

PLANS AND SPECIFICATIONS  
FOR  
SEWERAGE SYSTEM IMPROVEMENTS  
CITY OF NEWBERG, OREGON  
*Hess Creek*

City Council

Elvern Hall  
Mayor

Maurice Chandler  
Roger Gano  
Tom Tucker  
Robert Hurford

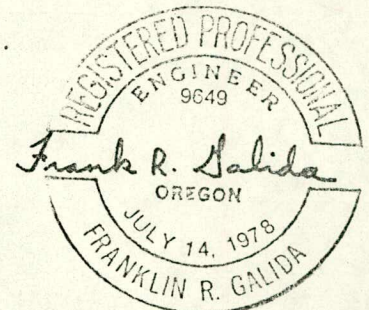
Fred Labonte  
Jack C. Nulsen, Jr.  
Janet Nybakke  
Alan Halstead

City Staff

Myrland C. Gilbert, City Administrator  
Robert L. Sanders, P.E., City Engineer

JULY 1980

ROBERT E. MEYER CONSULTANTS  
14250 S.W. Allen Boulevard  
Beaverton, Oregon 97005  
(503) 643-7531





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The specifications comprise the following:

Bidding requirements

- Notice to Contractors
- Instructions to Bidders
- Proposal
- Agreement

General Conditions of the Contract

Special Provisions

Special Technical Specifications

Standard Technical Specifications for Sewers and Drains



NOTICE TO CONTRACTORS  
SEWERAGE SYSTEM IMPROVEMENTS  
CITY OF NEWBERG, OREGON

Sealed proposals for furnishing all materials, equipment, labor and services of all kinds for the construction of Sewerage System Improvements for the City of Newberg, Oregon will be received in the Council Chambers at City Hall, 414 E. 1st Street, Newberg, Oregon 97132 until 2:00 p.m. P.D.T., July 30, 1980 and will be publicly opened and read at that time. Contracts will be awarded or proposals will be rejected within thirty (30) days after the opening.

The work to be performed includes, but is not limited to furnishing and installing sewer pipe consisting of approximately 3,240 lineal feet of 18-inch, 1,940 lineal feet of 15-inch, 110 lineal feet of 6-4-inch for house services, manholes, one (1) bored or jacked highway crossing, pump station modifications, appurtenances and other associated work.

Plans and specifications may be examined at:

City Hall  
414 East First Street  
Newberg, Oregon 97123

Builders Exchange Co-Op  
1125 S.E. Madison Street  
Portland, Oregon 97214

Construction Data  
925 N.W. 12th  
Portland, Oregon 97208

Northwest Plan Center  
500 N.E. Multnomah  
Portland, Oregon 97212

Documents may be obtained at the office of the City Engineer, City Hall, 414 E. First Street, Newberg, Oregon 97132.

A deposit of twenty-five dollars(\$25.00) will be required and will be refunded upon return of the documents in good condition within ten (10) days after the bid opening. If the plans or specifications are damaged so as to preclude their future use, the deposit will be forfeited.



Bidders must submit prequalification statements to the City at least ten (10) days prior to the bid opening. If proof of prequalification is on file with the City and is not over one (1) year old, refiling is not necessary unless there has been a substantial change in the Contractor's status. Proposals must be submitted on the prescribed forms, accompanied by a certified check or bid bond in an amount equal to ten percent (10%) of the aggregate amount of the proposal. The successful bidder will be required to furnish bonds equal to the amount of the proposal for the faithful performance of the contract and payment for materials.

Each bidder agrees to comply with the provisions of ORS 279.350, payment of not less than current wages in accordance with the Davis-Bacon Act and with the President's Executive Order No. 11246.

The City of Newberg reserves the right to reject any or all proposals, to waive informalities and to accept that proposal which is in the best interests of the City.

Dated this 1st day of July, 1980

M.C. Gilbert  
City Administrator



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## INSTRUCTIONS TO BIDDERS

### 1. QUALIFICATION OF BIDDERS

The Owner may make such investigation as he deems necessary to determine the ability of the Bidder to do the work. The Bidder must submit a notarized statement of qualification. This shall be used as a guide to show Bidder's qualifications to do the work proposed by the Contract Documents. The Owner reserves the right to reject any proposal if the evidence submitted by or investigation of such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the contract and to complete the work.

### 2. PREPARATION OF PROPOSAL

Proposals must be made on the prescribed forms. Each blank provided in the form titled "Proposal" shall be completed in ink (or typing). Where indicated, amounts are to be in both words and figures with amounts extended and totaled. In case of discrepancy between written amounts and figures, the written amounts shall govern.

Any proposal may be deemed informal which contains any omissions, erasures, alterations, additions, or irregularities of any kind.

The Bidder shall sign his name in the blank space provided. If the proposal is made by a partnership or corporation, the name and address of the partnership or corporation shall be shown. If the proposal is made by a partnership, it must be acknowledged by one of the partners; if made by a corporation, by one of the officers. The Bidder shall comply with all other specific requirements of the proposal form.

### 3. EXAMINATION OF SITE AND CONDITIONS

Before making a proposal, the Bidder shall examine the site of the work and determine for himself the existing conditions and the extent of which they will affect his proposal. Failure to do so will not relieve him from performing the work in strict accordance with the requirements of the Contract Documents.



No statement made by the Owner, or its officers, agents or employees pertaining to the site of the work or the conditions under which the work must be performed will be binding on the Owner.

4. SUBMISSION OF PROPOSAL

Each proposal shall be completely sealed in a package, marked with the name and address of the Bidder and the name of the project. The proposal must be delivered to the place named in the official advertisement and before the specified time.

5. MODIFICATION OF DELIVERED PROPOSAL

Change in a proposal already delivered will be permitted only if the request for the privilege of making such modification is made in writing, signed by the Bidder and the specific modification itself is stated prior to the scheduled closing time for the receipt of the proposals. To be effective, every modification must be made in writing over the signature of the Bidder. No other form or procedure will be acceptable.

6. WITHDRAWAL OF PROPOSAL

A proposal may be withdrawn prior to scheduled closing time if the Bidder appears in person, or upon his telegraphic or written request. A telephoned request for withdrawal will not be recognized for this purpose. No Bidder will be permitted to withdraw his proposal after scheduled closing time for filing bids, unless the contract has not been awarded before the expiration of the thirty day period immediately following the proposal submittal date. Bids received after the scheduled closing time will be returned to the Bidder unopened.

7. PROPOSAL SECURITY

Each proposal must be accompanied by a security in the form of a bid bond or certified check in an amount equal to ten percent (10%) of the total amount of the proposal unless local laws permit less. The proposal security of the three (3) lowest bidders will be retained until the award of the contract, the two (2) not accepted will be immediately returned.



Should the successful Bidder either fail to enter into a contract or furnish performance bond within ten (10) days after his proposal has been accepted, the security shall be forfeited to the Owner as liquidated damages.

#### 8. OPENING AND REJECTION OF PROPOSALS

All proposals received prior to the scheduled closing time and which are not withdrawn as above provided will be publicly opened and read aloud even though there may be irregularities or informalities therein, except that any proposal which is not signed will not be read and will be rejected without consideration.

The Owner reserves the right before or after opening, to reject any or all proposals or to waive any informalities therein if it is believed that the best interests of the Owner will be served thereby.

#### 9. AWARD OF CONTRACT

The contract will either be awarded or all proposals rejected within thirty (30) calendar days of the opening. The contract will be awarded to the lowest responsible Bidder unless all proposals are rejected.

#### 10. INTERPRETATION OF DOCUMENTS

If any person contemplating submitting a proposal is in doubt as to the true meaning of any part of the Contract Documents, or finds discrepancies in or omissions from the drawings or specifications, he may submit to the Engineer a written request for an interpretation or correction thereof and to be given consideration, shall be received at least five (5) days prior to date fixed for opening proposals. The person submitting the request will be responsible for its prompt delivery. Any interpretation or correction of the documents will be made only by addendum duly issued, and a copy of the addendum will be mailed to each person receiving a set of the Contract Documents. Neither the Owner nor the Engineer will be responsible for any other explanation or interpretation of the Contract Documents.



11. ADDENDA

Any addenda issued during the time of bidding will be in the form of written addenda to the specifications and will be mailed to each person who has previously received a set of Contract Documents. All addenda so issued shall become a part of the Contract Documents.

12. PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

The successful Bidder, simultaneously with the execution of the contract, will be required to furnish a faithful Performance Bond and a Labor and Material Payment Bond equal to one hundred percent (100%) of the contract amount; said bonds shall be secured from a surety company satisfactory to the Owner.

13. NON-DISCRIMINATION IN EMPLOYMENT

Contracts for work under this proposal will obligate the Contractor and subcontractors not to discriminate in employment practices.

Bidders must, if requested, submit with their initial bid a signed statement as to whether they have previously performed work subject to the President's Executive Order No. 11246 of September 24, 1965.

Successful bidders must, if requested, submit a list of all subcontractors who will perform work on the project and written signed statements from authorized agents of the labor pools with which they will or may deal for employees on the work together with supporting information to the effect that said labor pools' practices and policies are in conformity with Executive Order No. 11246 and that said labor pools will affirmatively cooperate in or offer no hindrance to the recruitment, employment and equal treatment of employees seeking employment and performing work under the contract or, a certification as to what efforts have been made to secure such statements when such agents or labor pools have failed or refused to furnish same prior to the award of the contract.

Successful bidders must be prepared to comply in all respects with the contract provisions regarding nondiscrimination.



Bidder: \_\_\_\_\_

Address \_\_\_\_\_

### PROPOSAL

City Council  
City of Newberg  
Newberg, Oregon 97132

The undersigned Bidder offers to enter into a contract with the City of Newberg, Oregon, hereinafter referred to as the Owner, to furnish all materials, equipment, machinery and labor necessary to construct Sewerage System Improvements as shown on the plans, or called for by the Contract Documents.

The undersigned Bidder declares that. He has carefully examined the Contract Documents; that he has made an examination of the site of the proposed work and has made such investigations necessary to determine the conditions to be encountered independently of those indicated on the drawings that if his proposal is accepted he will furnish all necessary bonds required by the specifications and will contract with the Owner, in the form bound herein, to provide all materials, equipment, machinery and labor required to complete the work according to the Contract Documents; that within ten (10) days from execution of the Contract, he will begin and pursue the work to completion without cessation or shutdown unless approved in writing by the Owner; that he will comply with all local, state and federal laws even though such laws may not have been quoted or referred to in the specifications; that he will do all the work as required by the Contract Documents and this Proposal.

The following unit prices are submitted with the understanding that the amount of the unit quantities may be changed by additions or deletions and are used only for comparison of bids and that the prices stated are independent of the final quantities.



PROPOSAL  
FOR  
SEWERAGE SYSTEM IMPROVEMENTS  
NEWBERG, OREGON

| Item | Description                                                                                                  | No.<br>Units | Unit | Unit Cost | Total Cost |
|------|--------------------------------------------------------------------------------------------------------------|--------------|------|-----------|------------|
| 1.   | Furnish & install gravity concrete sewer pipe, ASTM C-14, Class 3, including excavation & backfill, complete |              |      |           |            |
| A.   | 18-inch diameter "C" backfill, "B" bedding                                                                   |              |      |           |            |
| 1)   | 6' - 8' depth                                                                                                | 15           | 1.f. | \$        | \$         |
| 2)   | 8' - 10' depth                                                                                               | 460          | 1.f. | \$        | \$         |
| 3)   | 10' - 12' depth                                                                                              | 15           | 1.f. | \$        | \$         |
| B.   | 18-inch diameter, "A" backfill, "B" bedding                                                                  |              |      |           |            |
| 1)   | 0' - 6' depth                                                                                                | 450          | 1.f. | \$        | \$         |
| 2)   | 6' - 8' depth                                                                                                | 440          | 1.f. | \$        | \$         |
| 3)   | 8' - 10' depth                                                                                               | 700          | 1.f. | \$        | \$         |
| 4)   | 10' - 12' depth                                                                                              | 265          | 1.f. | \$        | \$         |
| 5)   | 12' - 14' depth                                                                                              | 280          | 1.f. | \$        | \$         |
| 6)   | 14' - 16' depth                                                                                              | 120          | 1.f. | \$        | \$         |
| 7)   | 16' - 18' depth                                                                                              | 15           | 1.f. | \$        | \$         |



