforcing steel shall conform to Section 205 MATERIALS - TYPES AND USE.

602.02.04 Cement Mortar

When specified for use, cement mortar shall conform to Section 205. Consistency of mortar shall be such that it will readily adhere to the pipe if using the standard tongue-and-groove type joint. Mortar mixed for longer than 30 minutes shall not be used.

602.02.05 Manholes

602.02.05A Standard Precast Manhole Sections

Furnish sections as specified conforming to the details on the Standard Drawings and to ASTM C 478. Cones shall have same wall thickness and reinforcement as manhole section. Provide eccentric cones with precast grooves for all manholes over six feet in depth. Flat slab tops with precast grooves reinforced to withstand AASHTO H20 loadings shall be provided for manholes six feet deep from crown of pipe and less. Top and bottom of all sections shall be parallel.

Prior to the delivery of any size of precast manhole section on the job site, yard permeability tests will be conducted at the point of manufacture. The precast sections to be tested will be selected at random from the stockpiled material which is to be supplied for the job. All test specimens will be mat tested, and shall meet the permeability test requirements of ASTM C 14 and ASTM C 497.

602.02.05B Precast Concrete Bases

All manholes, except as otherwise specified or approved by the Engineer, shall be constructed using precast, reinforced concrete bases in all traveled areas. Construction of precast bases shall conform to the requirements of ASTM C478. The base riser section shall be integral with the base slab.

602.02.05C Poured in Place Manhole Bases

The Contractor may use poured in place manhole bases in nontraveled areas. Concrete shall conform to Section 205 MATERIALS - TYPES AND USE.

602.02.05D Manhole Grade Rings

Concrete grade rings for extensions shall be a maximum of 6 inches high.

602.02.05E Jointing Materials

Preformed plastic gaskets conforming to the requirements of AASHTO M-198 or joints using confined O-ring with rubber gaskets conforming to ASTM C443 shall be used.

602.02.06 Pipe and Fittings

Conform to requirements of Section 601 PIPE AND FITTINGS (STORM DRAINS).

602.02.07 Precast Inlets and Catch Basins

Precast base and extension units shall conform to ASTM C913 and shall be used in the construction of all precast inlets and catch basins. Concrete risers for extensions shall be a minimum of 4 inches in height and shall be the same quality as the main section.

602.02.08 Manhole and Cleanout Frames and Covers

602.02.08A General

All castings shall be true to size, weight and tolerances shown on the Standard Drawings. Delivered weight shall be ± 5 percent of the specified weight. The bearing seat shall not rock when checked by the test jig. The foundry shall supply all test gauges and shall not subcontract any of the work other than testing procedure, patterns, and machining and cartage. The casting shall not be made by the open mold method and shall be free of porosity, shrink cavities, cold shuts, or cracks, or any defects which would impair serviceability. Repair of defects by welding, or by the use of "smooth-on" or similar material will not be permitted. All castings shall be shot or sandblasted, and the application of paint or other coating will not be permitted. All manhole frames and covers located outside of the right-of-way shall be tamper-proof.

602.02.08B Materials

Conform to ASTM A-48, Class 30B, with the following revisions:

Tensile Strength	30,000 PSI
Traverse Strength (1.2" dia. bar - 18" centers) Load - Pounds	1,600 - 3,000
Deflection - Inches	0.22 - 0.34
Brinell Hardness (as cast)	173 - 200

The Foundry shall certify as to the tensile and traverse properties and the Brinell Hardness. The Owner reserves the right to require a Rough Transverse bar (size of bar 1.2" dia. by 20" long) and/or a tensile bar as per ASTM A 48 for each 20 castings or heat when less than 20 castings are made.

602.02.08C Inspection

Notify the Owner at least 24 hours in advance of casting the units or bars. At least 24 hours notice shall also be given prior to final gauging and inspection. When directed, the following strength test shall be made on the manhole cover. The cover, while resting it its frame, shall sustain a concentrated load of 40,000 lbs. applied at its center through a 2 1/2-inch plug. The Engineer may, at any time, require up to 5 percent of the job and/or order and in no case less than one (1) cover to be tested in this manner. In case of failure during the test, additional covers shall be furnished until the tests prove satisfactory. Covers that do not pass this test shall not be used.

602.02.08D Cap Screws

Cap screws and washers for tamperproof and watertight manhole covers shall be stainless steel with 60,000 PSI minimum tensile strength conforming to ASTM A 453.

602.02.09 Standard Frames and Grates for Inlets and Catch Basins

Frames and grates for catch basins and storm drain inlets shall be fabricated of steel conforming to ASTM A 7, A 36, A 373 in accordance with the details shown on the Standard Drawings. All connections shall be welded. Welding shall conform to requirements of current code for welding in building construction of the American Welding Society. Frames and gratings shall be tested one within the other, and there shall be no

more than 1/16-inch rock. When checked by a test jig, the bearing seat of either component shall have no more than 1/16-inch rock. Test jibs shall be furnished by the manufacturer.

602.02.10 Steps for Precast Manholes

Manhole steps will comply with Section 302 MANHOLES AND CONCRETE STRUCTURES.

602.02.11 Storm Sumps

The precast sections will comply with Section 602.02.05. The frame and cover will comply with Section 602.02.08 and will be tamper-proof when the sump is located outside the right-of-way. The steps will comply with Subsection 602.02.10. Drain rock will be clean round imported material and the size will be 2"-4". The filter fabric will be Mirafi 140 or equal.

602.03 CONSTRUCTION

602.03.01 General

602.03.01A Excavation and Backfill

Conform to applicable provisions in Section 204 EXCAVATION, EMBANKMENT, BEDDING AND BACKFILL. Backfill around manholes, inlets, catch basins, and other appurtenances shall be of the same quality as the trench backfill immediately adjacent. All excavation shall be unclassified.

602.03.01B Base Rock

Place crushed aggregate base rock and thoroughly compact with a mechanical vibrating or power tamper.

602.03.01C Foundation Stabilization

If material in bottom of excavation is unsuitable for supporting manholes and other sewer appurtenances, excavate below subgrade as directed and backfill to required grade with rock conforming to Foundation Stabilization in Section 204 EXCAVATION, EMBANKMENT, BEDDING AND BACKFILL.

602.03.02 Manholes

All manholes, except as otherwise specified, shall be constructed using precast, reinforced concrete base sections, riser sections, and other precast appurtenances conforming to ASTM C478. Base riser sections shall be integral with the base slabs.

Preformed plastic gaskets shall be installed in strict accordance with the manufacturer's recommendation. Only pipe primer furnished by the gasket manufacturer will be approved. When using preformed plastic gaskets, manhole sections with chips or cracks in the joint surfaces shall not be used. Completed manholes shall be rigid and all manholes for sanitary sewers shall pass the hydrostatic test. Construct manhole inverts in conformance with the Standard Drawings with smooth transitions to ensure an unobstructed flow through manhole. Cover exposed edges of pipe completely with mortar. Trowel all mortar surfaces smooth.

Holes for installing pipe into precast manhole sections shall be cast in place or saw cut.

Channels shall conform accurately to sewer grade. Channel shall be formed to accept a three (3) foot long by six (6) inch TV. camera. Construct cast in place channel and shelf, in field, in one operation. Finish concrete shelf between channels with a brush.

602.03.03 Pipe Stubouts From Manholes

Install stubouts from manholes at locations as shown or directed. Grout or install pipes into manhole walls or manhole base so as to provide watertight seal around pipes. Provide manhole with resilient connector for PVC pipe. Saw cut opening in manhole walls with concrete saw. Pipe connections to the cone section of a manhole are strictly prohibited.

602.03.04 Manhole Grade Rings

In general, manhole grade rings will be used on all manholes in streets or roads or other locations where a subsequent change in existing grade may take place. Extensions will be limited to a maximum height of 12 inches.

Install appropriate combination of grade rings to a height that will accommodate the finish manhole surface elevation as shown on the Drawings. Lay grade rings in mortar with sides plumb and tops level. Seal joints with mortar to provide a watertight seal. Grade ring extensions shall be watertight.

602.03.05 Adjustment of Manholes to Grade

Frame and cover shall be left a minimum of 3 inches below finish grade and when the first lift of A.C. is placed. Sawcut around the manhole or cleanout and adjust the frame and cover to match street grade and fill excavation with concrete to a depth of 6 inches. The frame shall bear directly on the concrete. Place final lift of A.C. See Standard Drawing for manhole or cleanout adjustment.

602.03.06 Special Concrete Structures

Conform to the details as shown.

602.03.07 Placing Precast Units

If material in bottom of trench is unsuitable for supporting unit, excavate as directed and backfill to required grade with foundation stabilization material in conformance with Section 204 EXCAVATION, EMBANKMENT, BEDDING AND BACKFILL. Set units to grade at locations shown or directed.

602.03.08 Installation of Inlets and Catch Basins

Install inlets and catch basins at the locations shown on the Plans or where directed by the Engineer.

Construct inlets and catch basins as shown on the Standard Drawings. All inlets and catch basins constructed with precast units shall conform to ASTM C913. The top section, including curb, gutter, and frame, shall be cast-in-place. The Contractor may use poured in place inlets and catch basins in accordance with the Standard Detail Drawings. Concrete shall conform to Section 205 MATERIALS - TYPES AND USE.

Set frames and grates at elevations shown or as directed. Frames shall be cast in concrete. Bearing surfaces shall be clean and provide uniform contact. Anchor bolts and other fastenings shall be firmly embedded in concrete.

Any surrounding structures (e.g., pavement, curbs, gutters, sidewalks, driveways) and landscaping damaged during installation of inlets or catch basins shall be restored in accordance with these Standard Specifications at the Contractor's sole expense.

602.03.09 Inlet and Catch Basin Extensions

Install extensions to height as required. Use the largest size (in height) pre-cast extension risers

available from the manufacturer that will allow for conformance with the specified finished grade. Stacking small pre-cast extensions where a larger extension could be used is prohibited. Lay risers in mortar with sides plumb and tops to grade. Joints shall be sealed with mortar, with interior and exterior troweled smooth. Prevent mortar from drying out and cure by applying an approved curing compound or other approved method. Extensions shall be watertight.

602.03.10 Cleaning

Upon completion, clean each structure of all silt, debris and foreign matter.

602.03.11 Steps for Precast Manholes

Steps shall comply with that specified in the Sanitary Sewer Section of the Standard Technical Specifications - Division Three.

602.04 MEASUREMENT AND PAYMENT

602.04.01 Manholes

Measurement and payment for manholes will be made on a unit price basis for each type shown in the Proposal for Manholes 8 feet deep, plus the unit price per foot shown in the Proposal for extra depth of manholes over 8 feet. No deduction will be made for depths less than 8 feet. Measurement of manhole depth will be from the top of the manhole frame and cover to the manhole invert at the center of the manhole to the nearest 1/10 foot. Payment shall include full compensation for all materials, labor, steps and equipment required to construct manhole in-place.

602.04.02 Pipe Stubouts From Manholes

Measurement and payment for pipe stubouts from manholes shall be made at the unit price per length of pipe installed.

602.04.03 Tamperproof and Watertight Manhole Frame and Covers

Measurement and payment for tamperproof and watertight manhole frame and covers will be made on a unit price basis for each type installed. Since payment for furnishing and installing standard frame and covers is already included in the bid price for manholes, this unit price will include only the additional compensation for providing the watertight frame and cover complete in place.

If no item is called out in the Proposal then tamperproof and watertight manholes frames and covers will be supplied at the same price as for standard frame and cover, i.e., no extra compensation.

602.04.04 Concrete Encasement

Measurement and payment for concrete encasement will be made on a linear foot basis as shown in the Proposal for the size pipe to be encased. Length shall be measured along the centerline of the pipe. Payment shall include full compensation for all materials, equipment and labor required to construct the work complete in place.

602.04.05 Special Concrete Structures

Measurement and payment for special concrete structures will be made on a lump sum each basis. Payment shall constitute full compensation for materials, equipment and labor required to construct the work complete in place.

602.04.06 Catch Basins and Inlets

Measurement and payment for catch basins and inlets will be made on a unit price basis per each catch basin or inlet for the number and type actually constructed. Payment shall include full compensation for all materials, equipment and labor required to construct the work complete in place including the replacement of any surrounding structures damaged during construction.

****

603 WORK ON EXISTING STORM DRAINS DRAINAGE STRUCTURES

****

603.01 DESCRIPTION

This section covers the work necessary to join new work to existing, the abandoning of storm drains and structures and adjusting existing utility structures to finished grades.

603.02 MATERIALS

Conform to requirements of Section 205 MATERIALS - TYPES AND USE and to the requirements for related work referred to herein.

603.03 CONSTRUCTION

603.03.01 Excavation and Backfill

Conform to requirements of Section 204 EXCAVATION, EMBANKMENT, BEDDING AND BACKFILL. All excavation shall be unclassified.

603.03.02 Manholes Over Existing Storm Sewers

Advise Engineer of system for diverting flow and obtain authorization before starting. The Contractor shall be totally responsible for maintaining adequate capacity for flow at all times and adequately protecting new and existing work.

Construct manholes over existing operating lines at locations shown. Perform necessary excavation and construct new manholes in conformance with applicable requirements of Section 302 MANHOLES AND CONCRETE STRUCTURES.

Construct manholes as shown on the Detail Drawings or Standard Drawings. Densify the concrete base by vibrating or working as approved and screed to provide a level, uniform bearing for precast sections.

Place the first precast section of manhole in concrete base before concrete has set and deposit sufficient mortar on the base to assure a watertight seal between the base and the manhole wall. First section shall be properly located and plumb. Stacking additional precast manhole sections shall be prohibited until the concrete has cured a sufficient amount to support the additional weight in moist conditions.

After pouring concrete base, remove the top section of the existing pipe to the full width of pipe and diameter of the manhole. Cover exposed edges of pipe completely with mortar. Trowel all mortar surfaces smooth.

Prevent broken material or debris from entering sewer flow. Maintain flow through existing lines at all times. Protect new concrete and mortar for a period of 7 days after placing.

DIVISION SEVEN
CONCRETE STRUCTURES TECHNICAL REQUIREMENTS

****

701 CONCRETE STRUCTURES

****

701.01 DESCRIPTION

This section covers Portland Cement concrete, plain or reinforced, precast or cast-in-place, in bridges, box culverts, retaining walls, catch basins, abutments, piers, footings, foundations, and similar structures.

701.02 MATERIALS

701.02.01 Portland Cement

Conform to Section 205 MATERIALS - TYPES AND USE.

701.02.02 Aggregates

701.02.02A General

Use aggregates which conform to requirements of Section 205 MATERIALS - TYPES AND USE, and the additional requirements contained herein.

If Contractor desires to furnish aggregates which deviate from gradations contained herein, obtain written authorization from Engineer prior to incorporation of any materials in any part of the work.

701.02.02B Fine Aggregate

Fine aggregate must be graded from coarse to fine within the following limits:

All fine aggregate shall meet the requirements of ASTM C33.

GRADING REQUIREMENTS
FINE AGGREGATE - PORTLAND CEMENT CONCRETE

Sieve Size Passing	Percentages (by weight)
3/8"	100
No. 4	90 - 100
No. 16	45 - 75
No. 30	25 - 55
No. 50	5 - 30
No. 100	0 - 8

Use fine aggregate which has a sand equivalent of not less than 68, and which develops in the mortar strength test taken at seven days, a compressive strength of at least 95 percent of mortar using Ottowa sand.

Sand for mortar shall conform to the requirements of AASHTO M45; testing shall conform to the OSHO standard test for mortar strength.

701.02.02C Coarse Aggregate

Coarse aggregate must conform to the specified maximum size, and when each maximum size is separated into designated sizes, the separated designated sizes shall be as follows:

Maximum Size of Aggregates	Separated Sizes
2 inch	(2" - 1"), (1" - No. 4)
1½ inch	(1½" - ¾"), (¾" - No. 4)
1 inch	(1" - No. 4)
¾ inch	(¾" - No. 4)

Do not allow oversized and undersized materials to exceed a combined 15 percent of any separated size, nor allow any pieces to have any dimension greater than twice the maximum square screen size for the specified grading.

Grading of each of the specified separated sizes of coarse aggregate shall conform with the following:

GRADING REQUIREMENTS
COARSE AGGREGATE - PORTLAND CEMENT CONCRETE

Separated Sizes
Percentages (by weight)

Sieve Size Passing	2" - 1"	1½" - ¾"	1" - No. 4	¾" - No. 4
2½"	100			
2"	90 - 100	100		
1½"	35 - 70	90 - 100	100	
1"	0 - 15	30 - 65	90 - 100	100
¾"		0 - 15	50 - 80	90 - 100
3/8"			15 - 40	20 - 50
No. 4			1 - 10	0 - 10

When a tolerance range is set forth in the above grading requirements, it shall be understood that the midpoint of the tolerance range is the target value and the product shall conform as closely as realistically possible to this target value. The purpose of the tolerance range is only to permit occasional minor variations from the target value that are, for practical reasons, unavoidable.

When coarse aggregate is to be separated into two sizes as set forth hereinabove, control grading of material in each separated size within the applicable range of percentages given in grading requirements for coarse aggregate hereinabove so that the quantity of each separated size measured into the batch shall be not less than 35 percent nor more than 65 percent of total quantity of coarse aggregate measured into the batch.

701.02.03 Water

Conform to Section 205 MATERIALS - TYPES AND USE.

701.02.04 Admixtures

701.02.04A Air-Entraining Admixtures

Air-entraining admixtures shall conform to AASHTO M 154 (ASTM C260) using one or another of several tests as directed by the Engineer. Chloride content of admixture must not exceed 0.5 percent by weight.

701.02.04B Water-Reducing, Retarding, and Accelerating Admixtures

Water reducing, retarding, and accelerating admixtures shall conform to AASHTO M 194 (ASTM C494) using one or more of several tests as Engineer may direct. Chloride content of admixture must not exceed 0.5 percent by weight.

701.02.05 Curing Materials

Use curing material(s) conforming to one or more of the following requirements or as specified:

White Burlap-Polyethylene sheets for Curing Concrete	AASHTO M 171
Waterproof Paper for Curing Concrete	AASHTO M 171
Liquid Membrane-Forming Compounds for Curing Concrete* (white pigmented)	AASHTO M 148
White Polyethylene (Film) for Curing Concrete	AASHTO M 171
Burlap Cloth (Jute or Kenaf)	AASHTO M 182

*Not permitted on bridges, reservoirs, and box culverts.

701.02.06 Joint Materials

701.02.06A Preformed Expansion Joint Fillers

Use preformed expansion joint fillers for concrete conforming to AASHTO M 153 or AASHTO M 213 except that those furnished under AASHTO M 213 shall be tested in conformance to ASTM D 1751. Fillers conforming to AASHTO M213, except that the binder, if other than bituminous material, may also be used provided that they otherwise meet these Specifications and provide further that they have been demonstrated to be rot and vermin proof for a period of at least 5 years.

701.02.06B Preformed Elastomeric Joint Seals

Utilize preformed elastomeric joint seals conforming to AASHTO M 220.

701.02.06C Poured Filler

Utilize poured filler for concrete joints conforming to AASHTO M 173.

701.03 CONSTRUCTION

701.03.01 General

When purchasing concrete from others during performance of the Contract, be fully responsible for

such concrete conforming to all requirements contained herein.

701.03.02 Mix Design

701.03.02A Classes of Concrete

Classes of concrete shall designate design field strength of concrete in 28 days (PSI) followed by maximum size of aggregate to be used in the concrete, i.e., Class 3300-1-1/2 shall include a compressive strength of 3300 PSI in 28 days with 1-1/2 inch maximum size aggregate used in that concrete.

Use the class of concrete as specified or shown for each component part of the project, and if not so specified or shown, use Class 3300-1-1/2 concrete.

In all precast-prestressed concrete members, in the stems of post- tensioned box girders, and in all other members where the spacing of reinforce- ment is less than 2 inches, use 1-inch maximum size aggregate, unless specified otherwise.

701.03.02B Classification and Proportioning of Concrete Mixtures

Before beginning any concrete work the Contractor shall submit a concrete mix design to the Engineer.

During progress of the work, if concrete strength and quality as determined by cylinders and tests taken by Engineer fail to attain the requirements specified, suspend all concrete work and make necessary adjustments to obtain required results.

A mix using different proportions or aggregate sizes of any of concrete materials in the mix, may be requested to satisfy a particular production schedule or for other reasons. Any requested and authorized alteration to proportions of any of the concrete materials in the mix shall be made at the Contractor's sole expense.

The Contractor shall design the mix to meet the following requirements unless otherwise specified:

1. Entrained air range 3 percent to 6 percent (percent by volume). AASHTO T 152.
2. Slump range - 2 inches to 4 inches. AASHTO T 119.
3. When using 3/4-inch maximum size aggregate, the fine aggregate shall be between 40 percent and 48 percent of the total aggregate used.
4. When using 1-1/2-inch maximum size aggregate, the fine aggregate shall be between 35 percent and 45 percent of the total aggregate used.
5. When specified, use a water reducing admixture in conformance with manufacturer's recommendations.

Tests for strength shall be made in accordance with the following:

Molding Concrete Specimens in the Field	AASHTO T 23
Compressive Strength of Molded Cylinders	AASHTO T 22

Curing of cylinders shall conform to AASHTO T 23 except as modified herein.

701.03.03 Consistency

In general, use a mixture which contains the minimum amount of water consistent with required

workability. Consistency of concrete shall be gauged by ability of equipment to properly place it without segregating or honeycombing, and not by the difficulty in mixing or transporting.

701.03.04 Measurement of Materials

Provide facilities for weighing and accurately measure all materials by weight, except water, when batching concrete; weigh fine and coarse aggregates separately. Take representative samples and determine moisture content for each kind of aggregate. Store or handle aggregates so that their water content remains constant during any day's run. Equipment for weighing materials shall provide convenient and positive means of determining quantities in the batch of concrete, and means shall be provided for addition or removal of small quantities of materials to obtain exact weight per batch. Device for measuring water shall show accurately the quantity in gallons and be so designed that the water supply will be automatically cut off while water is being discharged into the mixer. Water shall be assumed to weigh 8.34 pounds per gallon.

701.03.05 Mixing

701.03.05A General

Machine mix all concrete. Ready-mix concrete may be used if it meets all specified requirements herein.

701.03.05B Mixing at the Site

Mix concrete thoroughly in a batch mixer of a size and type which will ensure a uniform distribution of materials throughout the mass.

Equip mixer with adequate water storage and a device for accurately measuring and automatically controlling amount of water used in each batch. Preferably provide mechanical means for recording the number of revolutions for each batch and automatically preventing discharge of mixer until materials have been mixed the specified minimum time.

Remove entire contents of the mixer from the drum before materials for a succeeding batch are placed therein. Deposit materials composing a batch simultaneously in the mixer. Do not use any mixer having a rated capacity of less than 1-sack batch. Do not charge a mixer in excess of its rated capacity.

Mix all concrete for a period of not less than 1-1/2 minutes after all materials, including water, are in the mixer. During the period of mixing, operate at a design speed of not less than 14 nor more than 20 revolutions per minute.

The first batch of concrete materials placed in the mixer shall contain a sufficient excess of cement, sand, and water to coat the inside of the drum without reducing the required mortar content of the mix. Upon cessation of mixing for a considerable period, clean the mixer thoroughly.

The above specification contemplates the use of conventional revolving drum type mixers. Other types may be used with written permission of the Engineer.

701.03.05C Truck Mixing

Unless otherwise authorized by the Engineer, use only revolving drum type truck mixers that are watertight and so constructed that concrete can be mixed to ensure a uniform distribution of materials throughout the mass.

Accurately measure all solid materials for concrete in accordance with Subsection 701.03.04 and charge into the drum at the proportioning plant. Except as subsequently provided, equip the truck mixer

with a tank for carrying mixing water. Place only the prescribed amount of water in the tank unless the tank is equipped with a device by which quantity of water added can be readily verified. Mixing water may be added directly to the batch in which case a tank will not be required. Truck mixers may be required to be provided with means by which the mixing time can be readily verified by the Engineer.

Do not allow any batch in a truck mixer to exceed the maximum rated capacity of mixer as stated by the manufacturer and stamped in metal on the mixer. Continue truck mixing for not less than 70 revolutions nor more than 100 revolutions of the drum at the rate of rotation designated by the manufacturer and stamped in metal on the mixer. Commence mixing after all ingredients, including water, are in the drum. Additional mixing, if any, shall be of the rate of rotation as designated by the manufacturer as agitating speed. Begin mixing within 30 minutes after cement has been added to either the water or the aggregate. When cement is charged into a mixer drum containing water or surface-wet aggregate and when the temperature is above 90 degrees F, or when high-early strength Portland Cement is used, reduce this limit to 15 minutes.

701.03.05D Partial Mixing at Central Plant

When a stationary mixer is used for partial mixing of concrete (shrink-mixing), mixing time in stationary mixer may be no more than is required to intermingle the ingredients. After transfer to a truck mixer, further mixing at a designated mixing speed will be required only as necessary to meet the requirements for uniformity of concrete as specified for truck mixing.

701.03.05E Plant Mix

Conform mixing at a central plant to requirements for mixing at the site.

701.03.05F Time of Hauling and Placing Mixed Concrete

Completely discharge and place in the forms all concrete transported to the project in a truck mixer or truck agitator within ninety (90) minutes after the introduction of mixing water to cement and aggregate, or cement to aggregate, or before 250 revolutions of the truck drum or blades, whichever comes first.

Reduce this time during conditions which contribute to accelerated setting of concrete, or when temperature of concrete is 85 degrees F, or above.

Add no water to concrete during hauling or before discharge, unless ordered by the Engineer. Engineer will not approve any water addition which increases the slump by more than 1 inch or exceeds the design water-cement ratio.

701.03.05G Delivery

Utilize a plant capacity and transportation equipment which are adequate to ensure continuous delivery of concrete during concreting operations and which will provide for proper handling, placing, and finishing of the concrete. Use a rate of delivery such that the interval between batches does not exceed 20 minutes. Methods of delivery and handling concrete shall allow placing with a minimum of rehandling and without damage to the structure or concrete. Time interval may be reduced when deck concrete is being placed. Control delivery of concrete for decks so that deck pour will progress at a rate of not less than 20 feet per hour unless some other rate of pour is specified.

701.03.05H Retempering

Mix concrete only in such quantities as are required for immediate use and do not use any which has developed initial set. Concrete which has partially hardened shall not be retempered or remixed.

701.03.06 Falsework

For structures requiring poured-in-place concrete superstructures, working drawings and calculations for falsework prepared by an engineer registered to practice in the State of Oregon may be required to be submitted for review. For a guideline on designing formwork and falsework, the contractor is referred to ACI Standard, "Recommended Practices for Concrete Formwork" (ACI 347-XX).

Design and construct all falsework to support the total applied loads with a deflection/span ratio not to exceed 1/500 in any falsework span. Employ screw jacks or hardwood wedges to take up any settlement in formwork either before or during the placing of concrete. Set falsework for post- tensioned structures to carry full dead load and any additional vertical or horizontal loads caused by the prestressing operation.

Contractor is directed to the fact that post-tensioned structures are not self-supporting until post-tensioning is complete and Contractor shall consider this fact in the design, maintenance, and protection of falsework.

701.03.07 Forms

Forms shall be constructed for all concrete work. Adjacent surfacing such as asphaltic concrete shall not be used as a form for placing concrete. Make all forms mortar-tight, set them so finished concrete will conform to the proper dimensions and contours, and make them sufficiently rigid to prevent distortion due to the pressure of the concrete and other loads incident to the construction operations. Construct and maintain forms to prevent warping and opening of joints.

Design forms to withstand the effects of vibration of concrete as it is placed.

Support deck forms for concrete box girder spans by girder stems. Posts or other supports for deck forms will not be permitted to come in contact with the bottom slab of the box girder.

Make wood forms for concrete surfaces not subject to backfill of dressed lumber of uniform thickness with a form liner or an approved type. Wood forms for interior cells of box girders may be made with or without a form liner. Shiplap or S4S boards are acceptable provided forms are mortar-tight. Plywood will be acceptable as a form liner if sufficiently supported. Ensure that all form work for exposed concrete surfaces is smooth with the grain running in the same direction to give a good finished appearance. Construct metal ties or anchorages within forms to permit their removal to a depth of at least 1 inch from face without injury to the concrete. Where wire ties are permitted, all wires, upon removal of forms, shall be cut back at least 1/4-inch from the face of the concrete with chisels or nippers; for green concrete, nippers are necessary. Design all fittings for metal ties so that upon their removal, cavities which are left will be of the smallest possible size. Fill cavities with cement mortar and leave surface sound, smooth, even, and uniform in color.

Fillet forms at all sharp corners and bevel or draft in the case of all projections, such as girders and copings, to ensure easy removal. For narrow walls and columns, where the bottom of the form is inaccessible, leave the lower form boards loose so that they may be removed for cleaning out extraneous material immediately before placing of the concrete.

Keep the forms in place for periods, which shall be determined as hereinafter specified. When the forms appear to be unsatisfactory in any way, either before or during the placing of concrete, work shall be stopped until defects have been corrected.

Maintain shape, strength, rigidity, watertightness, and surface smoothness of re-used forms at all times. Do not re-use warped or bulged lumber, and do not re-use any forms which are unsatisfactory in any respect. Thoroughly clean re-used forms of all dirt, mortar, and foreign matter.

Treat all forms with form oil or wax or saturate with water immediately before placing concrete. Do not

use material which will adhere to or discolor the concrete.

701.03.08 Removal of Falsework and Forms

Assume full responsibility for all damage resulting from premature removal of forms. Do not place earth backfill against walls below grade, and do not remove forms and shoring from structural slabs or beams until concrete has reached an actual field strength equal to 75 percent of the specified 28-day design field strength. Actual field strength shall be determined from field cured test cylinders which shall be cured under conditions equivalent to the most unfavorable conditions for the portions of concrete which the cylinders represent.

Do not use methods of form removal likely to cause over-stressing of the concrete. Remove supports in such a manner as to permit concrete to uniformly and gradually take the stresses due to its own weight.

Remove all form work from cells of concrete box girders to which access is provided, and all form work except that necessary to support deck slab, from the remaining cells of the box girder.

701.03.09 Weather Limitations

701.03.09A General

Assume full responsibility for the concrete work during any unusual weather conditions, including, but not limited, to hot and cold weather. Any work not in conformance to the Drawings and Specifications may be rejected by the Engineer and replaced or repaired at the Contractor's expense.

701.03.09B Hot Weather

Take special precautions for hot weather in placing, finishing, and curing concrete when the ambient temperature reaches 85 degrees F or higher or whenever relative humidity, wind velocity, or exposure to the sun at lower air temperatures are expected to cause hot weather conditions for the concrete. Specify cool materials for the mix, add additional water to the forms, subgrades and other areas to be in contact with concrete but allow no standing water when concrete is placed; schedule work carefully to place and finish concrete as rapidly as possible, reduce evaporation from the concrete with windbreaks, covers, and fog nozzles, and begin curing as soon as possible.

701.03.09C Cold Weather

Do not place concrete when ambient temperature is below 35 degrees F without written permission of the Engineer. Enclose structure in such a way that concrete and air within the enclosure can be kept above 50 degrees F for a period of seven days after placing the concrete. When enclosures are used to maintain specified temperatures, furnish a 24-hour temperature recording thermometer to record all temperature within the enclosure.

Supply heating apparatus such as stoves, salamanders, or steam equipment and the necessary fuel. When dry heat is used, provide means of maintaining atmospheric moisture. Heat all aggregates and mixing water to a temperature of at least 70 degrees F, but not more than 150 degrees F; aggregates may be heated by either steam or dry heat.

Where practicable, forms insulated with at least 2-inch thick blankets, made of fiberglass, rock wool, balsam wood, or similar commercial material capable of maintaining the surface of the concrete at no less than 50 degrees F may be used in lieu of other protection of concrete involving housing and heating. When forms are insulated, protect exposed horizontal surfaces with a similar layer of the insulating materials securely fastened in place. If insulated forms do not maintain proper temperature at the surface of the concrete, use auxiliary protection and heat. The Contractor may also use plastic and straw to protect the concrete. The

Contractor will keep the straw confined to the surfaces being protected and clean up all materials as soon as the concrete no longer requires the protection. No staining of the concrete will be accepted due to the use of straw as a method of protection.

701.03.10 Handling and Placing

701.03.10A General

In preparation for placing of concrete, remove all sawdust, chips, and other construction debris and extraneous matter from interior of forms. Remove struts, stays, and braces, serving temporarily to hold forms in correct shape and alignment prior to placing of the concrete, when the concrete has reached a position rendering their service unnecessary. Remove these temporary members entirely from the forms and do not leave them buried in the concrete.

Do not use concrete which does not reach its final position in forms within time stipulated in Subsection 209.03.05F.

Place concrete so as to avoid segregation of material and displacement of reinforcement. Do not use long troughs, chutes, and pipes for conveying concrete from mixer to forms.

For open troughs and chutes, use steel or steel lined material. Where steep slopes are required, equip chutes with baffles or make in short lengths that reverse direction of movement. Keep all chutes, troughs, and pipes clean and free from coatings of hardened concrete by thoroughly flushing with water after each run; discharge water used for flushing clear of structure and do not discharge into any sewer or culvert or appurtenances thereto.

When placing operations would involve dropping concrete more than 3 feet, deposit through an "elephant trunk." Aluminum pipe will not be allowed.

After initial set of concrete, do not jar forms nor place strain on the ends of the reinforcing bars which project.

Thoroughly compact concrete during and immediately after depositing.

Provide compaction by mechanical vibration subject to the following provisions:

1. Use internal vibration or other methods provided herein.

2. Use vibrators of a sufficient type and design, capable of transmitting vibration to concrete at frequencies of not less than 4,500 impulses per minute.

3. Provide intensity of vibration such as to visibly affect the mass of the concrete of 1-inch slump over a radius of at least 18 inches.

4. Provide a sufficient number of vibrators to properly compact each batch, immediately after it is placed in forms.

5. Manipulate vibrators so as to thoroughly work concrete around reinforcement and embedded fixtures and into corners and angles of forms.

6. Apply vibration at the point of deposit and in the area of freshly deposited concrete. Insert vibrators and withdraw from concrete slowly. Use vibration of sufficient duration and intensity to thoroughly compact concrete but do not continue so as to cause segregation. Do not continue vibration at any one point to the extent that localized areas of grout are formed.

7. Make application of vibrators at points uniformly spaced and not farther apart than twice the radius over which vibration is visibly effective.

8. Do not apply vibration directly or through reinforcement to sections or layers of concrete which have hardened to the degree that concrete ceases to be plastic under vibration. Do not use vibration to make concrete flow in forms over distances so great as to cause segregation, nor to transport concrete in forms.

9. Supplement vibration by such spading as is necessary to ensure smooth surfaces and dense concrete, along form surfaces and in corners and locations impossible to reach with vibrators.

Place concrete in horizontal layers not more than 12 inches thick except as hereinafter provided. When less than a complete layer is placed in one operation, terminate in a vertical bulkhead. Place each layer and compact before the preceding layer has taken initial set to avoid surfaces of separation between the layers. Compact each layer so as to avoid formation of a surface of separation with a preceding layer.

When placing of concrete is temporarily discontinued, and after concrete has become firm enough to retain its form, clean off laitance and other objectionable material to a sufficient depth to expose sound concrete. Smooth top surface of the concrete adjacent to forms with a trowel. Where a "feather edge" might be produced at a construction joint, as in the sloped top surface of a wing wall, use inset form work to produce a blocked out portion in the preceding layer which produces an edge thickness of not less than 6 inches in succeeding layer. Do not discontinue work within 18 inches of the top of any face, unless provision has been made for a coping, in which case, a construction joint shall be made at the under side of the coping.

701.03.10B Pumping

Placement of concrete by pumping will be permitted provided clean equipment is used which is of sufficient size and capacity to satisfactorily handle the concrete mix specified. For discharge line of pump, use steel or rubber pipe. Provide additional cement or additives required to obtain a pumpable mix at the sole expense of the Contractor.

Furnish evidence of backup means of placing structural concrete in the event of failure of equipment during placement.

701.03.11 Construction Joints

701.03.11A General

Use construction joints only where shown or designated on the Drawings, unless otherwise specified. Taper wooden key forms and pre-soak or treat to prevent swelling. When placing operation is interrupted for any reason, place construction joints and provide with keys to resist shear and dowels to develop bond.

701.03.11B Bonding

Before depositing new concrete on or against concrete which has hardened, the forms shall be retightened. The surface of the hardened concrete shall be roughened in a manner that will not leave loosened particles or aggregate or damaged concrete at the surface. It shall be thoroughly cleaned of foreign matter and laitance and saturated with water. At the juncture of the hardened and the newly deposited concrete, the cleaned and saturated surfaces, including vertical and inclined surfaces, shall first be thoroughly covered with a coating or mortar or neat cement grout against which the new concrete shall be placed before the grout has attained its initial set.

The placing of concrete shall be continuous from joint to joint. The face edges of all joints

which are exposed to view shall be carefully finished true to line and elevation.

701.03.12 Expansion and Fixed Joints

Construct all joints according to details shown.

701.03.12A Open Joints

Place open joint in locations shown. Construct by insertion and subsequent removal of a template without chipping or breaking corners of the concrete. Do not extend reinforcement across an open joint unless so shown.

701.03.12B Filled Joints

Construct poured expansion joints similar to open joints. When premolded types are specified, drive nails at about 1 foot on centers through filler to provide anchors into concrete when it is placed. Place premolded joint filler in forms in proper rigid position before concrete is poured. Install premolded joint filler in all walks to provide expansion and contraction joints at maximum 18-foot intervals and at all changes in direction, at intersections and at each side of driveway entrances.

701.03.12C Steel Joints

Shape plates, angles or other structural shapes accurately at the shop to conform to the section of concrete. Fabricate and paint to conform to requirements of these Specifications. Take care to insure that surface in finished plane is true and free of warping. Employ positive methods in placing joints to keep them in correct position during placement of concrete. Opening at expansion joints at normal temperature shall be as shown. Avoid impairment of clearance of any manner.

701.03.12D Preformed Elastomeric Joint Seals

Use compression joint seals in the longest practicable lengths for longitudinal joints. In transverse joints, one factory splice will be permitted in joint seals where required length of material in any one joint exceeds manufacturers' standard stock lengths. Make such splices true and smooth on outside surfaces with no offsets of abutting sections and with complete bond on all abutting surfaces. Make joints clean and dry and free of spalls and irregularities which would impair a tight seal in service. Place seals in the joint under compression, as recommended by manufacturer, using a lubricant-adhesive as a covering film applied to both sides of the seal just prior to its installation.

For lubricant-adhesive material, use a compound of same base polymer as the joint seal with which it is used, blended with a suitable volatile solvent. Lubricant-adhesive shall be compatible with joint seal and concrete and be relatively unaffected by normal moisture in the concrete. It shall maintain a suitable consistency at the temperature at which joint seal is installed.

Set seal as shown and make sure it contacts walls of joint throughout its length. Longitudinal elongation of an installed seal by 3 percent or more of its original length will be cause for its removal and reinstallation.

Remove all lubricant-adhesive which comes upon the exposed top of an installed seal before it dries, and remove all seals which show twist, curl, nicks or other malformation, as installed. Seal all ends of preformed elastomeric joint seals with watertight plug prior to installation of joint seal. Use a foam rubber plug or other acceptable closed cell cellular material which is compressible to 15 percent of its uncompressed thickness. Plug shall be a minimum of 2 inches in length and be secured in elastomeric joint seal with an adhesive which will insure a watertight plug.

701.03.13 Surface Finishing

701.03.13A General

After forms have been removed, carefully point all depressions resulting from removal of form ties or from other causes with mortar conforming to Section 205. Maintain thorough saturation of concrete surface during pointing and patching. Type of finish to be used shall be as specified or as shown.

701.03.13B Slab Finishes

1. **General.** Refrain from excessive use of "Jitterbugs" or other special tools designed for the purpose of forcing coarse aggregate away from slab surface. dusting of surfaces with dry materials will not be permitted. Compact slabs and floors thoroughly by vibration. Round off edges of slabs and tops of walls with a 1/2-inch radius steel edging tool, unless specified otherwise.

2. **Monolithic Finish.** Finish by screeding and floating with straight-edge to bring surfaces to the required finish elevation shown. While concrete is still green, but sufficiently hardened to bear a person's weight without deep imprint, wood float to a true, even plane with no coarse aggregate visible. Apply sufficient pressure on wood floats to bring moisture to surface. After surface moisture has disappeared, steel trowel concrete to produce a smooth, impervious surface, free from trowel marks. Give an additional troweling to surface for the purpose of burnishing. Final troweling shall produce a ringing sound from the trowel. Do not use dry cement or additional water in troweling. Do not use excessive troweling.

3. **Rough Slab Finish.** Finish slabs to receive fill and mortar setting beds by screeding with straightedges to bring surface to required finish plane. Remove all laitance and leave surface clean. Subject to approval, an acceptable aggregate revealing material may be used and laitance washed off when concrete has set.

4. **Wood Float Finish.** Finish by screeding with straightedges to bring surface to required line as shown. While concrete is still green, but hardened sufficiently to bear cement finisher's weight, work flat surface to a true and uniform plane with no coarse aggregate visible.

5. **Broomed Floor Finish.** Finish concrete as specified for monolithic floor finish above, except omit final troweling and finish surface by drawing a fine-hair broom lightly across surface. Do all brooming in same direction and parallel to expansion joints, or in cases of inclined slabs, perpendicular to slope, except for reservoir roof slab, broom surface in radial direction.

6. **Power Machine Finish.** In lieu of hand finishing, a power machine may be used for finishing concrete floors and slabs in conformance with directions of machine manufacturer.

701.03.14 Curing

Cure concrete surfaces by covering with material conforming to Subsection 506.03.13A Curing of Concrete. Place covering as soon as concrete has hardened sufficiently to support covering without damage. Use a covering which is best suited to existing conditions. If such coverings are not required, keep surfaces moist by flushing or sprinkling. Arrange sprinkling system so outside of all forms can be kept damp for a period of 7 days after placing of concrete so that no moisture is taken away from concrete by forms. Coordinate curing and finishing when both requirements are to be met at same time.

Protect slab concrete exposed to conditions causing premature drying during placing operations by providing wind breaks, fog spray or by other necessary methods.

701.04 MEASUREMENT AND PAYMENT

701.04.01 Concrete

Concrete will be measured on a lump sum basis, square yard surface basis, or on a cubic yard basis for payment as shown in the Proposal. In all cases the part or parts of work to be measured on each basis shall be as shown and as specified.

When reinforcing steel, metal expansion plates, or miscellaneous metal items are not specified or shown as a separate pay item in the Proposal, payment for said item is considered to be incidental to the related item of work and no separate payment will be made.

701.04.01A Lump Sum Basis

Measurement and payment will be made on a lump sum basis as shown in the Proposal.

701.04.01B Square Yard Surface Basis

Measurement and payment will be made on a square yard surface basis for each class of concrete as shown in the Proposal.

701.04.01C Cubic Yard Basis

Measurement and payment will be made on a cubic yard basis for each class of concrete as shown in the Proposal.

701.04.01D Square Foot Surface Basis

Measurement and payment will be made on a square foot surface basis for each class of concrete as shown in the Proposal.

****

702 REINFORCEMENT

****

702.01 DESCRIPTION

This section covers work necessary for reinforcing steel, welded wire fabric, dowels, and accessories, for concrete structures, complete.

702.02 MATERIALS

702.02.01 Bar Reinforcement

Use steel deformed bars conforming to ASTM A 615, Grade 40, unless otherwise shown, except that longitudinal bars in continuously reinforced concrete pavement and high strength bar reinforcement shall be Grade 60.

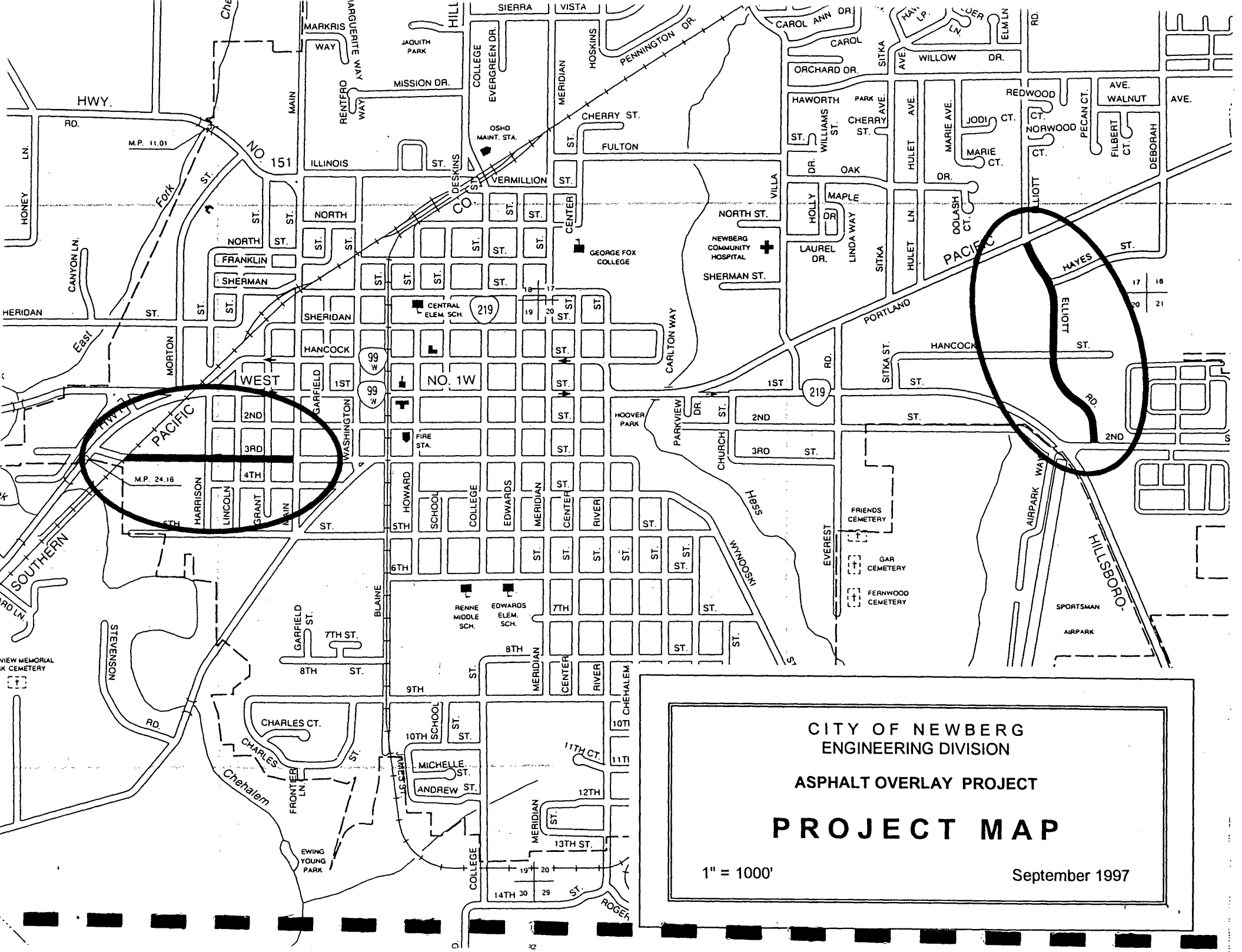
702.02.02 Dowels

For concrete pavement, slab or wall load transfer devices at joints and other elements, use dowels conforming to ASTM A 306, Grade 70 unless otherwise specified. Coat with plastic or other approved material for bond prevention where specified.

PROJECT INFORMATION

CITY OF NEWBERG
ASPHALT OVERLAY PROJECT

JANUARY, 1998


CITY OF NEWBERG
ENGINEERING DIVISION
ASPHALT OVERLAY PROJECT
PROJECT MAP
1" = 1000'
September 1997
PACIFIC
HWY.
NO. 151
M.P. 11.01
M.P. 24.16
NO. 1W
WEST
East Fork
Chehalem
SOUTHERN PACIFIC
HILLSBORO-
PORTLAND
HAYES ST.
ELLIOTT
NEWBERG COMMUNITY HOSPITAL
GEORGE FOX COLLEGE
CENTRAL ELEM. SCH.
RENNE MIDDLE SCH.
EDWARDS ELEM. SCH.
FIRE STA.
OSHD MAINT. STA.
HOOVER PARK
JAQUITH PARK
EWING YOUNG PARK
FRIENDS CEMETERY
GAR CEMETERY
FERNWOOD CEMETERY
SPORTSMAN AIRPARK
VIEW MEMORIAL K CEMETERY
MAIN
MORTON
GARFIELD
WASHINGTON
HARRISON
LINCOLN
GRANT
HOWARD
SCHOOL
COLLEGE
EDWARDS
MERIDIAN
CENTER
RIVER
BLAINE
CHEHALEM
STEVENSON
CARLTON WAY
HOSKINS
PENNINGTON DR.
CHERRY ST.
FULTON
VERMILLION
NORTH ST.
SHERMAN ST.
SHERIDAN
HANCOCK
FRANKLIN
SHERMAN
NORTH
1ST
2ND
3RD
4TH
5TH
6TH
7TH
8TH
9TH
10TH
11TH
12TH
13TH ST.
14TH
CHARLES CT.
CHARLES
MICHELLE
ANDREW
FRONTER LN.
JAMES ST.
GARFIELD ST.
7TH ST.
8TH ST.
CHURCH
PARKVIEW DR.
HESS
WYNOOSKI
EVEREST
AIRPARK WAY
SITKA
SITKA ST.
HULET AVE.
MARIE AVE.
MARIE CT.
JODI CT.
DOLASH CT.
LAUREL DR.
LINDA WAY
HOLLY DR.
MAPLE
OAK
ORCHARD DR.
WILLOW DR.
CAROL
CAROL ANN DR.
HAWORTH PARK
WILLIAMS ST.
CHERRY AVE.
REDWOOD
NORWOOD CT.
PECAN CT.
FILBERT CT.
WALNUT AVE.
DEBORAH
ELM LN
HONEY LN.
CANYON LN.
MISSION DR.
RENTFRO WAY
MARGUERITE WAY
MARKRIS WAY
SIERRA
VISTA
COLLEGE
EVERGREEN DR.
DESKINS
VILLA
CENTER
219
99W
17
18
19
20
21

ASPHALT OVERLAY PROJECT

TABLE OF STREETS

STREET	LOCATION BEGIN	LOCATION END	PRELEVEL (Class D) (Yes / No)	ASPHALT CLASS	NOMINAL THICKNESS (in)	FABRIC WIDTH (Approx.) (Ft)	PAVEMENT WIDTH (Ft)	PAVEMENT LENGTH (Ft)	PAVEMENT AREA (SY)
3RD	Main	RR Xing	Y	B + C	2.5" + 1.5"	24	32	1,460	5,190
Elliott	Portland Rd.	2ND	Y	B + C	2.5" + 1.5"	26	46 - 34	2,010	7,810
		TOTAL						**3,470**	**13,000**

STRAIGHT LINE CHART

STA.	OFFSET (Ft) LEFT	OFFSET (Ft) RIGHT	DESCRIPTION
3rd Street:			
10 + 00	0		C/L Monument box, South side of SP RR
10 + 02		17	Begin RT curb
10 + 14	17		Begin LT curb
11 + 27		17	Catch basin
11 + 39	17		Catch basin
12 + 50		13	Manhole
16 + 73	18		Water valve
16 + 74	17		Water valve
16 + 75	18	16	Water valve
16 + 79		15	Water valve
16 + 85		9	Manhole
16 + 94	0		C/L Monument box at Harrison St.
19 + 54	0		C/L Monument box at Lincoln St.
19 + 75		14	Water valve
21 + 47		6	Manhole
21 + 93		13	Water valve
21 + 94		14	Water valve
21 + 95		13, 17	Water valve
22 + 07		8	Manhole
22 + 13	0		C/L Monument box at Grant St.
23 + 37		15	Gas valve
23 + 44		8	Manhole
24 + 73	0		C/L Monument box at Main St.
Elliott Street:			
0 + 94	0		South curb line, Portland Rd.
0 + 96	33		Gas valve
2 + 00	0		C/L Monument box

STRAIGHT LINE CHART

STA.	OFFSET (Ft) LEFT	OFFSET (Ft) RIGHT	DESCRIPTION
3 + 14	0		C/L Monument box
3 + 18		18	Catch basin
3 + 30	0		Manhole
3 + 48	0		C/L Monument box
4 + 18	0		Manhole
5 + 05		18	Catch basin
5 + 07	18		Catch basin
5 + 41	0		C/L Monument box at Hayes St.
5 + 68	9		Manhole
6 + 22	0		C/L Monument box
8 + 04	5		Manhole
8 + 44	18	18	Catch basin
11 + 51	18	18	Catch basin
11 + 69	24, 27		Water valve
11 + 70		25	Water valve
11 + 81		17	Manhole
11 + 94	0		C/L Monument box at Hancock St.
11 + 98	6		Manhole
12 + 79	0		C/L Monument box
13 + 30	18		Catch basin
13 + 33		18	Catch basin
14 + 20		7	Manhole
15 + 08	0		C/L Monument box
16 + 93	18	18	Catch basin
17 + 44	0		C/L Monument box
17 + 66	0		Manhole
18 + 93	18	18	Catch basin
19 + 19	0		Manhole

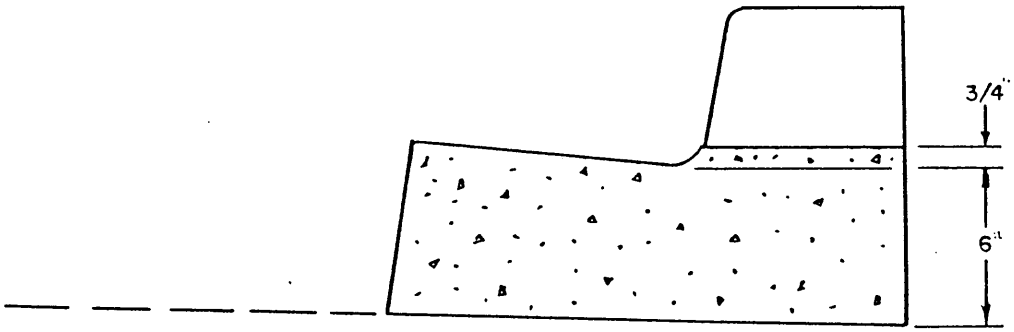
STRAIGHT LINE CHART

STA.	OFFSET (Ft) LEFT	OFFSET (Ft) RIGHT	DESCRIPTION
19 + 73	0		C/L Monument box
20 + 72	18	18	Catch basin
21 + 05	0		North curb line, 2ND St.
21 + 12	14		Manhole

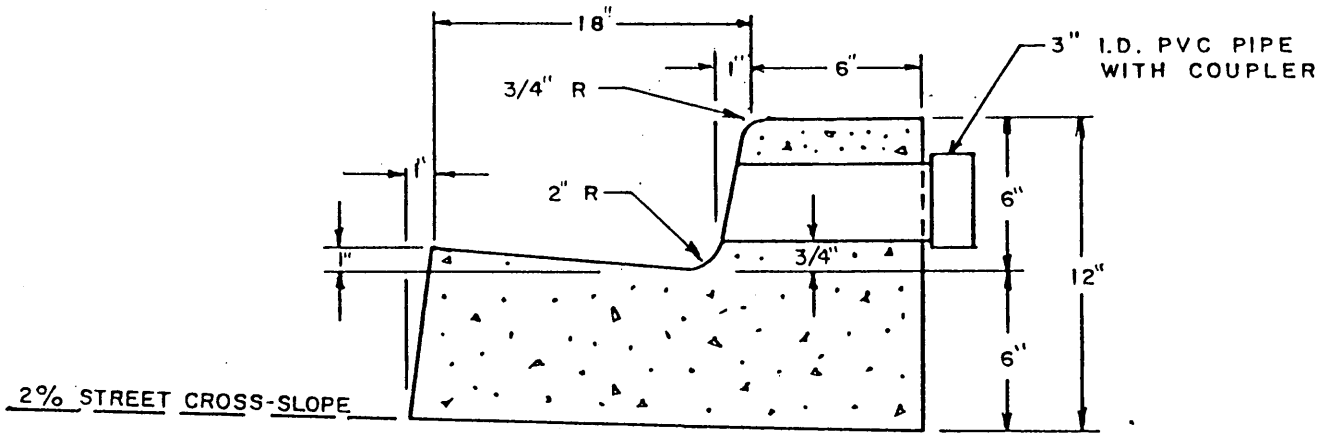
STANDARD DRAWINGS

CITY OF NEWBERG
ASPHALT OVERLAY PROJECT

JANUARY, 1998



CURB and GUTTER AT DRIVEWAY APPROACH



DIMENSIONS IN INCHES

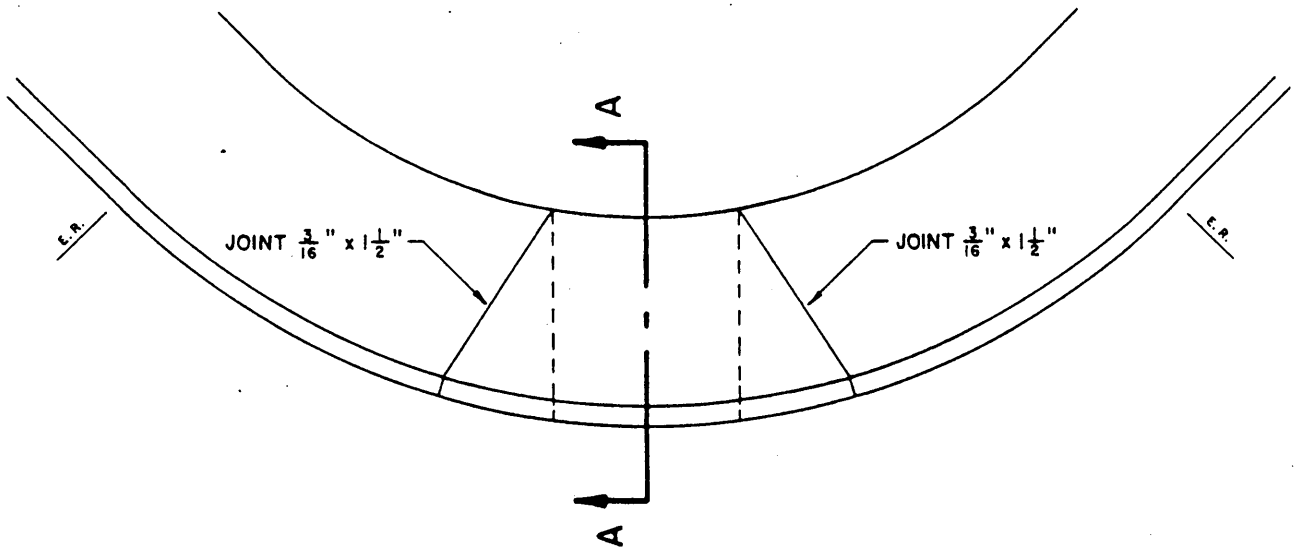
CURB and GUTTER

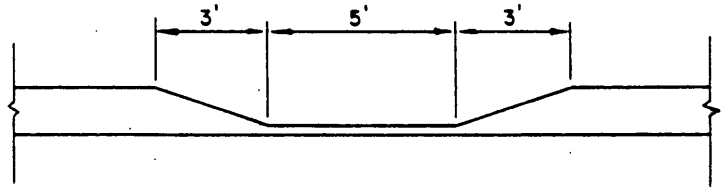
NOTES

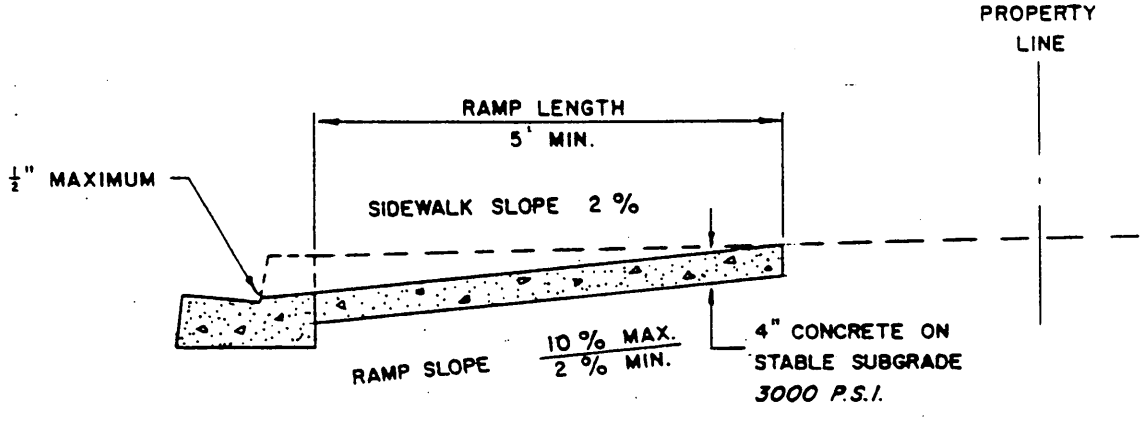
1. CONCRETE SHALL HAVE STRENGTH OF 3000 P.S.I. AT 28 DAYS.
2. TRANSVERSE CONTRACTION JOINTS - MAKE 3/16"x 1-1/2" DEEP CUT; SPACED AT 15'. PROVIDE CONTRACTION JOINTS AT CURB RETURN POINTS, CATCH BASINS, AND DRIVEWAYS.
3. SCORE CURB OVER DRAIN BLOCK-OUT.
4. WEEP HOLES SHALL SLOPE TO THE STREET.
5. EXPANSOIN JOINTS SHALL NOT BE USED.
6. APPLY CURING COMPOUND (PETROLEUM BASE) TO FRESH CONCRETE TO RETAIN MOISTURE.
7. TOP OF CURB BRANDED "S" & "W", 2" MIN. HEIGHT FOR SEWER AND WATER LOCATIONS. HAND SCRIBING IS NOT ALLOWED.

CURB & GUTTER

ENGINEERING DEPT.	CITY of NEWBERG	STANDARD DRAWING NO. ST-4	REVISIONS



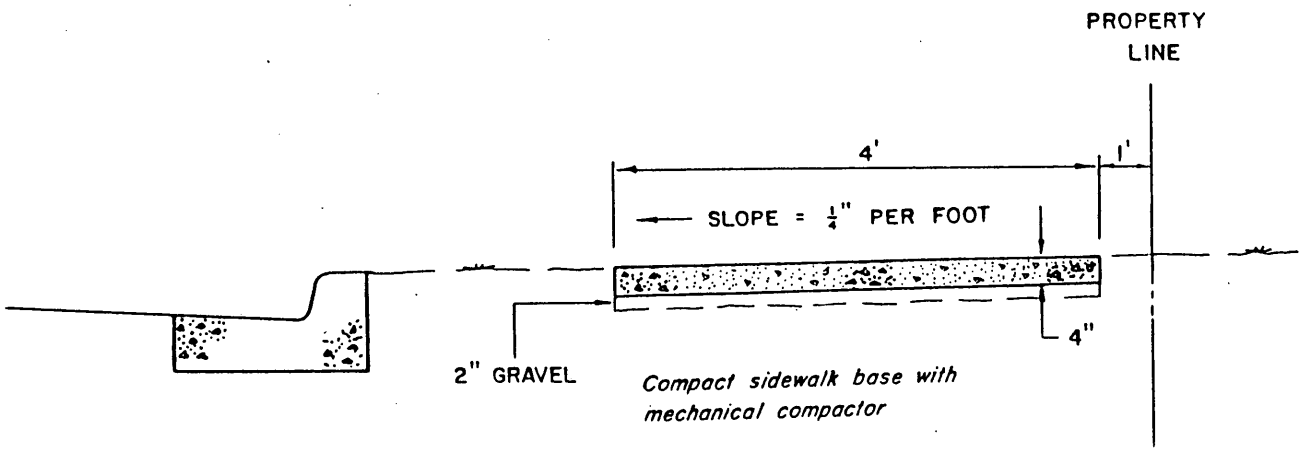




SECTION A-A

CURB RAMP

ENGINEERING DEPT.	CITY of NEWBERG	STANDARD DRAWING NO. ST-7	REVISIONS

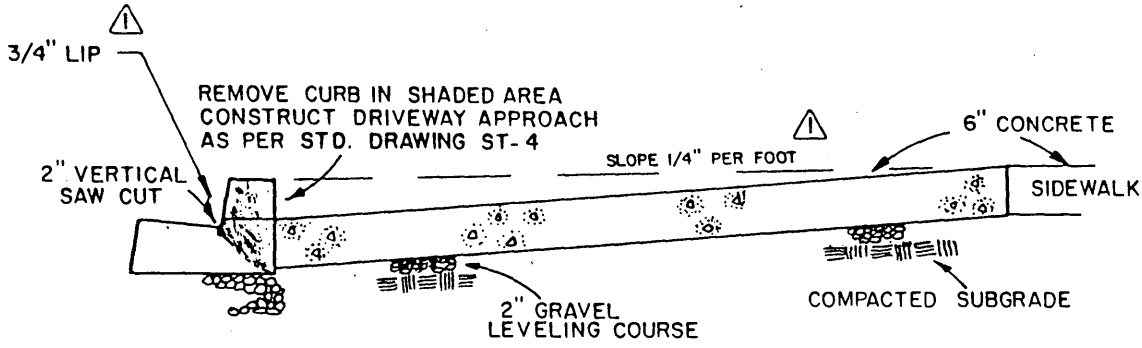


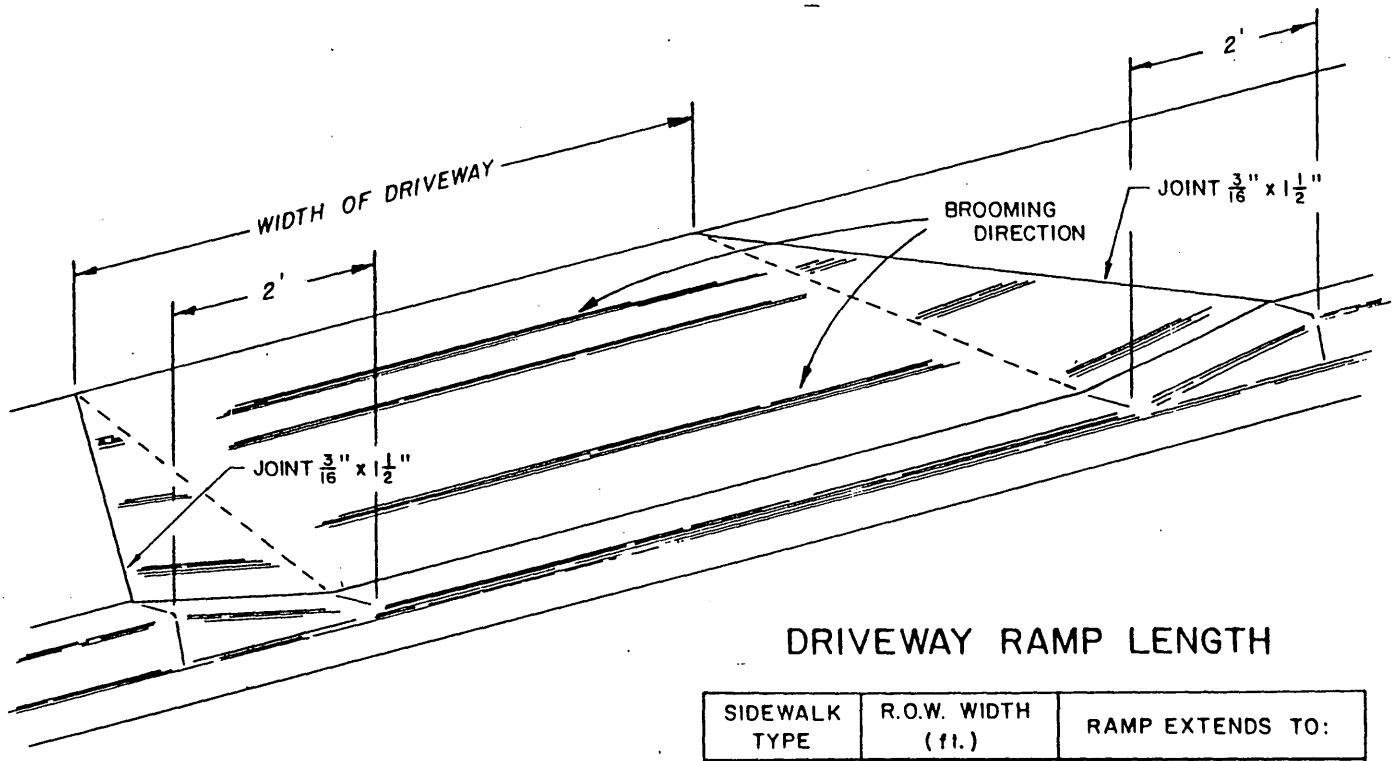
NOTES

1. Frontage from property line to curb shall slope to the street at indicated slope.
2. Work aggregate down into mix prior to finishing concrete.
3. Finishing details —
   Edge concrete with a 3" edging trowel.
   Score concrete at 4' intervals.
   Install $\frac{3}{16}$" x 1$\frac{1}{2}$" contraction joints 12' apart (every 3 "squares"). ⚠1
   Expansion joints shall not be used
   Apply a light broom finish transverse to sidewalk.
4. Concrete shall obtain strength of 3000 P.S.I. at 28 days.
5. Apply curing compound (petroleum base) to fresh concrete to retain moisture.
6. Tolerances —
   Surface shall not vary more than $\frac{1}{4}$" from a 10' straightedge.
   Alignment shall be within $\frac{1}{4}$" of true line.

SIDEWALK - TYPE 'A'

ENGINEERING DEPT.	CITY of NEWBERG	STANDARD DRAWING NO. ST-8	⚠1 REVISIONS





DRIVEWAY RAMP LENGTH

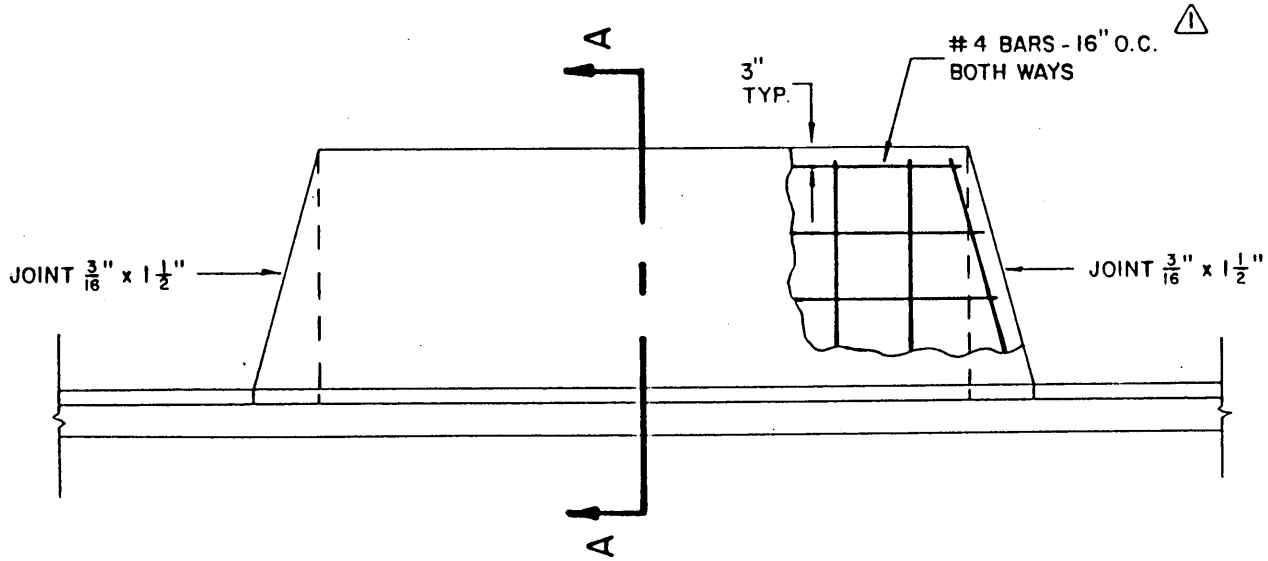
SIDEWALK TYPE	R.O.W. WIDTH (ft.)	RAMP EXTENDS TO:
A	50	Back of Sidewalk
A	60	Front of Sidewalk
B	50	Back of Sidewalk
B	60	Back of Sidewalk

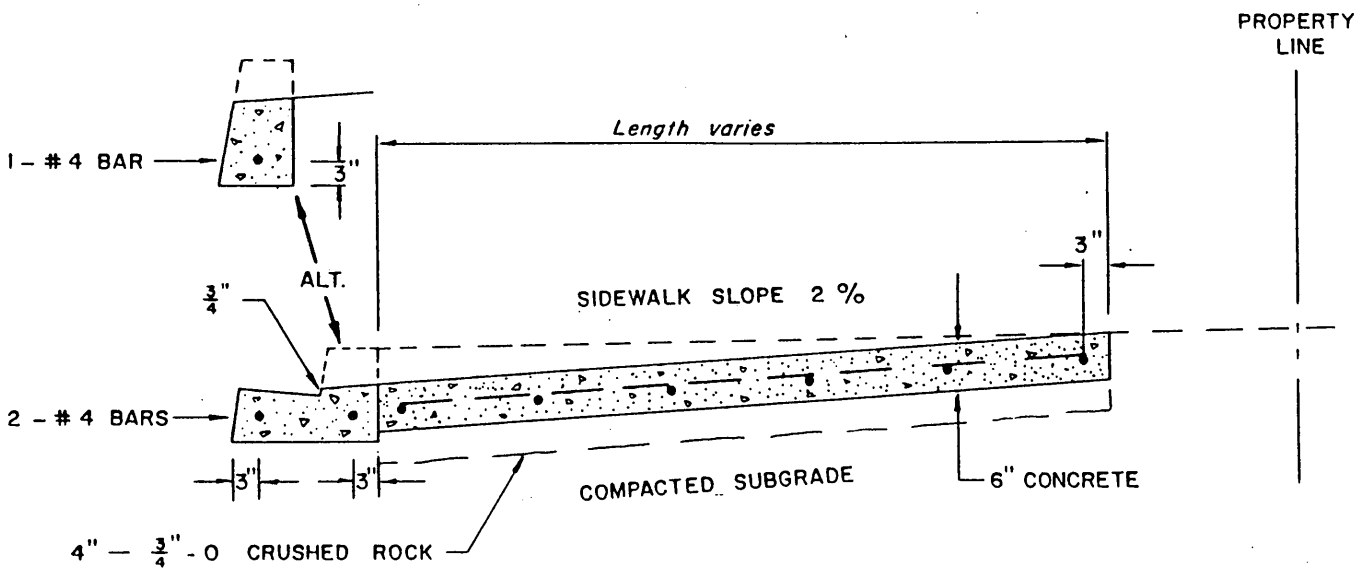
NOTES

1. *Concrete shall have strength of 3000 P.S.I. at 28 days.*
2. *Limits of driveway approach shall be saw-cut.*
3. *Finish with broom. Edge all joints.*
4. *Curb and approach shall be poured monolithic.*
5. *If width is greater than 15 ft, install 3/16" x 1 1/2" contraction joint down the center of the driveway.*
6. *Expansion joints shall not be used.*
7. *Work aggregate down into mix prior to finishing concrete.*
8. *Apply curing compound (petroleum base) to fresh concrete to retain moisture.*

DRIVEWAY APRON and CURB CUT

ENGINEERING DEPT.	CITY of NEWBERG	STANDARD DRAWING NO. ST-13	REVISIONS 1





SECTION A - A

NOTES

1. *See Std. Drawing ST-13 for additional details.*
2. *Re-bar may be deleted by City Engineer for light-duty commercial driveway.*
3. *Sidewalk through Commercial Driveway shall be constructed to this standard.*

COMMERCIAL DRIVEWAY

ENGINEERING DEPT.	*CITY of NEWBERG*	STANDARD DRAWING NO. ST-14	REVISIONS 1

ENGINEERING DEPT.

CITY of NEWBERG

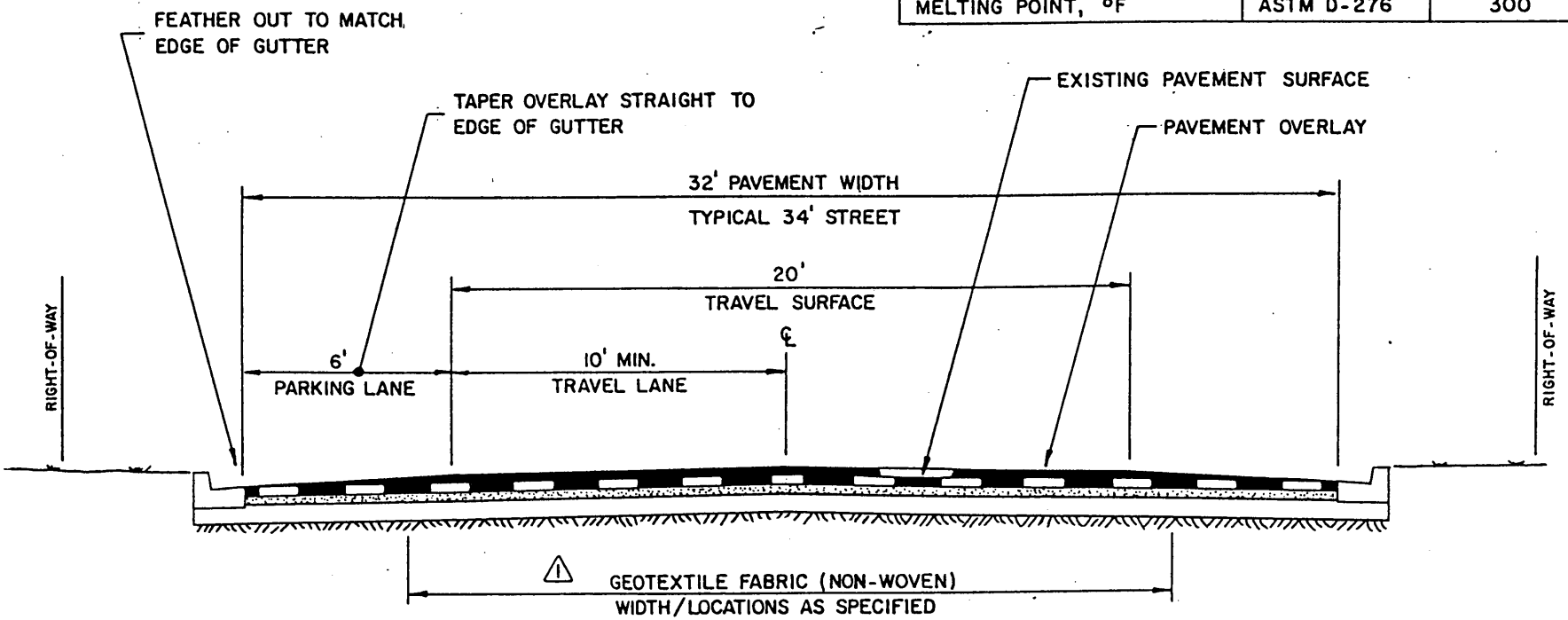
STANDARD DRAWING NO. ST-22

⚠ REVISIONS

ASPHALT OVERLAY TYPICAL SECTION

⚠ GEOTEXTILE SPECIFICATIONS

PROPERTY	TEST	MIN. VALUE
TENSILE STRENGTH, lbs	ASTM D-1682	80
ELONGATION, %	ASTM D-1682	50
ASPHALT RETENTION, gal/sy	OSHD TM-817	0.20
MELTING POINT, °F	ASTM D-276	300



NOTES

1. *Overlay pattern for different width streets will be similar.*
2. ⚠ *Offset paving panels 1-foot from joints of existing pavement.*
3. ⚠ *Cover with roofing paper, then overlay, the following utility structures (to be raised by others) —*
   — Manholes, Clean-outs, Gas valve boxes
4. ⚠ *Raise to finish grade, the following utility structures —*
   — Water valve boxes, Monument boxes

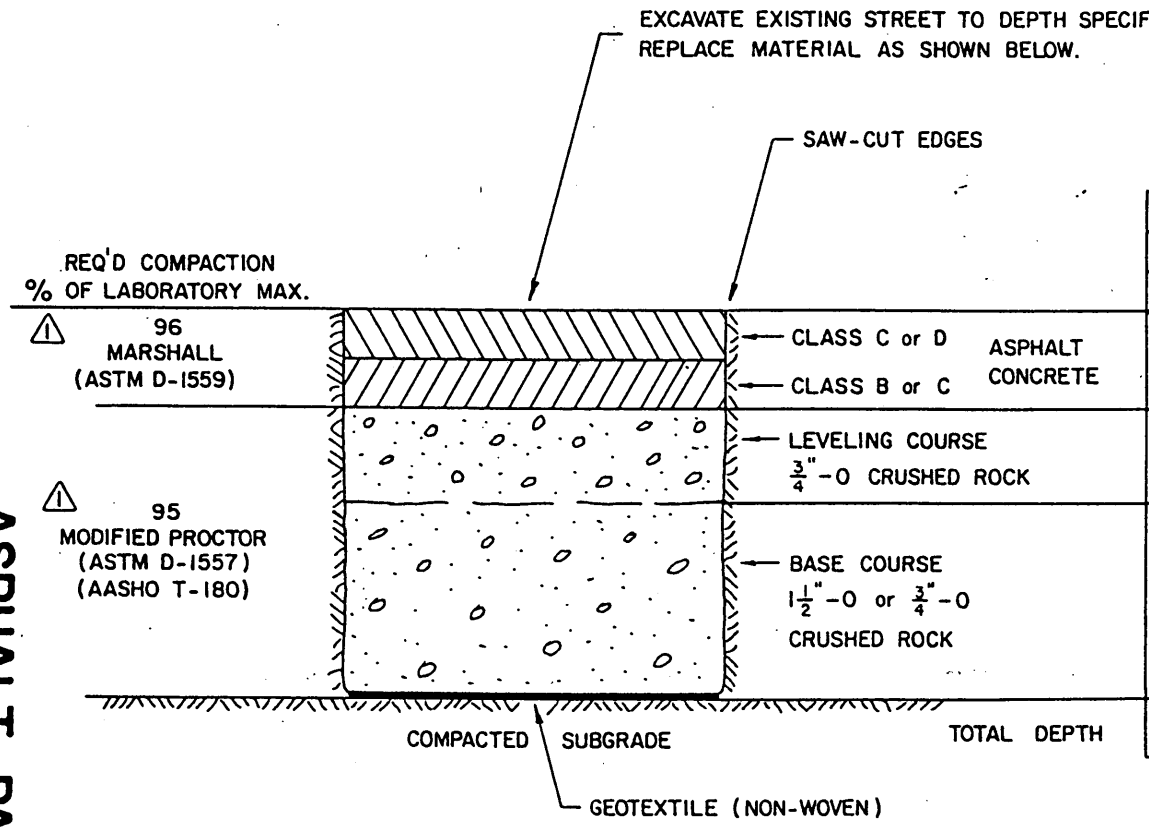
ENGINEERING DEPT.

CITY of NEWBERG

STANDARD DRAWING NO ST-23

REVISIONS

ASPHALT PAVEMENT REPAIR



STREET TYPE					
LOCAL		COLLECTOR		ARTERIAL	
DEPTH	LIFTS	DEPTH	LIFTS	DEPTH	LIFTS
3"	2	4"	2	6"	3
3"	1	3"	1	3"	1
6"	1	9"	2	12"	2
12"		16"		21"	

GEOTEXTILE SPECIFICATIONS

PROPERTY	TEST	MIN. VALUE	
TENSILE STRENGTH, lbs	ASTM D-1682	120	
ELONGATION, WET %	ASTM D-1682	40	1
COEFFICIENT OF WATER PERMEABILITY, cm/sec	ASTM D-4491	0.10	
PUNCTURE STRENGTH, lbs	ASTM D-3787	80	1
MULLEN BURST STRENGTH, psi	ASTM D-3786	250	1

ENGINEERING DEPT.