| Item | Description                                               | No.<br>Units | Unit | Unit Cost | Total Cost |
|------|-----------------------------------------------------------|--------------|------|-----------|------------|
| C.   | 15-inch diameter<br>"D" backfill,<br>"B" bedding          |              |      |           |            |
| 1)   | 0' - 6' depth                                             | 340          | 1.f. | \$ _____  | \$ _____   |
| 2)   | 6' - 8' depth                                             | 370          | 1.f. | \$ _____  | \$ _____   |
| 3)   | 8' - 10' depth                                            | 275          | 1.f. | \$ _____  | \$ _____   |
| 4)   | 10' - 12' depth                                           | 195          | 1.f. | \$ _____  | \$ _____   |
| 5)   | 12' - 14' depth                                           | 115          | 1.f. | \$ _____  | \$ _____   |
| 6)   | 14' - 16' depth                                           | 80           | 1.f. | \$ _____  | \$ _____   |
| 7)   | 16' - 18' depth                                           | 15           | 1.f. | \$ _____  | \$ _____   |
| 8)   | 18' - 20' depth                                           | 15           | 1.f. | \$ _____  | \$ _____   |
| D.   | 15-inch diameter<br>"C" backfill,<br>"B" bedding          |              |      |           |            |
| 1)   | 0' - 6' depth                                             | 115          | 1.f. | \$ _____  | \$ _____   |
| 2)   | 6' - 8' depth                                             | 140          | 1.f. | \$ _____  | \$ _____   |
| 3)   | 8' - 10' depth                                            | 185          | 1.f. | \$ _____  | \$ _____   |
| 4)   | 10' - 12' depth                                           | 95           | 1.f. | \$ _____  | \$ _____   |
| E.   | 12-inch diameter<br>"C" or "D" back-<br>fill, "B" bedding | 25           | 1.f. | \$ _____  | \$ _____   |
| F.   | 8-inch diameter<br>"A" backfill,<br>"B" bedding           | 40           | 1.f. | \$ _____  | \$ _____   |



| Item | Description                                                                                                                             | No.<br>Units | Unit | Unit Cost | Total Cost |
|------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------|------|-----------|------------|
| 2.   | Furnish & install<br>48-inch diameter<br>standard manhole,<br>8 ft. depth with galv.<br>steps, & standard<br>frame & cover,<br>complete | 22           | ea.  | \$ _____  | \$ _____   |
| 3.   | Additional cost of<br>extra depth for man-<br>holes                                                                                     | 47           | l.f. | \$ _____  | \$ _____   |
| 4.   | Additional cost of<br>outside drop for<br>manholes                                                                                      | 7            | l.f. | \$ _____  | \$ _____   |
| 5.   | Additional cost for<br>watertight manhole<br>frame & cover                                                                              | 14           | ea.  | \$ _____  | \$ _____   |
| 6.   | Furnish & install<br>tees or taps for service<br>lines, complete                                                                        |              |      |           |            |
| A.   | 18" x 4" or 18"x6"                                                                                                                      | 5            | ea.  | \$ _____  | \$ _____   |
| B.   | 15" x 4" or 15"x6"                                                                                                                      | 15           | ea.  | \$ _____  | \$ _____   |
| 7.   | Furnish & install 6"<br>or 4"dia. 1/8 bends<br>for service lines,<br>complete                                                           | 20           | ea.  | \$ _____  | \$ _____   |
| 8.   | Furnish & install<br>concrete sewer pipe,<br>ASTM C-14, Class 2<br>for house services                                                   |              |      |           |            |
| A.   | 6" or 4" diameter "D"<br>backfill, "B"<br>bedding                                                                                       | 70           | l.f. | \$ _____  | \$ _____   |
| B.   | 6" or 4" diameter "C"<br>backfill, "B"<br>bedding                                                                                       | 40           | l.f. | \$ _____  | \$ _____   |



| Item | Description                                                                                                              | No.<br>Units | Unit | Unit Cost | Total Cost |
|------|--------------------------------------------------------------------------------------------------------------------------|--------------|------|-----------|------------|
| 9.   | Cut & replace exist-<br>ing bituminous<br>surfacing with<br>asphaltic concrete,<br>complete, including<br>base & subbase |              |      |           |            |
| A.   | 3" asphaltic concrete                                                                                                    | 615          | s.y. | \$ _____  | \$ _____   |
| B.   | 4" asphaltic concrete                                                                                                    | 15           | s.y. | \$ _____  | \$ _____   |
| 10.  | Furnish and install testing<br>wye and two plugs on new<br>service lines complete.                                       | 3            | e.a. | \$ _____  | \$ _____   |
| 11.  | Additional gravel<br>bedding for subgrade<br>reinforcement                                                               | 100          | c.y. | \$ _____  | \$ _____   |
| 12.  | Furnish & install 24"<br>steel casing & 18" class<br>3300 A.C. carrier pipe<br>under State Highway<br>complete           | 215          | l.f. | \$ _____  | \$ _____   |
| 13.  | Creek Crossings                                                                                                          |              |      |           |            |
| A.   | Creek Crossing No.1                                                                                                      | 1            | L.S. |           | \$ _____   |
| B.   | Creek Crossing No.2                                                                                                      | 1            | L.S. |           | \$ _____   |
| C.   | Creek Crossing No.3                                                                                                      | 1            | L.S. |           | \$ _____   |
| D.   | Creek Crossing No.4                                                                                                      | 1            | L.S. |           | \$ _____   |
| E.   | Creek Crossing No.5                                                                                                      | 1            | L.S. |           | \$ _____   |
| F.   | Creek Crossing No.6                                                                                                      | 1            | L.S. |           | \$ _____   |
| G.   | Creek Crossing No.7                                                                                                      | 1            | L.S. |           | \$ _____   |
| H.   | Creek Crossing No.8                                                                                                      | 1            | L.S. |           | \$ _____   |



| Item | Description                                                                                     | No.<br>Units | Unit | Unit Cost | Total Cost |
|------|-------------------------------------------------------------------------------------------------|--------------|------|-----------|------------|
| 14.  | Replacement of<br>existing manhole<br>frames & covers with<br>new watertight<br>frames & covers | 3            | ea.  | \$ _____  | \$ _____   |
| 15.  | Plug, fill and<br>abandon existing<br>manholes, complete                                        | 2            | ea.  | \$ _____  | \$ _____   |
| 16.  | Concrete plugs on<br>abandoned lines,<br>complete                                               | 15           | ea.  | \$ _____  | \$ _____   |
| 17.  | Curb replacement                                                                                | 10           | l.f. | \$ _____  | \$ _____   |
| 18.  | Connection of line<br>"C" to Wynooski Pump<br>Station, complete                                 | 1            | L.S. | \$ _____  | \$ _____   |
| 19.  | Connections of new<br>lines to existing<br>manholes, complete                                   |              |      |           |            |
| A.   | Line A to MH 2-11 on<br>Morton St.                                                              | 1            | L.S. | \$ _____  | \$ _____   |
| B.   | Line A to MH 1-1 on<br>Morton St.                                                               | 1            | L.S. | \$ _____  | \$ _____   |
| C.   | Line B to MH 1-6 on<br>St. Hwy 240                                                              | 1            | L.S. | \$ _____  | \$ _____   |
| D.   | Line B to MH 1-7<br>between St. Hwy 240<br>and Main St.                                         | 1            | L.S. | \$ _____  | \$ _____   |



| Item | Description                                      | No.<br>Units | Unit | Unit Cost | Total Cost |
|------|--------------------------------------------------|--------------|------|-----------|------------|
| E.   | Line B to MH 1-10-1<br>on Main St.               | 1            | L.S. |           | \$ _____   |
| F.   | Line C to MH 6-13<br>at Church St.               | 1            | L.S. |           | \$ _____   |
| G.   | Line C to MH 6-20<br>east of Sherman St.         | 1            | L.S. |           | \$ _____   |
| H.   | 4" line to MH 6-10                               | 1            | L.S. |           | \$ _____   |
| I.   | 4" line to MH 6-14                               | 1            | L.S. |           | \$ _____   |
| 20.  | Patch storm pipe in<br>MH 6-20-1, complete       | 1            | L.S. |           | \$ _____   |
| 21.  | Drill and bolt down<br>existing manhole<br>lids. | 10           | EA.  | \$ _____  | \$ _____   |

22. Exfiltration testing 5355 1.f. \$ \_\_\_\_\_ \$ \_\_\_\_\_

23. Hess Cr. Pump Station  
modifications,  
complete 1 L.S. \$ \_\_\_\_\_

TOTAL AMOUNT BID  
(Subject to correction if error in extension or addition)

\$ \_\_\_\_\_

### Alternate Bid Items for A.C. Pipe (ASTM C428, Class 2400)

The following price adjustments shall apply for the alternate material if the Owner desires to use this material for any one or more sizes:

Add or deduct from the unit prices listed in the proposal for A.C. pipe (ASTM C428, Class 2400) in place of concrete sewer pipe.

| Size |                                           |
|------|-------------------------------------------|
| 18"  | ADD \$ _____/1.f.<br>DEDUCT \$ _____/1.f. |
| 15"  | ADD \$ _____/1.f.<br>DEDUCT \$ _____/1.f. |
| 12"  | ADD \$ _____/1.f.<br>DEDUCT \$ _____/1.f. |
| 8"   | ADD \$ _____/1.f.<br>DEDUCT \$ _____/1.f. |



The undersigned, as bidder, acknowledges that Addenda numbered \_\_\_\_\_ through \_\_\_\_\_ have been delivered to him and have been examined as part of the contract.

Accompanying this proposal is a surety bond, cashier's check, or certified check for the sum of \$ \_\_\_\_\_ which is not less than ten percent (10%) of the base bid.

The undersigned agrees to complete the project within 120 calendar days and that the provisions required by ORS 279.350 shall be complied with and that he has knowledge of the liquidated damages portion of the General Conditions.

\_\_\_\_\_  
Firm Name of Bidder

\_\_\_\_\_  
Address

\_\_\_\_\_  
Signature of Bidder

\_\_\_\_\_  
Official Title

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 1980



OWNER - CONTRACTOR AGREEMENT

THIS AGREEMENT, made and entered into this 15  
day of August 19 80, by and between  
THE CITY OF NEWBERG, 414 E. First Street.  
(The official name, form of organization and address of  
Newberg, Oregon 97132  
Owner)  
hereinafter called the "Owner" and Jack Kennedy Contracting,  
(The official name,  
Corporation, P.O. Box 4156, Sun River, Oregon 97701  
form of organization and address of Contractor - if  
partnership, name of partners)  
hereinafter called the "Contractor".

WITNESSETH THAT:

WHEREAS, pursuant to the invitation of the Owner, extended  
through an official published "Notice to Contractors", the  
Contractor did in accordance therewith, on the 30th  
day of July, 19 80, file with the Owner a proposal  
containing an offer which was invited by said notice; and

WHEREAS, the Owner has heretofore determined that said  
offer was the lowest and best submitted:



NOW, THEREFORE, IT IS AGREED:

First: That the Contractor shall comply in every way with the requirements of those certain specifications entitled

Plans and Specifications for Sewerage System Improvements,  
(Official name of specifications and a statement of the

City of Newberg, Oregon  
limits to which they apply)

prepared by Robert E. Meyer Consultants, Inc.  
(Official name of organization preparing

specifications)

and dated July . 1980, hereinafter  
called the "Project".

Second: That in consideration of faithful compliance with the terms and conditions of this agreement the Owner shall pay to

the Contractor at the times and in the manner provided in said

specifications the total sum of Two Hundred Forty-three Thousand,

Five Hundred Ninety and no/100 dollars (\$243,590.00)

which sum is subject, however, to increase or decrease in such

proportion as the unit quantities named in the proposal are

so changed, in accordance with the provisions of the Contract

Documents.

Third: That work under this Agreement shall be commenced upon

written notice to proceed, and shall be completed within

One Hundred Twenty (120) calendar days of the commencement of

the Contract Time as defined in the General Conditions of the

Contract.



Fourth: That the Contractor agrees to bind every subcontractor by the terms of the Contract Documents. The Contract Documents shall not be construed as creating any contractual relation between any subcontractor and the Owner.

Fifth: That the Contract Documents which are hereby made a part of this Agreement by actual attachment or by this reference thereto are as follows:

1. The "Notice to Contractors" - being the invitation to submit a proposal;
2. The Specifications named above by title and the Detailed Plans listed and described in said specification including the following Addenda:

| Addendum Number | Dated |
|-----------------|-------|
| _____           | _____ |
| _____           | _____ |
| _____           | _____ |
| _____           | _____ |

3. The Proposal of the Contractor, which was submitted the 30th day of July, 19 80.

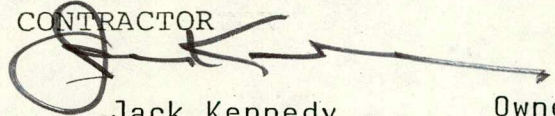
Sixth: That this Agreement and all of the covenants hereof shall inure to the benefit of and be binding upon the Owner and the Contractor respectively and their partners, successors, assigns and legal representatives and that neither the Owner nor the Contractor shall have the right to assign, transfer or sublet their interests or obligations hereunder without the written consent of the other party.



Seventh: That the Owner and Contractor mutually agree that this Agreement shall be subject to the following Special Provisions, which shall supersede other conflicting provisions of this Agreement.

IN WITNESS WHEREOF, said Owner and said Contractor have caused this Agreement to be executed on the day and year first above written.

CITY OF NEWBERG, OREGON  
OWNER  
BY  TITLE  
BY Elven Hall TITLE  
Mayor  
414 E. First St.  
BUSINESS ADDRESS  
Newberg, Oregon 97132  
CITY STATE ZIP

JACK KENNEDY CONTRACTING  
CONTRACTOR  
BY  TITLE  
BY Jack Kennedy TITLE  
Owner  
P.O. Box 4156  
BUSINESS ADDRESS  
Sunriver Oregon 97701  
CITY STATE ZIP



OWNER - CONTRACTOR AGREEMENT\*

THIS AGREEMENT, made and entered into this \_\_\_\_\_  
day of \_\_\_\_\_ 19 80, by and between  
\_\_\_\_\_  
THE CITY OF NEWBERG, 414 E. First Street.  
(The official name, form of organization and address of  
Newberg, Oregon 97132  
Owner)  
hereinafter called the "Owner" and \_\_\_\_\_  
(The official name,  
\_\_\_\_\_  
form of organization and address of Contractor - if  
\_\_\_\_\_  
partnership, name of partners)  
hereinafter called the "Contractor".

WITNESSETH THAT:

WHEREAS, pursuant to the invitation of the Owner, extended  
through an official published "Notice to Contractors", the  
Contractor did in accordance therewith, on the \_\_\_\_\_  
day of \_\_\_\_\_, 19 80, file with the Owner a proposal  
containing an offer which was invited by said notice; and

WHEREAS, the Owner has heretofore determined that said  
offer was the lowest and best submitted:



NOW, THEREFORE, IT IS AGREED:

First: That the Contractor shall comply in every way with the requirements of those certain specifications entitled

Plans and Specifications for Sewerage System Improvements,  
(Official name of specifications and a statement of the

City of Newberg, Oregon  
limits to which they apply)

prepared by Robert E. Meyer Consultants, Inc.  
(Official name of organization preparing

specifications)

and dated \_\_\_\_\_ July \_\_\_\_\_, 1980, hereinafter called the "Project".

Second: That in consideration of faithful compliance with the terms and conditions of this agreement the Owner shall pay to the Contractor at the times and in the manner provided in said specifications the total sum of \_\_\_\_\_  
\_\_\_\_\_ dollars (\$ \_\_\_\_\_)

which sum is subject, however, to increase or decrease in such proportion as the unit quantities named in the proposal are so changed, in accordance with the provisions of the Contract Documents.

Third: That work under this Agreement shall be commenced upon written notice to proceed, and shall be completed within One Hundred Twenty (120) calendar days of the commencement of the Contract Time as defined in the General Conditions of the Contract.



Fourth: That the Contractor agrees to bind every subcontractor by the terms of the Contract Documents. The Contract Documents shall not be construed as creating any contractual relation between any subcontractor and the Owner.

Fifth: That the Contract Documents which are hereby made a part of this Agreement by actual attachment or by this reference thereto are as follows:

1. The "Notice to Contractors" - being the invitation to submit a proposal;
2. The Specifications named above by title and the Detailed Plans listed and described in said specification including the following Addenda:

| Addendum Number | Dated |
|-----------------|-------|
| _____           | _____ |
| _____           | _____ |
| _____           | _____ |
| _____           | _____ |

3. The Proposal of the Contractor, which was submitted the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

Sixth: That this Agreement and all of the covenants hereof shall inure to the benefit of and be binding upon the Owner and the Contractor respectively and their partners, successors, assigns and legal representatives and that neither the Owner nor the Contractor shall have the right to assign, transfer or sublet their interests or obligations hereunder without the written consent of the other party.



Seventh: That the Owner and Contractor mutually agree that this Agreement shall be subject to the following Special Provisions, which shall supersede other conflicting provisions of this Agreement.

IN WITNESS WHEREOF, said Owner and said Contractor have caused this Agreement to be executed on the day and year first above written.

\_\_\_\_\_  
OWNER

\_\_\_\_\_  
CONTRACTOR

\_\_\_\_\_  
BY

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
BY

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
BY

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
BY

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
BUSINESS ADDRESS

\_\_\_\_\_  
BUSINESS ADDRESS

\_\_\_\_\_  
CITY

\_\_\_\_\_  
STATE

\_\_\_\_\_  
ZIP

\_\_\_\_\_  
CITY

\_\_\_\_\_  
STATE

\_\_\_\_\_  
ZIP

\*NOTE: This form is subject to change by the attorney or other person authorized to represent the Owner.



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SEWERAGE SYSTEM IMPROVEMENTS  
CITY OF NEWBERG, OREGON

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SPECIAL PROVISIONS  
SEWERAGE SYSTEM IMPROVEMENTS  
CITY OF NEWBERG, OREGON

1.00      GENERAL STATEMENT AND SCOPE OF WORK

These Special Provisions supplement and amplify certain sections of the General Conditions of the Contract for the project. The General Conditions shall apply except as modified herein.

The work to be performed includes, but is not limited to furnishing and installing concrete sewer pipe consisting of approximately 3,240 lineal feet of 18-inch, 1,940 lineal feet of 15-inch, 110 lineal feet of 4-inch for house services, man-holes, one (1) bored or jacked highway crossing, pump station modifications, appurtenances and other associated work.

The above general outline of the principal features of the work does not in any way limit the responsibility of the Contractor to perform all work and furnish all plant, labor, and materials required by the specifications and the plans and drawings referred to therein.

2.00      PLANS

The Plans are designated by name, title, sheet number and file number. When reference is made to the drawings, the Sheet Number of the drawing will be used.

Each drawing bears the general title:

SEWERAGE SYSTEM IMPROVEMENTS  
CITY OF NEWBERG, OREGON

The following is a list of plans:

| <u>SHEET NO.</u> | <u>TITLE</u>                               | <u>DWG. NO.</u> |
|------------------|--------------------------------------------|-----------------|
| 1                | Plan & Profile Line "A" STA 0+00 to 6+25   | 7066            |
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| 3                | Plan & Profile Line "C" STA 0+00 to 12+25  | 7068            |
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### 3.00      TIME OF COMPLETION

The time of completion including testing and correction of defects shall be one hundred twenty (120) calendar days after a written Notice to Proceed has been issued by the Owner. Time extensions shall be based only upon delays which affect the project as a whole and not upon non-controlling delays.

The Contractor's attention is directed to Paragraphs 6.02 and 6.08 of the General Conditions of these Specifications. Liquidated damages will be computed on the basis of two-hundred fifty dollars (\$250) per day for each and every calendar day that completion of the project is delayed.

### 4.00      SURVEYS

The Contractor's attention is directed to Paragraph 2.14 of the General Conditions of the Contract and Paragraph 3.00 of the Standard Technical Specifications for Sewer and Drains, and 6.0 of the Special Technical Specifications.

### 5.00      GUARANTEE

The Contractor's attention is directed to Paragraphs 4.00 and 7.19 of the General Conditions of these specifications. Warranties and guarantees by the suppliers of various components in lieu of a single source responsibility by the Contractor will not be accepted. In the event that equipment, materials or workmanship fail to perform as specified or prove defective in service during the guarantee period, the Contractor shall provide equipment parts and/or material and such labor as may be required to replace, repair or modify the defect, without cost to the Owner.

### 6.00      SUBMITTALS

The Contractor's attention is directed to Paragraphs 2.11 and 2.12 of the General Conditions. The Contractor shall check all submittals before submitting them to the Engineer and shall stamp his approval on all copies of the shop drawing documents.



The following with regard to the amounts to be retained from the contract price modify Paragraph 7.02, Requests for Payment, of the General Conditions.

The amount to be retained from any given partial payment will be such that when added to the sum of amounts previously retained will bring the total of amounts retained to an amount equal to five percent (5%) of the value of completed work except that upon substantial completion of the work under the contract which will be understood to be not less than 97½% of the work, the Owner may, at his discretion, reduce the retained amount to an amount equivalent to not less than 200% of the contract value or estimated cost, which ever is greater, of the work remaining to be done.

The amount to be retained in protection of the Owner's interest as above set forth will be reduced in conformance with the following:

A. If the contractor deposits with the Owner, bonds and securities of a value equal to at least five percent (5%) of the amount of the contract at the time he signs the contract for the project, no amount will be retained from partial payments.

B. If the Contractor deposits bonds and securities with the Owner during the life of the contract, and retained amounts will be reduced by an amount equal to the value of the bonds and securities. This reduction in retainage will be made in the partial payments made subsequent to the time the Contractor deposits the bonds and securities with the Owner.

C. The value of the bonds and securities will be periodically determined by the Owner and amount retained on partial payments will be adjusted accordingly.

D. The bonds and securities deposited by the Contractor shall be of a kind approved by the State Treasurer.

E. At the time the Engineer determines that all requirements for the protection of the Owner's interest have been fulfilled, all bonds and securities deposited with the Owner as above provided will be returned to the Contractor.



#### 8.00 NONCOLLUSION AFFIDAVIT

The Owner reserves the right to require that any bidder, before being awarded a contract, shall execute a non-collusion affidavit in such form as will satisfy the Owner that the bid offered is genuine, is not a sham or collusive, and in no respect or degree is made in the interest or on behalf of any person, firm or corporation not named in the proposal containing such bid.

#### 9.00 EASEMENTS

Certain portions of the project lie within easements obtained from private property owners. The contractor shall comply with all provisions of the easements pertaining to this project in addition to all requirements found elsewhere in these specifications. A copy of the easements are available for inspection at the office of the Engineer.

#### 10.00 CONSTRUCTION WITHIN STATE RIGHTS-OF-WAY

Before commencing construction in any state right-of-way, the Contractor shall determine and comply with all requirements of the State. The contractor shall furnish all bonds and insurance required by that agency.

#### 11.00 ACCESS

Access to Line "C" is very limited. There is a graveled access road from Wynooski St. to the Wynooski Pump Station which is approximately 8 to 10 feet wide and has grades up to approximately 23 percent. This is the only access to the south end of Line "C". The City has negotiated access agreements through Herbert Hoover Park to serve the middle of Line "C" and through George Fox College which provides access to the north end of the line. Both of these routes involve slopes of approximately 20 percent.

Any additional access points or routes would have to be acquired by the Contractor at no additional cost to the City. All access routes shall be restored to before construction condition by the contractor at no additional cost to the Owner.

See "Special Technical Specifications", Paragraph 2.00, "Easements" for more information.



12.00      INSURANCE

The Contractor's attention is directed to Paragraph 5.01 of the General Conditions of the Contract for insurance requirements.

The Contractor shall also name the CHEHALEM PARK AND RECREATION DISTRICT, its officers, agents and employees as additionally insureds on all required insurance policies.

The requirement calling for the Contractor to provide Builders Risk "All Risk" insurance shall be waived for this project.

Written evidence of insurance coverage as required in Paragraph 5.01 shall be submitted by the Contractor to the Owner before a Notice to Proceed will be issued.



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## GENERAL CONDITIONS OF THE CONTRACT

### 1.00 DEFINITIONS

1.01 Contract Documents - The contract comprises the following documents, including all additions, deletions and modifications incorporated therein before the execution of the contract.

- A. Owner-Contractor Agreement
- B. Contractor's Proposal
- C. Addenda to Contract Documents
- D. Instruction to Bidders
- E. Advertisement
- F. Permits from Outside Agencies Required by Law
- G. Special Provisions
- H. Special Technical Specifications
- I. General Conditions of the Contract
- J. Detailed Drawings
- K. Standard Specifications
- L. Standard Drawings

1.02 Engineer - The Engineer named in the Contract Documents or his representative, duly authorized in writing to act for the Engineer.

1.03 Owner - Owner named in the Contract Documents as the Owner of the work, when it is completed.

1.04 Contractor - The individual, firm or corporation undertaking the execution of the work under the terms of the contract.

1.05 Subcontractor - Any person, firm or corporation with a direct contract with the Contractor who acts for or in behalf of the Contractor in executing any part of the contract, but does not include one who merely furnished material.

1.06 Field Representative - The authorized representative of the Engineer or Owner assigned to observe the work or material.