CITY of NEWBERG

STANDARD DRAWING NO. ST-29

REVISIONS

MANHOLE ADJUSTMENT

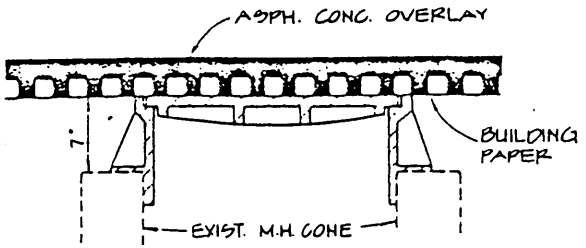
CONSTRUCTION SEQUENCE

STEP 1 COVER MANHOLE WITH BUILDING PAPER AND CONST. OVERLAY ACROSS EXIST. MANHOLES.

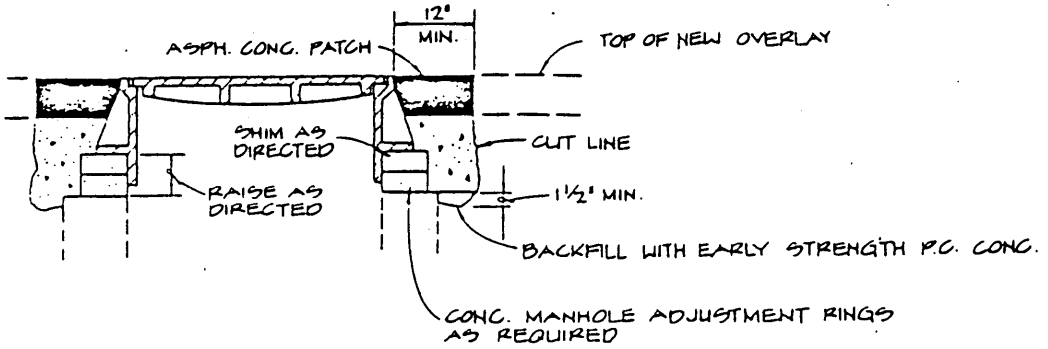
STEP 2 CUT RECTANGULAR EXCAVATION AROUND MANHOLE 12" MIN. FROM M.H. FRAME.

STEP 3 RAISE M.H. FRAME AND INSTALL CONC. RINGS AND SHIM TO FINISH PAVEMENT PROFILE AND CROSS SLOPE.

STEP 4 BACKFILL WITH EARLY STRENGTH CONC. AND ASPH. CONC. TO DEPTHS AS DIRECTED.



STEP 1



STEPS 2, 3, AND 4

MANHOLE ADJUSTMENT DETAIL

N.T.S.

NOTES:

1. Sawcut a 6-Ft square diamond pattern excavation around manhole.
2. Use Class D asphalt concrete, placed and compacted in several shallow lifts. Compact asphalt using a hand-operated mechanical compactor. Compact final surface using a plate compactor.
3. Seal paving joint with approved material and method.

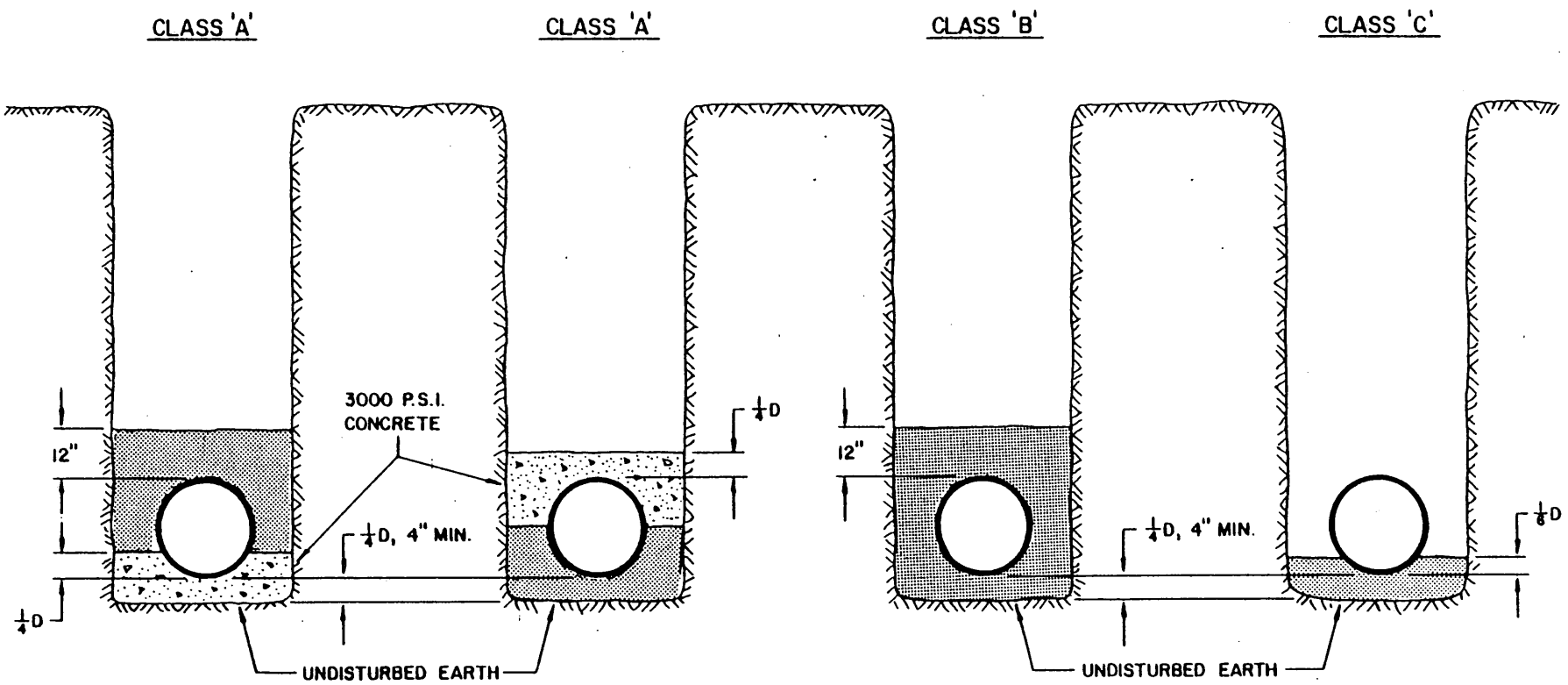
ENGINEERING DEPT.

CITY of NEWBERG

STANDARD DRAWING NO. S-1

REVISIONS

PIPE BEDDING



MAXIMUM TRENCH WIDTH

PIPE SIZE (in)	WIDTH (In)	PIPE SIZE (in)	WIDTH (in)
4	18	15	42
6	24	18	42
8	30	21	48
10	30	24	60
12	36	27 and larger	See City Eng.

CRUSHED ROCK ¾"-0

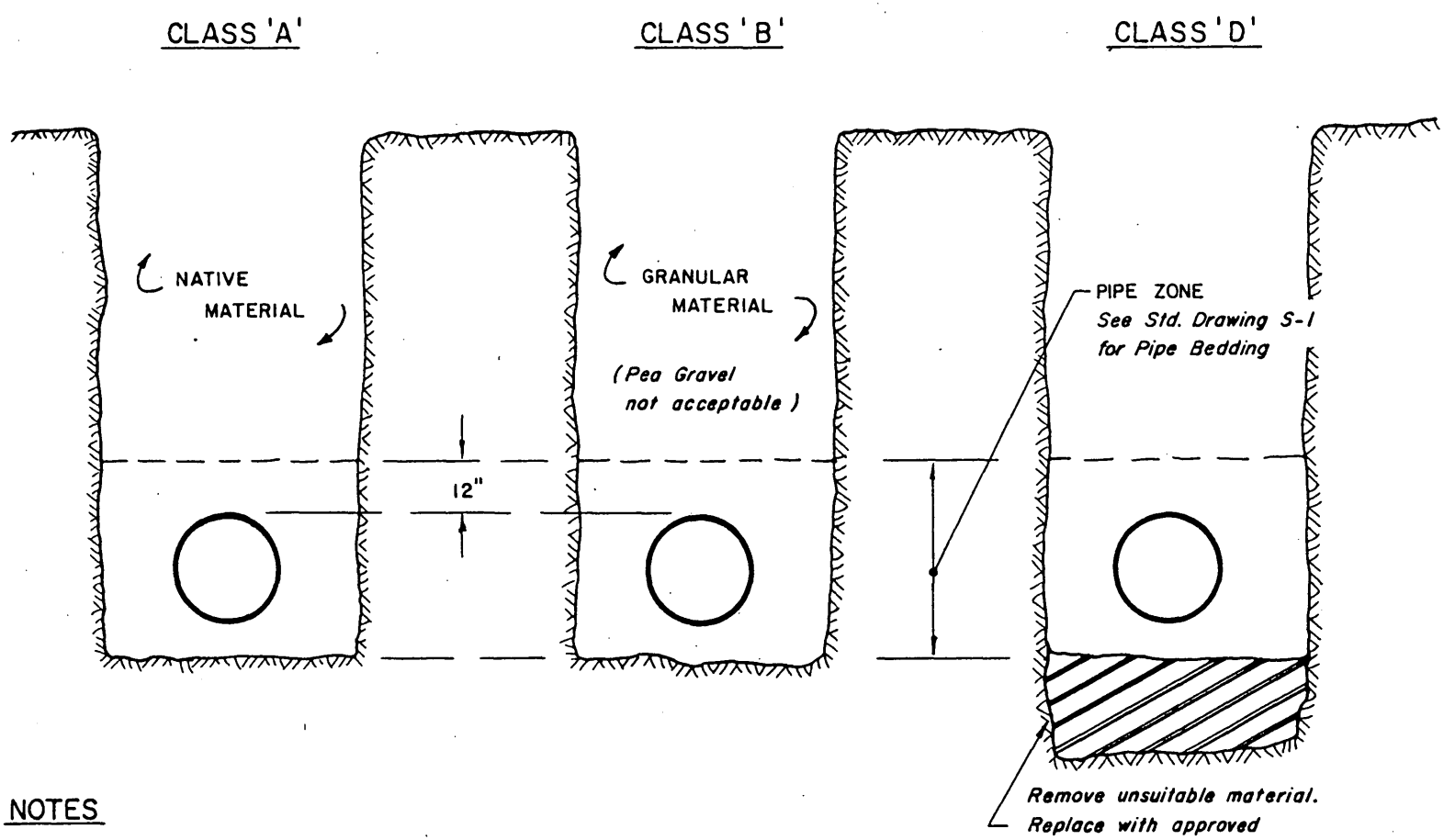
ENGINEERING DEPT.

CITY of NEWBERG

STANDARD DRAWING NO. S-2

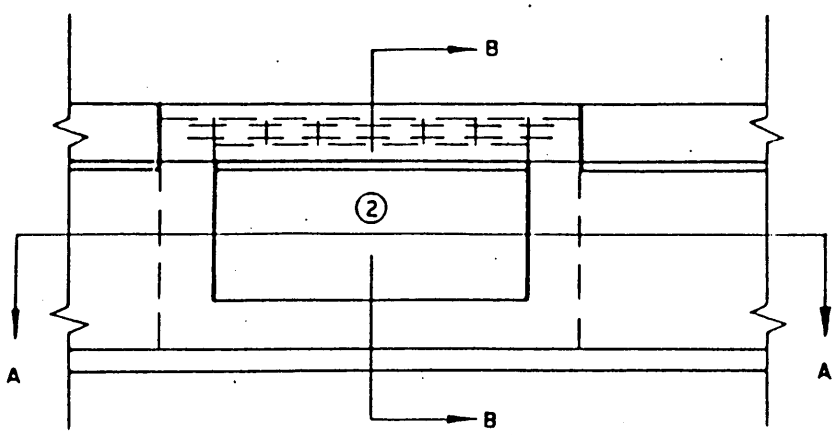
1 REVISIONS

TRENCH BACKFILL

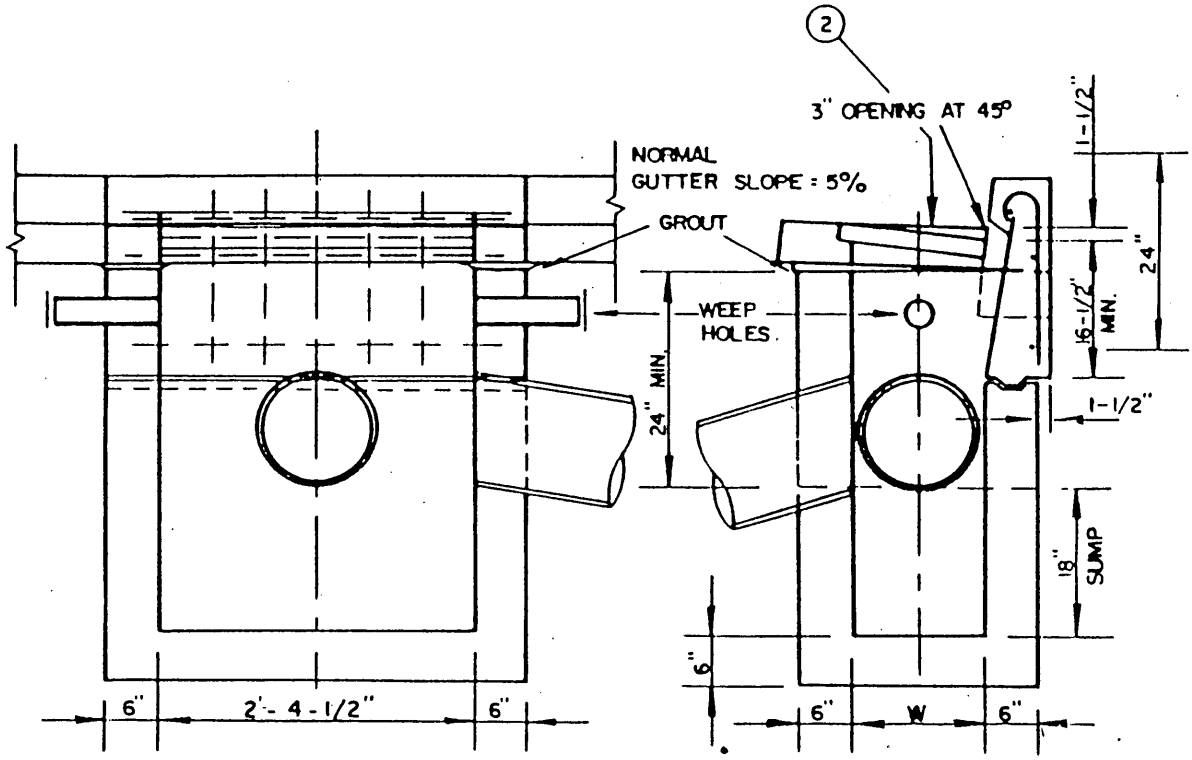


NOTES

1. *Compact backfill to not less than 95% relative compaction.*
2. *Initial compaction of backfill over P.V.C. pipe, to 3 feet over top of pipe, shall be 85% relative compaction.* 1



USE 7 – #3 HOOK BAR at 6" C.C. VERT. & 3 – #5 BARS HORIZ. IN CURB AS SHOWN



SECTION A-A

SECTION B-B

NOTES:

1) CONCRETE SHALL BE CLASS 3300
2) USE FRAME & GRATE DETAILS FROM STD. DRWG. FOR GUTTER INLET
3) INSTALL STEPS WHEN DISTANCE FROM TOP OF GRATE TO FLOWLINE OF PIPE IS GREATER THAN 3.5'.

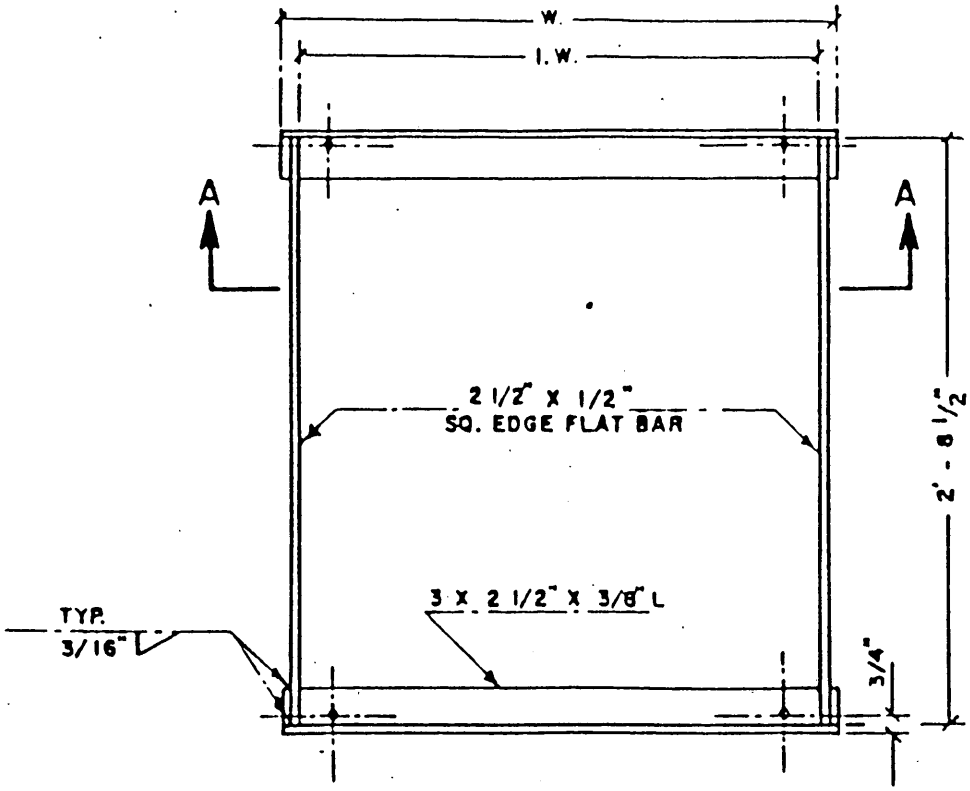
TYPE	W	PIPE DIAMETER
STANDARD	1' - 1-7/8"	10" - 12"
OVERSIZE *	2' - 3-3/8"	15" - 22"

* REQUIRES 2 GRATES SEE DRAWING No. 380

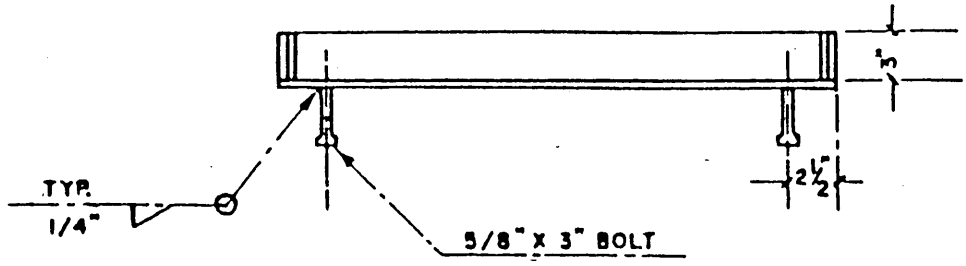
NOTE: ALL PASSTHROUGH CATCH BASINS SHALL BE OVERSIZE.

GUTTER & CURB INLET CATCH BASIN DETAILS

ENGINEERING DEPT.	CITY of NEWBERG	STANDARD DRAWING NO. SD-1	REVISIONS



PLAN



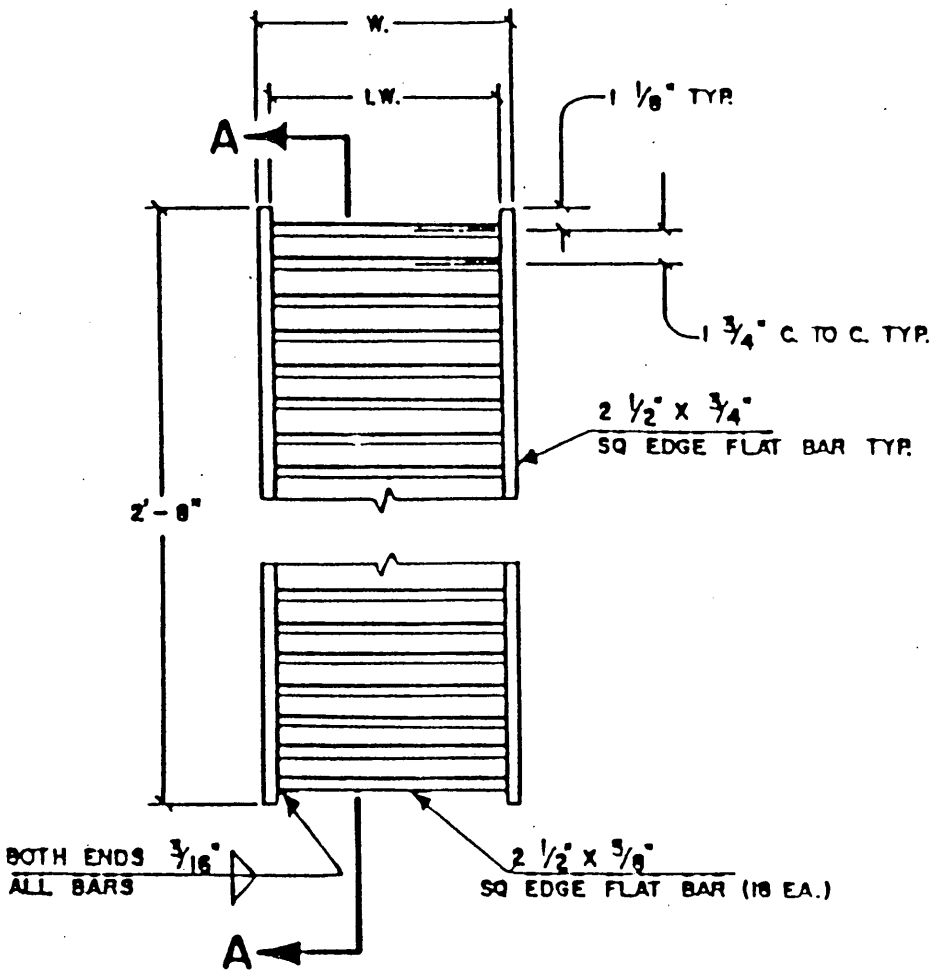
SECTION A-A

TYPE	DIA. PIPE	W.	I.W.
STANDARD	10" - 12"	1' - 3 1/4"	1' - 1 7/8"
! OVERSIZE	15" - 27"	2' - 4 3/4"	2' - 3 3/8"

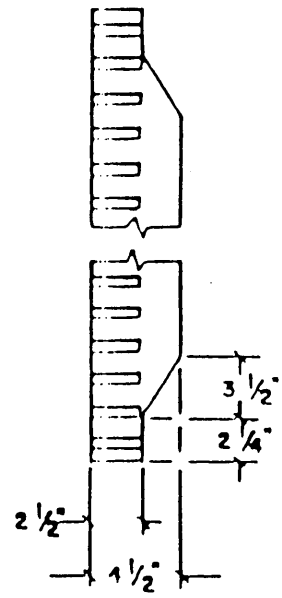
! REQUIRES TWO GRATES

FRAME

ENGINEERING DEPT.	CITY of NEWBERG	STANDARD DRAWING NO. SD-2	REVISIONS



PLAN



SECTION A-A

TYPE *	W.	I.W.
STANDARD	1'-1 1/2"	1'-0"
1 OVERSIZE	1'-1 1/2"	1'-0"

1 REQUIRES 2 GRATES.

* "STANDARD" AND "OVERSIZE" ARE WASHINGTON COUNTY DESIGNATIONS.

GRATE

ENGINEERING DEPT.	CITY of NEWBERG	STANDARD DRAWING NO. SD-2	REVISIONS

City Manager
(503) 538-9421

City Attorney
(503) 537-1208

414 E. First St.
Newberg, Oregon 97132

City FAX
(503) 538-5393

ADDENDUM NO. 1
ASPHALT OVERLAY PROJECT
JANUARY 8, 1998

This addendum forms a part of the Contract Documents. It modifies the original bidding documents.

1. Table of Contents

Replace the table of contents with the revised table of contents to include one additional item under Project Information.

2. Technical Provisions

Add Section 505 Asphalt Concrete Pavement. This section was left out of the original Technical Provisions.

3. Schedule of Prices

Replace the first page of the Schedule of Prices (page 3 of bid documents) with this revised page.

Bidders shall acknowledge on Page 5 of the Contract Documents that they have received this addendum by writing in the addendum number and date received.

Roger Pyles
Project Engineer

K:\WP\ADMIN\MISC\TABBY\SPECS\OVERLAY.PRJ\ADENDUM.1

TABLE OF CONTENTS
ASPHALT OVERLAY PROJECT
REVISED

		Pages in Section
CONTRACT DOCUMENTS		
	Advertisement for Bids	10
	Bid Documents	
	Contract for Construction	
	Performance - Payment Bond	
GENERAL PROVISIONS		34
Section 1	Definitions and Terms	
2	Proposal Requirements and Conditions	
3	Award and Execution of Contract	
4	Scope of Work	
5	Control of Work	
6	Control of Materials	
7	Responsibility to the Public	
8	Prosecution and Progress	
9	Measurement and Payment	
10	Requirements of Oregon Law for Public Contracts	48
SPECIAL PROVISIONS		2
Section 1	Length of Contract	
2	Liquidated Damages	
3	Pre-Construction Meeting	
4	Tree Trimming	
5	Water	
6	Changeover of Specifications	
7	Concrete Curb and Gutter Repair	
8	Prevailing Hand Work	
9	Leveling Course Asphalt, Class D	
10	Asphalt Overlay	
11	Pavement Reinforcing Fabric	
12	Adjust Manhole	
13	Adjust Valve Cover	
14	Shoulder Rock	
TECHNICAL PROVISIONS		106
Division 2	General Technical Requirements	
5	Street Technical Requirements	
6	Storm Drainage Technical Requirements	
7	Concrete Structures Technical Requirements	
PROJECT INFORMATION		6
	Reconstruction Plans - Third Street (incorporated by reference)	
	Project Map	
	Table of Streets	
	Straight Line Charts	
STANDARD DRAWINGS		13
ST-4	Curb and Gutter	
ST-7	Curb Ramp	
ST-8	Sidewalk - Type "A"	
ST-13	Driveway Apron and Curb Cut	
ST-14	Commercial Driveway	
ST-22	Asphalt Overlay Typical Section	
ST-23	Asphalt Pavement Repair	
ST-29	Manhole Adjustment	
S-1	Pipe Bedding	
S-2	Trench Backfill	
SD-1	Gutter and Curb Inlet Catch Basin Details	
SD-2	Frame and Grate	

****

505 ASPHALT CONCRETE PAVEMENT

****

505.01 DESCRIPTION

This section covers work necessary for the construction of hot mix asphalt pavements under prepared foundations or base surfaces.
Hot mix asphalt concrete is defined as a mixture of asphalt cement; well graded, high quality aggregate; mineral filler and additives as required; heated and plant mixed into a uniformly coated mass, hot laid on a prepared foundation and compacted to specified density.

505.02 MATERIALS

505.02.01 General

Asphalt and aggregate shall meet OSHD requirements for Light Duty AC and will be subject to approval preceding mixing. Plant mixed mixtures will be subject to final approval after blending and mixing, either at the plant or at the place of delivery prior to rolling. Approval will be based on periodic sampling and testing of the materials.

505.02.02 Asphalt Cement

Asphalt materials incorporated in the mix shall be PBA-2 grade asphalt that conforms to requirements of Section 205 MATERIALS - TYPES AND USE.

THE REST OF THIS PAGE WAS INTENTIONALLY LEFT BLANK

505.02.03 Aggregates

Aggregates shall conform to requirements of Section 205 MATERIALS - TYPES AND USE.

505.02.04 Mineral Filler

Mineral filler shall conform to the requirements of AASHTO M 17.

Collector dust may be used as mineral filler, in whole or in part, provided the dust or the resultant mineral filler mixture conforms to the above requirements.

505.02.05 Additives

Additives and admixtures may be used to prevent stripping or separation of bituminous coatings from aggregates, and to aid in the mixing or use of bituminous mixes or for experimental purposes. Use admixtures and additives of standard recognized products of known value for the intended purpose and obtain approval on the basis of laboratory tests prior to their use. They shall have no deleterious effect on the bituminous material and shall be complete miscible.

505.02.06 Composition and Proportion of Mixtures

The class of asphalt concrete to be used shall be as shown and shall conform to the following requirements:

	DENSE GRADED Percentage of Total Aggregate (by weight)		
Sieve Size Passing	Class "B"	Class "C" (Mod.)	Class "D"
1"	99 - 100	—	—
¾"	92 - 100	99 - 100	—
½"	75 - 94	91 - 100	99 - 100
¼"	50 - 70	58 - 73	85 - 100
#10	21 - 41	24 - 36	37 - 57
#40	6 - 24	8 - 18	13 - 29
#200	2 - 7	3 - 8	4 - 9
Asphalt Cement**	4 - 8	3 - 8	4 - 8

* Including Lime or Cement Filler.
**Percent of total mix (by weight).

The amount of new asphalt cement to be added to the recycled mixture will vary from 3-8%.

Class "B", "C", and "D" asphalt concrete shall meet the following qualifying test requirements:

Test	Test Method	Requirements
Stability, First Compaction	OSHD Standard Test*	35 min. (residential streets)

		40 min. (arterial streets)
Voids, First Compaction	OSHD Standard Test*	7% maximum
Voids, Second Compaction	OSHD Standard Test*	1% minimum
Retained Strength	AASHTO T 165-Modified	70% minimum

*Available from Engineer or Materials, ODOT, Salem, Oregon 97310.

505.02.07 Mix Formulas

The Contractor may be required to submit a job-mix formula for review by the Engineer. The job-mix formula shall indicate the gradation of each of the several aggregate constituents to be used in the mixture and shall establish the exact proportion of each constituent to be used to produce a combined gradation of aggregate within the appropriate limits stated above.

The job-mix formula shall also indicate the ASTM bulk specific gravity of each aggregate constituent, the measured maximum specific gravity of the mix at the optimum asphalt content determined in accordance with ASTM D 2041, all properties as stated in Subsection 505.02.06 of these specifications for at least four different asphalt contents other than optimum, two of which will be below optimum and two of which will be above optimum, the percent of asphalt lost due to absorption by the aggregate, and any other information pertinent to the design of the mix.

505.02.08 Recycled Asphalt Pavement (RAP) Materials Permitted

The Contractor shall have the option of using processed recycled asphalt pavement materials in the production of new asphalt concrete pavement. The RAP materials proposed for use in the recycled mix shall contain hard, sound, and durable aggregates, and asphalt of a composition to provide properties equivalent to asphalt as specified in these specifications when in the mix. Recycled material which is used in the asphalt concrete pavement shall have a maximum size of one-inch prior to entering the cold feed. If there is evidence of the recycled material not breaking down during the heating and mixing of the asphalt concrete mixture, the Engineer may elect to modify the maximum size requirement. Not more than 20 percent, by weight, of recycled materials may be used in the mix.

505.02.09 Tolerances

After the mix formula is submitted, the several constituents shall meet the following tolerances, but always within the range of proportions specified in Subsection 507.02.06:

Asphalt Concrete Mix Tolerances

Constituent of Mixture	Tolerance (± to Job Mix Formula)
Aggregate passing 1", ¾", ½" sieves -	Within the range of the proportions specified in Subsection 505.02.06:
	Specifications
Aggregate passing ¼" sieve	6.0%
Aggregate passing No. 10 & No. 40 sieve	5.0%
Aggregate passing No. 200 sieve	2.0%

Asphalt cement	0.5%
Temperature of mixture at time it is placed in final position	240 - 300°F

Each day the Engineer shall be permitted to take as many samples as he considers necessary for checking the uniformity of the mixture. When unsatisfactory results or other conditions make it necessary, the Engineer may require a new mix formula.

Should a change in source of material be made, or should conditions arise which the Engineer determines to be justified, the Contractor shall establish a new job-mix formula.

The materials to be used in the work shall be of such nature that a mixture of them, proportioned in accordance with the mix formula, will have a retained strength of no less than 70% when tested in accordance with AASHTO T 165 as modified by OSHD test methods. The Engineer shall be permitted to take as many samples as he considers necessary for checking the uniformity of the mixture.

505.02.10 Feathering

Asphalt concrete for use in feathering at curb or gutter lines, at intersections, at connections with existing pavement, in spot patching, and under similar conditions, shall be a fine mix of asphalt concrete such as Class "D" mix.

505.03 CONSTRUCTION

505.03.01 Repaving Conference

The Contractor and his supervisory personnel plus any subcontractors and their supervisory personnel who are to be involved in the paving work shall meet with the Project Manager and his representatives for a prepaving conference at a time mutually agreed upon. At this conference, the Contractor shall discuss his methods of accomplishing all phases of the paving work. The plan of the work, order of paving and other details of performance shall meet with the approval of the Engineer.

505.03.02 Preparation of Bases

All pavement bases and foundations constructed under this Contract shall be completed and finished as prescribed under the applicable specification for its construction.

Manholes, inlets, water valve boxes, and other such structures shall have been completed, cured, and otherwise prepared, as applicable, and made clean and ready for asphalt pavement. Unless otherwise approved, manholes shall be adjusted so that they can be paved over and then later adjusted as shown on the Standard Drawing. Paint vertical surfaces that will come in contact with asphalt pavement with tack coat material to provide a good bond and seal. Cover top surfaces with paper or other material to prevent adherence of asphalt pavement, tack coat, or prime coat.

505.03.03 Reconditioning Old Roadbed

This work consists of reconditioning and preparing previously constructed roadbed subgrades, existing stone bases and surfacings, and existing pavements; none of which were constructed by the Contractor under the pertinent Contract but on which an additional layer or course of material is to be placed.

Existing aggregate subbases, bases, and surfacings shall be bladed, scarified, leveled, and compacted in conformance to lines, grades, and cross sections as established and the density and tolerance

requirements of Section 503 AGGREGATE BASES.

Prelevel uneven or broken bituminous, cement concrete, or brick surfaces with asphalt concrete as specified. Spread and compact preleveling asphalt concrete to the density and surface condition as directed.

505.03.04 Tack Coat

Asphalt shall consist of emulsified asphalts (CSS-1 or CSS-1h) or an approved equal.

Spread asphalt by means of pressure-spray equipment which will provide uniformity of application at prescribed rates. Do not apply aggregate cover material to the tack coat. Asphalt shall be applied to the prepared surface at a rate of 0.05 gallons per square yard for clean surfaces and up to 0.12 gallons per square yard for dirty surfaces. The tack coat shall not be applied during wet or cold weather or during darkness and apply only so far in advance as is appropriate to maintain a tacky, sticky condition of the asphalt. Apply tack coat in such a manner as to offer the least interference to traffic and to permit at least one-way traffic without pickup or tracking of asphalt.

505.03.05 Mixing

Mix the asphalt concrete by combining aggregate, asphalt, and additives at an approved central mixing plant equipped with controls to accurately measure and monitor the various components of the mix to produce a uniform homogeneous mixture at the specified temperature.

The discharge temperature of the mix will vary with the type of mixing plant, climatic conditions, and other variables. However, the temperature shall be sufficient to provide thorough mixing and coating and to provide a mass viscosity of the mix on the grade which will permit compaction to required density. Mix temperatures and asphalt in storage shall generally not exceed 325 degrees F.

505.03.06 Placing

Conform to the Drawing of work, order of paving, and other details of performance as approved. Lift thickness shall be as shown on the Drawing or specified.

Transport the asphalt concrete mixture from the mixing plant to the point of use in trucks. Send no loads so late in the day as to prevent the spreading and compacting of the mixture during daylight, unless approved lighting is provided.

Hot mix asphalt concrete shall normally be placed on dry prepared surfaces and when air temperature in the shade is 40 degrees F (minimum) and rising. Place Class "E" wearing surface only when the existing pavement temperature is at least 60 degrees F. Placing during rain or other adverse weather conditions normally will not be permitted, except that mix in transit at the time these adverse conditions may occur may be laid provided it is of proper temperature, the mix has been covered during transit, and is placed on a foundation free from pools or flow of water. The temperature of hot mix at the time it is spread into final position shall be between 240 and 300 degrees F, except Class "E" mix shall be between 200 and 250 degrees F.

Lay the mixture in strips of such width as to hold to a practical minimum the number of longitudinal joints required. The longitudinal joints in any layer of pavement shall be offset from those joints in layers below by not less than 6 inches. Before any paving is started, the Contractor shall submit a Drawing indicating locations of longitudinal joints to the Engineer for his review. Take special care at longitudinal joints to provide positive bond and required density.

Bituminous paving machines shall be self-contained, power-propelled units, provided with an

activated screed or strike-off assembly, heated if necessary, and capable of spreading and finishing layers of bituminous mix material in lane widths applicable to the specified typical sections, and to required thicknesses, lines, grades, and cross sections. Machines used for shoulders and similar construction shall be capable of spreading and finishing to the widths shown.

When the capacity of the paver to properly spread and finish exceeds the rate of delivery of mixture, operate the paver at a reduced and uniform speed to give continuous spreading and finishing.

Take care at all times to prevent segregation in the mixture as evidenced by areas of fine and coarse materials, and correct any such segregation with fresh mixture either spread and worked into the surface or by complete removal and replacement of segregated mixture at no expense to the Owner. AT NO TIME SHALL THE COURSE AGGREGATE SEGREGATED FROM THE MIX FROM HAND SPREADING OR RAKING OF JOINTS BE SCATTERED ACROSS THE PAVED MAT. Such material shall be collected and disposed of.

On areas to be patched with asphalt concrete mixture and on areas of irregular shape or limited size, the spreading and finishing requirements may be modified as approved.

Boils and slicks occurring in the pavement must be immediately removed and replaced with suitable materials, at the sole expense of the Contractor.

505.03.07 Paving Plant and Equipment

All plant and equipment used by the Contractor in the preparation and mixing of asphalt concrete shall conform to the requirements of Section 403.33, "Standard Specifications for Highway Construction" as published by Oregon State Highway Division, 1984 Edition.

505.03.08 Weigh Scales

When materials are to be measured for payment by weighing on vehicle scales, the Contractor shall provide the scales and transport the materials to the scales provided.

The vehicle scales furnished shall be accurate within the tolerances required by State law and shall be licensed with the Oregon Department of Agriculture. Scales shall be suitable for the weighing to be done and shall be properly installed and maintained.

At each end of the vehicle scale there shall be a straight approach in the same plane as the platform. The approaches shall be of sufficient length and width to ensure the level positioning of combination vehicles longer than the scale platform during weight determinations. All vehicle brakes shall be released while combination vehicle are being weighed.

Vehicle scales shall be inspected and the accuracy tested every six months by either the State Department of Agriculture or a scale service company. Scales installed at a new site shall be inspected and the accuracy tested before use. Testing by a scale service company shall be done by using a minimum of 10,000 pounds of test weights certified by the State Department of Agriculture.

505.03.09 Hauling Equipment

Vehicles used for hauling asphalt concrete mixtures shall have tight, clean, and smooth beds which have been thinly coated with a minimum amount of paraffin oil, lime solution, soapy water or other approved material to prevent the mixture from adhering to the beds. Diesel oil may be used when requested by the Contractor and approved by the Engineer. Its use will be terminated by the Engineer if it is not being used as specified or is a source of contamination for the asphalt mix.

During each application of an approved coating material, and prior to loading, the vehicle bed shall be drained of all excess coating material by raising the truck bed, opening belly dump gates or operating the conveyer belt as appropriate for the type of equipment being used.

Vehicles which cause excessive segregation, which leak badly, or which delay normal operations, as such are determined by the Engineer, shall not be used.

Contractors hauling vehicles shall be so constructed and equipped with covers to protect against moisture and against heat loss, and shall have a 3/8-inch diameter hole near the middle of the left side wall of the bed to allow access for a thermometer.

505.03.10 Asphalt Concrete Pavers

Pavers shall be self-contained, power-propelled units, provided with an activated screed or strike-off assembly, heated if necessary, and capable of spreading and finishing layers of asphalt concrete material in widths applicable to the specified typical sections, and to required thicknesses, lines, grades and cross sections.

Extensions added to the paver when used on travel lanes shall have the same augering and screeding equipment as the rest of the paver.

The paver shall be equipped with a receiving and distribution system of sufficient capacity for a uniform spreading operation and capable of placing the mixture uniformly in front of the screed without segregation of materials.

The paver shall be designed to compensate for minor irregularities of the base on which it is supported so that such will not be reflected immediately in the surface of the layer being placed. The weight of the paver shall be supported on tracks or wheels none of which shall contact the mixture being laid. The contact area of the screed or strike-off assembly shall be uniform over the entire width of the strip of mixture being placed.

The screed or strike-off assembly shall produce a finished surface of the required evenness and texture without tearing, shoving or gouging the mixture. The paver shall be equipped with either a manual or electronic line and grade control.

505.03.11 Weather Limitations

Asphalt concrete mixtures shall be placed on dry prepared surfaces when the air temperature in the shade and the surface temperature is not less than those specified in the following table:

SURFACE TEMPERATURE LIMITATIONS

Compacted Thickness of Individual Courses	Travel Lanes/Wearing Course	All Other Courses
Less than 1½ inches	60°F	55°F
1½ inches to 2½ inches	50°F	45°
Over 2½ inches and other	40°F	35°F

Placing of any mixture during rain or other adverse weather conditions normally will not be permitted, except that mix in transit at the time these adverse conditions occur may be laid if of proper temperature, if the mix has been covered during transit, if placed on a foundation free of pools, or flow of water and if all other

requirements of these specifications are met. Asphalt concrete mixtures shall not be placed when the underlying layer is frozen, or when, in the opinion of the Engineer, weather conditions either existing or expected will prevent the proper handling, finishing, or compaction of the mixtures.

505.03.12 Compaction

The Contractor will not be permitted to use any equipment which crushes the aggregate to any extent. However, he will be required to obtain the densities required in Subsection 505.03.14.

505.03.13 Compactors

Rollers shall be steel wheel, pneumatic tire, vibratory or a combination of these types as the Contractor may elect. They shall be in good condition and capable of reversing without backlash.

505.03.13A Steel Wheel Rollers

Steel wheel rollers shall have a minimum gross static weight of 8 tons and a minimum static weight on the drive wheel of 250 pounds per inch of width. For finish rolling a 6-ton minimum gross static weight is acceptable and the 250 pounds per inch of width will not be required.

505.03.13B Vibratory Rollers

Vibratory rollers shall be equipped with amplitude and frequency controls and shall be specifically designed for compaction of asphalt concrete mixtures. The rollers shall be capable of frequencies of not less than 2,000 vibrations per minute.

505.03.13C Pneumatic Rollers

The pneumatic-tired rollers shall be self-propelled, tandem, or multiple axle, multiple wheel type with smooth-tread pneumatic tires of equal size staggered on the axles at such spacings and overlaps as will provide uniform compacting pressure for the full compacting width of the roller and shall be capable of exerting ground pressures of at least 800 pounds per square inch of tire contact area. Pneumatic-tired rollers shall be fully skirted to insulate the tires from significant heat loss during compaction.

505.03.14 Density Requirements

The density of asphaltic concrete shall be at least 91% of Rice theoretical maximum density as determined in conformance with AASHTO T 209 as modified by OSHD.

Asphaltic concrete pavements which do not meet substantial compliance requirements for compaction, and are deemed by the Engineer to be not suitable for use, will be rejected. Any rejected material shall be removed. No payment will be made for the rejected material or for removal of the rejected material.

Asphaltic concrete pavements which do not meet substantial compliance requirements for compaction, but are deemed by the Engineer to be suitable for use, may be left in place if the Contractor so elects. A price reduction for such materials will be determined as follows:

The percentage below the required density will be squared and the rounded off to the nearest whole figure and a percentage deduction made to the in place price equal to the results. Any pavement with a density less than 89% will not be considered suitable.

Samples and tests will be taken as frequently and at such locations as the Engineer elects, and the

results will be made known tot he Contractor as soon as is practicably possible. However, it shall be the responsibility of the Contractor to obtain specified density at all times, and delay in advising the Contractor of test results shall not act as a waiver of this responsibility. When it is determined that specified density is not being obtained, discontinue all paving operations until corrective measures have been taken.

Any displacement occurring as a result of the reversing of the direction of a roller, or from other causes, shall be corrected at once by the use of rakes and addition to fresh mixture when required. Do not displace the line and grade of edges. Moisten steel roller wheels with water or other approved material to the least extent necessary to prevent pickup of mixture and yet not cause spotting or defacement of the surface of the mixture.

Along curbs and walls, on walks, irregular areas, and other areas not practicably accessible to specified rollers, compact the mixture with small rollers, mechanical tampers, hot hand tampers, or smoothing irons. On depressed areas, a trench roller may be used or cleated compression strips may be used under the roller to transmit compression to the depressed area.

Remove and replace any mixture that becomes loose and broken, mixed with dirt, or is defective in any way. Remove and replace any area showing an excess or deficiency of bituminous cement. Removal and replacement under these provisions shall be at the sole expense of the Contractor.

505.03.15 Transverse Joints

Form transverse joints by cutting back on the previous run to expose the full depth of the layer or course.

Place a course or strip of asphalt concrete as nearly continuous as practicable. Carefully construct transverse joints using vertical faces and thoroughly compacted to provide a smooth riding surface. Apply a coat of bituminous material to contact surfaces just before mixture is placed against previously rolled mixture. The Contractor shall use a 10-foot straight edge to determine the location of the full depth vertical faces.

At bridge ends or at joints with other rigid type structures, existing bases shall be conditioned and compacted, and place asphalt concrete to extra thickness and compact in transverse direction as well as longitudinally.

When the end of a course or strip of asphalt concrete is to be temporarily subject to traffic, the end shall be left on a bevel of approximately 20:1 (horizontal to vertical), being later cut back to a vertical edge.

505.03.16 Construction Joints

Placing of a course or strip of asphalt concrete shall be as nearly continuous as practicable. Transverse joints shall be earefully constructed and thoroughly compacted to provide a smooth riding surface.

The mixture shall be laid in strips of such widths as to hold to a practical minimum the number of longitudinal joints required. Longitudinal joints in the wearing course shall not occur within the area or width of a traffic lane or auxiliary lane. On median lanes and on shoulder areas such joints shall occur only at points of change in the transverse slopes as shown on the plans or designated by the Engineer. The longitudinal joints in one layer shall offset those in the layer immediately below by a minimum of 6 inches. Underlying longitudinal joints shall be within 12 inches of the edge of a lane or within 12 inches of the center of a lane, except in irregular areas, or if otherwise shown on the plans.

When the end of a course or strip of asphalt concrete is to be temporarily subjected to traffic, the end shall be on a bevel of approximately 20:1 (horizontal to vertical), being later cut back to a vertical edge to

provide a fresh surface against which subsequently placed asphalt concrete is to abut.

When placing of asphalt concrete pavement in layers in excess of 2-inch nominal thickness is being performed under traffic, work shall be scheduled in a manner such that at the end of each working day, the full width of the area to be paved shall be completed to the same elevation with no longitudinal drop-offs within this width.

When placing of asphalt concrete pavement in layers of 2 inches or less in thickness is being performed under traffic, work shall be scheduled in a manner such that at the end of each working shift, one strip of new travel lane pavement shall not extend ahead of the adjoining strip of travel lane pavement more than the distance normally covered by each shift.

Where abrupt or sloped drop-offs occur within or at the edge of the paved surface, the Contractor shall construct and maintain a wedge of asphalt concrete at a Slope 10:1 or flatter along the exposed joint.

505.03.17 Thickness and Number of Layers

Asphalt concrete shall be placed in the number of courses and to the total compacted thickness per course called for by the typical cross sections given on the plans.

In case the course of pavement involves the placing of a layer of variable thickness, as for leveling existing irregular surfacings, the course may include or consist of a layer of asphalt concrete of variable compacted thickness, the thickness of which layer shall not exceed the following:

Type of Mix	Maximum Compacted Thickness Layers
"A"	4 Inches
"B"	3 Inches
"C"	2 Inches
"D"	1 Inch

The top surface of each layer of asphalt concrete shall be spread at grade and cross section closely paralleling the specified top surface of the finished pavement.

505.03.18 Pavement Samples

The Engineer shall be permitted to cut samples or to take cores from the full depth of compacted mixture or from the separate layers and courses thereof, for testing purposes, and at such locations and at such frequencies as the Engineer determines necessary for proper representation. Where samples have been taken, and when directed by the Engineer, the Contractor shall furnish new like material for filling the holes with no extra compensation.

505.03.19 Pavement Smoothness

The top surface of the asphalt concrete pavement, when tested with a 12-foot straightedge either parallel to or perpendicular to the centerline furnished and operated by the Contractor, shall not vary by more than 0.02 foot. The Engineer will observe this testing and may require additional testing. The means of correction of a surface that does not meet the smoothness requirements shall have the approval of the Engineer.

When tests show the pavement is not within the above tolerances, the Contractor shall take

immediate action to correct equipment or procedures in his paving operation to eliminate the unacceptable pavement roughness.

Any surface irregularities exceeding the above tolerances shall be corrected by the Contractor using a method or methods listed herein and approved by the Engineer.

Corrective Action - Corrective measures by the Contractor requiring one or more of the following actions approved by the Engineer shall be performed on deficient areas:

1. Remove and replace the surface course.
2. Place an overlay of a thickness approved by the Engineer.
3. Grind the pavement surface utilizing diamond blades up to a maximum depth of 0.3 inch and apply an emulsion fog coat as directed by the Engineer.

When utility appurtenances such as manhole covers and valve boxes are located in the traveled way and they are not required to be adjusted or are required to be adjusted before paving, these tolerances will not apply at the utility appurtenance.

All corrective work shall be completed within 10 working days following notification from the Engineer that the pavement does not meet the specified tolerances, unless otherwise directed by the Engineer.

All corrective work, including furnishing of materials, shall be performed at the Contractor's expense and no adjustment in contract time will be made for corrective action work.

505.03.20 Special Protection Under Traffic

In addition to other required provisions for traffic, the following shall apply to pavement construction: no traffic or equipment shall come in contact with the compacted mixture until it has cooled and set sufficiently to prevent marking; edges shall be protected from being broken down; and edge drop-offs one or more inches in height shall be marked with warning devices visible by day and night to the traveling public, and placed at spacings indicated on the plans or as directed by the Engineer.

505.04 MEASUREMENT AND PAYMENT

505.04.01 Measurement

Pay quantities for hot mix asphalt concrete and other bituminous construction under this Section will be measured by one or another of the methods as set forth hereinafter.

505.04.01A Asphalt Concrete on a Single Unit Basis

When pay items in the Proposal so indicate, the quantity of asphalt concrete used in the accepted work as specified will be measured on a ton basis. There will be no separate measurement of bituminous cement or additives contained in the mixture or used otherwise in the work. Measurement will be made on the number of tons of asphalt concrete, as weighed on approved and tested scales. Give trip tickets to the Engineer for his signature as the material is delivered. Each trip ticket shall show date and time of delivery, truck number, driver's name, net weight of material, and will be considered as valid delivery receipts only when signed by the Engineer. No material will be accepted without a trip ticket being available at the time of delivery.

505.04.01B Asphalt Concrete on Square Yard Basis

When the pay items in the Proposal so indicate, asphalt concrete, complete in place, as specified and accepted, will be measured on a square yard basis. Measurement will be made of width and length of each separately constructed strip of pavement, wherein width is the design width or edge-to-edge width of pavement, whichever is the lesser, and length is from end to end of the pavement along the center of the strip. Measurement will be on the surface of the pavement to the nearest 0.1 foot and the square yardage will be to the nearest full square yard.

The Engineer may take core samples of the pavement or use other methods to determine the actual pavement thickness constructed. Extra thickness of pavement as shown or as directed will be measured by conversion on a proportionate volume basis to an equivalent number of square yards of specified standard thickness pavement.

No additional payment over the Contract unit price will be made for pavement having a thickness greater than shown or ordered. When the pavement is found deficient in thickness by more than 0.2 inch, but not more than 1 inch, as determined by test cores of reasonable test samplings, payment for pavement will be made at an adjusted price as specified in the Special Provisions.

505.04.02 Payment

Payment will be made for any or all of the following items when listed as pay items in the Proposal for any particular Contract:

	Payment Item	Unit of Measure
1.	Asphalt concrete mixture (specify class)	Per Ton
2.	Asphalt concrete (specify class & thickness)	Per S.Y.

A deduction of 1% of the in place price will be made for each 1% cumulative deviation from the allowable tolerance of each component of the job mix formula required by the specification, except as follows:

Deviations in asphalt cement shall be weighted 8-times, and deviations in 200-minus material shall be weighted 2-times the deviation in other specified aggregate sieve sizes.

All materials furnished where the cumulative deviation equals or exceeds 12% shall be removed and replaced with acceptable material at the sole expense of the Contractor.

When asphalt paving materials with a cumulative deviation of less than 12% are furnished, the Owner shall notify the Contractor, in writing, to remove and replace defective materials at the sole expense of the Contractor or to pay to the Owner liquidated damages in accordance with the above deduction schedule.

SCHEDULE OF PRICES
ASPHALT OVERLAY PROJECT

NO.	ITEM	ESTIMATED QUANTITY	UNIT PRICE FIGURES	UNIT PRICE IN WRITING	TOTAL AMOUNT
1.	10" DI Pipe, Class B Bedding/Backfill	60 LF			
2.	Catch Basin	2 EA			
3.	Remove catch basin	1 EA			
4.	10" DI Pipe conn. into existing catch basin	1 EA			
5.	Sawcut asphalt pavement	200 LF			
6.	Remove curb and gutter	400 LF			
7.	Remove concrete sidewalk	290 SF			
8.	Concrete Curb & Gutter (12" wide gutter) Restore planted areas	300 LF			
9.	Concrete Curb & Gutter, Reinforced	100 LF			
10.	Driveway Approach, Reinforced Concrete	370 SF			
11.	Concrete Sidewalk, 4" deep Restore planted areas	150 SF			
12.	Wheelchair Ramp	2 EA			
13.	Excavate & Re-construct Street, 13.5" deep, 1.5" AC	900 SY			
14.	Asphalt Concrete Overlay,Class B (t=2.5")	1,800 TON			
15.	Asphalt Concrete Overlay,Class C (t=1.5")	1,100 TON			
16.	Pre-leveling Asphalt, Class D	500 TON			
17.	Tack Coat, CSS-1 Emulsified Asphalt	3 TON			
18.	Pavement Reinforcing Fabric	10,000 SY			

CITY OF NEWBERG
ASPHALT OVERLAY PROJECT
CONTRACT DOCUMENTS
JANUARY, 1998

TABLE OF CONTENTS
ASPHALT OVERLAY PROJECT

		Pages in Section
CONTRACT DOCUMENTS		
	Advertisement for Bids	10
	Bid Documents	
	Contract for Construction	
	Performance - Payment Bond	
GENERAL PROVISIONS		34
Section 1	Definitions and Terms	
2	Proposal Requirements and Conditions	
3	Award and Execution of Contract	
4	Scope of Work	
5	Control of Work	
6	Control of Materials	
7	Responsibility to the Public	
8	Prosecution and Progress	
9	Measurement and Payment	
10	Requirements of Oregon Law for Public Contracts	48
SPECIAL PROVISIONS		2
Section 1	Length of Contract	
2	Liquidated Damages	
3	Pre-Construction Meeting	
4	Tree Trimming	
5	Water	
6	Changeover of Specifications	
7	Concrete Curb and Gutter Repair	
8	Prevailing Hand Work	
9	Leveling Course Asphalt, Class D	
10	Asphalt Overlay	
11	Pavement Reinforcing Fabric	
12	Adjust Manhole	
13	Adjust Valve Cover	
14	Shoulder Rock	
TECHNICAL PROVISIONS		106
Division 2	General Technical Requirements	
5	Street Technical Requirements	
6	Storm Drainage Technical Requirements	
7	Concrete Structures Technical Requirements	
PROJECT INFORMATION		6
	Project Map	
	Table of Streets	
	Straight Line Charts	
STANDARD DRAWINGS		13
ST-4	Curb and Gutter	
ST-7	Curb Ramp	
ST-8	Sidewalk - Type "A"	
ST-13	Driveway Apron and Curb Cut	
ST-14	Commercial Driveway	
ST-22	Asphalt Overlay Typical Section	
ST-23	Asphalt Pavement Repair	
ST-29	Manhole Adjustment	
S-1	Pipe Bedding	
S-2	Trench Backfill	
SD-1	Gutter and Curb Inlet Catch Basin Details	
SD-2	Frame and Grate	

City of Newberg
ADVERTISEMENT FOR BIDS
ASPHALT OVERLAY PROJECT

Sealed bids for the construction of the **Asphalt Overlay Project** in the City of Newberg, Oregon addressed to the Community Development-Project Manager, 719 E. First St., Newberg, Oregon 97132, will be received until **4:00 p.m.** prevailing time on the **26th day of January, 1998** at the Community Development Building, 719 E. First St., Newberg, Oregon at which time and place all bids will be opened and publicly read aloud by the undersigned or his designated representative.

The estimated quantities of work are: 3400 tons asphalt concrete (Class B, C, Class D Preleveling); 10,000 SY Pavement Reinforcing Fabric; 900 SY Street Reconstruction; 400 LF Concrete Curb and Gutter; 500 SF Concrete (sidewalks and driveways); 2 wheelchair ramps; 60 LF 10" DI Storm Drain Piping; 2 Catch Basins; and related work.

Plans and Specifications may be **obtained** at the Community Development Office, 719 E. First St., Newberg, Oregon 97132 at $25.00 for the set of documents. Plans and specifications may also be **examined** at the same location at no charge.

Bidders must be prequalified in conformance with Oregon Law ORS 279.039. Documentation of State approval must be submitted to the Owner at least seven days prior to the bid opening date.

No bid will be received or considered unless the bid contains statements by the bidder as a part of his bid, that the provisions required by ORS 279.348 through 279.363, as may be applicable, are to be complied with. Applicable state wage rates are included with the contract documents.

No bid for a construction contract shall be considered unless the bidder is registered with the Construction Contractors Board as required by ORS 671.530. Each Bid must contain a statement as to whether the bidder is a resident bidder, as defined by ORS 279.029.

Each bid must be submitted on the prescribed form in a sealed envelope, clearly marked that it is a bid, and with the Bidders name and the project title on the outside of the envelope. Each bid must be accompanied by a certified check or bid bond payable to the City of Newberg, Oregon, in an amount of not less than 10 percent of the total amount of the bid submitted. The successful Bidder will be required to furnish a bond for faithful performance on the contract in the full amount of the contract price.

The City of Newberg reserves the right to reject any or all bids, to waive informalities, and to accept the bid which is in the best interest of the City. No bidder may withdraw his bid for a period of thirty (30) calendar days after the date set for opening.

Michael Soderquist
Community Development Director

BID

PLACE: CITY OF NEWBERG, OREGON

PROJECT: ASPHALT OVERLAY PROJECT

TO: MAYOR AND CITY COUNCIL
CITY OF NEWBERG, OREGON
719 E. FIRST STREET
NEWBERG, OREGON 97132

The undersigned, hereinafter called the Bidder, in compliance with your advertisement for bid offers to enter into a Contract with the City of Newberg, Oregon, hereinafter referred to as the Owner, to furnish all labor, materials, equipment, supplies and machinery to construct the project in accordance with the Contract Documents, within the time set forth therein, and at the prices stated below.

The Bidder declares that he has carefully examined the plans and specifications with related documents, that he has personally inspected the site of the proposed work; that he has satisfied himself as to the quantities involved including materials and equipment, and is familiar with all of the conditions surrounding the construction of the proposed project including availability of materials and labor.

The Bidder further declares that the Bid is made according to the provisions and under the terms of the Contract Documents, which are hereby made a part of this Bid, and that the prices below are to cover all expenses incurred in performing the work required under the Contract Documents of which this Bid is a part.

The Bidder agrees that if this Bid is accepted, he will, within ten calendar days after notification of acceptance, execute the Contract with the Owner; and will at that time deliver to the Owner the Performance and Payment Bond and insurance documents required herein, and will, to the extent of his Bid, furnish all labor, equipment and materials necessary to complete the work in the manner, in the time, and according to the methods as specified in the Contract Documents and required by the Community Development Project Manager.

The Bidder further agrees to begin work within ten calendar days after receipt of written "Notice to Proceed" from the Owner and to fully complete the project by **June 15, 1998**. Bidder further agrees to pay as liquidated damages, the sum of one hundred fifty dollars ($150.00) for each consecutive calendar day thereafter until the work shall have been finished. Sundays and legal holidays shall be excluded in determining days in default.

The Bidder further proposes to accept as full payment for the work proposed herein the amounts computed under the provisions of the Contract Documents and based on the following schedule of lump sum or unit price amounts, it being expressly understood that the unit prices are independent of the exact quantities involved. The Bidder agrees that the lump sum prices and unit prices represent a true measure of the labor and materials required to perform the work, including all allowances for overhead and profit for each type and unit of work called for in these Contract Documents.

SCHEDULE OF PRICES
ASPHALT OVERLAY PROJECT

NO.	ITEM	ESTIMATED QUANTITY	UNIT PRICE FIGURES	UNIT PRICE IN WRITING	TOTAL AMOUNT
1.	10" DI Pipe, Class B Bedding/Backfill	60 LF	38.00	Thirty Eight and 00/100	2280.00
2.	Catch Basin	2 EA	825.00	Eight hundred twenty five and 00/100	1650.00
3.	Remove catch basin	1 EA	175.00	One hundred seventy five and 00/100	175.00
4.	10" DI Pipe conn. into existing catch basin	1 EA	350.00	three hundred fifty and 00/100	350.00
5.	Sawcut asphalt pavement	200 LF	1.00	One and 00/100	200.00
6.	Remove curb and gutter	400 LF	2.00	two and 00/100	800.00
7.	Remove concrete sidewalk	290 SF	1.00	One and 00/100	290.00
8.	Concrete Curb & Gutter (12" wide gutter) Restore planted areas	300 LF	19.00	nineteen and 00/100	5700.00
9.	Concrete Curb & Gutter, Reinforced	100 LF	20.00	twenty and 00/100	2000.00
10.	Driveway Approach, Reinforced Concrete	370 SF	7.00	Seven and 00/100	2590.00
11.	Concrete Sidewalk, 4" deep Restore planted areas	150 SF	6.00	Six and 00/100	900.00
12.	Wheelchair Ramp	2 EA	280.00	two hundred eighty and 00/100	560.00
13.	Excavate & Re-construct Street, 13.5" deep, 1.5" AC	900 SY	21.00	twenty one and 00/100	18,900.00
14.	Asphalt Concrete Overlay,Class B (t=2.5")	1,800 TON	31.00	thirty one and 00/100	55,800.00
15.	Asphalt Concrete Overlay,Class C (t=1.5")	1,100 TON	34.00	thirty four and 00/100	37,400.00
16.	Pre-leveling Asphalt, Class D	500 TON	36.00	Thirty Six and 00/100	18,000.00
17.	Tack Coat, CSS-1 Emulsified Asphalt	3 TON	260.00	two hundred sixty and 00/100	780.00
18.	Pavement Reinforcing Fabric	10,000 SY	1.00	one and 00/100	10,000.00

SCHEDULE OF PRICES
ASPHALT OVERLAY PROJECT

NO.	ITEM	ESTIMATED QUANTITY	UNIT PRICE FIGURES	UNIT PRICE IN WRITING	TOTAL AMOUNT
19.	Adjust Manhole Cover	13 EA	700.00	Seven hundred and 00/100	9100.00
20.	Adjust Valve Cover or Monument Cover	5 EA	75.00	Seventy five and 00/100	375.00
21.	Detour Signing, Collector Street	1 LS	2500.00	Two thousand five hundred and 00/100	2500.00
22.	Mobilization	1 LS	5000.00	Five thousand and 00/100	5000.00

TOTAL BID — One hundred seventy five thousand three hundred fifty and 00/100 — 175,350.00

BIDDERS NAME: MORSE BROS INC
ADDRESS: PO BOX 7 LEBANON OR 97355
PHONE/FAX: 390-6955 / 390-4904
SIGNATURE: Russ Rebo
PRINT NAME: RUSS REBO Construction Estimator

The undersigned Bidder hereby agrees that the provisions of ORS 279.348 to 279.356 will be complied with, so that the undersigned Bidder and Bidder's subcontractors will pay to their employees not less than the specified minimum prevailing rate of wage as determined by the Oregon Commissioner of the Bureau of Labor and Industries, and further agrees to pay such wages not less than once per week.

The above unit prices shall include all labor, materials, equipment, tools, overhead, profit, insurance, etc., to complete the work called for.

It is agreed that if the Bidder is awarded the Contract for the work herein proposed and shall fail or refuse to execute the Contract and furnish the required Performance- Payment Bond within the time herein proposed, then, in that event, the bid security deposited herewith shall be retained by the Owner as liquidated damages.

The Bidder understands that the Owner may reject any or all bids and waive any informalities in the bidding.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of thirty (30) calendar days after the scheduled closing time for receiving bids.

The Bidder acknowledges receipt of the following Addenda.

NO. one DATE 1-8-98
NO._____ DATE_____
NO._____ DATE_____
NO._____ DATE_____

The name of the Bidder submitting this Proposal is MORSE BROS., INC.
doing business at P.O. Box 7, Lebanon, OR, 97355
Street, City, State, Zip
which is the address to which all communications shall be sent.

BIDDER'S PERFORMANCE BOND STATEMENT

MORSE BROS., INC., hereinafter referred to as Contractor, is
(Name of Contractor)
submitting a bid to the City of Newberg pursuant to the latter's advertisement for bids dated **January, 1998** for the **Asphalt Overlay Project.**

Contractor certifies that if awarded the Contract, Contractor has the financial ability to obtain a good and sufficient bond issued by a surety to Owner in a sum equal to the amount of the bid providing for the faithful performance of the Contract.

Contractor understands and agrees if Contractor fails to provide the performance bond, the Owner will reject such bid and the bid bond or security submitted with the subject bid will be forfeited. The Surety requested to issue the Performance Bond will be Safeco Ins Co
(Surety Company)
_____.

Contractor hereby authorizes Selective Ins Co to disclose any information to
(Surety Company)
the Owner concerning Contractor's ability to supply a performance bond in the amount of the Contract.

In witness thereto the undersigned has set his hand this 19th day of Jan. 1998.

X Stephen Frey
Signature of Bidder

STEPHEN FREY
ASSISTANT SECRETARY
Print Name

Title

(If Corporation)

In witness whereof the undersigned corporation has caused this instrument to be executed and the seal affixed by its duly authorized officers this ___ day of _____1998.

Name of Corporation

By _____

Print Name

Title

Attest _____
Secretary

CONTRACT FOR CONSTRUCTION

THIS CONTRACT, made and entered into this 13th day of March, 1998, by and between the CITY OF NEWBERG, OREGON, a municipal corporation, hereinafter called the "OWNER", and

MORSE BROS., INC.

of PO Box 7
Lebanon, OR 97355

hereinafter called the "CONTRACTOR".

WITNESS:

Said Contractor, in consideration of the sum to be paid him by the said Owner and of the covenants and agreements herein contained, hereby agrees at his own proper cost and expense to do all the work and furnish all the materials, tools, labor, and all appliances, machinery and appurtenances for the **Asphalt Overlay Project** to the extent of the Bid made by the Contractor on the 19th day of January 1998, all full compliance with Contract Documents referred to herein.

The Advertisement for Bid, the signed copy of the Bid made by the Contractor, the fully executed Performance and Payment Bond, the General Provisions, the Special Provisions, the Technical Provisions, entitled **Asphalt Overlay Project** dated January, 1998, are hereby referred to and, by reference, made a part of this Contract as fully as if the same were completely set forth herein.

In consideration of the faithful performance of the work herein embraced, as set forth in these Contract Documents, and in accordance with the direction of the Community Development Director and to his satisfaction to the extent provided in the Contract Documents, or as otherwise herein provided and based on the said Bid made by the Contractor, the Owner agrees to pay to the Contractor the amount bid as adjusted in accordance with the Contract Documents, and to make such payments in the manner and at the times provided in the Contract Documents.

The Contractor agrees to complete the work within the time specified herein and to accept as full payment hereunder the amounts computed as determined by the Contract Documents and based on the said Bid.

The Contractor agrees to indemnify and save harmless the Owner from any and all defects appearing or developing in the materials furnished and the workmanship performed under this Contract for a period of one year or such other time as applicable law may allow after the date of acceptance of the work in the Contract by the Owner.

In the event that the Contractor shall fail to complete the work within the time limits or the extended time limit agreed upon, as more particularly set forth in the Contract Documents, liquidated damages shall be paid at the rate of One Hundred and Fifty Dollars per consecutive calendar day. Sundays and legal holidays shall be excluded in determining days in default.

The provisions of ORS 279.350 relating to prevailing wage rates are made a part of this Contract as completely as if the same were fully set forth herein.

The Contractor shall pay a fee to the Oregon Bureau of Labor and Industries pursuant to the provisions of ORS 279.352. The fee is equal to one-tenth of one percent (0.1 percent) of the price of the contract, but not less than $100 nor more than $5000, regardless of the contract price. The fee shall be paid on or before the first progress payment or 60 days from the date work first began on the contract, whichever comes first. The fee is payable to the Bureau of Labor and Industries and shall be mailed or otherwise delivered to the Bureau at the following address:

Bureau of Labor and Industries
Wage and Hour Division
Prevailing Wage Unit
800 N.E. Oregon Street, #32
Portland, OR 97232

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed the day and year first herein above written.

CITY OF NEWBERG, OREGON

By Duane R. Cole

Print Name Duane R. Cole

City Manager
Title

CONTRACTOR **MORSE BROS., INC.**

By X Stephen Frey

Print Name STEPHEN FREY
ASSISTANT SECRETARY

Title

APPROVED AS TO FORM:

Terrence D. Mahr
City Attorney

EXECUTED IN QUADRUPLICATE

BOND NO 5923547

PERFORMANCE - PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we MORSE BROS., INC

A CORPORATION hereinafter called "Principal" and SAFECO INSURANCE COMPANY OF AMERICA
(Corp., Partnership, or Individual)
of SAFECO PLAZA, State of WASHINGTON, herein after called "Surety", are held firmly bound unto the City of Newberg, Oregon, hereinafter called "Owner" in the penal sum of ONE HUNDRED SEVENTY FIVE THOUSAND THREE HUNDRED FIFTY DOLLARS Dollars ($175,350.00) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain contract with the Owner, dated this ____ day of _____, 1998, a copy of which is hereto attached and made a part hereof for the construction of the **Asphalt Overlay Project.**

NOW THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extension thereof which may be granted by the Owner, with or without notice to the Surety, and if he shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, and shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contracts and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools consumed or used in connection with the construction of such work whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition of the terms of the contract or the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specification.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed this 13TH day of MARCH 1998.

x _____
Principal MORSE BROS., INC.
R.R. Reinhard
Vice President
P.O Box 7 (s)
LEBANON, OR 97355
(Address - Zip Code)

x _____
(Principal) Secretary STEPHEN FREY
ASSISTANT SECRETARY

(SEAL)

_____
Witness as to Principal

_____
(Address - Zip Code)

ATTEST

SAFECO INSURANCE COMPANY OF AMERICA
Surety

Joyce C Blasingame
(Surety) Secretary
JOYCE C. BLASINGAME - WITNESS

By _____
Attorney-in-fact
JEFFREY N. KING ATTORNEY-IN-FACT

(SEAL)

Joyce C Blasingame
Witness as to Surety
RKI INC. - JOYCE C BLASINGAME - WITNESS
P.O Box 157 LEBANON, OR 97355
(Address - Zip Code)

Note: Date of Bond must not be prior to the date of Contract. If Contractor is Partnership, all partners should execute bond.

k:\wp\tabby\wynooski\contract.doc

SAFECO®

POWER OF ATTORNEY

SAFECO INSURANCE COMPANY OF AMERICA
GENERAL INSURANCE COMPANY OF AMERICA
HOME OFFICE: SAFECO PLAZA
SEATTLE, WASHINGTON 98185

No. 4844

KNOW ALL BY THESE PRESENTS:

That **SAFECO INSURANCE COMPANY OF AMERICA** and **GENERAL INSURANCE COMPANY OF AMERICA**, each a Washington corporation, does each hereby appoint
**********JEFFRY N. KING; BARRY L. JOHNSON; JOYCE C. BLASINGAME; Lebanon, Oregon**********

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and **GENERAL INSURANCE COMPANY OF AMERICA** have each executed and attested these presents

this 20 day of February, 19 98.

R A Pierson
R.A. PIERSON, SECRETARY

W Randall Stoddard
W. RANDALL STODDARD, PRESIDENT

CERTIFICATE

Extract from the By-Laws of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA:**

"Article V, Section 13. - FIDELITY AND SURETY BONDS . . . the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business . . . On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA** adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,
(i) The provisions of Article V, Section 13 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,
the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, R. A. Pierson, Secretary of **SAFECO INSURANCE COMPANY OF AMERICA** and of **GENERAL INSURANCE COMPANY OF AMERICA**, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 13TH day of MARCH, 1998.

SAFECO INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1953 STATE OF WASHINGTON

GENERAL INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1923 State of Washington

R A Pierson
R.A. PIERSON, SECRETARY

S-1787 9/97
S-974/EP 1/93

® Registered trademark of SAFECO Corporation.

GENERAL PROVISIONS

CITY OF NEWBERG
ASPHALT OVERLAY PROJECT

JANUARY, 1998

GENERAL PROVISIONS

SECTION 1.00 DEFINITIONS AND TERMS

Terms used or referred to herein are defined as follows:

1.01 BID

The offer of the bidder when submitted on the proposal form, properly signed and guaranteed.

1.02 BIDDER

Any individual, firm partnership, corporation or combination thereof acting directly or through a duly authorized representative, submitting a proposal on the work contemplated.

1.03 CHANGE ORDER

A written instruction to the Contractor, signed by the Engineer, prescribing any change in the work.

1.04 CONTRACTING AGENCY

The agency which has contracted for the performance of the work or for whom the work is being performed. Unless specifically stated otherwise, wherever in these documents the words "Contracting Agency" appear, it shall be understood to mean the City of Newberg, a Municipal Corporation, located in Yamhill County, Oregon.

1.05 CONTRACT

The written agreement covering performance of the work including formal contract, advertisement for bids, instructions to bidders, proposal with required affidavit, specifications, bonds, plans, and all other Contract Documents.

1.06 CONTRACTOR

The individual, partnership, corporation, or other entity entering into a contract with the Contracting Agency to perform the contemplated work. In the case of work being done under a permit issued by the Contracting Agency, the Permittee shall be construed to be the Contractor.

1.07 ENGINEER

The Engineer of the Contracting Agency, acting either directly or through his authorized representatives, and designated by the Contracting Agency to supervise the work during its execution.

1.08 HOUSE CONNECTION SEWER

Any sewer pipe line lying within an easement, public street or right of way which connects or is proposed to connect, a house sewer or any lot or part of a lot with a public sewer.

1.09 HOUSE SEWER

Any sewer pipe line which connects, or is proposed to connect, any building to a house connection sewer.

GENERAL PROVISIONS

1.10 INSPECTOR

An authorized representative of the Engineer of the Contracting Agency, limited to the particular duties entrusted by the Engineer.

1.11 LABORATORY

A materials testing laboratory operated by a public agency or if approved by the Engineer, any private, commercial testing laboratory.

1.12 LINEAL FOOT

Horizontal measurement as determined by engineers' station.

1.13 MAJOR ITEM

Any items or work and/or materials having an original contract value in excess of $500.00 or which exceeds ten (10) percent of the amount of the original contract, whichever is greater.

1.14 NOTICE TO PROCEED

A written notice to the Contractor from the Contracting Agency, designating the date by which the Contractor shall begin prosecution of the work.

1.15 PERSON

Any individual, firm, association, partnership, corporation, trust, or joint venture.

1.16 PLANS

The plans, profiles, cross sections, and drawings, or reproductions thereof, approved by the Engineer, which show the details of the work to be done.

1.17 PROPOSAL GUARANTY

Certified check or bidder's surety bond executed by a bonafide surety company, accompanying the Bid as a guarantee that the bidder will enter into a contract with the Contracting Agency for the performance of the work.

1.18 REFERENCE SPECIFICATIONS

Bulletins, standards, rules, methods of analysis or test, codes and specifications of other agencies, engineering societies, or industrial associations referred to in these specifications. All such references specified herein, refer to the latest edition thereof, including any amendments thereto which are in effect and published at the time of advertising for bids or issuing the permit for the project.

1.19 ROADWAY

That portion of the right-of-way or easement intended for use by vehicles.

1.20 SANITARY SEWER

A sewer that carries liquid and water-carried wastes together with minor quantities of storm, surface, and groundwaters that are not admitted intentionally.

1.21 SEWER

A pipe or conduit that carries wastewater or drainage water.

1.22 SPECIAL PROVISIONS

Specific clauses setting forth conditions or requirements peculiar to the work which modify or supplement the standard specification.

1.23 SPECIFICATIONS

This term includes the standard specifications and specifications included herein by reference, any special or project specifications, and specifications included therein by reference, specifications on the plans referred to and specifications contained or referred to in supplemental agreements between the Contractor and the Contracting Agency.

1.24 STANDARD DRAWINGS

Drawings of structures or devices referred to on the plans or in specifications by title and/or an index number.

1.25 STATE

The State of Oregon.

1.26 STORM SEWER

A sewer that carries storm water and surface water, street wash and other wash waters, or drainage, but excludes domestic wastewater and industrial wastes. Also called storm drain.

1.27 STREET

Any road, highway, parkway, freeway, alley, walk or way.

1.28 SURETY

The bondsman, party or parties who may guarantee the fulfillment of the contract by bond.

1.29 UTILITY

Tracks, overhead or underground wires, pipe lines, conduits, ducts or structures, owned, operated, or maintained in or across a public right-of-way or private easement.

1.30 WORK

That which is proposed to be constructed or done under the contract.

GENERAL PROVISIONS

1.31 ABBREVIATIONS AND SYMBOLS

A.A.S.H.O. (AASHO) American Association of State Highway Officials; A.G.C. (AGC) Associated General Contractors of America; A.P.W.A. (APWA) American Public Works Association; A.S.T.M. (ASTM) American Society for Testing Materials; A.W.W.A. (AWWA) American Water Works Association; O.R.S. (ORS) Oregon Revised Statutes.

SECTION 2.00 PROPOSAL REQUIREMENTS AND CONDITIONS

2.01 INTERPRETATION OF PLANS AND SPECIFICATIONS

The Engineer will interpret the meaning of any part of the plans and specifications about which any misunderstanding may arise, and his decision will be final.

Should the Contractor become aware of any error or discrepancy in or between the plans and specifications, he shall refer the matter to the Engineer for adjustment before proceeding further with the work. Should the Contractor proceed with the work without referring the matter, he does so on his own responsibility.

2.02 FIELD CONDITIONS

Logs of test holes, ground water levels, and any accompanying soil reports as furnished by the Contracting Agency are furnished for general information only. The field conditions so set forth shall not constitute a representation or warranty, expressed or implied that such conditions are actually existent. Bidders shall make their own investigations and form their own estimates of the site conditions. The Contracting Agency will not be liable for any loss sustained by the Contractor as a result of any variance between conditions as set forth in the soil reports or as shown by the logs of test holes and the actual conditions revealed during the progress of the work or otherwise.

2.03 CONTRACT DOCUMENTS

The Contract Documents under which it is proposed to execute this work consist of the material bound herewith. These Contract Documents are intended to be mutually cooperative and to provide all details reasonably required for the execution of the proposed work. Any person contemplating the submission of a Bid and being in doubt as to the meaning or intent of said Contract Documents should request of the Engineer, in writing, an interpretation thereof. Any interpretation or change in said Contract Documents will be made only in writing, and a copy of such interpretation or change will be mailed or delivered to each person receiving a set of the Documents. The Contracting Agency will not be responsible for any other explanation or interpretation of said Documents.

2.04 TYPE OF BID

The Bid for the work contemplated is to be submitted on the form prescribed in the Bid.

2.05 PREPARATION OF BIDS

All blank spaces in the Bid form must be filled, in ink, in both words and figures where required. No changes shall be made in the phraseology of the forms or in the items mentioned here in. Written amounts shall govern in cases of discrepancy between the amounts stated in writing and the amounts stated in figures. In the case of error in extending unit prices in the bid, the correct extension of the

unit prices shall govern.

Any Bid shall be deemed informal which contains omissions, erasures, alterations or additions of any kind, or items uncalled for, or in which any of the items are obviously unbalanced, or which in any manner shall fail to conform to the conditions of the published Advertisement for Bids.

The Bidder shall sign his Bid in the blank space provided therefore. Bids made by corporations or partnerships shall contain names and addresses of the principal officers or partners. If the Bid is made by a corporation, it must be acknowledged by one of the principal officers thereof; if made by a partnership, by one of the partners.

2.06 SUBMISSION OF BIDS

All Bids must be submitted at the time and place and in the manner prescribed in the Advertisement for Bids. Bids must be made on the prescribed Bid forms and submitted with the Contract Documents.

2.07 WITHDRAWAL OF BID

Any bid may be withdrawn prior to the scheduled time for the opening of bids either by telegraph or written request, or in person. No bid may be withdrawn after the time scheduled for opening of bids unless the time specified in Section 3.01 has elapsed.

2.08 BID SECURITY

Bids must be accompanied by a certified check drawn on a bank in good standing, or a bid bond issued by a surety company authorized to issue such bonds in the State of Oregon, in an amount of not less than ten (10) percent of the total amount of the Bid submitted. This check or bid bond shall be given as a guarantee that if awarded the Contract, the successful Bidder will execute the attached Contract and furnish a properly executed Performance Bond in the full amount of the Contract price within the time specified.

The Contracting Agency reserves the right to retain the bid security of the three lowest bidders until the successful Bidder has signed and delivered the Contract, and furnished a one-hundred percent (100%) Performance Bond within the specified time; the next lowest bid may be accepted at the Owner's discretion whereupon the above instructions and requirements will apply to the said second bidder.

2.09 CONDITIONS OF WORK

Each Bidder must inform himself of the conditions relating to the regular execution of the work, and it is assumed that he will inspect the site and make himself thoroughly familiar with all the Contract Documents. Failure to do so will not relieve the successful Bidder of his obligation to enter into a Contract and complete the contemplated work in strict accordance with the Contract Documents.

Each Bidder must inform himself of all laws and statutes, both Federal and State, relative to the regular execution of the work, the employment of labor, protection of public health, the protection of private property, right-of-way, and access to the work, fire protection regulations, and similar requirements.

2.10 PREQUALIFICATION OF BIDDERS

Bidders who are in doubt as to their qualifications should refer to the requirements

regarding prequalification in the Advertisement for Bids for this contract. Prequalification requests must be submitted by the time stipulated in the Advertisement for Bids.

SECTION 3.00 AWARD AND EXECUTION OF CONTRACT

3.01 AWARD OF CONTRACT

After the Bids for the contemplated work have been opened and read as provided in these specifications, the respective totals thereof will be checked and compared by the Contracting Agency; and the results thereupon will be considered public information.

Unless otherwise stated in the Special Provisions or in the Advertisement for Bids the contract will be awarded within the forty-five (45) days after the opening of Bids to the lowest bidder meeting the qualifications required by law, including but not limited to the law relating to prequalification of bidders, and the requirements stated in the advertisement for bids, and instructions to bidders, and/or the specifications, and whose bid complies with all the prescribed requirements unless all bids are rejected. The Contracting Agency reserves the right to reject any and all bids and no bid shall be considered as being binding upon the Contracting Agency until the execution of the Contract; and failure of the Awardee to properly execute the awarded contract and furnish acceptable bonds and insurance as provided herein, shall be just and sufficient cause for the annulment of the award and the forfeiture of his proposal guaranty.

3.02 EXECUTION OF CONTRACT

The contract shall be signed by the successful bidder and returned together with the contract bonds and required insurance documents within 15 calendar days after the award of the contract unless otherwise stated in the Special Provisions or in the Advertisement for Bids, and after receipt of same by the Contracting Agency the proposal guarantees will be returned to all bidders. The Contractor shall carry all insurance which may be required by Federal and State laws by local ordinances, and by these specifications.

The attention of the Contractor is called to the fact that, when the United States Government participates in all or any portion of the cost of the work, the Federal laws authorizing such participation and the rules and regulations made pursuant to such laws must be observed by the Contractor. The work shall be subject to the inspection and approval of the authorized representatives of such Federal agencies as are created for the administration of these laws.

3.03 CONTRACT BONDS

Prior to the execution of the Contract, the Contractor shall file with the Contracting Agency a Performance Bond in the amount and for the purposes noted below, duly executed by a responsible corporate surety authorized to issue such bonds in the State of Oregon, which bond must in all respects comply with ORS 279.029 and ORS 279.526 Et. Seq. inclusive, and be satisfactory and acceptable to the Contracting Agency and he shall pay all premiums and costs thereof and incidental thereto to keep such bond in full force until one year after acceptance of the work in writing by the Contracting Agency.

The bond must be signed by both the Contractor and Surety and shall be in the sum of not less than 100% of the contract price to assure the claims of materialmen supplying materials to him, and of mechanics and laborers employed by him on the work required under these specifications.

Provided the Contractor shall faithfully and truly observe and comply with the terms, conditions, and

provisions of the Contract, in all respects, and shall well and truly and fully do and perform all matters and things by him undertaken, and within the time prescribed therein or as extended as provided in the applicable Standard Specifications, and shall indemnify and save harmless the Contracting Agency, its officers, employees, and agents, against any direct or indirect damages of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the said contract by the said Contractor or his subcontractors; and shall make payment promptly, as due, to all subcontractors and to all persons supplying to the Contractor or his subcontractors: equipment, supplies, labor, or materials for the prosecution of the work, or any part thereof, provided for in said contract, and shall pay all contributions or amounts due the State Industrial Accident Fund and the State Tax Commission; and shall pay all other debts, dues and demands incurred in the performance of the said contract and shall in all respects perform said contract according to law, then this obligation is to be void, otherwise to remain in full force and effect.

Non payment of the bond premium will not invalidate this bond nor shall the Contracting Agency be obligated for the payment thereof.

Should any surety or sureties upon said bonds or any of them become insufficient, said Contractor shall renew said bond or bonds with good and sufficient sureties within ten (10) days after receiving notice from the Contracting Agency that the surety or sureties are insufficient.

3.04 PROTECTIVE LIABILITY INSURANCE REQUIREMENTS AND PROPERTY INSURANCE

The Contractor shall furnish to the Contracting Agency in triplicate, a policy or certificate of protective liability insurance in which the Contracting Agency shall be named insured or be named in such insurance as an additional insured with the Contractor. In compliance with this provision, the Contractor may file with the Contracting Agency a satisfactory "blanket coverage" policy or certificate of insurance. The policy shall insure the Contracting Agency, its officers, employees and agents against all claims arising out of or in connection with the work to be performed and shall remain in full force and effective until the work is accepted by the Contracting Agency. The policy shall provide the following minimum limits.

Bodily Injury	$ 500,000 each person
	$ 500,000 each occurrence
Property Damage.	$ 500,000 each accident

Such policy shall provide coverage at least as broad as that provided in the Standard Form approved by the National Bureau of Casualty Underwriters together with such endorsements as are required to cover the risks involved. In addition, the Contractor shall furnish evidence of a commitment by the insurance company to notify the Contracting Agency of the expiration or cancellation of the insurance policies.

All policies of insurance or the certificate or other evidence thereof required to be purchased and maintained by Contractor will contain a provision or endorsement that the coverage afforded will not be cancelled or materially changed or renewal refused until at least thirty days prior written notice has been given to the Contracting Agency by certified mail.

3.05 CONTRACTING AGENCY'S IMMUNITY FROM LIABILITY

The Contractor shall save, keep and hold harmless, the Contracting Agency and all officers and agents thereof from all damages, costs or expenses in law or equity that may at any time arise or be set up because of damages to property or of personal injury received by reason of or in the course of performing said work, which may be occasioned by any negligence upon the part of the Contractor or any

of said Contractor's employees, or any subcontractor performing any of the work contemplated by the Contract.

The Contracting Agency shall not be liable or responsible for any accident, loss, or damage happening to the works referred to in the contract prior to the completion and acceptance thereof.

3.06 INDUSTRIAL ACCIDENT INSURANCE

The Contractor shall secure and maintain in full force and effect and bear the cost of complete Industrial Accident Insurance in accordance with the requirements of the Workmen's Compensation laws. The Contracting Agency, its officers, employees, or agents will not be responsible for any claims or suits in law or equity occasioned by this paragraph.

SECTION 4.00 SCOPE OF WORK

4.01 INTENT OF CONTRACT

The intent of the contract is to prescribe a complete work or improvement which the Contractor undertakes to do, in full compliance with the provisions and requirements of the contract. The Contractor for all or any part shall furnish all labor, materials, tools, equipment, transportation, necessary supplies and incidentals required to make each and every item complete as contemplated by the contract. Any deviation from these requirements must be stipulated in the SPECIAL PROVISIONS.

4.02 PLANS, SPECIFICATIONS AND WORK

The plans, together with specifications and other contract documents will govern the work to be done. Anything mentioned in the specifications but not shown on the plans and detailed drawings, or anything shown on the plans and detailed drawings but not mentioned in the specifications, shall be of like effect as though shown or mentioned in both.

Specifications and plans referred to in any of the contract documents shall be considered as being included in the document in which such reference is made. A reference to a particular specification or standard drawing in the contract documents shall refer to the version that is in force at the time of advertisement for bids.

In case of conflict, the order of precedence of the following documents in controlling the work shall be:

(1) Permits from outside agencies required by law.
(2) Special Provisions
(3) General Provisions
(4) Technical Provisions
(5) Plans

Change orders, supplemental agreements and approved revisions to plans and specifications will take precedence over contract documents listed above.

GENERAL PROVISIONS

4.03 PLANS AND SHOP DRAWINGS

The plans furnished and included with the specifications will show such details as may be necessary to comprehensively indicate the work that is proposed and the results that are intended to be accomplished. The Contractor shall keep a copy of the plans and specifications at the job site and access thereto shall, at all times, be accorded the Engineer. Any additional working drawings, detail plans, or shop drawings that may be required in connection with the prosecution or construction of any part of such work shall be supplied by and at the expense of the Contractor as they will not be accepted by the Engineer from suppliers or others.

When shop drawings are required in the various sections of the specifications or are requested by the Engineer, they shall be prepared in accordance with standard engineering practice. Shop drawings shall be of sufficient size and scale to clearly illustrate all details. Unless otherwise specified, shop drawings shall be submitted in quadruplicate to the office of the Engineer for approval or correction not less than 30 days before approved drawings will be required. One set will be returned to the Contractor marked "approved" or "approved as corrected". If changes are required, four copies of corrected shop drawings shall be delivered to the Engineer. No materials shall be furnished or work done on items requiring shop drawings prior to approval. Approval of shop drawings shall not relieve the Contractor from responsibility for errors or omissions of any sort in the shop drawing.

4.04 CHANGES AT THE CONTRACTOR'S REQUEST

Provision has been made in the specifications for certain specific changes in methods of construction which may be made at the Contractor's request and upon approval of the Engineer. Changes in the drawings and specifications, other than those specified herein, which do not materially affect the work, and which are not detrimental to the work or to the interests of the Contracting Agency as determined by the Engineer, may be granted to facilitate the work of the Contractor when such changes are requested in writing and submitted to the Engineer for approval. In the event such changes are granted, the changes shall be made without additional cost to the Contracting Agency, and the Contracting Agency reserves the right to receive an equitable adjustment in the contract price or contract time as a consideration for authorizing any such change.

4.05 ALTERATION OF QUANTITIES AND EXTRA WORK

The Contracting Agency reserves the right to make such increase or decrease in the quantity of any item of work or material to be performed or furnished under such contract, or to order the performance of such additional or extra work of a class not contemplated by the proposal as may be considered expedient or advantageous and essential to the satisfactory completion of proposed work and the full accomplishment of the intended purpose thereof, without thereby affecting the validity of the contract or contract bonds, and without giving notice to the surety of any such bond, unless the total bid price is increased more than 25%. In such cases the Contractor will be required to perform or furnish additional quantities or extra items of work or materials or to decrease the amount of work or materials to be performed or furnished under the contract or to omit portions thereof, and to furnish and provide the necessary labor and equipment to do so, when and as the Engineer may so order in writing within the limitations herein or by law provided. In the event that any such increase or decrease in the quantity of work or materials to be performed or furnished is so ordered, the amount to be paid the Contractor under his contract shall be correspondingly increased or decreased as the case may be, in proportion to the increased or decreased quantities of work or materials performed or furnished under such order.

4.06 ALTERATION OF QUANTITIES

In the event that the Contractor is directed by the Engineer to increase, decrease or omit portions of the work, and the total pay quantity for any items of work varies from the original contract quantity by 25% or less, payment will be made for the quantity of work performed at the contract unit price thereof.

If the total pay quantity for any item of work required under the contract varies from the original contract quantity by more than 25%, the compensation to the Contractor will be determined as follows:

If a change is made which, together with any previous changes in quantity, increases the quantity of any major item or decreases the quantity of any item more than 25% of the original contract quantity, the payment for the work in excess of the 25% increase over the original contract amount of that item will be determined by negotiation; at the option of the Engineer, payment for such excess will be made on the basis of "Extra Work" as hereinafter provided. Credit for decreases in the quantity of any item may be determined by negotiation but in no event shall the amount of credit exceed the contract unit prices for the omitted items.

4.07 LABOR

The cost of all labor used in performing the work under this contract shall be based on the prevailing wage scale as may be set forth in the Special Provisions for each particular craft or type of workman involved. Employer payments for payroll taxes and insurance, health and welfare, pension, vacation, and other similar purposes shall be included in this cost.

4.08 EXTRA WORK

Any new and unforeseen work will be classed as "Extra Work" when determined by the Engineer that said work is not covered by any of the contract items for which there is a bid price, or by a combination of such items.

Changes in the work involving either additional costs or credits for unforeseen additions or omissions in the work shall be made only subsequent to execution of a Change Order by the Engineer or by Supplemental Agreement issued by the Contracting Agency.

Payment of extra work on a lump sum or Unit Price basis required to be performed in accordance with the provisions of this section will be established by mutual agreement between the Contractor and the Engineer within the legal limits provided by State Laws or local ordinances. When no mutual agreement can be reached, payment will be made on a force account basis as hereinafter prescribed.

When the extra work is to be performed on a force account basis, the Contractor shall keep full and complete records of the cost of such work and shall permit the Engineer to have access thereto as may be necessary to assist in the determination of the compensation payable for such work. An itemized statement of such work shall be submitted to the Engineer for approval prior to submitting invoice for payment. The Contractor will be paid for labor, materials, and equipment rental as hereinafter prescribed. Only materials incorporated in the work will be paid for.

To the totals computed as hereinafter prescribed for labor, materials and equipment rental will be added 15% for overhead, profit and supervision. It is understood that labor, materials, and equipment may be furnished by the Contractor or the subcontractor or by others on behalf of the Contractor. However, when extra work to be paid for on a force account basis is performed by forces other than those of the

Contractor, the Contractor shall reach agreement with such other forces as to the distribution of the payment to be made by the Contracting Agency for such work and no additional payment will be made therefore.

4.08A LABOR

The cost of all labor used in performing extra work under this contract shall be in accordance with Section 4.07.

4.08B MATERIALS

The cost of materials incorporated in the work will be the cost to the purchaser, whether Contractor, Subcontractor or other forces, from the supplier thereof, except as follows:

a. If materials are procured by the purchaser by any method which is not a direct purchase from and a direct billing by the actual supplier to such purchaser, the cost of such materials shall be deemed to be the price paid to the actual supplier as determined by the Engineer. No markup except for actual costs incurred in the handling of such materials will be permitted.

b. If the materials are obtained from a supplier or source owned wholly or in part by the purchaser, payment therefor will not exceed the price paid by the purchaser, payment therefor will not exceed the price paid by the purchaser for similar materials furnished from said source on contract items or the current price of such materials delivered to the job site, whichever price is lower.

c. The Contracting Agency reserves the right to furnish such materials as it deems advisable, and the Contractor shall have no claims for costs and profit on such furnished materials.

4.08C EQUIPMENT RENTAL

The Contractor will be paid for the use of equipment on the basis of, but not exceeding the prevailing hourly rental rates established by the Oregon State Highway Department and recognized by the Associated General Contractors for the area where such equipment is required to be operated.

On any equipment for which no rental rate has been established by Oregon State Highway Department, or where the required operation of the equipment is less than four hours or in excess of one week, rental rates shall be proposed by the Contractor and agreed upon in writing by the Engineer prior to the start of force account work.

Equipment that is in operational condition and is standing by with the Engineer's approval for participation in force account work will be paid for at 50% of the agreed upon rental rate.

Rental time will not be allowed while equipment is inoperative due to breakdowns for periods in excess of 30 minutes. Rental time shall be computed in 1/2 hour increments. In computing rental time of equipment in actual operation, less than 30 minutes will be considered 1/2 hour.

The rental rates paid, as above provided, shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals. Operators of rented equipment will be paid for as provided under Section 4.08D.

All equipment shall, in the opinion of the Engineer be in good working condition and suitable for the purpose for which the equipment is to be used.

Unless otherwise specified, manufacturer's ratings and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

Individual pieces of equipment or tools having a replacement value of $50.00 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefore.

a. Equipment on the Work - The rental time to be paid for equipment on the work shall be the time the equipment is in operation on the extra work being performed and, in addition, shall include the time required to move the equipment to the location of the extra work and return it to the original location, except that moving time will not be paid for if the equipment is used at the site of the extra work on other than such extra work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power, except that no payment will be made if the equipment is used at the site of the extra work on other than such extra work.

b. Equipment Not on the Work - For the use of equipment moved in for the work and used exclusively for extra work paid for on a force account basis, the Contractor will be paid rental rates as agreed to, as provided in Section 4.08C above, and for the cost of transportation of the equipment to the location of the work and its return to its original location, all in accordance with the following provisions.

(1) The original location of the equipment to be hauled to the location of the work shall be agreed to by the Engineer in advance.

(2) The Contracting Agency will pay the costs of loading and unloading such equipment.

(3) The cost of transporting equipment in low bed trailers shall not exceed the hourly rates charged by established haulers or the applicable minimum established rates of the Oregon Public Utility Commission.

(4) The rental period shall begin at the time the equipment is unloaded at the site of the extra work, shall include each day that the equipment is at the site of the extra work, excluding Saturdays, Sundays and legal holidays unless the extra work is performed on such days, and shall terminate at the end of the day on which the Engineer directs the contractor to discontinue the use of such equipment. The maximum rental time to be paid per day shall not exceed 8 hours unless the equipment is in operation for a longer period of time.

(5) Should the Contractor desire the return of the equipment to a location other than its original location, the Contracting Agency will pay the cost of transportation in accordance with the above provisions, provided such payment shall not exceed the cost of moving the equipment into the location of the work.

(6) Payment for transportation, loading, and unloading equipment as above provided, will not be made if the equipment is used on the work in any other way than upon extra work paid for on a force account basis.

4.08D RECORDS

The Contractor shall maintain his records in such a manner as to provide a clear distinction between the direct cost of extra work paid for on the force account basis and the costs of the other operations performed in connection with the contract.

The Contractor shall furnish to the Engineer daily reports in duplicate of the extra work to be paid for on a force account basis. The reports shall itemize the materials used and shall set forth the direct cost of labor and the charges for equipment rental whether furnished by the Contractor, or subcontractor. The reports shall provide all names or identifications and classifications of workmen, the hourly rate of pay and hours worked together with the size, type, and identification number of equipment and hours of equipment operation. All reports shall be signed by the Contractor or his authorized representative.

Material charges shall be substantiated by vendors' invoices. Such invoices shall be submitted with the reports; or, if not available, they shall be submitted with subsequent reports. In the event said vendors' invoices are not submitted within 15 days after acceptance of the work, the Contracting Agency reserves the right to establish the cost of such materials at the lowest current price at which said materials are available in the quantities concerned delivered to the location of the work.

The Engineer will compare his records with the reports furnished by the Contractor, make any necessary adjustments and then compile the costs of extra work paid for on a force account basis on forms furnished by the Contracting Agency. When these extra work reports are agreed upon and signed by both parties, they shall become the basis of payment for the work performed.

4.09 CLEANUP AND DUST CONTROL

Throughout the period of construction, the Contractor shall keep the site free and clean from all rubbish and debris and shall promptly clean up all or any portion of the site when notified to do so by the Engineer. Care shall be taken to prevent spillage on the streets over which hauling is done, and any such spillage or debris deposited on streets due to the Contractor's operations shall immediately be cleaned up. The Contractor shall promptly remove any parts from the working area of all unused materials, surplus earth, and debris. Construction areas shall be left in a clean, neat and acceptable condition at the earliest time following completion of that portion of the work.

In the event that the Contractor fails to comply with the orders of the Engineer regarding cleanup, the Engineer may require the Contractor to cease progress on any or all parts of the work under contract until the unsatisfactory condition is corrected. The Engineer may order such cleanup work performed by others and the costs therefor deducted from payments due the Contractor. No additional compensation will be allowed as a result of such suspension.

During all phases of the construction work; the Contractor shall take precautions to abate dust nuisance by cleaning up, sweeping, sprinkling with water, or other means as necessary to accomplish results satisfactory with the Engineer.

Upon completion of the work and prior to final inspection the entire site of operations shall be cleared of equipment, unused materials and rubbish so as to present a clean and neat appearance. All costs of "Cleanup," including all charges for water, are to be absorbed in the prices bid for the various bid items.

4.10 VERMIN CONTROL

At the time of occupancy by the Contracting Agency, any structure or structures entirely constructed under the contract shall be free of rodents, insects, vermin and/or pests. Extermination work as may be necessary shall be arranged and paid for by the Contractor as part of the contract work within the contract time and shall be performed by a licensed agency and in accordance with the requirements of governing authorities. The Contractor shall be responsible for any injury to persons or property resulting from extermination work.

4.11 SANITARY PROVISIONS

The Contractor shall provide, and maintain in a neat and sanitary condition, such accommodations for the use of the employees as may be necessary to comply with all applicable laws, ordinances and regulations.

In the event of damage to the existing sewer facilities, or interruptions of existing sewage flows, the Contractor shall promptly dispose of any free sewage by pumping or other means. Sewage shall not be permitted to flow in the trenches or be covered by backfill. Continuous sanitary sewer service in closed conduits shall be maintained at all times.

SECTION 5.00 CONTROL OF WORK

5.01 SUPERVISION AND INSPECTION

The Engineer shall decide within the provisions of the specifications all questions which may arise concerning the quality or acceptance of materials furnished and work performed, and all questions concerning the acceptable fulfillment of the contract by the Contractor.

The Engineer or his representatives shall have access to the work at all times. The Contractor shall furnish all facilities for inspection at the construction site, and at shops or yards, and shall not cover up any work requiring inspection until the same has been approved by the Engineer. If work should be covered up before being inspected, the Contractor will be required to remove such portions of the work as may be necessary to disclose the part in question.

The Contractor shall be fully responsible for providing proper supervision and sufficient labor and equipment to accomplish the work and to complete the work within the contract time. The Contractor shall notify the Engineer 24 hours prior to commencing any work, or resuming work after shutdowns, except for normal resumption of work following Saturdays, Sundays, or Holidays. The Contractor shall maintain a local telephone for the duration of the contract, at his own expense, where he or his authorized representative may be reached directly or by message at all times; during and outside of working hours.

5.02 COOPERATION WITH OTHERS

Ordinarily, utility owners and Contracting Agency responsible for facilities located within the right-of-way will be required to complete any installation, relocation, repair, or replacement prior to commencement of work by the Contractor. However, when this is not feasible or practicable or the need for such work was not foreseen, such utility owners or Contracting Agency shall have the right to enter upon the right-of-way and upon any structure therein for the purpose of making new installations, changes or repair, and the Contractor shall so conduct his operations as to provide the time needed for such work to be accomplished during the progress of the improvement.

Where two or more contractors are employed on related or adjacent work, each shall conduct his operations in such a manner as not to cause any unnecessary delay or hindrance to the other.

5.03 MUTUAL RESPONSIBILITY OF CONTRACTORS

The Contracting Agency may let other contracts on any portion of the site for any work not included in the contract.

The Contractor shall perform the work of the contract so that it will properly coordinate with and the work performed by other contractors. He also shall give the other contractors every reasonable opportunity to perform their work, store materials, and place equipment therefor, and fit their work to the work of other contractors. He shall furnish to the other contractors all information necessary in order tha they may properly connect and fit their work to his and in ample time, so that they may have reasonable opportunity to prepare their work accordingly. He shall make the work of the contract ready to receive th work of the other contractors at the time fixed therefor, and shall fit this work to that of the other contract at the times fixed therefore.

5.04 UTILITIES

Utilities for the purposes of these specifications shall be considered as including but not limited to: pipe lines, conduits, transmission lines, and appurtenances of Public Utilities and those of priv industry, businesses or individuals solely for their own use or for use of their tenants, and storm drains, sanitary sewers, irrigation facilities, street lighting, traffic signals, telephone, television, and fire alarm systems.

The Contracting Agency has by a search of known records, endeavored to locate and indicate o the drawings, all utilities which exist within the limits of work. However, the accuracy or completeness of utilities indicated on the drawings is not guaranteed. Service connections to adjacent property may or m not be shown on the drawings. It shall be the responsibility of the Contractor to determine the exact loca of all utilities and their service connections. The Contractor shall contact all utility owners and request th they locate and mark any existing utilities and their appurtenances and that service connections which m be affected by the contract work also be marked. In addition, the Contractor shall notify the Engineer as any utility, appurtenances, and service connections located by him which have been incorrectly shown o omitted from the drawings.

Unless otherwise specified the Contractor shall remove all interfering portions of utilities which a shown on the drawings as "abandoned" or "to be abandoned in place", and which interfere with the construction of the project. All costs involved in said removals shall be included in the prices bid for the various items of work. All such abandoned utilities removed by the Contractor, shall be included in the prices bid for the various items of work. All such abandoned utilities removed by the Contractor, shall be stored on the site where directed and shall remain the property of the owner utility company or Contracti Agency as determined by the Engineer.

Where utilities are shown on the drawings as "abandoned" or "to be abandoned in place", it shal be the Contractor's responsibility to contact the utility company involved, as required in Section 5.11 here prior to excavating around such utilities to ascertain that the abandonment of the utility has been complet

In certain cases where indicated on the drawings, the Contractor shall locate utilities in advance his construction operations. In these cases the Contractor shall backfill the excavations and shall constr either a temporary or permanent resurfacing over the backfill. The temporary resurfacing shall be constructed when the exploratory excavations are made in an area located within the proposed project excavation.

The permanent resurfacing when specified shall be constructed when the exploratory excavatio are made in an area located outside the proposed project excavation. Said permanent resurfacing shall of the type and thickness specified or as field conditions may otherwise require. In either case, the excavations shall be backfilled by the methods and to the relative density specified.

This work shall be performed as soon as practical after award of the contract and, in any event,

sufficient time in advance of construction to avoid possible delays to the Contractor's work. All costs for making such exploratory excavations (including the backfilling and the resurfacing as specified herein) shall be included in the prices bid for the various items of work.

Utilities which upon exploration, are found to interfere with the permanent project work will be relocated, altered, or reconstructed by others in accordance with the provisions of Section 5.05 herein, or the Engineer may approve and order changes in location, line or grade of structures being built in order to avoid the utilities. The cost of such changes will be paid for under applicable bid items or as "Extra Work" as provided under Section 4.08.

5.05 BY OTHER THAN THE CONTRACTOR

When it is stated in the detailed specifications or indicated on the drawings, that a utility is to be relocated, altered or reconstructed by other than the Contractor, the Contracting Agency will conduct all negotiations with the owners in respect to such work and the work shall be done at no cost to the Contractor.

Service connections which physically interfere with project structures or appurtenances, whether or not so stated or indicated, shall be relocated by other than the Contractor; except as otherwise specified or unless directed by the Engineer in accordance with Section 5.08.

5.06 BY THE CONTRACTOR UNDER A SPECIFIC CONTRACT ITEM

When bidding schedule contains a separate item covering the relocation, alteration, or reconstruction of a utility by the Contractor, the price bid for said item shall cover all costs involved in such work.

The drawings and detailed specifications will give the construction details for the work, and unless the time at which the work must be done is specified in the detailed specifications, the Contractor shall coordinate with the Engineer in respect to when the work is to be done.

5.07 BY THE CONTRACTOR BUT NOT UNDER A SPECIFIC CONTRACT ITEM

When the work on a utility is specified or indicated on the drawings to be done by the Contractor, but is not included as a separate contract item in the bidding schedule, the Contracting Agency will make all arrangements with the owner of the utility in respect to the construction details, however, the Contractor shall coordinate with the owner as to when the work is to be done. Any costs for such work shall be absorbed or included in the prices bid for the various contract items.

5.08 BY THE CONTRACTOR - SERVICE CONNECTIONS (EXCEPT SANITARY SEWER)

For the purpose of these specifications, service connections shall be construed to mean all, or any portion of, the conduit cable or duct which connects a utility main distribution line to the meter box of an individual user.

Except when shown on the drawings to be relocated by others, and except as otherwise specified herein, the alteration or permanent relocation of service connections which physically interfere with project structures, or appurtenances thereto, which are to be constructed under this contract shall, when directed by the Engineer, be arranged for by the Contractor in accordance with the requirements of the utility owner. The costs for such work will be paid for as "Extra Work" as per Section 4.08.

5.09 BY THE CONTRACTOR FOR HIS OWN CONVENIENCE

The temporary or permanent relocation or alteration of utilities including service connections, desired by the Contractor for his own convenience, shall be the Contractor's own responsibility and he shall make all arrangements regarding such work. The costs of such work shall be absorbed or included in the prices bid for the various contract items.

5.10 BY THE CONTRACTOR OR BY OTHERS - UNKNOWN UTILITIES DISCLOSED DURING CONTRACT WORK

In the event that a utility is disclosed subsequent to the award of the contract, such utility not being indicated on the drawings, or in the event that an existing utility is found to be in a materially different location than shown on the drawings and thus requires additional or more costly work on the part of the Contractor for its maintenance, relocation, or support, the necessary alteration, relocation, proper support and protection shall be done and paid for as follows:

a. When said utility is found to occupy the space to be occupied by a part of the permanent works to be constructed, or when utility is, in the opinion of the Engineer, in such close proximity to the new work as to require the relocation or alteration of said utility the Contracting Agency will arrange for such relocation or alteration, or require the Contractor to do so as "Extra Work" as per Section 4.08.

b. When any portion of a utility is in close proximity and more or less parallel to the structure or conduit and does not lie between the vertical planes or pay lines specified in subparagraph a., above, the Contractor shall advise the owner thereof, and in cooperation with the owner, provide and place the necessary support for proper protection to insure continuous and safe operation of the utility structure. All costs for such work shall be borne by the Contractor.

c. With the exception of service connections, when said utility lies within the excavation but does not intercept the permanent works to be constructed and the length of said utility between the vertical planes or pay lines specified in paragraph a., above, is less than five times the perpendicular distance between pay lines, the Contractor shall maintain the utility in place. The work of maintaining the utility in place shall be considered as "Extra Work" (see Section 4.08).

5.11 RESPONSIBILITY OF THE CONTRACTOR

The Contractor shall be held responsible for all costs for the repair of any and all damage to the contract work or to any utility (whether previously known or disclosed during the work), as may be caused by his operations. Utilities not shown on the drawings to be relocated or altered by others, shall be maintained in place by the Contractor. Utilities which are relocated by others in order to avoid interference with structures and which cross the project work shall be maintained in the relocation positions by the Contractor. All costs for such work shall be absorbed or included in the prices bid for the various contract items.

The Contractor shall notify the owners of all utilities at least 2 working days in advance of excavating around any of their structures.

5.12 DELAYS CAUSED BY FAILURE TO RELOCATE UTILITIES

Where parties other than the Contractor are responsible for the relocation of utilities and a delay in the Contractor's work is caused by the failure on the part of said parties to remove or relocate such utilities in time to prevent such delay, or by any action or lack of action on the part of the Contracting

Agency, it shall be understood that the Contractor shall not be entitled, as a result of such delay to his work, to damages or additional payments over and above the contract price. If delays in the Contractor's work are caused by the reasons mentioned herein, the Contractor shall be entitled to an extension of time. The length of such extension of time will be determined by the Engineer with consideration as to the effect of the delay on the project as a whole.

In order to minimize delays to the Contractor caused by the failure of other parties to relocate utilities which interfere with structures, the Contractor, after approval from the Engineer, may be permitted to temporarily omit the portion of work affected by the utility. The portion thus omitted shall be constructed by the Contractor immediately following the relocation of the utility involved.

5.13 PERMANENT SURVEY MARKERS

The Contractor shall notify the Engineer not less than seven days prior to starting work in order that the Engineer may take necessary measures to insure the preservation of survey monuments, stakes, and bench marks. The Contractor shall not disturb permanent survey monuments, stakes or bench marks without the consent of the Engineer, and shall notify Engineer and bear the expense of replacing any that may be disturbed without permission. Replacement shall be done or arranged for only by the Engineer.

When a change is made in the finished elevation of the pavement of any roadway in which a permanent survey monument is located, the Contractor shall, at his own expense, adjust the monument cover to the new grade unless otherwise specified.

5.14 LOT STAKES

Unless otherwise directed by the Engineer or shown on the plans, the Contractor shall preserve existing survey stakes that mark property lines and corners. Any stakes that become lost or disturbed by his operation shall be replaced at the Contractor's expense and by a Registered Land Surveyor.

5.15 SURVEY SERVICE

The Engineer will furnish and set construction stakes establishing lines and grades as determined necessary by the Engineer for all work indicated on the plans or required under the contract, including lines and grades for street excavation and fill, finished subgrade, finished base rock, curbs and gutters, walks, structures and utilities, and will furnish the Contractor all the necessary information relative to the lines and grades.

Line and grade stakes will be offset from the construction area. They will show the offset distances, stationing and required cut or fill to the finished grade or flow line as indicated on the plans or grade sheet. Upon request a copy of the grade sheet will be furnished to the Contractor. Grade stakes will be set by the Engineer to the finished grade of the subgrade and also of the base rock, or as determined necessary by the Engineer, and the tops of these stakes marked blue or red.

The Contractor shall construct the work in accordance with the Engineer's stakes and marks, making use of them before they are disturbed, and shall be charged with full responsibility for conformity and agreement of the work with such stakes and marks.

The Contractor shall be responsible for the preservation of construction survey stakes and marks for the duration of their usefulness during construction. If any construction survey stakes are lost or

disturbed, and in the opinion of the Engineer need to be replaced, such replacement shall be by the Engineer at the expense of the Contractor. The cost of replacing them shall be charged against, and all shall be deducted from, the payment of the work.

The Contractor shall give notice to the Engineer not less than two working days in advance of when he will require survey services in connection with the laying out of any portion of the work.

5.16 PRIVATE ENGINEERS

Surveying by private engineers on permit projects or any other work under the control of the Contracting Agency shall conform in all respects to the quality and practice required of the Contracting Agency's surveyor as set forth in Section 5.15 above.

5.17 LINE AND GRADE

All work during its progress and upon its completion, shall conform to the lines, elevations, and grades shown on the plans. Distances and measurements, except elevations and structural dimensions, are given and made on horizontal planes.

Three consecutive points set on the same slope shall be used together in order that any variation from a straight grade can be detected. If any such variation is found, it shall be reported to the Inspector; and, in the absence of such report prior to completion of grade, the Contractor shall be responsible for any error in the grade of the finished work.

5.18 PRESERVATION OF PROPERTY

The Contractor shall protect all public and private property including irrigation berms, insofar as it may be endangered by his operations, and he shall take every reasonable precaution to avoid damage to such property.

Public or private improvements of facilities within the right of way not designated for removal but visibly evident or correctly shown on the plans which are damaged or injured directly or indirectly by or on account of any act, omission, or neglect of the Contractor in the execution of the work shall be restored by the Contractor at his expense to a condition substantially equivalent to that existing before such damage or injury occurred, by repairing, rebuilding, or otherwise affecting restoration thereof, or if this is not feasible, a suitable settlement shall be made with the owner of the damaged property.

The Contractor shall give reasonable notice to occupants of buildings on property adjacent to the work to permit the occupants to remove vehicles, trailers, and other possessions as well as salvage or relocate plants, trees, fences, sprinkler systems, or other improvements in the right-of-way which are designated for removal or which might be destroyed or damaged by the Contractor's operations.

The Contractor shall be responsible for the protection of all designated trees and planted areas within the right-of-way. He shall also exercise care and conduct his operations so as to minimize damages to other planted areas.

5.19 DAMAGE TO RAILROADS

The provisions given elsewhere herein, which require the Contractor to protect property against damage, and which place upon the contractor all responsibility for damage to property, injury to persons, and loss, expense, inconvenience and delay to the owners of the property and others, shall be

understood to apply in connection with railway lines or railroads the same as in connection with other kinds of property. In the protection of railway lines and railroads, however, the Contractor will be required to exercise particular care to avoid any damage which might result in train wrecks or in delays in train service. In the performance of work in close proximity to railroad tracks, he shall consult with the railroad owners or officials in regard to means and methods of conducting the work, and unless the Engineer orders otherwise, he shall use in the performance of the work means and methods which are not unsatisfactory to said owners or officials and he shall at his own expense provide such trackwalkers and flagmen as the said owners and officials may deem necessary for the adequate protection of the railroad property and train service.

The Contractor shall be solely and directly responsible to the owners and operators of such properties for any damage, injury, expense, loss, inconvenience or delay which may result from the carrying out of the work to be done under this contract, and if the SPECIAL PROVISIONS so specify, he shall give bond or insurance in the amount therein specified to each corporation, company, partnership, or individual owning or operating any of the properties affecting, in guarantee of this responsibility. Any extension of time granted the Contractor in which to complete the contract shall not relieve him or his surety from this responsibility.

5.20 PROTECTION OF MATERIALS AND WORK

The Contractor shall provide and maintain substantial and adequate protection as necessary to protect new or existing work, and all items of equipment and furnishings, for the duration of the contract, except that by the Contracting Agency action the Contractor may be relieved of certain responsibilities for maintenance and protection of completed portions of the work as provided under Section 5.23, hereof.

Unless relieved of responsibility as provided under Section 5.21, the Contractor and his sureties shall be fully liable for any loss or damage to the works referred to in the contract, resulting from any cause whatsoever, including but not limited to fire, theft, vandalism, malicious mischief, or injury or damage by the elements, except for any loss or damage that may be occasioned by acts of God, acts of the public enemy, acts of governmental authorities, or any act, omission, or default of the Contracting Agency prior to completions of the project and final acceptance thereof by the Contracting Agency.

5.21 RELIEF FROM MAINTENANCE AND RESPONSIBILITY

Upon the request of the Contractor and with the approval of the Contracting Agency, or upon the request of the Contracting Agency, the Contractor will be relieved of the duty of maintaining and protecting certain portions of the work which are ready to be placed in service and which have been completed in accordance with the plans and specifications, including cleanup.

In addition, such action by the Contracting Agency will relieve the Contractor of responsibility for injury or damage to said completed portions of the improvement resulting from use by public traffic or from the action of the elements or from any other cause, excepting injury or damage resulting from the contractor's own operations or from his negligence. The Contractor will not be required to again clean up such portions of the improvement prior to field acceptance, excepting for such items of work that result from his operations. However, nothing in this section shall be construed as relieving the Contractor from the full responsibility for making good defective work or materials found to be defective.

5.22 STORAGE OF MATERIALS IN PUBLIC STREETS, ROADS, OR HIGHWAYS

Materials shall not be stored in streets, roads, or highways for longer than four working

days after being unloaded, unless a longer storage period is permitted by the Engineer. In the event that the rate of progress of construction is such that the materials stored in streets, roads, or highways are not installed in its final position within the time period stipulated hereinabove, the Contractor shall when so directed by the Engineer remove such materials to storage areas to be provided by the Contractor at his own expense.

Unless otherwise permitted by the Engineer, no storage of excavated material will be permitted in public streets, roads, or highway. After the placing of the backfill in said trench, all remaining excavated material shall be removed from the site of the work.

5.23 HISTORICAL AND ARCHAEOLOGICAL REPORTS

Where historical objects of archaeological and paleontological nature, including ruins, sites, buildings, artifacts, fossils and other objects of antiquity are encountered within the areas on which the Contractor's operations are performed, the Contractor shall postpone operations in the area, shall preserve such objects for disturbance or damage and shall notify the Engineer of their existence and location.

Upon receipt of such notification, the Engineer will arrange for the disposition of the objects or for the recording of data relative thereto, and will notify the Contractor when it is proper for him to proceed with the work in the affected area. If the Contractor is directed by the Engineer to perform any work in salvaging said objects, the Contractor shall do so on the "Extra Work" basis set forth in Section 4.08.

5.24 LIGHT, POWER, AND WATER

The Contractor shall furnish temporary light, power, and water complete with connecting piping, wiring, lamps, and similar equipment necessary for the work as determined by the Engineer. The Contractor shall install, maintain, and remove his temporary lines upon completion of work. All expenses in connection with temporary services and facilities shall be paid by the Contractor, unless specified differently in the SPECIAL PROVISIONS.

SECTION 6.00 CONTROL OF MATERIALS

6.01 MATERIALS AND WORKMANSHIP

All materials, parts and equipment furnished by the Contractor shall be new, high grade, and free from defects and imperfections unless otherwise hereinafter specified. Workmanship shall be in accord with the best standard practice. Both materials and workmanship shall be subject to the approval of the Engineer.

All materials and workmanship not conforming to the requirements of these specifications shall be considered as defective and will be rejected. Defective material whether in place or not, shall be removed immediately from the site of the work by the Contractor at his expense when so directed by the Engineer. No rejected material, the defects of which have been subsequently corrected, shall be used until approval in writing has been given by the Engineer.

In the event any defect in material or workmanship is of a minor nature and the Engineer determines that it is not of such consequence as to result in a dangerous and undesirable condition, or that the removal of such work would create a dangerous or undesirable condition, the Contracting Agency shall have the right to retain such work and make such deductions in the payment therefor as they determine reasonable and in the public interest. Such determination by the contracting Agency shall be final.

6.02 TEST OF MATERIALS

Except as may otherwise be provided, all testing that may be required by the Contracting Agency to determine the quality, fitness and suitability of such materials shall be performed under the direction and upon the order of the Engineer, and at no expense to the Contractor; samples being secured and tested wherever considered necessary by the Engineer. In those cases in which the Contractor is required to provide and bear the expense of such testing the specifications or drawings will definitely so state.

The Contractor at his own expense, shall deliver the materials for testing at the time and to the place designated by the Engineer.

6.03 TRADE NAMES AND EQUALS

Whenever in the specifications any particular materials, process, and/or equipment is indicated or specified by patent, proprietary, or brand name, or by name of manufacturer, such wording shall be deemed to be used for the purpose of facilitating description of the material, process, and/or equipment desired, and shall be deemed to be followed by the words "or approved equal". The lists of acceptable materials indicated in various sections of the specifications, or on drawings, for materials are not intended to be comprehensive lists, or in any order of preference. The Contractor may offer any material, process, and/or equipment which complies with the governing specification and which he considers to be equivalent to that indicated or specified.

The Contractor shall, before installation, submit data substantiating a request for substitution of "an equal" item. The Contractor shall, at his own expense, furnish information and/or data concerning the material and/or equipment offered by him as an equivalent to that specified or indicated by name, and if the Engineer shall so require, the Contractor, at his own expense, shall have the said material tested as to its quality, strength, physical, chemical, and/or other pertinent characteristics, including the durability, finish, efficiency, dimensions, service, and suitability to perform the function intended to be served by the material and/or equipment.

The method of performing the test or tests shall be subject to the approval of the Engineer, and the results of said tests shall be reported promptly to the Engineer, who shall evaluate the results thereof and shall determine whether or not the substitute material and/or equipment so tested is deemed to be equivalent, and his findings shall be final. Installation and use of the material shall not be made until such substitute material has been approved by the Engineer. If a substitute offered by the Contractor is not found by the Engineer to be equal to the material specified, or indicated, then the Contractor shall furnish and install the item specified or indicated by name.

The time specified for completion of the work under the contract shall not be affected by any circumstances whatsoever developing from the provisions of this section.

SECTION 7.00 RESPONSIBILITY TO THE PUBLIC

7.01 PUBLIC CONVENIENCE

The Contractor shall so conduct his operations as to offer the least possible obstruction and inconvenience to traffic, and he shall have under construction no greater amount of work than he can prosecute properly with due regard for the rights of the public.

GENERAL PROVISIONS

The Contractor shall obtain prior approval from the Engineer for the closing or partial closing of any street, alley or other public thoroughfare. He shall also give advance notice of such closure to all agencies providing emergency services, including police, fire and ambulance services.

Unless otherwise provided by the plans or project specifications or authorized by the Engineer, vehicular access to properties at established driveways and pedestrian access to building entrances shall be provided and maintained by the Contractor, except for such periods of time as may be reasonably necessary to expeditiously complete those construction operations which preclude such access.

The Contractor shall conduct his operations in a manner which will minimize interference with the normal use of property adjacent to the construction.

Occupants of property fronting on the street shall be given at least 24 hours advance notice that the entire street or half the street, as the case may be, will be closed to vehicular traffic whenever necessary for the normal prosecution of the work. Such notices shall be given by the Contractor unless otherwise directed by the Engineer, or otherwise specified in the SPECIAL PROVISIONS. Parking of cars may be prohibited on streets where construction work, such as grading or paving operations are in progress. When directed by the Engineer, traffic shall be controlled or routed through the construction area, such as maintaining controlled or one-way traffic over one-half of the street while construction is progressing on the other half.

In order that all unnecessary delay to the traveling public may be avoided where ordered by the Engineer, the Contractor shall provide and maintain temporary "No Parking" and/or detour signs, pilot cars and station competent flagmen whose sole duties shall consist of directing the movement of public traffic either through or around the work. Signs shall be of standard size and design as approved by the Engineer and shall comply with the requirements specified in Section 7.03 hereof. Such signs shall be removed as soon as practicable or when directed by the Engineer.

The cost of all work involved in providing for public convenience including detours, as set forth in this article shall be considered as included in the prices paid for the various contract items of work and no additional allowance will be made.

7.02 DETOURS

The Contractor shall construct and maintain temporary detours as shown on the plans or specified in the SPECIAL PROVISIONS, or as necessary to provide adequate passage of public traffic and for protection of his work, or as determined necessary by the Contracting Agency. Routing and width of detours shall be approved by the Engineer.

Unless otherwise specified, when a detour is required the Contractor shall be governed by the following:

1. One day duration

   (a) Passable - no gravel but graded
   (b) Water and maintain smooth and dust free

2. One day to one week duration

   (a) Gravel
   (b) Water and maintain smooth and dust free

3. More than one week - if on a major or secondary arterial street (if on a collector street, treatment No. 2 above will suffice)

(a) Gravel 2 in. and graded
(b) Penetration with a minimum of .30 gal. per square yard MC70
(c) Maintain with patching of chuck holes

4. General Conditions

(a) If maintenance is not performed, the Contracting Agency will do the maintenance and bill the Contractor at rates specified in Section 4.08 and 4.09.
(b) When directed by the Engineer detours shall be removed and all ditches, etc. restored before the permit is closed out. If restoration is delayed more than one week after completion of work, the Contracting Agency will restore the area and bill the Contractor.
(c) Before pavement is cut, the Engineer must approve the construction and barricading.
(d) Provisions for public convenience and public safety shall be maintained in compliance with Section 7.01 through 7.03 hereof.

The Engineer will reserve the right to estimate the expected time the detour will be in use and will order construction accordingly.

7.03 PUBLIC SAFETY

The Contractor shall erect and maintain temporary fences, traffic control signs, bridges, railing, lights, and barriers, taking all other necessary precautions, and place proper guards for prevention of accidents. In the event any of the above items becomes misplaced, damaged, or destroyed, they shall be replaced immediately in their proper location.

All warning signs, barriers, barricades, lights and performance of flagmen shall conform to the "Oregon Manual on Uniform Traffic Control Devices for Streets and Highway" issued by the Oregon State Highway Department; local ordinances; and existing published rules and/or traffic control manuals and regulations of the Contracting Agency.

The Contractor shall at all times keep open or backfilled excavations in a safe or protected condition. In the event of the existence of unsafe or hazardous conditions in the Contractor's work or operations, the Contractor shall immediately take such measures as are necessary to eliminate the conditions.

The cost for all work involved in providing for public safety as set forth in this article shall be considered as included in the prices paid for the various contract items of work and no additional allowance will be made.

7.04 FIRE HYDRANTS

Access shall be provided to all fire hydrants at all times. Pavements and sidewalks adjacent to fire hydrants shall be kept clean and clear of debris, materials and contractor's equipment. The Contractor shall not draw any water from a fire hydrant for use on the work other than for extinguishing fire, without first obtaining permission from the owner. Slow-closing valves will be required in connection with the use of fire hydrants. Unnecessary wasting or leakage of water shall not be permitted.

In the event a fire hydrant is damaged, or for any reason becomes inoperative, or is placed out of service due to the nature of the construction, it shall be the Contractor's responsibility to immediately notify the owner and the Engineer.

7.05 USE OF EXPLOSIVES

The use of explosives will be permitted only when authorized in writing by the Engineer unless otherwise stated in the SPECIAL PROVISIONS. Explosives shall be handled, used, and stored in accordance with the provisions and requirements of all applicable laws, ordinances, and regulations with respect thereto. The approval by the Engineer for the use of explosives shall not relieve the Contractor from his responsibility.

7.06 SAFETY

Construction materials, equipment, methods and workmanship shall be in accordance with applicable local ordinances and State laws. The Contractor shall comply with the lawful orders and codes issued by the Workmen's Compensation Board of the State of Oregon.

7.07 LABOR

The Contractor shall be bound by and comply with all applicable provisions of the Revised Statutes of the State of Oregon and shall keep informed of and observe and comply with, and cause all of his agents and employees to observe and comply with, all Federal, State, and local laws which in any way affect the conduct of the work in this contract.

None but competent workmen shall be employed on any work under these specifications; and any laborer, workman, mechanic, foreman, superintendent, or other person so employed who is found to be incompetent, intemperate, troublesome, disorderly or otherwise objectionable, or who fails or refuses to perform his work properly and in an acceptable manner, shall be removed from the job immediately upon notification in writing, and not again be employed on the work unless approved by the Engineer.

7.08 NONDISCRIMINATION OF LABOR

The attention of the Contractor is directed to the provisions of Chapter 659, Oregon Revised Statutes relative to unlawful employment practices and discrimination by employers against any employee or applicant for employment because of race, religion, color, or national origin. Particular reference is made to ORS 659.030, which states that it is unlawful employment practice for an employer, because of the race, religion, color, or national origin of any individual, to refuse to hire or employ or to bar or discharge from employment such individual or to discriminate against such individual in compensation or in terms, conditions, or privileges of employment.

In the event the contract is funded in whole or in part by federal funds, the Contractor shall comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the Secretary of Labor.

In the event of the Contractor's noncompliance with the nondiscrimination clauses of a contract so funded, or with any such rules, regulations, or orders the contract may be cancelled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts for federally assisted construction contracts, in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 14, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

GENERAL PROVISIONS

7.09 MINIMUM WAGE, PAYMENT OF LABORERS AND MATERIALMEN

The Contractor shall comply fully with ORS 279.348 through 279.363, which provide in part that "the hourly rate of wage to be paid by any contractor or subcontractor to workmen upon all public works shall be not less than the prevailing rate of wage for an hour's work in the same trade or occupation in the locality where such labor is performed".

The provisions of this law do not apply to workmen or to persons regularly employed on a monthly or per diem salary. The "prevailing rate of wage", for the purposes hereof, shall be the rate of hourly wage and overtime paid in the locality, as hereinafter defined, to the majority of workmen in the same trade or occupation; provided, however, that if there is not a majority in the same trade or occupation paid at the same rate, the average rate of hourly wage and overtime paid in the locality to workmen in the same trade or occupation shall be the prevailing rate, and provided further, than when a contractor or subcontractor is a party to a state-wide agreement in effect with any labor organization, the rate of wages as established in the agreement shall be considered to be the prevailing rate in the locality.

If the wage paid by any contractor or subcontractor to workmen is based on a period of time other than an hour, the hourly wage shall be mathematically determined by the number of hours worked in that period. The "locality", for the purposes hereof, shall be the largest city in the county or counties in which the work under the contract is performed.

In case any dispute arises as to what is the prevailing rate of wage for the same trade or occupation in the locality and that dispute cannot be settled by the parties involved, the dispute shall be referred to the Commissioner of the State Bureau of Labor, who will determine the prevailing rate of wage for the same trade or occupation in the locality.

The minimum wage rates applicable to the work to be done under the contract are those prescribed under the provisions of ORS 279.348 through 279.356 and laws amendatory thereto. The Contractor is reminded that a provision of these statutes requires the certification and filing of the payroll with the owner at each of the following times: (1) once before the payment of the first monthly estimate, (2) once immediately after any change in the wage rates, and (3) once before final payment is made.

Copies of prevailing wage rates may be obtained from the Bureau of Labor, 115 Labor and Industries Building, Salem, Oregon 97310.

The Contractor shall: 1) Make payment promptly, as due, to all persons supplying to such contractor labor or material for the prosecution of the work provided for in such contract. 2) Pay all contributions or amounts due the Industrial Accident Fund from such contractor or subcontractor incurred in the performance of the contract. 3) Not permit any lien or claim to be filed or prosecuted against the state, county, school district, municipality, municipal corporation or subdivision thereof, on account of any labor or material furnished. 4) Pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.167.

Before payment is made by or on behalf of the Contracting Agency of any sum or sums due under the contract, the Contractor or his surety and every subcontractor or his surety shall submit a statement in writing in a form prescribed by the State Labor Commissioner certifying under oath the hourly rate of wage paid each classification of workmen employed by him upon the work under the Contract, and further certifying that no workmen employed by him upon work has been paid less than the prevailing rate of wage or less than the minimum hourly rate of wage specified in the contract. These statements are to be submitted to the Engineer in the manner and at the times designated by him.

In case of conflict between any of the minimum hourly wage rates set forth in the schedule above referred to and other pertinent minimum hourly wage rates, as such other rates may have been set forth in the contract provisions in accordance with the federal regulations, the higher of the conflicting wage rates shall be applicable under the contract.

There is no representation on the part of the Contracting Agency that labor can be obtained at the hourly rates as may be shown in the SPECIAL PROVISIONS. It is the responsibility of bidders to inform themselves as to local labor conditions and prospective changes or adjustments of wage rates. No increases in the contract price shall be allowed or authorized on account of the payment of wage rates in excess of those listed.

If the Contractor fails, neglects, or refuses to make prompt payment of any claim for labor or services furnished to the Contractor or a subcontractor by any person, or the assignee of the person, in connection with the public works contract as such claim becomes due, the proper officer or officers of the public Contracting Agency may pay such claim and charge the amount of the payment against funds due or to become due the Contractor by reason of the contract. (Reference: ORS 279.314).

7.10 HOURS OF WORK, SATURDAY, SUNDAY, HOLIDAY AND OVERTIME WORK

The Contractor shall comply fully with ORS 279.334 of the Oregon Revised Statutes, which reads as follows: "In all cases where labor is employed by the state, county, school district, municipality, municipal corporation, or subdivision, through a contractor, no person shall be required or permitted to labor more than eight hours in any one day, or 40 hours in any one week, except in cases of necessity, emergency, or where the public policy absolutely required it, in which event, the person or persons so employed for excessive hours shall receive at least time and a half pay for all overtime in excess of eight hours a day, or for work performed on Saturday and on ...legal holidays."

However, if it is necessary for the Contractor to perform construction work on Saturdays, Sundays, legal holidays or outside the 8 hours regular working day, the Contractor shall first notify the Engineer of his intent to do so prior to commencing such "overtime work". In any event, all work shall be subject to approval of the Engineer. Prior to start of such work, the Contractor shall arrange with the Engineer for the continuous or periodical inspection of the work, surveys, and tests of materials when necessary.

7.11 PERMITS AND LICENSES

Except for private contracts or unless otherwise specified elsewhere in these specifications, the Contracting Agency will obtain all other permits and licenses and pay any fees connected therewith, having to do with his construction operations.

7.12 CLEARING AND BURNING PERMITS

The Contractor shall comply fully with ORS 477.685 which reads, in part, as follows:

"(1) Before clearing any right-of-way for any highway or railroad, or any power, commercial telegraph or telephone line, or for any transmission or transportation utility right-of-way on any forest land, whether upon his land or that of another, where the clearing would constitute a fire hazard, every person shall file with the forester a general description of the right-of-way to be cleared. The forester shall issue a written permit for such clearing. The permit shall set forth the precautionary conditions and manner under which the clearing shall be done."

"(2) A person engaged in clearing any right-of-way or forest land shall not place on adjoining

land or property any forest material or debris resulting from such clearing without the permission of the owner of the adjoining land."

7.13 LICENSING OF CONTRACTORS

The Contractor shall be licensed in accordance with all state and local requirements.

7.14 PATENTS, FEES OR ROYALTIES

In the event that any patented article, material or process is to be installed or used in the performance of the work as shown on the plans or particular specifications therefore, the Contractor shall pay the royalty chargeable, if any, and shall save, keep and hold the Contracting Agency harmless from any damage, costs and expenses by reason of any infringement of the patent thereof, and any loss to the Contracting Agency if enjoined from using such patented article or material and the incidental damage caused by the loss of use and damage to the Contracting Agency's property in removing same, and the cost of replacing the article or material the use of which is enjoyed. Provided further the Performance-Payment Bond for faithful performance shall be deemed to be expressly applied to this provision of the specifications.

7.15 LIABILITY FOR MONIES DUE STATE COMMISSIONS

The Contractor shall promptly pay all contributions or amounts due the State Industrial Accident Fund and the State Unemployment Compensation Trust Fund from such Contractor or his subcontractors, incurred in the performance of the contract.

The Contractor shall pay all sums of money withheld from his employees and payable to the Department of Revenue pursuant to ORS 316.162 to 316.212.

7.16 LIABILITY FOR AMOUNTS DUE HOSPITAL ASSOCIATIONS, ETC.

The Contractor shall comply fully with ORS 279.320 which reads in part as follows:

"...The Contractor shall promptly, as due, make payments to any person, co- partnership, association, or corporation, furnishing medical, surgical and hospital care or other needed care and attention, incident to sickness or injury, to the employees of such Contractor, of all sums which the Contractor agrees to pay for such services and all monies and sums which the Contractor collected or deducted from the wages of employees pursuant to any law, contract or agreement for the purpose of providing or paying for such service."

7.17 CONTRACTOR'S CONSTRUCTION EQUIPMENT

The Contractor shall furnish and maintain in good condition all equipment and facilities including stairs, ramps, runways, scaffolds, hoists, etc., as required for the proper execution and inspection of the work. All such equipment and facilities shall meet all requirements of all ordinances and laws applicable thereto.

7.18 RIGHT-OF-WAY

The right-of-way for the improvement will be provided by the Contracting Agency. Unless the plans or specifications show additional work area to be provided by the Contracting Agency, the Contractor shall make his own arrangements and pay all expenses for additional area required by him

outside the limits of the right-of-way.

7.19 BUREAU OF LABOR AND INDUSTRIES FEE

The Contractor is required to pay a fee to the Bureau of Labor and Industries pursuant to the provisions of ORS 279.352(2). The fee is one-tenth of one percent of the price of this contract, but not less than $100 or more than $5,000, regardless of the contract price.

SECTION 8.00 PROSECUTION AND PROGRESS

8.01 PROGRESS OF THE WORK

The Contractor shall commence the work within 10 calendar days after receiving notice to proceed, unless otherwise stated in the SPECIAL PROVISIONS, and shall diligently prosecute the same to completion within the time limit specified.

8.02 CONTRACTOR'S CONSTRUCTION SCHEDULE

Before starting work, the Contractor shall submit for approval his proposed construction schedule to the Engineer. In the event the Contractor desires to carry on operations in more than one location simultaneously he shall submit for approval a schedule therefor, two weeks in advance of beginning such operations. In the event that the Contractor's proposed construction schedule does not meet the necessary construction program schedule as determined by the Contracting Agency, he may be required to resubmit a schedule that shall conform to an approved program of construction operations. The Contractor must obtain from the Engineer written approval of a construction schedule prior to start of work.

8.03 SUSPENSION OF WORK

The Engineer shall have the authority to suspend work wholly or in part for such periods as may be necessary because of unsuitable weather or unforeseen conditions or the failure of the Contractor to carryout lawful orders to comply with any of the provisions of the contract. The Contractor shall immediately suspend work when so ordered, and he shall resume work after such suspension only on written instruction from the Engineer. Upon receipt of such instructions to resume work, he shall immediately proceed with the work.

If through the fault of the Contracting Agency, the Contractor must suspend operations and incurs expenses or sustains losses which could not have been avoided by the judicious handling of forces and equipment, and if by a diligent prosecution of the work he could not have completed the work before such suspension, the Contractor will be paid such amounts as may be agreed upon between the Contractor and the Contracting Agency to be a fair and reasonable compensation and a commensurate extension of contract time will be granted.

If work is suspended through no fault of the Contracting Agency, all such expenses and losses incurred by the Contractor during such suspensions of work shall be borne in full by him. In the event the Contractor fails to properly provide for public safety, traffic, and protection of the work, during periods of suspension of work, the Contracting Agency may elect to do so, and deduct the cost thereof from monies due the Contractor.

8.04 TIME OF COMPLETION

The Contractor shall complete the work called for under the contract in all part and requirements within the number of calendar days set forth in the contract. Unless otherwise provided, all work shall be performed during normal working days. A working day is defined as any day except Saturdays, Sundays, legal holidays, days on which the Contractor is specifically required by the Contract to suspend construction operations, and days on which the Contractor is prevented from working by inclement weather or interference from utility relocation or alteration work.

Credit for inclement weather or interference from utility relocation or alteration work will be allowed only when the Contractor is prevented by such weather or utility work or conditions resulting immediately therefrom, from proceeding for at least five hours with at least 75% of the normal labor and equipment force engaged in the current controlling operation or operations. The current controlling operation or operations is to be construed to include any feature of the work which, if delayed at the time being considered, could delay the completion of the work beyond the contract period.

Should the Contractor prepare to begin work at the regular starting time in the morning of any day on which inclement weather or the conditions resulting from the weather, or the condition of the work, prevents the work from beginning at the usual starting time and the new crew is dismissed as a result thereof, the Contractor will not be charged for a working day whether or not conditions should change thereafter during said day and the major portion of the day could be considered suitable for such construction operations.

Determination of each nonworking day except Saturdays, Sundays, legal holidays, and days on which the Contractor is specifically required by the contract to suspend construction operations shall be made and agreed upon during such a day by conference between the Engineer and the Contractor. In the event of failure to agree, the Contractor will be allowed 15 days in which to file a written protest setting forth in what respects he differs from the Engineer. Otherwise the decision of the Engineer shall be deemed to have been accepted by the Contractor as correct.

8.05 LIQUIDATED DAMAGES

It is agreed by the parties of the contract that in case all of the work required under the terms of this contract is not completed within the number of calendar days as specified therefor in the contract or any lawful extension thereof as provided herein, damage will be sustained by the Contracting Agency as a result thereof, but to definitely determine and ascertain the actual amount of such damage, either before or after the occurrence thereof would be difficult and impractical. The sum stated in the SPECIAL PROVISIONS for liquidated damages for each and every calendar day that the completion of said work is delayed beyond the prescribed completion date, or lawful extension thereof, is hereby stipulated as being the nearest and most exact measure of such damage that can be fixed at this or any subsequent time; and when so assessed by the Contracting Agency, the Contractor shall become liable for and shall pay to the Contracting Agency as liquidated damages and not as a penalty said sum per day for each and every calendar day of such delay. When the amount of liquidated damages is not stated in the SPECIAL PROVISIONS it is agreed by the parties to the Contract that the amount of liquidated damages shall be One Hundred and Fifty Dollars ($150.00) per day for each and every day of such delay. The amount of such liquidated damages may be deducted by the Contracting Agency from any compensation due, or that may become due, the Contractor under his contract, and the Contractor and his sureties shall be liable for any excess.

It is further agreed that if the work is not finished and completed in all parts and requirements within the number of calendar days as specified therefor in the Contract or any lawful extension thereof as

provided herein, the Contracting Agency will have the right to extend the time for completion if to do so seems best to serve its interests; and in case said Contracting Agency decides to so extend the time limit for the completion of the work, it shall have further right to charge to the Contractor, his heirs, assigns, or sureties, all or any part as it may deem proper, the actual costs of engineering, inspection, supervision, and other overhead expenses, that are directly chargeable to the contract and accrue during the period of such extension, and deduct the amount thereof from the final payment for the work; provided, however, that the cost of the final survey and preparation of the final estimate will not be included in such charges.

In the event that the Contractor is directed to perform extra or additional work, the number of calendar days specified in the contract shall be extended by an amount determined by application to the original number of calendar days of the ratio that the value of the extra or additional work bears to the original contract value. Should the nature of the extra or additional work be such that the Contractor believes that a longer time extension should be granted than that computed by the above procedures, he may notify the Engineer in writing. The Contracting Agency may grant such additional time extension as it feels warranted.

Should any default, act or omission of the Contracting Agency, act of the State, act of public enemy or act of God, epidemic, quarantine restriction, strike, freight embargo, fire or flood cause any delay in the completion of the work the Contractor will not be assessed for liquidated damages nor engineering or other overhead charges for the period of such delay, provided that he shall, within ten (10) days subsequent to the beginning of any such delay, file a written report as to the cause thereof with the Engineer, who will ascertain the facts relative thereto and the extent of the delay, and whose finding in connection therewith shall be final and conclusive. The Contracting Agency shall not be liable to the Contractor for any damages on account of such delay.

8.06 RESPONSIBILITY OF CONTRACTOR AND OF CONTRACTOR'S REPRESENTATIVE ON THE WORKS

The Contractor shall give his personal attention and supervision to the work until same is entirely completed. In the absence of the Contractor from the work, he shall have a representative in charge who shall be competent to superintend and direct the progress of the work and who shall be authorized to receive instructions and to act for the Contractor on all matters relating to the work. The name, address and telephone number of this representative shall be sent by letter to the Engineer immediately after the awarding of the contract.

8.07 PROVISIONS RELATIVE TO DEFAULT BY CONTRACTOR

If, at any time, the Contractor shall neglect or refuse to prosecute the work with reasonable diligence, or should refuse or neglect to perform the work according to the drawings and specifications, as interpreted by the Engineer, the Contracting Agency will give him written notice to proceed. If the Contractor fails to comply with such notice within a period of seven (7) days, he shall be in default of the contract. The Contracting Agency will have the right, without further notice to the Contractor, and without voiding the Contract, to take possession of all materials, to complete the work, and to charge cost of so doing against the Contractor. Should the unpaid balance of the contract price exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expenses shall exceed the balance due the Contractor, the Contractor and his bondsmen agree to pay the excess to the Contracting Agency.

Notice, for the purposes of this section, may be served personally, or may be served by mail, addressed to the Contractor and his surety at their respective places of business as indicated in the contract documents.

The determination by the Engineer of the question as to whether any of the terms of the Contract or specifications have been violated, or have not been performed satisfactorily, shall be conclusive upon the Contractor, his surety, and any and all other parties who may have any interest in the Contract or any portion thereof.

The foregoing provisions of this section shall be in addition to all other rights and remedies available to the Contracting Agency under law.

8.08 TERMINATION OF CONTRACT

If Conditions encountered during the progress of the work make it impossible or impracticable to proceed with the work, the Contracting Agency may order the termination of the contract. Upon such termination, the Contracting Agency will pay the Contractor fair and reasonable compensation as agreed upon between the Contractor and the Contracting Agency. In the event that no agreement is reached between the Contractor and the Contracting Agency as to fair and reasonable compensation, the Contracting Agency will be liable to the Contractor only for the reasonable value of the work performed and any other actual costs sustained by the Contractor.

8.09 ADVERTISING

No advertising matter shall be attached or painted on surfaces of buildings, fences or canopies, except the names of contractors and subcontractors, with their addresses and the designation of their particular branch may be shown on signs of a removable type. Size and location of such signs shall be subject to approval of the Engineer.

8.10 ASSIGNMENT

No contract or any portion thereof, may be assigned without consent of the Contracting Agency except that money due the Contractor may be assigned as specified below.

The Contractor may assign money due or to become due him under the contract and such assignment will be recognized by the Contracting Agency, if given written notice thereof, to the extent permitted by law, but any assignment of money shall be subject to all proper set-offs and withholdings in favor of the Contracting Agency and to all deductions provided for in the contract, and particularly all money withheld, whether assigned or not, shall be subject to being used by the Contracting Agency for completion of the work in the event the Contractor should be in default therein.

8.11 SUBCONTRACTS

Names of subcontractors for all or any portion of the work shall be submitted to the Engineer prior to commencement of any subcontracted work. Such submittals shall state the types of work to be subcontracted and the names of the proposed subcontractors. Subcontracting all or any portion of the work shall not be construed to relieve the Contractor of any of his responsibility under the Contract.

No subcontractors will be recognized as such, and all persons engaged in the work of construction will be considered as employees of the Contractor. The Contractor will be held responsible for their work, which shall be subject to the provisions of the contract and specifications.

8.12 CERTIFICATE OF COMPLIANCE

The Contractor shall file with the Engineer, prior to the acceptance of the work, a certificate

in form substantially as follows: "I, (We) hereby certify that all work has been performed and materials supplied in accordance with the plans, specifications and contract documents for the above work, and that:

1. Not less than the prevailing rates of wages as ascertained by the Contracting Agency has been paid to laborers, workmen and mechanics employed on this work;

2. There have been no unauthorized substitutions of subcontractors; nor have any subcontracts been entered into without the names of the subcontractors having been submitted to the Engineer prior to the start of such subcontracted work;

3. No subcontract was assigned, transferred to, or performed by any subcontractor other than the original subcontractor, without prior notice having been submitted to the Engineer together with the names of all subcontractors.

4. All claims for material and labor and other service performed in connection with these specifications have been paid.

5. All monies due the State Industrial Accident Fund, the State Unemployment Compensation Trust Fund (ORS 279.510), the State Department of Revenue (ORS 316.162 to .212), hospital associations and/or others, (ORS 279.320), the State Bureau of Labor and Industries (ORS 279.352), have been paid."

SECTION 9.00 MEASUREMENT AND PAYMENT

9.01 METHODS OF MEASUREMENT

Materials and items of work which are to be paid for on the basis of measurement shall be measured in accordance with the methods stipulated in the particular sections herein covering materials or types of work.

When material is to be paid for on a volume basis and it would be impracticable to determine a volume by the specified method of measurement, or when requested by the Contractor and approved by the Engineer, the material will be weighed in accordance with the requirements specified for weight measurement and such weights will be converted to volume measurement for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities will be adopted.

Unless otherwise provided, when mineral aggregate or roadway material is being paid for by weight, deductions from pay quantities will be made for the weight of water in excess of 3% if the material is to be treated with bitumen, and 6% if the material is to be waterbound.

9.02 MEASUREMENT OF QUANTITIES FOR UNIT PRICE WORKS

Unless otherwise specified, linear or area quantities of work such as grading, landscaping, paving, curb, gutter, walk and other work of a similar nature shall be determined from measurements of dimensions of such work and computed in horizontal planes. However, linear quantities of underground cable, piling and timber, shall be considered as being the true length measured along the longitudinal axis thereof. For pipe work see related sections.

Volummetric quantities shall be determined by the average end area method.

9.03 UNITS OF MEASUREMENT

Measurements shall be in accordance with U.S. Standard Measures. A pound shall be avoirdupois. A ton shall be 2,000 pounds. The unit of liquid measure shall be the U.S. gallon.

9.04 CERTIFIED WEIGHTS

When payment is specified to be made on the basis of weight, the weighing shall be done on certified platform scales licensed in accordance with Chapter 618 Oregon Revised Statutes. The Contractor shall furnish the Engineer with licenses issued with the information required by Chapter 618 Oregon Revised Statutes. The Contractor shall pay all costs, if any, in connection with obtaining said information. The Contracting Agency will accept the certificates as evidence of the weight delivered.

9.05 PAYMENT

Once each month, the Engineer will make an approximate measurement of the work performed to that date and an estimate of the value thereof based on the contract prices. When the work has been satisfactorily completed, the Engineer will determine the final quantity of work performed and prepare the final estimate of the value thereof. The quantities listed in the bid schedule do not govern final payment. Payments to the Contractor shall be made only for the actual quantities of contract items performed in accordance with the plans and specifications and if upon completion of the construction these actual quantities show either an increase or decrease from the quantities given in the bid schedule, the contract unit prices will still prevail.

In unit price contracts, when an item for mobilization is included in the bid, this item shall include the cost of assembling of materials, plant, and equipment as set forth in said bid items, and as more fully described in the specifications. An evaluation for the purpose of payment for mobilization will be included in progress estimates in unit price contracts only when mobilizations is so set forth as an item in the bid. In such cases, the specifications will indicate a fixed sum or a percentage of the total bid price as a maximum that may be bid on this item.

In accordance with ORS Chapter 279, from each progress and final estimate, except on contracts for County roads and bridges, or unless otherwise required by the SPECIAL PROVISIONS, applicable Federal or State laws or local ordinances, 5% will be deducted and retained by the Contracting Agency, and the remainder less the amount of all previous payments will be paid to the Contractor.

At the expiration of 30 days from the date of acceptance of the work by the Contracting Agency, provided that the Contractor has furnished the Contracting Agency satisfactory receipts for all labor and material bills and waivers or liens from any and all persons holding claims against the wage rates as required by Section 279.354, Oregon Revised Statutes, the amount deducted from the final estimate and retained by the Contracting Agency will be paid to the Contractor, with the exception of such amounts as are required by law to be further retained.

Payments for work or materials performed or furnished under an assessment proceedings contract will be made as provided in the particular proceedings or legislative act under which such contract was awarded.

SECTION 10.00 REQUIREMENTS OF OREGON LAW FOR PUBLIC CONTRACTS

To any extent that they are not already incorporated into the Contract Documents the terms and conditions of ORS 279.310 to ORS 279.575 are an integral part of this Contract and Contract Documents, and incorporated herein at this point by reference.

Copy

PREVAILING WAGE RATES

for

Public Works Contracts in Oregon

OREGON BUREAU OF LABOR AND INDUSTRIES

Jack Roberts
Commissioner
Bureau of Labor and Industries

Effective July 1, 1997

Oregon

BUREAU
OF LABOR
AND INDUSTRIES

July 1, 1997

Jack Roberts
Commissioner

This booklet contains the prevailing wage rates for non-residential building and construction trades in the State of Oregon. These rates are effective July 1, 1997, and have been determined in accordance with ORS 279.348 through ORS 279.365. Rates are published in their entirety twice each year, although specific occupational rates may be amended more frequently

Prevailing wage rates are the minimum wages that must be paid to all workers employed in the construction, reconstruction, major renovation or painting of any public works. Copies of these rates must be incorporated into all bid specifications when the advertisement for a public works contract is issued. A provision that prevailing wage rates be paid must also be put in the contract. The rates in effect at the time the bid specifications are first advertised are those that apply for the duration of the project, with one exception; if during the bidding process the prevailing wage rates change, the public contracting agency has the option of amending the bid specifications to reflect such changes.

Legislative changes in the state's prevailing wage rate law are highlighted on page 7 of this publication.

If you identify any errors in the rates published, please bring them to the attention of the Prevailing Wage Rate Coordinator in Portland (731-4074). If you have any questions about the manner in which the prevailing wage rates are enforced, contact the Wage and Hour Division in Portland (731-4074).

JACK ROBERTS
Commissioner
Bureau of Labor and Industries

PORTLAND
800 NE Oregon St. # 32
Portland, OR 97232
(503) 731-4200
FAX (503) 731-4069

EUGENE
165 E 7th Street, Suite 220
Eugene, OR 97401
(541) 686-7623
FAX (541) 686-7980

BEND
1250 NE 3rd, Suite B105
Bend, OR 97701
(541) 388-6330
FAX (541) 388-6273

MEDFORD
700 E Main, Suite 105
Medford, OR 97504
(541) 776-6270
FAX (541) 776-6284

SALEM
3865 Wolverine St. NE; E-1
Salem, OR 97310
(503) 378-3292
FAX (503) 373-7636

PENDLETON
200 Hailey Ave., Suite 308
Pendleton, OR 97801
(541) 276-7884
FAX (541) 276-2950

AN EQUAL OPPORTUNITY EMPLOYER

Oregon

BUREAU
OF LABOR
AND INDUSTRIES

July 1, 1997

Jack Roberts
Commissioner

This booklet contains the prevailing wage rates for non-residential building and construction trades in the State of Oregon. These rates are effective July 1, 1997, and have been determined in accordance with ORS 279.348 through ORS 279.365. Rates are published in their entirety twice each year, although specific occupational rates may be amended more frequently

Prevailing wage rates are the minimum wages that must be paid to all workers employed in the construction, reconstruction, major renovation or painting of any public works. Copies of these rates must be incorporated into all bid specifications when the advertisement for a public works contract is issued. A provision that prevailing wage rates be paid must also be put in the contract. The rates in effect at the time the bid specifications are first advertised are those that apply for the duration of the project, with one exception; if during the bidding process the prevailing wage rates change, the public contracting agency has the option of amending the bid specifications to reflect such changes.

Legislative changes in the state's prevailing wage rate law are highlighted on page 7 of this publication.

If you identify any errors in the rates published, please bring them to the attention of the Prevailing Wage Rate Coordinator in Portland (731-4074). If you have any questions about the manner in which the prevailing wage rates are enforced, contact the Wage and Hour Division in Portland (731-4074).

JACK ROBERTS
Commissioner
Bureau of Labor and Industries

PORTLAND
800 NE Oregon St. # 32
Portland, OR 97232
(503) 731-4200
FAX (503) 731-4069

EUGENE
165 E 7th Street, Suite 220
Eugene, OR 97401
(541) 686-7623
FAX (541) 686-7980

BEND
1250 NE 3rd, Suite B105
Bend, OR 97701
(541) 388-6330
FAX (541) 388-6273

MEDFORD
700 E Main, Suite 105
Medford, OR 97504
(541) 776-6270
FAX (541) 776-6284

SALEM
3865 Wolverine St. NE; E-1
Salem, OR 97310
(503) 378-3292
FAX (503) 373-7636

PENDLETON
200 Hailey Ave., Suite 308
Pendleton, OR 97801
(541) 276-7884
FAX (541) 276-2950

AN EQUAL OPPORTUNITY EMPLOYER

TABLE OF CONTENTS
July 1, 1997

General information ---------- 1-3

Commonly asked questions ---------- 4-6

Booklet Note ---------- 7
Sample Language ---------- 8
Apprenticeship Rule Change Letter dated April 29, 1997 ---------- 9-12
July rate determination for:
Heavy-Entire State
Highway-Entire State and
Non-residential building **(exluding Coos, Curry, Douglas & Josephine Counties)** ---------- 13-26

Construction categories: ---------- 27-28

July rate determination for
Non-residential building in the counties of:
Coos, Curry, Douglas & Josephine ---------- 29-31

List of debarred contractors ---------- 32-33

Forms necessary to comply with ORS 279.348 through ORS 279.375 will be found in the back of this booklet.

Contractors are encouraged to use the forms provided as master copies, and to keep on file for prevailing wage rate projects.

THIS INFORMATION IS AVAILABLE IN AN ALTERNATE FORMAT

ANNOUNCEMENT

The prevailing wage rates contained in this booklet generally reflect non-residential building, heavy, and highway construction rates determined for Oregon by the Secretary of Labor of the United States pursuant to the Davis-Bacon Act; certain changes have been made to better reflect prevailing practices in Oregon. Pursuant to ORS 279.348 to ORS 279.380, these rates have been adopted for use on public works contracts in Oregon. If you have specific questions regarding how rates are determined or if you would like a copy of this booklet, please contact:

Prevailing Wage Rate Coordinator
Bureau of Labor and Industries
Wage and Hour Division
800 NE Oregon St. # 32
Portland, OR 97232
(503)731-4074

The first copy is free. Additional copies are available for $2.00 each.

GENERAL INFORMATION

Information in this section and in the "Commonly Asked Questions" is meant to provide a convenient reference to Oregon's Prevailing wage rate Law. **It is not a complete statement of the laws and rules.**

If you have questions about the enforcement of prevailing wage rates, please contact the Wage and Hour Division. Division offices may be reached at the following phone numbers:

Bend	(541)388-6330	Portland	(503)731-4074
Eugene	(541)686-7623	Salem	(503)378-3292
Medford	(541)776-6270		

Apprentices and Trainees

Apprentices and trainees may be employed on public works projects. To qualify as an apprentice or trainee, the worker must be registered in a bona fide apprenticeship or training program of the U.S. Department of Labor, Bureau of Apprenticeship and Training (BAT) or with any State Apprenticeship and Training Agency recognized by BAT. For information call (503) 731-4072. The apprentice or trainee must receive all **fringe benefits*** and a percentage of the journeyman's wage rate which is listed in this booklet. This rate may be different than the rate contained in the Apprenticeship Standards for the trade. The correct percentage shall be determined by the appropriate apprenticeship or training committee. All other workers must receive rates as published.

*** SEE APRIL 29, 1997 NOTICE REGARDING TEMPORARY ADMINISTRATIVE RULE RELATING TO PAYMENT OF FRINGE BENEFITS TO APPRENTICES AND TRAINEES. (PAGES 9-12)**

Zone Pay

In certain trades, the basic hourly rate of pay progressively increases based upon the distance between the job site and a designated landmark; this is commonly referred to as zone pay. To determine the hourly wage, find the correct zone based on the number of road miles the job site is from the closest designated city (based either on distance from city hall or from geographical center of the city, depending on the trade) and add the amount for that zone to the basic hourly rate. Zone pay, unlike travel pay, is the basic hourly wage upon which overtime is computed.

Bid Specifications

The specifications for every public works contract must include the current prevailing wage rates in effect at the time the specifications are first advertised. A statement incorporating the existing rates by reference will not satisfy this requirement (ORS 279.352). **All contracts and all contract specifications for a public work are required to include a provision stating that the fee shall be paid to the Bureau of Labor. Sample language is included in this booklet.**

NOTE: **If a public agency fails to include a provision that a contractor and any subcontractor shall comply with ORS 279.350 in the advertisement for bids, the request for bids, the contract specifications, the accepted bid or elsewhere in the contract documents, the liability of the public agency for unpaid wages shall be joint and several with any contractor or subcontractor that had notice of the requirement to comply.**

Fringe Benefits

Payments for fringe benefits are in addition to the basic hourly rate. The term "fringe benefits" refers to payments such as:

a) medical or hospital care; pensions on retirement or death; compensation for injuries or illness resulting from an occupational activity, or insurance to provide any of the foregoing;
b) unemployment benefits, life insurance, disability and sickness insurance or accident insurance;
c) vacation and holiday pay;
d) defraying costs of apprenticeship or other similar programs; and
e) other such bona fide benefits.

For the purpose of prevailing wage rates, fringe benefits do not include any benefits which may be required by federal, state or local law (e.g. Workers' Compensation, Unemployment Insurance, etc.).

Every contractor or subcontractor that provides for or contributes to a health and welfare plan or a pension plan, must post notice describing such plans in a conspicuous and accessible place on the project.[ORS 279.350(5)] Fringe benefits may be paid to the worker in cash or to a third party administering a fringe benefit program. When an hourly rate in excess of the required prevailing base rate is paid, the amount by which the rate is exceeded may be credited toward payment of fringe benefits.

Overtime

Senate Bill 234 was signed into law by the governor and became effective on June 9, 1997. It applies to contracts entered into on or after June 9, 1997. This legislation revised the provisions of ORS 279.334 regarding when payment of overtime is due for work performed on a public works job. The new law requires the payment of overtime for work performed in excess of 8 hours in a day or 40 hours in any one week when the work week is five consecutive days, Monday through Friday; or 10 hours a day or 40 hours in any one week when the work week is four consecutive days, Monday through Friday. Overtime must also be paid for all work performed on Saturday, Sunday and the following other legal holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

SB 234 also requires employers to give written notice to employees who perform work on public works contracts either at the time of hire or before commencement of work on the contract, or by posting a notice in a location frequented by employees, of the number of hours per day and days per week that employees may be required to work.

Overtime is calculated at not less than one and one-half times the basic hourly rate as determined by the Commissioner of Labor (not including fringe benefits which are paid at the straight rate for every hour worked). In the computation of overtime, travel pay does not need to be included, but zone pay differentials do.

Overtime (Continued)

Contractors who violate the requirements of the law are liable to the employees affected in the amount of their unpaid overtime wages and in an additional amount equal to the unpaid overtime wages as liquidated damages. Additionally, if the violation resulted from willful falsification of payroll records, the contractor shall be liable to the employees affected in the amount of their overtime wages and in additional amount equal to twice the unpaid overtime wages as liquidated damages.

NOTE: Contractors who are signatory to a collective bargaining agreement may be subject to different overtime requirements (ORS 279.334(3)).

Certification of Payroll

The law requires every contractor and subcontractor to file certain information on wages paid to each worker employed on a public works contract. This statement must completely and accurately reflect payroll records for the work week immediately preceding the submission. A contractor or subcontractor must complete and submit the certified statement contained on Form WH-38 as well as the information required on the weekly payroll. **Form WH-38 and instructions for completing it are included in this booklet.** The schedule for submitting payroll information is as follows: Once within 15 days of the date the contractor or subcontractor first began work on the project; once before the final inspection of the project by the public contracting agency; in addition, for projects exceeding 90 days, submissions are to be made at 90 day intervals. When work on a project starts and finishes in 15 days or less, the contractor or subcontractor which performed the work shall submit a payroll and certified statement form which accurately and completely sets out the payroll for all the work performed on the project. **Payroll information is to be filed with the public contracting agency.** The payroll information must be kept by the contractor and or subcontractor for three years.

COMMONLY ASKED QUESTIONS

1) What are "prevailing wage rates?"

A prevailing wage rate is the minimum wage, including fringe benefits, to be paid workers employed on contracts for public works. Different rates are established for specific trades and specific geographical areas.

2) Who must be paid "prevailing wage rates?"

All employees of a contractor or subcontractor engaged on a public works project when the total price of the project is **$25,000** or more must receive at least the prevailing wage rate (PWR) for time worked on the project, unless otherwise exempt.

Office/clerical employees and supervisory employees who are supervisory only and do not perform any hands-on labor are not required to be paid the PWR. A person who owns and operates his/her own truck on construction projects (Owner/Operator) is not required to be paid the PWR. **This does not include owner-operators of any other type of equipment such as bulldozer, scrapers, backhoes, cranes, drilling rigs, or welding machines.**

3) What about contracts when Federal funds are used?

When more than $2,000 of federal funds are involved, the contract is usually subject to the provisions of the federal Davis-Bacon Act, not Oregon PWR statutes. (Further information may be obtained from the U.S. Department of Labor, Wage and Hour Division, Portland, Oregon (503-326-3057).) In the event that federal funds are involved, but the contract is not regulated under the Davis-Bacon Act, Oregon's prevailing wage rate statutes may apply (ORS 279.348 - 279.380). **Oregon statutes pertaining to overtime requirements apply on both state and federally regulated contracts. (ORS 279.334).**

4) I don't have a pension fund. How do I calculate fringe benefits?

Workers must receive at a minimum the sum of the basic hourly rate plus all fringe benefits for each hour worked on a public works contract. Fringe benefits may be paid either to a third party trust account or in cash directly to the worker.

5) My employees receive health benefits. Do I get credit for the health benefit when I prepare my payroll on a public works project?