- 1.07 Proposal - The offer of a bidder to perform the work described by the Contract Documents when made out and submitted on the prescribed proposal form, properly signed and guaranteed.
- 1.08 Proposal Guaranty - The cashier's check or bidder's bond accompanying the proposal submitted by the bidder, as a guaranty that the bidder will enter into a contract with the Owner for the construction of the work, if the contract is awarded to him.
- 1.09 Contract - The agreement between the Owner and the Contractor, governing the performance of the work described in the Contract Documents including all supplemental agreements and all general and special provisions pertaining to the work or materials.
- 1.10 Performance Bond - The approved form of security furnished by the Contractor and his Surety as a guaranty of good faith on the part of the Contractor to execute the work in accordance with the terms of the contract for 100% of the contract amount.
- 1.11 Labor and Material Payment Bond - The approved form or security furnished by the Contractor and his Surety as a guaranty of full payment of all labor and material provided by the Contractor to execute the work in accordance with the terms of the contract.
- 1.12 Surety - The person, firm or corporation who executes the Contractor's Performance Bond.
- 1.13 Specifications - The legal and procedural documents and General Conditions of the Contract, together with the modifications and the detailed specification requirements, with all addenda.
- 1.14 Drawings - Those listed in the Special Provisions of the Contract Documents together with any additional maps, plans, or supplemental drawings furnished by the Engineer.
- 1.15 Written Notice - Written notice shall be considered as served when delivered in person or sent by registered mail to the individual, firm or corporation or to the last business address of such known to him who serves the notice.
- 1.16 Supplemental Agreement - Any written agreement entered into between the Contractor and the Owner to supplement, clarify or alter the plans, specifications or contract or to otherwise provide for unseen work, contingencies, alterations in plans and other matters not contemplated by or adequately provided in the Contract Documents.
- 1.17 Right-of-Way - The area provided by the Owner for use in constructing the work covered by the contract, including appurtenances. The right-of-way so designated may be either temporary or permanent.
- 1.18 Work - Work shall be understood to mean the furnishing of all labor, materials, equipment and other incidentals necessary or convenient to the successful completion of the project or the portion of the project involved and the carrying out of all duties and obligations imposed by the contract.



1.19 Act of God - Means an earthquake, flood, cyclone or other cataclysmic phenomenon of nature. Rain, wind, flood or other natural phenomenon of intensity, less than that recorded for the locality of the work shall not be construed as an act of God and no reparation shall be made to the Contractor for damages to the work resulting therefrom.

1.20 Favorable Review - Submittals for material list, shop drawings, material substitutions, schedules, etc., will be reviewed by the Engineer and copies returned to the Contractor marked as "no exceptions taken" or "make corrections noted" in which case no further submittals are needed.

## 2.00 CONTRACT DOCUMENTS AND RELATED DATA

2.01 Intent of Contract Documents - The intent of the Contract Documents is that the Contractor furnish all labor and materials, equipment and transportation necessary for the proper execution of the work unless specifically noted otherwise. The Contractor shall do all the work shown on the drawings as described to complete the project in a substantial and acceptable manner, and to fully complete the work or improvement, ready for use by the Owner.

2.02 Conflict - In case of conflicting requirements within the Contract Documents, the order of precedence in controlling the work shall be:

- A. Owner-Contractor Agreement
- B. Contractor's Proposal
- C. Addenda to Contract Documents
- D. Instruction to Bidders
- E. Advertisement
- F. Permits from outside agencies required by law
- G. Special Provisions
- H. Special Technical Specifications
- I. General Conditions of the Contract
- J. Detailed Drawings
- K. Standard Specifications
- L. Standard Drawings

Contract modifications, supplemental agreements and approved revisions to drawings and specifications will take precedence over Contract Documents listed above.

2.03 Discrepancies in Drawings - Any discrepancies found between the drawings and specifications and site conditions or any errors or omissions in the drawings or specifications shall be immediately reported in writing to the Engineer, who shall promptly clarify such error or omission in writing. Any work done or materials ordered by the Contractor after his discovery of such discrepancies, errors or omissions shall be done at the Contractor's risk.

2.04 Additional Instructions - Further instructions may be issued by the Engineer during the progress of the work by means of drawings or in writing to clarify the Contract Documents or as may be necessary to explain or illustrate changes in the work to be done.



2.05 Copies of Contract Documents Furnished - Unless otherwise stipulated, five (5) copies of Contract Documents shall be furnished to the Contractor without charge.

2.06 Contract Documents at Job Site - One complete set of all Contract Documents shall be maintained at the job site and shall be available to the Engineer at all times.

2.07 Ownership of Contract Documents - All original or duplicated Contract Documents and other data prepared by the Engineer shall remain the property of the Engineer and they shall not be re-used on other work, but shall be returned to him upon completion of the work.

2.08 Dimensions - Figured dimensions on the drawings will be used in preference to scaling the drawings. Where the work of the Contractor is effected by finish dimensions, these shall be determined by the Contractor at the site, and he shall assume the responsibility.

2.09 Models - All models prepared for this work shall become the property of the Owner at the completion of the work.

2.10 Samples - All samples called for in the specifications or required by the Engineer shall be furnished by the Contractor and shall be submitted to the Engineer for his approval. Samples shall be furnished so as not to delay fabrication, allowing the Engineer reasonable time for the consideration of the samples submitted. The Contractor shall furnish such samples of material as they may be required for examination and test. All materials and workmanship shall be in accordance with approved samples. All samples of materials for tests shall be taken according to methods provided in the specifications.

2.11 Shop Drawings - The Contractor shall provide shop drawings, schedules and such other drawings as may be necessary for the prosecution of the work in the shop and in the field as required by the Contract Documents or Engineer's instructions.

Within 30 days after award of the Contract, the Contractor shall submit to the Engineer for approval, a proposed list of manufacturers and suppliers and a schedule of specific target dates for the submission and return of Shop Drawings required by the Contract Documents. The Schedule shall be divided into construction categories. All Shop Drawings for inter-related items shall be scheduled for submission at the same time. Not less than two (2) weeks shall be allocated to each submittal for processing by the Engineer.

The Engineer will review Shop Drawings to determine compliance with the design concept of the project and return them to the Contractor with the period established in the Shop Drawing Schedule.

The Engineer may hold Shop Drawings in cases where partial submission cannot be reviewed until the complete submission has been received or where Shop Drawings cannot be reviewed until correlated items affected by them have been received. When such Shop Drawings are held, he may advise the Contractor in writing that the Shop Drawings submitted will not be reviewed until Shop Drawings for all related items have been received. No work requiring Shop Drawings shall commence until Shop Drawings are reviewed.



A. Submittal Schedule - Shop drawings shall be submitted according to the following schedule:

1. Three copies shall be submitted at least thirty (30) days before the materials indicated thereon are to be needed, or earlier if required to prevent delay of the work.

2. The Engineer shall, within fourteen (14) days of the submittal of any shop drawings, return one copy to the Contractor marked with all corrections and changes.

3. The Contractor shall then correct the shop drawings to conform to the corrections and changes requested by the Engineer.

4. Following completion of such corrections and changes, the Contractor shall furnish the Engineer two copies of the shop drawings conforming to the required corrections and changes.

B. Use - Shop drawings shall not be used unless submitted to the Engineer for favorable review.

C. Additional Submissions - If more than two (2) submissions are required to meet the project specifications, the cost of reviewing these additional submissions may be charged directly against the Contractor and the Owner may withhold the funds necessary to cover these costs.

2.12 Quality of Equipment and Materials - In order to establish standards of quality, the Engineer has, in the detailed specifications, referred to certain products by name and catalog number. This procedure is not to be construed as eliminating from competition other products of equal or better quality by other manufacturers where fully suitable in design. Materials which are equal in quality and utility to those specified will be favorably reviewed subject to the following provisions.

A. All materials shall be submitted for review by the Engineer, in writing. For this purpose, the Contractor shall submit to the Engineer, not later than ten (10) calendar days after execution of the contract, three copies of a typewritten list, listing all items or classes of materials to be used in the work together with a description of the particular material he proposes to use in each case. The Contractor will be permitted thirty-five (35) calendar days after execution of the contract to complete the final submission to the Engineer of all material and equipment in the form and detail specified herein. In cases where the Contractor proposes materials different from those so named he shall so state in the material list and he shall append to the material list sufficient data, drawings, samples, literature, or other detailed information (in duplicate) as will demonstrate to the Engineer that proposed material is equal in quality and utility to material named. The Contractor shall call to the Engineer's attention in writing, the difference between the named material and the material proposed for use. Favorable review of a substitution does not authorize any deviation from the utility, size or function of the named item unless such variation is specifically noted and review is requested with the submission. Material and equipment shall not be used unless submitted to and favorably reviewed by the Engineer.



B. Such favorable review shall not relieve the Contractor from complying with requirements of Contract Documents and he shall be responsible at his own expense for any changes caused by his proposed substitutions which affect other parts of his own work or appurtenant work of other contractors.

C. Failure of the Contractor to submit proposed substitutions for review in the manner described above and within the thirty-five (35) day period after execution of the contract may be deemed sufficient cause for rejection by Engineer of any substitutions otherwise proposed.

D. In preparing these specifications, the Engineer has named those products which to his knowledge meet the specifications and are equivalent in construction, functional efficiency, and durability, and where only one product has been named by brand, it is the only brand, trade name, or manufactured product known to the Engineer that meets these specifications. Alternative products meeting the specifications may be submitted by the Contractor for favorable review by the Engineer. Wherever more than one manufacturer is listed, the first named manufacturer is the basis for the project design and the use of alternative named or unnamed manufacturer' products may require modifications in the project design and construction. If such alternatives are proposed by the Contractor and are reviewed by the Engineer, the Contractor shall assume all costs required to make necessary revisions and modifications including all engineering costs.

E. The Contractor shall abide by the Engineer's judgment when proposed substitute materials or items of equipment are judged to be unacceptable and shall furnish the specified material or item of equipment in such case. All proposals for substitutions shall be submitted in writing by the Contractor and not by individual trades or material suppliers. The Engineer will approve or disapprove proposed substitutions in writing within a reasonable time. No substitute materials shall be used unless approved in writing.

2.13 Equipment Data For Review - The Contractor shall furnish three (3) copies of complete catalog data for every manufactured item of equipment and all components to be used in the work, including performance data, material description, rating, capacity, working pressure, material gauge or thickness, brand name, catalog number and general type.

A. This submission shall be compiled by the Contractor and favorably reviewed by the Engineer before any of the equipment is ordered.

B. Each data sheet or catalog in the submission shall be indexed according to specification section and paragraph for easy reference.

C. After written favorable review, this submission shall become a part of the contract, and may not be deviated from except upon written approval of the Engineer.

D. Catalog data for equipment favorably reviewed by the Engineer does not in any case supersede the Engineer's Contract Documents. The favorable review by the Engineer shall not relieve the Contractor from responsibility for deviations from drawings or specifications, unless he has in writing called the



Engineer's attention to such deviations at the time of submission, nor shall it relieve him from responsibility for errors of any sort in the items submitted. The Contractor shall check the work described by the catalog data with the Engineer's Contract Documents for deviations and errors.

E. It shall be the responsibility of the Contractor to insure that items to be furnished fit the space available. He shall make necessary field measurements to ascertain space requirements, including those for connections, and shall order such sizes and shapes of equipment that the final installation shall suit the true intent and meaning of the drawings and specifications.

F. Where equipment requiring different arrangement of connections from those shown is favorably reviewed, it shall be the responsibility of the Contractor to install the equipment to operate properly, in harmony with the intent of the drawings and specifications, and make all changes in the work required by the different arrangement of connections.

2.14 Surveys - Unless otherwise specified, the Engineer shall establish all base lines for the location of the principal component parts of the work together with a suitable number of bench marks adjacent to the work. Based upon the information provided by the Engineer, the Contractor shall develop and make all detail surveys necessary for construction, including slope stakes, batter boards, stakes for pile locations and other working points, lines and elevations. The Contractor shall have the responsibility to carefully preserve bench marks, reference points and stakes, and, in the case of destruction thereof by the Contractor or resulting from his negligence, the Contractor shall be charged with the expense and damage resulting therefrom and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such bench marks, reference points and stakes.

### 3.00 ENGINEER-OWNER-CONTRACTOR RELATIONS

3.01 Engineer's Responsibility and Authority - The Engineer shall decide any and all questions which may arise as to the quality and acceptability of materials furnished, work performed, rate of progress of work, interpretation of Contract Documents and all questions as to the acceptable fulfillment of the contract on the part of the Contractor.

3.02 Engineer's Decisions - All claims of the Owner or the Contractor shall be presented to the Engineer for decisions which shall be made in writing within a reasonable time. All decisions of the Engineer shall be final except in cases where time and/or financial considerations are involved, which shall be subject to arbitration.

3.03 Suspension of Work - The Engineer shall have the authority to suspend the work, wholly or in part, for such period or periods, due to unsuitable weather, or such other conditions as are considered unfavorable for prosecution of the work, or failure on the part of the Contractor to carry out the provisions of the contract or to supply materials meeting the requirements of the Contract Documents. The Contractor shall not suspend operation without the Engineer's permission.