Yes. Any expenditures an employer makes for bona fide employee benefits can be charged against the fringe benefit payments designated in the prevailing wage rate booklet. To learn how to compute the correct hourly charge, call the Wage and Hour Division (503-731-4074).

6) What if the employees are not paid on an hourly basis?

All workers must receive at least the basic hourly rate of wage and fringe benefits for each hour worked on the project. If an employee is paid other than on an hourly basis, the equivalent hourly rate (for both wages and fringe benefits) must still be at least equal to the rates published.

7) How do I classify workers?

Virtually all of the job classifications/trades normally used in the non-residential construction industry are represented by the job classifications used in this PWR publication. These classification titles should be used according to common practice. If you need residential construction rates, or if you have questions about how to classify workers, contact the Prevailing Wage Rate Coordinator at (503)-731-4074.

Laborers who do basic work requiring no specific skills, training, or knowledge are generally classified as Group 1 Laborers. (Note that Landscapers are classified as Laborers, and Ornamental Ironworkers are classified as Ironworkers.)

COMMONLY ASKED QUESTIONS (Continued)

8) When are new rates determined? How long are they effective?

Prevailing wage rates are determined once each year by the Commissioner of the Bureau of Labor and Industries. The Commissioner may amend the rates at any time. The rates are usually amended at least once each year. The rates in effect at the time the bid specifications are first advertised are those that apply for the duration of the contract, with one exception. If during the bidding process the prevailing wage rate changes, the public contracting agency (not the contractor) has the option of amending the bid specifications to reflect such changes.

9) How do I post prevailing wage rates?

Every contractor or subcontractor employing workers on a public works project is required to post the applicable prevailing wage rates in a conspicuous and accessible place in or about the work-site. Rates need to be posted for the duration of the job. Contractors and subcontractors who intentionally fail to post the PWR can be made ineligible to receive any public works contract for up to three years.

10) What can I do about a contractor who is not complying with Oregon's PWR law?

File a complaint with the nearest office of the Oregon Bureau of Labor and Industries (see list of offices on page 1), or contact the Wage and Hour Division, Bureau of Labor and Industries, 800 NE Oregon St. # 32, Portland, Oregon 97232 (503-731-4074). You may also complain to the contracting agency, which has the contractual authority to pay PWR claims directly to a contractor's or subcontractor's workers (ORS 279.314).

11) What happens to contractors who do not comply with PWR statutes?

Contractors and subcontractors who pay less than the prevailing wage rates may be liable to the workers affected for the amount found due plus an equal amount as liquidated damages (ORS 279.356). **Also, the law now provides for a civil penalty of up to $5,000 for any violations of the prevailing wage rate laws, including ORS 279.348 to 279.380 and the prevailing wage rate administrative rules pursuant to those statutes.** Contracting agencies have the contractual authority to withhold payments due or to be due to the contractor or subcontractor in order to pay the unpaid prevailing wages directly to the worker (ORS 279.314).

Contractors and subcontractors who intentionally refuse to pay the prevailing wage rate to workers employed on public works or to post the PWR on the job site may be determined to be ineligible to receive any public works contracts for a period of up to three years (ORS 279.361). Workers employed by the contractor or subcontractors have a right of action against the surety of the prime contractor for any unpaid prevailing wages.

A list is kept of all contractors, subcontractors, and other persons ineligible to receive public works contracts and subcontracts. When a contractor or subcontractor is a corporation, the individual officers and agents of the corporation can be debarred in addition to the corporation. As a result, individuals who intentionally fail to pay or post the PWR are prevented from simply moving from one corporation to another.

In addition, ORS 279.073, provides that any person that loses a competitive bid for a construction contract may bring an action for damages against the person who is awarded the contract, if the losing bidder can establish that the winner has knowingly violated any one of several laws, including the requirement to pay prevailing wage rates while performing work under the contract. The losing bidder is entitled to recover, as liquidated damages, 10% of the losing bid amount, or $5,000, whichever is greater, plus reasonable attorney fees.

12) How much do I pay apprentices?

To qualify as an apprentice, the worker must be registered in a bona fide apprenticeship program of the U.S. Department of Labor, Bureau of Apprenticeship and Training (BAT) or with any State Apprenticeship Agency recognized by BAT. For information call (503) 731-4072. The apprentice is to receive all **fringe benefits*** and a percentage of the journeyman's wage rates.

listed in this booklet. This rate may be different than the rate contained in the Apprenticeship Standards for the trade. The correct percentage shall be determined by the appropriate apprenticeship committee. All other workers receive rates as published.

*** SEE APRIL 29, 1997 NOTICE REGARDING TEMPORARY ADMINISTRATIVE RULE RELATING TO PAYMENT OF FRINGE BENEFITS TO APPRENTICES AND TRAINEES. (PAGES 9-12)**

13) What records must I keep? For how long?

Contractors and subcontractors are required to keep records necessary to determine if prevailing wage rates were paid. These records must include the Payroll and Certified Statement Form (WH-38) as well as the following: The name and address of each employee; the work classification(s) of each employee; the rate(s) of wages and fringe benefits paid to each employee; the rate(s) of fringe benefit payments made in lieu of those required to be provided to each employee; total daily and weekly compensation paid to each employee; daily and weekly hours worked by each employee; apprenticeship and training agreements; any payroll and other such records pertaining to the employment of employees upon a public works contract.

Administrative rules on prevailing wage rates require that these records be kept for a period of three (3) years from the completion of the public work contract. Other legal considerations may require retention of records for a period greater than 3 years. Records relating to public works contracts must be maintained separately from records relating to private projects/contracts.

14) What forms are public agencies required to file with the Bureau of Labor and Industries?

Public agencies are required to prepare and file a list of every public improvement that the agency intends to fund during the subsequent budget period with the Commissioner of the Bureau of Labor and Industries (ORS 279.023[2]). If, after the original filing, the agency plans additional public improvements, a revised list is to be submitted (OAR 839-16-008[2]).

The "Notice of Award of Public Works Contract" is to be filed with the Wage and Hour Division within 30 days of the date when a contract is awarded which requires the payment of prevailing wage rates (i.e., is regulated under ORS 279.348 to 279.380). **Civil Penalties may be assessed for failure to file this Notice.**

Copies of the "Planned Public Improvement Summary" (Form No. WH-118), the "Capital Improvement Project Cost Comparison Estimate" (WH-119), and the "Notice of Award of Public Works Contract" (WH-81) can be found at the back of this booklet.

15) Does a contracting agency have any power to enforce payment of prevailing wage rates on its public works projects?

Yes. According to ORS 279.314, all public contracts for work or services must contain a clause or condition permitting the contracting agency to pay a worker's past due wage claim, charging the payment against funds due or to become due to the contractor.

All forms necessary to a public works project are printed in their entirety and provided in the back of this booklet. The instruction sheet WH-38A, is provided to assist contractors in completing the Payroll/Certified Statement.

A synopsis of Legislative changes affecting most public agencies which award contracts for public works projects and the contractors working on those projects is given below.

- The threshold for PWR projects is now $25,000.
- Contractors receiving public works contracts must pay a fee equal to one-tenth of one percent of the total contract price of the project.
- All contracts and contract specifications must contain a provision stating that the fee shall be paid to the Bureau.
- Contractors are no longer required to send copies of the certified payroll statements to the Bureau.
- Public contracting agencies may not divide projects to avoid compliance with the PWR law.
- Civil penalties of up to $5,000 may now be assessed for any violation of the PWR law or the administrative rules.
- Effective June 9, 1997, overtime requirements revised. *See "General Information" pages 2 & 3.*
- Effective September 1, 1996, Truck Driver coverage criteria changed.
- Effective April 29, 1997, fringe benefits for apprentices in specific occupations amended.

FOR MORE INFORMATION CONCERNING THESE CHANGES, CALL THE PREVAILING WAGE RATE COORDINATOR AT (503) 731-4074, EXT. 250.

WE HAVE ATTEMPTED TO MAKE ALL CHANGES NOTICEABLE BY PRINTING THEM IN BOLD TYPE.

Oregon

BUREAU
OF LABOR
AND INDUSTRIES

April 29, 1997

To: Interested Parties

From: Christine N. Hammond
Administrator
Wage and Hour Division

Jack Roberts
Commissioner

Re: Adoption of Temporary Prevailing Wage Rate Rules Relating to Fringe Benefits Paid to Apprentices and Trainees

Attached for your information is a copy of temporary prevailing wage rate (Division 16) administrative rules relating to the payment of fringe benefits to apprentices and trainees. These temporary rules were filed and became effective on April 29, 1997. The rules will be in effect through October 25, 1997, unless amended sooner.

The temporary rules provide that the rate of pay required to be paid for fringe benefits to registered apprentices and trainees be not less than the rate paid to the majority of apprentices and trainees in the same trade or occupation as determined by the commissioner. The rules also provide that if there is no majority in the same trade or occupation, apprentices and trainees must be paid the full amount of fringe benefits as determined by the commissioner.

Prior to the adoption of these temporary rules, the rules relating to the payment of fringe benefits to apprentices required apprentices and trainees to be paid the full amount of fringe benefits paid to journeymen. The agency has now determined that the prevailing practice in a limited number of trades is to pay apprentices and trainees a *percentage* of certain fringe benefits paid to journeymen, rather than the full amount. Accordingly, the temporary rules will now permit payment of a percentage of the fringe benefits paid to journeymen in those trades where there is a clear showing that the prevailing practice is to pay registered apprentices such a percentage.

For more information, or to request a determination by the commissioner pertaining to fringe benefits to be paid to apprentices, contact the Wage and Hour Division, Prevailing Wage Rate Unit, at (503) 731-4074, ext. 250.

g:\whd\admin\intpart.sam

PORTLAND
800 NE Oregon St. # 32
Portland, OR 97232
(503) 731-4200
FAX (503) 731-4069

EUGENE
165 E 7th Street, Suite 220
Eugene, OR 97401
(541) 686-7623
FAX (541) 686-7980

BEND
1250 NE 3rd, Suite B105
Bend, OR 97701
(541) 388-6330
FAX (541) 388-6273

MEDFORD
700 E Main, Suite 105
Medford, OR 97504
(541) 776-6270
FAX (541) 776-6284

SALEM
3865 Wolverine St. NE; E-1
Salem, OR 97310
(503) 378-3292
FAX (503) 373-7636

PENDLETON
200 Hailey Ave., Suite 308
Pendleton, OR 97801
(541) 276-7884
FAX (541) 276-2950

AN EQUAL OPPORTUNITY EMPLOYER

BEFORE THE COMMISSIONER

OF THE

BUREAU OF LABOR AND INDUSTRIES

OF THE

STATE OF OREGON

In the Matter of Rules Pertaining to Prevailing Wage Rates and Fringe Benefits Paid to Apprentices	)))	TEMPORARY RULES

Title: Payment of Prevailing Rate of Wage

Rule Number: OAR 839-016-0035

839-016-0035 (1) Every contractor or subcontractor employing workers on a public works project shall pay to such workers no less than the prevailing rate of wage for each trade or occupation, as determined by the Commissioner, in which the workers are employed.

(2) Every person paid by a contractor or subcontractor in any manner for the person's labor in the construction, reconstruction, major renovation or painting of a public work is employed and must receive no less than the prevailing rate of wage, regardless of any contractual relationship alleged to exist. Thus, for example, if partners are themselves performing the duties of a worker, the partners must receive no less than the prevailing rate of wage for the hours they are so engaged.

(3) Persons employed on a public works project and who are spending more than 20% of their time during any workweek in performing duties which are manual or physical in nature as opposed to mental or managerial in nature are workers and must be paid the prevailing rate of wage. Mental or managerial duties include but are not limited to administrative, executive, professional, supervisory or clerical duties.

(4) Persons employed on a public contract for the manufacture or furnishing of materials, articles, supplies or equipment (whether or not a public agency acquires title to such materials, articles, supplies or equipment during the course of the manufacture or furnishing, or owns the materials from which they are manufactured or furnished) are not workers required to be paid the

1Note: Material in [brackets] and *italics* is material that is deleted. Material that is **underlined** and **bold** is material to be added.

prevailing rate of wage unless the employment of such persons is performed in connection with and at the site of public work.

(5) Persons employed on a public works project who are employed by a commercial supplier of goods or materials must be paid no less than the prevailing rate of wage when the work is performed at the "site of work" as that term is defined in OAR 839-016-0004(19) or when the work is performed in fabrication plants, batch plants, barrow pits, job headquarters, tool yards or other such places that are dedicated exclusively or nearly so to the public works project.

(6) Persons employed on a public works project by the construction contractor or construction subcontractor to transport materials or supplies to or from the public works project are required to be paid the prevailing wage rate for work performed in connection with the transportation of materials or supplies at the "site of work" as that term is defined in OAR 839-016-0004(19).

(7) Persons employed on a public contract for service work as opposed to construction work are not workers required to be paid the prevailing rate of wage.

(8) Every apprentice, as defined in these rules, must be paid not less than the appropriate percentage of the applicable journeyman's wage rate and [*all*] fringe benefits as determined pursuant to ORS 279.348 to 279.363. Any worker listed on a payroll at an apprentice wage rate, who is not an apprentice as defined in these rules shall be paid not less than the applicable prevailing rate of wage for the classification of work actually performed. In addition, if the total number of apprentices employed exceeds the ratio permitted in the applicable standards, all apprentices so employed shall be paid not less than the applicable journeyman's prevailing wage rate for work actually performed.

(9) Every trainee, as defined in these rules, must be paid not less than the appropriate percentage of the applicable journeyman's wage rate and [*all*] fringe benefits determined pursuant to ORS 279.348 to 279.363. Any worker listed on a payroll at a trainee wage rate, who is not a trainee as defined in these rules shall be paid not less than the applicable prevailing rate of wage for the classification of work actually performed. In addition, if the total number of trainees employed exceeds the ratio permitted in the applicable standards, all trainees so employed shall be paid not less than the applicable journeyman's prevailing wage rate for work actually performed.

2Note: Material in [brackets] and *italics* is material that is deleted. Material that is **underlined** and **bold** is material to be added.

Title: Payment of Fringe Benefits

Rule Number: 839-016-0040

839-016-0040 (1) Each contractor and subcontractor required to pay workers the prevailing rate of wage must pay no less than the hourly rate of pay and fringe benefits as determined by the Commissioner.

(2) The rate of pay for fringe benefits paid to apprentices and trainees shall be not less than such rate paid to the majority of such apprentices and trainees in the same trade or occupation as determined by the commissioner. If there is no majority in the same trade or occupation, as determined by the commissioner, apprentices and trainees shall be paid the full amount of the fringe benefits.

[*(2)*] **(3)** The requirements of section (1) of this rule are met when the amount of the fringe benefit or benefits is paid to the worker, in cash, in lieu of a third party administering a fringe benefit or benefits program.

[*(3)*] **(4)** When a contractor or subcontractor pays an hourly rate of pay which exceeds that which is determined by the Commissioner, the amount by which the rate is exceeded may be credited toward payment of the amount of fringe benefits determined by the Commissioner for the trade or occupation.

[*(4)*] **(5)** When a contractor or subcontractor pays a rate for any one fringe benefit which exceeds that which is determined for the fringe benefit, the amount by which the rate is exceeded may be credited toward payment of the amount to be paid for all fringe benefits as determined by the Commissioner for the trade or occupation.

[*(5)*] **(6)** When a contractor or subcontractor pays an amount for fringe benefits which exceeds that which is determined by the Commissioner the amount by which it exceeds the determination may be credited toward payment of the hourly rate of pay as determined by the Commissioner.

g:\whd\pwr\temprule

3Note: Material in [brackets] and *italics* is material that is deleted. Material that is **underlined** and **bold** is material to be added.

OREGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

ASBESTOS WORKERS

Installation of insulation on mechanical systems for Thermal and Acoustical purposes, also the installation of fire stop penetrations on Electrical and Mechanical Systems.

Journeyman Asbestos Worker	23.98	6.38

Removal of regulated material on mechanical systems* which are not going to be scrapped.**

o Hazardous Materials Handler Mechanic	13.75	3.50

* Mechanical systems include pipes, boilers, ducts,flues, breaching, grease ducts and acid ducts. This also includes all labor connected with the handling and distribution of materials for these systems.

** The removal of all regulated materials from mechanical systems is exclusively the work of Hazardous Materials Handlers, unless the mechanical systems are going to be scrapped. Laborers do all removal of regulated materials on mechanical systems to be scrapped and any non mechanical(walls,ceilings,floors,beams etc.) insulation. They also do loading of any regulated material after it has been removed, bagged and tagged, as well as cleanup at the removal site and all work done at the disposal site. Persons performing the removal of regulated materials are classified as Group 3 Laborers.

NOTE: Regulated materials are those materials that are regulated for the purpose of protecting the environment or for personal protection by either E.P.A., O.S.H.A., DEQ or Federal O.S.H.A.

BOILERMAKERS	24.07	9.31

BRICKLAYERS/STONEMASONS

THIS TRADE IS TENDED BY "TENDERS TO MASONS" -PG. 24

Area 1 (add $0.75 per hour to Fringe for Refractory repair work.)	23.86	6.71
Area 2 (add $0.75 per hour to Fringe for Refractory repair work.)	22.12	5.88

Area 1

Baker	Hood River	Multnomah	Wallowa
Benton (a)	Lincoln (a)	Polk	Wasco (a)
Clackamas	Linn (a)	Sherman	Washington
Clatsop	Malheur (a)	Tillamook	Yamhill
Columbia	Marion	Umatilla	Gilliam
Morrow	Union		

BRICKLAYERS/STONEMASONS(Continued)

Area 2

Benton (b)	Douglas	Josephine	Linn (b)
Crook	Grant	Klamath	Malheur (b)
Coos	Harney	Lake	Wasco (b)
Curry	Jackson	Lane	Wheeler
Deschutes	Jefferson	Lincoln (b)	

a) North half
b) South half

CARPENTERS

Zone 1 (Base Rate):

o Group 1	22.44	7.00
o Group 2	22.59	7.00
o Group 3	22.94	7.00
o Group 4	23.09	7.00
o Group 5	22.94	7.00
o Group 6	23.09	7.00
o Group 7	23.44	7.00

Zone Differential for Carpenters
(Add to Zone 1 Rate)

Zone 2	.85
Zone 3	1.25
Zone 4	1.70
Zone 5	2.00
Zone 6	3.00
Zone 7	**5.00**

Zone 1: Projects within 30 miles of City Hall in the Cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 60 miles.
Zone 5: More than 60 miles but less than 70 miles.
Zone 6: More than 70 miles but less than 100.
Zone 7: More than 100 miles from the city hall of the employee's home local.

Reference cities for Group 1 and 2 Carpenters

Albany	Eugene	Longview	Portland
Astoria	Goldendale	Madras	Port Orford
Baker	Grants Pass	Medford	Reedsport
Bend	Hermiston	McMinnville	Roseburg
Brookings	Hood River	Newport	Salem
Burns	Klamath Falls	Oregon City	The Dalles
Coos Bay	LaGrande	Ontario	Tillamook
Corvallis	Lakeview	Pendleton	Vancouver

Zones for Groups 3 and 4 Carpenters are determined by the distance between the project site and **either**
1) the worker's residence; *or*
2) City Hall of a reference city
for the appropriate group shown, whichever is closer.

OREGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

ARPENTERS (Continued)

Reference Cities for Group 3 and 4 Carpenters

gene Medford Portland Vancouver
ngview North Bend The Dalles

nes for Groups 5, 6 and 7 Carpenters are determined follows:

1. For those workers who reside within zone 1 of a reference city below, their zone pay differential shall be computed based upon the distance from the city hall of that city to the project site.

2. For those workers who reside nearer to the project than is the city hall of any reference city below, the mileage from their residence to the project may be used in computing their zone pay differential.

3. The zone pay differential for all other projects shall be computed from the city hall of Longview, North Bend, or Portland, whichever is closer to the project.

eference Cities for Groups 5, 6 and 7

Astoria Eugene Newport Salem
Bend Klamath Falls Portland The Dalles
North Bend Medford Roseburg Longview

Group 1

uto. Nailing Machine
arpenters
Form Stripper
anhole Builders
on-irritating Ins.
abinet & Shelving Installers (wood or steel)

Group 2

Floor Layers & Finishers
Stationary Power Saw Operators
Wall & Ceiling Insulators
Irritating Insulation

Group 3

Millwrights
achine Erectors
achinists

Group 4

Millwright/Welders (Certified Welders receive $0.25/hour over Group 3)

Group 5

idge, Dock & Wharf Builders
Piledrivermen

Group 6

Boom Men

Group 7

Marine Piledriver

EMENT MASONS

THIS TRADE IS TENDED BY "CONCRETE LABORERS" PG. 17

one 1 (Base Rate)		
o Group 1	21.61	7.00
o Group 2	22.00	7.00
o Group 3	22.00	7.00
o Group 4	22.39	7.00

CEMENT MASONS (Continued)

Group 1 Cement Masons, finishing, hand chipping and patching grouting, end pointing, screed setting, plugging, filling bolt holes, dry packing, setting curb forms, planks, stakes, lines and grades.

Group 2 Composition Workers (includes installation of epoxy & other resinous toppings), and Power Machine Operators.

Group 3 Cement masons working on suspended, swinging and/or hanging scaffold.

Group 4 Cement Masons performing work of both Group 2 and Group 3 at the same time.

Zone Differential for Cement Masons
(Add to Zone 1 Rate)

Zone 2	.65
Zone 3	1.15
Zone 4	1.70
Zone 5	2.75

Zone 1: Projects within 30 miles of City Hall in the cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 80 miles.
Zone 5: More than 80 miles.

Cities

Bend Eugene Medford Salem Vancouver
Corvallis Longview Portland The Dalles

DIVERS & DIVERS' TENDERS

o Divers	55.15	7.00
o Divers' Tenders	24.71	7.00

Depth Pay and Enclosure Pay are added to the Divers' Basic Hourly Rate to obtain the Total Hourly Rate for the diver.

Basic Hourly Rate	+	Hourly Depth Pay	+	Hourly Enclosure Pay	=	Divers' Total Hourly Pay

o Divers' Depth Pay

Depth of Dive	Hourly Depth Pay
50-100 ft	([total ft- 50] x $1.00)/hr.
100-150 ft	$ 50 + ([total ft-100] x $1.50)/hr.
150-200 ft	$125 + ([total ft-150] x $2.00)/hr.

ADE	BASIC HOURLY RATE	FRINGE BENEFITS

ERS & DIVERS' TENDERS (Continued)

ivers' Enclosure Pay(working without vertical escape)

tance Travelled the Enclosure	Hourly Enclosure Pay
5 - 50 ft	$ .50/hr
50 - 100 ft	$ .63/hr
100 - 150 ft	$ 2.13/hr
150 - 200 ft	$ 4.63/hr
200 - 300 ft	$ 4.63 + ([total ft-200]x $.05)/hr
300 - 450 ft	$ 9.63 + ([total ft-300]x $.10)/hr
450 - 600 ft	$24.63 + ([total ft-450]x $.20)/hr

EDGING

ne 1 (Base Rate):

Leverman (Hydraulic, Dipper, Floating Clamshell)	26.71	6.85
Asst. Engineer (including: WatchEngineer, Welder, Mechanic, Machinist)	25.91	6.85
Tenderman (Boatman, Attending Dredge Plant);		
Fireman	25.32	6.85
Fill Equipment Operator	24.79	6.85
Assistant Mate (Deckhand);		
Oiler	23.16	6.85

ne Differential for Dredging (Add to Zone 1 Rate)

Zone 2	2.00
Zone 3	3.00

ne 1: Center of job site not more than30 miles from the City Hall of Portland
ne2 More than 30 miles but not more than 50
ne 3 Over 50 miles

YWALL/WETWALL

Drywall (Accoustical and Drywall Applicator)	20.58	8.02
Wetwall (Lather)	19.56	9.04

ECTRICIANS

ea 1:		
Electricians	20.44	5.45
Cable Splicers	22.48	5.51
ea 2:		
Electricians	25.20	7.59
Cable Splicers	26.46	7.62
ea 3:	23.30	8.45
ea 4:		
lectricians	25.90	6.98
able Splicers	28.94	7.05

ELECTRICIANS (Continued)

Area 5:		
o Electricians	25.50	8.92
o Cable Splicers	26.25	8.94
Area 6:		
o Electricians	23.05	7.44
o Cable Splicers	23.05	7.44

Area 1	Area 2	Area 2(cont)	Area 3
Malheur	Baker	Umatilla	Coos
	Gilliam	Union	Curry
	Grant	Wallowa	Lincoln
	Morrow	Wheeler	**Douglas (a)
			Lane (a)

Area 4	Area 5	Area 5(cont)	Area 6
Benton	Clackamas	Washington	Harney
Crook	Clatsop	Yamhill (d)	Jackson
Deschutes	Columbia		Josephine
Jefferson	Hood River		Klamath
Lane (b)	Multnomah		Lake
Linn	Sherman		**Douglas (b)
Marion	Tillamook		
Polk	Wasco		
Yamhill(c)			

a) Those portions lying west of a line running North and South from the NE corner of Coos County to the SE corner of Lincoln County
b) That portion lying east of a line running North and South from the NE corner of Coos County to the SE corner of Lincoln County
c) South half
d) North half

ELEVATOR CONSTRUCTORS

Area 1

o Mechanic	26.89	6.85 + a
o Helper	18.82	6.64 + a
o Probationary Helper	13.45	.36

Area 2

o Mechanic	28.27	6.89 + a
o Helper	19.79	6.67 + a
o Probationary Helper	14.14	.38

a) Plus 8% of basic hourly rate for employees with more than 5 years of service; 6% of basic hourly rate for 6 months to 5 years of service.

REGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
EVATOR CONSTRUCTORS (Continued)		
Area 1: Umatilla, Wallowa, Union, Baker		
Area 2: All Remaining Counties		
LAZIERS		
Area 1	22.87	4.94
(Add $1.00 to base rate if safety belt is required by State safety regulations)		
(Add $4.00 to base rate for work done from a non-motorized single-man bosun chair)		
rea 2	14.86	4.94
(Add $0.50 to base rate if working at over 35 feet of free fall in height)		
Area 1: All Counties except Malheur		
Area 2: Malheur		
IGHWAY / PARKING STRIPERS	20.43	4.09
IRONWORKERS	21.50	9.92
Structural, Reinforcing, Ornamental, Riggers, Fence Erectors, Signal Men		
LABORERS		
one 1 (Base Rate):		
o Group 1	18.34	7.05
o Group 2	18.72	7.05
o Group 3	19.04	7.05
o Group 4	19.30	7.05
o Group 5	16.55	7.05

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Hazardous Waste Site. A Group 1 base rate is used for General Laborer on such a site. For further information on this, call the Prevailing Wage Rate Coordinator at 731-4074.

Zone Differential for Laborers

(Add to Zone 1 Rate)

Zone 2	.65
Zone 3	1.15
Zone 4	1.70
Zone 5	2.75

LABORERS (Continued)

Zone 1: Projects within 30 miles of City Hall in the Cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 80 miles.
Zone 5: More than 80 miles.

Reference Cities

Albany	**Burns**	**Hermiston**	**Portland**
Astoria	**Coos Bay**	**Klamath Falls**	**Roseburg**
Baker City	**Eugene**	**Medford**	**Salem**
Bend	**Grants Pass**	**Pendleton**	**The Dalles**

Group 1

Asphalt Plant Laborers	Guardrail, Median Rail (c)
Asphalt Spreaders	Landscape or Planting Laborer
Batch Weighman	Leverman or Aggregate Spreader (d)
Broomers	Loading Spotter
Brush Burners/Cutters	Material Yard Man (e)
Carpenter Tender	Powderman Assistant
Car & Truck Loaders	Railroad Track Laborers
Change-House Man	Ribbon Setters (f)
Chipper Operator (a)	Rip Rap Man (Hand Placed)
Choke Setter	Road Pump Tender and moving
Clean-up Laborers ***	Sewer Laborer
Curing, concrete	Signalman
Demolition, wrecking (industrial) ***	Skipman
Driller Assistant	Slopers
Dry-shack Man	Sprayman
Dumpers, road oiling crew	Stake Chaser
Dumpmen for grading crew	Stockpiler
Elevator Feeders	Tie Back Shoring
Fence Builder	Timber Faller/Bucker (Hand Labor)
Fine Graders	Toolroom Man (Job Site)
Fire Watch	Weight-Man-Crusher (g)
Form Strippers (b)	
General Laborer ***	

a) Pittsburg or similar types
b) Not swinging stages
c) Reference Post, Guide Post, or Right-of Way Marker
d) Flaherty, and similar types
e) Including electrical
f) Including steel forms
g) Aggregate when used

*** Laborers can tear off roofs, clean up or handle roofing materials only when at least one new story is added or in demolition work, where no reroofing will occur.

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

BORERS (Continued)

roup 2

plicators (a)
ush Cutters (b)
rners
oker Splicer
ury Power Spreader(c)
an up Nozzleman-
reen Cutter (d)
ncrete Laborers
ncrete Power Buggyman
usher Feeder
molition/Wrecking (e)
nnite Nozzleman Tender
Gunite or Sandblasting
Pot Tender
Handlers/Mixers (f)
Pipe Doping & Wrapping
Post Hole Digger, Air, gas or electric
Power Tool Operators (g)
Sand Blasting (wet)
Stake Setter
Tampers
Vibrating Screed

a) Including Pot Tender for same, applying protective material by hand or nozzle on utility lines or storage tanks on project

b) Power saw

c) And similar types of spreaders

d) Concrete, rock, etc.

e) Charred Materials

f) Of all materials of an irritating nature including cement and lime

g) Includes, but not limited to: Dry Pack Machine, Jackhammer, Chipping Guns, Paving Breakers

roup 3

Asbestos Removal
Bit Grinder
Concrete Saw Operator
Drill Doctor
Drill Operators (a)
Laser Beam (b)
Manhole Builder
Nippers & Timbermen
Nuclear Plant Worker
Lead Shield
Power Saw Operators (c)
Sand Blasting (dry)
Sewer Timberman
Track Liners (d)
Tugger Operator
Vibrators(all)
Water Blaster
Welder

a) Air Tracks, Cat Drills, Wagon Drills, Rubber-mounted drills, and other similar types

b) Pipe laying, applicable when employee assigned to move, set up, align Laser Beam.

c) Bucking and falling

d) Anchor Machines, Ballast Regulators, Multiple Tampers, Power Jacks

LABORERS (Continued)

Group 4

Asphalt Rakers
Concrete Nozzlemen
Grade Checker
High Scalers, Strippers, Drillers (a)
Laser Beam (Tunnel), applicable when employee assigned to move, set-up, align laser beam
Loop Installation
Motorman - Dinky Locomotive
Pipe Layers (all)
Powder Men
Shield Operator
Tunnel Bull Gang (Above Ground)
Tunnel Chuck Tenders
Tunnel Miners
Tunnel Muckers/Brakeman/Concrete Crew/Bull Gang (Underground)
Tunnel Powderman

a) Covers work in Swinging Stages, chairs or belts, under extreme conditions unusual to normal drilling, blasting, barring-down, or sloping and stripping

Group 5

Clean-up Laborers (building only)***
Demolition, Wrecking, & Moving (building only)***
Flagger

*** Laborers can tear off roofs, clean up or handle roofing materials only when at least one new story is added or in demolition work, where no reroofing will occur.

LIMITED ENERGY ELECTRICIANS

May only be used for electrical work not exceeding 100 va in Class II and III installations (as defined in Article 725 of the National Electrical Code):

Area 1	20.05	6.55
Area 2	20.05	6.55
Area 3	**16.79**	**4.25**
Area 4	**16.79**	**4.25**
Area 5	**16.79**	**4.25**
Area 6	**16.79**	**4.25**
Area 7	**16.79**	**4.25**
Area 8	**16.79**	**4.25**
Area 9	20.05	6.55
Area 10	**16.79**	**4.25**
Area 11	**16.79**	**4.25**
Area 12	20.05	6.55
Area 13	20.05	6.55
Area 14	20.05	6.55

LIMITED ENERGY ELECTRICIANS (Continued)

Area 1 Clatsop, Columbia, Tillamook
Area 2 Clackamas, Multnomah, Washington, Yamhill (north half)
Area 3 Marion, Polk, Yamhill (south half)
Area 4 Benton, Lincoln, Linn
Area 5 Lane
Area 6 Douglas
Area 7 Coos, Curry
Area 8 Jackson, Josephine
Area 9 Hood River, Sherman, Wasco
Area 10 Crook, Deschutes, Jefferson
Area 11 Klamath, Lake, Harney
Area 12 Gilliam, Grant, Morrow, Umatilla, Wheeler
Area 13 Baker, Union, Wallowa
Area 14 Malheur

LINE CONSTRUCTION

Area 1:

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
o Group 1	26.91	6.44
o Group 2	24.27	6.35
o Group 3	18.83	5.15
o Group 4	20.91	5.23
o Group 5	18.26	5.14
o Group 6	17.15	5.09

Area 2:

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
o Cable Splicers	23.38	5.24
o Journeyman Lineman	21.20	5.16
o Line Equip. Mech. (Right-of-way)	17.98	5.01
o Line Equip. Oper.	17.98	5.01
o Groundman	13.15	4.80

Area 1 All counties except Malheur County
Area 2 Malheur County

Group 1
Cable Splicers
Leadman Pole Sprayer

Group 2
Certified Lineman Welder
Heavy Line Equipment Man
Lineman
Pole Sprayer

Group 3
Tree Trimmer

Group 4
Line Equipment Man

Group 5
Head Groundman
Jackhammer Man
Powderman

Group 6
Groundman

MARBLE SETTERS (Includes Granite)

THIS TRADE IS TENDED BY "TILE, TERRAZZO, BRICK MARBLE FINISHERS" PG. 25

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
Area 1	24.86	6.71
Area 2	23.12	5.88

Area 1

Baker	Hood River	Multnomah	Wallowa
Benton (a)	Lincoln (a)	Polk	Wasco (a)
Clackamas	Linn (a)	Sherman	Washington
Clatsop	Malheur (a)	Tillamook	Yamhill
Columbia	Marion	Umatilla	
Gilliam	Morrow	Union	

Area 2

Benton (b)	Douglas	Josephine	Linn (b)
Crook	Grant	Klamath	Malheur (b)
Coos	Harney	Lake	Wasco (b)
Curry	Jackson	Lane	Wheeler
Deschutes	Jefferson	Lincoln (b)	

a) North half
b) South half

PAINTERS & DRYWALL TAPERS

Area 1

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
o Brush, Roller	14.51	2.99
o Spray and Sandblasting	15.11	2.99

Area 2

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
o Brush Painting	18.46	3.14

(Add $0.60 to base rate for spray, sandblasting,other pressure blasting over 3000 psi, and steam cleaning.)
(Add $0.50 to base rate for work over 60 ft high on swing stage, mechanical climber, spider, or bucket truck.)

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
o Drywall Tapers	22.80	5.83

Area 1 Malheur County
Area 2 Remaining Counties

PLASTERERS

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
o Nozzleman	23.41	5.86
o Swinging scaffold	22.41	5.86
o all other work	21.91	5.86

EGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

LDE	BASIC HOURLY RATE	FRINGE BENEFITS

MBERS & STEAMFITTERS/PIPEFITTERS

1 (Both)	22.19	6.67

Zone Differential for Area 1 Plumbers & Steamfitters/Pipefitters

(Add to Zone 1 Rate)

Zone 2	$ 1.20 per hour
Zone 3	$ 1.70 per hour
Zone 4	$ 2.50 per hour
Zone 5	$ 3.55 per hour
Zone 6	$30.32 per day

1: Projects within 15 miles of City Hall in the Cities listed below.
2: More than 15 but less than 30
3 More than 30 but less than 40
4 More than 40 but less than 50
5 More than 50 but less than 100
6 More than 100 miles

th distances in Zone 6, 100 miles and beyond, there shall minimum of one hundred fifty-one dollars and sixty cents 51.60) per week or thirty dollars and thirty-two cents 0.32) per day worked.

erence Cities

se, Idaho
In Falls, Idaho

2 (Both)	27.30	9.05
3 (Both)	26.15	8.25

Area 1	Area 2	Area 3
Baker	Grant (b)	All remaining
Harney (a)	Morrow	counties
Malheur	Umatilla	
	Wallowa	
	Union	

Except Northwest Portion
Except Southwest Corner

WER EQUIPMENT OPERATORS

1 (Base Rate):

o Group 1	22.96	7.15
o Group 2	22.55	7.15
o Group 3	21.85	7.15
o Group 4	21.38	7.15
o Group 5	20.82	7.15
o Group 6	19.13	7.15

POWER EQUIPMENT OPERATORS (Continued)

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Hazardous Waste Site. For further information on this, call the Prevailing Wage Rate Coordinator at 731-4074.

ZONE RATES
(Add to Zone 1 Rate)

Zone 2	1.50
Zone 3	3.00

ZONE DESCRIPTIONS

Portland to Salem Metropolitan Area

Zone 1:
Projects within the boundary of a region described as follows: Those portions of Multnomah, Clackamas, and Marion Counties which are West of the western boundary of Mt. Hood National Forest and West of Mile Post 30 on Interstate 84 and West of Mile Post 30 on State Highway 26 and West of Mile Post 30 on Highway 22. Also those portions of Washington County East of Highway 47, and of Yamhill County East of Highway 47 and Hwy. 99W.

Zone 2:
Projects outside of any Zone 1, but less than 50 miles from the Portland city hall.

Zone 3:
Projects outside of any Zone 1 or 2, and more than 50 miles from the Portland city hall.

Albany, Eugene, Roseburg, Grants Pass, Medford

Zone 1:
Projects within 30 miles of the City Hall of the above cities.

Zone 2:
Projects outside of any Zone 1 and more than 30 miles but less than 50 miles from the city hall.

Zone 3:
Projects outside of any Zone 1 or 2, and more than 50 miles from the city hall.

Longview, Coos Bay, Klamath Falls, Bend

Zone 1:
Projects within 20 miles of the City Hall of the above cities.

Zone 2:
Projects outside of any Zone 1, and more than 20 but less than 40 miles from the city hall.

Zone 3:
Projects outside of any Zone 1 or 2, and more than 40 miles from the city hall.

OREGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

POWER EQUIPMENT OPERATORS (Continued)

Astoria, The Dalles, Pendleton, LaGrande, Baker, Ontario, McMinnville

Zone 1 :
Projects within 5 miles of the city hall of the above cities.
Zone 2:
No Zone 2 for these cities.
Zone 3:
Projects outside of any Zone 1 or 2, and more than 5 miles from the city hall.

ASPHALT

6 Plant Oiler
6 Plant Fireman
6 Pugmill Operator (any type)
6 Truck mounted asphalt spreader, with screed
4 Screed Operator
6 Extrusion Machine Operator
2 Asphalt Plant Operator (any type)
4 Asphalt Paver Operator
6 Roller Operator (any asphalt mix)
4 Diesel-Electric Engineer, Plant
5 Asphalt Burner and Reconditioner Operator anytype),84
4 Roto-Mill, pavement profiler operator, under 6 foot lateral cut
5 Roto-Mill, pavement profiler, ground man
2 Roto-Mill, pavement profiler operator, 6 foot lateral cut and over

BLADE

6 Blade Operator, pulled type
4 Blade Operator
4 Blade Operator, Finish
4 Blade Operator, externally controlled by electronic, mechanical hydraulic means
4 Blade Operator, multi-engine
2 Auto Grader or "Trimmer" Operator

BULLDOZERS

4 Bulldozer Operator
4 Drill Cat Operator
4 Side-Boom Operator
2 Tandem bulldozer operator (quadnine and similar type, D-11)
4 Bulldozer Operator, twin engine (TC 12 and similar type, D-10)
4 Cable-Plow Operator (any type)

CLEARING

4 Log Skidder Operator
4 Chipper Operator
4 Incinerator Operator
4 Stump Splitter Operator
4 Faller/Buncher Operator

POWER EQUIPMENT OPERATORS (Continued)

COMPRESSORS

6 Compressor Operator (any power), under 1,250 cu. ft.total capacity
5 Compressor Operator (any power), over 1,250 cu. ft. capacity)

COMPACTORS - Self-Propelled

5 Compactor Operator, including vibratory
5 Wagner Patcor Operator or similar type (without blade)
4 Compactor Operator, with blade
4 Compactor Operator, multi-engine

CONCRETE

6 Plant Oiler
6 Assistant Conveyor Operator
6 Conveyor Operator
6 Mixer Box Operator (C.T.B., dry batch, etc.)
6 Cement Hog Operator
6 Concrete Saw Operator
6 Concrete Curing Machine Operator (riding type)
6 Wire Mat or Brooming Machine Operator
5 Combination Mixer and Compressor Operator, gunite work
5 Concrete Batch Plant Quality Control Operator
5 Beltcrete Operator
5 Pumpcrete Operator (any type)
5 Pavement Grinder and/or Grooving Machine Operator (riding type)
4 Mixer Mobile Operator
5 Cement Pump Operator, Fuller-Kenyon and similar
5 Concrete Pump Operator
5 Grouting Machine Operator
4 Screed Operator
4 Concrete Cooling Machine Operator
5 Concrete Mixer Operator, single drum, any capacity
2 Batch Plant and/or Wet Mix Operator, 1 and 2 drum
1 Batch Plant and/or Wet Mix Operator, 3 units or more
5 Cast in place pipe laying machine
5 Maginnis Internal Full Slab Vibrator Operator
5 Concrete Finishing Machine Operator, Clary, Johnson, Bidwell, Burgess bridge deck or similar type
5 Curb Machine Operator, Mechanical Berm, Curb and/or Curb and Gutter
5 Concrete Joint Machine Operator
5 Concrete Planer Operator
5 Tower Mobile Operator
5 Power Jumbo Operator setting slip forms etc., in tunnels
5 Slip Form Pumps, power driven hydraulic lifting device for concrete forms
5 Concrete Paving Machine Operator
5 Concrete Finishing Machine Operator
5 Concrete Spreader Operator
4 Concrete Paving Road Mixer
2 Automatic Concrete Slip Form Paver Operator

REGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

RADE	BASIC HOURLY RATE	FRINGE BENEFITS

OWER EQUIPMENT OPERATORS (Continued)

ONCRETE (Continued)

Concrete Canal Line Operator
Concrete Breaker
Reinforced Tank Banding Machine (K-17 or similar types)
Concrete Profiler, Diamond Head

RANE

Oiler
Truck Crane Oiler-Driver, 25 ton capacity or over
Fireman, all equipment
A-Frame Truck Operator, single drum
Tugger or Coffin Type Hoist Operator
Helicopter Hoist Operator
Hoist Operator, single drum
Elevator Operator
A-Frame Truck Operator, double drum
Boom Truck Operator
Chicago Boom and similar types
Lift Slab Machine Operator
Boom Type lifting device, 5 ton capacity or less
Cherry Picker or similar type crane-hoist, 5 ton capacity or less
Hoist Operator, two drum
Hoist Operator, three or more drums
Derrick Operator, under 100 ton
Hoist Operator, stiff leg, guy derrick or similar type, 50 ton and over
Cableway Operator, up to 25 tons
Bridge Crane Operator, Locomotive, Gantry, Overhead
Cableway Operator, 25 tons and over
Helicopter Operators, when used in erecting work

HYDRAULIC CRANE OPERATOR
Hydraulic Boom Truck Operator, Pittman
Hydro Crane Operator, under 50 tons
Hydro Crane Operator, 50 tons through 89 tons
Hydro Crane Operator, 90 tons through 199 tons
Hydro Crane Operator, 200 tons and over

TOWER/WHIRLEY OPERATOR
Tower Crane Operator
Whirley Operator, under 90 tons
Whirley Operator, 90 tons and over

LATTICE BOOM CRANE OPERATOR
Lattice Boom Crane Operator, under 50 tons
Lattice Boom Crane Operator, 50 tons through 89 tons, and less than 150 ft boom
Lattice Boom Crane Operator, 90 tons through 199 tons, and/or 150 ft -200 ft boom
Lattice Boom Crane (Operator, 200 tons and over, and/or over 200 ft boom

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

POWER EQUIPMENT OPERATORS (Continued)

CRUSHER

6 Crusher Oiler
6 Crusher Feederman
4 Generator Operator
4 Diesel-Electric Engineer
4 Grizzley Operator
2 Crusher Plant Operator

DRILLING

6 Drill Assistant
6 Auger Oiler
5 Churn Drill and Earth Boring Machine Operator
4 Drill Doctor
4 Boring Machine Operator
4 Driller - Percussion, Diamond, Core, Cable, Rotary and similar type
4 Cat Drill (John Henry)

FLOATING EQUIPMENT

6 Deckhand
6 Boatman
5 Fireman
4 Diesel-Electric Engineer
4 Jack Operator, elevating barges
4 Barge Operator, self-unloading
4 Piledriver Operator (not crane type)
4 Floating Clamshell, etc. Operator, under 3 cu. yd.(only for construction projects - otherwise see Dredging)
4 Floating Crane (derrick barge) Operator, less than 30 tons
2 Floating Clamshell, etc. Operator, 3 cu. yd. and over (only for construction projects - otherwise see Dredging)
2 Floating Crane (derrick barge) Operator, 30 tons but less than 150 tons
1 Floating Crane, 150 tons and over

FORK LIFT

6 Self-Propelled Scaffolding Operator (excluding working platform)
6 Fork Lift or Lumber Stacker Operator
6 Ross Carrier Operator
5 Lull Hi-Lift Operator or similar type
5 Fork Lift, over 5 tons
3 Rock Hound Operator

GENERATORS

4 Generator Operator
4 Diesel-Electric Engineer

GUARDRAIL EQUIPMENT

6 Oiler
6 Auger Oiler
6 Oiler, combination guardrail machines
4 Guardrail Punch Operator (all types)

OREGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

POWER EQUIPMENT OPERATORS (Continued)

GUARDRAIL EQUIPMENT (Continued)

6	Guardrail Punch Oiler	
4	Guardrail Auger Operator (all types)	
4	Combination Guardrail machines. i.e. punch, auger etc.	

HAZARDOUS WASTE REMOVAL

5	Assistant to the Engineer (Oiler)	
4	Assistant Incinerator Control Board Operator	
3	Incinerator Control Board Operator	

HEATING PLANT

6	Temporary Heating Plant Operator	
4	Surface Heater and Planer Operator	

HYDRAULIC HOES

5	Hydraulic Backhoe Operator, wheel type 3/8 cu. yd. and under with or without front end attachments 2-1/2 cu. yd. and under (Ford, John Deere, Case type)	
4	Hydraulic Backhoe Operator, Track Type 3/8 cu.yd. (Note: Over 3/8 cu. yd. takes Shovel Classification rate)	

LOADERS

6	Bobcat, Skid Steer (under 1 cubic yard)	
6	Bucket Elevator Loader Operator, Barber-Greene and similar types	
5	Loaders, rubber-tired type, 2-1/2 cu. yd. and under	
5	Elevating Grader Operator, Tractor Towed requiring Operator or Grader	
4	Belt Loader Operator, Kolman and Ko Cal types	
4	Loader Operator, front end and overhead, 2-1/2 cu. yd. and under 4 cu. yd.	
4	Elevating Loader Operator, Athey and similar types	
4	Elevating Grader Operator, Sierra, Euclid or similar types	
3	Loader Operator, 4 cu. yd. but less that 6 cu. yd.	
2	Loader Operator, 6 cu. yd. and over	

OILERS

6	Oiler	
6	Guardrail Punch Oiler	
6	Truck Crane Oiler-Driver, 25 ton or over	
6	Auger Oiler	
6	Grade Oiler, required to check grade	
5	Service Oiler (Greaser)	
6	Grade Checker	

PILEDRIVERS

(Use Crane rates when driving or pulling piling)

4	Hammer Operator	
4	Piledriver Operator (not crane type)	

POWER EQUIPMENT OPERATORS (Continued)

PIPE LINE - Sewer Water

6	Tar Pot Fireman	
6	Tar Pot Fireman (power agitated)	
6	Hydraulic Pipe Press Operator	
5	Hydra Hammer or similar types	
5	Pavement Breaker Operator	
4	Pipe Cleaning Machine Operator	
4	Pipe Doping Machine Operator	
4	Pipe Bending Machine Operator	
4	Pipe Wrapping Machine Operator	
4	Boring Machine Operator	
4	Back Filling Machine Operator	

PUMPS

6	Pump Operator, any power	
6	Hydrostatic Pump Operator	
5	Pump Operator, more than 5 (any size)	
5	Pot Rammer Operator	

RAILROAD EQUIPMENT

6	Brakeman	
6	Oiler	
6	Switchman	
6	Motorman	
6	Ballast Jack Tamper Operator	
5	Locomotive Operator	
5	Ballast Regulator Operator	
5	Ballast Tamper Multi-Purpose Operator	
5	Track Liner Operator	
5	Tie Spacer Operator	
5	Shuttle Car Operator	

REMOTE CONTROL

2	Remote controlled earth-moving equipment	

REPAIRMEN, Heavy Duty

6	Parts Man (Tool Room)	
6	H.D. Repairman Assistant	
6	Welder's Assistant	
4	Diesel-Electric Engineer (Plant or Floating)	
4	Bolt Threading Machine Operator	
4	Drill Doctor (Bit Grinder)	
4	H.D. Mechanic	
4	H.D. Welder	
4	Machine Tool Operator	
4	Combination H.D. Mechanic-Welder, when dispatched and/or when required to do both	
4	Welder - Certified, when dispatched and/or required	

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

POWER EQUIPMENT OPERATORS (Continued)

RUBBER-TIRED SCRAPERS

4 Rubber-tired Scraper Operator, single engine, single scraper
4 Self-loading, paddle wheel, auger type under 15 cu. yd.
4 Rubber-tired Scraper Operator, twin engine
4 Rubber-tired Scraper Operator, with push-pull attachments
3 Rubber-tired Scraper Operator, with tandem scraper
2 Rubber-tired Scraper Operator, with tandem scrapers, multi -engine
4 Self-loading, paddle wheel, auger type 15 cu. yd. and over, single engine
3 Self-loading, paddle wheel, auger type, finish and/or 2 or more units

SHOVEL, DRAGLINE, CLAMSHELL, BACKHOE, SKOOPER, ETC., OPERATOR

6 Oiler
6 Grade Oiler (required to check grade)
6 Grade Checker
6 Fireman
4 Diesel-Electric Engineer
4 Stationary Drag Scraper Operator
4 Shovel, Dragline, Clamshell, Hoe etc., Operator under 3 cu. yd.
4 Grade-all Operator
2 Shovel, Dragline, Clamshell, Hoe etc., Operator 3 cu. yd. and over

SIGNALMAN

6 Bell Boy, phones, etc., Operator
6 Helicopter Radioman (ground)

SURFACING (BASE) MATERIAL

6 Roller Operator, grading of base rock (not asphalt)
5 Roller Operator, Oiling, C.T.B.
6 Tamping Machine Operator, mechanical, self-propelled
6 Hydrographic Seeder Machine Operator, straw, pulp or seed
5 Rock Spreaders, self-propelled
5 Pulva-mixer or similar types
4 Blade Mounted Spreaders, Ulrich and similar types
5 Chip Spreading Machine Operator
5 Lime Spreading Operator

SWEEPERS

6 Broom Operator, self-propelled
5 Sweeper Operator (Wayne type) self-propelled

POWER EQUIPMENT OPERATORS (Continued)

TRACTOR - RUBBER TIRED

5 Tractor Operator, rubber-tired, 50 H.P. Flywheel and under
4 Tractor Operator, rubber -tired, over 50 H.P. Flywheel
4 Tractor Operator, with boom attachment
4 Rubber-tired Dozers and Pushers (Michigan, Cat, Hough type)

TRENCHING MACHINE

6 Oiler
6 Grade Oiler (required to check grade)
5 Trenching Machine Operator, maximum digging capacity 3 ft. depth
4 Trenching Machine Operator, maximum digging capacity over 3 ft. depth
4 Back Filling Machine Operator
2 Wheel Excavator
2 Canal Trimmer
2 Band Wagon (in conjunction with wheel excavator)

TUNNEL

4 Mucking Machine Operator
6 Conveyor Operator (any type)
4 Shield Operator
6 Air Filtration Equipment Operator
6 Dinkey Operator
6 Oiler
4 Tunnel Boring Machine Operator

WELDING MACHINES

6 Welding Machine Operator

UNDERWATER EQUIPMENT

2 Underwater Equipment Operator, remote or otherwise, when used in construction work

ROOFERS

(Installation and removal of sheetmetal roofing is done by sheetmetal workers.)

Area 1:		
o Roofers	19.75	5.55
o Handling coal tar pitch	21.73	5.55
Area 2:		
o Roofers	17.64	5.78

(Add $2.00 per hour to Fringe for work with irritable Bituminous material.)

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

OOFERS (Continued)

Area 3:
- o Roofers — 14.85 — 4.07

(Add $1.50 per hour to Fringe for work with irritable Bituminous material.)

Area 4:
- o Roofers — 16.00 — 6.05

(Add $2.00 per hour to Fringe for work with irritable Bituminous material.)

rea 5:
- o Roofers — 16.92 — 5.60

(Add $3.00 per hour to Fringe for work with irritable Bituminous material.)

Area 1	Area 1(cont)	Area 2	Area2(cont)
Baker	Multnomah	Benton	Klamath
Clackamas	Sherman	Coos	Lake
Clatsop	Tillamook	Crook	Lane
Columbia	Wasco	Curry	Lincoln
Jefferson	Washington	Deschutes	Linn
Gilliam	Wheeler	Douglas	Marion
Grant		Harney	Polk
Hood River		Jackson	Yamhill
		Josephine	

Area 3	Area 4	Area 5
Malheur	Umatilla	Morrow
	Union	
	Wallowa	

SHEETMETAL WORKERS

Area 1 — 22.28 — 8.49

(Add $1.00 to base rate for work performed on any swinging platform, swinging chair, or swinging ladder)
(Add $1.00 to base rate for work with lead or installing material in a plant that uses lead in any form to manufacture a product, (excluding soldering)).
(Add $1.00 to base rate for work performed in a confined space as defined by OSHA.)

Area 2 — 19.66 — 6.15

(Add $1.75 to base rate for work performed whenever it is possible for worker to fall 30 feet or more)
(Add $1.75 to base rate for work performed in an area where epoxy resins or other injurious chemicals are being applied)

SHEETMETAL WORKERS (Continued)

Area 3 — 23.43 — 7.25

(Add $1.00 to base rate for work where it is necessary to wear a chemically activated face mask)
(Add $1.00 to base rate for work where employees required to wear a fresh air mask due to nuclear related work)
(Add $.45 to base rate for work on a swinging stage, swinging scaffold or bosun chair in excess of 30 feet above the ground)

Area 4 — 19.92 — 5.65

Area 5 — 19.80 — 5.77

Area 1

Benton	Gilliam	Linn	Tillamook
Clackamas	Grant	Marion	Wasco
Clatsop	Harney	Multnomah	Washington
Columbia	Hood River	Polk	Wheeler
Crook	Jefferson	Sherman	Yamhill
Deschutes	Lincoln		

Area 2	Area 3	Area 4	Area 5
Baker	Morrow	Douglas	Coos
Malheur	Umatilla	Jackson	Curry
	Union	Josephine	
	Wallowa	Klamath	
		Lake	
		Lane	

SOFT FLOOR LAYERS — 19.70 — 5.25 + a

a) plus 4% of basic hourly rate for employees with less than one year of service, 6% for those with more than one year.

SPRINKLER FITTERS — 21.40 — 6.28

TENDERS TO MASON TRADES — 20.39 — 6.00

o Tenders to Bricklayers and Stone Masons. Mortar Mixers.
(Add $0.50 to base rate for refractory work)
(Add to base rate an amount equal to that received for safety belt requirements or other unusual job conditions by the mechanic this worker is tending)

OREGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE. NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
TENDERS TO PLASTERERS	19.09	6.00
TILE SETTER/ TERRAZZO WORKER	22.18	5.80

THIS TRADE IS TENDED BY "TILE, TERRAZZO, BRICK & MARBLE FINISHERS"

(Add $.50 to base rate if safety belt required by State safety regulations.)
(Add $1.00 to base rate if work involves epoxy,furnane, alkor acetylene black grouting or waterproof membrane.)

TILE, TERRAZZO, BRICK & MARBLE FINISHERS	16.77	4.27

- Assists Tile Setters, Brick Layers, Marble Masons, and Terrazzo Workers by striking, sawing, cleaning, washing or grouting. Does not lay or set any material.
(Add $.50 to base rate if safety belt required by State safety regulations.)
(Add $1.00 to base rate if work involves epoxy, furnane, alkor acetylene black grouting or waterproof membrane.)
(Add $0.75 to fringe for refractory repair work.)

TRUCK DRIVERS

Zone 1 (Base Rate):

o Group 1	20.32	7.60
o Group 2	20.44	7.60
o Group 3	20.57	7.60
o Group 4	20.82	7.60
o Group 5	21.04	7.60
o Group 6	21.19	7.60
o Group 7	21.39	7.60

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Hazardous Waste Site. For further information on this, call the Prevailing Wage Rate Coordinator at 731-4074.

Zone Differential for Truck Drivers
(Add to Zone 1 Rate)

Zone 2	.65
Zone 3	1.15
Zone 4	1.70
Zone 5	2.75

Zone 1: Projects within 30 miles of City Hall in the Cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 80 miles.
Zone 5: More than 80 miles.

TRUCK DRIVERS (Continued)

Reference Cities

Albany	Eugene	Longview	Portland
Astoria	Goldendale	Madras	Port Orford
Baker	Grants Pass	Medford	Reedsport
Bend	Hermiston	McMinnville	Roseburg
Brookings	Hood River	Newport	Salem
Burns	Klamath Falls	Oregon City	The Dalles
Coos Bay	LaGrande	Ontario	Tillamook
Corvallis	Lakeview	Pendleton	

Work	Group
A-Frame or Hydra-lift Truck w/load bearing surface	1
Battery Rebuilder	1
Bus or Man-Haul Driver	1
Concrete Buggies (Power operated)	1
Drivers and Helpers handling sacked concrete—add 15¢ per hour	
Dump Trucks, Side, End and Bottom Dumps, including Semi-Trucks and trains or combinations thereof:	
Up to and inc. 10 cu. yds	1
Over 10 cu. yds. and inc. 30 cu. yds	3
Over 30 cu. yds. and inc. 50 cu. yds	4
Over 50 cu. yds. and inc. 60 cu. yds	5
Over 60 cu. yds. and inc. 80 cu. yds	6
Over 80 cu. yds. and inc. 100 cu. yds	7
Dumpsters or Similar Equipment—all sizes	2
Flaherty Spreader Driver or Leverman	2
Lift Jitneys, Fork Lifts—all sizes—used in loading, unloading & transporting material on job site	1
Loader and/or Leverman on Concrete Dry Batch Plant, manually operated	1
Low Bed Equipment, Flat Bed Semi-Truck and Trailer or Doubles transporting equipment or wet or dry materials	2
Lubrication Man, Fuel Truck Driver, Driver, Tireman, Wash Rack, Steam Cleaner or combination	1
Lumber Carrier, Driver-Straddle Carrier—used in loading, unloading and transportation of material on job site	2
Oil Distributor Driver or Leverman	2
Pilot Car	1
Slurry Truck Driver or Leverman	1
Solo Flat Bed and Misc. Body Truck, 0-10 tons	1

TRUCK DRIVERS (Continued)

Work	Group
Transit Mix and Wet or Dry Mix Trucks:	
5 cu. yds. and under	1
Over 5 cu. yds. and inc. 7 cu. yds	2
Over 7 cu. yds. and inc. 11 cu. yds	3
Over 11 cu. yds. and inc. 15 cu. yds	4
Team Drivers	1
Tireman, full-time basis	1
Truck Assistant	1
Truck Mechanic—Welder—Body Repairman	3
Truck Mechanic Assistant	1
Water Wagons (Rated Capacity) up to:	
3000 gallons	1
3000 to 5000 gallons	2
5000 to 10,000 gallons	3
10,000 to 15,000 gallons	4
Winch Truck—takes classification of truck on which winch is mounted	

WELDERS: RIGGERS

Receive rate for craft performing operation to which welding and rigging are incidental.

THE INFORMATION ON THE FOLLOWING PAGES (27-31) IS TO BE USED FOR PUBLIC WORKS PROJECTS IN THE COUNTIES OF COOS, CURRY, DOUGLAS AND JOSEPHINE ONLY. INCLUDED IS INFORMATION TO ASSIST THE CONTRACTOR WITH CORRECT RATE APPLICATION.

When determining which rate is applicable for projects in Coos, Curry, Douglas or Josephine Counties, it is necessary to determine whether the project is "non-residential," "heavy," or "highway" construction. If more than one of the categories make up 20% or more of the total project cost, separate wage determinations must be used for each of the different types of construction. Conversely, if any of the construction categories makes up over 80% of the total cost of the project, that category will define the appropriate wage determination to be applied to the entire project.

NON-RESIDENTIAL BUILDING CONSTRUCTION

- Alterations and additions to non-residential bldgs.
- Apartment buildings (5 stories or over)
- Arenas (enclosed)
- Auditoriums
- Automobile parking garages
- Banks and financial buildings
- Barracks
- Churches
- City halls
- Civic centers
- Commercial Buildings
- Courthouses
- Detention facilities
- Dormitories
- Farm buildings
- Fire stations
- Hospitals
- Hotels
- Industrial buildings
- Institutional buildings
- Mausoleums
- Motels
- Nursing & convalescent facilities
- Office buildings
- Out-patient clinics
- Passenger & freight terminal
- Post office
- Power Plants
- Prefabricated buildings
- Remodeling buildings
- Renovating buildings
- Repairing buildings
- Restaurants
- Schools
- Service stations
- Shopping centers
- Stores
- Subway stations
- Theaters
- Warehouses
- Water & Sewage treatment plant (buildings only)

HEAVY CONSTRUCTION

- Antenna towers
- Bridges (major bridges designed for commercial navigation)
- Breakwaters
- Caissons (other than building or highway)
- Canals
- Channels
- Channel cut-offs
- Chemical complexes or facilities (other than bldgs.)
- Cofferdams
- Coke ovens
- Dams
- Dikes
- Docks
- Drainage projects
- Dredging projects
- Electrification projects (outdoor)
- Flood control projects
- Industrial incinerators
- Irrigation projects
- Jetties
- Kilns
- Land drainage (not incidental to other construction)
- Land reclamation
- Levees
- Locks, waterways
- Oil refineries
- Pipe lines
- Ponds
- Pumping stations (prefabricated drop-in units)
- Railroad construction
- Reservoirs
- Revetments
- Sewage collection and disposal lines
- Sewers (sanitary, storm, etc.)
- Shoreline maintenance
- Storage tanks
- Swimming pools (outdoor)
- Subways
- Tipples
- Tunnels
- Unsheltered piers and wharves
- Viaducts (other than highway)
- Water mains
- Waterway construction
- Water supply lines (not incidental to building)
- Water and sewage treatment plants (other than buildings)
- Wells

HIGHWAY CONSTRUCTION

Alleys
Airport runways
Bituminous treatments
Bridle paths
Concrete pavement
Curbs
Excavation & embankment (for road construction)
Fencing (highway)
Grade crossing elimination (overpass or underpass)
Guardrails on highway
Highway signs
Highway bridges (overpasses, underpasses, grade separation)
Medians
Parking lots
Parkways
Resurfacing streets and highways
Roadbeds
Roadways
Shoulders
Sidewalks
Stabilizing courses
Storm sewer(incidental to road construction)
Street paving
Surface courses
Taxiways
Trails

ADD	BASIC HOURLY RATE	FRINGE BENEFITS
BESTOS WORKERS		
tallation of insulation on mechanical terms for Thermal and Acoustical purposes, also the tallation of fire stop penetrations on Electrical and chanical Systems.		
urneyman Asbestos Worker	23.98	6.38
mo l of regulated material mechanical systems* which not going to be scrapped.**		
H ardous Materials Handler Mechanic	13.75	3.50

M chanical systems include pipes, boilers, ducts, flues breaching, grease ducts and acid ducts. This also includes all labor connected with the ha dling and distribution of materials for these sy tems.

The removal of all regulated materials from m chanical systems is exclusively the work of Hazardous Materials Handlers, unless the mechanical systems are going to be scrapped. L orers do all removal of regulated materials on m chanical systems to be scrapped and any non mechanical(walls,ceilings,floors,beams etc.) in ulation. They also do loading of any regulated m terial after it has been removed, bagged and tagged, as well as cleanup at the removal site and all work done at the disposal site. Persons p forming the removal of regulated materials a classified as Group 3 Laborers.

*OTE: Regulated materials are those materials that are regulated for the purpose of protecting the environment or for personal protection by either E.P.A., O.S.H.A., DEQ or Federal O.S.H.A.

OILERMAKERS	24.07	9.31
RIC LAYERS/STONEMASONS	22.12	5.88
IS TRADE IS TENDED BY "TENDERS TO MASONS" -PG. 30		
AR ENTERS	13.20	3.67
EMENT MASONS	10.00	0.00
RY WALL/WETWALL		
D ywall (Accoustical and D ywall Applicator)	20.58	8.02
Wetwall (Lather)	19.56	9.04

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
ELECTRICIANS		
Coos, Curry, Douglas (western portion)		
o Electricians	23.30	8.45
Josephine, Douglas (eastern portion)		
o Electricians	23.05	7.44
o Cable Splicers	23.05	7.44
ELEVATOR CONSTRUCTORS		
o Mechanic	28.27	6.89 + a
o Helper	19.79	6.67 + a
o Probationary Helper	14.14	.38
a) Plus 8% of basic hourly rate for employees with more than 5 years of service; 6% of basic hourly rate for 6 months to 5 years of service.		
GLAZIERS	22.87	4.94
(Add $1.00 to base rate if safety belt is required by State safety regulations) (Add $4.00 to base rate for work done from a non-motorized single-man bosun chair)		
INSULATORS (BAT AND BLOWN)	7.85	0.00
IRONWORKERS	21.50	9.92
o Structural, Reinforcing, Ornamental, Riggers, Fence Erectors, Signal Men		
LABORERS	9.10	4.65
LIMITED ENERGY ELECTRICIANS	16.79	4.25
May only be used for electrical work not exceeding 100 va in Class II and III installations (as defined in Article 725 of the National Electrical Code):		
PAINTERS	13.00	0.00
PLASTERERS		
o Nozzleman	23.41	5.86
o Swinging scaffold	22.41	5.86
o all other work	21.91	5.86

OREGON DETERMINATION 97-04	CONSTRUCTION TYPE:	NON-RESIDENTIAL BUILDING - COOS, CURRY, DOUGLAS AND JOSEPHINE COUNTIES ONLY

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
PLUMBERS & STEAMFITTERS/PIPEFITTERS	26.15	8.25
POWER EQUIPMENT OPERATORS		
Backhoes	12.94	1.56
Bulldozers	13.50	1.56
Loader	13.50	1.56
ROOFERS	8.00	0.00
SHEETMETAL WORKERS		
Coos, Curry	19.80	5.77
Douglas, Josephine	19.92	5.65
SOFT FLOOR LAYERS	19.70	5.25 +a

a) plus 4% of basic hourly rate for employees with less than one year of service, 6% for those with more than one year.

SPRINKLER FITTERS	21.40	6.28
TENDERS TO MASON TRADES	20.39	6.00

o Tenders for Bricklayers and Stone Masons. Mortar Mixers.
(Add $0.50 to base rate for refractory work)
(Add to base rate an amount equal to that received for safety belt requirements or other unusual job conditions by the mechanic this worker is tending)

TENDERS TO PLASTERERS	19.09	6.00
TILE SETTER/ TERRAZZO WORKER	22.18	5.80

THIS TRADE IS TENDED BY "TILE, TERRAZZO, BRICK & MARBLE FINISHERS"

(Add $.50 to base rate if safety belt required by State safety regulations.
(Add $1.00 to base rate if work involves epoxy,furnane, alkor acetylene black grouting or waterproof membrane.)

TILE, TERRAZZO, BRICK & MARBLE FINISHERS	16.77	4.27

o Assists Tile Setters, BrickLayers,Marble Masons, and Terrazzo Workers by striking, sawing, cleaning, washing or grouting. Does not lay or set any material.
(Add $.50 to base rate if safety belt required by State safety regulations.
(Add $1.00 to base rate if work involves epoxy, furnane, alkor acetylene black grouting or waterproof membrane.)
(Add $0.75 to fringe for refractory repair work.)

TRUCK DRIVERS

Zone 1 (Base Rate):

o Group 1	20.32	7.60
o Group 2	20.44	7.60
o Group 3	20.57	7.60
o Group 4	20.82	7.60
o Group 5	21.04	7.60
o Group 6	21.19	7.60
o Group 7	21.39	7.60

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Hazardous Waste Site. For further information on this, call the Prevailing Wage Rate Coordinator at 731-4466

Zone Differential for Truck Drivers (Add to Zone 1 Rate)

Zone 2	.65
Zone 3	1.15
Zone 4	1.70
Zone 5	2.75

Zone 1: Projects within 30 miles of City Hall in the Cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 80 miles.
Zone 5: More than 80 miles.

Reference Cities

Albany	Eugene	Longview	Portland
Astoria	Goldendale	Madras	Port Orford
Baker	Grants Pass	Medford	Reedsport
Bend	Hermiston	McMinnville	Roseburg
Brookings	Hood River	Newport	Salem
Burns	Klamath Falls	Oregon City	The Dalles
Coos Bay	LaGrande	Ontario	Tillamook
Corvallis	Lakeview	Pendleton	

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS

TRUCK DRIVERS (Continued)

Work	Group
A-Frame or Hydra-lift Truck w/load bearing surface	1
Battery Rebuilder	1
Bus or Man-Haul Driver	1
Concrete Buggies (Power operated)	1
Drivers and Helpers handling sacked cement—add 15¢ per hour	
Dump Trucks, Side, End and Bottom Dumps, including Semi-Trucks and trains or combinations thereof:	
Up to and inc. 10 cu. yds	1
Over 10 cu. yds. and inc. 30 cu. yds	3
Over 30 cu. yds. and inc. 50 cu. yds	4
Over 50 cu. yds. and inc. 60 cu. yds	5
Over 60 cu. yds. and inc. 80 cu. yds	6
Over 80 cu. yds. and inc. 100 cu. yds	7
Dumpsters or Similar Equipment all sizes	2
Flaherty Spreader Driver or Leverman	2
Lift Jitneys, Fork Lifts—all sizes—used in loading, unloading & transporting material on job site	1
Loader and/or Leverman on Concrete Dry Batch Plant, manually operated	1
Low Bed Equipment, Flat Bed Semi-Truck and Trailer or Doubles transporting equipment or wet or dry materials	2
Lubrication Man, Fuel Truck Driver, Driver, Tireman, Wash Rack, Steam Cleaner or combination	1
Lumber Carrier, Driver-Straddle Carrier—used in loading, unloading and transportation of material on job site	2
Oil Distributor Driver or Leverman	2
Pilot Car	1
Slurry Truck Driver or Leverman	1
Solo Flat Bed and Misc. Body Truck, 0-10 ton	1

TRUCK DRIVERS (Continued)

Work	Group
Transit Mix and Wet or Dry Mix Trucks:	
5 cu. yds. and under	1
Over 5 cu. yds. and inc. 7 cu. yds	2
Over 7 cu. yds. and inc. 11 cu. yds	3
Over 11 cu. yds. and inc. 15 cu. yds	4
Team Drivers	1
Tireman, full-time basis	1
Truck Assistant	1
Truck Mechanic-Welder-Body Repairman	3
Truck Mechanic Assistant.	1
Water Wagons (Rated Capacity) up to:	
3000 gallons	1
3000 to 5000 gallons	2
5000 to 10,000 gallons	3
10,000 to 15,000 gallons	4
Winch Truck—takes classification of truck on which winch is mounted	

WELDERS; RIGGERS

Receive rate for craft performing operation to which welding and rigging are incidental.

OREGON DETERMINATION 97-03/04 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE, HIGHWAY-ENTIRE STATE.
AMENDMENT EFFECTIVE JULY 1, 1997 NON-RESIDENTIAL BLDG. INCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
BRICKLAYERS/STONEMASONS		
Area 2	22.62	6.38
MARBLE SETTERS		
Area 2	23.62	6.38
ROOFERS		
Area 4	17.00	6.05
Area 5	17.60	5.60

OREGON DETERMINATION 97-03 CONSTRUCTION TYPE: HEAVY-ENTIRE STATE HIGHWAY-ENTIRE STATE.
AMENDMENT EFFECTIVE OCTOBER 1, 1997 NON-RESIDENTIAL BLDG. EXCLUDES COOS, CURRY, DOUGLAS & JOSEPHINE COUNTIES

TRADE	BASIC HOURLY RATE	FRINGE BENEFITS
ELECTRICIANS		
Area 1		
o Electricians	20.87	5.84
o Cable Splicers	22.96	5.93
LINE CONSTRUCTION		
Area 2		
o Cable Splicers	24.81	5.85
o Journeyman Lineman	22.50	5.76
o Line Equip. Mech. (Right-of-way)	19.08	5.61
o Line Equip. Oper.	19.08	5.61
o Groundman	13.96	5.39
PLUMBERS & STEAMFITTER/PIPEFITTERS		
Area 3 (Both)**	26.15	8.10

**The above rate for Plumbers & Steamfitter/Pipefitters is also in effect for "NON-RESIDENTIAL BUILDING" in Coos, Curry, Douglas and Josephine Counties.

ROOFERS		
Area 1		
o Roofers	19.75	5.30
o - Handling coal tar pitch	21.73	5.30
SOFT FLOOR LAYERS**	19.85	5.30 + a

**The above rate for Soft Floor Layers is also in effect for "NON-RESIDENTIAL BUILDING" in Coos, Curry, Douglas and Josephine Counties.

POWER EQUIPMENT OPERATORS

ZONE PAY CHANGES ONLY:

FOR THE FOLLOWING METROPOLITAN COUNTIES:

MULTNOMAH; CLACKAMAS; MARION; YAMHILL; WASHINGTON AND COLUMBIA:

(A) ALL JOBS OR PROJECTS LOCATED IN MULTNOMAH, CLACKAMAS AND MARION COUNTIES, WEST OF THE WESTERN BOUNDARY OF MT HOOD NATIONAL FOREST AND WEST OF MILE POST 30 ON INTERSTATE 84 AND WEST OF MILE POST 30 ON STATE HWY 26 AND WEST OF MILE POST 30 ON HWY 22 AND ALL JOBS LOCATED IN YAMHILL COUNTY, WASHINGTON AND COLUMBIA COUNTY SHALL RECEIVE ZONE 1 PAY FOR ALL CLASSIFICATIONS.

(B) ALL JOBS OR PROJECTS LOCATED IN THE AREA OUTSIDE THE IDENTIFIED BOUNDARY ABOVE, BUT LESS THAN 50 MILES FROM THE PORTLAND CITY HALL SHALL RECEIVE ZONE 2 PAY FOR ALL CLASSIFICATIONS.

(C) ALL JOBS OR PROJECTS LOCATED MORE THAN 50 MILES FROM THE PORTLAND CITY HALL, BUT OUTISDE THE IDENTIFIED BORDER ABOVE, SHALL RECEIVE ZONE 3 PAY FOR ALL CLASSIFICATIONS.

FOR THE FOLLOWING CITIES:

ALBANY; BEND; COOS BAY; EUGENE; GRANTS PASS; KLAMATH FALLS; MEDFORD AND ROSEBURG

(A) ALL JOBS OR PROJECTS LOCATED WITHIN 30 MILES OF THE RESPECTIVE CITY HALL OF THE ABOVE MENTIONED CITIES SHALL RECEIVE ZONE 1 PAY FOR ALL CLASSIFICATIONS

(B) ALL JOBS OR PROJECTS LOCATED MORE THAN 30 MILES AND LESS THAN 50 MILES FROM THE RESPECTIVE CITY HALL OF THE ABOVE MENTIONED CITIES SHALL RECEIVE ZONE 2 PAY FOR ALL CLASSIFICATIONS.

(C) ALL JOBS OR PROJECTS LOCATED MORE THAN 50 MILES FROM THE RESPECTIVE CITY HALL OF THE ABOVE MENTIONED CITIES SHALL RECEIVE ZONE 3 PAY FOR ALL CLASSIFICATIONS.

Oregon

BUREAU
OF LABOR
AND INDUSTRIES

LIST OF CONTRACTORS INELIGIBLE TO RECEIVE PUBLIC WORKS CONTRACTS

Publication Date: July 1, 1997

To: All Oregon Contracting Agencies

Jack Roberts
Commissioner

Pursuant to ORS 279.361, contractors on this list are ineligible to receive public works contracts. These contractors and subcontractors, as well as any firm, corporation, partnership or association in which the contractor or subcontractor has a financial interest are ineligible to receive public works contracts until removed from this list.

If you have questions regarding the list or for the most current information regarding persons ineligible to receive prevailing wage contracts, please contact the Prevailing Wage Rate Cordinator, (Portland) 731-4074 Ext. 250.

	CONTRACTOR NAME	DATE PLACED	REMOVAL DATE
1.	Craig Yundt, Registered Agent and President and **AC & C Electrical Enterprises, Inc.** 2130 NW York Portland, OR 97210	May 10, 1996	May 9, 1999
2.	Robin Allen Daniel Allen **A C & E Electric Company** 3363 Silverton Road NE Salem, OR 97301	December 1, 1994	November 30,1997
3.	Wayne C. Everett and **Equipment Erection Specialties, Inc.** 8645 SE Roots Road Clackamas, OR 97015	October 15, 1995	October 14, 1998

PORTLAND
800 NE Oregon St. # 32
Portland, OR 97232
(503) 731-4200
FAX (503) 731-4069

EUGENE
165 E 7th Street, Suite 220
Eugene, OR 97401
(541) 686-7623
FAX (541) 686-7980

BEND
1250 NE 3rd, Suite B105
Bend, OR 97701
(541) 388-6330
FAX (541) 388-6273

MEDFORD
700 E Main, Suite 105
Medford, OR 97504
(541) 776-6270
FAX (541) 776-6284

SALEM
3865 Wolverine St. NE; E-1
Salem, OR 97310
(503) 378-3292
FAX (503) 373-7636

PENDLETON
200 Hailey Ave., Suite 308
Pendleton, OR 97801
(541) 276-7884
FAX (541) 276-2950

AN EQUAL OPPORTUNITY EMPLOYER

LIST OF CONTRACTORS INELIGIBLE TO RECEIVE PUBLIC WORKS CONTRACTS

Publication Date: July 1, 1997

	CONTRACTOR NAME	DATE PLACED	REMOVAL DATE
4.	**Malar Construction, Inc.** 4470 S.W. Hall Blvd, #317 Beaverton, OR 97005	November 23, 1994	November 22,1997
5.	Michael A. McSweeney dba **Michael A. McSweeney Construction** P.O. Box 1573 Rogue River, OR 97537	February 25, 1997	February 24,2000
	Edward R. Romayor and **Portland Custom Interiors, Inc.** 4330 SE Milwaukie Avenue Portland, OR 97202	April 28, 1995	April 27, 1998
6.	Haskell F. Tallent, dba **Sound Construction of Reno** 34773 Seavey Loop Road Eugene, OR 97405	October 14, 1994	October 13, 1997

Jack Roberts, Commissioner
Bureau of Labor and Industries

BUREAU OF LABOR AND INDUSTRIES - WAGE AND HOUR DIVISION

INSTRUCTIONS FOR COMPLETING PAYROLL/CERTIFIED STATEMENT FORM,
WH-38 (Rev 6/97)

General: This form provides for the contractor's showing of the payroll and all monies paid to the employees, whether as basic rates or as cash in lieu of fringe benefits, and provides for the contractor's representation in the payroll/certified statement that he/she is paying other benefits required by the contract and not paid as cash in lieu of fringe benefits. Detailed instructions concerning the preparation of the form follow:

Complete the box at the top of the form. Complete the appropriate prime contractor or subcontractor box. Be sure to enter the date the contract was first advertised for bid. If you are not sure of this date, contact the Public Contracting Agency.

Column 1 - Name, Address, and Social Security number of Employee: The employee's full name must be shown on each payroll submitted. The employee's address must also be shown on the first payroll submitted. The address need not be shown on subsequent payrolls unless the address changes. Although not required, space is available in the name and address section so that Social Security numbers can be listed.

Column 2 - Trade Classifications: List the classification found in the Bureau of Labor and Industries' publication "Prevailing Wage Rates for Public Works Contracts in Oregon," which is most descriptive of the work actually performed by the employee. Give the group number for those worker classifications which include such information. Consult the worker classifications and minimum prevailing wage rate schedule set forth in contract specifications. Refer to the appropriate prevailing wage rates in effect at the time the contract was first advertised for bid for information regarding trade classifications, basic hourly rates, and hourly fringe benefits. Indicate which workers are apprentices, if any, and give their current percentage, trade classification, and group number when applicable. If additional worker classifications are deemed necessary, contact the contracting public agency. If an employee works in more than one worker classification, use the highest rate for all hours worked, or use separate line entries to show hours worked, rate of pay, and fringe benefit for each classification.

Column 3 - DAY AND DATE: Enter the day of the week (M, T, W, Th, F, S, Su) in the top row of boxes, and the number of the day of the month below.

- HOURS WORKED EACH DAY: **Enter overtime hours in the row marked "OT". See ORS 279.334 and page 2 of this booklet for changes in the overtime requirements.**

Column 4 - Total Hours: Enter separately the total number of overtime hours and straight time hours worked by each listed classification during this pay period; overtime ("OT") on top, straight time ("S") immediately below.

Column 5 - Basic Hourly Rate of Pay: Enter the basic hourly rate and the overtime hourly rate (if any) paid the employee in the appropriate overtime and straight time boxes. Payment of not less than one and one half times the basic or regular rate paid is required for overtime under ORS 279.334.

Column 6 - Hourly Fringe Benefit Paid as Wages to the Employee: Enter any additional cash paid directly to the employee in lieu of fringe benefits. It is not necessary to pay time and a half for overtime work on those wages which are paid in lieu of fringe benefits.

Column 7 - Gross amount earned: Enter the gross wages earned by the worker in this classification for all listed straight time hours, all listed overtime hours, and including all additional amounts paid directly to the employee.

Column 8 - Total Deductions, FICA, FED, STATE, ETC: Enter the total amount of deductions withheld from each employee for just those hours reported on this payroll/certified statement for this project. All deductions must be in accordance with the provisions of ORS 652.610.

Column 9 - Net Wages Paid for Week: Enter the amount of wage actually paid to the employee after subtracting the total deductions reported in Column 8 from the gross amount earned shown in Column 7.

INSTRUCTIONS FOR COMPLETING PAYROLL/CERTIFIED STATEMENT FORM,
WH-38 (Rev 6/97)

Column 10 - Hourly Fringe Benefit Paid to Party, Plan, Fund or Program: Enter the hourly amount of fringe benefits paid to each individually approved party, plan, fund or program for each employee. List these amounts separately on the lines provided. Any contactor who is making payments to approved parties, plans, funds or programs in amounts less than the required hourly fringe benefit is obligated to pay the difference directly to the employee as wages in lieu of fringe benefits, and to show that amount in Column 6 of this form.

Column 11 - Name of Benefit Party, Plan, Fund or Program: Enter the name of the party, plan, fund or program that corresponds to the amount shown as an hourly fringe benefit in Column 10.

Summary - In order to determine if the wages and fringe benefits being certified by this statement are sufficient to meet prevailing wage rate requirements, the following check may be performed:

1. Consider each Trade Classification listed in Column 2.

2. For that Trade Classification, take the sum of:
   a) the Basic Hourly Rate of Pay (Column 5),
   b) the Hourly Fringe Benefit Paid as Wage to Employee (Column 6),
   c) and the Hourly Fringe Benefit Paid To Party, Plan, Fund or Program (Column 10).

3. This sum must equal or exceed the sum of the Basic Hourly Rate (including zone pay and special wage differentials, if any) and the Fringe Benefit as they are listed for that Trade Classification in the appropriately dated issue of the Bureau of Labor and Industries publication Prevailing Wage Rates for Public Works Contracts in Oregon.

◆◆◆

NOTICE TO CONTRACTORS: YOU ARE NO LONGER REQUIRED TO SUBMIT COPIES OF THE PAYROLL/CERTIFIED STATEMENT TO THE BUREAU OF LABOR AND INDUSTRIES. THE STATEMENT MUST BE SUBMITTED TO THE PROJECT CONTRACTING AGENCY.

BUREAU OF LABOR AND INDUSTRIES
WAGE AND HOUR DIVISION

PAYROLL/CERTIFIED STATEMENT FORM WH-38
FOR USE IN COMPLYING WITH ORS 279.354

PRIME CONTRACTOR ☐ **FIRST** ☐ **90 DAY** ☐ **LAST** ☐
SUBCONTRACTOR ☐

Business Name (DBA): CCB Registration Number: Project Name: Project Number:

Phone: ( ) Type Of Work:
Street Address: Project Location:
Mailing Address: Project County:

Date Pay Period Began: Date Pay Period Ended:

THIS SECTION FOR PRIME CONTRACTORS ONLY
Public Contracting Agency Name:
Phone: ( )
Date Contract Specifications First Advertised For Bid:
Contract Amount

THIS SECTION FOR SUBCONTRACTORS ONLY
Subcontract Amount:
Prime Contractor Business Name (DBA):
Phone: ( ) CCB Registration Number:
Date You Began Work On The Project:

(1) NAME, ADDRESS AND SOCIAL SECURITY NUMBER OF EMPLOYEE	(2) TRADE, CLASSIFICATION (INCLUDE GROUP # IF APPLICABLE)		(3) DAY AND DATE — HOURS WORKED EACH DAY							(4) TOTAL HOURS	(5) BASIC HOURLY RATE OF PAY	(6) HOURLY FRINGE BENEFIT PAID AS WAGE TO EMPLOYEE	(7) GROSS AMOUNT EARNED	(8) TOTAL DEDUCTION FICA, FED, STATE, ETC	(9) NET WAGE PAID FOR WEEK	(10) HOURLY FRINGE BENEFIT PAID TO PARTY, PLAN, FUND OR PROGRAM	(11) NAME OF BENEFIT PARTY, PLAN, FUND, OR PROGRAM
		OT															
		S															
		OT															
		S															
		OT															
		S															
		OT															
		S															

THIS FORM CONTINUED ON REVERSE
FORM WH-38 (REV. 6/96)

(1) NAME, ADDRESS AND SOCIAL SECURITY NUMBER OF EMPLOYEE	(2) TRADE, CLASSIFICATION (INCLUDE GROU # IF APPLICABLE)		(3) DAY AND DATE HOURS WORKED EACH DAY	(4) TOTAL HOURS	(5) BASIC HOURLY RATE OF PAY	(6) HOURLY FRINGE BENEFIT PAID AS WAGE TO EMPLOYEE	(7) GROSS AMOUNT EARNED	(8) TOTAL DEDUCTION FICA, FED, STATE, ETC.	(9) NET WAGE PAID FOR WEEK	(10) HOURLY FRINGE BENEFIT PAID TO PARTY, PLAN, FUND OR PROGRAM	(11) NAME OF BENEFIT PARTY, PLAN, FUND, OR PROGRAM
		OT									
		S									
		OT									
		S									
		OT									
		S									
		OT									
		S									

CERTIFIED STATEMENT

I _____, _____ DO HEREBY STATE:
(NAME OF SIGNATORY PARTY) (TITLE)

(1) THAT I PAY OR SUPERVISE THE PAYMENT OF THE PERSONS EMPLOYED BY; _____ ON THE _____
(CONTRACTOR, SUBCONTRACTOR OR SURETY) (BUILDING OR WORK)
THAT DURING THE PAYROLL PERIOD COMMENCING ON THE _____ DAY OF _____, 19_____, AND ENDING THE _____ DAY OF _____, 19_____
ALL PERSONS EMPLOYED ON SAID PROJECT HAVE BEEN PAID THE FULL WEEKLY WAGES EARNED, THAT NO REBATES HAVE BEEN OR WILL BE MADE EITHER DIRECTLY OR INDIRECTLY TO OR ON BEHALF OF SAID _____ FROM THE FULL WEEKLY WAGES EARNED BY ANY PERSON, AND THAT NO DEDUCTIONS HAVE BEEN MADE EITHER DIRECTLY OR INDIRECTLY FROM THE FULL WAGES EARNED BY ANY PERSON, OTHER THAN PERMISSIBLE DEDUCTIONS AS SPECIFIED IN ORS 652.610, AND DESCRIBED AS FOLLOWS:

_____

(2) THAT ANY PAYROLLS OTHERWISE UNDER THIS CONTRACT REQUIRED TO BE SUBMITTED FOR THE ABOVE PERIOD ARE CORRECT AND COMPLETE; THAT THE WAGE RATES FOR WORKERS CONTAINED THEREIN ARE NOT LESS THAN THE APPLICABLE WAGE RATES CONTAINED IN ANY WAGE DETERMINATION INCORPORATED IN THE CONTRACT; THAT THE CLASSIFICATION SET FORTH THEREIN FOR EACH WORKER CONFORMS WITH WORK PERFORMED.
(3) THAT ANY APPRENTICES EMPLOYED IN THE ABOVE PERIOD ARE DULY REGISTERED IN A BONA FIDE APPRENTICESHIP PROGRAM REGISTERED WITH A STATE APPRENTICESHIP AGENCY RECOGNIZED BY THE BUREAU OF APPRENTICESHIP AND TRAINING, UNITED STATES DEPARTMENT OF LABOR, OR IF NO SUCH RECOGNIZED AGENCY EXISTS IN A STATE, ARE REGISTERED WITH THE BUREAU OFAPPRENTICESHIP AND TRAINING, UNITED STATES DEPARTMENT OF LABOR.

I HAVE READ THIS CERTIFIED STATEMENT, KNOW THE CONTENTS THEREOF AND IT IS TRUE TO MY KNOWLEDGE.

_____ _____
NAME AND TITLE SIGNATURE

NOTE TO CONTRACTORS: YOU MUST ATTACH COPIES OF THIS FORM TO EACH OF YOUR PAYROLL SUBMISSIONS ON THIS PROJECT. SEE THE BOLI PUBLICATION PREVAILING WAGE RATES FOR PUBLIC WORKS CONTRACTS IN OREGON FOR INSTRUCTIONS ON COMPLETING THIS FORM.

[redacted] FILE THIS FORM WITH THE CONTRACTING AGENCY [redacted]

BUREAU OF LABOR AND INDUSTRIES
NOTICE OF AWARD OF PUBLIC WORKS CONTRACT
(For use by Public Agencies in Complying with ORS 279.363)

1. CONTRACTING AGENCY INFORMATION

Name _____ Agency Number _____

Address _____

City, State, Zip _____

Agency Representative _____ Phone _____

2. CONTRACT INFORMATION

Project Name _____ Project Number _____

Project Manager Name _____ Fax Number _____

Phone Number _____

Project Location (Street(s), City, State) _____

Project County _____ Contract Amount _____

Source of Funds (i.e. 100% Federal Funds, 50/50 Federal/State, 100% Local, etc.) _____

Note: If this project is Federally funded and subject to the Davis Bacon Act, do not submit this form to the Oregon Bureau of Labor and Industries. If Federal funds are involved, but the project is subject to Oregon prevailing wage rate, please specify.

Date Contract Specifications First Advertised for Bid _____

Date Contract Awarded _____ Date Work Expected to Begin _____

Date First Progress Payment Due _____ Expected Date of Completion _____

3. PRIME CONTRACTOR INFORMATION

Name _____

Address _____

City, State, Zip _____ Phone _____

Construction Contractors Board Registration Number _____

Workers' Comp. Insurance Company _____

Workers' Comp Policy/Binder Number _____

THIS FORM WILL BE RETURNED TO THE CONTRACTING AGENCY FOR CORRECTION AND RESUBMITTAL IF INCOMPLETE.

RETURN THIS COMPLETED FORM TO:

Bureau of Labor and Industries
Wage and Hour Division Rm 1160
Prevailing Wage Section
800 NE Oregon # 32
Portland, OR 97232
(503) 731-4074, ext. 233 Fax: (503)731-4606

g:\whd\pwr\bidaward.sam(Rev. 6/96)
WH-81

Bureau of Labor and Industries
Prevailing Wage Rate Unit
800 N.E. Oregon St., # 32
Portland, OR 97232
Phone: (503) 731-4074, Fax: (503) 731-4623

PUBLIC WORK CONTRACT FEE INFORMATION FORM

(For use by contractors in complying with ORS 279.375)

THIS FORM TO BE USED FOR PROJECTS AWARDED AFTER SEPTEMBER 9, 1995 ONLY

Contractors: Please complete and mail this form to BOLI at the above address, along with the appropriate fee (1/10th of 1% of the contract price*) payable to BOLI. **MINIMUM FEE IS $100.00, MAXIMUM FEE IS $5,000.00. Without the following completed information, the bureau may be unable to properly credit you for payment received.**

BUSINESS NAME (DBA) _____ **CCB #** _____

MAILING ADDRESS: _____ **PHONE:** (___) _____

(STREET OR PO BOX #)

_____

(CITY, STATE, ZIP)

PROJECT NAME: _____

PROJECT NUMBER: _____ **PROJECT LOCATION:** _____

AGENCY AWARDING CONTRACT: _____

AGENCY CONTACT PERSON: _____ **PHONE:** (___) _____

CONTRACT AMOUNT: _____ **DATE AWARDED:** _____ **DATE WORK BEGAN:** _____

*(Contract amount X .001)

(Please duplicate this form for future use)

Bureau of Labor and Industries
Prevailing Wage Rate Unit
800 N.E. Oregon St., # 32
Portland, OR 97232
phone: (503) 731-4074, ext. 250
FAX: (503) 731-4623

PUBLIC WORKS CONTRACT FEE ADJUSTMENT FORM

THIS FORM TO BE USED FOR RECONCILIATION OF FEES ON COMPLETION OF PUBLIC WORKS PROJECTS

(As required by ORS 279.375 and OAR 839-16-210)

Contractors: Please complete and mail this form to BOLI at the above address, after completion of the public works project and not less than 30 days after the final payment by the contracting agency. Contractors are required to determine the final contract price, including all change orders or other adjustments to the original contract price and to calculate the adjusted prevailing wage rate fee, based on the revised contract price. Documentation must be included to support the final contract price. The prevailing wage rate fee, .001, (1/10th of 1%) shall be applied to the final contract price, with credit taken for fees already submitted. The contractor must submit the additional fee payable to BOLI with the adjustment form or requests for refund if applicable. NO ADDITIONAL FEE WILL BE CHARGED, NOR A REFUND MADE, ON ANY RECONCILED AMOUNTS UNDER $100.00.

BUSINESS NAME (DBA) _____ **CCB #** _____

MAILING ADDRESS: _____ **PHONE:** ( ) _____
(STREET OR PO BOX #, CITY, STATE, ZIP)

PROJECT NAME: _____

PROJECT NUMBER: _____ **PROJECT LOCATION:** _____

AGENCY AWARDING CONTRACT: _____ **DATE AWARDED:** _____

FINAL CONTRACT AMOUNT: _____ **FINAL FEE DUE*:** _____
(Include all change orders and adjustments to the contract price)
*(Final Contract amount X .001)

ORIGINAL CONTRACT AMOUNT: _____ **INITIAL FEE PAID*:** _____
*(Contract amount X .001)

BALANCE DUE: _____ **REFUND DUE:** _____
(Final contract fee less initial fee paid)

Sample Calculation:

Final Contract Amount:	$400,000.00	Final Fee Due:	$400.00
Original Contract Amt:	-300,000.00	Initial Fee Paid:	-300.00
Total Adjustment:	$100,000.00	Amount Due or Refund Due:	$100.00

*Documentation may consist of change orders or other contract documents substantiating the amount of the contract.

PLANNED PUBLIC IMPROVEMENT SUMMARY

FISCAL YEAR_____ - _____ _____ PAGE_____OF_____

(Name of State or Local Government Agency)

Project Number	Project Name	Project Type	Project Location	Estimated Project Cost	Agency or Contract Work

ORS 289.023 generally states that not less than 30 days prior to adoption of its budget for the subsequent budget period, each public agency shall prepare and file with the Commissioner of the Bureau of Labor and Industries a list of every public improvement known to that agency that the agency plans to fund in the budget period. If the agency decides to use its own equipment and personnel for construction projects estimated to cost more than $50,000, the agency shall show that the decision conforms to the policy of the State of Oregon that public agencies shall make every effort to construct public improvements at the least cost to the public agency, and the public agency shall cause to be kept and preserved a full, true and accurate account of the costs of performing the work including all engineering and administrative expenses and a reasonable estimate of the cost, including investment cost, of the equipment used. NOTE: This Improvement Summary together with the project estimate and least cost determination constitutes a public record available in the usual manner for public review or copying. Mail a copy of this public improvement summary to: Wage and Hour Division, 800 NE Oregon St., # 32, Portland, Oregon 97232.

FORM WH-118 (Rev 6/96)

CAPITAL IMPROVEMENT PROJECT COST COMPARISON ESTIMATE

_____
(Name of State or Local Government Agency)

DEPARTMENT:
PROPOSED YEAR:
PROJECT DESCRIPTION:

PROJECT NAME:

FUND:
PROJECT NUMBER:

Rough Quantity Estimate	Units	Work Class Description	Agency Force Estimate		Agency Contract Estimate	
			Unit Cost	Total Cost	Unit Cost	Total Cost
				$		$

Estimated Construction Period _____

_____ determines that (Agency Forces)(Contractor) can perform this work at the least cost.
(Name of Agency) (cross out one)

FORM WH - 119 (Rev 6/96)

_____
(Agency Official)

SPECIAL PROVISIONS

CITY OF NEWBERG
ASPHALT OVERLAY PROJECT

JANUARY, 1998

SPECIAL PROVISIONS

1. **Length of Contract.**
Construction must be substantially completed by June 15, 1998.

2. **Liquidated Damages.**
The amount of liquidated damages shall be One Hundred Fifty Dollars ($150) per calendar day.

3. **Pre-Construction Meeting.**
A pre-construction meeting will be scheduled by the Engineer after the contract has been awarded, and before issuance of the Notice to Proceed. The Contractor shall provide the following: a detailed construction schedule; insurance certificates; material certifications.

4. **Tree Trimming.**
All tree branches or foliage which will hinder the proper placement of the surfacing shall be removed by the Contractor by pruning and sealing the cut ends, or by tying back in a manner approved by the Engineer.

5. **Water.**
Construction water shall be from any domestic supply approved by the City. To obtain water from a City fire hydrant, a permit is required for a construction water meter installed by the City. To obtain a meter, contact the Project Inspector.

6. **Concrete Curb & Gutter Repair.**
This item consists of removing and reconstructing concrete curb & gutter that is deteriorated or deformed. Locations are tabulated below.

Method: Sawcut curb & gutter and two feet width of pavement. Reconstruct pavement according to Standard Drawing ST-23, "Asphalt Pavement Repair". Reconstruct curb & gutter according to Standard Drawing ST-4. Backfill curb with select material, restore existing surfacing. If the surface is plantings or barkdust, backfill top 6 inches with topsoil. If surface is grass, re-seed, cover with peatmoss, and provide one good watering.

Measurement will be per linear foot of curb & gutter. The unit price shall include sawcutting, excavation, restoration of the asphalt pavement, restoration of the backfill surface, and all tasks included in this item.

CONCRETE CURB & GUTTER REPAIR			
STREET	**LOCATION**	**SIDE OF STREET**	**EST. LENGTH (Ft)**
3RD	Harrison to RR Xing	North	15
TOTAL			15

7. **Preleveling Asphalt Hand Work.**
Small localized areas shall be preleveled by hand work prior to applying the Leveling Course, as directed by the Engineer. Preleveling Asphalt Hand Work shall be included in payment for the bid item Leveling Course Asphalt.

8. **Leveling Course Asphalt, Class D.**
The purpose for this work is to remove unevenness from the pavement in preparation for the asphalt overlay. Ride the screed of the self-propelled paving machine on the existing pavement surface from high point to high point. The locations for the leveling course are listed in the "Table of Streets".

9. **Asphalt Overlay.**
Construct asphalt concrete overlay as listed in the "Table of Streets". Refer to Standard Drawing ST-22.

SPECIAL PROVISIONS

10. Pavement Reinforcing Fabric.

Place non-woven Pavement Reinforcing Fabric according to Standard Drawing ST-22 on streets tabulated in the "Table of Streets". Specifications are listed in the table below.

PAVEMENT REINFORCING FABRIC		
PROPERTY	**TEST**	**MIN. VALUE**
Tensile Strength (Lbs)	ASTM-1682	80
Elongation (%)	ASTM-1682	50
Asphalt Retention (Gal/SY)	ODOT TM-817	0.20
Melting Point (°F)	ASTM-276	300

11. Adjust Manhole.

Adjust the frame with concrete adjustment rings. Make the final adjustment using shims and cement mortar. Refer to Standard Drawing ST-29.

12. Adjust Valve Cover.

Pry loose and raise the telescoping valve box with levers, using sufficient care so as not to break it. If a valve box is broken in this process, it shall be replaced at the contractor's expense following paving.

K:\WP\ADMIN\MISC\TABBY\SPECS\OVERLAY.PRJ\SPECPROV.1

TECHNICAL PROVISIONS

CITY OF NEWBERG
ASPHALT OVERLAY PROJECT

JANUARY, 1998

DIVISION TWO
GENERAL TECHNICAL REQUIREMENTS

****

201 MOBILIZATION

****

201.01 DESCRIPTION

This section covers, but is not limited to, work necessary to obtain all bonds, insurance, licenses, and permits; move in personnel and equipment; set up all offices, buildings, and facilities; provide all required light, power, and water; install project information signs if required; prepare for construction complete; demobilize, including removal of all facilities and clean up; and all other work to successfully complete the project which is not covered in other bid items.

201.02 MATERIALS

Provide all materials required to accomplish the work as specified.

201.03 CONSTRUCTION/GENERAL REQUIREMENT

Set up construction facilities in a neat and orderly manner within designated or approved work area. Provide for an acceptable material and equipment storage area. Supply all labor and equipment necessary to accomplish the work as specified. Conform to applicable requirements of Section 105 of GENERAL REQUIREMENTS, including, but not limited to, (1) required notifications, (2) protection of surveying monuments and other markers, (3) temporary traffic control, (4) temporary utility connections, (5) protection of property, (6) water and air pollution, and (7) noise.

201.04 MEASUREMENT AND PAYMENT

201.04.01 Lump Sum Basis

When mobilization is listed as a separate pay item on the Proposal, it will be paid for on a lump sum basis. Normal retainage will be deducted from partial payments.

Partial payments for Mobilization under the Contract will be made under the following schedule:

1. When 5 percent of the total original contract amount is earned from other bid items, 50 percent of the amount bid for Mobilization, or 5 percent of the total original contract amount, whichever is the least, less normal retainage, will be paid.

2. When 10 percent of the total original contract amount is earned from other bid items 100 percent of the amount bid for Mobilization, or 10 percent of the total original contract amount, whichever is the least, less normal retainage, will be paid.

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

The above schedule of progress payments for Mobilization shall not be construed to limit or preclude partial payments otherwise provided by the Contract.

201.04.02 Incidental Basis

When not listed in the Proposal, all Mobilization costs will be considered incidental work for which no separate payment will be made.

****

202 TEMPORARY TRAFFIC CONTROL

****

202.01 DESCRIPTION

This section covers all work necessary to conduct construction operations so as to offer the least possible obstruction and inconvenience to the public and to protect pedestrian and vehicular traffic.

202.02 UNIFORM TRAFFIC CONTROL DEVICES

Provide barricades, signs, and traffic control devices built in conformance with the Manual on Uniform Traffic Control Devices (current edition), published by the U.S. Department of Transportation, and the Oregon supplements to the Manual published by the Oregon Department of Transportation.

202.03 CONSTRUCTION

202.03.01 General

Use flag persons and provide and maintain such signs, barricades, warning lights, and other traffic control devices in conformance with the manuals referenced in Subsection 202.02.01. Adequately warn the public at all times of existing conditions on all streets affected by work operation.

Patrol the construction area at least twice daily and reset all disturbed signs and traffic control devices immediately. Remove or cover non applicable signs when not needed. Prior to closing or partial closing of any street, conform to Subsection 105.04 NOTIFICATION OF UTILITIES AND AGENCIES.

202.03.02 Traffic Control Within the Project

Formulate and submit a traffic control plan and a work schedule to minimize the disruption of traffic. Plan shall be submitted at the pre-construction conference. If no conference is held, plan shall be submitted at least 10 days in advance of beginning work. Obtain approval of plan and schedule from Engineer before commencing work. Allow traffic to pass through the work with as little inconvenience and delay as possible.

The traffic control plan shall contain a complete signing plan for semi-permanent and portable signs, barricades, and other traffic controls, provisions to keep the signs or devices current with the construction activities and the illumination of all detours and obstructions during hours of darkness. Be responsible for furnishing, installing, and maintaining all traffic control devices. Maintain these devices at all times including non-working hours.

Provide approved access to private properties at all times, except during stages of construction when it is impractical to perform construction and maintain access to private property simultaneously, as determined by the Engineer. When access is to be denied notify occupants of affected properties at least 24 hours in advance.

When, in the judgment of the Engineer, vehicular parking is a hazard to through traffic or to the work, furnish and place NO PARKING signs on any street which is directly involved in the construction work.

Only one intersection will be closed at a time without prior approval by the Engineer. The Contractor will notify Police and Fire departments in the jurisdiction of the closing and opening of streets. Pedestrian detours shall not exceed one block in length and all foot bridges will be provided with adequate handrails.

202.03.03 Construction and Maintenance of Detours

Construct and maintain temporary detours for protection of the work and the safe passage of traffic around work area.

Conform to requirements for detours in Subsection 107.12 of the Safety Requirements.

202.03.04 Flagging Requirements

The Contractor shall provide and maintain such signs, barricades and warning lights as are necessary to warn and protect the public at all times on highways, roads or streets affected by work operations. In addition, the Contractor shall also provide all necessary flag persons and guards necessary to warn and protect the public. Each flagger on duty shall wear an orange or yellow colored hard hat and an orange colored or fluorescent red-orange or fluorescent yellow-orange colored vest and shall be equipped with a highly visible, reflectorized "Stop-Slow" hand sign conforming to current standards for daylight use; and with illuminated stand area, of high visibility for night use.

202.03.05 Dust Control

Contractor shall be responsible for maintaining adequate dust control during and after construction and prior to acceptance by the Owner. The contractor shall apply a fine spray of water or other approved dust pallative to unpaved surfaces. Paved surfaces shall be broomed with power brooms (i.e., street sweepers) to control dust.

202.04 MEASUREMENT AND PAYMENT

202.04.01 Lump Sum Basis

When listed in the Proposal as a separate pay item, payment for Temporary Traffic Control will be made on a lump sum basis.

202.04.02 Incidental Basis

When not listed in the Proposal for separate payment, all Temporary Traffic Control will be considered incidental work for which no separate payment will be made.

****

203 CLEARING AND GRUBBING

****

203.01 DESCRIPTION

This section covers work necessary to clear, remove, and dispose of all debris and vegetation such as stumps, trees, logs, roots, shrubs, vines, grass, and weeds within the designated limits, to preserve from injury or defacement such objects and vegetation as are designated to remain in place, and to perform final clean-up of the designated area.

Clearing is defined as cutting of trees, bushes, vines, and other vegetative growth at or above ground surface and removal from the site of all such cut or down vegetation.

Grubbing shall consist of the elimination of wooden and vegetative matter occurring at or below ground surface including, but not limited to, stumps, trunks, roots, canes, stems, debris remaining from clearing work, and sticks having a diameter of one inch or more.

Review with the Engineer the location, limits, and methods to be used prior to commencing work under this section.

Removal of man-made structures, including, but not limited to, concrete slabs, walls, vaults, footings, asphaltic surfaced areas, and graveled areas, shall be included in payment for excavation or excavation and backfill as provided in Subsection 204.03.04, and will not be included in Clearing and Grubbing.

As indicated in Subsection 105.08 PROTECTION OF PROPERTY, occupants of buildings adjacent to the work shall have salvage rights to plants, trees, shrubs, fences, and other improvements in the right-of-way. Contractor shall notify adjacent property owners. Contractor does not assume ownership of clearing and grubbing items until after fulfilling the requirements of Subsection 105.08, and Subsection 203.03.02 TIMBER SALVAGE.

203.02 MATERIALS

Explosives used for clearing and/or grubbing shall be fresh, stable material manufactured to the standards of the "Institute of Makers of Explosives", and shall conform to the applicable requirements of ORS Chapter 476 and 480.

203.03 CONSTRUCTION

203.03.01 General

Obtain the required permits as specified in Subsection 105.08, PROTECTION OF PROPERTY, and perform clearing work in conformance thereto.

Remove trees and plants as designated within the area of work, and remove all sod, topsoil, and organic earth within designated areas.

Remove and stockpile as directed, all topsoil that is free of roots, rocks, and other objectionable material and is determined by the Engineer to be suitable for future use. Take reasonable care to prevent topsoil from becoming mixed with subsoil. Contractor shall provide imported topsoil per Subsection 206.02.04 at its sole expense if existing topsoil is not adequately segregated as determined by the Engineer.

203.03.02 Timber Salvage

203.03.02A Trees in Street Right-of-Way

The adjacent property owner shall have the right to any trees felled in the right-of-way adjacent to owner's property. Contractor shall notify adjacent property owners by mail or doorhanger at least 48 hours prior to felling trees. Trees shall be stacked and decked on owner's property or removed from the construction site if the owner does not reserve the right of ownership.

203.03.02B Trees on City-Owned Property

Owner reserves the right to merchant timber as designated in the Contract Documents and as marked at the project site by the Engineer. Assume ownership, remove, and dispose of all other timber. Cut,

trim, and handle marked merchantable timber in such a manner as to ensure the best sale value to Owner and dispose of resulting waste materials as hereinafter specified.

203.03.03 Protection of Existing Vegetation

Protect all trees, shrubbery, and other vegetation, not designated for removal, from damage caused by the work. Cut and remove trees and branches only where approved. When directed, remove branches other than those required to provide a balanced appearance of any tree. Contractor will provide adequate protection for trees, shrubbery, and other vegetation adjacent to the work area which are to remain, as indicated on the plans. No roots projecting into the excavation will be cut except in the presence of the Project inspector. All roots authorized to be cut will be cut neatly, with a sharp tool to avoid torn root endings. Remove branches only as directed by the Engineer and treat scars with approved tree sealant.

203.03.04 Clearing

Clear the area above the natural ground surface of all vegetation and objectionable materials. Cut timber and timber growth so that no stump extends above ground surface more than 6 inches. Prune all limbs over paved streets to an elevation fourteen feet above the pavement on arterial and collector streets, and eleven feet above the pavement on residential streets. Prune all limbs over sidewalks to an elevation seven feet, six inches above the sidewalk. All such pruning shall be done in accordance with accepted arboricultural standards, and shall be approved by the Engineer.

203.03.05 Clearing Borrow and Waste Disposal Areas

Clear areas designated as borrow and waste disposal areas to designated limits and dispose of all waste as herein specified.

203.03.06 Grubbing and Stripping

Completely remove all stumps and roots within the limits of required excavations and fill areas. No stumps or portion thereof shall come within three (3) feet of fill subgrades or slope surfaces. Use of explosives for stump removal shall conform to requirements of Subsection 203.02. Obtain any and all permits required for use of explosives from controlling jurisdiction.

On areas to be occupied by fills, remove all grass, roots, and embedded wood to a depth not less than 3 feet below subgrade or slope surface on which the fill is to be constructed.

On excavation areas, remove all roots and embedded wood to a depth not less than 1 foot below subgrade or slope surface through which excavation is required.

203.03.07 Disposal of Waste Material

Remove and dispose of all waste material or debris from the site. Obtain all necessary permits for disposing of waste materials. Copies of such permits shall be provided the Engineer prior to disposal.

203.03.08 Backfilling and Clean-up

In areas not subject to future excavations or filling, fill all holes and depressions caused by clearing and grubbing with material acceptable to the Engineer and reshape area to drain properly and to conform to adjacent undisturbed topography.

Leave work area in a clean and sightly condition, free from litter and debris.

203.03.09 Removal and Replacement of Signs, Mailboxes, Posts, etc.

Contractor will be responsible for the removal and replacement of all signs, mailboxes, posts, etc. when not specifically designated otherwise by the Engineer. Contractor to contact property owner prior to removal and reinstallation of mailbox. Mail boxes in work area must be temporarily moved to allow clearing and excavation as well as easy access by mailman and residents. Upon completion of excavation, mail boxes shall be permanently replaced behind curb to postal service regulations.

203.04 MEASUREMENT AND PAYMENT

203.04.01 Lump Sum Basis

When shown in the Proposal, payment for clearing and grubbing will be made on a lump sum basis for all clearing and grubbing within the limits specified.

203.04.02 Incidental Basis

When not listed in the Proposal for separate payment, all clearing and grubbing will be considered incidental work for which no separate payment will be made.

****

204 EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL

****

204.01 DESCRIPTION

204.01.01 GENERAL

This section covers work necessary for excavation, construction of embankment, foundation stabilization, pipe bedding, pipe zone backfill, trench backfill, and disposal of material required in construction of streets, sewers, water mains, storm drains, structures, and appurtenances thereto.

204.01.02 Unclassified Excavation

Unclassified excavation is defined as all excavation, regardless of type, nature, or condition of materials encountered unless separately designated. The Contractor shall assume full responsibility to estimate the kind and extent of various materials to be encountered in order to accomplish the work.

204.01.03 Rock Excavation

Rock excavation is defined as the removal of all material which by actual demonstration cannot, in Engineer's judgment, be reasonably excavated with equipment comparable to types listed in TABLE 1 and equipped with rippers or similar approved equipment and which is, in fact, systematically drilled and blasted or broken by power-operated tools designed for rock excavation. Engineer may waive the demonstration if material encountered is well-defined rock. The term Rock Excavation shall be understood to indicate a method of removal and not a geological formation.

TABLE 1

Manufacturer	Model	Minimum Net Horse Power	Type of Excavation
Caterpillar	225	125	Trench
John Deere	690	125	Trench
Case	125B/980B	125	Trench
Caterpillar	D8	300	Grading and Structural

In trenches, boulders or pieces of concrete below grade larger than 1/2 cubic yard will be classified as rock if drilling and blasting or other approved methods are actually used for their removal from the trench. If material which would be classified as rock by the above definition is mechanically removed without blasting, breaking, or splitting, it will be considered unclassified excavation and will be paid for as such at the unit price bid, or if larger equipment is specifically brought in for the sole purpose of rock removal, as defined above, then such removal will be considered rock excavation and will be paid for as such at the unit price bid.

204.01.04 Trench Excavation

Trench Excavation is defined as removal of all material encountered in the trench to the depths and widths as shown and, unless otherwise classified by the Engineer, shall be considered unclassified or rock excavation.

204.01.05 Embankment

Embankment is defined as furnishing, placing, and compacting embankment materials to the depth and configuration as shown.

204.01.06 Foundation Stabilization

Foundation stabilization is defined as the removal of unsuitable material in the bottom of an excavation as directed by the Engineer and replacement with specified material for support of a roadbed, pipe, main, conduit, structure, or appurtenances thereto.

204.01.07 Vacant

204.01.08 Pipe Zone

Pipe zone is defined as the full width of the trench from 6-inches below outside of the pipe barrel to a point 12-inches above the top outside surface of the pipe barrel as shown on the appropriate Standard Drawing.

204.01.09 Trench Backfill

Trench backfill is defined as furnishing, placing, and compacting backfill material in the trench between the top of the pipe zone and the bottom of the pavement base or ground surface. Trench backfill will be classified as either native or select backfill.

204.02 MATERIALS

204.02.01 Embankment Materials

Provide embankment materials of approved earth, sand, bank-run or river-run gravel or combinations

thereof, which can be compacted to the densities specified free of peat, humus, muck, frozen ground, organic matter, or other materials detrimental to construction of firm, dense, and sound embankments.

204.02.02 Foundation Stabilization

Use foundation stabilization consisting of gravel or crushed aggregate ranging in size from 6 inch-minus to 3/4 inch-minus as specified. Material shall be well graded from coarse to fine, and free from excessive clay or organic material.

204.02.03 Vacant

204.02.04 Pipe Zone Material

Use pipe zone material consisting of 3/4" - 0" crushed aggregate or sand, as noted on the plans or in the special provisions.

Pipe zone material shall be as specified for crushed aggregate material in Section 204.02.06B CRUSHED AGGREGATE.

204.02.05 Native Backfill Material

Use native material excavated from within limits of the project that can be compacted to the density specified and free from vegetation and other deleterious material containing no frozen ground.

Maximum particle size shall be as shown, except for trench backfill, wherein the particle size shall not exceed 6 inches in diameter.

204.02.06 Select Backfill Material

Use imported granular material for backfill consisting of bank-run or river-run gravel from an approved source, sand, or crushed aggregate as specified.

204.02.06A Bank-Run and River-Run Gravel

Use imported bank-run or river-run gravel from an approved source. Approval of material from a location does not mean approval of the entire site, but only as material continues to meet specification. Material shall be well- graded sandy gravel free from roots, clay balls, organic material, and debris. Maximum size of material shall be six (6) inches. No more than five (5) percent by weight shall pass the No. 200 sieve. The material shall have a minimum uniformity coefficient of 8, and a minimum permeability coefficient of 10-3 cm/sec.

204.02.06B Crushed Aggregate

Coarse and fine aggregates shall conform to requirements of Section 205 MATERIALS and to additional requirements contained herein.

Base aggregates to be incorporated in the work shall have a sand equivalent of not less than 30 when tested in conformance with AASHTO T 176.

Base aggregate shall meet the requirements for Liquid Limit and Plasticity Index of Subsection 205.02.12C FINE AGGREGATE.

The base aggregates shall be uniformly graded from coarse to fine and shall conform to one or another of the following grading requirements as specified:

	Separated Sizes				
	2½" – 0	2" – 0	1½" – 0	1" – 0	¾" – 0
Sieve Size	Percentages (by weight)				
3"	100				
2½"	95 – 100	100			
2"		95 – 100	100		
1½"			95 – 100	100	
1¼"	55 – 75				
1"		55 – 75		90 – 100	100
¾"			55 – 75		90 – 100
½"				55 – 75	
3/8"					55 – 75
*¼"	30 – 45	30 – 45	35 – 50	40 – 55	40 – 60

*Of the fraction passing the 1/4-inch sieve, 40 percent to 60 percent shall pass the No. 10 sieve.

For determination of sizes and grading conform to AASHTO T 27.

Where 1"-0 base aggregate is approved for use, at least 70 percent (by weight) of the material passing through the 1/4" sieve but retained on the No. 10 sieve shall have at least one mechanically fractured face.

Materials will be subject to acceptance as follows:

Construction Method	Time of Acceptance
Stationary plant mixed	Immediately following mixing
Travel plant mixed	After mixing and before laying
Road mixed	After mixing and before compacting

Acceptance will be based on periodic samples taken following mixing.

For trench backfill, the maximum particle size shall not exceed 1-1/2" in pipe zone.

204.02.06C Sand

1. Use sand consisting of fine granular material, naturally produced by the disintegration of rock, or produced from crushed gravel, and reasonably free of organic material, mica, clay, and other deleterious substances.

2. Use dredge sand produced from river dredging and reasonably free of organic material, mica clay, and other deleterious substances.

The grading of sand used for backfill shall be as follows, or as approved by the Engineer:

	Percentage Passing by Weight	
Sieve Size	Coarse Sand	Fine Sand
1"	100	100
3/8"	95 – 100	...
#4	80 – 100	90 – 100
#30	10 – 30	...
#100	...	2 – 10
#200	0 – 8	0 – 4
Sand Equivalent	50 min.	50 min.

3. When using sand as imported granular trench backfill material, material must be able to stand on a minimum 60° angle from horizontal following compaction to specified density unless otherwise approved by the Engineer. For the purpose of this specification, specified density will be a minimum of 95% of relative density as determined by the appropriate City of Newberg standard test at optimum moisture.

204.02.07 Imported Topsoil

Unless specified otherwise, imported topsoil shall be used. Provide natural, fertile, friable topsoil, representative of local productive soil, and 90 percent free of clay lumps or other foreign matter larger than 2-inch diameter, not frozen or muddy, with pH 5.0 to 7.0, and not less than 3 percent humus as determined by loss on ignition of moisture-free samples dried at 100 degrees C. Gravel portion (particles larger than 2 mm) shall not exceed 15 percent of total volume. Imported topsoil shall be free of quack grass, horsetail, and other noxious vegetation and their seeds. Should such regenerative material be present in the soil all resultant growth, both surface and root, shall be removed and replaced to original specifications at the Contractor's expense within 2 years of acceptance of the work.

204.02.08 Native Topsoil

When specified, use topsoil from the site, properly stored and protected and free from grass, debris, overburden and roots, sticks, hard clay, and stones which will not pass a 1-inch square opening.

204.02.09 Water

Use water which conforms to requirements of Section 205 MATERIALS TYPES AND USE. Provide water at the Contractor's sole expense. Whenever City water is to be used, the Contractor shall obtain a meter issued by the City.

204.02.10 Explosives

Use explosives which are fresh, stable materials manufactured to the standards of the "Institute of Makers of Explosives", and conforming to applicable requirements of ORS Chapters 476 and 480.

204.03 CONSTRUCTION

204.03.01 Excavation

Excavate, remove, and dispose of all formations and materials, natural or man-made, irrespective of nature or conditions, encountered within limits hereinafter defined or as specified, necessary for construction

of the project. Method of excavation used is optional. Overbreak shall be removed at the Contractor's expense. Use hand methods for excavation that cannot be accomplished without endangering existing or new structures or other facilities.

Furnishing, installing, and removal of all shoring, sheeting, and bracing as required to support adjacent earth banks and structures, and for the safety of the public and of all personnel working in the excavation shall be the Contractor's responsibility and shall be considered incidental to the construction.

204.03.02 Rock Excavation and Explosives

204.03.02A Depth of Excavation

Excavate to the depths designated or as shown on the appropriate plan or standard drawing. Correct over-excavation with compacted material as directed at no additional expense to Owner. In trenches for sewers, and water mains or conduits, remove all material necessary to provide a minimum clearance of 6 inches under the pipe and replace with bedding material in conformance with Subsection 204.02.04 PIPE ZONE MATERIAL.

204.03.02B Methods and Records Required

Before rock removal by systematic drilling and blasting or other methods will be permitted, notify Engineer who, with Contractor or its representative, will determine the amount of material to be removed as rock excavation and will record the information. Then drill, blast, or break with power-operated tools specially designed for rock excavation, and excavate the material.

204.03.02C Use of Explosives

Obtain any and all permits required for use of explosives required by the City of Newberg, and other governing agencies.

Use of explosives shall be avoided as far as practicable, and in no case shall tunnel blasting methods be used. Such blasting as must be done shall be controlled in a manner which will avoid possible shattering or loosening of materials back of lines to which the excavations are to be made. All blasting shall be supervised and/or done by a state certified powder person. Be responsible for any and all damages to property or injury to persons resulting from blasting, or accidental or premature explosions that may occur in connection with the use of explosives. Give adequate warning to all affected persons and adjacent property owners prior to blasting.

Where excavations in hard, solid rock are to be made to depths of 10 feet or more, blasting thereof shall be done by the presplitting or preshearing method unless other methods are approved by Engineer.

204.03.02D Trench Blasting

When blasting rock in trenches, cover area to be shot with blasting mats or other approved type of protective material that will prevent scattering of rock fragments outside of the excavation.

204.03.03 Preservation of Existing Improvements

Conduct operations in such a manner that existing streets, utilities, railroad tracks, structures, and other facilities which are to remain in place will not be damaged, as specified in Section 105. Furnish and install cribbing and shoring, or whatever means are necessary to support material carrying existing facilities, or to support the facilities themselves, and maintain such supports until no longer needed.

Protect temporary facilities, until they are no longer required, and remove and dispose of temporary supports and other protective means when they are no longer required.

204.03.04 Excavation of Existing Improvements and Miscellaneous

Unless otherwise specifically provided for, excavation or excavation and backfill includes all excavating, removing, hauling, and depositing, including but not limited to, existing pavements, walks, driveways, surfaces, slabs, curbs, gutters, and similar cement concrete structures, bituminous materials, all rock or gravel road surfacing materials, abandoned sewers, pipes and conduits, logs, piling, footings, foundations, vaults, and chambers, when such materials are within the limits of excavation.

Remove remaining ends of abandoned pipes, or portions of other items partially removed under this work, which would be left exposed after final excavation, to a minimum of one (1) foot below the finished grade or elevation. Plug or seal ends of abandoned pipes in backfill or embankment areas. Storm drain pipe shall be reconnected as directed by the Engineer.

Payment for all work in this section and repair of any damage will be considered incidental to the work and included under bid items for Excavation, Excavation and Backfill, or other specified earthwork items.

204.03.05 Limits of Excavation

Excavate to the depths and widths designated, allowing for forms, shoring, working space, base material, and finish topsoil where required. Do not excavate deeper than elevation shown. Excavation carried below grade lines shown or established without approval shall be replaced with compacted foundation stabilization material at the Contractor's expense. Over-excavation under footings shall be filled with concrete of a strength equal to that of the footing, and cuts below grade shall be corrected by similarly cutting adjoining areas and creating a smooth transition, all at the Contractor's expense. When the precise location of subsurface structures is unknown, locate such structures by hand excavation prior to utilizing mechanical excavation equipment.

204.03.06 Slope Grading

Make slopes free of all exposed roots, unstable rock, and loose stones exceeding 3 inches in any dimension. Shape tops of banks to circular curves with, in general, not less than a 6-foot radius, unless rock makes such work impractical. All surfaces shall be neatly and smoothly trimmed.

204.03.07 Foundation Stabilization

If, in the judgment of the Engineer, material in the bottom of an excavation is unsuitable for supporting foundations, piers, retaining walls, cribbing, sewers, pipes, or similar facilities, over-excavate as directed and backfill to required grade with thoroughly compacted foundation stabilization material conforming to Subsection 204.02.02.

204.03.08 Disposal of Excess Material

Excavated materials not suitable or not required for backfill or embankment shall be deposited at predesignated sites specified or sites supplied by the Contractor. An embankment permit may be necessary within the City of Newberg for any embankment exceeding 50 yards before the Contractor places any excavated material from City projects on any property. The Contractor shall make all arrangements for disposal of excess material, obtain the necessary permits when not provided by the City at predesignated sites, and bear all cost or retain any profit incidental to such disposal.

204.03.09 Temporary Location of Excavated Materials

Place excavated material, specified for embankment or backfills and not excess material, only within the construction easement, right-of-way, or specified working area. Pile in such a manner that it will cause a minimum of inconvenience to the public. Furnish the Engineer a copy of written approval from each property owner prior to stockpiling material on private property outside of easements. Conform to all Federal, State, and local codes governing the safe loading of trenches with excavated material.

Provide free access to all fire hydrants, water valves, and meters, and leave clearance to enable free flow of storm water in all gutters, conduits, and natural watercourses.

204.03.10 Surface Removal and Replacement for Trenches

204.03.10A Removal and Replacement of Topsoil

When specified and where trenches within easements cross lawns, garden areas, pasture lands, cultivated fields, or other areas on which topsoil conditions exist, remove all topsoil to a depth of at least 12 inches for the full width of the trench to be excavated. Stockpile topsoil to one side of the easement in a location and do not mix with remaining excavated material. Replace and compact removed topsoil in the top of backfilled trench to the depth removed.

Maintain finished grade of topsoil level with area adjacent to the trench until final acceptance by the Engineer. Repair damage to adjacent topsoil caused by work operations. Remove all rock, gravel, clay, and any other foreign materials from surface; regrade, and add topsoil as required.

In lieu of stockpiling topsoil, Imported Topsoil as defined in Subsection 204.02.07 may be substituted and replaced to the actual depth removed at the Contractor's expense. If, in the opinion of the Engineer, the Contractor does not take precautions to protect the stockpiled topsoil from contamination by rocks, clay, excess water, etc., the Contractor will import topsoil meeting the requirements of Section 204.02.07 at his own expense.

Payment for removing, stockpiling, and replacing topsoil in the trench is included in the bid item, Trench Excavation and Backfill.

204.03.10B Removal of Pavement, Curbs, Driveways, and Sidewalks

Cut all asphalt pavement to full depth with a pavement saw or other suitable pavement cutter prior to excavation of trenches.

Saw Portland Cement concrete pavement, curbs, and sidewalks to a minimum depth of four (4) inches or half the concrete thickness, whichever is greater. Subsequent removal may be accomplished by using a jackhammer. Full depth cut by pavement saw can be done at the option of the Contractor. Use of any machine utilizing a falling or swinging weight in the form of a "headache ball" will not be permitted.

Width of cut shall be as shown on the plans or standard drawings. Remove all loose, undermined or damaged pavement. Remove all pavement between the trench and curb, pavement edge or construction joint whenever the cut is two (2) feet or less from the curb, pavement edge, or construction joint. Prior to paving, all loose, cracked, sunken or otherwise damaged edges will be saw cut in continuous straight cuts. Straight line saw cut lengths will not be less than 50 feet. Cut angles will not exceed 15 degrees.

Pavement and concrete materials removed shall be hauled from the site and not used for trench backfill. Replacement of pavement, curb, and sidewalk shall conform to the requirements of Subsection 212 RESURFACING.

204.03.11 Trench Excavation and Shoring

204.03.11A Maximum Length of Open Trench

Length of trench excavated in advance of the pipe laying shall be kept to a minimum, and in no case shall it exceed two hundred (200) feet unless otherwise authorized. The length of unrestored work area and total unfinished trench construction shall not exceed a length of 800 feet, for each main line pipe laying operation unless otherwise authorized. Trench construction will not be considered completed until all restoration is completed. If the unfinished trench or restoration exceeds 800 feet in length, the main line construction shall be suspended and shall not be resumed until authorized by the Engineer.

In no case will any trench be left unfinished or uncovered overnight or outside working hours.

A section of trench shall be considered as unfinished until excavation, construction, backfilling, compaction, gravel road restoration, Portland Cement concrete pavement, minimum of first lift of asphaltic concrete pavement or cold patch, and cleanup operations have been completed. Cleanup of backfilled and construction area shall include resurfacing and cleaning of area so as to allow use of trench and adjacent construction area for normal use as required in Section 207 RESTORATION AND CLEANUP.

204.03.11B Trench Width

The maximum trench width at the ground surface will be kept to a minimum necessary to install the pipe in a safe manner. Trenches shall be of sufficient width to allow for shoring and permit proper joining of pipe and compaction of the backfill material along the sides of the pipe. Minimum trench width of unsheeted trenches shall provide a clear working space of at least six inches on each side of the outside diameter of the pipe bell. Sheeting requirements shall be independent of trench widths.

Trench width at the top of the pipe will be the pipe I.D. plus 18 inches, except where specifically shown on the Drawings, or specified in the Special Specifications. The pipe will be centered in the trench on line and grade at all times. When authorized by the Engineer, the Contractor may use pipe of greater strength or install a superior pipe bedding in lieu of maintaining the trench widths shown. If maximum width shown is exceeded by Contractor (without written authorization), the Contractor shall provide pipe of a higher strength designation, a higher class of bedding, or both, as approved by the Engineer, at no expense to the Owner.

Make the excavation for manholes and other structures wide enough to provide a minimum of twelve (12) inches between sides of structure and sides of excavation.

Confine top width of trench to dedicated rights-of-way or construction easements. Special written agreements to extend width may be made by the Contractor with affected property owners, provided such agreements are approved by the Engineer.

204.03.11C Grade

Excavate trench to lines and grades shown or as established by the Engineer, with proper allowance for pipe thickness, pipe bedding, and foundation stabilization. The subgrade upon which bedding is to be placed shall be firm, undisturbed, and true to grade. If the trench is over-excavated, restore to grade with thoroughly compacted foundation stabilization material or pipe bedding material at the Contractor's expense. Place material over full width of the trench in compacted layers to established grade with allowance for pipe bedding.

204.03.11D Shoring, Sheeting, and Bracing of Trenches

Sheet and brace trench when necessary to prevent caving and to protect adjacent structures, property, workers, and the public. Increase trench widths by the thickness of the sheet and maintain sheeting

until pipe has been placed and backfilled at the pipe zone. Remove shoring and sheeting as backfilling is done, in a manner that will not damage the pipe or permit voids in the backfill. All sheeting, shoring, and bracing of trenches shall conform to the safety requirements of the Federal, State, or local agency having jurisdiction. The most stringent of these requirements shall apply.

204.03.12 Dewatering

Furnish, install, and operate all necessary machinery, appliances, and equipment to keep excavations free from water during construction. Remove and dispose of all water entering the trench excavation continuously during the time the trench is being prepared for the pipe laying, during the pipe laying, when concrete is being placed, and until the backfill has been completed. Dewater and dispose of water so as to prevent injury to public or private property, or nuisance or menace to the public. Drainage of trench water through the pipeline under construction is prohibited unless otherwise approved by the Engineer. At all times have on hand sufficient pumping equipment and machinery in good working condition for all ordinary emergencies, including power outage. Have available at all times competent workers for operation of the pumping equipment. Control surface runoff to prevent entry or collection of water in excavations.

Control ground water such that softening of the bottom of excavations or formation of "quick" conditions or "boils" during excavation shall be prevented. Design and operate dewatering systems so as to prevent removal of natural soils and so that ground water level outside the excavation is not reduced to the extent that would damage or endanger adjacent structures or property.

Before dewatering is started, submit to the Engineer a statement of the method, installation, and details of the dewatering system proposed to be used. Open and cased sumps shall not be used as primary dewatering for excavations deeper than 3 feet below static water table.

Release ground water to its static level in such a manner as to maintain the undisturbed state of natural foundation soils. Prevent disturbance of compacted backfill and flotation or movement of structures, water mains, sewers, and other utilities.

Dewatering shall be considered as incidental to, and all costs included in, the various contract pay items in the Proposal.

204.03.13 Compaction

Compaction shall be by mechanical methods only.

Compaction equipment shall be of suitable type and adequate to obtain the amount of compaction specified. Compaction equipment shall be operated in strict accordance with the manufacturer's instructions and recommendations and shall be maintained in such condition that it will deliver the manufacturer's rated compactive effort. Compaction equipment for granular materials shall be vibratory plate or vibratory drum compactors.

Any settlement noted in backfill, embankment, or in structures built over the backfill or embankment within the 2-year warranty period in accordance with the GENERAL REQUIREMENTS will be considered to be caused by improper compaction methods and shall be corrected at the Contractor's expense. Structures damaged by settlement shall be restored to their original condition by the Contractor at the Contractor's expense.

204.03.14 Embankment

204.03.14A Roadway Embankment

Preparation of Embankment Foundations:

Prior to construction of embankments, excavate and dispose of unstable material or unsuitable foundation material. Limit excavation to lines, grades, and cross sections shown. Backfill basements, trenches, and holes which occur within embankment limits with specified material. Compact natural ground underlying embankments to the depth of grubbing or a minimum of 12 inches to density specified for the embankment material to be placed.

Embankment Construction:

Construct embankments to the lines and grades shown. Deposit material in layers not exceeding 8 inches deep across the full width of the embankment. Place material in continuous horizontal layers. Compact each lift to at least 95 percent of maximum dry density as determined by ASTM D1557/AASHTO T-180.

In embankments, the compacted materials within 3 feet of established subgrade elevation shall have a density in place of not less than 95% of relative maximum density, and below 3 feet shall have a density in place of not less than 90% of relative maximum density, and will show no appreciable deflection or adverse reaction under the compacting equipment during compaction.

If the surface of the prepared foundation or the compacted surface of a preceding lift is too dry or smooth to bond properly with the next layer of material, moisten or scarify, or both, before the next layer of material is placed. Compact slopes of all embankments thoroughly, and true to line and grade.

Do not place embankment material when the material, foundation, or previously placed embankment material is frozen. Embankment material shall not be placed in final position until moisture in excess of optimum moisture has been removed. Water settling of embankments will not be permitted.

204.03.14B Pipeline Embankment

Where pipelines are to be placed within an embankment, construct the embankment to its final specified elevation prior to trench excavation for the pipeline. Place pipe bedding and pipe zone materials in accordance with applicable portions of Subsection 204.03.16 and 204.03.17. Place trench backfill material as specified in Subsection 204.03.17 for TRENCH BACKFILL AND COMPACTION.

Additional Pipe Cover:

In locations where insufficient pipe cover exists, place excess excavated trench material suitable for embankment over the pipe to provide a minimum cover of 3 feet. Compact as required for underlying trench backfill.

204.03.14C Embankment for Structural Foundations

Deposit specified materials free from roots, organic material, trash, and stones larger than 3-inch diameter in uniform lifts across the full width of the embankment. Compact each lift to 95 percent of maximum dry density as determined by ASTM D 1557/AASHTO T180.

204.03.15 Pipe or Conduit Pipe Zone Bedding

Construct bedding in conformance with the appropriate Standard Drawing.

Class A pipe zone bedding consists of a pipe cradle of Portland Cement concrete as shown on the appropriate Standard Drawing. Bottom of trench shall be fully compacted before placement of pipe or cradle. Place concrete in such a manner that no dirt or foreign material become mixed with the concrete. Allow concrete sufficient time to reach initial set before any additional backfill material is placed in the trench. Conform to applicable provisions for Concrete Encasement in DIVISIONS 3 and 6 - SANITARY SEWERS and

STORM DRAINS.

Class B pipe zone bedding consists of leveling the bottom of the trench or top of the foundation material and placing pipe bedding select material to the horizontal centerline (springline) of the pipe. Bedding select material shall be placed in at least two lifts. Place the first lift to provide the minimum depth of bedding select material shown on the appropriate Standard Drawing before the pipe is installed. Spread smoothly to proper grade so that pipe is uniformly supported along the barrel. Excavate bell holes at each joint to permit proper assembly and inspection of the entire joint. Bedding under pipe shall provide a firm, unyielding support along the entire pipe length. Place subsequent lifts of not more than 6 inches thickness up to the horizontal centerline of the pipe. Bring lifts up together on both sides of the pipe and carefully work under pipe haunches.

Class A, B, and C pipe zone bedding shall be considered to include full width of excavated trench from the bottom of the trench or top of the foundation stabilization material to the top of the bedding.

Particular attention must be given to the area from the invert to the horizontal centerline of the pipe or top of the bedding to ensure that firm support is obtained to prevent any lateral movement of the pipe during the final backfilling of the pipe zone.

204.03.15A Bedding for Flexible Sewer Pipe

Material for bedding sewer pipe shall be as specified. Place in more than one lift. Material for pipe bedding PVC pipe shall be 3/4" - 0" or crushed rock placed a minimum of 6" under the pipe to 6" over the top of the pipe. First lift shall provide the minimum thickness per Standard Drawing No. 402 under any portion of the pipe or 4", whichever is greater, and be placed before the pipe is installed. Spread smoothly so that the pipe is uniformly supported along the barrel. Install subsequent lifts of not more than 6 inch thickness to the top of pipe zone and individually compact to either 90 percent density as determined by AASHTO 180 (delete paragraph 5.1), or 70 percent relative density as determined by ASTM D 2049. Engineer will select test method appropriate for material used.

204.03.15B Bedding for Water Pipe

Place bedding to a minimum thickness of 6 inches below the outside bottom of the pipe barrel or conduit and compact with mechanical vibrating or impact tampers to 95 percent of maximum density as determined by AASHTO 180 (delete paragraph 5.1), or 70 percent relative density, as determined by ASTM D 2049. Engineer will select test method appropriate for material used. For coal tar coated steel pipe, 3/4" - 0" bedding material is not acceptable.

204.03.16 Pipe Zone Placement

Place pipe zone material carefully around the pipe in 6-inch layers and compact to a minimum of 90 percent maximum dry density as determined by ASTM D1557/AASHTO T-180. Pipe zone material for water pipe shall be compacted to a minimum of 95 percent of maximum dry density as determined by ASTM D 1557/ AASHTO 180. Prevent pipe from movement either horizontally or vertically during placement and compaction of pipe zone material.

204.03.17 Trench Backfill and Compaction

204.03.17A General

For bidding purposes, the type of backfill to be used above the pipe zone is indicated on the Drawings. The right is reserved to modify the use, location, and quantities of the type of backfill during construction as the Engineer considers to be in the best interest of the Owner. Payment will be made based on the type of backfill installed.

Trench backfill above the pipe zone will be either imported or native for the purpose of payment:

Select and Approved Granular Native Backfill will, generally, be limited to streets and roadways and in similar areas where subsequent trench settlement must be held to a minimum. The Engineer will make the determination of acceptability of the granular native materials.

Native backfill will, generally, be limited to use in unsurfaced or unimproved areas.

When backfill is placed mechanically, push the backfill material onto the slope of the backfill previously placed and allow to slide down into the trench. Do not push backfill into the trench in such a way as to permit free fall of the material until at least 2 feet of cover is provided over the top of the pipe. Under no circumstances allow sharp, heavy pieces of material to drop directly onto the pipe or the tamped material around the pipe. Do not use backfill material larger than 6 inches in any dimension.

Take reasonable precautions to prevent excavated material which is designated to be used for backfill from becoming wet and exceeding the critical moisture limits. If native material does become wet and exceeds the critical moisture limits due to the Contractor's operations, replace with imported granular material at the Contractor's expense.

204.03.17B Select Backfill

Backfill the trench above the pipe zone with imported granular backfill material. Compact the entire trench depth in suitable lifts not to exceed 18 inches in depth with mechanical vibrating compactors with sufficient compactive effort to meet the specified density. Determine the type of equipment, method of placing lifts, and the amount of compacting effort required to prevent subsequent settlement. Compaction with hydrahammer equipment will not be approved.

The top 3 feet of select backfill shall be compacted to 95 percent of maximum relative density as determined by ASTM D4253 and D4254 for bar-run or river-run gravels. For one (1) inch-minus crushed aggregate, compact to 95 percent of maximum dry density as determined by ASTM D1557/AASHTO T-180.

In the zone below the top 3 feet of backfill, except water line trenches, compact to 90 percent of maximum dry density as determined by ASTM D1557/AASHTO 180.

Any subsequent settlement of the finished surface during the warranty period shall be considered to be a result of improper or insufficient compaction and shall be promptly repaired by the Contractor at the Contractor's expense.

204.03.17C Native Backfill

Backfill the trench above the pipe zone with excavated trench material.

In untraveled areas and as shown on the Construction Drawings, leave the trench with the backfill material level with the existing ground for the entire width of the trench. Material will be compacted to a minimum of 85 percent maximum dry density as determined by ASTM D1557/AASHTO T-180. Any deficiency of backfill material which becomes apparent after settlement and within the warranty period shall be corrected by regrading, and adding additional material where required. Unless otherwise directed by Subsection 204.03.11A, remove rocks larger than 2 inches in any dimension from the upper 8 inches of the backfill.

204.03.17D Compaction Testing

Sampling and testing of materials for determination of compliance with the specified compaction requirements may be taken at any location and time as the Engineer may determine. Excavate test pits in the backfill as directed by the Engineer for the purpose of testing the backfill compaction. At the option of the

Engineer, density tests may be taken on a lift of compacted backfill immediately before placing the next lift. All costs in connection with excavating test pits, providing and installing safety shoring as required to protect the testing person, and standby time during field density test shall be considered incidental to backfill and shall be included in unit prices bid for the various items involved.

When compaction testing has been performed by the Engineer and the required density has not been obtained by the Contractor, the Contractor shall bear all costs for all subsequent retesting in the areas of non-compliance. All testing shall be performed by the testing laboratory of the Engineer. The Engineer shall keep an accurate account of the time spent for the testing laboratory to perform retesting. The Contractor shall be totally responsible for rescheduling compaction testing with the Engineer. Any and all tests associated with delays due to retesting shall be the sole responsibility of the Contractor.

If required density has not been obtained, remove the backfill from the trench, replace with backfill, and recompact as many times as it is necessary to obtain the required specified minimum densities.

204.03.17E Trench Maintenance

In graveled areas, maintain surface of the backfilled trench level with the adjacent and existing grade, before and after the area is opened to traffic, with 1-inch minus crushed aggregate material. In paved areas, cold mix asphalt pavement shall be used until the final pavement replacement is completed. The cold mix asphalt or steel plating shall be in place at the end of each workday.
Place cold mix asphalt in conformance with Section 209 RESURFACING.

Maintain backfilled trench surface between any two successive manholes until the following operations have been completed and accepted by the Engineer:

1. Service connections installed, backfilled, and compacted.
2. Construction of manholes and appurtenances.
3. Air testing.
4. Cleanup and restoration of all physical features, including concrete curbs, gutters, and driveways.
5. Utilities restored to their original condition or better.
6. All work required between the two manholes accomplished.

Maintain backfilled trench surface between any two successive valves until the following operations have been completed and accepted by the Engineer:

1. Service connections installed, backfilled, and compacted.
2. Valves, valve boxes, and hydrants installed.
3. Hydrostatic testing.
4. Flushing and disinfection.
5. Cleanup and restoration of all physical features, including concrete curbs, gutters, and driveways.
6. Utilities restored to their original condition or better.
7. All work required between the two valves accomplished.

Do not undertake final pavement replacement until all items outlined above have been completed and accepted.

Maintenance of backfilled trenches is considered as incidental to this item of work, and payment for such maintenance will be considered as included in payment for Excavation and Backfill.

204.04 MEASUREMENT AND PAYMENT

204.04.01 Unclassified Excavation

All unclassified excavation will be measured on a cubic yard basis, or on a linear foot basis for trench excavation and backfill when so shown in the Proposal, all in original position prior to excavation. The quantity measured for payment will include only material excavated from within the limits defined herein. Any additional excavation outside of these limits, unless ordered in writing by the Engineer, shall be considered as having been made for Contractor's benefit and will be considered as incidental to the work. Excavation required for the volume displaced by new concrete curbs, driveway, sidewalks, steps, and pathways shall be considered incidental to the work and no payment will be made for removal of this material.

204.04.01A Roadbed and Slope Excavation

Pay quantities shall be computed to the neat lines of cross sections as staked or as otherwise specified.

204.04.01B Trench Excavation and Backfill

General

Length of all trenches will be measured horizontally along center of pipe or conduit from center-to-center of valves, fittings, couplings, manholes, structures, or end of pipe or conduit, whichever is applicable. Measurement through structures will be deducted if the Proposal carries a separate item of structure excavation applicable to the structures.

Measurement and payment for trench excavation and backfill shall include all work specified herein, or not specifically paid for in other pay items. No separate measurement and payment for trench excavation and native backfill shall be made for waterline projects. See Division 4, Subsection 404.01.

The price per linear foot for trench excavation and backfill shall be considered full compensation for the removal, protection, and replacement if damaged or interfering portions of existing sewers, storm drains, waterlines and other improvements; the plugging or removing of abandoned conduit and structures; the excavations of the trench; disposal of excess excavation; the control of ground and surface waters; the preparation of subgrade; backfilling the trench; removing, stockpiling, and replacing topsoil; and all other work necessary to install the pipe or conduit, complete in place.

Gravity Sanitary Sewers and Storm Drains

When contained in the Proposal, trench excavation and backfill will be paid for on a linear foot basis for type and depth of backfill used, with depth being measured from original ground or paved surface to invert of the pipe. The price bid per linear foot shall include the excavation required to provide space for the pipe bedding and any excavation and backfill necessary to widen the trench for installation of manholes and appurtenances.

For sanitary sewers and storm drains, depth figures shown in the Proposal are inclusive to the nearest 0.1 foot, that is, a trench depth measured as 11.9 feet will be paid for at the unit price for excavation 10 to 12 feet deep. At trench depth measured as 12.0 feet will be paid for at the unit price for excavation 12 to 14 feet deep. Depths measured at less than 8 feet will be included in the base depth of range of zero to 8 feet. Depth of trench will be measured at intervals of 50 feet along the centerline of the trench, and the ends. Depths will be interpolated between each 50-foot station or the ends if the line is less than 50 feet long.

Pressure Sewers, Waterlines, and Conduits

Payment for trench excavation and backfill will be made at the respective unit prices per linear foot stated in the Proposal for the trench excavation, the type of backfill used, and all incidental work, including

all extra excavation required to provide space for pipe bedding and shall also include any incidental excavation and backfill necessary to widen the trench for installation of branch-line fittings and appurtenances.

For waterline installations, payment for trench excavation and native backfill will be included within the "Installation of Pipe" (Subsection 404.01) bid item.

204.04.01C Imported Select Backfill

If a portion of the native material is approved as a granular backfill material in areas requiring such, there may be a need for additional granular backfill to be imported. Compensation will be on a cubic yard ("neat-line", in place) or linear foot basis.

All projects where select backfill is used in the trench section, payment shall be by the cubic yard unit price in place. The units shall be computed by multiplying the neat width of the trench, as defined by Standard Drawings, times the depth of the backfill between the asphalt concrete restoration section and the pipe zone, times the horizontal length of the trench to which the backfill is added. If all dimensions are in feet, divide the resulting volume by twenty-seven (27) for cubic yards.

204.04.02 Rock Excavation

204.04.02A Structural Rock Excavation

Rock excavation will be measured on a cubic yard basis for the actual quantity removed within the limits of excavation as defined for unclassified excavation. Quantity for payment shall be the amount approved by the Engineer.

204.04.02B Roadbed and Slope Rock Excavation

Rock excavation will be measured on a cubic yard basis for the actual quantity removed within the limits of excavation as defined for unclassified excavation. Quantity for payment shall be the amount approved by the Engineer.

204.04.02C Trench Rock Excavation

Rock excavation will be measured on a cubic yard basis as follows:

Length

Length will be the entire horizontal distance where rock is encountered measured on a linear foot basis along the centerline of the trench.

In sewer trenches, manholes and other structures will be excluded and will be measured separately. Measurement will commence at the first location where rock is encountered and continue to the point where rock terminates.

In trenches for water mains, valves, fittings, couplings, or structure locations will be included in the linear measurement, unless the Proposal carries a separate item that is applicable to the structures.

Width

For sewers and water mains, the width for payment of trench rock excavation shall be the inside pipe diameter plus 2 feet.

Depth

Measurement for depth will be the vertical distance from the top of the rock to the bottom of the rock or a depth that is 6 inches below the sewer pipe or watermain, whichever is less. Depth will be measured at intervals of 25 feet for sewers and 50 feet for water mains along the centerline of the trench, beginning at the first location that rock is encountered, and the average depth between measuring points will be the depth used for computing depth of rock.

Payment for rock excavation will be based on the unit price per cubic yard stated in the Bid and will be paid in addition to the payment for trench excavation and backfill except for water mains, where the volume paid for rock excavation will be deducted from the volume paid for common trench excavation. Payment for rock excavation shall include full compensation for all work necessary to excavate the rock material. No payment will be made for rock excavated below the required grade or outside the widths mentioned above.

Rock excavation quantities for manholes and other structures shall be computed from the actual profile depth as above, multiplied by the area within a line parallel to and one foot outside of the actual outside dimensions of the manhole or structure base.

204.04.03 Hard Surface Removal and Replacement for Trenches

Measurement and payment for the removal and replacement of Portland Cement concrete pavement, asphaltic concrete pavement and surfaces, curbs, driveways, and sidewalks shall conform to the provisions of Section 209 RESURFACING.

Payment for removal will be covered under excavation unless specifically stated otherwise in this document.

204.04.04 Embankment

Measurement for payment for embankment compacted in place will be made on a cubic yard basis. Computation of volume for payment will be based on field measurement of the actual number of cubic yards constructed within limits shown or directed. Where applicable, this shall be within neat lines of the staked cross section.

No payment will be made for quantities required due to subsidence or settlement of ground or foundation, for settlement of materials within the embankment or for shrinkage, settlement, washout, slippage, or loss regardless of cause, subject however to the provisions of RESPONSIBILITY OF CONTRACTOR in Section 105 of the GENERAL REQUIREMENTS.

No deduction will be made for piers, columns, pipes, or miscellaneous construction features constructed within embankment limits.

Payment shall constitute full compensation for all work and all materials used, whether obtained from the site of work or imported.

Trench excavation, bedding, and backfill placed in the compacted embankment will be paid for separately for the particular item and class of construction.

204.04.05 Foundation Stabilization

Payment for this item will be based on the unit price per cubic yard stated in the Proposal. Measurement will be based upon a trench pay width of the inside pipe diameter plus 2 feet. Payment for this item shall constitute full compensation for all materials, labor, equipment, and incidentals necessary to furnish materials at the site and for placing and compacting it and for the extra depth of excavation required below the pipe base grade structure or roadway to provide for a stable base. This item is to provide for unstable base encountered in the progress of the work and shall be used only under the direction of the Engineer. Foundation

stabilization will only be paid in those areas where the Engineer has given written direction for installation.

204.04.06 Bedding for Sewers, Water Mains, and Conduits

Payment for pipe bedding will be included in the linear foot payment for pipe as specified in Section 301 and/or Section 404.

204.04.07 Pipe Zone Backfill

Payment for pipe zone backfill will be included in the linear foot payment for pipe as specified in Section 301 and/or Section 404.

204.04.08 Riprap and Filter Blanket

Riprap and filter blanket material will be measured for payment on a cubic yard or ton basis only when listed in the Proposal as a separate bid item, or when directed by the Engineer. Measurement will be based upon individual trip tickets of actual truck measure furnished to the Engineer for the cubic yards or tons used under this item. Trip tickets shall be presented to the Engineer for signature on the day the material is delivered. No payment will be allowed on trip tickets not so validated by the Engineer.

Payment for riprap and filter blanket shall include all work necessary to furnish and place the material complete. When not listed in the Proposal, payment for riprap and filter blanket shall be incidental to other items of work.

204.04.09 Imported Topsoil

Measurement and payment for the imported topsoil will be made on a cubic yard or ton basis and only when listed in the Proposal as a separate bid item. Measurement will be based upon individual trip tickets of actual truck measure furnished to the Engineer for the cubic yards or tons used under this item. Trip tickets shall be presented to the Engineer for signature on the day the material is delivered. No payment will be allowed on trip tickets not so validated by the Engineer.

Payment for imported topsoil shall constitute full compensation for all work necessary to furnish materials on site, placing material, and for full compaction in place.

204.04.10 Shoring, Sheeting, and Bracing

Shoring, sheeting, and cribbing, including all work and materials expended in furnishing, placing, and removing such shoring, sheeting, and cribbing necessary to complete the excavation shall be considered incidental to the pay item for excavation.

204.04.11 Dewatering

Dewatering shall be considered as incidental to and included in the pay item for excavation.

****

205 MATERIALS - TYPES AND USE

****

205.01 DESCRIPTION

This section covers certain types of materials and their use that are common to appropriate forms of construction contained throughout Divisions 3 through 6.

205.02 MATERIALS

205.02.01 General

Unless specified otherwise in the Contract Documents or Standard Drawings, materials contained herein will be used in required work.

205.02.02 Portland Cement Concrete

Use concrete having a 28 day design strength of 3,300 PSI for curbs, sidewalks, and poured in place manholes and catch basins, and 4,000 PSI for PCC pavement per AASHTO T-22 and T-23 with 1-1/2 inch maximum size aggregate.

High early strength concrete (Type III cement) shall be used when patching trenches in Portland Cement concrete pavement.

Use Type II cement concrete for all sewer and water main construction and appurtenances thereto.

Portland Cement concrete shall be sampled and tested in accordance with the following ASTM test methods:

1.	Sampling Fresh Concrete	C172
2.	Obtaining Drilled Cores	C42
3.	Molding and Curing Specimens	C31
4.	Compressive Strength	C39
5.	Flexural Strength	C78
6.	Slump	C143
7.	Air Content	C173 or C231
8.	Unit Weight Yield	C138
9.	Setting of Mortar	C191 or C266

205.02.03 Cement Mortar

Use either standard premixed mortar conforming to ASTM C 387, or mortar proportioned with 1 part Portland Cement to 2 parts clean, well-graded sand which passes a 1/8-inch screen and which conforms to AASHTO M 45. Admixtures may be used, but do not exceed the following percentages of cement by weight: Hydrated lime - 10 percent and diatomaceous earth or other inert materials - 5 percent. Testing shall conform to the OSHD test for mortar strength.

205.02.04 Cement Grout

205.02.04A Type "A" Grout

Utilize grout which consists of 1 part Portland Cement, 3 parts of clean and well-graded sand. Use minimum amount of water to produce a thick, creamy consistency.

205.02.04B Type "B" Grout

Where type "B" grout is specified, use a mixture consisting of 1 part Portland Cement, 5 parts of clean and well-graded sand, and 7 parts pea gravel, by volume.

205.02.05 Steel Reinforcement

Use steel deformed bars conforming to ASTM A 615, Grade 40, except that longitudinal bars in continuously reinforced concrete pavement shall be Grade 60. See Section 702 REINFORCEMENT.

205.02.06 Dowels

Utilize steel dowels which conform to ASTM A 306 Grade 70. Where specified, dowels shall be coated with plastic or other approved material for bond prevention. See Section 702 REINFORCEMENT.

205.02.07 Structural Joint Material

Use preformed and poured joint fillers conforming to requirements of Subsection 701.02.06 JOINT MATERIALS. For joints in Portland Cement concrete pavement, curbs, gutters, driveways, sidewalks, and pathways, refer to DIVISION 5 - STREETS.

205.02.08 Curing Materials for Portland Cement Concrete

Conform to one or more of the following requirements for curing materials; choice of method to be used is dependent on weather and existing conditions:

1.	White Burlap – Polyethylene Sheets	AASHTO M 171
2.	Waterproof Paler	AASHTO M 171
3.	White – Pigmented Liquid Membrane-Forming Compound **	AASHTO M 148
4.	White Polyethylene Film	AASHTO M 171
5.	Burlap Cloth (Jute or Kenaf)	AASHTO M 182

**Required for PCC curbs, but do not use on bridges or box culverts. Test in accordance with the OSHD modified procedure.

205.02.09 Epoxy Cement

Epoxy cement shall be a two-compound epoxy resin adhesive conforming to requirements of AASHTO M 235.

205.02.10 Portland Cement

Furnish one or more of the following types as specified:

Type I – For general use when special properties of other type cements are not required.

Type IA – Air-entraining cement for same uses as Type I, where air-entrainment is desired.

Type II – For use when moderate sulfate resistance or moderate heat of hydration is desired.

Type IIA – Air-entraining cement for same uses as Type II, where air-entrainment is desired.

Type III – For use when high early strength is desired.

Type IIIA – Air-entraining cement for same use as Type III, where air-entrainment is desired.

Portland Cement shall conform to AASHTO M 85 for low alkali cement except as follows:

1. Total alkali content (sodium and potassium oxide calculated as $Na_2O+0.658K_2O$) shall not exceed 0.6 percent.

2. Types I, IA, III, or IIIA must contain a maximum of 10 percent tricalcium aluminate.

3. Time-of-setting tests shall be by either the Gillmore Test or the Vicat Test or both, as Engineer may elect.

When not otherwise specified, use Type I. Contractor, at his option, may use Type III Portland Cement (high early strength) in lieu of Type I in the identical quantity specified for the latter.

Differing brands or types of cement, or the same brand or type of cement from different plants shall not be mixed during use nor be used alternately. Cement may be sampled either at the plant or site of work at the option of the Engineer.

205.02.11 Water

Water used in all work must be reasonably clean and free of oil, salt, acid, alkali, sugar, vegetable matter, or other substances injurious to the finished product. Use water conforming to AASHTO T 26 for mixing and curing Portland Cement concrete, mortar, or grout. Water of approved potable quality may be used without test.

205.02.12 Aggregates

205.02.12A General

Aggregates shall be subject to approval at the source or at the actual stockpile from which the aggregate is taken for incorporation in the work. During production of the aggregate, provide samples of each size for testing if requested by the Engineer. On the basis of testing, modify or adjust crushing and screening operations to bring each separate size of aggregate within gradings, proportions, and quantities as specified.

In all stages of production, transporting, and stockpiling, handle aggregates in such a manner as will prevent the segregation of materials and the intermingling of separate gradings or kinds of aggregates.

Grading of designated aggregate sizes shall conform to the requirements of appropriate forms of work contained within applicable sections throughout these Specifications.

The determination of sizes and grading of aggregate shall conform to AASHTO T 27 and AASHTO T 11.

205.02.12B Coarse Aggregates

Coarse aggregates shall be natural or crushed rock or gravel which is retained on a No. 4 sieve and free from flat, elongated, soft, or disintegrated pieces, vegetable material, or other deleterious matter.

Use crushed rock or crushed gravel for coarse aggregate in aggregate bases and all asphalt construction requiring coarse aggregate. Total deleterious matter shall not exceed 2 percent by weight.

Use crushed rock, natural gravel, or other inert materials of similar characteristics, or combinations thereof, for coarse aggregate in Portland Cement concrete. Do not allow amount of deleterious substances in Portland Cement concrete to exceed the following amounts:

Lightweight pieces	0.25% (by weight)
Friable particles	0.25% (by weight)
Material passing No. 200 sieve	1.00% (by weight)
Wood waste	0.05% (by weight)

Use coarse aggregates having weighted percentages of loss which do not exceed 12 percent by weight when subjected to five alternations of the sodium sulfate soundness test (AASHTO T 104).

Fracture of Gravel

When crushed gravel is furnished, it shall have at least one mechanically fractured face on not less than the following percentages (by weight) of the material retained on a No. 4 sieve.

Type of Use	Percentages
Asphalt Concrete Pavement	75
Asphalt Surface Treatment	95
Asphalt Treated Bases	75
Aggregate Bases – 1"- 0" crushed gravel	70

Durability

The source material from which coarse aggregate is produced shall meet the following qualifying test requirements:

Test	Test Method	Requirements
Degradation:		
Passing No. 20 sieve	OSHD Standard	30% Max.
Sediment Height	OSHD Standard	3" Max.
Abrasion	AASHTO T 96	35% Max.

Also, other sampling and testing of coarse aggregate shall be in accordance with the following methods:

Sampling	AASHTO T 2
Materials Passing No. 200 sieve	AASHTO T 11
Sieve Analysis	AASHTO T 27
Soundness	AASHTO T 104
Friable Particles	AASHTO T 112
Lightweight Pieces	AASHTO T 113
Fracture	OSHD Standard

205.02.12C Fine Aggregate

Use fine aggregate consisting of finely crushed rock or gravel, fine sand, and other finely divided natural and inert mineral matter, thoroughly washed, and free of clay, loam, shale, alkali, vegetable matter, and other deleterious matter. Do not mix fine aggregate from different geological sources, and do not store in the

same pile nor use alternately in the same class of construction or mix.

Portland Cement concrete shall contain fine aggregate which has a deleterious material content not exceeding the following limits:

Friable Particles	1% (by weight)
Lightweight Particles	1% (by weight)
Material Passing No. 200 Sieve	1% (by weight)

When this fine aggregate for Portland Cement concrete is subject to five alternations of the sodium sulfate soundness test (AASHTO T 104), weighted percentage of loss must not exceed 10 percent by weight.

Asphalt cement concrete and surface treatments shall contain fine aggregate having a weighted loss of not more than 15 mass percent when sodium sulfate is used or 20 mass percent when magnesium sulfate is used in five cycles of the soundness test. Total deleterious matter shall not exceed 2 percent by weight.

Use fine aggregates which meet the durability requirements for coarse aggregates contained hereinbefore, and which meet the following Liquid Limit and Plasticity Index requirements:

Quality	Test Method	Requirement
Liquid Limit	AASHTO T 89	NP or 33 Max.*
Plasticity Index	AASHTO T 90	NP or 6 Max.*

*When tested as specified, both the liquid limit and the plasticity index test results shall conform to the following:

Percent of Material Passing No. 40 Sieve	AASHTO T 89 Liquid Limit (Maximum)	AASHTO T 90 Plasticity Index (Maximum)
0.0 to 5.5, inclusive	33	6
5.1 to 10.0, inclusive	30	5
10.1 to 15.0, inclusive	27	4
15.1 to 20.0, inclusive	24	3
20.1 to 25.0, inclusive	21	2
Over 25.0	21	O or N.P.

Sampling and testing fine aggregate shall conform to the following methods:

1.	Sampling	AASHTO T 2
2.	Material Passing No. 200 Sieve	AASHTO T 11
3	Organic Impurities	AASHTO T 21
4.	Sieve Analysis	AASHTO T 27
5.	Mortar Strength	ASTM C 109
6.	Soundness	AASHTO T 104
7.	Friable Particles	AASHTO T 112
8.	Lightweight Pieces	AASHTO T 113
9.	Sand Equivalent	AASHTO T 176

205.02.13 Asphalt Materials

205.02.13A General

Unless otherwise specified herein or in applicable subsections, types and grades of material shall conform to the current Oregon State Highway Division's "Specifications for Asphalt Materials" for Light Duty AC obtainable from the Engineer of Materials, ODOT, Salem, Oregon 97310.

205.02.13B Asphaltic Cement

Use PBA-2 grade asphalt that meets OSHD requirements for Light Duty AC.

205.02.13C Tack Coat

Asphalt shall consist of CSS-1 or CSS-1h emulsified asphalts.

205.02.13D Slurry Seal

Use CCS-1H cationic emulsified asphalt.

205.02.14 Geotextiles

DESCRIPTION: Geotextiles will be accepted for use in various applications according to the provisions of this section.

DEFINITIONS:

(a) **GEOTEXTILE** - A fabric manufactured specifically for use in civil engineering applications. Fibers used in the manufacture of geotextiles consist of long chain synthetic polymers. At least 85 percent by weight of the long chain polymers are polyolephins, polyesters, or polyamides.

1) **DRAINAGE GEOTEXTILE** - For installation in subsurface drains or other drainage locations.

2) **EMBANKMENT GEOTEXTILE** - For installation within or under embankments for stabilization.

3) **RIPRAP GEOTEXTILE** - For installation behind and beneath riprap, buttresses, inlays, shear keys, and erosion control applications.

4) **WALL GEOTEXTILE** - For construction of retained earth walls.

5) **SUBGRADE GEOTEXTILE** - For installation on subgrades and in other material separation applications.

6) **PAVEMENT OVERLAY GEOTEXTILE** - For installation beneath an asphalt concrete overlay.

(b) **MACHINE DIRECTION** - The long, or warp, direction of the geotextile. The cross-machine, or fill, direction is perpendicular to the machine direction.

(c) **NON-WOVEN GEOTEXTILE** - A textile produced by bonding and/or interlocking of fibers by mechanical, heat, or chemical means.

(d) **ROLL** - Unit of continuous geotextile without transverse seams as furnished by the manufacturer. Roll size may vary between manufacturers and types of geotextiles.

ACCEPTANCE REQUIREMENTS:

(a) **GENERAL REQUIREMENTS** - The geotextile shall:

- Be composed of a polymeric yarn or fiber oriented into a stable network which retains its relative structure during handling, placement, and design service life.
- Meet or exceed the properties outlined under Geotextile Property Values.
- Be free of any chemical treatment or coating which might significantly reduce permeability.
- Have the selvage finished so the outer fibers are prevented from pulling away from the fabric.
- Be free of defects or tears.
- Be resistant to ambient temperatures, acid and alkaline conditions, micro-organisms and insects.
- Be for the intended purpose and have dimensional stability.

(b) Base the actual minimum average roll values furnished by the manufacturer on representative test results from the manufacturing plant which produced the rolls, and shall meet or exceed each of the specified minimum values. Clearly label all rolls as being part of the same production run certified as meeting all applicable requirements.