3.04 Arbitration - Should there be any dispute or any questioned decision of the Engineer, it may be submitted to arbitration if consented to by all parties. The Contractor shall not delay the work because arbitration proceedings are pending unless he shall have written permission from the Engineer to do so and such delay shall not extend beyond the time when the arbitrators shall have opportunity to determine whether the work shall continue or be suspended pending decision by the arbitrators of such a dispute. Any demand for arbitration shall be in writing and shall be delivered to the Engineer and any adverse party either by personal delivery or by registered mail addressed to the last known address of each within ten (10) days of receipt of the Engineer's decision, and in no event after final payment has been made and accepted, subject, however, to any express stipulation to the contrary in the Contract Documents. Should the Engineer fail within a reasonable period to make a decision, a demand for arbitration may then be made as if the Engineer's decision had been rendered against the party demanding arbitration.

A. No one shall be qualified to act as an arbitrator who has, directly or indirectly, any financial interest in the contract or who has any business or family relationship with the Owner, the Contractor, or the Engineer. Each arbitrator selected shall be qualified by experience and knowledge of the work involved in the matter to be submitted to arbitration.

B. Arbitration shall be in accordance with the procedure and standards of the American Arbitration Association.

3.05 Site Visits - All materials and each part or detail of the work shall be subject at all times to inspection by the Engineer, and the Contractor will be held strictly to the true intent of the specifications in regard to quality of materials, workmanship, and the diligent execution of the contract. Such inspection may include mill, plant, or shop inspection and any material furnished under these Contract Documents is subject to such inspection. The Engineer shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

3.06 Examination of Completed Work - At any time before acceptance of the work, if the Engineer requests it, the Contractor shall remove or uncover portions of the finished work for inspection. After examination, the Contractor shall restore said portions of the work to the standard required by the Contract Documents. Should the work thus exposed or examined prove acceptable, the uncovering or removing, and the replacing of the covering or making good of the parts removed shall be paid for as extra work, but should the work so exposed or examined prove unacceptable, the uncovering, removing and replacing shall be at the Contractor's expense.

3.07 Contractor's Superintendence - A qualified superintendent, who is acceptable to the Engineer shall be maintained on the work and give efficient supervision to the work until its completion. The superintendent shall have full authority to act in behalf of the Contractor.



3.08 Lands by Owner - The Owner shall provide the lands shown on the drawings upon which the work under the contract is to be performed and to be used for rights-of-way access.

3.09 Lands by Contractor - Any additional land and access thereto not shown on the drawings that may be required for temporary construction facilities or for storage of materials shall be provided by the Contractor with no liability to the Owner. The Contractor shall confine his apparatus and storage of materials and operation of his workmen to those areas described in the Contract Documents and such additional areas which he may provide as approved by the Engineer.

3.10 Private Property - The Contractor shall not enter upon private property for any purpose without obtaining permission, and he shall be responsible for the preservation of all public property, trees, monuments, etc. along and adjacent to the street and/or right-of-way, and shall use every precaution necessary to prevent damage or injury thereto. He shall use suitable precautions to prevent damages to pipes, conduits, and other underground structures, and shall protect carefully from disturbance or damage all monuments and property marks until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed.

3.11 Assignment of Contract - Neither the Contractor nor the Owner shall sublet, sell, transfer, assign or otherwise dispose of the contract or any portion thereof, or his right, title or interest therein, or his obligations thereunder, without written consent of the other party.

3.12 Removal of Construction Equipment, Tools and Supplies - At the termination of this contract, before acceptance of the work by the Owner, the Contractor shall remove all of his equipment, tools and supplies from the property of the Owner. Should the Contractor fail to remove such equipment, tools and supplies, the Owner shall have the right to remove them.

3.13 Suspension of Work by Owner - The work or any portion thereof may be suspended at any time by the Owner provided that he gives the Contractor five (5) days written notice of suspension, which shall set forth the date on which work is to be resumed. The Contractor shall resume the work upon written notice from the Owner and within the (10) days after the date set forth in the notice of suspension. If the Owner does not give written notice to resume work within ten (10) days of the date fixed in the notice of suspension, the Contractor may abandon that portion of the work so suspended and shall be entitled to payment in accordance with Paragraph 7.11.

3.14 Owner's Right to Correct Deficiencies - Upon failure of the Contractor to perform the work in accordance with the Contract Documents, including any requirements with respect to the Schedule of Completion, and after five (5) days written notice to the Contractor and receipt of written approval from the Engineer, the Owner may, without prejudice to any other remedy he may have, correct such deficiencies and deduct the cost thereof from the payment then or thereafter due the Contractor.



3.15 Owner's Right to Terminate Contract and Complete the Work - The Owner shall have the right to terminate the employment of the Contractor after giving ten (10) days written notice of termination to the Contractor in the event of any default by the Contractor and upon receiving written notice from the Engineer certifying cause for such action. In the event of such termination, the Owner may take possession of the work and of all materials, tools and equipment thereon and may finish the work by whatever method and means he may select. It shall be considered a default by the Contractor whenever he shall:

A. Declare bankruptcy, become insolvent, or assign his assets for the benefit of his creditors.

B. Disregard or violate provisions of the Contract Documents or Engineer's instructions, or fail to prosecute the work according to the agreed Schedule of Completion, including extensions.

C. Fail to provide a qualified superintendent, competent workmen or subcontractor, or proper materials, or fail to make prompt payment.

3.16 Contractor's Right to Suspend Work or Terminate Contract - The Contractor may suspend work or terminate contract upon ten (10) days written notice to the Owner and the Engineer, for any of the following reasons:

A. If an order of any court, or other public authority caused the work to be stopped or suspended for a period of ninety (90) days through no act or fault of the Contractor or his employees.

B. If the Engineer should fail to act upon Request for Payment within ten (10) days after it is presented in accordance with the General Conditions of the Contract.

C. If the Owner should fail to act upon any Request for Payment within forty-five (45) days after its approval by the Engineer.

D. If the Owner should fail to pay the Contractor any sum within thirty (30) days after its award by arbitrators.

3.17 Legal Proceedings - The Contractor and all subcontractors shall, as a condition precedent to performing any work on this project, furnish to the Owner a list of all litigation, arbitration or other legal proceedings in which the Contractor or subcontractors have been directly or indirectly involved in the last five (5) years from the date of the agreement, and in which any Owner, Architect, or Engineer or any consultant to any Owner, Architect, or Engineer were named as parties to the litigation, arbitration or other legal proceedings.

3.18 Separate Contract - The Owner may let other contracts in connection with the work of the contractor. The Contractor shall cooperate with other contractors with regard to storage of materials and execution of their work. He shall not commit or permit any act to be committed which will interfere with the performance of work by any other Contractors affecting his work and report to the Engineer any irregularities which will not permit him to complete his work in a satisfactory manner. His failure to notify the Engineer of such irregularities shall indicate the work of other contractors has been satisfactorily completed to receive his work. The Contractor shall not be responsible for defects of which he could not



have known, which develop in the work of others after the work is completed. It shall be the responsibility of the Contractor to measure the completed work in place and report to the Engineer immediately any difference between completed work by others and the drawings.

3.19 Subcontracts - At the time specified by the Contract Documents, or when requested by the Engineer, the Contractor shall submit in writing to the Owner for approval of the Engineer the name of the subcontractors proposed for the work.

Subcontractors may not be changed except at the written request of the Contractor for the acts and omissions of his subcontractors, and of their direct and indirect employees, to the same extent as he is responsible for the acts and omissions of his employees. The Contract Documents shall not be construed as creating any contractual relation between any subcontractor and the Owner. The Contractor shall bind every subcontractor by the terms of the Contract Documents. For convenience of reference and to facilitate the letting of contracts and subcontracts, the specifications are separated into titled sections. Such separations shall not, however, operate to make the Engineer an arbitrator to establish limits to the contracts between the Contractor and subcontractor.

3.20 Work During and Emergency - The Contractor shall perform any work and shall furnish and install any materials and equipment necessary during an emergency endangering life or property. In all cases, he shall notify the Engineer of the emergency as soon as practicable, but, he shall not wait for instructions before proceeding to protect both life and property.

3.21 Oral Agreements - No oral order, objections, claim or notice by any party to the others shall affect or modify any of the terms of obligations contained in any of the Contract Documents, and none of the provisions of the Contract Documents shall be held to be waived or modified by reason of any act whatsoever, other than by an agreed waiver or modification in writing, and no evidence shall be introduced in any proceeding of any other waiver or modification.

3.22 Overtime Inspection - The Contractor shall reimburse the Owner for the additional costs above those costs for an 8-hour day, 40-hour week incurred by the Owner for the inspection of all work performed by the Contractor on Saturdays, Sundays, holidays, or other than the normal eight-hour day.

3.23 Claims for Damages - Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the other party or of any of his employees, agents or others for whose acts he is legally liable, claim shall be made in writing to such other party within 5 days after the first observance of such injury or damage. Failure to provide the notice within five (5) days, shall nullify said claim.

#### 4.00 MATERIALS AND WORKMANSHIP

4.01 Materials Furnished by the Contractor - All materials used in the work shall be new and shall meet the requirements of the respective specifications, and no material shall be used until it has been favorably reviewed by the Engineer. All



materials not otherwise specifically indicated shall be furnished by the Contractor.

4.02 Materials Furnished by the Owner - Materials specifically indicated shall be furnished by the Owner. The fact that the Owner is to furnish materials is conclusive evidence of its acceptability for the purpose intended, and the Contractor may continue to use it until otherwise directed. If the Contractor discovers any defect in material furnished by the Owner, he shall notify the Engineer. Unless otherwise noted or specifically stated materials furnished by the Owner, which are not of local occurrence, are considered to be f.o.b. the nearest freight station. The Contractor shall be prepared to unload and properly protect all such material from damage or loss. The Contractor shall be responsible for material loss or damage after receipt of material at the point of delivery.

4.03 Test of Materials - All tests of materials shall be made in accordance with approved methods as described and designated in the specifications. When tests of materials are required, such tests shall be made by a testing laboratory approved by the Engineer and at the expense of the Owner unless otherwise indicated. The Contractor shall provide such facilities as may be required for collecting and forwarding samples and shall hold the materials represented by the samples until tests have been made and the materials found equal to the requirements of the specifications or to approved samples. The Contractor in all cases shall furnish required samples without charge as specified in Paragraph 2.10.

4.04 Storage of Materials - Materials shall be stored to insure the preservation of their quality and fitness for the work. When considered necessary, they shall be placed on wooden platforms or other hard clean surfaces and not on the ground, and/or they shall be placed under cover. Stored materials shall be located so as to facilitate prompt inspection. Private property shall not be used for storage purposes unless written permission of the Owner or lessee is obtained by the Contractor.

4.05 Character of Workmen - The Contractor shall at all times be responsible for the conduct and discipline of his employees and/or any subcontractor or persons employed by subcontractor. All workmen must have sufficient knowledge, skill, and experience to perform properly the work assigned to them. Any foreman or workman employed by the Contractor or subcontractor who, in the opinion of the Engineer, does not perform his work in a skillful manner, or appears to be incompetent or to act in a disorderly or intemperate manner shall, at the written request of the Engineer, be discharged immediately and shall not be employed again in any portion of the work without the approval of the Engineer.

4.06 Rejected Work and Materials - All materials which do not conform to the requirements of the Contract Documents, are not equal to samples approved by the Engineer, or are in any way unsatisfactory or unsuited to the purpose for which they are intended, shall be rejected. Any defective work whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause shall be removed within ten (10) days after written notice is given by the Engineer, and the work shall be re-executed by the Contractor. The fact that the Engineer may have previously overlooked such defective work shall not constitute an acceptance of any part of it.



A. Should the Contractor fail to remove rejected work or materials within ten (10) days after written notice to do so, the Owner may remove them and store the materials.

B. Correction of Faulty Work After Final Payment shall be in accordance with Paragraph 7.19.

4.07 Manufacturer's Directions - Manufactured articles, material and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer unless herein specified to the contrary.

4.08 Cutting and Patching - The Contractor shall do all necessary cutting and patching of the work that may be required to properly receive the work of the various trades or as required by the Contract Documents to complete the structure. He shall restore all such cut or patched work.

4.09 Final Cleaning Up - Upon completion of the work and before the acceptance and final payment, the Contractor shall remove from the Owner's property, and from all public and private property, all temporary structures, rubbish, and waste materials resulting from his operation or caused by his employees, and shall remove all surplus materials leaving the site smooth, clean and true to line and grade.

4.10 Guaranty Period - The Contractor shall warrant all materials and equipment furnished and work performed by him for a period of one year from date of written acceptance of the work.

Correction of Faulty Work After Payment shall be as provided in Paragraph 7.19.