GEOTEXTILE PROPERTY VALUES

Minimum Value

Geotextile Property Test Method	Drainage (1) Geotextile Type 1/Type 2	Riprap (1) Geotextile Type 1/Type 2	Subgrade Geotextile	Embankment Geotextile	Wall (1) Geotextile	Pavement (1) Overlay Geotextile
Grab tensile strength minimum in each principal direction - ASTM D4623	80 lb/180 lb	200 lb/260 lb	180 lb	230 lb	---	80 lb
Grab Elongation - ASTM D 4632	15%	15%	---	---	---	50%
Burst Strength, Diaphragm method - ASTM D 3786 Mod. (OSHA TM 814) (TF 25 Method 3)	130 psi/290 psi	320 psi/430 psi	290 psi	430 psi	---	---
Puncture Strength - ASTM D 4833 or ASTM D 3787 Mod. (OSHD TM 816)	35 lb/80 lb	80 lb/110 lb	80 lb	110 lb	---	---
Apparent opening size (AOS), U.S. Std. Sieve - ASTM D 4751 (CW-02215 Corps of Engr.)	No. 70 sieve or smaller opening	No. 70 sieve or smaller opening	No. 30 sieve or smaller opening	No. 30 sieve or smaller opening	(2)	---
Water permeability - ASTM D 4491	0.1 cm/sec	0.1 cm/sec	0.005 cm/sec	0.005 cm/sec	(2)	---
Ultraviolet stability - ASTM D 4355 at 500 hours	---	70% strength retained	---	---	70% strength retained	---
Wide strip tensile strength - ASTM D 4595	---	---	---	---	(2)	---
Asphalt retention - OSHD TM 817 (TF25 Method 3) (3)	---	---	---	---	---	0.20 gal/sq. yd.
Melting point - ASTM D 276	---	---	---	---	---	300° F

205.03 CONSTRUCTION

205.03.01 Description

This work consists of furnishing and placing geotextiles in drains, under embankments, for embankment reinforcement, under riprap, buttresses, inlays, shear keys and erosion control applications,

behind retaining structures, over roadbed subgrades, and beneath pavement overlays as shown on the plans and at other locations as directed.

205.03.02 Geotextile Installation Requirements

Acquisition and Storage - Provide complete rolls of geotextile as furnished by the manufacturer and protect against damage and deterioration. Store all geotextile rolls in a dry place and off the ground at all times according to ASTM D 4873. Cover all rolls and partial rolls with a dark protective covering when received. The geotextile will be rejected for use if the Engineer determines it has defects, deterioration, or has been damaged.

Placement:

(1) Surface Preparation - Prepare the surface receiving the geotextile to a smooth condition free of obstructions, depressions and debris unless otherwise directed. Do not drag the geotextile on the ground or mishandle in any way.

Loosely place the geotextile without wrinkles so placement of the overlying material will not tear the geotextile. Lap or sew the geotextile at the ends and sides of adjoining sheets as specified.

(2) On Slopes - Place the geotextile with the machine direction oriented up-down the slope. Lap the upper sheets over the top of the lower sheets. When the geotextile is placed on a slope steeper than 6:1, securely anchor the laps to the ground surface with pins or stakes as necessary to prevent slippage and tearing of the geotextile. Start placement of fill material on the geotextile at the toe of the slope and proceed upwards.

(3) Where Exposed To Water - If geotextiles are placed under water or in areas where water will flow, the geotextile may be placed with the machine direction parallel to the direction of water flow instead of the placement direction specified. Overlap sheets so the upstream sheet is placed over the top of the downstream sheet. Adequately secure the geotextile to prevent slippage. As the geotextile is placed under water, place the backfill material on it to the required thickness. Do not place geotextile more than 50 feet ahead of the specified cover material.

Overlaps - Minimum overlap requirements for geotextiles are:

GEOTEXTILE APPLICATION	MINIMUM OVERLAP REQUIREMENTS, INCHES
Drains	12
Embankment Stabilization	24
Geotextile Wall Reinforcement	24
Pavement Overlays	**
Riprap and Rock Buttresses	24
Roadbed Subgrade Stabilization	24

* Refer to 00350.44

** Use sufficient overlap to insure closure, but not more than 6 inches.

If the Engineer determines the specified overlap is not sufficient, increase the overlap to provide adequate coverage or sew the geotextile together in the field. If field sewn, the provision of 00350.20 and 00350.40(d) apply.

Field Seams:

(1) General - Obtain the Engineer's approval before field seaming and stitching. Sew field seams with polymeric thread consisting of polypropylene, polyester, or kevlar, and as resistant to deterioration as the geotextile being sewn. Use a color of thread that contrasts with the geotextile being sewn so the stitches are exposed for inspection when the geotextile is placed.

(2) Seam Type - Obtain the geotextile manufacturer's recommendation for the type of seam and stitch to be used. If the Contractor does not obtain and provide the foregoing technical information, use a "J" seam with at least 3 stitches per inch. The flat, or prayer, seam may be used for repair of damaged in-place geotextile.

Protection of Geotextile - Protect the geotextile at all times from ultraviolet (UV) rays, contamination by surface runoff, and construction activities.

Traffic or construction equipment will not be permitted directly on the geotextile except as authorized.

When placed for construction, cover the geotextile with specified cover material as soon as possible. Do not leave in uncovered condition for more than 5 days, except when used with temporary retained earth walls and asphalt overlays.

Place cover material on the geotextile in a manner that the geotextile is not torn, punctured, or shifted. Use a minimum 6 inches thick cover layer or twice the maximum aggregate size, whichever is thicker. End-dumping cover material directly on the geotextile will not be permitted.

Limit construction vehicles in size and weight so rutting in the initial layer above the geotextile is not more than 3 inches deep or 1/2 the layer thickness, whichever is lesser. Turning of vehicles on the first layer will not be permitted.

Repair of Geotextile - Repair or replace all torn, punctured, or contaminated goetextiles during construction at no cost to the Division. Repair by placing a patch of the specified geotextile over the affected area. Overlap the existing geotextile with the patch. Where geotextile seams are required to be sewn, repair any damaged sheet by sewing unless otherwise indicated on the plans or special provisions or as directed.

205.03.02A Drainage Geotextile

When used in trenches for drains, place the geotextile in the trench as shown on the plans to loosely conform to the shape of the trench with no wrinkles or folds.

205.03.02B Embankment Geotextile

Construct embankment stabilization according to details shown on the plans. Place the geotextile layers so the geotextile machine direction is transverse to the embankment centerline. Spread the geotextile so all slack and wrinkles are eliminated.

205.03.02C Riprap Geotextile

Place geotextile behind and beneath riprap, buttresses, inlays, shear keys, and erosion control applications according to the details shown. Demonstrate to the satisfaction of the Engineer that the combination of the rockfill drop height and the thickness of any aggregate cushion, when specified or required, are adequate to not puncture or damage the geotextile when placing the riprap or stone embankment material. In addition, the following limits apply:

	Maximum Drop Height, Feet	
Size of Rock Material	Onto Geotextile	Onto an Aggregate Cushion Blanket
Greater than 200 lbs.	0	3
200 lbs. or less	3	3

After placing the riprap, backfill all voids in the riprap face so the geotextile is completely covered and not visible.

205.03.02D Wall Geotextile

(a) General - Begin wall construction at the lowest portion of the excavation and place each layer horizontally as shown on the plans. Complete each layer in its entirety before the next layer is started. Seams will be allowed only at the wall face. Either overlap geotextile sheets perpendicular to the wall or sew seams parallel to the wall face. Stretch the geotextile in a perpendicular direction to the wall face to eliminate slack before backfilling.

(b) Forming the Wall - Use a temporary form system at the wall face during construction. A typical temporary form system and a sequence of wall construction required are shown in the plans. Use pegs, pins, or the manufacturer's recommended method as approved by the Engineer, in combination with the forming system, to hold the geotextile in place until the cover material is placed.

(c) Backfill for Wall Construction - Compact the backfill for the wall within the limits shown or directed. Compact each layer to 95 percent of maximum density as determined by OSHD TM 109. Maintain the water content to within +/- 3 percent of the optimum moisture content. Sheepsfoot rollers and vibratory rollers or other rollers with protrusions will not be allowed within 3 feet of the wall face. Compact this area using approved light mechanical tampers, without damaging or distorting the wall facing or reinforcing layers.

205.03.02E Subgrade Geotextile

For roadbed subgrade separation, prepare the subgrade according to Section 501.

Correct geotextile failures, as evidenced by soil pumping or roadbed distortion, by removing any covering material in the affected area and placing a geotextile patch on the exposed geotextile. The patch shall overlap the exposed geotextile a minimum of 12 inches. Cover the patch with the specified cover material and compact before proceeding.

205.03.02F Pavement Overlay Geotextile

(a) General - Place geotextile and pavement overlay in four basic steps:

- Surface preparation
- Sealant application
- Geotextile placement
- Overlay placement

As outlined according to Section 508.

205.04 MEASUREMENT AND PAYMENT (GEOTEXTILE)

Square Unit Basis (Measurements) – Each geotextile installation will be measured along the lines and grades of the installation to the nearest square yard of surface area actually covered according to the plans or as

required, except for drainage and wall geotextile applications.

The number of square yards of drainage geotextile will be computed by multiplying the length of the trench where geotextile is used by the perimeter of the trench as determined from the neat lines shown, or as directed.

Geotextile walls will be measured to the nearest square foot of wall face computed by multiplying the length times the sloped height of the wall.

No separate measurement will be made for constructing laps, seams, joints, or patches unless more than the specified lap is ordered, in which case the added lap width will be measured.

Square Unit Basis (Payment) – The accepted quantities for geotextiles will be paid for at the contract price per unit of measurement for the following items:

	UNIT OF PAY ITEM	MEASUREMENT
(a)	Drainage Geotextile	Square Yard
(b)	Embankment Geotextile	Square Yard
(c)	Riprap Geotextile	Square Yard
(d)	Wall Geotextile	Square Foot
(e)	Subgrade Geotextile	Square Yard
(f)	Pavement Overlay Geotextile	Square Yard

Item (d) includes all backfilling costs and geotextile as shown on the plans.

Item (f) includes preparation work, sealant, and geotextile.

Payment will be payment in full for all equipment, tools, labor, and incidentals necessary to complete the work. No separate payment will be made for constructing laps, seams, joints, and patches unless the Engineer orders additional amounts over the minimum. For laps wider than the minimum or specified width, payment will be made for the added lap width at the contract unit prices.

If the Engineer orders geotextiles with properties more stringent than specified, price adjustment for the difference in material cost only will be allowed.

****

206 LANDSCAPING AND LANDSCAPE RESTORATION

****

206.01 DESCRIPTION

This Section covers the work necessary for: (A) finish grading, addition of topsoil, fertilizer, and weed control, establishment of lawns or grass areas by sod or seeding, and maintenance of lawn or grass areas, complete; (B) mulching, fertilization, and planting of ground cover, establishment of nursery stock, such as trees, shrubs, and small plants, and maintenance of ground cover and nursery stock, complete; (C) irrigation system and subsurface drainage, complete.

206.02 MATERIALS

206.02.01 Plants

Names of plants to conform to standardized names of the American Joint Committee on Horticultural Nomenclature. Names of varieties not included therein conform to names generally accepted in the nursery trade. Provide plants which are nursery-grown with habit of growth that is normal for the species, sound, healthy, vigorous, and free from insects, diseases, and injuries and equal to or exceeding measurements specified, measured before pruning with branches in normal position. Provide sizes and methods of handling according to the code of standards recommended by the AAN.

206.02.02 Seed

Provide tested grass and legume seed from blue tag stock and from the latest crop available. Deliver each variety or mixture in standard containers labeled in accordance with Oregon State laws and U.S. Department of Agriculture rules and regulations under the Federal Seed Act. Provide with label showing the following: seed variety, percentage of purity, germination, maximum weed content, and date of test (must be within 9 months of date of delivery). Seed must be tested as set forth in the General Seed Certification Standard by the Oregon State University Certification Board. Mold or evidence of container having been wet or otherwise damaged will be cause for rejection of each lot of seed.

206.02.03 Sod

Provide grass sod from certified or approved source, strongly rooted, and free of pernicious weeds. Sod should be composed of several seed varieties excluding blue and bent grass varieties.

206.02.04 Topsoil

206.02.04A Native Topsoil

Save, store, protect, and reuse approved native topsoil taken from the top 12 inches of the excavation. Ensure that topsoil is free from grass, overburden and roots, sticks, hard clay, and any stones which will not pass a 1-inch square opening. Wherever native topsoil cannot be saved or is not satisfactory for reuse, use imported topsoil conforming to Subsection 204.02.07 IMPORTED TOPSOIL, but only with the approval of the Engineer.

206.02.05 Sand

Conform to the requirements of Subsection 205.02.12C FINE AGGREGATE.

206.02.06 Organic Material for Soil Amendment

Use a peat consisting of natural residue formed by decomposition of reeds, sedges, or mosses from freshwater site. Peat must be free from lumps, roots, stones, and capable of absorbing at least 4 times its dry weight of water. It must contain organic matter not less than 90 percent on a dry weight basis, and have a maximum moisture content at time of delivery of 65 percent by weight.

206.02.07 Lime

Provide a lime composed of ground dolomitic limestone not less than 85 percent total carbonates and magnesium, ground so that 50 percent passes 100 mesh sieve and 90 percent passes 20 mesh sieve. Coarser material may be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing 100 mesh sieve.

206.02.08 Subdrains

Use perforated PVC drain pipe, meeting the requirements of Subsection 601.02.04 PVC PIPE, unless otherwise specified, and as approved by the Engineer.

206.02.09 Irrigation and Water Systems

206.02.09A Pipe

Use copper pipe, Type K hard copper, conforming to ASTM B 88, with commercially pure wrought copper solder joint fittings. Make joints with 95-5 wire solder, ASTM B 32, grade 95 TA. The use of cored solder will not be permitted.

Use PVC pipe (SDR-PR), conforming to ASTM D 2241, and fittings of PVC with deep socket dimensions conforming to ASTM D 2466.

206.02.09B Gate Valves

Install the following gate valves: up to and including 3-inch with bronze bodies, 4-inch and larger with either bronze or iron bodies, all having bronze stems, bronze seat rings, and bronze disc faces, and conforming to ASTM B 62.

206.02.09C Pressure Reducing Valves

Use adjustable, heavy duty bronze pressure reducing valves. Must have approved stainless steel or monel strainer to permit quick cleaning or replacement without dismantling or removing the valve from the line and with integral or independent union.

206.02.09D Control Valves

Provide manual control valves of brass or bronze for underground installation. Valves shall have cross or slot type handle for operation with a standard key, a removable bonnet and stem assembly, an adjustable packing gland, a rising stem to assure full opening of the valve, renewable disc-type washer seat, and integral or independent union.

Use electrically operated control valves of bronze, brass, or stainless steel. These shall be of the normally closed type, having an open or close time greater than 4 seconds, and capable of manual control during power failure. Provide with a motor assembly or operating parts which are removable without disturbing the valve body. Must be all waterproof for underground burial, and with integral or independent union for supply line connection.

206.02.09E Quick-Coupling Valves

Supply one-piece or two-piece body type, locking cap, having body of approved heavy duty brass or bronze, watertight before and after the coupler is inserted, and designed so that the valve seat is closed before the coupler is removed. Provide valve couplers, keys, and hose swivels of compatible design to quick-coupling valves.

206.02.09F Risers

Connect sprinkler heads and quick-coupling valves to galvanized steel pipe water supply lines with galvanized steel pipe risers. Heads and valves connected to plastic pipe water supply lines shall, in addition, be provided with an approved swing joint.

206.02.09G Vacuum Breakers

Install bronze-bodied machined valve seat, with working pressure rating to 150 PSI. Provide pressure type vacuum breaker as an assembly consisting of vacuum breaker, 2 gate valves, check valve union, and nipples, as approved.

206.02.09H Backflow Preventers

Use either reduced pressure or double check valve assemblies, as indicated in Contract Documents, of a type and size approved by the Owner.

206.02.10 Fertilizer

Use fertilizer conforming to the recommended content as provided for in 206.03.02 SOIL TEST. Furnish fertilizer in moisture-proof bags with weight and the manufacturer's certified analysis of the contents showing the percentage for each ingredient. Furnish fertilizer in a dry condition free from lumps and caking, in a uniform granular or palletized form, of standard commercial grade conforming to all State and Federal regulations and to the standards of the Association of Official Agricultural Chemists. Fertilizer may be furnished in bulk form if an approved transfer hopper is provided.

206.02.11 Mulch and Ground Covers

Use one or more of the following types of mulch:

1. Organic mulch of clean ground Douglas fir or hemlock bark graded so that 50 percent consists of particles larger than 1/4-inch, but not exceeding 1-inch, and 20 percent will pass a No. 10 sieve.

2. Stone mulch of screened washed bank gravel with rounded pebbles. Submit sample for approval of color and size.

3. Fiber-glass mulch of approved commercial grade fiber-glass yarn mat.

4. Straw mulch of threshed straw of oats, wheat, or rye, free from seed of noxious weeds or clean salt hay.

5. On steep slopes use approved mesh to reinforce mulch or plantings such as fiber mulch of heavy, twisted jute mesh or other material as approved, with openings between strands approximately 1-inch square.

6. Spray mulch of a verdyol complex, with nontoxic, 100 percent organic water soluble powder binding agent with silva fiber used in hydraulic seeding operations.

206.02.12 Tie Downs

Use one or more of the following materials as the need arises:

1. Eye-bolt masonry anchors of galvanized steel, with approved lead shield or flush shell for setting into masonry joint or concrete.

2. Wood stakes, 2-inch by 2-inch by 96-inch, clear straight cedar, or approved.

3. Wire of 12 gauge, pliable galvanized steel, for guys, or for fastening trees to stakes.

4. Hose for guy wire encasement will be of 2-ply reinforced rubber garden hose, having a

minimum 5/8-inch diameter threaded openings fitted with screw eyes.

5. Turnbuckles will be zinc-coated, with a 6 1/2-inch lengthwise opening, and 3/8-inch diameter threaded openings fitted with screw eyes.

206.02.13 Soil Sterilant

Soil sterilant shall be as approved by the Engineer for the purpose specified and shall be applied conforming to manufacturer's recommendations.

206.03 CONSTRUCTION

206.03.01 General

Conform to the manufacturer's and supplier's recommendations and instructions and to accepted practices in the industry.

206.03.02 Soil Test

If directed by the Engineer, have a soil test performed before the project schedule is submitted. The test may be performed by any Oregon State University County Extension Agent or by any other approved soils testing laboratory. The soils analysis shall provide a chemical analysis of the soil and recommendations for soil improvement for the vegetation to be grown. The recommendations shall be used to select the particular fertilizer and soil improvement materials to be used prior to planting.

206.03.03 Lawns and Grass

206.03.03A Project Schedule

Within 20 calendar days of the date specified for commencement of work, submit for approval a time schedule indicating dates for beginning and completion of the following operations:

1. Delivery of Materials
2. Preparation of Seedbed
3. Planting Grass
4. Maintenance

206.03.03B Delivery, Handling, and Storage of Sod

Deliver sod immediately on lifting and after lawn bed is prepared for planting. Protect sod from drying by covering during delivery to protect from sun and wind. Store materials only in designated areas.

If sod is not laid within 2 days of delivery, spread out flat with grass side up in cool place and keep moist. Rolled or stacked sod that becomes yellow will not be accepted.

206.03.03C Preparation of Subgrade

After rough grading is completed and before topsoil is spread, apply lime and/or super phosphate as determined by soil analysis, and mix to a depth of 4 to 6 inches. Conform to manufacturer's recommendations for applying lime and super phosphate simultaneously, and schedule application or applications accordingly.

206.03.03D Subsurface Drainage

Lay drainage pipe on firm bed of gravel with minimum fall of 0.5 percent and located as shown on the plans. Place pipe at a minimum depth of 24 inches and not any deeper than required to produce minimum fall. Cover backfill with fiberglass mat to prevent infiltrations of soil. Backfill trenches with gravel to within 4 inches of subgrade.

Place other drain materials in conformance with the applicable requirements in DIVISION 5 - SEWERS. Complete backfilling of trenches with a 4-inch layer of coarse sand and tamp for compaction, as approved.

206.03.03E Topsoil and Finish Grading

Spread topsoil and soil conditioner over the prepared rough grade using a rubber-tired tractor with grader blade or equivalent, weighing a maximum of 3 1/2 tons. Imported topsoil must be incorporated with at least a 2-inch layer of subsoil. Thoroughly mix the applied materials to a depth of 8 inches using a disc or cultivator over the entire area in two directions at right angles. Rake topsoil areas to a uniform grade so that all areas drain, as shown on the plans or as approved. Remove all trash and any stones exceeding 2 inches in diameter from the area to a depth of 2 inches prior to preparation and planting grass.

206.03.03F Soil Sterilant

Apply specified soil sterilant at the rate recommended and by the method approved by the manufacturer or as specified.

206.03.03G Seeding

Plant grass seed only at times when local weather and other conditions are favorable to the preparation of the soil and to the germination and growth of grass seed. Sow grassed areas evenly with a mechanical spreader at the recommended rate and method approved by Oregon Department of Agriculture Extension Service. Method of seeding may be varied, as approved, however, the responsibility to establish a smooth, uniformly grassed area will not be waived. Hydroseeding will be permitted, unless otherwise specified.

206.03.03H Sodding

Before sod is laid, correct soft spots and irregularities in grade of the prepared bed, as approved. Lay sod, and tamp or roll so that no voids occur. Water sod thoroughly. Complete sod surface true to finished grade, even and firm. On slopes steeper than 1 to 2, fasten sod with wooden pins 6 inches long driven through the sod into the soil, flush with the top of the sod at approved intervals.

206.03.03I Mulching and Protection of Slopes

Mulch all areas with a slope from 5 percent to 20 percent by spreading a uniform light cover of straw mulch over the seeded area at a rate of 1 1/2 tons per acre.

In areas with a slope steeper than 20 percent, and up to 25 percent, install erosion control netting. In non-turf areas, cover netting with fir bark mulch.

Mulch all areas with a slope steeper than 25 percent with spray mulch applied at a rate of 15 gallons per 1,000 square feet after wetting the ground with water penetrating at least 1 inch deep.

Protect new seeded area from pedestrian traffic. Unless otherwise approved, erect a fence of 2-inch by 2-inch posts 4 feet high spaced 10 feet on center and strung with jute, hemp, or a single strand of No. 12 gauge wire marked with cloth strips at 3-foot intervals between posts.

206.03.03J Maintenance

Begin maintenance immediately after each portion of lawn is planted and continue for 8 weeks after all lawn planting is completed.

Water to keep surface soil moist. Repair washed out areas by filling with topsoil, fertilizing, and seeding. Replace mulch on banks when washed or blown away. Repair fencing as needed. Mow to 2 inches after grass reaches 3 inches in height, and mow frequently enough to keep grass from exceeding 2 1/2 inches. Weed by local spot application of selective herbicide only after first planting season when grass is established.

206.03.03K Lawn Guarantee

If, at the end of the 8-week lawn maintenance period, a satisfactory stand of grass has not been produced, immediately renovate and reseed the unsatisfactory portions of lawn, or when approved, reseed at the beginning of the next planting season. If a satisfactory stand of grass develops by June 1st of the following year, the lawn will be accepted. If the lawn is not accepted, a complete replanting will be required during the ensuing planting season. A satisfactory stand is defined as a lawn or section of lawn that has:

1. No bare spots larger than 3 square feet.
2. Not more than 10 percent of the total area with bare spots larger than 1 square foot.
3. Not more than 15 percent of the total area with bare spots larger than 6 inches square.

206.03.03L Inspection for Acceptance

Submit a written notice eight weeks after the start of maintenance on the last section of completed lawn. Within 15 days of such written notice the Engineer will make an inspection of the lawn to determine if a satisfactory stand of grass has been produced.

206.03.04 Trees, Shrubs and Ground Cover

206.03.04A Delivery, Preparation and Storage

Dig plants designated as Balled and Burlapped in the Contract Documents with firm, natural balls of earth of diameter and depth sufficient to encompass the fibrous and feeding root system required for full recovery of the plant. Firmly wrap balls with burlap and bind with twine, cord, or wire mesh. Where necessary to prevent breaking or cracking of the ball during the process of planting, or where the tree exceeds 4 inches in diameter, secure the ball to a platform. Meet or exceed AAN Standards, current edition.

Dig bare root plants during dormant period to remove earth with the least possible injury to the fibrous root system. Cover the roots with thick coating of mud immediately after digging by puddling or wrapping in wet straw, moss, or other suitable packing material for protection until delivery.

Furnish container grown plants with self-established root systems sufficient to hold earth together after removal from the container but not root-bound. Plants shall have grown for at least 3 months in the container with inside diameter specified. Meet or exceed AAN Standards, current edition.

If plants are not in the dormant state, spray with anti-desiccant to cover foliage as recommended by manufacturer, prior to digging the plants. During shipment, protect the plants with tarpaulin or other

approved covering to prevent excessive drying from the sun and wind.

Cover balls of balled and burlapped plants, and containers of container grown plants, which cannot be planted immediately upon delivery, with moist mulch to protect from drying. Plant or heel-in bare root plants immediately upon delivery. Water plants as necessary to prevent drying until planted. Do pruning only at the time of planting.

Open and separate all bundles of heeled-in bare root plants before the roots are covered. Avoid leaving air pockets among the roots.

206.03.04B Soil Conditioning

After the specified chemical analysis report for topsoil is received, prepare the topsoil mixture for plant pits and beds by thoroughly mixing the approved topsoil with soil conditioner materials, fertilizer, and lime. Thoroughly mix with rotary mixer or other approved method in the following proportions:

	Required Mixture		Parts by Volume		
Topsoil Classification by Clay Content	Top Soil	Sand	Peat	Fertilizer*	Lime
Clay 5 - 10 Percent	4	0	1 LB/CY	(½) LB/CY	(1)
Clay 10 - 15 Percent	2	2	1 LB/CY	(½) LB/CY	(1)
Clay 15 - 25 Percent	2	4	1½ LB/CY	(½) LB/CY	(1)

*Adjust in accordance with Soil Test chemical analysis report.

Store and protect topsoil mixture and other materials at designated area of the site. Protect topsoil mixture from excessive leaching by covering with tarpaulin if stored for more than 6 weeks.

206.03.04C Planting Procedures

Within 20 calendar days after receiving the notice to proceed, submit a time schedule for approval indicating dates for commencement and completion of the following operations:

1. Tagging of plants in the nurseries
2. Survey and staking of plant locations
3. Delivery of topsoil and other materials
4. Digging and preparation of plant pits and beds
5. Delivery of trees and plants to the site
6. Planting of trees and other plants
7. Fertilization and application of pre-emergent herbicide
8. Guying, staking and mulching
9. Completion of work for start of guarantee period

At least 20 days before start of the guarantee period, submit a schedule of proposed maintenance operations indicating the number of man-hours contemplated for each operation by season during autumn, winter, spring and summer.

Locate new planting where shown on plans, except make approved adjustments where obstructions below ground are encountered or where changes have been made in the construction. Place no planting, except ground cover, closer than 18 inches to pavements and structures. Dig plant pits and have soil mixture for planting ready before plants are delivered. Excavate circular pits with vertical sides a minimum of two feet greater than the diameter of the ball. For trees, shrubs, and vines excavate pits to depth sufficient to accommodate ball or roots when plant is set to finished grade. Place 3 inches of compacted soil mixture in the bottom of pit. Set plants upright and face as approved to give the best appearance or relationship to adjacent structures. Remove wire, burlap, and surplus binding from top and sides of balls. Spread roots in normal position. Cut all broken or frayed roots off cleanly. Place prepared soil mixture and compact carefully to avoid injury to roots and to fill voids. When hole is nearly filled, add water as necessary and allow to soak away. Fill hole to finished grade. When directed by Engineer, form shallow saucer around plant by placing ridge of topsoil around edge of pit two feet greater than diameter of ball. After ground settles, fill with additional soil to level of finished grade.

Plant trees before surrounding smaller plants and covers are placed. Position trees as shown on plans or, where spacing dimensions or locations are not clear, as approved.

Plant shrubs on centers as shown on plans with spacing adjusted if required to evenly fill bed using specified quantity of plants.

Plant hedges on centers as shown on plans. Excavate trenches a maximum of 4 inches deeper and 12 inches wider than spread of roots or diameter of balls. Make adjustments to spacing if necessary to fill trench evenly with the quantity of plants shown on plans.

Plant ground covers in beds having minimum 8 inch of prepared soil mixture. Treat ground cover beds with soil fumigant, after preparation for planting, but before any plants are installed within bed area, to destroy weed seeds. Apply according to Manufacturer's directions, delaying planting for the recommended minimum period to allow dissipation of herbicide. Space plants as shown on plans. Mulch and water immediately after planting.

Plant bulbs in ground cover beds to recommended depths for each bulb type as shown on plans.

Provide trees and planting beds with 3 inch layer of fir or hemlock bark mulch within 2 days after planting and keep at this depth throughout maintenance period. Mulch to entirely cover area of saucer around each tree.

Use four guys equally spaced as shown on plans for all trees greater than 4 inches in diameter.

Use three guys equally spaced as shown on plans for all trees 4 inches in diameter or less.

Where shown on plans, wrap trunks of trees spirally from ground line to height of second branches. Make all wrappings neat and snug and hold material in place by raffia cord at top and bottom.

206.03.04D Pruning and Repair

At completion of planting work, prune and repair injuries at all plants. Limit amount of pruning to minimum necessary to remove dead or injured twigs and branches and to compensate for the loss of roots as a result of planting operations. Do not change natural habit or shape of plant. Make cuts to branch collar, leaving no stubs. On all cuts over 3/4 inch in diameter and bruises or scars on bark, trace the injured cambium back to living tissue and remove. Smooth and shape wounds so as not to retain water. Coat with approved tree wound paint.

206.03.04E Plant Guarantee

Guarantee all plants for a minimum of 1 year to be alive and in vigorous growing condition at the end of guarantee period. Guarantee period shall extend 1 year from date of Acceptance of Work as defined in Subsection 101.01 DEFINITIONS. Remove unsatisfactory plants and replace with plants of the same kind, quality and size as originally provided as specified. Guarantee all plant replacements to be alive and in vigorous growing condition 1 year after replacement. Bear all costs of replacement except for replacements resulting from removal, loss or damage due to occupancy of project in any part, vandalism or acts, of neglect on part of others. Replace plants that die immediately, unless during a season unfavorable for planting. When season is unfavorable, plant during the first month of the next favorable planting season.

206.02.04F Maintenance

Begin maintenance immediately after each plant is installed and continue to maintain until the end of the guarantee period.

Perform the following operations: (1) Watering as often as required to maintain capillary water within 2 inches of the soil surface around plants, (2) weeding of plant beds, planting saucers and plantpockets to keep free of weeds, using approved selective herbicide according to the Manufacturer's directions for use, and/or weeding by hand methods, (3) mulching monthly to replenish mulch and keep at required 2 inch minimum depth, (4) tightening and repairing guys to keep trees erect and supported without damage to bark, (5) resetting plants to proper grades or upright position, (6) restoration of planting saucers, (7) seasonal spraying to control disease or insect pests that may impair plant vigor.

Replace plants required by the plant guarantee on a regular monthly basis, except during the months of December, January and February.

206.03.05 Irrigation Systems

206.03.05A General

Install components of the irrigation system as shown and as recommended by the equipment manufacturers. All sprinkler runouts shall be evenly graded to the drain points shown on plans. Piping beneath paved areas shall have a minimum cover of 30 inches. Construct irrigation system in areas to receive topsoil after topsoil is spread, compacted, and rough graded. Copper tubing may be bedded using excavated material. Bed PVC pipe in sand, as shown on plans and backfill to a minimum of 3 inches above the pipe with sand. Determine the final number and location of sprinkler heads after grading is complete, such that complete coverage of all sprinkled areas is provided. Flush out system thoroughly and pressure test before installing sprinkler heads. Adjust flow on each head for proper coverage.

Repair and replace irrigation parts and winterize as necessary.

206.03.05B Copper Tubing

Cut tubing square and remove burrs. Clean both inside of fittings and outside of tubings with steel wool and muriatic acid before sweating. Take care to prevent annealing of fittings and hard-drawn tubing when making connections. Mitering of joints for elbows and notching of straight runs of pipe for tees will not be permitted.

206.03.05C PVC Pipe

Cut, make up, and install PVC pipe in accordance with the manufacturer's recommendations, as approved. Lay PVC pipe using the practice of snaking from one side of the trench to the other, 1 cycle per 40 feet or less. Use strap wrenches for tightening threaded plastic joints. Take care not to over-tighten fittings.

Do not lay PVC pipe when the temperature is below 40° F. Sprinklers and valves shall be installed in accordance with the manufacturer's recommendations, as approved.

206.04 MEASUREMENT AND PAYMENT

206.04.01 Incidental Basis

When not specified or shown as a separate pay item in the proposal, payment for all landscape work is considered to be incidental to the construction.

206.04.02 Unit Price Basis

When so listed in the Bid, payment for the landscaping items will be made on a unit price basis for the number of items actually placed and accepted.

206.04.03 Lump Sum Basis

When so listed in the Bid, measurement and payment will be made at the contract lump sum pay item for Landscaping, complete.

****

207 RESTORATION AND CLEANUP

****

207.01 DESCRIPTION

This section covers the work necessary to restore and clean up the site, and remove all construction equipment, refuse, and unused materials of any kind resulting from project activities.

207.02 MATERIALS

Provide all materials required to accomplish the work as specified.

207.03 CONSTRUCTION

207.03.01 Surface Dressing

Slopes, sidewalk areas, planting areas, and roadway shall be smoothed and dressed to the required cross section and grade by means of a grading machine insofar as it is possible to do without damaging the work or existing improvements, trees, and shrubs. Unless specified otherwise, the maximum slope shall be 2 to 1 in cut and fill. Supplement machine dressing by hand work as necessary.

Upon completion of the cleaning and dressing, the project shall appear uniform in all respects. Grade all areas true to line and grade as shown. Excavated areas adjoining new walkways and curbs shall be backfilled with top soil. Where the existing ground is below the sidewalk and curb, fill and dress the area to the walk. Wherever fill material is required in the planting area, make finish surface high enough to allow for final settlement. Surface improvements other than topsoil which are adjacent to new walkways or curbs, such as asphalt paving or brickwork, shall be replaced with like materials.

207.03.02 Removal of Materials

Remove and dispose of all excavated or construction materials, equipment, and trash of all kinds resulting from the work. Where brush and trees have been disturbed, remove and dispose of or restore same as directed by the Engineer at the Contractor's expense.

207.03.03 Cleaning Drains

Clean all drainage facilities such as inlets, catch basins, culverts, and open ditches of all excess material or debris which is the result of the work.

207.03.04 Cleaning Paved Surfaces and Appurtenances

Clean all pavement surfaces, whether new or existing within the limits of the project. All haul routes will be kept free of dust, dirt, gravel, and debris at all times. Clean existing improvements such as curbs, gutters, walls, sidewalks, castings for manholes, monuments, water gates, lamp poles, vaults, signs, and other similar installations.

Flush the street with a pressure type flusher and hand broom or flush all sidewalks.

207.03.05 Restoring Planted Areas

Hand-rake and drag all former grasses and/or planted areas leaving disturbed areas free from rocks, gravel, clay, or any other foreign material and ready, in all respects, for seeding. The finished surface shall conform to the original surface, be free-draining and free from holes, rough spots, or other surface features detrimental to a seeded area.

207.03.06 Restoring Mobilization, Borrow and Disposal Areas

Clean all properties which were disturbed during construction of the project. Dispose of all uprooted stumps, felled trees, brush, excess excavation, rock, discarded materials, rubbish, and debris. Remove all plant, equipment, tools, and supplies and restore the property occupied to a neat, clean, and orderly condition, in equal or better condition to that existing before move in.

207.03.07 Removal of Signs

Do not remove warning, regulatory, guide, or project signs prior to formal acceptance, except as directed.

207.03.08 Restoring Curbs, Sidewalks and Driveways

Repair or replace all curbs, sidewalks, driveways, and other structures damaged during construction of the work. Construct curbs, sidewalks, driveways, and other structures in conformance with the applicable requirements in DIVISION FIVE - STREET TECHNICAL REQUIREMENTS.

207.04 MEASURE AND PAYMENT

207.04.01 Lump Sum Basis

When restoration and cleanup is listed as a separate pay item on the Proposal, it will be paid for on a Lump Sum Basis.

207.04.02 Incidental Basis

When not listed in the Proposal for separate payment, all restoration and cleanup will be considered incidental work for which no separate payment will be made.

THE REST OF THIS PAGE WAS INTENTIONALLY LEFT BLANK

****

209 RESURFACING

****

209.01 DESCRIPTION

This section covers the work necessary to replace all pavement, pavement base, curbs, sidewalks, rock surfacing and other surface features damaged either directly or indirectly by the operations incidental to the construction of sewers, storm drains, water distribution systems, and conduits.

209.02 MATERIALS

209.02.01 Asphalt Concrete

Use hot mix asphalt concrete Class C mix conforming to the requirements for hot mix asphalt concrete in Section 505 ASPHALT CONCRETE PAVEMENT and Section 205 MATERIALS - TYPES AND USE.

209.02.02 Vacant

209.02.03 Vacant

209.02.04 Vacant

209.02.05 Pavement Base

THE REST OF THIS PAGE WAS INTENTIONALLY LEFT BLANK

Use pavement base material for resurfacing trenches which conform to Section 503 AGGREGATE BASES.

209.02.06 Forms

All forms shall conform to requirements for forms in DIVISION 7 - CONCRETE STRUCTURES.

209.02.07 Rock Surfacing

Rock surfacing shall be 1-1/2-inch or 1-inch minus crushed aggregate as specified in Section 204.02.06B.

209.02.08 Subgrade

Subgrade material shall conform to the requirements for subgrade in Section 501 SUBGRADE.

209.02.09 Joint Materials

209.02.09A Preformed Expansion Joint Fillers for Concrete

Preformed expansion joint fillers for concrete shall conform to the requirements of AASHTO M 153 or AASHTO M 213 except those furnished under AASHTO M 213 shall be tested in conformance to ASTM D 1751. Fillers conforming to AASHTO M 213, except the binder, if other than bituminous material, may be used provided they otherwise meet this specification and they have been demonstrated to be rot and vermin proof for a period of at least 5 years. Unless otherwise specified or called for by the plans, the kind furnished may be one or another of the above specified as the Contractor may elect.

209.02.09B Preformed Elastomeric Joint Seals

Preformed elastomeric joint seals shall conform to the requirements of AASHTO M 220.

209.02.09C Poured Filler

Poured filler for concrete joints shall conform to the requirements of AASHTO M 173 (ASTM D 1190).

209.02.09D Rubber Gaskets for Concrete Pipe and Precast Section Joints

Rubber gaskets for use in concrete pipe and precast manhole section joints shall conform to the requirements of AASHTO M 198 except that rubber gaskets for use in concrete siphon pipe joints shall conform to the composition and property requirements set forth in ASTM C 361.

209.02.09E Joint Mortar for Concrete Pipe Joints and Precast Manhole Section Joints

Joint mortar shall consist of one part Portland cement and two parts approved sand with water as necessary to obtain the required consistency. Mortar shall be used within 30 minutes after its preparation unless conditions during use necessitate a shorter time.

209.02.09F Plastic Compound for Precast Manhole Section Joints

Compound for use in precast manhole section joints shall be a putty-like, preformed homogeneous blend of hydrocarbon resins and rubber or plasticizing materials with not more than 50% by weight of inert mineral filler. The compound shall be specifically manufactured for the intended use and shall

be pliable at temperatures between 32°F and 135°F. A specimen at 77°F and 1/2" square in cross section shall stretch at least 1-1/2 inches before rupture when tested with the apparatus described in ASTM D 113. It shall adhere firmly and cohesively to the precast manhole sections when the compound-sealed joint is flexed to its maximum extent. The compound shall be accompanied by and used with such primer solution as the manufacturer of the compound may recommend. Compound conforming to Federal Specification SS-S-00210 (GSA-FSS) is representative of an acceptable material.

209.02.09G Water Stop

Water stop shall be either plastic or rubber as the Contractor may elect conforming to the following:

(a) Plastic - Polyvinylchloride water stop shall be manufactured to the dimensions called for on the plans from virgin polyvinylchloride (P.V.C.) compound. No reclaimed P.V.C. will be allowed. The water stop shall have the following properties:

	ASTM Test Method	Specification
Tensile, PSI	D 412	1800
Elongation %	D 412	350
100% Modulus, PSI	D 412	760
Low Brittle Temperature	D 746	50°F
Cold Bend Test*	No Failures	

*Samples maintained at -70°F for two hours, then bent quickly around a 1/4" mandrel to 180°.

The supplier shall furnish test samples of the material from which his water stop is to be manufactured. Samples shall be in sheet form having a uniform thickness of from 1/16 to 1/8 inch and having a total area of not less than 2 sq. ft. Each sample shall be comprised of pieces not smaller than 6 in. x 6 in.

(b) Rubber - Rubber water stop shall be manufactured to the dimensions shown on the plans in such a manner that the finished product shall have an integral cross section which will be dense, homogeneous, and free from porosity and other imperfections. The water stop shall have the following properties:

Hardness - The shore A Durometer hardness shall be 60 to 70 when tested in accordance with ASTM D 2240.

Elongation - Minimum of 450%.

Tensile strength - Minimum of 3000 pounds per square inch.

Water absorption - Maximum of 55% by weight after immersion in water for two days at 158°F.

Tensile strength after aging - The test specimen, after accelerated aging of 7 days at 158°F, shall retain not less than 80% of the original tensile strength. The tensile strength of the test specimen, after accelerated aging of 48 hours in oxygen at 158°F and tensile stress of 300 pounds per square inch, shall be not less than 80% of the original tensile strength.

Compression set - After 22 hours at 158°F shall be not more than 30% when tested in accordance with ASTM D 395, method B.

Specific gravity - 1.17 ± 0.03.

Defects - Minor surface defects such as surface peel covering less than one square inch, surface cavities or bumps less than one-quarter inch in longest lateral dimensions and less than one-sixteenth inch deep will be acceptable.

209.03 CONSTRUCTION

209.03.01 Street Maintenance

Maintain all trenches as specified under Section 204 EXCAVATION, EMBANKMENT, BEDDING AND BACKFILL.

209.03.02 Temporary Cold Mix Asphalt

All excavations on hard surfaces shall be paved with a temporary cold mix asphalt patch at the end of each workday.

Place and compact temporary cold mix asphalt to a minimum depth of one inch over the backfilled and compacted trench areas as specified under Section 204 EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL. Spread with a mechanical spreading machine, or place by hand methods. Distribute into place by means of shovel or suitable forks and spread with rakes in a loose layer of uniform density.

After spreading, the mixture shall be thoroughly and uniformly compacted with a power-driven roller capable of providing compression of 200 to 300 pounds per linear inch as soon as raking is complete. Compact areas inaccessible to the roller by tamping. After compaction, the temporary cold mix asphalt shall have the minimum thickness specified and shall match the adjacent existing grade. The temporary cold mix asphalt patch shall be maintained such that a continuous surface will exist without depressions or potholes.

209.03.03 Pavement Base

Place pavement base to the specified depth; when not specified, place to a compacted depth of 12 inches. Bring the top of the pavement base to a smooth, even grade at a distance below finished grade equivalent to the required pavement depth.

Compact the pavement base with mechanical vibratory or impact tampers to a density of not less than 95 percent of the maximum dry density as determined by ASTM D1557/AASHTO T-180.

209.03.04 Asphalt Concrete Pavement

209.03.04A Tack Coat

Tack coat all edges of existing pavement, manhole and clean-out frames, inlet boxes and like items. Apply an asphalt tack coat to the base lift of asphalt at a rate of 0.05 to 0.15 gallons per square yard prior to placing the second lift when the time between placing the second lift is greater than four hours after placement of the initial lift.

209.03.04B Asphalt Concrete Placement

Saw cut the existing pavement a minimum of 6 inches from the edge of the existing pavement at the side of the trench. The saw cut shall be a straight line and shall follow lines parallel to the pipe centerline to remove any pavement which has been damaged or which is broken and unsound. The saw-cut pavement edges shall be free of irregularities. Provide a smooth, sound edge for joining the new pavement. Excavate the material immediately below the cutback area and replace with 1"-0" compacted crushed gravel base.

Place the asphalt concrete on the prepared subgrade over the trench to the specified depth, or the depth of the adjacent pavement, whichever is greater. When a prime coat is specified, place asphalt concrete after the prime coat has set. Place the asphalt concrete in a minimum of two lifts. Maximum thickness for any one lift of pavement shall not exceed 2 1/2 inches. The minimum thickness for placement of compacted pavement shall not be less than 1 inch. Spread and level the asphalt concrete with hand tools or by use of a mechanical spreader, depending upon the area to be paved. Bring the asphalt concrete to the proper grade and compact by rolling or the use of hand tampers where rolling is impossible or impractical.

Roll with power rollers capable of providing compression of 200 to 300 pounds per linear inch. Begin the rolling from the outside edge of the replacement progressing toward the existing surfacing, lapping the existing surface at least 1/2 the width of the roller. If existing surfacing bounds both edges of the replacement, begin rolling at the edges of the replacement, lapping the existing surfacing at least 1/2 the width of the roller, and progress toward the center of the replacement area. Overlap each preceding track by at least 1/2 the width of the roller and make sufficient passes over the entire area to remove all roller marks and to produce a smooth, uniform surface. Density requirements for asphalt concrete pavement shall conform to those in Section 505 ASPHALT CONCRETE PAVEMENT.

Finished surface of the new compacted paving shall be flush with the existing surface and conform to the grade and crown of the adjacent pavement.

209.03.04C Seal Coat

Immediately after the new paving is completed, apply a seal coat of liquid asphalt conforming to Subsection 205.02.13, ASPHALT MATERIALS, to all joints between the new and original asphalt pavement. The seal coat shall be a minimum of 12 inches in width and shall be centered on the joint. The liquid asphalt shall be applied to the point that it begins to run off. The minimum application rate shall be 1.7 gallons per 100 linear feet.

Immediately after the liquid asphalt has been applied and before the asphalt has solidified, cover the seal coat asphalt with clean-dry masonry sand. The sand shall be applied in a layer thick enough to prevent tracking of seal coat. Before opening the street to traffic, the Contractor shall clean up all loose sand.

209.03.04D Surface Smoothness

The top surface of the asphalt concrete pavement, when tested with a 12-foot straightedge furnished and operated by the Contractor, shall not vary by more than 0.02 foot either parallel to or perpendicular to the centerline. The Engineer will observe this testing and may require additional testing. The means of correction of a surface that does not meet the smoothness requirements shall have the approval of the Engineer.

When tests show the pavement is not within the above tolerances, the Contractor shall take immediate action to correct equipment or procedures in his paving operation to eliminate the unacceptable pavement roughness.

Any surface irregularities exceeding the above tolerances shall be corrected by the Contractor using a method or methods listed herein and approved by the Engineer.

Corrective Action - Corrective measures by the Contractor requiring one or more of the following actions approved by the Engineer shall be performed on deficient areas:

1. Remove and replace the surface course.
2. Place an overlay of a thickness approved by the Engineer.
3. Grind the pavement surface utilizing diamond blades up to maximum depth of 0.3 inch and apply an emulsion fog coat as directed by the Engineer.

All corrective work shall be completed within 10 working days following notification from the Engineer that the pavement does not meet the specified tolerances, unless otherwise directed by the Engineer.

All corrective work, including furnishing of materials, shall be performed at the Contractor's expense and no adjustment in contract time will be made for corrective action work.

209.03.04E Weather Conditions

Asphalt concrete mixtures shall be placed on dry prepared surfaces when the air temperature in the shade and the surface temperature is not less than those specified in the following table:

SURFACE TEMPERATURE LIMITATIONS

Compacted Thickness of Individual Courses	Travel Lanes/ Wearing Course	All Other Courses
Less than 1-1/2 inches	60°F	55°F
1-1/2 inches to 2-1/2 inches	50°F	45°F
Over 2-1/2 inches and other	40°F	35°F

Placing of any mixture during rain or other adverse weather conditions normally will not be permitted, except that mix in transit at the time these adverse conditions occur may be laid if the mix is of proper temperature, if the mix has been covered during transit, if placed on a foundation free of pools, or flow of water and if all other requirements of these specifications are met. Asphalt concrete mixtures shall not be placed when the underlying layer is frozen, or when, in the opinion of the Engineer, weather conditions either existing or expected will prevent the proper handling, finishing, or compaction of the mixtures.

Do not apply asphalt for tack coat when the surface temperature is less than 50 degrees F.

209.03.04F Protection of Structures

Provide whatever protective coverings may be necessary to protect the exposed portions of bridges, culverts, curbs, gutters, posts, guard fences, road signs, and any other structures from splashing oil and asphalt from the paving operations. Remove any oil, asphalt, dirt, or any other undesirable matter that may come upon these structures by reason of the paving operations.

Where existing structures (e.g., water valve boxes, manholes, catch basins, or other underground utility appurtenances) are within the area to be surfaced, make the resurfacing level with the top of the existing finished elevation of these facilities. The Contractor shall be responsible for adjusting the existing structures as specified in ADJUSTMENT OF EXISTING STRUCTURES TO GRADE (See Section 511 of Street Technical Requirements). Consider any delays experienced from such obstructions as incidental to the paving operation. No additional payment will be made. Protect all covers during asphalt

application.

209.03.04G Excess Materials

Dispose of all excess materials. Make arrangements for the disposal and bear all costs or retain any profit incidental to such disposal.

209.03.05 Portland Cement Concrete Pavement

Pavement replaced shall be the same thickness as that removed, or a minimum of 6 inches. Protect the newly placed concrete from traffic for a period of at least 7 days.

Saw cut the existing pavement a minimum of 6 inches from the edge of the existing pavement at the side of the trench. The saw cut shall be a straight line following lines parallel to the pipe centerline and shall remove any pavement which has been damaged or which is broken and unsound. The saw cut pavement edges shall be free of irregularities. Provide a smooth, sound edge for joining the new pavement.

Handle, place, finish and cure concrete pavement in conformance with the applicable provisions of Section 506 PORTLAND CEMENT CONCRETE PAVEMENT.

209.03.06 Rock Surfacing

Place rock surfacing only where shown or directed on streets, driveways, parking areas, street shoulders, and other areas disturbed by the construction. Spread the rock by tailgating and supplement by hand labor where necessary. Level and grade the rock surfacing to conform to adjacent existing grades and surfaces as directed.

209.03.07 Concrete Driveways, Sidewalks and Curbs

Replace concrete driveways, sidewalks and curbs to the same section, width, depth, line and grade as that removed or damaged. Saw broken or jagged ends of existing concrete on a straight line and to a vertical plane. Prior to replacing the concrete sections properly backfill and compact the backfill to prevent subsequent settlement.

Replace concrete driveways and sidewalks between scored joints unless otherwise directed by the Engineer. Provide a minimum 2-inch thick compacted leveling course of clean 3/4" - 0" minus crushed aggregate. All concrete replacement work shall be completed prior to the placement of adjacent asphalt concrete. Restoration and clean up shall be as specified under Section 207.

Construct forms to match existing. Place concrete and finish exposed surfaces similar to adjacent surface in conformance with Section 507 CURBS, GUTTERS, DRIVEWAYS AND SIDEWALKS.

209.04 MEASUREMENT AND PAYMENT

209.04.01 Temporary Cold Mix Asphalt

Payment for temporary cold mix asphalt pavement placed in all paved areas to be maintained over trench backfill shall be based on the unit price per linear foot stated in the Proposal.

The unit price will include all work and materials required to place and maintain the surface. If not included in the proposal then it will be considered incidental to the work and included in the unit price for pavement replacement.

209.04.02 Rock Surfacing

Payment for replacement of rock surfacing shall be based on the unit price per ton or cubic yard as stated in the Proposal. The quantity of rock replaced shall be the actual number of tons or cubic yards used as directed by the Engineer, and shall be based on weight tickets from state certified weigh stations. The Contractor will supply certified conversion factors to get from ton to cubic yard. Trip tickets shall be presented to the Engineer for his signature on the date of use. No payment will be allowed on trip tickets not so validated by the Engineer. The unit price for the rock shall include payment for excavating to provide space for the rock if necessary and disposal of all excess excavated material.

209.04.03 Asphalt Concrete and Portland Cement Pavement Placement

When the pipe centerline crosses, or is under or at, the edge of existing pavement, payment for asphalt concrete and Portland cement concrete pavement will be based on the unit price per square yard stated in the Proposal for each. The number of square yards will be measured by the Engineer. The pay width for determining square yardage will be as shown on the plans.

The unit prices shall include payment for excavation and dig out required to provide space for the surfacing and compacted crushed rock, preparation of the trench, surfacing, disposal of all excess excavated materials, temporary cold mix asphalt, if not a separate pay item, and all other work required to complete the resurfacing. The crushed rock base and leveling course, crushed rock for the dig out area, and seal coat will also be considered as included in the bid price per square yard for pavement replacement as stated in the Proposal.

209.04.04 Sidewalk and Driveway Replacement

Payment for sidewalk and driveway replacement will be based on the unit price bid per square foot, as stated in the Proposal. No differentiation will be made between concrete and asphalt sidewalks.

The leveling course will be considered as included in the bid price for sidewalk and driveway replacement, as stated in the Proposal.

Payment for replacing damaged sidewalks and driveways lying parallel to the pipe centerline shall be based on the unit price per square foot as stated in the Proposal. Payment will, however, be limited to sidewalks and driveways replaced within three feet of the pipe centerline. All sidewalks and driveways damaged outside these limits shall be replaced at the expense of the Contractor.

The leveling course shall be included in the bid price per square foot as stated in the Proposal.

209.04.05 Curb Replacement

Payment for replacing concrete curbs, curb and gutter, or gutter sections shall be based on the unit price bid per linear foot of for each crossing, as stated in the Proposal.

No differentiation for payment will be made between curb and monolithic curb and gutter sections.

Payments for replacing curbs lying parallel to the pipe centerline shall be based on the unit price per linear foot as stated in the Proposal. Payment will, however, be limited to curbs replaced within three feet of the pipe centerline. All curbs damaged outside these limits shall be replaced at the expense of the Contractor. No differentiation for payment will be made between curb and monolithic curb and gutter sections.

209.04.06 Removal and Replacement of Culverts, Storm Drains or Catch Basins

Payment for the removal and replacement of existing culverts or storm sewers lying parallel to and within three feet of pipe centerline will be based on the unit price per linear foot, irrespective of size, as stated in the Proposal. Payment shall be considered to include full compensation for all work and material required to remove and replace the pipe and restore the culvert or storm sewer to at least its original condition and function. Replacement of existing culvert headwalls will also be included in this payment.

Payment for removal and replacement of catch basins will be based on the unit price for each, regardless of size or shape, as stated in the Proposal. Payment shall be considered to include full compensation for all work required to remove and replace the catch basins and restore the basins to their original condition and intended function.

END OF DIVISION

DIVISION FIVE
STREET TECHNICAL REQUIREMENTS

****

501 SUBGRADE

****

501.01 DESCRIPTION

This section covers work necessary for preparation of the subgrade, complete. See also Section 203 for CLEARING AND GRUBBING, and Section 204 for EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL.

Subgrade is defined as the area of new or existing roads, streets, alleys, driveways, sidewalks, or locations upon which additional materials are to be placed as a part of work covered in other Sections or by future work. Where applicable, subgrade may be considered to extend over the full width of the specified base course.

501.01.01 Untreated Subgrade

The material placed in fills or unmoved from cuts in the normal grading of the roadbed and which is brought to true line and grade, shaped and compacted as required by these specifications to provide a foundation for the pavement structure.

501.02 MATERIALS

501.02.01 Water

Conform to the requirements in Subsection 205.2.11 Water.

501.03 CONSTRUCTION

501.03.01 PREPARATION

In advance of setting line and grade, complete clearing and grubbing as specified in Section 203 of these specifications. Drain all depressions or ruts which contain water. Blade and shape subgrade to remove irregularities and secure a uniform surface.

Subgrade upon which pavement, sidewalk, curb and gutter, driveways, or other structures are to be directly placed shall not vary more than .10 foot from the specified grade and cross section. Subgrade upon which subbase or base material is to be placed shall not vary more than .10 foot from the specified grade and cross section at any point. Variations within the above specified tolerances shall be compensating so that the average grade and cross section specified are met.

In advance of setting line and grade, the Contractor shall clear and dispose of brush, weeds, vegetation, grass and debris from the subgrade. The Contractor shall drain all depressions or ruts which contain water.

Prior to starting subgrade work, including backfill, all underground work contemplated in the area of the subgrade shall be completed. This requirement includes work on the contract, work to be

performed by the owner or by others.

The Contractor shall remove all soft or otherwise unsuitable material as directed and replace with approved material from the excavation. The Contractor shall compact to a line one foot beyond the edge of paving, curb or form.

Subgrade areas which cannot be compacted to specified density, but in the judgment of the engineer otherwise meet the requirements herein, may be removed and aerated or stabilized with an approved soil stabilizing material, all at no additional expense to the Owner.

Subgrade materials which cannot be compacted to specified density because of excess moisture shall be dried out to bring materials to the optimum moisture content. The Contractor shall aerate, drain, rehandle, or by other means at his option remove the excess moisture. Unless otherwise specified in the special conditions, all costs involved in the removal of excess moisture from the subgrade material will be considered incidental and be included in the various other items of work in the Proposal.

501.03.02 Grading of Areas Not to be Paved

When specified, areas within and adjacent to the project which are intended for lawns, planting areas, flower beds and similar uses shall be finished with four (4) inches of topsoil and graded smooth as directed. Topsoil, for such finishing shall be fertile, loamy natural surface soil consisting of sands, silts, clays and organic matter and shall be free of toxic substances, weeds, roots, refuse, sticks, large rocks or lumps. Topsoil available from required excavation shall be used to the greatest extent possible in this work and the provisions of Section RW-02, prohibiting the premature disposal of suitable materials shall apply to topsoil materials.

501.03.03 Overexcavation and Foundation Stabilization

When, in the opinion of the Engineer, unsuitable material or other conditions are discovered which render the subgrade, unable to be compacted to the specified density, then the Engineer may order the Contractor to remove and dispose of the unsuitable material and then backfill with crushed rock as specified in the applicable portions of Section 204 EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL.

501.03.04 Embankment Construction

The Contractor shall place embankments and fills of all kinds in approximately horizontal layers of a maximum of 8 inches in thickness and compact each layer separately and thoroughly to the density specified.

In the immediate vicinity of curbs, walks, driveways, inlets, manholes and similar structures, in holes and where embankment and fill materials cannot be reached by the normal compacting equipment, the Contractor shall compact to specified density by approved methods.

Where embankments are constructed predominantly of rock fragments, the Contractor shall place material in layers of the thickness as directed, but not greater than three feet. Placing of individual rock fragments having dimensions greater than three feet will be permitted provided that they have no dimensions greater than six feet, that clearances between adjacent fragments provide adequate space for the placing and compacting of material in horizontal layers as specified, and that no part comes within four feet of subgrade. The Contractor shall distribute and manipulate rock so that the interstices between the larger pieces are filled with smaller places, forming a dense and compact mass.

The Contractor shall exercise caution to ensure that embankment construction and fill does not move, endanger or overstress any structure. The Contractor shall place and compact embankments

at the end of bridges prior to the time that work begins on the bridge.

Embankments shall not be constructed when the embankment material, or the embankment on which it would be placed is frozen.

501.03.05 Slides and Slipouts

Material outside the planned roadway or ditch slopes which is unstable and constitutes potential slides, in the opinion of the Engineer, material which has come into the roadway, channel or ditch, and material which has slipped out of new or old embankments shall be excavated and removed. The material shall be excavated to designated lines or sloped either by benching or in such manner as directed by the Engineer. Such material shall be used in the construction of the embankments or disposed of as directed by the Engineer.

The above provisions shall not be so construed as to relieve the Contractor of his obligation to maintain all slopes true and smooth.

501.03.06 Slopes

Excavation and embankment slopes shall be finished in conformance with the lines and grades shown on the plans.

501.03.07 Finishing and Cleanup

All roadbeds, planting areas, ditches, embankments and other areas on which earthwork is performed shall be trimmed reasonably close to established lines, grades, and cross sections and shall be finished in a thoroughly workmanlike manner. They shall be kept free, throughout the work, of debris and foreign matter of all kinds and prior to final acceptance the entire right-of-way shall be cleaned up and finished as directed.

501.03.08 Compaction and Density Requirements

The density of compacted materials in place will be determined by AASHTO T191, and the maximum density by AASHTO T99 OR T180 as specified.

The Contractor shall compact all embankments, fills and backfills within three feet of established subgrade elevation to a minimum density in place of 95 percent of maximum density. Below said three-foot limit, compaction shall be a minimum density in place of 90 percent of maximum density.

Roadbed cuts and foundations for structures to a depth of 1 foot below established subgrade or foundation elevation shall be three-inch maximum material and shall be compacted to a minimum density in place of 95 percent of maximum density.

501.04 MEASUREMENT AND PAYMENT

501.04.01 Measurement

501.04.01A Incidental Work

No measurement will be made for work involved in draining water from the subgrade, smoothing the subgrade in preparation for staking, or blading, shaping, and compacting the subgrade including roadbed materials to a depth of 12 inches below the subgrade, to final line, grade, and cross section. All work involved in these processes will be considered incidental to and included in the various other items of work in the Proposal.

Water used in the work (compaction, dust control, etc.) will be considered incidental to and included in the various other items of work in the Proposal.

501.04.01B Untreated Subgrade

No measurement and payment will be made for preparation of untreated subgrade unless otherwise provided.

501.04.01C Overexcavation and Foundation Stabilization

Measurement for overexcavation will be made on cubic-yard basis for quantities removed, and foundation stabilization will be made on a ton basis for the number of tons of crushed rock used to backfill the overexcavated areas, as weighed on approved and tested scales. Trip tickets shall be given to Engineer as specified in Subsection 503.04.01C.

501.04.01D Embankment Measure

"Embankment in Place" will be measured by the cubic yard in embankment as set forth in the two paragraphs which follow.

The pay quantities of "Embankment in Place" will be determined by cross-section measurement of the material in place in final embankment position in the work as specified and in accordance with the directions of the Engineer. The pay quantities of "Embankment in Place" will be limited to the neat lines of specified cross-sections, lines, grades, and slopes and above the ground or base elevations existing at the time embankment construction thereon begins. The pay quantities will not include additional quantities required due to subsidence and settlement of the ground or foundation, to settlement of materials within the embankments, or to shrinkage, settlement, washout, slippage, or loss regardless of cause.

There will be no measurement of overhaul on "Embankment in Place" materials.

501.04.02 Payment

501.04.02A Overexcavation and Foundation Stabilization

Payment for overexcavation will be made on a cubic-yard basis, and foundation stabilization will be made on a ton basis for crushed rock incorporated in the work.

501.04.02B Embankment in Place

Payment for "Embankment in Place" will comprise full compensation for the excavating, selecting, handling, hauling, placing, and compacting of the materials and all other costs incurred in the construction of the embankments involved.

****

502 WATERING

****

502.01 DESCRIPTION

This section covers work necessary to furnish and apply water for roadway excavations, fills, subgrades, roadbeds, backfill, subbases, bases, and surfacings, and water used for the alleviation or prevention of dust within the project limits.

502.02 MATERIALS

502.02.01 WATER

Water shall be free of silts and other deleterious matter. Make all necessary arrangements and pay all costs for obtaining water. Maintain an adequate supply of water at all times to complete the required work.

502.03 CONSTRUCTION

The Contractor shall make all arrangements necessary for the procurement of water and its application. The Contractor shall obtain a hydrant meter from the Engineer for the purposes of measuring all water used on the project.

Water by means of tank trucks equipped with spray bars, by hose and nozzle, or by other approved equal means which ensure uniform and controlled application. The use of splash boards will not be permitted without prior approval.

Perform watering at any hour of the day and on any day of the week as necessary.

502.04 PAYMENT

502.04.01 WATER ON INCIDENTAL BASIS

When neither specified nor shown in the Proposal for separate payment, all water will be considered incidental to the other items of work and no separate payment will be made.

****

503 AGGREGATE BASES

****

503.01 DESCRIPTION

This section covers work necessary to furnish and place one or more courses of aggregates and water, as base, on a prepared surface.

503.02 MATERIALS

Aggregates for aggregate base shall be crushed gravel or crushed rock. Aggregate for subbase shall be crushed gravel or crushed rock including sand.

503.02.01 Aggregate

Coarse and fine aggregates shall conform to requirements of Section 205 MATERIALS - TYPES AND USE and to additional requirements contained herein.

503.02.02 Sand Equivalent

Base aggregates to be incorporated in the work shall have a sand equivalent of not less than 30 when tested in conformance with AASHTO T 176.

503.02.03 Liquid Limit and Plasticity

Base aggregate shall meet the requirements for Liquid Limit and Plasticity Index of Subsection 205.02.12C FINE AGGREGATE.

503.02.04 Grading Requirements

The base aggregates shall be uniformly graded from coarse to fine and shall conform to one or another of the following grading requirements as specified:

XXXXX

	Separated Sizes				
	2½" – 0	2" – 0	1½" – 0	1" – 0	¾" – 0
Sieve Size	Percentages (by weight)				
3"	100				
2½"	95 – 100	100			
2"		95 – 100	100		
1½"			95 – 100	100	
1¼"	55 – 75				
1"		55 – 75		90 – 100	100
¾"			55 – 75		90 – 100
½"				55 – 75	
3/8"					55 – 75
*¼"	30 – 45	30 – 45	35 – 50	40 – 55	40 – 60

*Of the fraction passing the 1/4-inch sieve, 40 percent to 60 percent shall pass the No. 10 sieve.

For determination of sizes and grading conform to AASHTO T 27. Where 1"-0 base aggregate is approved for use, at least 70 percent (by weight) of the material passing the 1/4" sieve but retained on the No. 10 sieve shall have at least one mechanically fractured face.

503.02.05 Accceptance

Materials will be subject to acceptance as follows:

Construction Method	Time of Acceptance
Stationary plant mixed	Immediately following mixing
Travel plant mixed	After mixing and before laying

Road mixed After mixing and before compacting

Acceptance will be based on periodic samples taken following mixing, or gradation test reports supplied by the Contractor.

503.03 CONSTRUCTION

503.03.01 Preparation of Subgrade

Ensure that all surfaces and materials on which subbase or base is to be constructed are firm and have been prepared as specified in the applicable portions of Section 501 SUBGRADE.

503.03.02 Mixing

Mix to provide a homogeneous mixture of unsegregated and uniformly dispersed materials which will compact to not less than 95 percent maximum density as specified in Subsection 503.03.04. Add water during mixing in amount sufficient to provide optimum moisture content plus or minus two percentage points.

503.03.03 Placing

503.03.03A Weather Limitations

When the weather is such that satisfactory results cannot be secured, the Contractor shall suspend operations. Place no surfacing materials in snow or on a soft, muddy, or frozen subgrade. Owner will not be liable to damages or claims of any kind or description by reason of operations being suspended due to weather limitation.

503.03.03B Equipment

Furnish equipment that will provide for efficient and continuous operations insofar as practicable.

Aggregate bases shall be deposited on the roadbed at a uniform quantity per linear foot so that the Contractor will not resort to spotting, picking up, or otherwise shifting of aggregate base material. Segregation of aggregates shall be avoided and the material as spread shall be free of pockets of coarse or fine material.

Spreading equipment shall have an adjustable screed or strike-off assembly and it may have a receiving, mixing, and distribution system. It may be a complete and integral unit, self-propelled and powered; a crawler-track or wheeled type tractor intimately combined with a receiving, mixing, spreading, and screeding unit attached thereto; or a heavy-duty self-propelled grader, of an approved type, equipped with at least an eight-foot blade. Equipment shall be capable of spreading or striking off material to the designed line, grade, and transverse slope with surface texture of uniform appearance without excessive segregation or fracture of material.

Spreading equipment may be provided with an automatic control system if Contractor so elects or if specified.

503.03.03C Thickness of Lifts

If the required compacted depth of the base course exceeds six inches, construct in two or more layers of approximately equal thickness. Maximum compacted thickness of any one layer shall not exceed six inches. Place each layer in spreads as wide as practicable and to full width of the course before a succeeding layer is placed.

503.03.04 Compaction

At the time compaction begins, the materials shall be at optimum moisture content, plus or minus 2%. Compaction of each layer shall continue until a density of 95% of Relative Maximum Density has been obtained according to OSHD TM 106 and OSHD TM 306C. Water shall be added to the materials, as necessary during the compaction, to maintain the proper moisture content and upon completion of each layer, the Contractor shall maintain the materials in specified conditions until it is covered by the following layer or course.

503.03.05 Surface Finish

Surface of the base shall parallel the established cross section and grade for the finished surface within 0.04 foot. The finished surface of base, when tested with a 12-foot straight edge shall not vary from the testing edge by more than 0.04 foot at any point.

503.04 MEASUREMENT AND PAYMENT

503.04.01 Measurement

503.04.01A Square Yard Basis

Measurement of aggregate base made on a square yard basis will be made of width and length of each separately constructed strip of aggregate base incorporated in the work and accepted, wherein width is the design width or edge-to-edge width of aggregate base, whichever is the lesser, and length is from end to end along the center of the strip. Measurement shall be on the surface of the aggregate base to the nearest 0.1 foot and the square yardage shall be to the nearest full square yard.

Extra thickness of aggregate base, when directed by the Engineer, will be measured by conversion on a proportionate volume basis to an equivalent number of square yards of specified standard thickness of base.

503.04.01B Cubic Yard In Place Basis

Measurement of aggregate base made on a cubic yard in place basis will be made taking depth tests or cores at the rate of 1 depth test for each 300 square yards of base course, or by means of average end areas on the complete work computed from elevations to the nearest 0.01 foot. On individual depth measurements, thicknesses more than 1/2-inch in excess of that shown shall be considered as specified thickness.

503.04.01C Ton Basis

Measurement made on a ton basis will be for the number of tons of aggregate base, as weighed on approved and tested scales. Give trip tickets to the Engineer for his signature as the material is delivered. Each trip ticket shall show the date and time of delivery, truck number, driver's name, net weight of material, and will be considered as valid delivery receipts only when signed by the Engineer. Deductions in weight will be made at the point of weighing for moisture in excess of the optimum moisture content determined for the material being supplied.

503.04.02 Payment

Payment will be made on square yard, cubic yard, or ton basis as shown on the Proposal.

****

507 CURBS, GUTTERS, DRIVEWAYS, AND SIDEWALKS

****

507.01 DESCRIPTION

This section covers work necessary for the construction of curbs, gutters, combination curb and gutter, combination of curb, gutter and sidewalk, islands, traffic separators, driveways, sidewalks, and pathways hereinafter referred to collectively as structures.

The respective structure names are specific in their use and refer specifically to those names as shown.

507.02 MATERIALS

507.02.01 General

Materials shall conform to requirements of Section 205 MATERIALS - TYPES AND USE and to additional requirements contained herein.

THE REST OF THIS PAGE WAS INTENTIONALLY LEFT BLANK

507.02.02 Portland Cement Concrete for Extrusions

Grade the combined aggregates within the following limits:

Sieve Sizes	Total Passing Percent by Weight
½"	100
3/8"	75 - 100
No. 4	50 - 75
No. 16.	20 - 40
No. 30	12-23
No. 50	5 - 15
No. 100	0 - 5

507.02.03 Portland Cement Concrete

Portland Cement concrete shall conform to Subsection 205.02.02 except that extruded curbs and/or gutters shall have a maximum slump of 2".

507.02.04 Aggregate

Aggregate materials for base, foundation, courses, leveling courses, or bedding shall conform to 1"-0" gradation in Section 503 AGGREGATE BASES.

507.03 CONSTRUCTION

507.03.01 Preparation of Base

507.03.01A Earthwork

When roadway earthwork is called for in connection with other items of work under the same contract which includes structure construction under this section, all excavation, backfilling, and berm construction for the structures and in the vicinities thereof as required or as shown shall conform to applicable requirements of Section 204 EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL.

507.03.01B Aggregate Foundation or Bedding

Construct sidewalk structures on aggregate foundation course or bedding of selected granular material as specified.

When structures are to be constructed on areas where approved aggregate material is already in place, such materials may be salvaged and reused as bedding.

Foundation courses or beddings involving the furnishing of new materials shall be constructed in conformance to the applicable requirements of Section 503 AGGREGATE BASES.

507.03.01C Base for Portland Cement Concrete

All bases upon which new cement concrete structures are to be constructed shall be firm and free of all deleterious matter. Dampen thoroughly surfaces upon which new cement concrete is to be placed. No payment will be made for water and the work of placing base materials. The cost of preparing bases shall be considered as incidental to the construction of structures.

When new concrete is placed by the mechanical extrusion method, vertical dowel fastening to underlying concrete or asphalt may be eliminated and the bond between new concrete and underlying concrete or asphalt provided with epoxy cement applied in conformance with the manufacturer's recommendations as approved. Spread epoxy at a rate which will provide a thorough coating to the surface with all voids and depressions filled. Place new structure on the epoxy cement within 15 minutes after spreading.

507.03.02 Forms

507.03.02A Forms

Conform to requirements for Forms in Section 701 CONCRETE STRUCTURES.

507.03.03 Equipment

Plant and equipment requirements as described in Section 505 ASPHALT CONCRETE PAVEMENT and Section 506 PORTLAND CEMENT CONCRETE PAVEMENT may be modified as approved, when circumstances warrant. For asphalt sidewalks or islands, spread asphalt concrete by small or special pavers, by spreader boxes, or by blade graders. Compact with small, self-propelled rollers, vibratory compactors, or mechanical tampers. Spread or compact the mixture by hand methods only when approved.

The machine for extruding cement concrete curb or asphalt concrete curb shall be of the self-propelled type equipped with a material hopper, distributing screw, and adjustable curb forming devices capable of placing and compacting cement concrete or asphalt concrete to the lines, grades, and cross section as shown, in an even homogeneous manner. Cement concrete curb shall be free of honeycomb and cracks.

Set top of curb grade by an offset guide line using the survey marks established by the Engineer. The forming tube portion of the extrusion machine shall be readily adjustable vertically during the forward motion of the machine to provide, when necessary, a variable height of curb conforming to the predetermined curb grade. A grade line gauge or pointer shall be attached to the machine in such manner that a continual comparison can be made between the curb being placed and established curb grade as indicated by the offset guide line.

In lieu of the above method for maintaining the curb grade, the extrusion machine may be operated on approved rails or forms set at the proper relative grade.

507.03.04 Placing Material

No asphalt or concrete shall be placed until the surface and forms, where used, have been inspected and approved.

507.03.04A Portland Cement Concrete

Construct Portland Cement concrete structures between specified forms or by an mechanical extrusion method, as the Contractor may elect. If forms are used, maintain a 2- to 4-inch slump, and thoroughly compact and strike off. If the structures are constructed by a mechanical extrusion method, maintain a maximum slump of two inches. Feed cement concrete into the extruding machine at a uniform rate and operate the machine under sufficient restraint in a forward motion to produce a well-compacted mass of concrete.

507.03.05 Finishing

507.03.05A General

Construct all structures within 1/4 inch of true line and within 1/4 inch of established surface grade, cross section and slope, and within 1/4 inch of specified thickness, and all finished surfaces shall be free from humps, sags, or other irregularities. When a straightedge 10 feet long is laid on a finished surface, the surface shall not vary more than 0.02 feet from edge of the straightedge. At no time shall the concrete surface be allowed to pool water.

Where Portland Cement concrete sidewalks or pathways are to be placed around or adjacent to manholes, pipe inlets, or other miscellaneous structures, form around the miscellaneous structure and allow a minimum of 18" of clearance, after the sidewalk is poured and cured, adjust miscellaneous structures to grade and finish placing the sidewalk or pathway.

507.03.05B Portland Cement Concrete

Sidewalks and Other Structures:

Finish surface of concrete to grade and cross section with a bull float, trowel smooth, score if required, then finish with a broom. Use floats of not less than 10 feet in length for straight grade sections and not less than 5 inches in width. Finish concrete adjacent to expansion joints with an edger tool. Light brooming shall be transverse to the line of traffic, and if water is necessary, it shall be lightly applied to the surface immediately in advance of brooming.

The surface of concrete sidewalks shall be marked into rectangles with a scoring tool which will leave the edges rounded. Scoring and dimensions shall be as shown on the appropriate Standard Drawing or as directed. Sidewalks shall have a slope of 1/4 inch per foot from the top of curb to the back of walk unless otherwise shown.

Curbs:

Remove forms after the concrete has taken initial set and while the concrete is still green. Minor defects shall be repaired with mortar containing one part Portland Cement and two parts sand. Plastering will not be permitted on the faces and exposed surfaces. Honeycombed and other structurally defective concrete shall be removed and replaced at no expense to OWNER. While the concrete is still green, finish exposed surfaces as required to provide a uniform texture and smooth surface.

When constructing precast concrete curbs, the proportions of sand, gravel and cement, the type of forms used, and the method of compacting the concrete in the forms shall all be such that as dense, smooth and uniform a surface as is practicable for a concrete masonry unit will be obtained on the finished curb units. The faces that are to be exposed shall be free from chips, cracks, air holes, honeycomb or other imperfections except that if there be no more than 5 percent of the curb units having slight cracks, small chips not larger than 1/2 inch, or air holes not more than 1/2 inch in diameter or depth, the imperfections will not be deemed grounds for rejection.

Furnish and install a minimum of two 3-inch PVC Sch. 40 pipe curb drains to serve each lot. Blockouts shall be of adequate size to accommodate a 3-inch PVC drain pipe. PVC pipe shall conform to ASTM D 2241. Curb drains will be considered incidental work for which no separate payment will be made.

507.03.06 Curing Portland Cement Concrete

After the concrete has been placed and finished in curb structures, as specified, it shall be cured by application of a white pigmented liquid membrane-forming compound applied uniformly to the damp concrete

by pressure spray methods, or by keeping the concrete protected and moist for at least 72 hours. The concrete structure shall be kept from contact and strain for at least 7 days.

Curing of concrete in all other structures shall conform to the requirements for Curing in Section 506 PORTLAND CEMENT CONCRETE PAVEMENT.

507.03.07 Joints in Portland Cement Concrete

Contraction Joints in Walks and Incidental Surfacing:

Form transverse contraction joints of the weakened plane or dummy type in the exposed surfaces of cement concrete walks and incidental surfacings at such locations as are required to confine the contraction joint spacing to a maximum of 15 feet. The joints shall be formed to a depth of 1/3 of the thickness of concrete and to a width of about 1/8 inch. Joint edges shall be tooled.

Contraction Joints in Curbs:

Place contraction joints in curbs at intervals not exceeding 15 feet. Contraction joints shall be of the open joint type and shall be provided by inserting a thin, oiled steel sheet vertically in the fresh concrete to force coarse aggregate away from the joint. The steel sheet shall be inserted 1/2 the depth of the curb. After initial set has occurred in the concrete and prior to removing the front curb form, the steel sheet shall be removed with a sawing motion. Finish top of curb with a steel trowel and finish edges with a steel edging tool. Contraction and expansion joints of curbs should coincide with joints in sidewalks and streets.

Expansion Joints:

Transverse expansion joints for curbs shall be provided opposite abutting expansion joints in abutting Portland cement concrete, over expansion joints in concrete underlying the new concrete, and at each point of tangency in the structure alignment. Additional transverse expansion joints shall be provided at other locations as required to confine the expansion joint spacing to the maximum distance indicated on the plans. The width of joint and thickness of filler shall match those of the joints in abutting or underlying concrete, and elsewhere shall be not less than 1/2 inch. Each expansion joint shall be at right angles to the structure alignment, normal to the structure surface, and shall provide complete separation of new concrete.

Expansion joints for sidewalks and driveways shall be provided between driveways and Portland cement concrete pavements, transversely in walks at a distance of six to eight feet in from curbs which occur at walk ends, transversely in walks opposite expansion joints in adjoining curbs and elsewhere at such locations in the walk that the distance between transverse expansion joints does not exceed 45 feet; around poles, posts, boxes, and other fixtures which protrude through, into or against the structures; and alongside or transverse to the new surfacing at such locations and frequencies as is necessary to provide for expansion of both new and abutting Portland cement concrete.

Width of joint and thickness of filler shall not be less than 1/2 inch, and where the new concrete surfacing abuts other surfacing, shall be not less than 3/4 inch. Generally, transverse expansion joints shall be at right angles to the alignment, vertical to the surface, and shall provide complete separation of new concrete.

Requirements Near Existing Structures:

Cut back existing curbs, walks, driveways and other such structures to permit the new construction and where the new structures are to be constructed against or within 4 inches of the end, edge or side of other structures, the new construction shall include the construction of approved connections therewith, using the same kind of concrete as is used in the new construction. Make the joint between the old and new material with a saw cut.

507.03.08 Dowels, Tie Bars, Reinforcing

Provide metal reinforcing bars and wire fabric reinforcement when and as shown. When shown, provide and place dowels with "slip sleeves" as load transfer mediums. Provide and place dowels, but without "slip sleeves," as fastenings or ties between new concrete and existing underlying concrete when shown. Provide tie bars when shown. Place reinforcing, dowels and tie bars in conformance to the applicable requirements in Section 702 REINFORCEMENT.

507.04 MEASUREMENT AND PAYMENT

507.04.01 Measurement

507.04.01A Curbs

Curb will be measured on a linear foot basis along the face of the curb for the actual length constructed.

507.04.01B Combination Curb and Gutter

Combination curb and gutter will be measured on a linear foot basis along the face of the curb for the actual length constructed.

507.04.01C Curb, Gutter and Sidewalk

For purposes of measurement and payment, the combined curb, gutter and sidewalk will be considered as two component sections.

The first component, sidewalk, shall comprise that portion of the combined section beginning 6 inches behind the face of curb and shall be measured on a square yard basis for the actual square yards of sidewalk constructed.

The second component, curb and gutter, shall comprise the portion of the combined section beginning at the back of curb and through the gutter section, and shall be measured on a linear foot basis for the actual linear feet of curb and gutter constructed.

507.04.01D Precast Concrete Curb

Precast concrete curb will be measured on a linear foot basis along the face of the curb constructed, or on a per each basis for the actual number of precast concrete curb sections constructed.

507.04.01E Concrete Valley Gutter

Concrete valley gutter will be measured on a square yard basis for the actual square yards of gutter constructed.

507.04.01F Traffic Islands

Traffic islands will be measured by component parts of curb, and sidewalks as described above for combined curb, gutter and sidewalk.

507.04.01G Driveways, Sidewalks and Pathways

Measurement of Portland Cement or asphalt concrete driveways, sidewalks or pathways will

be made on a square yard basis on the actual surface of the specified thickness concrete or asphalt completed and accepted.

507.04.01H Sawed Joints

Sawed joints will be measured on a linear foot basis for each joint sawed, cleaned, and sealed as specified and directed.

507.04.01I Aggregate Base

Pay quantities of aggregate base material will be measured as set forth in Section 303 AGGREGATE BASES.

507.04.02 Payment

Payment will be made for any or all of the following items when listed as pay items in the Proposal for any particular contract and will include full compensation for all labor, materials, and equipment:

	Payment Item	Unit of Measure
1.	Curb (specify asphalt or concrete)	Per L.F.
2.	Precast Concrete Curb	Per L.F. or EA.
3.	Concrete Curb and Gutter	Per L.F.
4.	Sidewalk	Per S.Y.
5.	Concrete Valley Gutter	Per S.Y.
6.	Driveways and Sidewalks (specify thickness)	Per S.Y.
7.	Sawed Joints	Per L.F.*
8.	Aggregate Base	Per C.Y.*

*When neither specified or shown in the Proposal for separate payment, it shall be considered incidental to the other items of work and no separate payment will be made.

****

508 GEOTEXTILE FABRICS

****

508.01 GENERAL

This work consists of furnishing and placing geotextile fabrics in on subgrades (0 subgrade geotextile) and beneath an asphalt overlay (pavement overlay geotextile) as shown on the plans or as directed by the Engineer.

508.02 MATERIALS

Geotextile materials shall conform to Subsection 205.02.14.

508.02.01 Vacant

508.02.02 Vacant

508.03 CONSTRUCTION

508.03.01 General

General requirements for placement of geotextile shall be in accordance with Subsection 205.03.01.

508.03.02 Subgrade Geotextile

For roadbed subgrade separation, prepare the subgrade according to Section 501.