## 5.00 INSURANCE-LEGAL RESPONSIBILITY AND PUBLIC SAFETY

5.01 Insurance - The Contractor will not commence any work until he obtains at his own expense all required insurance. Certification of insurance meeting all requirements of the contract must be filed with and subject to the approval of the Owner. The Contractor will not permit any subcontractor to commence work on this project until the same insurance requirements have been complied with by such subcontractor. The types of insurance the Contractor is required to obtain and maintain for the full period of the contract will be Workmen's Compensation Insurance, Comprehensive General Liability Insurance, and Builder's Risk "All Risk" Insurance as detailed in the following portions of this specification. The Contractor's comprehensive general liability insurance with a Completed Operations Endorsement shall be maintained after the completion of the project for the full guarantee period. Nothing contained in these insurance requirements is to be construed as limiting the extent of the Contractor's responsibility for payment of damages resulting from his operations under this contract.

As evidence of specified insurance coverage, the Owners may, in lieu of actual policies, accept certificates issued by the insurance carrier showing such policies, accept certificates issued by the insurance carrier showing such policies in force for the specified period. In either case, a certification from the insurance carriers shall accompany the insurance submittals stating that all requirements of



the contract are covered by the indicated insurance coverage. Each policy or certificate will bear an endorsement or statement waiving right of cancellation or reduction in coverage without thirty days notice in writing to be delivered by registered mail to the Owner.

Acceptance of policies or other evidence of insurance coverage by the Owner shall not relieve the Contractor from full compliance with terms of the contract.

A. Workmen's Compensation Insurance - Before commencement of the work, the Contractor shall submit written evidence that he and all subcontractors have obtained for the period of the contract, Workmen's Compensation disability benefit, and other similar employee benefit acts coverage for all persons whom they employ or may employ in carrying out the work under this contract. This insurance shall be in strict accordance with the requirements of the most current and applicable State Workmen's Compensation Insurance Laws. This insurance shall name the Owner, the Engineer and his consultants, each officer employees as additional insureds.

This policy shall also contain coverage for the Employees Liability Act.

In addition, if applicable to the project, the Contractor shall purchase and maintain appropriate insurance for maritime employers subject to federal jurisdiction, including both the Federal Longshoremen and Harborworkers Compensation Act and the Federal Maritime Employer's Liability Law (Jones Act). Such insurance shall also name the Owner, the Engineer and his consultants and each of their officers, agents and employees.

B. Comprehensive General Liability Insurance - Before commencement of the work, the Contractor shall submit written evidence that he and all his subcontractors have obtained for the period of the contract full Comprehensive General Liability Insurance coverage. This coverage will provide for both bodily injury and property damage, including loss of use resulting therefrom. The bodily injury portion will include coverage for injury, sickness or disease, and death, arising directly or indirectly out of, or in connection with, the performance of work under the contract and will provide for a limit of not less than 500,000 dollars for all damages arising out of bodily injury, sickness, disease or death of one person, and a total limit of 1,000,000 dollars for damages arising out of bodily injury, sickness, disease or death of two or more persons in any one occurrence.

The property damage portion will provide for a limit of not less than 500,000 dollars for all damages arising out of injury to or destruction of property of others arising directly or indirectly out of or in connection with the performance of work under this contract and in any one occurrence including explosion, collapse and underground exposure.

The Comprehensive General Liability Insurance will include as Additional Named Insureds: The Owner; the Engineer and his consultants; and each of their officer, agents and employees.

C. Builder's Risk "All Risk" Insurance - Before commencement of the work, the Contractor will submit written evidence that he has obtained for the period of this contract, Builder's Risk "All Risk" Completed Value Insurance coverage (including earthquake but not including flood or landslide unless specifically specified for a given project) upon the entire project which is the subject of this



contract and including completed work and work in progress. Such insurance shall include as Additional Named Insureds: The Owners; the Engineer and his consultants; and each of their officers, agents and employees; and any other persons with an insurable interest designated by the Owner as Additional Named Insureds.

Such insurance may have a deductible clause but not to exceed 5,000 dollars. (The deductible on earthquake, flood and landslide may be in accordance with the underwriter's requirements.)

D. Indemnity - Included in all foregoing described insurance will be Contractural coverage sufficiently broad to insure the indemnity provision herein-after described.

The Contractor hereby agrees to hold harmless, indemnify and defend the Owner, the Owner's agents, the Architects and Engineers, and the Owner's employees while acting within the scope of their duties from any and all liability, claims, damages, and cost of defense arising out of the Contractor's or subcontractor's performance of the work described herein but not including the sole negligence of the Owner, his agents, or employees. The Contractor will take out and maintain during the life of this agreement, and require any and all subcontractors to take out and maintain, insurance providing coverage for this hold harmless and indemnity agreement in conformity with the limits required herein.

In any and all claims against the Owner or the Engineer and his consultants or any of their officers, agents or employees, by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation set forth above shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Workmen's Compensation acts, disability benefit acts or other employee benefit acts.

The obligations of the Contractor under this section shall not extend to the liability of the Engineer and his consultants and their officers, agents or employees arising from errors, omissions or deficiency in the preparation of plans and specifications for the project.

E. Waiver of Subrogation - The Contractor and his insurance carriers, hereby waive and forever relinquish, any subrogated claim against the Owner, Engineer and his consultants, each of their officers, agents and employees.

5.02 Performance Bond and Labor and Material Payment Bond - The Contractor shall, at the time of his execution of the contract, furnish a corporate surety bond and payment bond, both of which shall be in the sum equal to the contract amount. The form of the bond shall be as the Owner may describe and with a surety company authorized to do business in the state where the work is located.

5.03 Patents and Royalties - If any design, device, material or process covered by patent or copyright is used by the Contractor, he shall provide for such use by legal agreement and with the Owner of the patent or a duly authorized licensee of such Owner, and shall save harmless the Owner and the Engineer from any and all loss or expense on account thereof, including its use by the Owner.



5.04 Permits - All permits and licenses necessary for the prosecution of the work shall be secured and paid for by the Contractor. Any such fees shall be included in the contract price.

5.05 Laws to be Observed - The Contractor at all times, shall observe and comply with all Federal, State and local laws, ordinances and regulations in any manner affecting the conduct of the work, and all such orders and decrees as exist, or may be enacted by bodies or tribunals having any jurisdiction or authority over the work, and shall indemnify and save harmless the Owner and the officers, employees and agents (including the Engineer) of the Owner against any claim or liability arising from, or based on, the violation of any such law, ordinance, regulation, order of decree, whether such violations be by the Contractor, his subcontractors or his employees.

5.06 Warning Signs and Barricades - The Contractor shall provide adequate signs, barricades, lights and watchmen and take necessary precautions for the protection of the work and the safety of the public. All barricades and obstructions shall be protected at night by flashing signal lights which shall be kept on from sunset to sunrise. Barricades and warning signs shall conform to the current State Highway Traffic Control Practices so placed and illuminated at night as to shown in advance where construction, barricades, or detours exist.

5.07 Public Safety and Convenience - The Contractor shall at all times so conduct his work as to insure the least possible obstruction to traffic and inconvenience to the general public, commercial enterprises and the residents in the vicinity of the work, and to insure the protection of persons and property in a manner satisfactory to the Engineer. No road or street shall be closed to the public except with the permission of the Engineer and proper governmental authority. Fire hydrants on or adjacent to the work shall be kept accessible to firefighting equipment at all times. Temporary provisions shall be made by the Contractor to insure the use of sidewalks and driveways and the proper functioning of all gutters, sewer inlets, ditches, and other utilities which shall not be obstructed.

5.08 Crossing Utilities - When new construction crosses highways, railroads, streets, water courses or utilities under the jurisdiction of State, County, City or other public agency, public utility or private entity, the Contractor shall conform to the permits, licenses, regulations and conditions of such authorities, and these requirements are hereby made a part of this document as fully and completely as though the same were fully set forth herein.

5.09 Sanitary Provisions - The Contractor shall provide and maintain such sanitary accommodations for the use of his employees and those of his subcontractors as may be necessary to comply with the requirements and regulations of local and state departments of health and as directed by the Engineer.

5.10 Safety - The Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours.



The required and/or implied duty of the Engineer to conduct construction review of the Contractor's performance does not, and is not intended to, include review of the adequacy of the Contractor's safety measures in or near the construction site.

5.11 Safeguarding of Excavations - The Contractor shall provide such safeguards and protection around and in the vicinity of excavations he makes as may be necessary to prevent and avoid the occurrence of damage, loss, injury and death because of such excavations. Liability for such damage, loss, injury and death shall rest with the Contractor.

5.12 Use of Explosives - In the handling and storage of explosives, the Contractor shall comply with all Federal, State and local laws and the Owner and Engineer will in no way be responsible for any non-compliance therewith or for damages to property or injury to persons resulting from accidental or premature explosions. When explosives are used, particularly in proximity to buildings or other structures, care shall be taken to protect the surroundings from injury by the explosion, the resultant concussion or by flying rocks or debris. The quantities of explosives and manner of their use shall be such that adjacent property will not be damaged.

## 6.00 PROGRESS AND COMPLETION OF WORK

6.01 Notice to Proceed - Following the execution of the contract by the Owner, written Notice to Proceed with the work shall be given to the Contractor. The Contractor shall begin within ten (10) days and shall prosecute the work uninterruptedly thereafter (unless otherwise directed in writing by the Owner) with such force as to secure the completion of the work within the time slated in the Proposal.

6.02 Contract Time - The Contractor shall complete, in an acceptable manner all of the work in the time stated in the Proposal. Computation of contract time shall commence on the tenth (10th) day after the date of mailing, by regular mail, of the Notice to Proceed and every calendar day following, except as herein provided, shall be counted as a working day.

6.03 Schedule of Completion - It is required that the Contractor establish work schedules with the Owner prior to beginning construction. The Contractor shall, no later than five (5) days after the date of commencement of work, prepare and submit to the Engineer, a progress schedule in chart form, showing the order and date in which he proposes to carry on and complete the work.

If the Contractor falls behind the schedule, he shall take such steps as may be necessary to improve his progress. The Owner may require him to accelerate his operation and to submit supplementary schedules to demonstrate the manner in which the agreed upon rate of progress will be regained without additional costs to the Owner. "Failure to submit progress schedules or supplementary schedules shall be just cause to hold pay estimates".



6.04 Changes in the Work - The Owner may, as the need arises, order changes in the work through additions, deletions or modifications without invalidating the contract. Compensation and time of completion affected by the change shall be adjusted at the time of ordering such change.

6.05 New Work - New and unforeseen items of work found to be necessary and which cannot be covered by any item or combination of items for which there is a contract price shall be classed as new work. The Contractor shall do such new work and furnish such materials as may be required for the proper completion of construction of the whole work contemplated upon written order from the Owner as recommended by the Engineer. In the absence of such written order, no claim for new work shall be considered. New work shall be performed in accordance with these specifications where applicable and work not covered by the specifications or special provisions shall be done in accordance with an executed Contract Modification. New work required in an emergency to protect life and property shall be performed by the Contractor as required.

6.06 Extension of Contract Time - A delay beyond the Contractor's control occasioned by an act of God, or act or omission on the part of the Owner or by strikes, lockouts, fire, etc., will entitle the Contractor to an extension of time in which to complete the work as determined by the Engineer, provided, however, that the Contractor shall immediately give written notice to the Engineer of the cause of such delay. The Owner shall have the right to order the work to cease because of inclement weather, but in case such order is given, the Owner also will give the notice to resume work. The Contractor shall submit written requests for extension of time for approval to the Owner. The request shall include the statement that granting of the time extension will not result in any liability on the part of the Owner.

6.07 Use of Completed Portions - The Owner shall have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding that the time for completing the entire work or such portions may not be deemed an acceptance of any work not completed in accordance with the Contract Documents. If such prior use increases the cost of or delays the completion of uncompleted work or causes refinishing of completed work, the Contractor shall be entitled to such extra compensation, or extension of time or both, as the Engineer may determine.

6.08 Liquidated Damages - If the Contractor shall fail to complete the work within the specified time in the contract, the Contractor shall reimburse the Owner for additional costs such as the additional expense of engineering services due to such delay plus interest on the invested capital for each day of delay. It is agreed that the amount of such additional expense and damage incurred by reason of the Contractor's failure to complete the work is the per diem rate stipulated in the special provisions for each and every day, such work remains incompleted after the initial date of completion. It is expressly understood and agreed that this amount is not to be considered in the nature of a penalty but as liquidated damages which have accrued against the Contractor and the Owner is authorized to deduct the amount of such damages from any monies due the Contractor for work



performed or material furnished under this contract. In the event that the monies payable are not sufficient to compensate the Owner fully because of such delay, then the Contractor promises and agrees to pay the balance of said damages to the Owner promptly upon demand.