Correct geotextile failures, as evidenced by soil pumping or roadbed distortion, by removing any covering material in the affected area and placing a geotextile patch on the exposed geotextile. Cover the patch with the specified cover material and compact before proceeding.

508.03.03 Pavement Overlay Geotextile

(a) GENERAL - Place geotextile and pavement overlay in four basis steps:

- Surface preparation
- Sealant application
- Geotextile placement
- Overlay placement

(b) WEATHER LIMITATIONS - Do not place sealant and geotextile unless the weather limitations of 00745.40 are met, as appropriate, except the minimum air temperature shall be 50°F for paving grade asphalt sealant placement and 60°F for asphalt emulsion sealant placement.

(c) SURFACE PREPARATION - Prepare the pavement surface on which the sealant is to be placed according to specifications and the following:

- Clean and fill cracks exceeding 1/8 inch width with an approved bituminous crack filler.

- Repair minor irregularities or depressions as directed.

- Allow crack filling material to cure before placing geotextile.

- Where the pavement is severely cracked, rutted, deformed, or otherwise distressed, place a leveling course as directed instead of extensive surface preparation

(d) SEALANT APPLICATION - Use a normal paving grade asphalt. A cationic or anionic emulsion may be used as approved. Do not use cutbacks or emulsions which contain solvents.

Uniformly spray the asphalt sealant at normal application temperature by means of a pressure distributor on the prepared dry pavement surface. Apply at the normal rate of 0.20 to 0.30 gallon per square yard or as recommended by the geotextile manufacturer as directed.

If using emulsions, increase the application rate 50 percent or as directed. Some underlying surfaces may require a higher application rate. Within street intersections, on steep grades, or in other zones where vehicle speed changes are commonplace, reduce the normal application rate by 20 percent or as directed.

The target width of sealant application shall be geotextile width plus 6 inches. Apply the sealant only as far in advance of geotextile installation as appropriate to insure a tacky surface at the time of geotextile placement. Place geotextile the same day as the sealant. Do not allow traffic on the sealant. Clean

excess asphalt from the road surface.

(e) GEOTEXTILE PLACEMENT - Place the geotextile into the sealant using mechanical or manual laydown equipment capable of providing a smooth installation with a minimum amount of wrinkling or folding before the sealant loses tackiness. When asphalt emulsions are used, allow the asphalt to separate from the water (break) before placing the geotextile.

Slit wrinkles or folds exceeding 1 inch and lay flat. Shingle-lap not more than 6 inches in the direction of the paving. Broom and/or pneumatic roll to maximize geotextile contact with the pavement surface. Additional hand-placed sealant material may be required at laps as determined.

Limit traffic to necessary construction equipment and emergency vehicles on the geotextile before and during paving unless otherwise directed. Turn the paver and other vehicles gradually. Keep turning to a minimum to avoid geotextile movement and damage. Avoid abrupt starts and stops.

(f) OVERLAY PLACEMENT - Place the overlay the same day the geotextile is placed. Remove sealant that bleeds through the geotextile. Do not windrow asphalt concrete material on the geotextile ahead of the paving machines. Do not use an asphalt concrete material pickup machine. In the event of rain, the contractor shall place sand over uncovered fabric to absorb sealant.

508.04 MEASUREMENT AND PAYMENT

Payment for the work in this section shall be in accordance with Subsection 205.04 by the square yard in place. Measurement will be to the nearest square yard. No allowance will be made for material in laps and seams. This payment shall constitute full compensation for all materials and work as specified within.

THE REST OF THIS PAGE WAS INTENTIONALLY LEFT BLANK

****

510 VACANT

****

****

511 ADJUSTMENT OF EXISTING STRUCTURES TO GRADE

****

511.01 DESCRIPTION

This section covers the work necessary for adjusting tops of existing structures (e.g., manholes, sumps, catch basins, inlets, valve boxes, meter boxes, monument boxes, and similar structures) to required elevation and/or horizontal alignment complete. See Subsection 403.03.06 for adjustment of new structures to grade.

511.02 MATERIALS

511.02.01 GENERAL

Materials used in adjustment of existing structures may be materials salvaged from the existing installation and brought to a condition approved for reuse by the Engineer.

511.03 CONSTRUCTION

THE REST OF THIS PAGE WAS INTENTIONALLY LEFT BLANK

511.03.01 Excavation and Backfill

Excavation shall be unclassified and shall include whatever materials are encountered to the depths as shown.

Saw cut around structures to be adjusted when pavement work has been completed. Do not use a jack hammer for pavement cutting. Replace pavement to previous density and grade. See Standard Detail Drawing No. 513.

Backfill shall be done in accordance with the applicable requirements of Section 204.

511.03.02 Salvage of Frames, Covers, and Grates

Metal frames, covers, grates, and fittings may be salvaged from structures to be adjusted or abandoned, and if of suitable size and condition, as determined by the Engineer, may be reused in the work.

Salvaged components to be reused shall be cleaned of foreign material by solvents, sand blasting, or other methods that will not harm the component but will restore it to a nearly new condition. Salvaged frames, covers, and grates not reused on the project shall become the property of the Owner.

511.03.03 Raising Tops of Masonry Structures

After existing frames, covers, and grates have been removed, expose the top surface on which new mortar or concrete is to be placed and chip away at least 1/2-inch to expose firm concrete. The new surface shall be cleaned by brushing and shall be moistened with water at the time of placing new concrete. New concrete shall then be placed to required grade and cured at least 3 days, after which the frame shall be seated in fresh mortar and brought to the proper grade.

Masonry of bricks or concrete blocks shall be raised with new bricks, blocks, mortar, or combinations thereof or with Portland Cement concrete, as conditions may require. Concrete boxes may be lifted and placed on precast concrete box extensions, on new brick, or on cast-in-place concrete as may be suitable.

Mortar for building up existing masonry shall not be placed to a a depth exceeding 1 inch. Concrete shall not be placed to a depth of less than 4 inches. To conform to these requirements, existing shells or walls of structures to be raised shall be cut down as necessary to provide space for the new construction.

Fabricated metal rings or plates may be furnished and used in adjustment work, provided the metal and its fabrication design is at least equal to specified characteristics of strength and support required of the covers or grates to be placed, that uniform bearing of bearing surfaces is assured, and positive provision is afforded against displacement when in service.

511.03.04 Lowering Tops of Masonry Structures

Where the top of an existing masonry structure is to be lowered, the masonry portion of the structure shall be exposed to required depth, cut off, or removed to an elevation below that established for the bottom of metal frame or cover which is to be reset on masonry and shall then be built up with mortar, concrete, brick, or concrete blocks, or with metal rings or plates to required elevation and top design. Joining of new material to old, minimum thicknesses of new mortar and concrete, limitations, curing, and other details shall be as specified in Section 701.

511.03.05 Adjusting Metal Structures

Metal inlets, valve boxes, meter boxes, monument boxes, or other like structures shall be raised or lowered to grade normally by resetting the entire structure on firm foundation. In the case of raising the

structure to a point where it would not enclose or protect its contents, add extensions of like design below the original structure. Contractor may replace the structure with a new structure of adequate design as approved and at the Contractor's sole expense. Salvaged structures not reused on the project shall become the property of the Owner. Metal structures shall meet the surface smoothness requirements of Section 212.03.04D. Conform to applicable Sections of DIVISION THREE - SANITARY SEWER TECHNICAL REQUIREMENTS and DIVISION FOUR - WATER TECHNICAL REQUIREMENTS.

511.04 MEASUREMENT AND PAYMENT

511.04.01 Measurement and Payment Incidental

When no pay item is listed in the Proposal, all work will be considered as incidental to the other pay items and no separate payment will be made.

511.04.02 Measurement as Units in Place

When listed in the Proposal, measurement will be the actual number of manholes, sumps, catch basins, inlets, valve boxes, meter boxes, monument boxes, and other like structures adjusted under this Section, measured as units in place, completed and accepted. Separate measurement will be made of each specific type or of each separate grouping of types of structures for which separate items are shown in the Proposal. Required earthwork, backfill, replacement of base drains, stone bases, pavements, and other miscellaneous work will be considered as incidental to the adjusting work and no separate measurement thereof will be made.

511.04.03 Payment as Units in Place

When listed in the Proposal, the accepted units in place will be paid for at the applicable Contract unit price per each for the particular pay items listed below and shown in the Proposal.

	Pay Item	Unit of Measurement
1.	Adjusting Manholes	Each
2.	Reconstructing Concrete Manholes	Each
3.	Adjusting Inlets	Each
4.	Adjusting Boxes	Each

Items 1 and 2 above refer to manholes, sumps, and like structures designed to permit human entry and working space therein, and to confine and control the flow of pipe-conveyed liquids; which structures are herein collectively referred to as manholes.

Item 1 above applies to manholes, regardless of the kind of materials of which they are composed and regardless of design, type, or depth, which have had the tops thereof adjusted as specified; except as Item 2 is applicable as hereinafter provided.

Item 2 above refers to monolithic concrete manholes which, in having their tops adjusted as specified, have necessarily had their entire existing cones destroyed and new cones constructed, or had their entire existing top slabs destroyed and new slabs constructed, or precast manholes which have necessarily had adjustments made below the cone.

Item 3 above refers to inlets and catch basins, defined as structures designed to receive surface water through grates and orifices and to discharge said waters under control through pipes and is applicable to such structures regardless of their designs, types, or sizes.

Item 4 refers to valve boxes, meter boxes, monument boxes, and other like structures, which are

comprised of a box-like body and removable cover provided for the protection of and access to meters, valves, markers, monuments, shut-offs, and similar items. If a protective coating is required on the new metal used in the work, the coating shall be provided as an incidental item without separate or additional compensation.

END OF DIVISION

THIS PAGE WAS INTENTIONALLY LEFT BLANK

DIVISION SIX
STORM DRAINAGE TECHNICAL REQUIREMENTS

****

601 PIPE AND FITTINGS (STORM DRAINS)

****

601.01 DESCRIPTION

This section covers the following work:

1. Gravity and storm sewer pipe
2. Culverts
3. Perforated pipe underdrains
4. Fittings

601.02 MATERIALS

601.02.01 General

Use all storm sewer pipe and fittings of the size, strength, material and joint type specified on the Drawings and/or the Proposal. Use jointing material as hereinafter specified for each pipe material. Each piece of pipe shall be clearly identified as to strength, class and date of manufacture. The manufacturer or fabricator shall furnish appropriate certification, based on manufacturer's routine quality control tests, that the materials in the pipe and fittings meet the requirements specified herein. Strength, permeability, hydrostatic tests and pipe joints will be used as the basis of acceptance as described under Proof Tests herein.

It is not intended that materials listed herein are to be considered equal or generally inter changeable for all applications. The Engineer shall determine the materials suitable for the project and so specify.

Use pipe and fittings of one type of material throughout; no interchanging of pipe and fittings will be allowed.

Do not coat pipes for storm sewers internally or externally with any substance of any type in an attempt to improve its performance when air tested.

601.01.02 Concrete Pipe

601.02.02A Nonreinforced Concrete Pipe

Nonreinforced concrete pipe shall conform to ASTM C 14 Class as shown or specified and the following additional requirements:

1. Cement shall be Type II conforming to ASTM C 150.
2. The minimum Portland Cement content shall be 564 pounds per cubic yard.
3. The water/cement ratio shall not exceed 0.49.
4. The Contractor shall provide the Engineer with a Certificate of Compliance from the pipe manufacturer that the pipe and concrete mix conform in all respects to these specifications and other nonconflicting requirements of the referenced ASTM Specifications.

601.02.02B Reinforced Concrete Pipe

Reinforced concrete pipe shall conform to ASTM C 76 Class as shown or specified with Wall B design and the following additional requirements:

1. Cement shall be Type II conforming to ASTM C 150.
2. The minimum Portland Cement content shall be 564 pounds per cubic yard.
3. The water/cement ratio shall not exceed 0.49.
4. Elliptical reinforcing is not permitted.
5. The area of the outer circular reinforcing cage shall not be less than 75 percent by the inner cage.
6. The Contractor shall provide the Engineer with a Certificate of Compliance from the pipe manufacturer that the pipe and concrete mix conform in all respects to these specifications and other nonconflicting requirements of the referenced ASTM Specifications.

601.02.02C Perforated Concrete Pipe

Perforated concrete pipe and fittings shall conform to ASTM C 444 and applicable requirements of ASTM C14 and C76 as modified herein, class and end type as specified.

601.02.03 Ductile Iron Pipe

Ductile iron pipe centrifugally cast of 60-42-10 iron shall conform to ANSI A21.51 Class 150 or AWWA C151, with Push-on Joint or Mechanical Joints as specified, conforming to ANSI Specification A21.11/AWWA C111. Ductile iron pipe shall be lined with cement mortar and seal coated in accordance with ANSI Standard A21.4/AWWA C104.

When specified, tube type polyethylene encasement shall conform to ANSI A21.5/AWWA C105.

601.02.04 PVC Non-pressure Pipe and Perforated PVC Pipe

PVC sewer pipe shall conform to ASTM D 3034 SDR 35. Perforated PVC pipe shall conform to ASTM D 1785, Schedule 40. The perforations shall consist of 2 rows of 2-inch slots. The slots shall be transverse to the axis of the pipe. Two rows of slots shall be 120 degrees on centers. Slot size shall be 0.4 inches.

601.02.05 Corrugated Aluminum Alloy Pipe

Corrugated aluminum alloy pipe and coupling bands of the gauges and types as shown or specified shall conform to the material, fabrication, and inspection requirements of AASHTO M 196, Type I or Type II, and AASHTO M 197. Recorrugate the ends of Helical corrugated pipe to receive annular bands at each joint.

601.02.06 Flared End Sections

Precast concrete flared-end sections shall conform to the requirements for Reinforced Concrete Pipe herein specified. The area of steel reinforcement per linear foot of flared-end section shall be at least equal to the minimum steel requirements for circular reinforcement in circular pipe for the internal diameter of the circular portion of the flared-end section. Submit all details of construction to the Engineer.

Use prefabricated aluminum flared-end sections conforming to AASHTO M 197.

601.02.07 Bituminous Coating

When specified, completely coat the inside and outside surfaces of corrugated pipe with bituminous

material conforming to AASHTO M 190 Type A, with a minimum thickness of 0.05 inch at the crest of the corrugations.

601.02.08 Paved Inverts

When specified, bituminously coat the bottom one-half and pave the inside surface of the corrugated metal pipe for 1/4 of its circumference with bituminous material conforming to AASHTO M 190 Type B to provide a flat invert centered in the bottom of the pipe. The pavement, except where the upper edges intersect the corrugations, shall have a minimum thickness of 1/8 inch above the crests of the corrugations. Suitably mark the outside of the pipe on both ends to clearly designate the centerline of the top of the pipe.

601.02.09 Jointing Materials

Only lubricants for jointing materials approved by the manufacturer shall be used.

Furnish in duplicate a certified statement from the manufacturer of the gaskets, setting forth the basic polymer used in the gaskets and results of the tests of the physical properties of the compound. Gaskets shall be shipped in containers with identification of the batch from which the gaskets were fabricated.

601.02.09A Concrete Pipe

Rubber gaskets for bell and spigot pipe shall conform to ASTM C 443. Use captive gasket in groove design for pipe 24-inch diameter and larger. Mortar for tongue and groove pipe shall conform to section 205 MATERIALS.

601.02.09B Cast Iron and Ductile Iron Pipe

Rubber gaskets shall conform to ANSI A21.11/AWWA C111.

601.02.09C PVC Pipe

Rubber gaskets for PVC pipe shall conform to ASTM F 477.

601.02.10 Proof Tests

601.02.10A General

The intent of this requirement is to prequalify a joint system, components of which meet the joint requirements, as to the water tightness capability of that joint system. This proof test shall be understood to apply to all storm drains which are to be tested for water tightness prior to acceptance. Material and test equipment for proof testing shall be provided by the manufacturer. Joints shall meet the requirements of yard testing specified below. The pipe manufacturer shall submit results of the yard tests made, certified by a testing agency acceptable to the Engineer. In general, each pipe material and joint assembly shall be subject to the following three proof tests at the discretion of the Engineer:

1. **Pipe in Straight Alignment.** No less than three nor more than five pipes selected from stock by the Engineer or the testing agency shall be assembled according to the manufacturer's installation instructions with the ends suitable plugged and restrained against internal pressure. The pipe shall be subjected to 13 PSI hydrostatic pressure for 10 minutes. Free movement of water through the pipe joint or pipe shall be grounds for rejection of the pipe.

2. **Pipe in Maximum Deflected Position.** A test section shall be deflected as described hereinafter for each pipe material. The pipe shall be subjected to 10 PSI hydrostatic pressure for 10 minutes. Free movement of water through the pipe joint or pipe wall shall be grounds for rejection of the pipe.

3. **Joints Under Differential Load.** The test section shall be supported on blocks or otherwise as described hereinafter for each pipe material. There shall be no visible leakage when the stressed joint is subjected to 10 PSI internal hydrostatic pressure for 10 minutes.

601.02.10B Concrete Pipe

For deflected position, create a position 1/2-inch wider than the fully assembled position, on one side of the outside perimeter of each joint.

For differential load test, assemble three pipes according to the manufacturer's instructions in straight alignment with the ends suitably plugged and restrained against internal hydrostatic pressure. The end pipes of the test section shall be supported on blocks or otherwise so that the center pipe is suspended freely between the adjacent pipe and bearing only the joints. The pipe section shall be filled with water and a load of 150 pounds per inch of pipe diameter, in addition to the weight of the pipe, shall be supplied over an arc of not less than 120 degrees along a longitudinal distance of 12 inches immediately adjacent to one of the joints. For pipe 24-inch and larger, the applied load shall be reduced by 1/2 of the weight of water in the suspended pipe.

601.02.10C Cast Iron Pipe and Ductile Iron Pipe

For deflected position, create a position 1/2-inch wider than the fully compressed section on one side of the outside perimeter.

For differential load, support so that one of the pipes is suspended freely between adjacent pipe, bearing only on the joints. Apply a force per the following table along a longitudinal distance of 12 inches, immediately adjacent to one of the joints.

PIPE SIZE	FORCE - POUNDS	PIPE SIZE	FORCE - POUNDS
4 inches	1,000	15 inches	3,700
6 inches	1,500	18 inches	4,400
8 inches	2,000	21 inches	5,000
10 inches	2,500	24 inches	5,500
12 inches	3,000	and over	----

601.02.10D PVC Pipe

PVC pipe joints shall be tested by and meet the requirement of ASTM C 3212 for gravity sewers and ASTM D 3139 for pressure sewers.

601.02.11 Fittings

601.02.11A PVC Pipe

In connecting PVC pipe to manholes, use resilient connectors in conformance with ASTM C923.

601.02.12 Couplings, Bands and Fittings for Corrugated Metal Pipe

Use couplings, bands and fittings conforming to AASHTO M 196.

601.03 CONSTRUCTION

601.03.01 Excavation and Backfill

Conform to the requirements of Section 204 EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL. All excavation shall be unclassified.

601.03.02 Line and Grade for Gravity Storm Sewers

Do not deviate from line or grade, as established by the Engineer, more than 1/2 inch for line and 1/4 inch for grade, provided that such variation does not result in a level or reverse sloping invert. Measure for grade at the pipe invert, not at the top of the pipe, because of permissible variation in pipe wall thickness. Establish line and grade for pipe by the use of lasers or by transferring the cut from the offset stakes to batter boards at maximum intervals of 50 feet.

601.03.03 Pipe Distribution and Handling

Distribute material on the job no faster than it can be used to good advantage. Unload pipe only by means recommended by the pipe manufacturer. Do not unload pipe of any size by dropping to the ground. Do not distribute more than one week's supply of material in advance of laying, unless approved.

Pipe shall not be unloaded or stored in the public right-of-way or easement unless it has been certified and accepted by the Engineer. Inspect all pipe and fittings prior to lowering into trench to ensure no cracked, broken, or otherwise defective materials are used. Clean ends of pipe thoroughly. Remove foreign matter ad dirt from inside of pipe and keep clean during and after laying.

Use proper implements, tools, and facilities for the safe and proper protection of the work. Lower pipe into the trench in such a manner as to avoid any physical damage to the pipe. Remove all damaged pipe from the job site. Do not drop or dump pipe into trenches.

601.03.04 Pipe Laying and Jointing of Pipe and Fittings

601.03.04A General

Proceed with pipe laying upgrade with spigot or tongue ends pointing in direction of flow. Place pipe in such a manner as to ensure a continuous and uniform bearing and support for the full length of the pipe between joints. Take care to properly align the pipe before forced entirely home. Upon completion of pipe laying all pipe joints shall be in the "home" position, which is defined as the position where the least gap (if any) exists, when the pipe components that comprise the join are fitted together as tightly as the approved joint design will permit. Gaps at pipe joints shall not exceed that allowed by the manufacturer's recommendations. For curved sewers the normal gap will be the gap existing when the pipe joints are in the "home" position as described above, for the pipe in the specified deflected position. After installation, prevent movement from any cause including uplift or floating.

Take special care to prevent movement of the pipe after installation when laid within a movable trench shield.

When laying operations are not in progress, protect the open end of the pipe from entry of foreign material and block the pipe to prevent movement or creep of gasketed joints.

Plug or close off pipes which are stubbed out for manhole construction or for connection by others.

Provide all sewer pipes, 36 inches or smaller in diameter, entering or leaving manholes or other structures, with flexible joints within 18 inches of the exterior wall. Pipes larger than 36 inches in diameter

shall have this flexible joint within a distance from the exterior wall equal to one-half the inside pipe diameter.

When cutting and/or machining the pipe is necessary, use only tools and methods recommended by pipe manufacturer.

When shown or approved to deflect pipe from a straight line, either in the vertical or horizontal plan, or when long-radius curves are shown, the amount of deflection shall not exceed that specified or approved by the Engineer. The pipe manufacturer's recommendation will serve as a guide, but the decision of the Engineer shall be final.

601.03.04B Concrete Pipe

Use rubber ring gasket joints unless mortar joints are specifically specified. When mortared joints are used, the entire joint for the full circumference of the pipe shall be completely filled with mortar. The surfaces of the pipe joint shall be brushed clean prior to mortaring. Fill the exterior of the joint with mortar and in the case of bell and spigot joints, fill to an angle of 45 degrees.

601.03.04C Corrugated Metal Pipe

Repair all damaged areas of the protective coating with material equal to the original and permit to dry or solidify before backfilling.

601.03.05 Perforated Pipe Underdrains

601.03.05A Trench Excavation and Backfill

Conform to applicable requirements in Section 204 EXCAVATION, EMBANKMENT, BEDDING AND BACKFILL. All excavation shall be unclassified.

601.03.05B Pipe Bedding

Provide a minimum 4-inch bedding of 1 1/2" - 3/4" rock as specified in Subsection 701.02.02C under perforated drain pipe, or as shown. Hand grade the bedding to proper grade ahead of pipe laying. Provide a firm, unyielding support along the entire pipe length.

601.03.05C Backfill at the Pipe Zone

Backfill the pipe zone with 1 1/2" - 3/4" rock as specified in Section 701.02.02C hand placed simultaneously on both sides of the pipe for the full trench width.

601.03.05D Backfill Above the Pipe Zone

Use 1 1/2" - 3/4" rock as specified in Subsection 701.02.02C for backfill above the pipe zone, unless otherwise specified.

601.03.05E Laying and Jointing Perforated Pipe

Securely fasten together perforated pipe with couplings, fittings, or bands as specified by the manufacturer for the type of the pipe used. Close upgrade ends of all subsurface drain pipe with approved plugs to prevent entry of soil materials.

Begin pipe laying normally at the outlet end of the pipe line. The lower segment of pipe shall be in contact with the shaped bedding throughout its full length. Bell or groove ends of rigid pipe and outside circumferential laps of flexible pipe shall be placed facing the upgrade end.

Lay all perforated pipe, except perforated PVC pipe, with perforations facing down, unless otherwise specified or directed. Place perforated PVC Drain Pipe with slots facing up.

Inspect all pipe prior to lowering into the trench and, if necessary, clean off any material tending to plug the perforations of the pipe. Carefully lower all pipe and fittings into the trench to avoid any contamination of the filter bedding material.

601.03.06 Flared End Sections

Construct flared end sections in accordance with the details and dimensions shown, except that minor variations may be accepted to permit the use of the manufacturer's standard prefabricated sections and methods of fabrication. Conform excavation, bedding and backfill to applicable requirements herein for the adjacent pipe or drain to be joined.

601.03.07 Pipe Coupling Adapters

Use flexible mechanical compression joint coupling with No. 305 stainless steel bands manufactured by Joints, Inc., Fernco Joint Sealer or equal.

601.03.08 Concrete Closure Collars

Only where specified on Drawings, construct concrete closure collars in conformance with the details provided. Wash pipe to remove all loose material and soil from the surface on which the concrete will be placed. Wet nonmetallic pipe thoroughly prior to placing the collars. Construct forms with materials that will ensure that no concrete shall enter the line. Make entire collar in one placement, and do not place collars in water. After the collars are placed and have taken their initial set, cure by covering with well-moistened earth. Do not backfill the trench until the concrete has sufficient strength.

601.03.09 Culverts

Remove and replace culverts in conformance to all applicable requirements of this section and Section 204 EXCAVATION, EMBANKMENT, BEDDING, AND BACKFILL.

601.03.10 Testing Storm Drains

601.03.10A General

1. Leakage or infiltration tests for storm drains will not be required unless called for on Drawings or in the Special Specifications.

2. The City may, at no additional expense to the Contractor, make a televised inspection of the storm drain pipe. Any defects in material or workmanship shall be satisfactorily corrected prior to final acceptance of the work.

3. When the quality of materials used or workmanship performed during the construction of storm drains is in doubt for any reason, the Engineer may require the storm drain and all applicable appurtenances to be tested. When so ordered, the storm drain shall be required to pass the same air test as specified for sanitary sewers in Subsection 301.03.10 Testing.

601.03.10B Cleaning Prior to Testing and Acceptance

Prior to final testing, acceptance and final manhole-to-manhole inspection of the storm sewer system by the Engineer, ball, flush and clean all parts of the system. Remove all accumulated construction debris, rocks, gravel, sand silt, and other foreign material from the storm sewer system at or near the closest

downstream manhole. If necessary, use mechanical rodding or bucketing equipment.

Upon the Engineer's final manhole-to-manhole inspection of the storm sewer system, if any foreign matter is still present in the system, reflush and clean the sections and portions of the liens as required.

601.03.10C Repairs

Repair or replace, in a manner satisfactory to the Engineer, any section of pipe not meeting the test requirements, or which has leakage.

Infiltration of ground water in an amount greater than herein specified, following a successful air test as specified, shall be considered as evidence that the original test was in error or that subsequent failure of the pipeline has occurred. Correct such failures occurring within the warranty period in a manner satisfactory to the Engineer at the Contractor's sole expense.

The Contractor, in contracting to do this work, agrees that the leakage allowances as indicated herein are fair and practical.

601.03.11 Deflection Test for PVC Pipe

Perform a deflection test for all storm drains and culverts constructed of PVC pipe after the trench backfill and compaction has been completed. The test shall be conducted by pulling an approved solid pointed mandrel or variable deflection measuring gauge through the completed pipeline a minimum of 30 days after compaction is completed. The diameter of the mandrel shall be 95 percent of the internal pipe diameter. Conduct testing on a manhole-to-manhole basis and only after the line has been completely flushed clean with water. Locate and repair any sections failing to pass the test and retest the section, at the Contractor's sole expense.

601.03.12 Television Inspection of Storm Drains

Upon completion of all storm drain construction, repairs, cleaning, and required tests, notify the Engineer that all lines are ready for televiewing inspection.

Subsequent to being notified, the Owner shall commence examination of lines or may waive the television inspection. Findings will be recorded. Correct all deficiencies at the Contractor's sole expense.

Upon correction of deficiencies revealed by televiewing, notify the Engineer; the same steps listed above may be repeated until all work is acceptable.

The City of Newberg may, at its own option, perform a deflection test at the same time it performs its television inspection.

601.04 MEASUREMENT AND PAYMENT

601.04.01 Storm Drain Pipe

Measurement and payment for storm drain pipe, including culverts and pipe stubouts from manholes, will be made on a linear foot basis for the various classes, types and sizes of pipe listed in the Proposal and as actually installed. All pipe will be measured horizontally from center-to-center of manholes or to the ends of the pipe, whichever is applicable. No deductions will be made for fittings or for structures.

Payment shall constitute full compensation for the pipe in place, including trench excavation, furnishing, placing and compacting pipe bedding and pipe zone material, native backfill material, testing, and plugs.

601.04.02 Perforated Pipe Underdrains

Measurement and payment for perforated drain pipe will be made on a lineal foot basis for the type and size of pipe installed as shown in the Proposal. Length will be measured as total length of pipe installed, including fittings measured along the pipe centerline. Payment shall constitute full compensation for trench excavation, special filter material for pipe bedding and trench backfill, and all other work specified to complete the installation of the perforated drain pipe complete in place.

601.04.03 Flared End Sections

Measurement and payment for flared end sections will be made on a unit price basis for each type and size actually installed as shown in the Proposal. Payment shall include full compensation for the flared end section complete in place including concrete cutoff walls and toe plates, when required.

601.04.04 Concrete Closure Collars

Measurement and payment for concrete closure collars will be made at the unit price each as shown in the Proposal and actually constructed. Payment shall include full compensation for all materials, equipment and labor necessary to complete the work. If not listed in the Proposal, then they will be considered incidental to the other work.

601.04.05 Field Fabricated Connections

Measurement and payment for field fabricated connections will be made at the unit price each for the type and size as shown in Proposal. Payment shall include full compensation for all materials, equipment and labor necessary to complete the work. If not shown in the Proposal, then they will be incidental to the other work.

****

602 MANHOLES, INLETS AND CONCRETE STRUCTURES

****

602.01 DESCRIPTION

This section covers the work necessary for the construction of the following items:

1. Manholes
2. Sumps
3. Inlets and Catch Basins
4. Anchor Walls
5. Special Concrete Structures
6. Concrete Encasement

602.02 MATERIALS

602.02.01 Base Rock

One inch minus base rock, conforming to the requirements for aggregate base material in Section 204.02.06 SELECT BACKFILL MATERIAL.

602.02.02 Forms

Forms for exposed surfaces shall be steel or plywood. Others shall be matched boards, plywood or other approved material. Form all vertical surfaces. Trench walls, large rock or earth shall not be used as form material.

602.02.03 Concrete and Reinforced Steel

Concrete and reinforcing steel shall conform to Section 205 MATERIALS - TYPES AND USE.

602.02.04 Cement Mortar

When specified for use, cement mortar shall conform to Section 205. Consistency of mortar shall be such that it will readily adhere to the pipe if using the standard tongue-and-groove type joint. Mortar mixed for longer than 30 minutes shall not be used.

602.02.05 Manholes

602.02.05A Standard Precast Manhole Sections

Furnish sections as specified conforming to the details on the Standard Drawings and to ASTM C 478. Cones shall have same wall thickness and reinforcement as manhole section. Provide eccentric cones with precast grooves for all manholes over six feet in depth. Flat slab tops with precast grooves reinforced to withstand AASHTO H20 loadings shall be provided for manholes six feet deep from crown of pipe and less. Top and bottom of all sections shall be parallel.

Prior to the delivery of any size of precast manhole section on the job site, yard permeability tests will be conducted at the point of manufacture. The precast sections to be tested will be selected at random from the stockpiled material which is to be supplied for the job. All test specimens will be mat tested, and shall meet the permeability test requirements of ASTM C 14 and ASTM C 497.

602.02.05B Precast Concrete Bases

All manholes, except as otherwise specified or approved by the Engineer, shall be constructed using precast, reinforced concrete bases in all traveled areas. Construction of precast bases shall conform to the requirements of ASTM C478. The base riser section shall be integral with the base slab.

602.02.05C Poured in Place Manhole Bases

The Contractor may use poured in place manhole bases in nontraveled areas. Concrete shall conform to Section 205 MATERIALS - TYPES AND USE.

602.02.05D Manhole Grade Rings

Concrete grade rings for extensions shall be a maximum of 6 inches high.

602.02.05E Jointing Materials

Preformed plastic gaskets conforming to the requirements of AASHTO M-198 or joints using confined O-ring with rubber gaskets conforming to ASTM C443 shall be used.

602.02.06 Pipe and Fittings

Conform to requirements of Section 601 PIPE AND FITTINGS (STORM DRAINS).

602.02.07 Precast Inlets and Catch Basins

Precast base and extension units shall conform to ASTM C913 and shall be used in the construction of all precast inlets and catch basins. Concrete risers for extensions shall be a minimum of 4 inches in height and shall be the same quality as the main section.

602.02.08 Manhole and Cleanout Frames and Covers

602.02.08A General

All castings shall be true to size, weight and tolerances shown on the Standard Drawings. Delivered weight shall be ± 5 percent of the specified weight. The bearing seat shall not rock when checked by the test jig. The foundry shall supply all test gauges and shall not subcontract any of the work other than testing procedure, patterns, and machining and cartage. The casting shall not be made by the open mold method and shall be free of porosity, shrink cavities, cold shuts, or cracks, or any defects which would impair serviceability. Repair of defects by welding, or by the use of "smooth-on" or similar material will not be permitted. All castings shall be shot or sandblasted, and the application of paint or other coating will not be permitted. All manhole frames and covers located outside of the right-of-way shall be tamper-proof.

602.02.08B Materials

Conform to ASTM A-48, Class 30B, with the following revisions:

Tensile Strength	30,000 PSI
Traverse Strength (1.2" dia. bar - 18" centers) Load - Pounds	1,600 - 3,000
Deflection - Inches	0.22 - 0.34
Brinell Hardness (as cast)	173 - 200

The Foundry shall certify as to the tensile and traverse properties and the Brinell Hardness. The Owner reserves the right to require a Rough Transverse bar (size of bar 1.2" dia. by 20" long) and/or a tensile bar as per ASTM A 48 for each 20 castings or heat when less than 20 castings are made.

602.02.08C Inspection

Notify the Owner at least 24 hours in advance of casting the units or bars. At least 24 hours notice shall also be given prior to final gauging and inspection. When directed, the following strength test shall be made on the manhole cover. The cover, while resting it its frame, shall sustain a concentrated load of 40,000 lbs. applied at its center through a 2 1/2-inch plug. The Engineer may, at any time, require up to 5 percent of the job and/or order and in no case less than one (1) cover to be tested in this manner. In case of failure during the test, additional covers shall be furnished until the tests prove satisfactory. Covers that do not pass this test shall not be used.

602.02.08D Cap Screws

Cap screws and washers for tamperproof and watertight manhole covers shall be stainless steel with 60,000 PSI minimum tensile strength conforming to ASTM A 453.

602.02.09 Standard Frames and Grates for Inlets and Catch Basins

Frames and grates for catch basins and storm drain inlets shall be fabricated of steel conforming to ASTM A 7, A 36, A 373 in accordance with the details shown on the Standard Drawings. All connections shall be welded. Welding shall conform to requirements of current code for welding in building construction of the American Welding Society. Frames and gratings shall be tested one within the other, and there shall be no

more than 1/16-inch rock. When checked by a test jig, the bearing seat of either component shall have no more than 1/16-inch rock. Test jibs shall be furnished by the manufacturer.

602.02.10 Steps for Precast Manholes

Manhole steps will comply with Section 302 MANHOLES AND CONCRETE STRUCTURES.

602.02.11 Storm Sumps

The precast sections will comply with Section 602.02.05. The frame and cover will comply with Section 602.02.08 and will be tamper-proof when the sump is located outside the right-of-way. The steps will comply with Subsection 602.02.10. Drain rock will be clean round imported material and the size will be 2"-4". The filter fabric will be Mirafi 140 or equal.

602.03 CONSTRUCTION

602.03.01 General

602.03.01A Excavation and Backfill

Conform to applicable provisions in Section 204 EXCAVATION, EMBANKMENT, BEDDING AND BACKFILL. Backfill around manholes, inlets, catch basins, and other appurtenances shall be of the same quality as the trench backfill immediately adjacent. All excavation shall be unclassified.

602.03.01B Base Rock

Place crushed aggregate base rock and thoroughly compact with a mechanical vibrating or power tamper.

602.03.01C Foundation Stabilization

If material in bottom of excavation is unsuitable for supporting manholes and other sewer appurtenances, excavate below subgrade as directed and backfill to required grade with rock conforming to Foundation Stabilization in Section 204 EXCAVATION, EMBANKMENT, BEDDING AND BACKFILL.

602.03.02 Manholes

All manholes, except as otherwise specified, shall be constructed using precast, reinforced concrete base sections, riser sections, and other precast appurtenances conforming to ASTM C478. Base riser sections shall be integral with the base slabs.

Preformed plastic gaskets shall be installed in strict accordance with the manufacturer's recommendation. Only pipe primer furnished by the gasket manufacturer will be approved. When using preformed plastic gaskets, manhole sections with chips or cracks in the joint surfaces shall not be used. Completed manholes shall be rigid and all manholes for sanitary sewers shall pass the hydrostatic test. Construct manhole inverts in conformance with the Standard Drawings with smooth transitions to ensure an unobstructed flow through manhole. Cover exposed edges of pipe completely with mortar. Trowel all mortar surfaces smooth.

Holes for installing pipe into precast manhole sections shall be cast in place or saw cut.

Channels shall conform accurately to sewer grade. Channel shall be formed to accept a three (3) foot long by six (6) inch TV. camera. Construct cast in place channel and shelf, in field, in one operation. Finish concrete shelf between channels with a brush.

602.03.03 Pipe Stubouts From Manholes

Install stubouts from manholes at locations as shown or directed. Grout or install pipes into manhole walls or manhole base so as to provide watertight seal around pipes. Provide manhole with resilient connector for PVC pipe. Saw cut opening in manhole walls with concrete saw. Pipe connections to the cone section of a manhole are strictly prohibited.

602.03.04 Manhole Grade Rings

In general, manhole grade rings will be used on all manholes in streets or roads or other locations where a subsequent change in existing grade may take place. Extensions will be limited to a maximum height of 12 inches.

Install appropriate combination of grade rings to a height that will accommodate the finish manhole surface elevation as shown on the Drawings. Lay grade rings in mortar with sides plumb and tops level. Seal joints with mortar to provide a watertight seal. Grade ring extensions shall be watertight.

602.03.05 Adjustment of Manholes to Grade

Frame and cover shall be left a minimum of 3 inches below finish grade and when the first lift of A.C. is placed. Sawcut around the manhole or cleanout and adjust the frame and cover to match street grade and fill excavation with concrete to a depth of 6 inches. The frame shall bear directly on the concrete. Place final lift of A.C. See Standard Drawing for manhole or cleanout adjustment.

602.03.06 Special Concrete Structures

Conform to the details as shown.

602.03.07 Placing Precast Units

If material in bottom of trench is unsuitable for supporting unit, excavate as directed and backfill to required grade with foundation stabilization material in conformance with Section 204 EXCAVATION, EMBANKMENT, BEDDING AND BACKFILL. Set units to grade at locations shown or directed.

602.03.08 Installation of Inlets and Catch Basins

Install inlets and catch basins at the locations shown on the Plans or where directed by the Engineer.

Construct inlets and catch basins as shown on the Standard Drawings. All inlets and catch basins constructed with precast units shall conform to ASTM C913. The top section, including curb, gutter, and frame, shall be cast-in-place. The Contractor may use poured in place inlets and catch basins in accordance with the Standard Detail Drawings. Concrete shall conform to Section 205 MATERIALS - TYPES AND USE.

Set frames and grates at elevations shown or as directed. Frames shall be cast in concrete. Bearing surfaces shall be clean and provide uniform contact. Anchor bolts and other fastenings shall be firmly embedded in concrete.

Any surrounding structures (e.g., pavement, curbs, gutters, sidewalks, driveways) and landscaping damaged during installation of inlets or catch basins shall be restored in accordance with these Standard Specifications at the Contractor's sole expense.

602.03.09 Inlet and Catch Basin Extensions

Install extensions to height as required. Use the largest size (in height) pre-cast extension risers

available from the manufacturer that will allow for conformance with the specified finished grade. Stacking small pre-cast extensions where a larger extension could be used is prohibited. Lay risers in mortar with sides plumb and tops to grade. Joints shall be sealed with mortar, with interior and exterior troweled smooth. Prevent mortar from drying out and cure by applying an approved curing compound or other approved method. Extensions shall be watertight.

602.03.10 Cleaning

Upon completion, clean each structure of all silt, debris and foreign matter.

602.03.11 Steps for Precast Manholes

Steps shall comply with that specified in the Sanitary Sewer Section of the Standard Technical Specifications - Division Three.

602.04 MEASUREMENT AND PAYMENT

602.04.01 Manholes

Measurement and payment for manholes will be made on a unit price basis for each type shown in the Proposal for Manholes 8 feet deep, plus the unit price per foot shown in the Proposal for extra depth of manholes over 8 feet. No deduction will be made for depths less than 8 feet. Measurement of manhole depth will be from the top of the manhole frame and cover to the manhole invert at the center of the manhole to the nearest 1/10 foot. Payment shall include full compensation for all materials, labor, steps and equipment required to construct manhole in-place.

602.04.02 Pipe Stubouts From Manholes

Measurement and payment for pipe stubouts from manholes shall be made at the unit price per length of pipe installed.

602.04.03 Tamperproof and Watertight Manhole Frame and Covers

Measurement and payment for tamperproof and watertight manhole frame and covers will be made on a unit price basis for each type installed. Since payment for furnishing and installing standard frame and covers is already included in the bid price for manholes, this unit price will include only the additional compensation for providing the watertight frame and cover complete in place.

If no item is called out in the Proposal then tamperproof and watertight manholes frames and covers will be supplied at the same price as for standard frame and cover, i.e., no extra compensation.

602.04.04 Concrete Encasement

Measurement and payment for concrete encasement will be made on a linear foot basis as shown in the Proposal for the size pipe to be encased. Length shall be measured along the centerline of the pipe. Payment shall include full compensation for all materials, equipment and labor required to construct the work complete in place.

602.04.05 Special Concrete Structures

Measurement and payment for special concrete structures will be made on a lump sum each basis. Payment shall constitute full compensation for materials, equipment and labor required to construct the work complete in place.

602.04.06 Catch Basins and Inlets

Measurement and payment for catch basins and inlets will be made on a unit price basis per each catch basin or inlet for the number and type actually constructed. Payment shall include full compensation for all materials, equipment and labor required to construct the work complete in place including the replacement of any surrounding structures damaged during construction.

****

603 WORK ON EXISTING STORM DRAINS DRAINAGE STRUCTURES

****

603.01 DESCRIPTION

This section covers the work necessary to join new work to existing, the abandoning of storm drains and structures and adjusting existing utility structures to finished grades.

603.02 MATERIALS

Conform to requirements of Section 205 MATERIALS - TYPES AND USE and to the requirements for related work referred to herein.

603.03 CONSTRUCTION

603.03.01 Excavation and Backfill

Conform to requirements of Section 204 EXCAVATION, EMBANKMENT, BEDDING AND BACKFILL. All excavation shall be unclassified.

603.03.02 Manholes Over Existing Storm Sewers

Advise Engineer of system for diverting flow and obtain authorization before starting. The Contractor shall be totally responsible for maintaining adequate capacity for flow at all times and adequately protecting new and existing work.

Construct manholes over existing operating lines at locations shown. Perform necessary excavation and construct new manholes in conformance with applicable requirements of Section 302 MANHOLES AND CONCRETE STRUCTURES.

Construct manholes as shown on the Detail Drawings or Standard Drawings. Densify the concrete base by vibrating or working as approved and screed to provide a level, uniform bearing for precast sections.

Place the first precast section of manhole in concrete base before concrete has set and deposit sufficient mortar on the base to assure a watertight seal between the base and the manhole wall. First section shall be properly located and plumb. Stacking additional precast manhole sections shall be prohibited until the concrete has cured a sufficient amount to support the additional weight in moist conditions.

After pouring concrete base, remove the top section of the existing pipe to the full width of pipe and diameter of the manhole. Cover exposed edges of pipe completely with mortar. Trowel all mortar surfaces smooth.

Prevent broken material or debris from entering sewer flow. Maintain flow through existing lines at all times. Protect new concrete and mortar for a period of 7 days after placing.

DIVISION SEVEN
CONCRETE STRUCTURES TECHNICAL REQUIREMENTS

****

701 CONCRETE STRUCTURES

****

701.01 DESCRIPTION

This section covers Portland Cement concrete, plain or reinforced, precast or cast-in-place, in bridges, box culverts, retaining walls, catch basins, abutments, piers, footings, foundations, and similar structures.

701.02 MATERIALS

701.02.01 Portland Cement

Conform to Section 205 MATERIALS - TYPES AND USE.

701.02.02 Aggregates

701.02.02A General

Use aggregates which conform to requirements of Section 205 MATERIALS - TYPES AND USE, and the additional requirements contained herein.

If Contractor desires to furnish aggregates which deviate from gradations contained herein, obtain written authorization from Engineer prior to incorporation of any materials in any part of the work.

701.02.02B Fine Aggregate

Fine aggregate must be graded from coarse to fine within the following limits:

All fine aggregate shall meet the requirements of ASTM C33.

GRADING REQUIREMENTS
FINE AGGREGATE - PORTLAND CEMENT CONCRETE

Sieve Size Passing	Percentages (by weight)
3/8"	100
No. 4	90 - 100
No. 16	45 - 75
No. 30	25 - 55
No. 50	5 - 30
No. 100	0 - 8

Use fine aggregate which has a sand equivalent of not less than 68, and which develops in the mortar strength test taken at seven days, a compressive strength of at least 95 percent of mortar using Ottowa sand.

Sand for mortar shall conform to the requirements of AASHTO M45; testing shall conform to the OSHO standard test for mortar strength.

701.02.02C Coarse Aggregate

Coarse aggregate must conform to the specified maximum size, and when each maximum size is separated into designated sizes, the separated designated sizes shall be as follows:

Maximum Size of Aggregates	Separated Sizes
2 inch	(2" - 1"), (1" - No. 4)
1½ inch	(1½" - ¾"), (¾" - No. 4)
1 inch	(1" - No. 4)
¾ inch	(¾" - No. 4)

Do not allow oversized and undersized materials to exceed a combined 15 percent of any separated size, nor allow any pieces to have any dimension greater than twice the maximum square screen size for the specified grading.

Grading of each of the specified separated sizes of coarse aggregate shall conform with the following:

GRADING REQUIREMENTS
COARSE AGGREGATE - PORTLAND CEMENT CONCRETE

Separated Sizes
Percentages (by weight)

Sieve Size Passing	2" - 1"	1½" - ¾"	1" - No. 4	¾" - No. 4
2½"	100			
2"	90 - 100	100		
1½"	35 - 70	90 - 100	100	
1"	0 - 15	30 - 65	90 - 100	100
¾"		0 - 15	50 - 80	90 - 100
3/8"			15 - 40	20 - 50
No. 4			1 - 10	0 - 10

When a tolerance range is set forth in the above grading requirements, it shall be understood that the midpoint of the tolerance range is the target value and the product shall conform as closely as realistically possible to this target value. The purpose of the tolerance range is only to permit occasional minor variations from the target value that are, for practical reasons, unavoidable.

When coarse aggregate is to be separated into two sizes as set forth hereinabove, control grading of material in each separated size within the applicable range of percentages given in grading requirements for coarse aggregate hereinabove so that the quantity of each separated size measured into the batch shall be not less than 35 percent nor more than 65 percent of total quantity of coarse aggregate measured into the batch.

701.02.03 Water

Conform to Section 205 MATERIALS - TYPES AND USE.

701.02.04 Admixtures

701.02.04A Air-Entraining Admixtures

Air-entraining admixtures shall conform to AASHTO M 154 (ASTM C260) using one or another of several tests as directed by the Engineer. Chloride content of admixture must not exceed 0.5 percent by weight.

701.02.04B Water-Reducing, Retarding, and Accelerating Admixtures

Water reducing, retarding, and accelerating admixtures shall conform to AASHTO M 194 (ASTM C494) using one or more of several tests as Engineer may direct. Chloride content of admixture must not exceed 0.5 percent by weight.

701.02.05 Curing Materials

Use curing material(s) conforming to one or more of the following requirements or as specified:

White Burlap-Polyethylene sheets for Curing Concrete	AASHTO M 171
Waterproof Paper for Curing Concrete	AASHTO M 171
Liquid Membrane-Forming Compounds for Curing Concrete* (white pigmented)	AASHTO M 148
White Polyethylene (Film) for Curing Concrete	AASHTO M 171
Burlap Cloth (Jute or Kenaf)	AASHTO M 182

*Not permitted on bridges, reservoirs, and box culverts.

701.02.06 Joint Materials

701.02.06A Preformed Expansion Joint Fillers

Use preformed expansion joint fillers for concrete conforming to AASHTO M 153 or AASHTO M 213 except that those furnished under AASHTO M 213 shall be tested in conformance to ASTM D 1751. Fillers conforming to AASHTO M213, except that the binder, if other than bituminous material, may also be used provided that they otherwise meet these Specifications and provide further that they have been demonstrated to be rot and vermin proof for a period of at least 5 years.

701.02.06B Preformed Elastomeric Joint Seals

Utilize preformed elastomeric joint seals conforming to AASHTO M 220.

701.02.06C Poured Filler

Utilize poured filler for concrete joints conforming to AASHTO M 173.

701.03 CONSTRUCTION

701.03.01 General

When purchasing concrete from others during performance of the Contract, be fully responsible for

such concrete conforming to all requirements contained herein.

701.03.02 Mix Design

701.03.02A Classes of Concrete

Classes of concrete shall designate design field strength of concrete in 28 days (PSI) followed by maximum size of aggregate to be used in the concrete, i.e., Class 3300-1-1/2 shall include a compressive strength of 3300 PSI in 28 days with 1-1/2 inch maximum size aggregate used in that concrete.

Use the class of concrete as specified or shown for each component part of the project, and if not so specified or shown, use Class 3300-1-1/2 concrete.

In all precast-prestressed concrete members, in the stems of post- tensioned box girders, and in all other members where the spacing of reinforce- ment is less than 2 inches, use 1-inch maximum size aggregate, unless specified otherwise.

701.03.02B Classification and Proportioning of Concrete Mixtures

Before beginning any concrete work the Contractor shall submit a concrete mix design to the Engineer.

During progress of the work, if concrete strength and quality as determined by cylinders and tests taken by Engineer fail to attain the requirements specified, suspend all concrete work and make necessary adjustments to obtain required results.

A mix using different proportions or aggregate sizes of any of concrete materials in the mix, may be requested to satisfy a particular production schedule or for other reasons. Any requested and authorized alteration to proportions of any of the concrete materials in the mix shall be made at the Contractor's sole expense.

The Contractor shall design the mix to meet the following requirements unless otherwise specified:

1. Entrained air range 3 percent to 6 percent (percent by volume). AASHTO T 152.
2. Slump range - 2 inches to 4 inches. AASHTO T 119.
3. When using 3/4-inch maximum size aggregate, the fine aggregate shall be between 40 percent and 48 percent of the total aggregate used.
4. When using 1-1/2-inch maximum size aggregate, the fine aggregate shall be between 35 percent and 45 percent of the total aggregate used.
5. When specified, use a water reducing admixture in conformance with manufacturer's recommendations.

Tests for strength shall be made in accordance with the following:

Molding Concrete Specimens in the Field	AASHTO T 23
Compressive Strength of Molded Cylinders	AASHTO T 22

Curing of cylinders shall conform to AASHTO T 23 except as modified herein.

701.03.03 Consistency

In general, use a mixture which contains the minimum amount of water consistent with required

workability. Consistency of concrete shall be gauged by ability of equipment to properly place it without segregating or honeycombing, and not by the difficulty in mixing or transporting.

701.03.04 Measurement of Materials

Provide facilities for weighing and accurately measure all materials by weight, except water, when batching concrete; weigh fine and coarse aggregates separately. Take representative samples and determine moisture content for each kind of aggregate. Store or handle aggregates so that their water content remains constant during any day's run. Equipment for weighing materials shall provide convenient and positive means of determining quantities in the batch of concrete, and means shall be provided for addition or removal of small quantities of materials to obtain exact weight per batch. Device for measuring water shall show accurately the quantity in gallons and be so designed that the water supply will be automatically cut off while water is being discharged into the mixer. Water shall be assumed to weigh 8.34 pounds per gallon.

701.03.05 Mixing

701.03.05A General

Machine mix all concrete. Ready-mix concrete may be used if it meets all specified requirements herein.

701.03.05B Mixing at the Site

Mix concrete thoroughly in a batch mixer of a size and type which will ensure a uniform distribution of materials throughout the mass.

Equip mixer with adequate water storage and a device for accurately measuring and automatically controlling amount of water used in each batch. Preferably provide mechanical means for recording the number of revolutions for each batch and automatically preventing discharge of mixer until materials have been mixed the specified minimum time.

Remove entire contents of the mixer from the drum before materials for a succeeding batch are placed therein. Deposit materials composing a batch simultaneously in the mixer. Do not use any mixer having a rated capacity of less than 1-sack batch. Do not charge a mixer in excess of its rated capacity.

Mix all concrete for a period of not less than 1-1/2 minutes after all materials, including water, are in the mixer. During the period of mixing, operate at a design speed of not less than 14 nor more than 20 revolutions per minute.

The first batch of concrete materials placed in the mixer shall contain a sufficient excess of cement, sand, and water to coat the inside of the drum without reducing the required mortar content of the mix. Upon cessation of mixing for a considerable period, clean the mixer thoroughly.

The above specification contemplates the use of conventional revolving drum type mixers. Other types may be used with written permission of the Engineer.

701.03.05C Truck Mixing

Unless otherwise authorized by the Engineer, use only revolving drum type truck mixers that are watertight and so constructed that concrete can be mixed to ensure a uniform distribution of materials throughout the mass.

Accurately measure all solid materials for concrete in accordance with Subsection 701.03.04 and charge into the drum at the proportioning plant. Except as subsequently provided, equip the truck mixer

with a tank for carrying mixing water. Place only the prescribed amount of water in the tank unless the tank is equipped with a device by which quantity of water added can be readily verified. Mixing water may be added directly to the batch in which case a tank will not be required. Truck mixers may be required to be provided with means by which the mixing time can be readily verified by the Engineer.

Do not allow any batch in a truck mixer to exceed the maximum rated capacity of mixer as stated by the manufacturer and stamped in metal on the mixer. Continue truck mixing for not less than 70 revolutions nor more than 100 revolutions of the drum at the rate of rotation designated by the manufacturer and stamped in metal on the mixer. Commence mixing after all ingredients, including water, are in the drum. Additional mixing, if any, shall be of the rate of rotation as designated by the manufacturer as agitating speed. Begin mixing within 30 minutes after cement has been added to either the water or the aggregate. When cement is charged into a mixer drum containing water or surface-wet aggregate and when the temperature is above 90 degrees F, or when high-early strength Portland Cement is used, reduce this limit to 15 minutes.

701.03.05D Partial Mixing at Central Plant

When a stationary mixer is used for partial mixing of concrete (shrink-mixing), mixing time in stationary mixer may be no more than is required to intermingle the ingredients. After transfer to a truck mixer, further mixing at a designated mixing speed will be required only as necessary to meet the requirements for uniformity of concrete as specified for truck mixing.

701.03.05E Plant Mix

Conform mixing at a central plant to requirements for mixing at the site.

701.03.05F Time of Hauling and Placing Mixed Concrete

Completely discharge and place in the forms all concrete transported to the project in a truck mixer or truck agitator within ninety (90) minutes after the introduction of mixing water to cement and aggregate, or cement to aggregate, or before 250 revolutions of the truck drum or blades, whichever comes first.

Reduce this time during conditions which contribute to accelerated setting of concrete, or when temperature of concrete is 85 degrees F, or above.

Add no water to concrete during hauling or before discharge, unless ordered by the Engineer. Engineer will not approve any water addition which increases the slump by more than 1 inch or exceeds the design water-cement ratio.

701.03.05G Delivery

Utilize a plant capacity and transportation equipment which are adequate to ensure continuous delivery of concrete during concreting operations and which will provide for proper handling, placing, and finishing of the concrete. Use a rate of delivery such that the interval between batches does not exceed 20 minutes. Methods of delivery and handling concrete shall allow placing with a minimum of rehandling and without damage to the structure or concrete. Time interval may be reduced when deck concrete is being placed. Control delivery of concrete for decks so that deck pour will progress at a rate of not less than 20 feet per hour unless some other rate of pour is specified.

701.03.05H Retempering

Mix concrete only in such quantities as are required for immediate use and do not use any which has developed initial set. Concrete which has partially hardened shall not be retempered or remixed.

701.03.06 Falsework

For structures requiring poured-in-place concrete superstructures, working drawings and calculations for falsework prepared by an engineer registered to practice in the State of Oregon may be required to be submitted for review. For a guideline on designing formwork and falsework, the contractor is referred to ACI Standard, "Recommended Practices for Concrete Formwork" (ACI 347-XX).

Design and construct all falsework to support the total applied loads with a deflection/span ratio not to exceed 1/500 in any falsework span. Employ screw jacks or hardwood wedges to take up any settlement in formwork either before or during the placing of concrete. Set falsework for post- tensioned structures to carry full dead load and any additional vertical or horizontal loads caused by the prestressing operation.

Contractor is directed to the fact that post-tensioned structures are not self-supporting until post-tensioning is complete and Contractor shall consider this fact in the design, maintenance, and protection of falsework.

701.03.07 Forms

Forms shall be constructed for all concrete work. Adjacent surfacing such as asphaltic concrete shall not be used as a form for placing concrete. Make all forms mortar-tight, set them so finished concrete will conform to the proper dimensions and contours, and make them sufficiently rigid to prevent distortion due to the pressure of the concrete and other loads incident to the construction operations. Construct and maintain forms to prevent warping and opening of joints.

Design forms to withstand the effects of vibration of concrete as it is placed.

Support deck forms for concrete box girder spans by girder stems. Posts or other supports for deck forms will not be permitted to come in contact with the bottom slab of the box girder.

Make wood forms for concrete surfaces not subject to backfill of dressed lumber of uniform thickness with a form liner or an approved type. Wood forms for interior cells of box girders may be made with or without a form liner. Shiplap or S4S boards are acceptable provided forms are mortar-tight. Plywood will be acceptable as a form liner if sufficiently supported. Ensure that all form work for exposed concrete surfaces is smooth with the grain running in the same direction to give a good finished appearance. Construct metal ties or anchorages within forms to permit their removal to a depth of at least 1 inch from face without injury to the concrete. Where wire ties are permitted, all wires, upon removal of forms, shall be cut back at least 1/4-inch from the face of the concrete with chisels or nippers; for green concrete, nippers are necessary. Design all fittings for metal ties so that upon their removal, cavities which are left will be of the smallest possible size. Fill cavities with cement mortar and leave surface sound, smooth, even, and uniform in color.

Fillet forms at all sharp corners and bevel or draft in the case of all projections, such as girders and copings, to ensure easy removal. For narrow walls and columns, where the bottom of the form is inaccessible, leave the lower form boards loose so that they may be removed for cleaning out extraneous material immediately before placing of the concrete.

Keep the forms in place for periods, which shall be determined as hereinafter specified. When the forms appear to be unsatisfactory in any way, either before or during the placing of concrete, work shall be stopped until defects have been corrected.

Maintain shape, strength, rigidity, watertightness, and surface smoothness of re-used forms at all times. Do not re-use warped or bulged lumber, and do not re-use any forms which are unsatisfactory in any respect. Thoroughly clean re-used forms of all dirt, mortar, and foreign matter.

Treat all forms with form oil or wax or saturate with water immediately before placing concrete. Do not

use material which will adhere to or discolor the concrete.

701.03.08 Removal of Falsework and Forms

Assume full responsibility for all damage resulting from premature removal of forms. Do not place earth backfill against walls below grade, and do not remove forms and shoring from structural slabs or beams until concrete has reached an actual field strength equal to 75 percent of the specified 28-day design field strength. Actual field strength shall be determined from field cured test cylinders which shall be cured under conditions equivalent to the most unfavorable conditions for the portions of concrete which the cylinders represent.

Do not use methods of form removal likely to cause over-stressing of the concrete. Remove supports in such a manner as to permit concrete to uniformly and gradually take the stresses due to its own weight.

Remove all form work from cells of concrete box girders to which access is provided, and all form work except that necessary to support deck slab, from the remaining cells of the box girder.

701.03.09 Weather Limitations

701.03.09A General

Assume full responsibility for the concrete work during any unusual weather conditions, including, but not limited, to hot and cold weather. Any work not in conformance to the Drawings and Specifications may be rejected by the Engineer and replaced or repaired at the Contractor's expense.

701.03.09B Hot Weather

Take special precautions for hot weather in placing, finishing, and curing concrete when the ambient temperature reaches 85 degrees F or higher or whenever relative humidity, wind velocity, or exposure to the sun at lower air temperatures are expected to cause hot weather conditions for the concrete. Specify cool materials for the mix, add additional water to the forms, subgrades and other areas to be in contact with concrete but allow no standing water when concrete is placed; schedule work carefully to place and finish concrete as rapidly as possible, reduce evaporation from the concrete with windbreaks, covers, and fog nozzles, and begin curing as soon as possible.

701.03.09C Cold Weather

Do not place concrete when ambient temperature is below 35 degrees F without written permission of the Engineer. Enclose structure in such a way that concrete and air within the enclosure can be kept above 50 degrees F for a period of seven days after placing the concrete. When enclosures are used to maintain specified temperatures, furnish a 24-hour temperature recording thermometer to record all temperature within the enclosure.

Supply heating apparatus such as stoves, salamanders, or steam equipment and the necessary fuel. When dry heat is used, provide means of maintaining atmospheric moisture. Heat all aggregates and mixing water to a temperature of at least 70 degrees F, but not more than 150 degrees F; aggregates may be heated by either steam or dry heat.

Where practicable, forms insulated with at least 2-inch thick blankets, made of fiberglass, rock wool, balsam wood, or similar commercial material capable of maintaining the surface of the concrete at no less than 50 degrees F may be used in lieu of other protection of concrete involving housing and heating. When forms are insulated, protect exposed horizontal surfaces with a similar layer of the insulating materials securely fastened in place. If insulated forms do not maintain proper temperature at the surface of the concrete, use auxiliary protection and heat. The Contractor may also use plastic and straw to protect the concrete. The

Contractor will keep the straw confined to the surfaces being protected and clean up all materials as soon as the concrete no longer requires the protection. No staining of the concrete will be accepted due to the use of straw as a method of protection.

701.03.10 Handling and Placing

701.03.10A General

In preparation for placing of concrete, remove all sawdust, chips, and other construction debris and extraneous matter from interior of forms. Remove struts, stays, and braces, serving temporarily to hold forms in correct shape and alignment prior to placing of the concrete, when the concrete has reached a position rendering their service unnecessary. Remove these temporary members entirely from the forms and do not leave them buried in the concrete.

Do not use concrete which does not reach its final position in forms within time stipulated in Subsection 209.03.05F.

Place concrete so as to avoid segregation of material and displacement of reinforcement. Do not use long troughs, chutes, and pipes for conveying concrete from mixer to forms.

For open troughs and chutes, use steel or steel lined material. Where steep slopes are required, equip chutes with baffles or make in short lengths that reverse direction of movement. Keep all chutes, troughs, and pipes clean and free from coatings of hardened concrete by thoroughly flushing with water after each run; discharge water used for flushing clear of structure and do not discharge into any sewer or culvert or appurtenances thereto.

When placing operations would involve dropping concrete more than 3 feet, deposit through an "elephant trunk." Aluminum pipe will not be allowed.

After initial set of concrete, do not jar forms nor place strain on the ends of the reinforcing bars which project.

Thoroughly compact concrete during and immediately after depositing.

Provide compaction by mechanical vibration subject to the following provisions:

1. Use internal vibration or other methods provided herein.

2. Use vibrators of a sufficient type and design, capable of transmitting vibration to concrete at frequencies of not less than 4,500 impulses per minute.

3. Provide intensity of vibration such as to visibly affect the mass of the concrete of 1-inch slump over a radius of at least 18 inches.

4. Provide a sufficient number of vibrators to properly compact each batch, immediately after it is placed in forms.

5. Manipulate vibrators so as to thoroughly work concrete around reinforcement and embedded fixtures and into corners and angles of forms.

6. Apply vibration at the point of deposit and in the area of freshly deposited concrete. Insert vibrators and withdraw from concrete slowly. Use vibration of sufficient duration and intensity to thoroughly compact concrete but do not continue so as to cause segregation. Do not continue vibration at any one point to the extent that localized areas of grout are formed.

7. Make application of vibrators at points uniformly spaced and not farther apart than twice the radius over which vibration is visibly effective.

8. Do not apply vibration directly or through reinforcement to sections or layers of concrete which have hardened to the degree that concrete ceases to be plastic under vibration. Do not use vibration to make concrete flow in forms over distances so great as to cause segregation, nor to transport concrete in forms.

9. Supplement vibration by such spading as is necessary to ensure smooth surfaces and dense concrete, along form surfaces and in corners and locations impossible to reach with vibrators.

Place concrete in horizontal layers not more than 12 inches thick except as hereinafter provided. When less than a complete layer is placed in one operation, terminate in a vertical bulkhead. Place each layer and compact before the preceding layer has taken initial set to avoid surfaces of separation between the layers. Compact each layer so as to avoid formation of a surface of separation with a preceding layer.

When placing of concrete is temporarily discontinued, and after concrete has become firm enough to retain its form, clean off laitance and other objectionable material to a sufficient depth to expose sound concrete. Smooth top surface of the concrete adjacent to forms with a trowel. Where a "feather edge" might be produced at a construction joint, as in the sloped top surface of a wing wall, use inset form work to produce a blocked out portion in the preceding layer which produces an edge thickness of not less than 6 inches in succeeding layer. Do not discontinue work within 18 inches of the top of any face, unless provision has been made for a coping, in which case, a construction joint shall be made at the under side of the coping.

701.03.10B Pumping

Placement of concrete by pumping will be permitted provided clean equipment is used which is of sufficient size and capacity to satisfactorily handle the concrete mix specified. For discharge line of pump, use steel or rubber pipe. Provide additional cement or additives required to obtain a pumpable mix at the sole expense of the Contractor.

Furnish evidence of backup means of placing structural concrete in the event of failure of equipment during placement.

701.03.11 Construction Joints

701.03.11A General

Use construction joints only where shown or designated on the Drawings, unless otherwise specified. Taper wooden key forms and pre-soak or treat to prevent swelling. When placing operation is interrupted for any reason, place construction joints and provide with keys to resist shear and dowels to develop bond.

701.03.11B Bonding

Before depositing new concrete on or against concrete which has hardened, the forms shall be retightened. The surface of the hardened concrete shall be roughened in a manner that will not leave loosened particles or aggregate or damaged concrete at the surface. It shall be thoroughly cleaned of foreign matter and laitance and saturated with water. At the juncture of the hardened and the newly deposited concrete, the cleaned and saturated surfaces, including vertical and inclined surfaces, shall first be thoroughly covered with a coating or mortar or neat cement grout against which the new concrete shall be placed before the grout has attained its initial set.

The placing of concrete shall be continuous from joint to joint. The face edges of all joints

which are exposed to view shall be carefully finished true to line and elevation.

701.03.12 Expansion and Fixed Joints

Construct all joints according to details shown.

701.03.12A Open Joints

Place open joint in locations shown. Construct by insertion and subsequent removal of a template without chipping or breaking corners of the concrete. Do not extend reinforcement across an open joint unless so shown.

701.03.12B Filled Joints

Construct poured expansion joints similar to open joints. When premolded types are specified, drive nails at about 1 foot on centers through filler to provide anchors into concrete when it is placed. Place premolded joint filler in forms in proper rigid position before concrete is poured. Install premolded joint filler in all walks to provide expansion and contraction joints at maximum 18-foot intervals and at all changes in direction, at intersections and at each side of driveway entrances.

701.03.12C Steel Joints

Shape plates, angles or other structural shapes accurately at the shop to conform to the section of concrete. Fabricate and paint to conform to requirements of these Specifications. Take care to insure that surface in finished plane is true and free of warping. Employ positive methods in placing joints to keep them in correct position during placement of concrete. Opening at expansion joints at normal temperature shall be as shown. Avoid impairment of clearance of any manner.

701.03.12D Preformed Elastomeric Joint Seals

Use compression joint seals in the longest practicable lengths for longitudinal joints. In transverse joints, one factory splice will be permitted in joint seals where required length of material in any one joint exceeds manufacturers' standard stock lengths. Make such splices true and smooth on outside surfaces with no offsets of abutting sections and with complete bond on all abutting surfaces. Make joints clean and dry and free of spalls and irregularities which would impair a tight seal in service. Place seals in the joint under compression, as recommended by manufacturer, using a lubricant-adhesive as a covering film applied to both sides of the seal just prior to its installation.

For lubricant-adhesive material, use a compound of same base polymer as the joint seal with which it is used, blended with a suitable volatile solvent. Lubricant-adhesive shall be compatible with joint seal and concrete and be relatively unaffected by normal moisture in the concrete. It shall maintain a suitable consistency at the temperature at which joint seal is installed.

Set seal as shown and make sure it contacts walls of joint throughout its length. Longitudinal elongation of an installed seal by 3 percent or more of its original length will be cause for its removal and reinstallation.

Remove all lubricant-adhesive which comes upon the exposed top of an installed seal before it dries, and remove all seals which show twist, curl, nicks or other malformation, as installed. Seal all ends of preformed elastomeric joint seals with watertight plug prior to installation of joint seal. Use a foam rubber plug or other acceptable closed cell cellular material which is compressible to 15 percent of its uncompressed thickness. Plug shall be a minimum of 2 inches in length and be secured in elastomeric joint seal with an adhesive which will insure a watertight plug.

701.03.13 Surface Finishing

701.03.13A General

After forms have been removed, carefully point all depressions resulting from removal of form ties or from other causes with mortar conforming to Section 205. Maintain thorough saturation of concrete surface during pointing and patching. Type of finish to be used shall be as specified or as shown.

701.03.13B Slab Finishes

1. **General.** Refrain from excessive use of "Jitterbugs" or other special tools designed for the purpose of forcing coarse aggregate away from slab surface. dusting of surfaces with dry materials will not be permitted. Compact slabs and floors thoroughly by vibration. Round off edges of slabs and tops of walls with a 1/2-inch radius steel edging tool, unless specified otherwise.

2. **Monolithic Finish.** Finish by screeding and floating with straight-edge to bring surfaces to the required finish elevation shown. While concrete is still green, but sufficiently hardened to bear a person's weight without deep imprint, wood float to a true, even plane with no coarse aggregate visible. Apply sufficient pressure on wood floats to bring moisture to surface. After surface moisture has disappeared, steel trowel concrete to produce a smooth, impervious surface, free from trowel marks. Give an additional troweling to surface for the purpose of burnishing. Final troweling shall produce a ringing sound from the trowel. Do not use dry cement or additional water in troweling. Do not use excessive troweling.

3. **Rough Slab Finish.** Finish slabs to receive fill and mortar setting beds by screeding with straightedges to bring surface to required finish plane. Remove all laitance and leave surface clean. Subject to approval, an acceptable aggregate revealing material may be used and laitance washed off when concrete has set.

4. **Wood Float Finish.** Finish by screeding with straightedges to bring surface to required line as shown. While concrete is still green, but hardened sufficiently to bear cement finisher's weight, work flat surface to a true and uniform plane with no coarse aggregate visible.

5. **Broomed Floor Finish.** Finish concrete as specified for monolithic floor finish above, except omit final troweling and finish surface by drawing a fine-hair broom lightly across surface. Do all brooming in same direction and parallel to expansion joints, or in cases of inclined slabs, perpendicular to slope, except for reservoir roof slab, broom surface in radial direction.

6. **Power Machine Finish**. In lieu of hand finishing, a power machine may be used for finishing concrete floors and slabs in conformance with directions of machine manufacturer.

701.03.14 Curing

Cure concrete surfaces by covering with material conforming to Subsection 506.03.13A Curing of Concrete. Place covering as soon as concrete has hardened sufficiently to support covering without damage. Use a covering which is best suited to existing conditions. If such coverings are not required, keep surfaces moist by flushing or sprinkling. Arrange sprinkling system so outside of all forms can be kept damp for a period of 7 days after placing of concrete so that no moisture is taken away from concrete by forms. Coordinate curing and finishing when both requirements are to be met at same time.

Protect slab concrete exposed to conditions causing premature drying during placing operations by providing wind breaks, fog spray or by other necessary methods.

701.04 MEASUREMENT AND PAYMENT

701.04.01 Concrete

Concrete will be measured on a lump sum basis, square yard surface basis, or on a cubic yard basis for payment as shown in the Proposal. In all cases the part or parts of work to be measured on each basis shall be as shown and as specified.

When reinforcing steel, metal expansion plates, or miscellaneous metal items are not specified or shown as a separate pay item in the Proposal, payment for said item is considered to be incidental to the related item of work and no separate payment will be made.

701.04.01A Lump Sum Basis

Measurement and payment will be made on a lump sum basis as shown in the Proposal.

701.04.01B Square Yard Surface Basis

Measurement and payment will be made on a square yard surface basis for each class of concrete as shown in the Proposal.

701.04.01C Cubic Yard Basis

Measurement and payment will be made on a cubic yard basis for each class of concrete as shown in the Proposal.

701.04.01D Square Foot Surface Basis

Measurement and payment will be made on a square foot surface basis for each class of concrete as shown in the Proposal.

****

702 REINFORCEMENT

****

702.01 DESCRIPTION

This section covers work necessary for reinforcing steel, welded wire fabric, dowels, and accessories, for concrete structures, complete.

702.02 MATERIALS

702.02.01 Bar Reinforcement

Use steel deformed bars conforming to ASTM A 615, Grade 40, unless otherwise shown, except that longitudinal bars in continuously reinforced concrete pavement and high strength bar reinforcement shall be Grade 60.

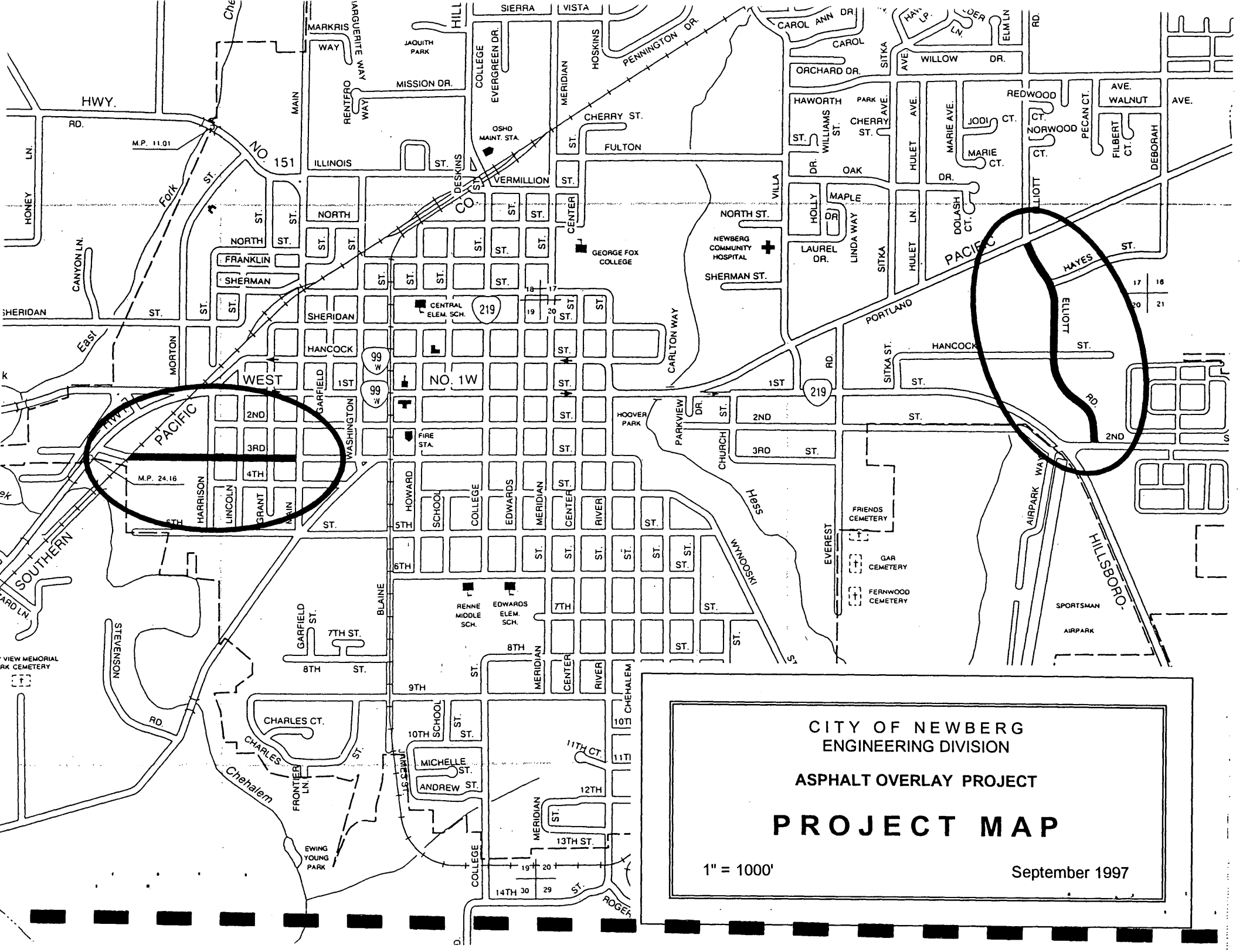
702.02.02 Dowels

For concrete pavement, slab or wall load transfer devices at joints and other elements, use dowels conforming to ASTM A 306, Grade 70 unless otherwise specified. Coat with plastic or other approved material for bond prevention where specified.