## 7.00 MEASUREMENT AND PAYMENT

7.01 Detailed Breakdown of Contract Amount - Except in cases where unit prices form the basis for payment under the contract, the Contractor shall within ten (10) days of receipt of Notice to Proceed, submit a complete breakdown of the contract amount showing the value assigned to each part of the work. Upon approval of the breakdown of the contract amount by the Engineer, it shall be used as the basis for all requests for payment.

7.02 Requests for Payment - The Contractor may submit periodically, but not more than once each month, a request for payment for work done and materials delivered and stored on the site. The Contractor shall furnish the Engineer all reasonable facilities required for obtaining the necessary information relative to the progress and execution of the work. Each request for payment shall be computed from the work completed on all items listed in the Detailed Breakdown of Contract Amount, less 5 percent until final completion and acceptance of the work, and less previous payments. Where unit prices are specified, the request for payment shall be based on the quantities completed.

A. When payment for material on hand is requested, it shall be followed with proof of payment to the supplier. The Contractor shall provide an affidavit from the supplier acknowledging payment and transfer of ownership to the Owner. This shall be done prior to the next monthly pay request.

7.03 Engineer's Action on a Request for Payment - Within ten (10) days of submission of any request for payment by the Contractor, the Engineer shall:

A. Approve the request for payment as submitted.

B. Approve such other amount as he shall decide is due the Contractor, informing the Contractor in writing of his reasons for approving the amended amount.

C. Withhold the request for payment, informing the Contractor in writing of his reasons for withholding it.

7.04 Owner's Action on an Approved Request for Payment - Within forty-five (45) days from the date of approval of a request for payment by the Engineer, the Owner shall:

A. Pay the request for payment as approved.

B. Pay such other amount in accordance with Paragraph 7.05 as he shall decide is due the Contractor, informing the Contractor and the Engineer in writing of his reasons for paying the amended amount.



C. Withhold payment in accordance with Paragraph 7.05 informing the Contractor and the Engineer of his reasons for withholding payment.

7.05 Owner's Right to Withhold Payment of an Approved Request for Payment - The Owner may withhold payment in whole or in part on an approved request for payment to the extent necessary to protect himself from loss on account of any of the following causes discovered subsequent to approval of a request for payment by the Engineer:

- A. Defective work.
- B. Evidence indicating the probable filing of claims by other parties against the Contractor.
- C. Failure of the Contractor to make payments to subcontractors, material suppliers or labor.
- D. Damage to another contractor.

7.06 Interest on Unpaid Requests for Payment - Should the Owner fail to pay an approved request for payment within forty-five (45) days from the date of approval by the Engineer, and should he fail to inform the Engineer and the Contractor in writing of his reasons for withholding payment, the Owner shall pay the Contractor interest on the amount of the request for payment at the rate of eight percent (8%) per annum until payment is made.

7.07 Responsibility of the Contractor - Unless specifically noted otherwise, the Contractor shall furnish all materials and services and perform all the work described by the Contract Documents or shall have all materials and services furnished and all the work performed at his expense. It shall also be the Contractor's responsibility to pay for:

- A. Replacement of survey bench marks, reference points and stakes provided by the Owner under Paragraph 2.14.
- B. Lands by Contractor provided in accordance with Paragraph 3.08.
- C. Insurance obtained in accordance with Paragraph 5.00.
- D. Performance bond obtained in accordance with Paragraph 5.02.
- E. Royalties required under Paragraph 5.03.
- F. Permits and licenses required of the Contractor and all subcontractors.

7.08 Payment for Uncorrected Work - Should the Engineer direct the Contractor not to correct work that has been damaged or that was not performed in accordance with the Contract Documents, an equitable deduction from the contract amount shall be made to compensate the Owner for the uncorrected work.



7.09 Payment for Rejected Work and Materials - The removal of work and materials rejected under Paragraph 4.06 and the re-execution of acceptable work by the Contractor shall be at the expense of the Contractor and he shall pay the cost of replacing the work of other Contractors destroyed or damaged by the removal of the rejected work or materials and the subsequent replacement of acceptable work. Where defective work is not discovered until after payment has been made to the Contractor for said work, the Owner shall subtract any sums previously paid for such work from the next payment certificate.

The cost of work done by others shall be deducted from the next request for payment.

7.10 Payments for Extra Work - Payment for authorized extra work shall be on the Engineer's standard extra work order form. Such payments must be authorized in writing by the Engineer and the Owner prior to commencement of the extra work. No payment shall be valid unless so made, except in emergency endangering life or property. The Owner's order for extra work shall specify any extension of the contract time and one of the following methods of payment:

A. Unit prices or combinations of unit prices which formed the basis of the original contract.

B. A lump sum based on the Contractor's estimate, accepted by the Owner, and approved by the Engineer.

C. Actual cost plus a surcharge and/or a percentage allowance.

The payment to the Contractor under this method shall be limited to the following:

(1) Payment for labor (work performed by employees of the Contractor who operate equipment and tools directly involved in extra work) shall be limited to the following:

a. The basic wage rate paid for labor currently employed on the project.

b. PLUS the surcharge actually paid for labor in addition to the basic wage rate to cover the cost of industrial accident insurance, unemployment and social security contributions, health and welfare benefits, pensions, and/or any other benefits required by applicable collective bargaining agreements or statutory laws.

c. PLUS an allowance, equal to 15 percent of the sum of a. and b. The percentage allowances made to the Contractor will be understood to be reimbursement and compensation for all superintendence, use of tools and small equipment, overhead expense, bond cost, insurance premiums, profits, indirect costs and losses of all kinds, and all other items of cost not specifically designated herein as items for which payment is to be made, whether the services, costs and other items involved are furnished or incurred by the Contractor or by the subcontractor. No other reimbursement, compensation, or payment will be made for any such services, costs or other items.



d. The time for which payment is made shall be the number of hours worked productively on extra work operations.

(2) Payment for materials (which are actually incorporated into the project as elements of construction) shall be actual cost, including freight and express, plus a 10 percent allowance.

(3) Payment for construction equipment and power tools having a value in excess of \$100.00:

a. Owned or rented by the Contractor and within the project limits when the need for extra work becomes apparent, shall be a maximum of the Oregon State Highway Division published rental rates and conditions therein.

b. Owned or rented by the Contractor but outside the project limits when the need for extra work becomes apparent, shall be a maximum of the Oregon State Highway Division published rental rates and conditions therein.

Individual pieces of equipment having a value of one-hundred dollars (\$100.00) or less will be considered to be tools or small equipment, and no rental will be allowed on such.

7.11 Payment for Work Suspended by the Owner - If the work or any part thereof shall be suspended by the Owner and abandoned by the Contractor as provided in Paragraph 3.13, the Contractor will then be entitled to payment for all work done on the portions so abandoned.

7.12 Payment for Work by the Owner - The cost of the work performed by the Owner in removing construction equipment, tools and supplies in accordance with Paragraph 3.11 and in correcting deficiencies in accordance with Paragraph 3.13 shall be paid by the Contractor.

7.13 Payment for Work by the Owner Following His Termination of the Contract - Upon termination of the contract by the Owner in accordance with Paragraph 3.14, no further payments shall be due the Contractor until the work is completed. If the unpaid balance of the contract amount shall exceed the cost of completing the work including all overhead costs, the excess shall be paid to the Contractor. If the cost of completing the work shall exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The cost incurred by the Owner, as herein provided, and the damage incurred through the Contractor's default, shall be certified by the Owner, and approved by the Engineer.

7.14 Payment for Work Terminated by the Contractor - Upon suspension of the work or termination of the contract by the Contractor in accordance with Paragraph 3.16, the Contractor shall recover payment from the Owner for the work performed.

7.15 Payment for Samples and Testing of Materials - Samples in accordance with Paragraph 2.10 shall be furnished by the Contractor at his expense.



Testing of samples and materials furnished in accordance with Paragraph 2.10 shall be paid for by the Owner.

7.16 Release of Liens - The Contractor shall deliver to the Owner a complete release of all liens arising out of this contract before the retained percentage or before the final request for payment is paid. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner such amounts as the Owner may have been compelled to pay in discharging such liens including all costs.

7.17 Acceptance and Final Payment - When the Contractor has completed the work in accordance with their terms of the Contract Documents, the Engineer shall certify his acceptance to the Owner and his approval of the Contractor's final request for payment, which shall be the contract amount plus all approved additions less all approved deductions and less previous payments made. The Contractor shall furnish written evidence that he has fully paid all debts for labor, materials, and equipment incurred in connection with the work, following which the Owner shall accept the work and release the Contractor except as to the conditions of the performance bond, any legal rights of the Owner, required guarantees, and correction of faulty work after final payment and shall authorize payment of the Contractor's final request for payment.

7.18 Termination of Contractor's Responsibility - The contract will be considered complete when all work has been finished, the final inspection made by the Engineer, and the project accepted in writing by the Owner. The Contractor's responsibility shall then cease, except as set forth in his performance bond, as required by the guaranty period in accordance with Paragraph 4.10 and as provided in Paragraph 7.19.

7.19 Correction of Faulty Work after Final Payment - The approval of the final request for payment by the Engineer and the making of the final payment by the Owner to the Contractor shall not relieve the Contractor of responsibility for faulty materials or workmanship. The Owner shall promptly give notice of faulty materials or workmanship and the Contractor shall promptly replace any such defects discovered within one year from the date of written acceptance of the work. The Engineer shall decide all questions arising under this paragraph, and all such decisions shall be subject to arbitration.



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SPECIAL TECHNICAL SPECIFICATIONS  
FOR  
SEWERAGE SYSTEM IMPROVEMENTS  
CITY OF NEWBERG, OREGON

1.00 GENERAL

These specifications supplement and amplify certain sections of the "Standard Technical Specifications for Sewers and Drains" in the specifications, and the detailed plans for the project. The "Standard Technical Specifications for Sewers and Drains" shall apply except as supplemented herein.

2.00 EASEMENTS

The Owner will provide the necessary right-of-way or easements for the work. At present, the Owner is negotiating for the necessary easements and the Contractor shall inform himself in advance of the date when bids are to be received in regards to the status of these easements. The Contractor's attention is directed to the "Standard Technical Specifications for Sewers and Drains", Paragraphs 6.00 "Rights-of-Way" and 7.00, "Landscaped Areas", "Special Provisions" paragraph 11.00 "Access".

3.00 SURPLUS EXCAVATED MATERIAL

Any surplus excavated material shall be disposed of by the Contractor, first, on the land from which it was excavated provided the Owner of the land so requests and, second, at locations for which the Contractor shall make his own arrangements all at no additional cost to the Owner.

4.00 EXISTING UTILITIES

Existing utilities that may affect the project are shown on the plans to the best of the Engineer's knowledge; however, it is the Contractor's responsibility to verify the existence of these or any other utilities and to determine their exact location and depth. Whenever a utility is to be crossed, the Contractor shall contact the utility before proceeding. The Contractor's attention is directed to the "Standard Technical Specifications for Sewers and Drains", Paragraph 4.00 "Existing Utilities, Interferences and Obstructions".



The following companies have facilities serving the project area

| <u>Type of Facility</u> | <u>Responsible Authority</u>                 | <u>Telephone Number</u> |
|-------------------------|----------------------------------------------|-------------------------|
| Electric                | - Portland General Electric Co. - Lee Hall   | - 643-5454              |
| Telephone               | - General Telephone Co. - Clint Hewitt       | - 620-0302              |
| Natural Gas             | - Northwest Natural Gas Co. - Scott Palmer   | - 226-4211              |
| Water & Sewer           | - City of Newberg - Bob Sanders              | - 538-9421              |
| State Highway           | - Oregon State Highway Division - Bob Doran  | - 378-2630              |
| Hoover Park Facilities  | - Chehalem Parks & Rec. Dist. - Jeri Jackson | - 538-7454              |

#### 5.00 TRAVELLED ROADS

Certain areas in the project are served by only one access road. In these areas special procedures will be required to provide emergency access for fire and police protection. At the close of each shift or period of operation the street shall be back-filled to a passable condition or satisfactory detours provided. The Contractor's attention is directed to the "Standard Technical Specifications", Paragraph 5.00, "Trench Maintenance and Protection" for those requirements.

#### 6.00 EXISTING SURVEY MONUMENTS

Existing survey monuments and corner pins and other property markers may be disturbed by the Contractor during construction operations. The Contractor shall retain at his own expense a licensed land surveyor to (1) reference any markers that could possibly be disturbed and (2) reset such markers. The cost of the above work shall be absorbed in the unit prices of the proposal.

#### 7.00 CONSTRUCTION WITHIN OREGON STATE HIGHWAY DIVISION (OSHD) RIGHT-OF-WAY

7.01 Permit Requirements and Provisions - The OSHD has issued two permits to the City for construction within State right-of-way (Highway 240 & 99). The Contractor shall comply with all their provisions including bond and insurance certificate requirements.