PROJECT INFORMATION

CITY OF NEWBERG
ASPHALT OVERLAY PROJECT

JANUARY, 1998


CITY OF NEWBERG
ENGINEERING DIVISION
ASPHALT OVERLAY PROJECT
PROJECT MAP
1" = 1000'
September 1997
HWY.
NO. 151
PACIFIC
SOUTHERN
PORTLAND
HAYES
ELLIOTT
WEST
NO. 1W
NORTH
SHERIDAN
HANCOCK
1ST
2ND
3RD
4TH
5TH
6TH
7TH
8TH
9TH
10TH
11TH CT.
12TH
13TH ST.
14TH
MAIN
MORTON
GARFIELD
WASHINGTON
HOWARD
SCHOOL
COLLEGE
EDWARDS
MERIDIAN
CENTER
RIVER
BLAINE
CHEHALEM
HOSKINS
PENNINGTON DR.
CHERRY ST.
FULTON
OAK
MAPLE
NORTH ST.
SHERMAN ST.
VILLA
CARLTON WAY
SITKA
HULET
MARIE AVE.
JODI CT.
MARIE CT.
REDWOOD
NORWOOD
PECAN CT.
WALNUT
DEBORAH
FILBERT CT.
DOLASH CT.
LAUREL DR.
LINDA WAY
HOLLY DR.
CAROL ANN DR.
CAROL
ORCHARD DR.
WILLOW DR.
HAWORTH PARK
CHURCH
PARKVIEW DR.
HOOVER PARK
FRIENDS CEMETERY
GAR CEMETERY
FERNWOOD CEMETERY
EVEREST
WYNOOSKI
AIRPARK WAY
HILLSBORO
SPORTSMAN AIRPARK
CENTRAL ELEM. SCH.
GEORGE FOX COLLEGE
NEWBERG COMMUNITY HOSPITAL
FIRE STA.
OSHD MAINT. STA.
RENNE MIDDLE SCH.
EDWARDS ELEM. SCH.
JAQUITH PARK
EWING YOUNG PARK
CHARLES CT.
MICHELLE ST.
ANDREW ST.
FRONTIER LN.
STEVENSON RD.
M.P. 11.01
M.P. 24.16
219
99W
99E

ASPHALT OVERLAY PROJECT

TABLE OF STREETS

STREET	LOCATION BEGIN	LOCATION END	PRELEVEL (Class D) (Yes / No)	ASPHALT CLASS	NOMINAL THICKNESS (in)	FABRIC WIDTH (Approx.) (Ft)	PAVEMENT WIDTH (Ft)	PAVEMENT LENGTH (Ft)	PAVEMENT AREA (SY)
3RD	Main	RR Xing	Y	B + C	2.5" + 1.5"	24	32	1,460	5,190
Elliott	Portland Rd.	2ND	Y	B + C	2.5" + 1.5"	26	46 - 34	2,010	7,810
		TOTAL						**3,470**	**13,000**

STRAIGHT LINE CHART

STA.	OFFSET (Ft) LEFT	OFFSET (Ft) RIGHT	DESCRIPTION
3rd Street:			
10 + 00	0		C/L Monument box, South side of SP RR
10 + 02		17	Begin RT curb
10 + 14	17		Begin LT curb
11 + 27		17	Catch basin
11 + 39	17		Catch basin
12 + 50		13	Manhole
16 + 73	18		Water valve
16 + 74	17		Water valve
16 + 75	18	16	Water valve
16 + 79		15	Water valve
16 + 85		9	Manhole
16 + 94	0		C/L Monument box at Harrison St.
19 + 54	0		C/L Monument box at Lincoln St.
19 + 75		14	Water valve
21 + 47		6	Manhole
21 + 93		13	Water valve
21 + 94		14	Water valve
21 + 95		13, 17	Water valve
22 + 07		8	Manhole
22 + 13	0		C/L Monument box at Grant St.
23 + 37		15	Gas valve
23 + 44		8	Manhole
24 + 73	0		C/L Monument box at Main St.
Elliott Street:			
0 + 94	0		South curb line, Portland Rd.
0 + 96	33		Gas valve
2 + 00	0		C/L Monument box

STRAIGHT LINE CHART

STA.	OFFSET (Ft) LEFT	OFFSET (Ft) RIGHT	DESCRIPTION
3 + 14	0		C/L Monument box
3 + 18		18	Catch basin
3 + 30	0		Manhole
3 + 48	0		C/L Monument box
4 + 18	0		Manhole
5 + 05		18	Catch basin
5 + 07	18		Catch basin
5 + 41	0		C/L Monument box at Hayes St.
5 + 68	9		Manhole
6 + 22	0		C/L Monument box
8 + 04	5		Manhole
8 + 44	18	18	Catch basin
11 + 51	18	18	Catch basin
11 + 69	24, 27		Water valve
11 + 70		25	Water valve
11 + 81		17	Manhole
11 + 94	0		C/L Monument box at Hancock St.
11 + 98	6		Manhole
12 + 79	0		C/L Monument box
13 + 30	18		Catch basin
13 + 33		18	Catch basin
14 + 20		7	Manhole
15 + 08	0		C/L Monument box
16 + 93	18	18	Catch basin
17 + 44	0		C/L Monument box
17 + 66	0		Manhole
18 + 93	18	18	Catch basin
19 + 19	0		Manhole

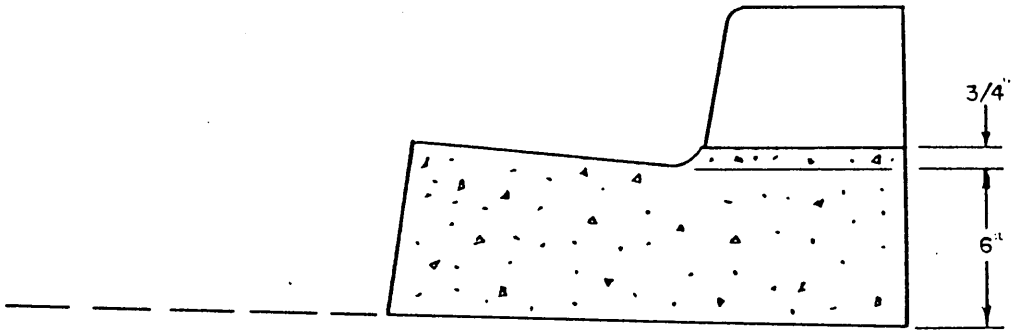
STRAIGHT LINE CHART

STA.	OFFSET (Ft) LEFT	OFFSET (Ft) RIGHT	DESCRIPTION
19 + 73	0		C/L Monument box
20 + 72	18	18	Catch basin
21 + 05	0		North curb line, 2ND St.
21 + 12	14		Manhole

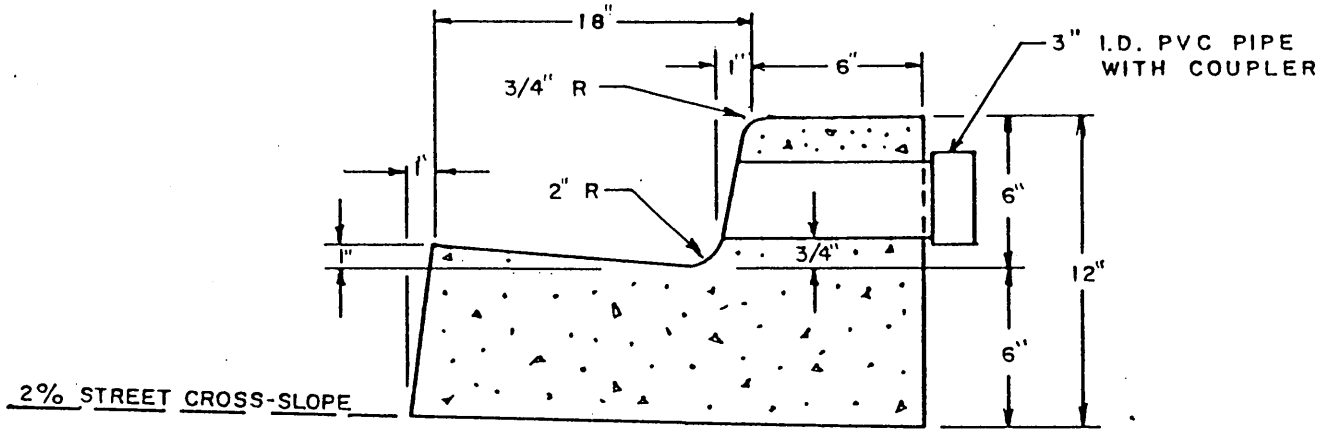
STANDARD DRAWINGS

CITY OF NEWBERG
ASPHALT OVERLAY PROJECT

JANUARY, 1998



CURB and GUTTER AT DRIVEWAY APPROACH



DIMENSIONS IN INCHES

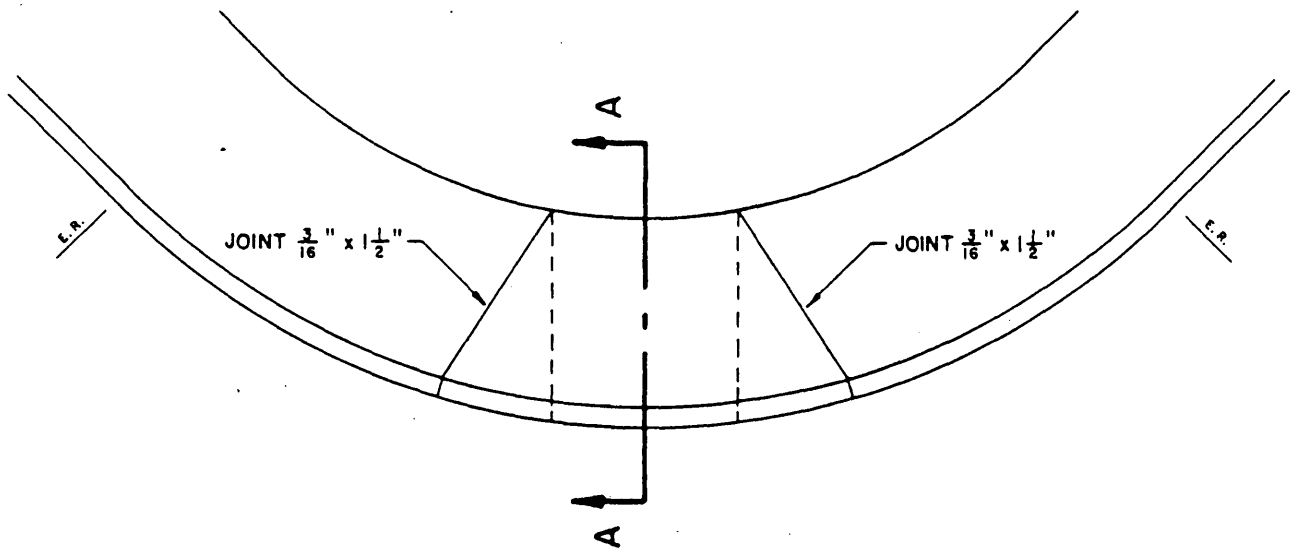
CURB and GUTTER

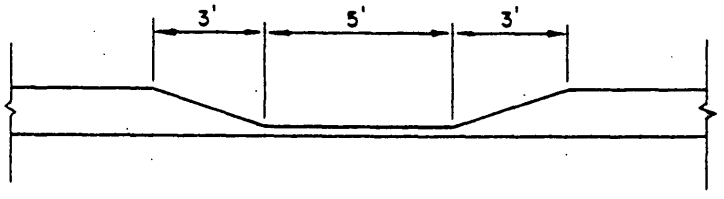
NOTES

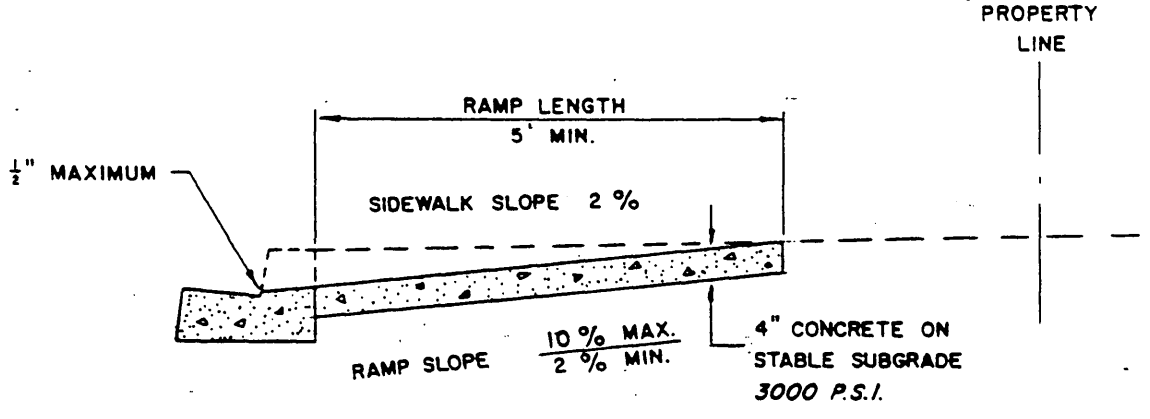
1. CONCRETE SHALL HAVE STRENGTH OF 3000 P.S.I. AT 28 DAYS.
2. TRANSVERSE CONTRACTION JOINTS - MAKE 3/16"x 1-1/2" DEEP CUT; SPACED AT 15'. PROVIDE CONTRACTION JOINTS AT CURB RETURN POINTS, CATCH BASINS, AND DRIVEWAYS.
3. SCORE CURB OVER DRAIN BLOCK-OUT.
4. WEEP HOLES SHALL SLOPE TO THE STREET.
5. EXPANSOIN JOINTS SHALL NOT BE USED.
6. APPLY CURING COMPOUND (PETROLEUM BASE) TO FRESH CONCRETE TO RETAIN MOISTURE.
7. TOP OF CURB BRANDED "S" & "W", 2" MIN. HEIGHT FOR SEWER AND WATER LOCATIONS. HAND SCRIBING IS NOT ALLOWED.

CURB & GUTTER

ENGINEERING DEPT.	CITY of NEWBERG	STANDARD DRAWING NO. ST-4	REVISIONS



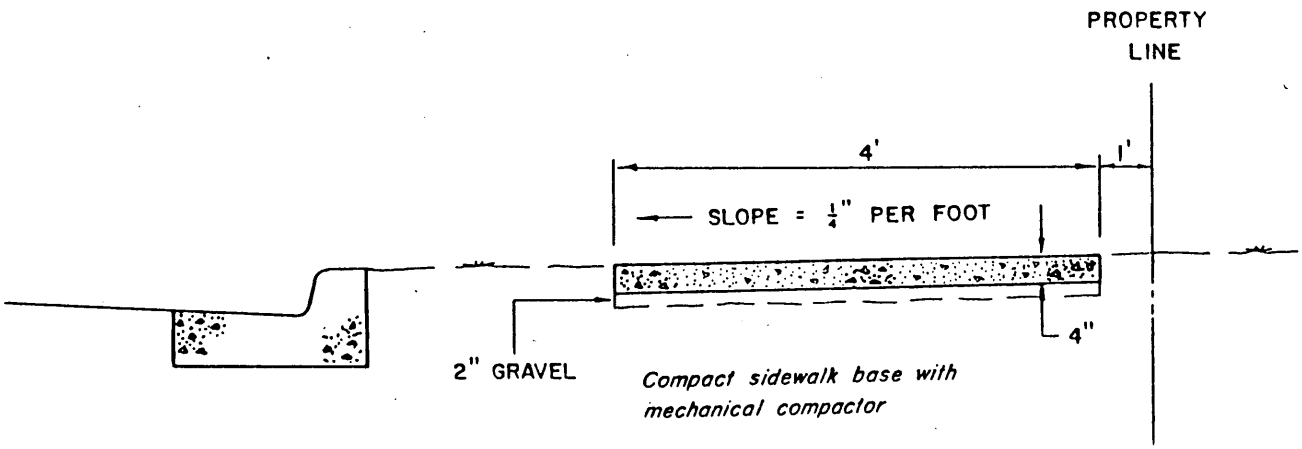




SECTION A-A

CURB RAMP

ENGINEERING DEPT.	CITY of NEWBERG	STANDARD DRAWING NO. ST-7	REVISIONS

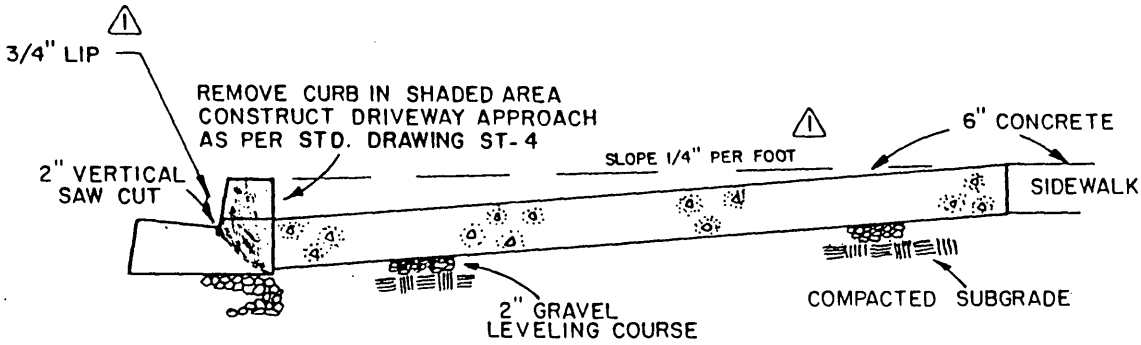


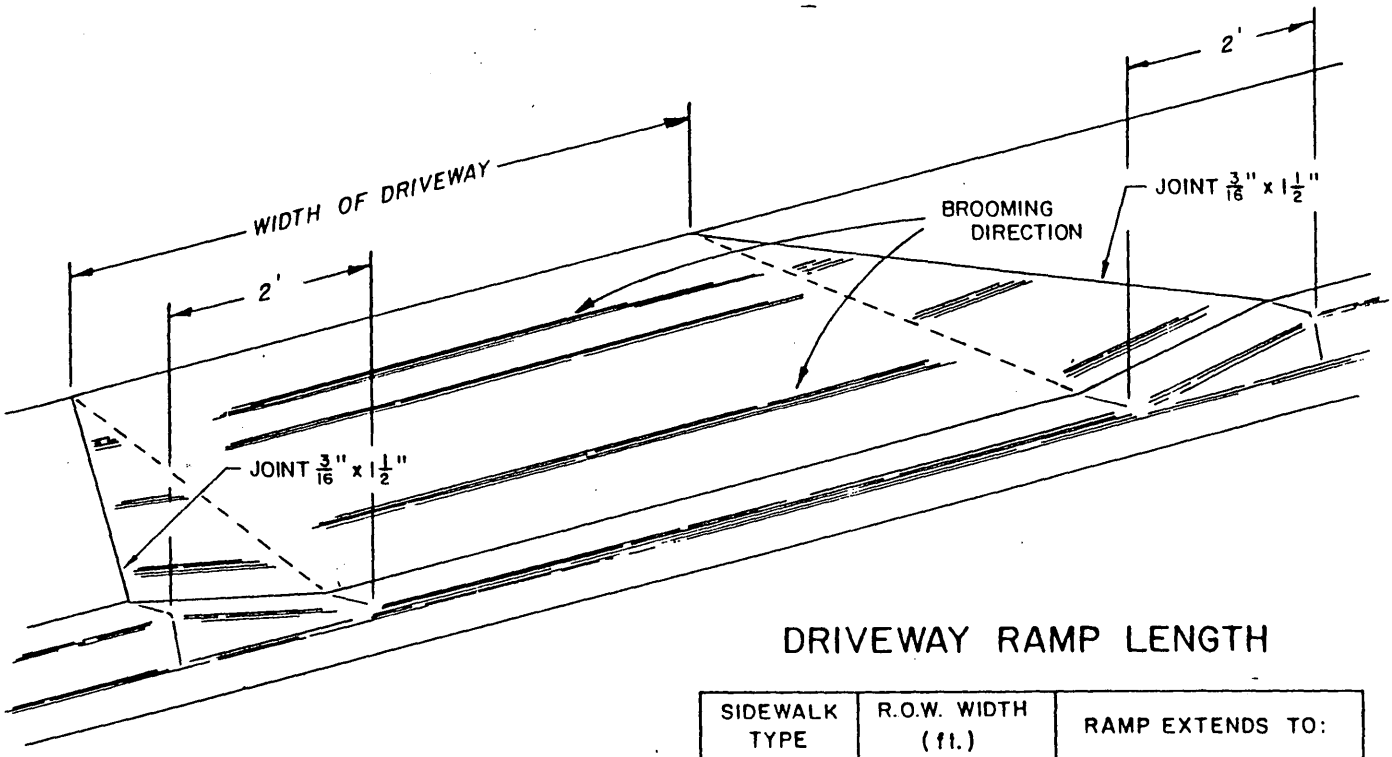
NOTES

1. Frontage from property line to curb shall slope to the street at indicated slope.
2. Work aggregate down into mix prior to finishing concrete.
3. Finishing details —
   Edge concrete with a 3" edging trowel.
   Score concrete at 4' intervals.
   Install 3/16" x 1 1/2" contraction joints 12' apart (every 3 "squares"). ⚠1
   Expansion joints shall not be used
   Apply a light broom finish transverse to sidewalk.
4. Concrete shall obtain strength of 3000 P.S.I. at 28 days.
5. Apply curing compound (petroleum base) to fresh concrete to retain moisture.
6. Tolerances —
   Surface shall not vary more than 1/4" from a 10' straightedge.
   Alignment shall be within 1/4" of true line.

SIDEWALK - TYPE 'A'

ENGINEERING DEPT.	CITY of NEWBERG	STANDARD DRAWING NO. ST-8	⚠1 REVISIONS





DRIVEWAY RAMP LENGTH

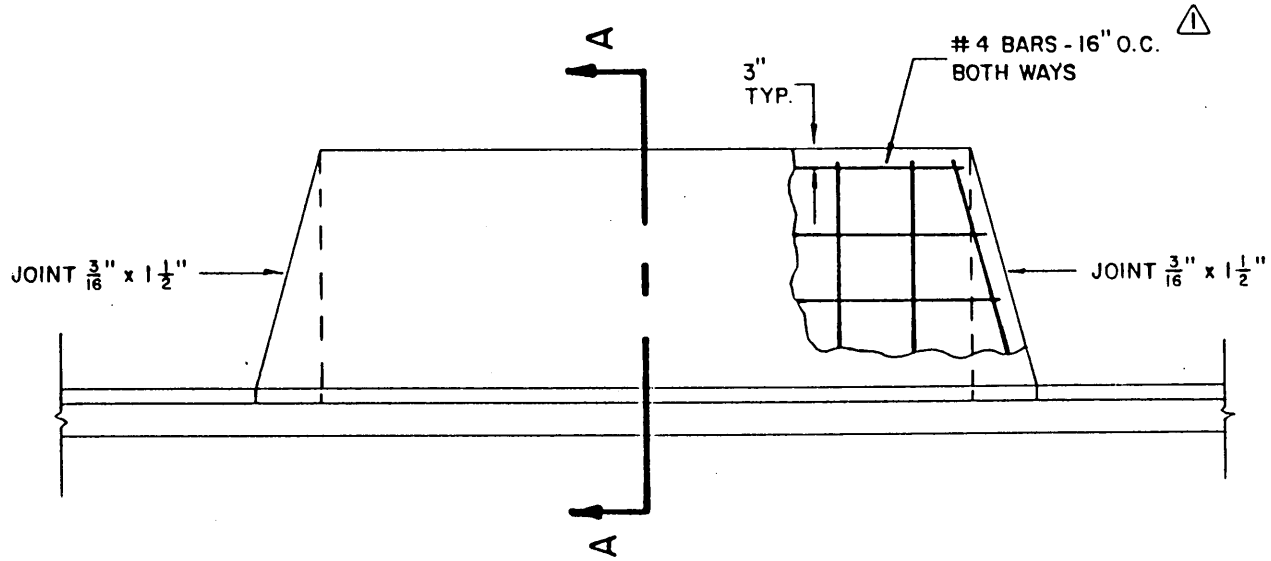
SIDEWALK TYPE	R.O.W. WIDTH (ft.)	RAMP EXTENDS TO:
A	50	Back of Sidewalk
A	60	Front of Sidewalk
B	50	Back of Sidewalk
B	60	Back of Sidewalk

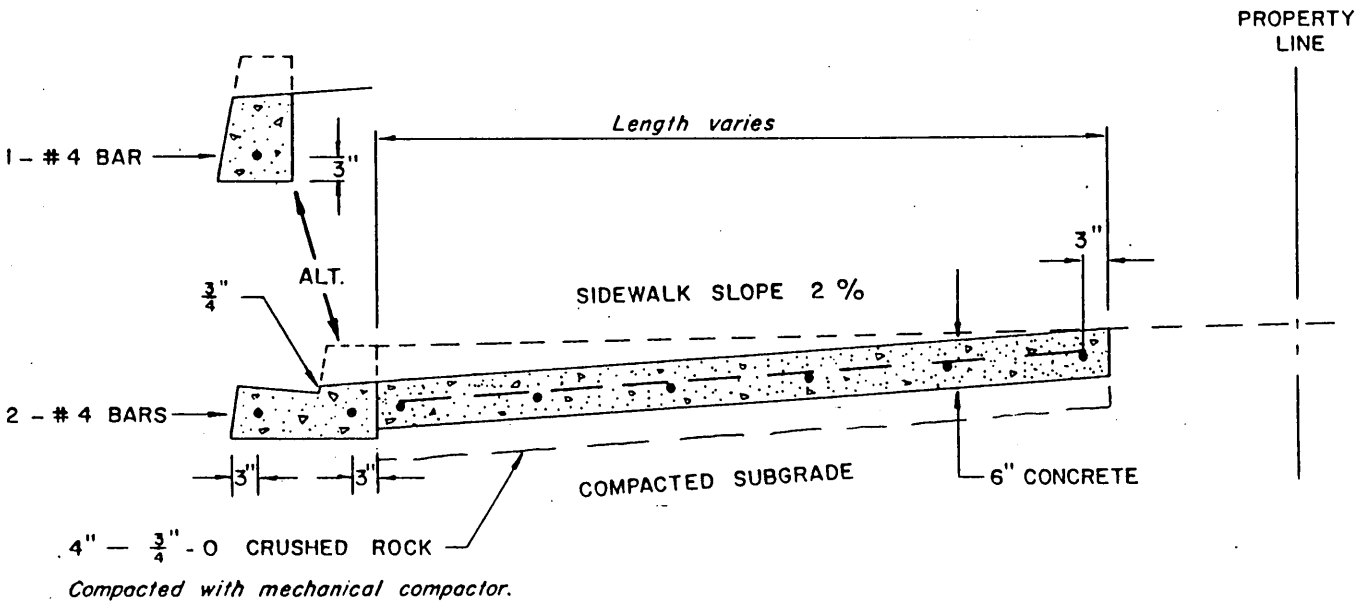
NOTES

1. *Concrete shall have strength of 3000 P.S.I. at 28 days.*
2. *Limits of driveway approach shall be saw-cut.*
3. *Finish with broom. Edge all joints.*
4. *Curb and approach shall be poured monolithic.*
5. *If width is greater than 15 ft, install 3/16" x 1 1/2" contraction joint down the center of the driveway.*
6. *Expansion joints shall not be used.*
7. *Work aggregate down into mix prior to finishing concrete.*
8. *Apply curing compound (petroleum base) to fresh concrete to retain moisture.*

DRIVEWAY APRON and CURB CUT

ENGINEERING DEPT.	CITY of NEWBERG	STANDARD DRAWING NO. ST-13	REVISIONS 1





SECTION A - A

NOTES

1. *See Std. Drawing ST-13 for additional details.*
2. *Re-bar may be deleted by City Engineer for light-duty commercial driveway.*
3. *Sidewalk through Commercial Driveway shall be constructed to this standard.*

COMMERCIAL DRIVEWAY

ENGINEERING DEPT.	*CITY of NEWBERG*	STANDARD DRAWING NO. ST-14	REVISIONS 1

ENGINEERING DEPT.

CITY of NEWBERG

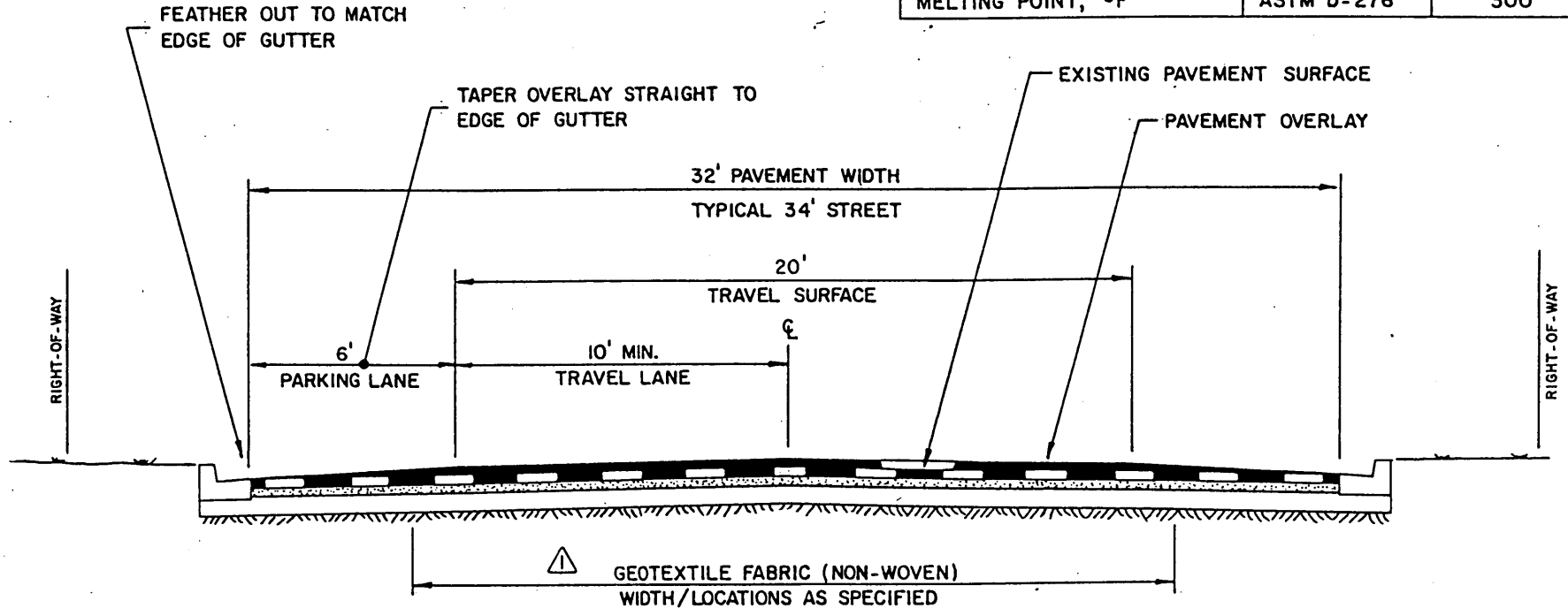
STANDARD DRAWING NO ST-22

⚠ REVISIONS

ASPHALT OVERLAY TYPICAL SECTION

⚠ GEOTEXTILE SPECIFICATIONS

PROPERTY	TEST	MIN. VALUE
TENSILE STRENGTH, lbs	ASTM D-1682	80
ELONGATION, %	ASTM D-1682	50
ASPHALT RETENTION, gal/sy	OSHD TM-817	0.20
MELTING POINT, °F	ASTM D-276	300



NOTES

1. *Overlay pattern for different width streets will be similar.*
2. ⚠ *Offset paving panels 1-foot from joints of existing pavement.*
3. ⚠ *Cover with roofing paper, then overlay, the following utility structures (to be raised by others) —*
   — Manholes, Clean-outs, Gas valve boxes
4. ⚠ *Raise to finish grade, the following utility structures —*
   — Water valve boxes, Monument boxes

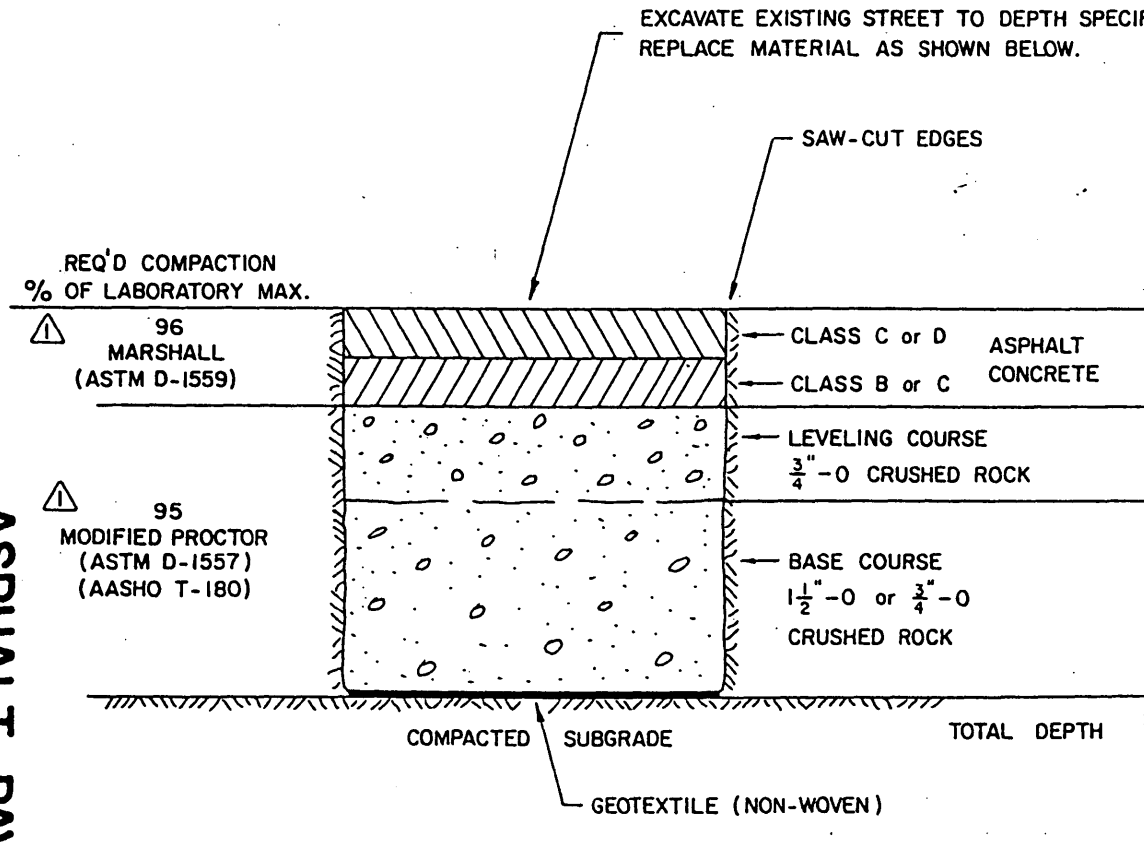
ENGINEERING DEPT.

CITY of NEWBERG

STANDARD DRAWING NO ST-23

REVISIONS

ASPHALT PAVEMENT REPAIR



STREET TYPE					
LOCAL		COLLECTOR		ARTERIAL	
DEPTH	LIFTS	DEPTH	LIFTS	DEPTH	LIFTS
3"	2	4"	2	6"	3
3"	1	3"	1	3"	1
6"	1	9"	2	12"	2
12"		16"		21"	

GEOTEXTILE SPECIFICATIONS

PROPERTY	TEST	MIN. VALUE	
TENSILE STRENGTH, lbs	ASTM D-1682	120	
ELONGATION, WET %	ASTM D-1682	40	1
COEFFICIENT OF WATER PERMEABILITY, cm/sec	ASTM D-4491	0.10	
PUNCTURE STRENGTH, lbs	ASTM D-3787	80	1
MULLEN BURST STRENGTH, psi	ASTM D-3786	250	1

ENGINEERING DEPT.

CITY of NEWBERG

STANDARD DRAWING NO. ST-29

REVISIONS

MANHOLE ADJUSTMENT

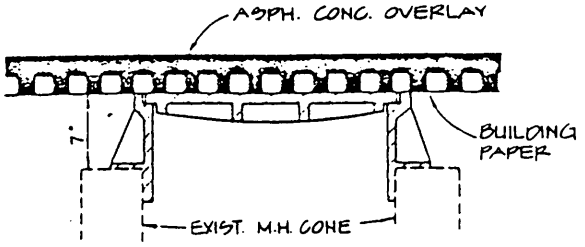
CONSTRUCTION SEQUENCE

STEP 1 COVER MANHOLE WITH BUILDING PAPER AND CONST. OVERLAY ACROSS EXIST. MANHOLES.

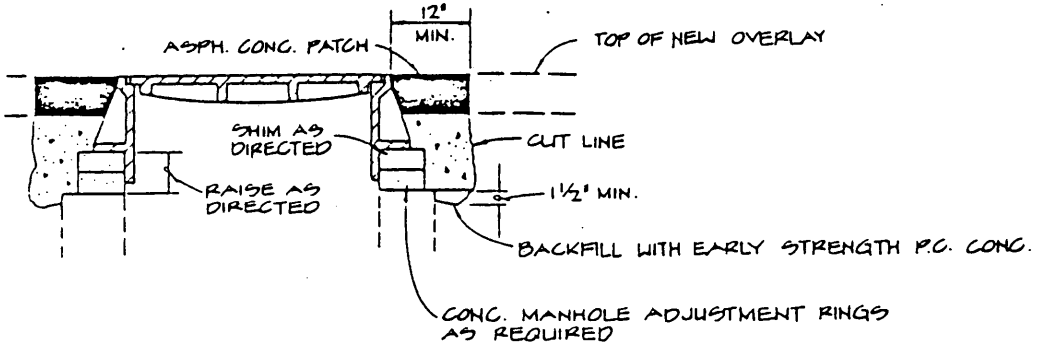
STEP 2 CUT RECTANGULAR EXCAVATION AROUND MANHOLE 12" MIN. FROM M.H. FRAME.

STEP 3 RAISE M.H. FRAME AND INSTALL CONC. RINGS AND SHIM TO FINISH PAVEMENT PROFILE AND CROSS SLOPE.

STEP 4 BACKFILL WITH EARLY STRENGTH CONC. AND ASPH. CONC. TO DEPTHS AS DIRECTED.



STEP 1



STEPS 2, 3, AND 4

MANHOLE ADJUSTMENT DETAIL

N.T.S.

NOTES:

1. Sawcut a 6-Ft square diamond pattern excavation around manhole.
2. Use Class D asphalt concrete, placed and compacted in several shallow lifts. Compact asphalt using a hand-operated mechanical compactor. Compact final surface using a plate compactor.
3. Seal paving joint with approved material and method.

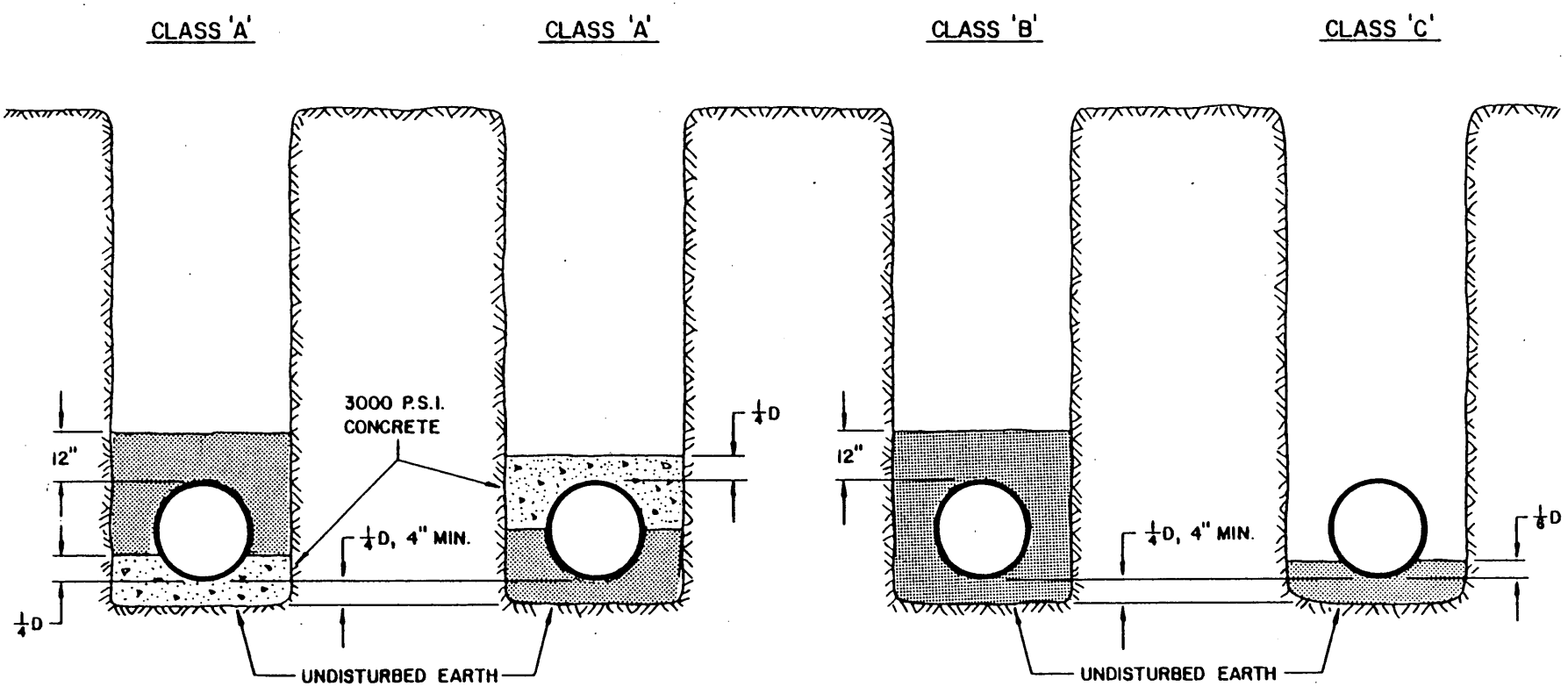
ENGINEERING DEPT.

CITY of NEWBERG

STANDARD DRAWING NO. S-1

REVISIONS

PIPE BEDDING



MAXIMUM TRENCH WIDTH

PIPE SIZE (in)	WIDTH (In)	PIPE SIZE (in)	WIDTH (in)
4	18	15	42
6	24	18	42
8	30	21	48
10	30	24	60
12	36	27 and larger	See City Eng.

CRUSHED ROCK ¾"-0

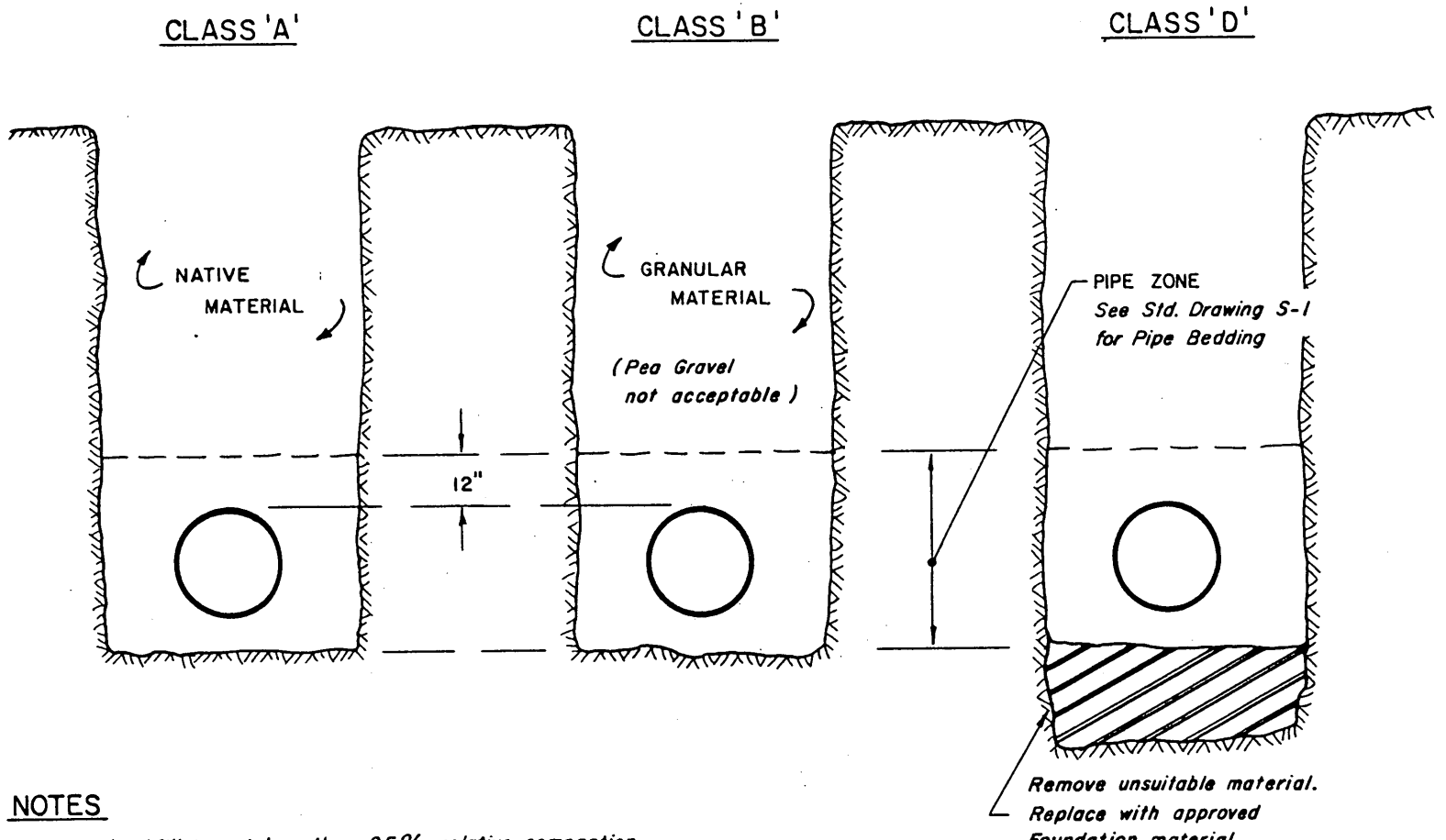
ENGINEERING DEPT.

CITY of NEWBERG

STANDARD DRAWING NO. S-2

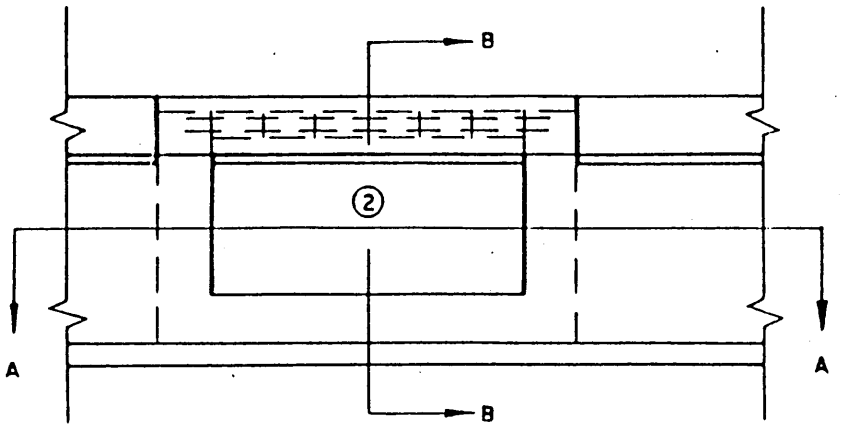
△1 REVISIONS

TRENCH BACKFILL

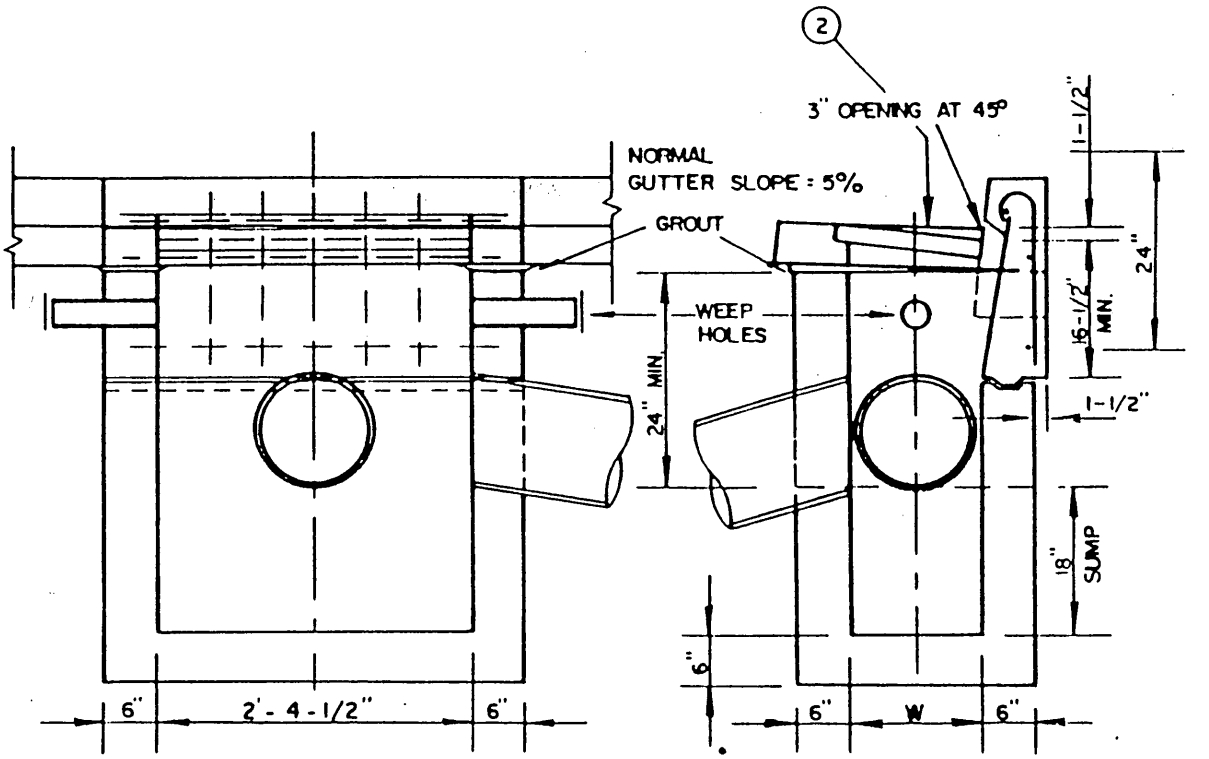


NOTES

1. Compact backfill to not less than 95% relative compaction.
2. Initial compaction of backfill over P.V.C. pipe, to 3 feet over top of pipe, shall be 85% relative compaction. △1



USE 7 – #3 HOOK BAR at 6" C.C. VERT. & 3 – #5 BARS HORIZ. IN CURB AS SHOWN



SECTION A-A

SECTION B-B

NOTES:

1) CONCRETE SHALL BE CLASS 3300
2) USE FRAME & GRATE DETAILS FROM STD. DRWG. FOR GUTTER INLET
3) INSTALL STEPS WHEN DISTANCE FROM TOP OF GRATE TO FLOWLINE OF PIPE IS GREATER THAN 3.5'.

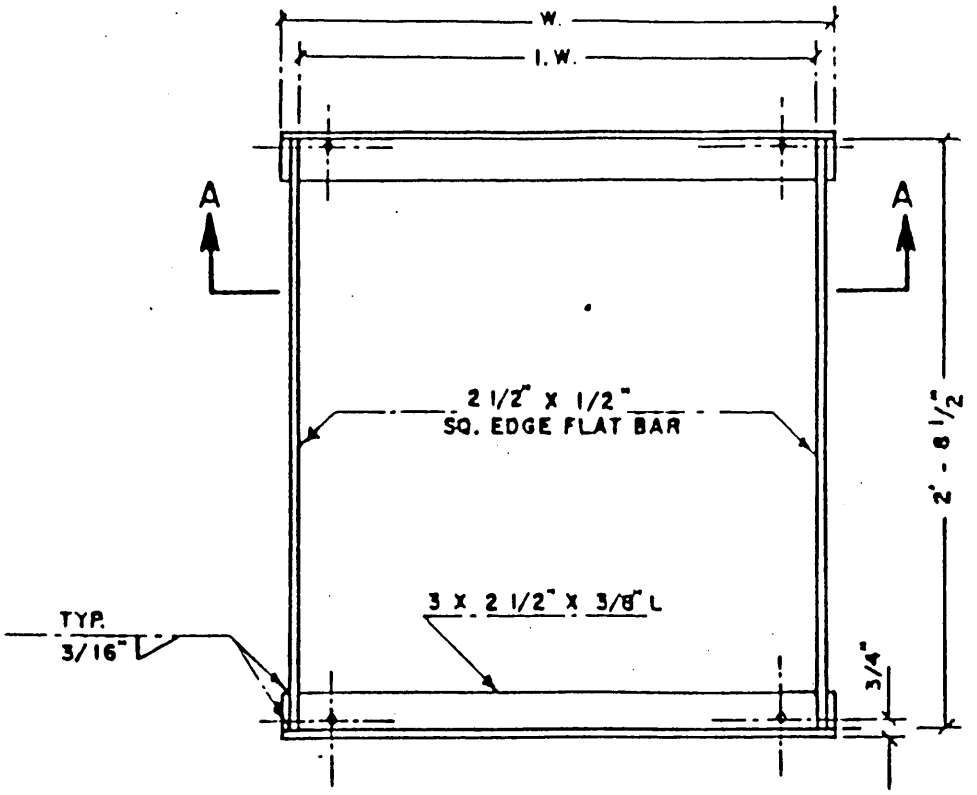
TYPE	W	PIPE DIAMETER
STANDARD	1'-1-7/8"	10"-12"
OVERSIZE *	2'-3-3/8"	15"-22"

* REQUIRES 2 GRATES SEE DRAWING No. 380

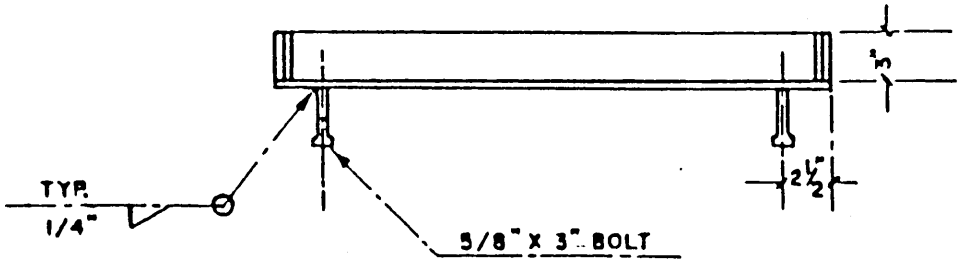
NOTE: ALL PASSTHROUGH CATCH BASINS SHALL BE OVERSIZE.

GUTTER & CURB INLET CATCH BASIN DETAILS

ENGINEERING DEPT.	CITY of NEWBERG	STANDARD DRAWING NO. SD-1	REVISIONS



PLAN



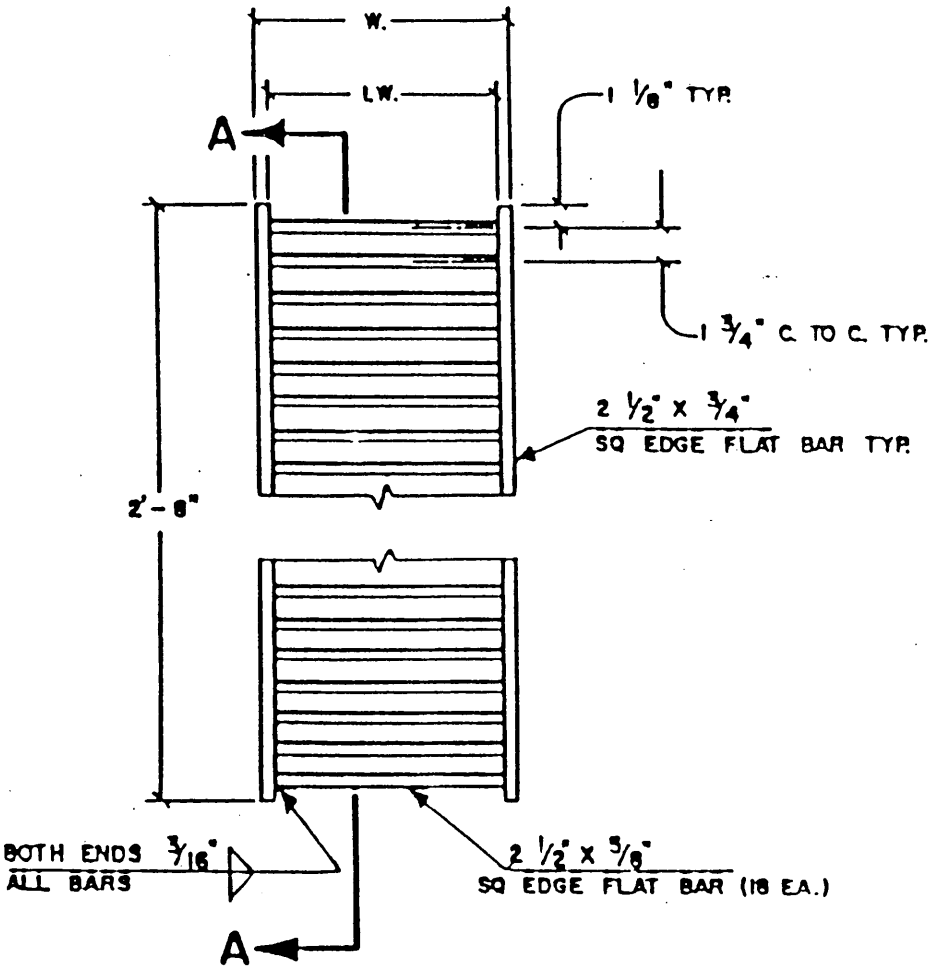
SECTION A-A

TYPE	DIA. PIPE	W.	I.W.
STANDARD	10"-12"	1'-3 1/4"	1'-1 7/8"
! OVERSIZE	15"-27"	2'-4 3/4"	2'-3 3/8"

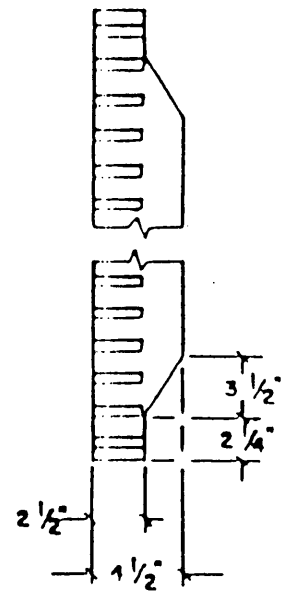
! REQUIRES TWO GRATES

FRAME

ENGINEERING DEPT.	CITY of NEWBERG	STANDARD DRAWING NO. SD-2	REVISIONS



PLAN



SECTION A-A

T Y P E *	W.	L.W.
STANDARD	1' - 1 1/2"	1' - 0"
! OVERSIZE	1' - 1 1/2"	1' - 0"

! REQUIRES 2 GRATES.

* "STANDARD" AND "OVERSIZE" ARE WASHINGTON COUNTY DESIGNATIONS.

GRATE

ENGINEERING DEPT.	CITY of NEWBERG	STANDARD DRAWING NO. SD-2	REVISIONS

City Manager
(503) 538-9421

City Attorney
(503) 537-1208

414 E. First St.
Newberg, Oregon 97132

City FAX
(503) 538-5393

ADDENDUM NO. 1
ASPHALT OVERLAY PROJECT
JANUARY 8, 1998

This addendum forms a part of the Contract Documents. It modifies the original bidding documents.

1. Table of Contents

Replace the table of contents with the revised table of contents to include one additional item under Project Information.

2. Technical Provisions

Add Section 505 Asphalt Concrete Pavement. This section was left out of the original Technical Provisions.

3. Schedule of Prices

Replace the first page of the Schedule of Prices (page 3 of bid documents) with this revised page.

Bidders shall acknowledge on Page 5 of the Contract Documents that they have received this addendum by writing in the addendum number and date received.

Roger Pyles
Project Engineer

K:\WP\ADMIN\MISC\TABBY\SPECS\OVERLAY.PRJ\ADENDUM.1

TABLE OF CONTENTS
ASPHALT OVERLAY PROJECT
REVISED

		Pages in Section
CONTRACT DOCUMENTS		
	Advertisement for Bids	10
	Bid Documents	
	Contract for Construction	
	Performance - Payment Bond	
GENERAL PROVISIONS		34
Section 1	Definitions and Terms	
2	Proposal Requirements and Conditions	
3	Award and Execution of Contract	
4	Scope of Work	
5	Control of Work	
6	Control of Materials	
7	Responsibility to the Public	
8	Prosecution and Progress	
9	Measurement and Payment	
10	Requirements of Oregon Law for Public Contracts	48
SPECIAL PROVISIONS		2
Section 1	Length of Contract	
2	Liquidated Damages	
3	Pre-Construction Meeting	
4	Tree Trimming	
5	Water	
6	Changeover of Specifications	
7	Concrete Curb and Gutter Repair	
8	Prevailing Hand Work	
9	Leveling Course Asphalt, Class D	
10	Asphalt Overlay	
11	Pavement Reinforcing Fabric	
12	Adjust Manhole	
13	Adjust Valve Cover	
14	Shoulder Rock	
TECHNICAL PROVISIONS		106
Division 2	General Technical Requirements	
5	Street Technical Requirements	
6	Storm Drainage Technical Requirements	
7	Concrete Structures Technical Requirements	
PROJECT INFORMATION		6
	Reconstruction Plans - Third Street (incorporated by reference)	
	Project Map	
	Table of Streets	
	Straight Line Charts	
STANDARD DRAWINGS		13
ST-4	Curb and Gutter	
ST-7	Curb Ramp	
ST-8	Sidewalk - Type "A"	
ST-13	Driveway Apron and Curb Cut	
ST-14	Commercial Driveway	
ST-22	Asphalt Overlay Typical Section	
ST-23	Asphalt Pavement Repair	
ST-29	Manhole Adjustment	
S-1	Pipe Bedding	
S-2	Trench Backfill	
SD-1	Gutter and Curb Inlet Catch Basin Details	
SD-2	Frame and Grate	

****

505 ASPHALT CONCRETE PAVEMENT

****

505.01 DESCRIPTION

This section covers work necessary for the construction of hot mix asphalt pavements under prepared foundations or base surfaces.
Hot mix asphalt concrete is defined as a mixture of asphalt cement; well graded, high quality aggregate; mineral filler and additives as required; heated and plant mixed into a uniformly coated mass, hot laid on a prepared foundation and compacted to specified density.

505.02 MATERIALS

505.02.01 General

Asphalt and aggregate shall meet OSHD requirements for Light Duty AC and will be subject to approval preceding mixing. Plant mixed mixtures will be subject to final approval after blending and mixing, either at the plant or at the place of delivery prior to rolling. Approval will be based on periodic sampling and testing of the materials.

505.02.02 Asphalt Cement

Asphalt materials incorporated in the mix shall be PBA-2 grade asphalt that conforms to requirements of Section 205 MATERIALS - TYPES AND USE.

THE REST OF THIS PAGE WAS INTENTIONALLY LEFT BLANK

505.02.03 Aggregates

Aggregates shall conform to requirements of Section 205 MATERIALS - TYPES AND USE.

505.02.04 Mineral Filler

Mineral filler shall conform to the requirements of AASHTO M 17.

Collector dust may be used as mineral filler, in whole or in part, provided the dust or the resultant mineral filler mixture conforms to the above requirements.

505.02.05 Additives

Additives and admixtures may be used to prevent stripping or separation of bituminous coatings from aggregates, and to aid in the mixing or use of bituminous mixes or for experimental purposes. Use admixtures and additives of standard recognized products of known value for the intended purpose and obtain approval on the basis of laboratory tests prior to their use. They shall have no deleterious effect on the bituminous material and shall be complete miscible.

505.02.06 Composition and Proportion of Mixtures

The class of asphalt concrete to be used shall be as shown and shall conform to the following requirements:

	DENSE GRADED Percentage of Total Aggregate (by weight)		
Sieve Size Passing	Class "B"	Class "C" (Mod.)	Class "D"
1"	99 - 100	—	—
¾"	92 - 100	99 - 100	—
½"	75 - 94	91 - 100	99 - 100
¼"	50 - 70	58 - 73	85 - 100
#10	21 - 41	24 - 36	37 - 57
#40	6 - 24	8 - 18	13 - 29
#200	2 - 7	3 - 8	4 - 9
Asphalt Cement**	4 - 8	3 - 8	4 - 8

* Including Lime or Cement Filler.
**Percent of total mix (by weight).

The amount of new asphalt cement to be added to the recycled mixture will vary from 3-8%.

Class "B", "C", and "D" asphalt concrete shall meet the following qualifying test requirements:

Test	Test Method	Requirements
Stability, First Compaction	OSHD Standard Test*	35 min. (residential streets)

		40 min. (arterial streets)
Voids, First Compaction	OSHD Standard Test*	7% maximum
Voids, Second Compaction	OSHD Standard Test*	1% minimum
Retained Strength	AASHTO T 165-Modified	70% minimum

*Available from Engineer or Materials, ODOT, Salem, Oregon 97310.

505.02.07 Mix Formulas

The Contractor may be required to submit a job-mix formula for review by the Engineer. The job-mix formula shall indicate the gradation of each of the several aggregate constituents to be used in the mixture and shall establish the exact proportion of each constituent to be used to produce a combined gradation of aggregate within the appropriate limits stated above.

The job-mix formula shall also indicate the ASTM bulk specific gravity of each aggregate constituent, the measured maximum specific gravity of the mix at the optimum asphalt content determined in accordance with ASTM D 2041, all properties as stated in Subsection 505.02.06 of these specifications for at least four different asphalt contents other than optimum, two of which will be below optimum and two of which will be above optimum, the percent of asphalt lost due to absorption by the aggregate, and any other information pertinent to the design of the mix.

505.02.08 Recycled Asphalt Pavement (RAP) Materials Permitted

The Contractor shall have the option of using processed recycled asphalt pavement materials in the production of new asphalt concrete pavement. The RAP materials proposed for use in the recycled mix shall contain hard, sound, and durable aggregates, and asphalt of a composition to provide properties equivalent to asphalt as specified in these specifications when in the mix. Recycled material which is used in the asphalt concrete pavement shall have a maximum size of one-inch prior to entering the cold feed. If there is evidence of the recycled material not breaking down during the heating and mixing of the asphalt concrete mixture, the Engineer may elect to modify the maximum size requirement. Not more than 20 percent, by weight, of recycled materials may be used in the mix.

505.02.09 Tolerances

After the mix formula is submitted, the several constituents shall meet the following tolerances, but always within the range of proportions specified in Subsection 507.02.06:

Asphalt Concrete Mix Tolerances

Constituent of Mixture	Tolerance (± to Job Mix Formula)
Aggregate passing 1", ¾", ½" sieves -	Within the range of the proportions specified in Subsection 505.02.06:
	Specifications
Aggregate passing ¼" sieve	6.0%
Aggregate passing No. 10 & No. 40 sieve	5.0%
Aggregate passing No. 200 sieve	2.0%

Asphalt cement	0.5%
Temperature of mixture at time it is placed in final position	240 - 300°F

Each day the Engineer shall be permitted to take as many samples as he considers necessary for checking the uniformity of the mixture. When unsatisfactory results or other conditions make it necessary, the Engineer may require a new mix formula.

Should a change in source of material be made, or should conditions arise which the Engineer determines to be justified, the Contractor shall establish a new job-mix formula.

The materials to be used in the work shall be of such nature that a mixture of them, proportioned in accordance with the mix formula, will have a retained strength of no less than 70% when tested in accordance with AASHTO T 165 as modified by OSHD test methods. The Engineer shall be permitted to take as many samples as he considers necessary for checking the uniformity of the mixture.

505.02.10 Feathering

Asphalt concrete for use in feathering at curb or gutter lines, at intersections, at connections with existing pavement, in spot patching, and under similar conditions, shall be a fine mix of asphalt concrete such as Class "D" mix.

505.03 CONSTRUCTION

505.03.01 Repaving Conference

The Contractor and his supervisory personnel plus any subcontractors and their supervisory personnel who are to be involved in the paving work shall meet with the Project Manager and his representatives for a prepaving conference at a time mutually agreed upon. At this conference, the Contractor shall discuss his methods of accomplishing all phases of the paving work. The plan of the work, order of paving and other details of performance shall meet with the approval of the Engineer.

505.03.02 Preparation of Bases

All pavement bases and foundations constructed under this Contract shall be completed and finished as prescribed under the applicable specification for its construction.

Manholes, inlets, water valve boxes, and other such structures shall have been completed, cured, and otherwise prepared, as applicable, and made clean and ready for asphalt pavement. Unless otherwise approved, manholes shall be adjusted so that they can be paved over and then later adjusted as shown on the Standard Drawing. Paint vertical surfaces that will come in contact with asphalt pavement with tack coat material to provide a good bond and seal. Cover top surfaces with paper or other material to prevent adherence of asphalt pavement, tack coat, or prime coat.

505.03.03 Reconditioning Old Roadbed

This work consists of reconditioning and preparing previously constructed roadbed subgrades, existing stone bases and surfacings, and existing pavements; none of which were constructed by the Contractor under the pertinent Contract but on which an additional layer or course of material is to be placed.

Existing aggregate subbases, bases, and surfacings shall be bladed, scarified, leveled, and compacted in conformance to lines, grades, and cross sections as established and the density and tolerance

requirements of Section 503 AGGREGATE BASES.

Prelevel uneven or broken bituminous, cement concrete, or brick surfaces with asphalt concrete as specified. Spread and compact preleveling asphalt concrete to the density and surface condition as directed.

505.03.04 Tack Coat

Asphalt shall consist of emulsified asphalts (CSS-1 or CSS-1h) or an approved equal.

Spread asphalt by means of pressure-spray equipment which will provide uniformity of application at prescribed rates. Do not apply aggregate cover material to the tack coat. Asphalt shall be applied to the prepared surface at a rate of 0.05 gallons per square yard for clean surfaces and up to 0.12 gallons per square yard for dirty surfaces. The tack coat shall not be applied during wet or cold weather or during darkness and apply only so far in advance as is appropriate to maintain a tacky, sticky condition of the asphalt. Apply tack coat in such a manner as to offer the least interference to traffic and to permit at least one-way traffic without pickup or tracking of asphalt.

505.03.05 Mixing

Mix the asphalt concrete by combining aggregate, asphalt, and additives at an approved central mixing plant equipped with controls to accurately measure and monitor the various components of the mix to produce a uniform homogeneous mixture at the specified temperature.

The discharge temperature of the mix will vary with the type of mixing plant, climatic conditions, and other variables. However, the temperature shall be sufficient to provide thorough mixing and coating and to provide a mass viscosity of the mix on the grade which will permit compaction to required density. Mix temperatures and asphalt in storage shall generally not exceed 325 degrees F.

505.03.06 Placing

Conform to the Drawing of work, order of paving, and other details of performance as approved. Lift thickness shall be as shown on the Drawing or specified.

Transport the asphalt concrete mixture from the mixing plant to the point of use in trucks. Send no loads so late in the day as to prevent the spreading and compacting of the mixture during daylight, unless approved lighting is provided.

Hot mix asphalt concrete shall normally be placed on dry prepared surfaces and when air temperature in the shade is 40 degrees F (minimum) and rising. Place Class "E" wearing surface only when the existing pavement temperature is at least 60 degrees F. Placing during rain or other adverse weather conditions normally will not be permitted, except that mix in transit at the time these adverse conditions may occur may be laid provided it is of proper temperature, the mix has been covered during transit, and is placed on a foundation free from pools or flow of water. The temperature of hot mix at the time it is spread into final position shall be between 240 and 300 degrees F, except Class "E" mix shall be between 200 and 250 degrees F.

Lay the mixture in strips of such width as to hold to a practical minimum the number of longitudinal joints required. The longitudinal joints in any layer of pavement shall be offset from those joints in layers below by not less than 6 inches. Before any paving is started, the Contractor shall submit a Drawing indicating locations of longitudinal joints to the Engineer for his review. Take special care at longitudinal joints to provide positive bond and required density.

Bituminous paving machines shall be self-contained, power-propelled units, provided with an

activated screed or strike-off assembly, heated if necessary, and capable of spreading and finishing layers of bituminous mix material in lane widths applicable to the specified typical sections, and to required thicknesses, lines, grades, and cross sections. Machines used for shoulders and similar construction shall be capable of spreading and finishing to the widths shown.

When the capacity of the paver to properly spread and finish exceeds the rate of delivery of mixture, operate the paver at a reduced and uniform speed to give continuous spreading and finishing.

Take care at all times to prevent segregation in the mixture as evidenced by areas of fine and coarse materials, and correct any such segregation with fresh mixture either spread and worked into the surface or by complete removal and replacement of segregated mixture at no expense to the Owner. AT NO TIME SHALL THE COURSE AGGREGATE SEGREGATED FROM THE MIX FROM HAND SPREADING OR RAKING OF JOINTS BE SCATTERED ACROSS THE PAVED MAT. Such material shall be collected and disposed of.

On areas to be patched with asphalt concrete mixture and on areas of irregular shape or limited size, the spreading and finishing requirements may be modified as approved.

Boils and slicks occurring in the pavement must be immediately removed and replaced with suitable materials, at the sole expense of the Contractor.

505.03.07 Paving Plant and Equipment

All plant and equipment used by the Contractor in the preparation and mixing of asphalt concrete shall conform to the requirements of Section 403.33, "Standard Specifications for Highway Construction" as published by Oregon State Highway Division, 1984 Edition.

505.03.08 Weigh Scales

When materials are to be measured for payment by weighing on vehicle scales, the Contractor shall provide the scales and transport the materials to the scales provided.

The vehicle scales furnished shall be accurate within the tolerances required by State law and shall be licensed with the Oregon Department of Agriculture. Scales shall be suitable for the weighing to be done and shall be properly installed and maintained.

At each end of the vehicle scale there shall be a straight approach in the same plane as the platform. The approaches shall be of sufficient length and width to ensure the level positioning of combination vehicles longer than the scale platform during weight determinations. All vehicle brakes shall be released while combination vehicle are being weighed.

Vehicle scales shall be inspected and the accuracy tested every six months by either the State Department of Agriculture or a scale service company. Scales installed at a new site shall be inspected and the accuracy tested before use. Testing by a scale service company shall be done by using a minimum of 10,000 pounds of test weights certified by the State Department of Agriculture.

505.03.09 Hauling Equipment

Vehicles used for hauling asphalt concrete mixtures shall have tight, clean, and smooth beds which have been thinly coated with a minimum amount of paraffin oil, lime solution, soapy water or other approved material to prevent the mixture from adhering to the beds. Diesel oil may be used when requested by the Contractor and approved by the Engineer. Its use will be terminated by the Engineer if it is not being used as specified or is a source of contamination for the asphalt mix.

During each application of an approved coating material, and prior to loading, the vehicle bed shall be drained of all excess coating material by raising the truck bed, opening belly dump gates or operating the conveyer belt as appropriate for the type of equipment being used.

Vehicles which cause excessive segregation, which leak badly, or which delay normal operations, as such are determined by the Engineer, shall not be used.

Contractors hauling vehicles shall be so constructed and equipped with covers to protect against moisture and against heat loss, and shall have a 3/8-inch diameter hole near the middle of the left side wall of the bed to allow access for a thermometer.

505.03.10 Asphalt Concrete Pavers

Pavers shall be self-contained, power-propelled units, provided with an activated screed or strike-off assembly, heated if necessary, and capable of spreading and finishing layers of asphalt concrete material in widths applicable to the specified typical sections, and to required thicknesses, lines, grades and cross sections.

Extensions added to the paver when used on travel lanes shall have the same augering and screeding equipment as the rest of the paver.

The paver shall be equipped with a receiving and distribution system of sufficient capacity for a uniform spreading operation and capable of placing the mixture uniformly in front of the screed without segregation of materials.

The paver shall be designed to compensate for minor irregularities of the base on which it is supported so that such will not be reflected immediately in the surface of the layer being placed. The weight of the paver shall be supported on tracks or wheels none of which shall contact the mixture being laid. The contact area of the screed or strike-off assembly shall be uniform over the entire width of the strip of mixture being placed.

The screed or strike-off assembly shall produce a finished surface of the required evenness and texture without tearing, shoving or gouging the mixture. The paver shall be equipped with either a manual or electronic line and grade control.

505.03.11 Weather Limitations

Asphalt concrete mixtures shall be placed on dry prepared surfaces when the air temperature in the shade and the surface temperature is not less than those specified in the following table:

SURFACE TEMPERATURE LIMITATIONS

Compacted Thickness of Individual Courses	Travel Lanes/Wearing Course	All Other Courses
Less than 1½ inches	60°F	55°F
1½ inches to 2½ inches	50°F	45°
Over 2½ inches and other	40°F	35°F

Placing of any mixture during rain or other adverse weather conditions normally will not be permitted, except that mix in transit at the time these adverse conditions occur may be laid if of proper temperature, if the mix has been covered during transit, if placed on a foundation free of pools, or flow of water and if all other

requirements of these specifications are met. Asphalt concrete mixtures shall not be placed when the underlying layer is frozen, or when, in the opinion of the Engineer, weather conditions either existing or expected will prevent the proper handling, finishing, or compaction of the mixtures.

505.03.12 Compaction

The Contractor will not be permitted to use any equipment which crushes the aggregate to any extent. However, he will be required to obtain the densities required in Subsection 505.03.14.

505.03.13 Compactors

Rollers shall be steel wheel, pneumatic tire, vibratory or a combination of these types as the Contractor may elect. They shall be in good condition and capable of reversing without backlash.

505.03.13A Steel Wheel Rollers

Steel wheel rollers shall have a minimum gross static weight of 8 tons and a minimum static weight on the drive wheel of 250 pounds per inch of width. For finish rolling a 6-ton minimum gross static weight is acceptable and the 250 pounds per inch of width will not be required.

505.03.13B Vibratory Rollers

Vibratory rollers shall be equipped with amplitude and frequency controls and shall be specifically designed for compaction of asphalt concrete mixtures. The rollers shall be capable of frequencies of not less than 2,000 vibrations per minute.

505.03.13C Pneumatic Rollers

The pneumatic-tired rollers shall be self-propelled, tandem, or multiple axle, multiple wheel type with smooth-tread pneumatic tires of equal size staggered on the axles at such spacings and overlaps as will provide uniform compacting pressure for the full compacting width of the roller and shall be capable of exerting ground pressures of at least 800 pounds per square inch of tire contact area. Pneumatic-tired rollers shall be fully skirted to insulate the tires from significant heat loss during compaction.

505.03.14 Density Requirements

The density of asphaltic concrete shall be at least 91% of Rice theoretical maximum density as determined in conformance with AASHTO T 209 as modified by OSHD.

Asphaltic concrete pavements which do not meet substantial compliance requirements for compaction, and are deemed by the Engineer to be not suitable for use, will be rejected. Any rejected material shall be removed. No payment will be made for the rejected material or for removal of the rejected material.

Asphaltic concrete pavements which do not meet substantial compliance requirements for compaction, but are deemed by the Engineer to be suitable for use, may be left in place if the Contractor so elects. A price reduction for such materials will be determined as follows:

The percentage below the required density will be squared and the rounded off to the nearest whole figure and a percentage deduction made to the in place price equal to the results. Any pavement with a density less than 89% will not be considered suitable.

Samples and tests will be taken as frequently and at such locations as the Engineer elects, and the

results will be made known tot he Contractor as soon as is practicably possible. However, it shall be the responsibility of the Contractor to obtain specified density at all times, and delay in advising the Contractor of test results shall not act as a waiver of this responsibility. When it is determined that specified density is not being obtained, discontinue all paving operations until corrective measures have been taken.

Any displacement occurring as a result of the reversing of the direction of a roller, or from other causes, shall be corrected at once by the use of rakes and addition to fresh mixture when required. Do not displace the line and grade of edges. Moisten steel roller wheels with water or other approved material to the least extent necessary to prevent pickup of mixture and yet not cause spotting or defacement of the surface of the mixture.

Along curbs and walls, on walks, irregular areas, and other areas not practicably accessible to specified rollers, compact the mixture with small rollers, mechanical tampers, hot hand tampers, or smoothing irons. On depressed areas, a trench roller may be used or cleated compression strips may be used under the roller to transmit compression to the depressed area.

Remove and replace any mixture that becomes loose and broken, mixed with dirt, or is defective in any way. Remove and replace any area showing an excess or deficiency of bituminous cement. Removal and replacement under these provisions shall be at the sole expense of the Contractor.

505.03.15 Transverse Joints

Form transverse joints by cutting back on the previous run to expose the full depth of the layer or course.

Place a course or strip of asphalt concrete as nearly continuous as practicable. Carefully construct transverse joints using vertical faces and thoroughly compacted to provide a smooth riding surface. Apply a coat of bituminous material to contact surfaces just before mixture is placed against previously rolled mixture. The Contractor shall use a 10-foot straight edge to determine the location of the full depth vertical faces.

At bridge ends or at joints with other rigid type structures, existing bases shall be conditioned and compacted, and place asphalt concrete to extra thickness and compact in transverse direction as well as longitudinally.

When the end of a course or strip of asphalt concrete is to be temporarily subject to traffic, the end shall be left on a bevel of approximately 20:1 (horizontal to vertical), being later cut back to a vertical edge.

505.03.16 Construction Joints

Placing of a course or strip of asphalt concrete shall be as nearly continuous as practicable. Transverse joints shall be earefully constructed and thoroughly compacted to provide a smooth riding surface.

The mixture shall be laid in strips of such widths as to hold to a practical minimum the number of longitudinal joints required. Longitudinal joints in the wearing course shall not occur within the area or width of a traffic lane or auxiliary lane. On median lanes and on shoulder areas such joints shall occur only at points of change in the transverse slopes as shown on the plans or designated by the Engineer. The longitudinal joints in one layer shall offset those in the layer immediately below by a minimum of 6 inches. Underlying longitudinal joints shall be within 12 inches of the edge of a lane or within 12 inches of the center of a lane, except in irregular areas, or if otherwise shown on the plans.

When the end of a course or strip of asphalt concrete is to be temporarily subjected to traffic, the end shall be on a bevel of approximately 20:1 (horizontal to vertical), being later cut back to a vertical edge to

provide a fresh surface against which subsequently placed asphalt concrete is to abut.

When placing of asphalt concrete pavement in layers in excess of 2-inch nominal thickness is being performed under traffic, work shall be scheduled in a manner such that at the end of each working day, the full width of the area to be paved shall be completed to the same elevation with no longitudinal drop-offs within this width.

When placing of asphalt concrete pavement in layers of 2 inches or less in thickness is being performed under traffic, work shall be scheduled in a manner such that at the end of each working shift, one strip of new travel lane pavement shall not extend ahead of the adjoining strip of travel lane pavement more than the distance normally covered by each shift.

Where abrupt or sloped drop-offs occur within or at the edge of the paved surface, the Contractor shall construct and maintain a wedge of asphalt concrete at a Slope 10:1 or flatter along the exposed joint.

505.03.17 Thickness and Number of Layers

Asphalt concrete shall be placed in the number of courses and to the total compacted thickness per course called for by the typical cross sections given on the plans.

In case the course of pavement involves the placing of a layer of variable thickness, as for leveling existing irregular surfacings, the course may include or consist of a layer of asphalt concrete of variable compacted thickness, the thickness of which layer shall not exceed the following:

Type of Mix	Maximum Compacted Thickness Layers
"A"	4 Inches
"B"	3 Inches
"C"	2 Inches
"D"	1 Inch

The top surface of each layer of asphalt concrete shall be spread at grade and cross section closely paralleling the specified top surface of the finished pavement.

505.03.18 Pavement Samples

The Engineer shall be permitted to cut samples or to take cores from the full depth of compacted mixture or from the separate layers and courses thereof, for testing purposes, and at such locations and at such frequencies as the Engineer determines necessary for proper representation. Where samples have been taken, and when directed by the Engineer, the Contractor shall furnish new like material for filling the holes with no extra compensation.

505.03.19 Pavement Smoothness

The top surface of the asphalt concrete pavement, when tested with a 12-foot straightedge either parallel to or perpendicular to the centerline furnished and operated by the Contractor, shall not vary by more than 0.02 foot. The Engineer will observe this testing and may require additional testing. The means of correction of a surface that does not meet the smoothness requirements shall have the approval of the Engineer.

When tests show the pavement is not within the above tolerances, the Contractor shall take

immediate action to correct equipment or procedures in his paving operation to eliminate the unacceptable pavement roughness.

Any surface irregularities exceeding the above tolerances shall be corrected by the Contractor using a method or methods listed herein and approved by the Engineer.

Corrective Action - Corrective measures by the Contractor requiring one or more of the following actions approved by the Engineer shall be performed on deficient areas:

1. Remove and replace the surface course.
2. Place an overlay of a thickness approved by the Engineer.
3. Grind the pavement surface utilizing diamond blades up to a maximum depth of 0.3 inch and apply an emulsion fog coat as directed by the Engineer.

When utility appurtenances such as manhole covers and valve boxes are located in the traveled way and they are not required to be adjusted or are required to be adjusted before paving, these tolerances will not apply at the utility appurtenance.

All corrective work shall be completed within 10 working days following notification from the Engineer that the pavement does not meet the specified tolerances, unless otherwise directed by the Engineer.

All corrective work, including furnishing of materials, shall be performed at the Contractor's expense and no adjustment in contract time will be made for corrective action work.

505.03.20 Special Protection Under Traffic

In addition to other required provisions for traffic, the following shall apply to pavement construction: no traffic or equipment shall come in contact with the compacted mixture until it has cooled and set sufficiently to prevent marking; edges shall be protected from being broken down; and edge drop-offs one or more inches in height shall be marked with warning devices visible by day and night to the traveling public, and placed at spacings indicated on the plans or as directed by the Engineer.

505.04 MEASUREMENT AND PAYMENT

505.04.01 Measurement

Pay quantities for hot mix asphalt concrete and other bituminous construction under this Section will be measured by one or another of the methods as set forth hereinafter.

505.04.01A Asphalt Concrete on a Single Unit Basis

When pay items in the Proposal so indicate, the quantity of asphalt concrete used in the accepted work as specified will be measured on a ton basis. There will be no separate measurement of bituminous cement or additives contained in the mixture or used otherwise in the work. Measurement will be made on the number of tons of asphalt concrete, as weighed on approved and tested scales. Give trip tickets to the Engineer for his signature as the material is delivered. Each trip ticket shall show date and time of delivery, truck number, driver's name, net weight of material, and will be considered as valid delivery receipts only when signed by the Engineer. No material will be accepted without a trip ticket being available at the time of delivery.

505.04.01B Asphalt Concrete on Square Yard Basis

When the pay items in the Proposal so indicate, asphalt concrete, complete in place, as specified and accepted, will be measured on a square yard basis. Measurement will be made of width and length of each separately constructed strip of pavement, wherein width is the design width or edge-to-edge width of pavement, whichever is the lesser, and length is from end to end of the pavement along the center of the strip. Measurement will be on the surface of the pavement to the nearest 0.1 foot and the square yardage will be to the nearest full square yard.

The Engineer may take core samples of the pavement or use other methods to determine the actual pavement thickness constructed. Extra thickness of pavement as shown or as directed will be measured by conversion on a proportionate volume basis to an equivalent number of square yards of specified standard thickness pavement.

No additional payment over the Contract unit price will be made for pavement having a thickness greater than shown or ordered. When the pavement is found deficient in thickness by more than 0.2 inch, but not more than 1 inch, as determined by test cores of reasonable test samplings, payment for pavement will be made at an adjusted price as specified in the Special Provisions.

505.04.02 Payment

Payment will be made for any or all of the following items when listed as pay items in the Proposal for any particular Contract:

	Payment Item	Unit of Measure
1.	Asphalt concrete mixture (specify class)	Per Ton
2.	Asphalt concrete (specify class & thickness)	Per S.Y.

A deduction of 1% of the in place price will be made for each 1% cumulative deviation from the allowable tolerance of each component of the job mix formula required by the specification, except as follows:

Deviations in asphalt cement shall be weighted 8-times, and deviations in 200-minus material shall be weighted 2-times the deviation in other specified aggregate sieve sizes.

All materials furnished where the cumulative deviation equals or exceeds 12% shall be removed and replaced with acceptable material at the sole expense of the Contractor.

When asphalt paving materials with a cumulative deviation of less than 12% are furnished, the Owner shall notify the Contractor, in writing, to remove and replace defective materials at the sole expense of the Contractor or to pay to the Owner liquidated damages in accordance with the above deduction schedule.

SCHEDULE OF PRICES
ASPHALT OVERLAY PROJECT

NO.	ITEM	ESTIMATED QUANTITY	UNIT PRICE FIGURES	UNIT PRICE IN WRITING	TOTAL AMOUNT
1.	10" DI Pipe, Class B Bedding/Backfill	60 LF			
2.	Catch Basin	2 EA			
3.	Remove catch basin	1 EA			
4.	10" DI Pipe conn. into existing catch basin	1 EA			
5.	Sawcut asphalt pavement	200 LF			
6.	Remove curb and gutter	400 LF			
7.	Remove concrete sidewalk	290 SF			
8.	Concrete Curb & Gutter (12" wide gutter) Restore planted areas	300 LF			
9.	Concrete Curb & Gutter, Reinforced	100 LF			
10.	Driveway Approach, Reinforced Concrete	370 SF			
11.	Concrete Sidewalk, 4" deep Restore planted areas	150 SF			
12.	Wheelchair Ramp	2 EA			
13.	Excavate & Re-construct Street, 13.5" deep, 1.5" AC	900 SY			
14.	Asphalt Concrete Overlay,Class B (t=2.5")	1,800 TON			
15.	Asphalt Concrete Overlay,Class C (t=1.5")	1,100 TON			
16.	Pre-leveling Asphalt, Class D	500 TON			
17.	Tack Coat, CSS-1 Emulsified Asphalt	3 TON			
18.	Pavement Reinforcing Fabric	10,000 SY			