7.02 Bored or Jacked Highway Crossing - The crossing on Highway 99 shall be bored or jacked. The following provisions apply to this crossing and supplement Section 10.00 of the Standard Technical Specifications for Sewers and Drains.

A. Casing Pipe - The casing pipe shall be installed



on the same slope as the carrier pipe in a manner approved by the Engineer and shall be installed at such grades as to ensure that the carrier pipe shall meet the precise slope and grade required.

The casing size shown on the plans is minimum and may be larger if permitted by the Engineer. Sections of casing shall be joined by full penetration butt welds. It shall be the Contractor's responsibility to provide joints capable of withstanding jacking stresses. After installation of the carrier pipe, the ends of the casing pipe shall be sealed with a full grout seal between the casing pipe and carrier pipe leaving one drainage hole at the bottom of the lower end of the casing.

Boring or jacking pits shall be kept to a minimum size. The Contractor shall fill any over excavation with granular material at no additional cost to the City.

As the various portions of the subsurface are penetrated during the work, the Contractor shall promptly, and before such conditions are disturbed, notify the engineer in writing if the actual subsurface conditions differ substantially from those generally recognized as inherent in the work of this nature. For this contract, consideration shall only be given to physical obstructions which fully stop the progress of the casing installation such as buried stumps, trees, wooden piles or large rocks. Slow progress or changes in soil types shall not be given consideration. The Engineer shall promptly investigate the conditions and if he finds that such conditions do so exist, will submit to the Owner and the Contractor a plan or description of the modifications which he proposes should be made. The resulting increase or decrease in the contract prices shall be adjusted by the issuance of a change order in accordance with other provisions of these specifications.

- B. Carrier Pipe - The carrier pipe shall be installed with spacer blocks banded to it to hold it in the casing pipe and to prevent flotation. The blocks shall be pressure treated Douglas Fir, trimmed to fit in the casing. Pressure treatment shall be with pentachlorophenol solution in heavy petroleum solvent (Fed Spec 570) and shall leave a minimum net retention of 0.5 lbs/cu.ft. of preservative.



- C. Measurement and Payment - The crossing shall be measured by the linear foot of casing installed and paid for at the bid price per linear foot of casing required. Payment shall be full compensation for everything involved in installing the casing and carrier pipe under the highway including excavation and backfill for the jacking pit outside the normal limits of pipe trench, furnishing and installing the pipe and casing, and any costs made necessary in order to comply with Oregon State Highway Division requirements.

8.00 CREEK CROSSINGS

- 8.01 Sewer Crossings of Natural Channels - The sewer line shall be encased in concrete and the trenchline shall be protected with pit run rock between the stations as shown on the detail for "Creek Crossing of Natural Channels". If an existing creek bank proves to be steeper than a slope of 1-1/2 H: 1V, then the Contractor is to use concrete to set and hold the rocks in place.

After each crossing has been completed, the creek channel shall be reshaped to conform to the original cross section.

- 8.02 Sewer Crossing of Rock Lined Channels - The contractor shall have his option as to the method he uses for sewer crossing under the rock and mortar lined creek channel within Herbert Hoover Park. He may either jack the sewer pipe under the channel or he may elect to cut and remove a portion of the rock lining, if necessary, lay the pipe and encase it in concrete and then replace the rock and mortar lining to match the existing.

- 8.03 Payment - Payment for all work and materials (including pipe of material and class used for adjoining sewer line) involved in constructing each creek crossing between the stations as listed on the detail in the plans shall be included in the individual lump sum bids as listed in the Proposal for Creek Crossings No. 1 through 8. If the limits of the crossing are increased or decreased by the



Engineer for any reason during construction, the lump sum payment for the creek crossing shall be adjusted accordingly on the basis of the cost per linear foot obtained by dividing the lump sum bid by the respective length of the crossing.

9.00 MANHOLES AND SEWERS TO BE ABANDONED

9.01 Manholes - As noted on the plans, certain existing manholes are to be abandoned once the new sewers are in service. For these manholes: All pipe openings shall be sealed with 6" of concrete; the manhole itself shall be backfilled with granular material, the casting and manhole cone shall be removed to a depth of approx. 3.0 ft. below finished grade and the surfacing material shall be repaired or replaced. Payment for all work and materials involved in abandoning each manhole shall be included in the unit price bid item listed in the Proposal as "Plug, Fill and Abandon Existing Manholes". Existing castings which are removed shall become the property of the Owner and shall be delivered to the City shops by the Contractor.

9.02 Sewers - As noted on the plans, certain portions of the existing sewers are to be abandoned in place. As noted, the ends of some sections of sewers to be abandoned shall be plugged with concrete for a minimum thickness of 6-inches.

Payment for all work and materials involved in constructing each concrete plug shall be included in the unit price bid item listed in the Proposal as "Concrete Plugs".

10.00 CONNECTIONS TO EXISTING FACILITIES

10.01 Connections to Existing Manholes - At several locations on the plans it has been noted that the Contractor is to connect new sewer lines to existing manholes. The Contractor shall be responsible for maintaining sewage flows through or past these manholes while the construction work is being done. The Contractor shall make a neat clean hole in the side of the existing manhole no more than 4-inches larger than the outside diameter of the new line to be installed. Once the new line is in place, the Contractor shall grout the connection all around to make it watertight. As a part of the connection work, the Contractor shall reshape the manhole channels as required.



The Contractor is to be careful that his construction methods do not cause any more damage to the manholes than is absolutely necessary for connection of the new lines. Any manhole cracks or leaks caused by the construction shall be repaired by the Contractor and shall be paid for as a part of this item.

Payment for all work and materials required to construct each of these connections shall be included in the respective lump sum bid prices as listed in the Proposal for "Connections of New Lines to Existing Manholes, Complete".

- 10.02 Connection to Wynooski Pump Station - The connection procedure shall be the same as was specified for connection to manholes. The Contractor shall be careful to assure that no concrete or other materials are allowed to fall into the bottom of the pump station wet well during construction of this sewer connection. The Contractor shall clean out the bottom of the wet well once construction is complete.

Payment for all work and materials required to construct this sewer connection shall be included in the lump sum bid price as listed in the Proposal for "Connection of Line "C" to Wynooski Pump Station, Complete".

11.00 REPAIR OF MH 6-20.1

On Sheet No. 5 of the plans, it is noted that the Contractor shall repair a hole in the storm drain line which runs through MH 6-20.1. The hole is approximately 10"x12" and has been made in the top of a 10-inch diameter storm drain which had been laid through the sanitary sewer manhole's base. The Contractor is to form a patch over this hole which will prevent the storm drain water from entering the manhole but which will not in any way block the storm drain line.

Payment for all work and materials required to construct this patch shall be included in the lump sum bid price as listed in the Proposal for "Patch Storm Pipe in MH 6-20.1, Complete".



12.00      WATERTIGHT MANHOLE FRAME AND LID

- 12.01 New Manholes - New manholes which are designated to be watertight shall have watertight frames and covers Model No. 101W by Valley Iron and Steel Co., Eugene, OR., or approved equal.

Payment for all additional work and materials required to supply and install watertight frames and lids in lieu of standard frames and lids on new manholes shall be included in the unit price as listed in the Proposal for "Additional Cost for Watertight Manhole Frame and Cover".

- 12.02 Existing Manholes - Certain existing manholes are designated on the plans to have their existing frames and covers removed and replaced with new watertight frames and covers. The new frames and covers shall be as specified above in Paragraph 12.01. Existing castings which are removed shall remain the property of the Owner and shall be delivered to the City shops by the Contractor.

Payment for all work and materials required to supply the new frames and covers and to replace the existing castings with the new castings shall be included in the unit price as listed in the Proposal for "Replacement of Existing Manhole Frames and Covers With New Watertight Frames and Covers".

13.00      SERVICE LATERALS

At several points on the plans it is noted that the Contractor shall reconnect existing service laterals to the new sewer mains. This may be done by means of installing a Tee fitting in the new line or by tapping the new line with an approved tapping system such as the Fowler tap system. Regardless of the method used, payment for all work and materials required to connect the service laterals shall be included in the unit price bid as listed in the Proposal for "Furnish and Install Tees or Taps For Service Lines, Complete". Plugging of the abandoned ends of the service lines leading to the existing mains with concrete shall be considered incidental to this item.



14.00 T.V. INSPECTION OF NEW SEWERS

The Contractor's attention is directed to the "Standard Technical Specifications for Sewers and Drains", paragraph 18.05 "T.V. Inspection". The City intends to T.V. all of the new sewers as a prerequisite to accepting the construction work. Due to the difficulty of obtaining access to portions of this job, it shall be the Contractor's responsibility to notify the City before access is cut to any portion of the sewer job. At least one week notice shall be given in order that the City might schedule it's T.V. crew to inspect that portion of the job.

15.00 PAVEMENT AND GRAVEL SURFACE REPLACEMENT

The location and type of new street surfacing is noted on the plans. Pavement and gravel surfaces shall be cut only to the minimum necessary for installation of the pipe.

Asphalt replacement requirements shall be as follows:

Oregon State Highway Right-of-Way - 4" A.C.  
All Other Areas - 3" A.C.

Sub-base requirements for asphalt pavement shall be as follows:

| <u>Base Rock</u> | <u>3" A.C.</u> | <u>4" A.C.</u> |
|------------------|----------------|----------------|
| 2-1/2" - 0"      | 0"             | 12"            |
| 3/4" - 0"        | 12"            | 2"             |

Existing gravel surfacing on Line "B" shall be replaced with 6-inches of 1-1/2"-0" crushed rock to be oiled to match the existing surfacing.

All sub-base and gravel surfacing shall be compacted to 95% of AASHTO-T-99.

16.00 CURB PLACEMENT

Payment for curb replacement shall be by the lineal foot unit. The number of units shall be determined by measuring the length which falls within a trench width, equal to the inside diameter of the pipe plus 2'-6", when measured on each side of the pipe centerline.



17.00      WORK IN HERBERT HOOVER PARK

As much as possible, the Contractor shall confine his work activities in Herbert Hoover Park to a band approx. 60-feet wide, 30-feet either side of the new sewer alignment. Access through the park from either River St. or Second St. shall be subject to Chehalem Park and Recreation District approval. Lawn areas that are torn up or tire rutted by construction equipment shall be leveled, compacted, fertilized and reseeded to match the existing grass types and ground grades. Areas showing thin regrowth shall be reseeded as necessary to establish a heavy, even stand of grass. Payment for this work shall be incidental to the other unit prices of this contract. No extra payment will be made for repair of lawn areas. The Contractor shall coordinate with the Park District so that those areas of the Park which are not directly involved in the construction work can be regularly watered. The Contractor shall repair any damage caused to the irrigation system within 24 hours. See "Standard Technical Specifications for Sewers and Drains", Paragraph 7.00 "Landscaped Areas" for further information.

18.00      ALTERATIONS TO THE STANDARD TECHNICAL SPECIFICATIONS  
FOR SEWERS AND DRAINS

Modify the above specifications as follows:

- A. Paragraph 11.04, Section A, "Base Sections", page SW-8.

Precast manhole bases will not be allowed.

- B. Paragraph 11.04, Section C, "Precast Manhole Sections", page SW-9.

Precast concrete manhole sections which incorporate an inside drop such as the "Oregon Drop" type as manufactured by McCormack Pipe Co., Hillsboro, OR., or approved equal may be used where drop manholes are called for.

- C. Paragraph 11.04, Section D, "Steps" page SW-9.

All manhole steps shall be hot dipped galvanized per this section.

- D. Paragraph 11.07, "Backfill Material, Granular", page SW-10.

All granular backfill material on Oregon State Highway right-of-way shall be 3/4"-0" crushed rock only.

All other granular backfill material may be river run gravel in accordance with this specification.



- E. Paragraph 14.00, Section E, "Class D Backfill", page SW-17.

Water settling will not be allowed.

- F. Paragraph 15.04, "Concrete Base", page SW-18.

Precast manhole bases will not be allowed.

- G. Paragraph 19.06, "Surfacing", page SW-28.

Pay width shall be pipe inside diameter plus 2.5 ft.

19.00 HESS CREEK PUMP STATION MODIFICATIONS

- 19.01 Scope - The Contractor shall accomplish all modifications to the Hess Creek Pump Station as shown on the plans and as described below. These specifications call out requirements for the major pieces of equipment and materials. It shall be the Contractor's responsibility to provide and install all miscellaneous materials required to make the modifications functional.

19.02 Replacement of Flow Control Valve and Actuator

- A. General - The existing flow control valve shall be removed and a new flow control valve unit, as specified below, shall be installed. Fabrication of a length of pipe is necessary due to a difference in overall length of existing and new valve. Such fabricated pipe shall be as shown on the plans.
- B. Valve & Actuator - The Flow Control Valve unit shall be comprised of 1.) a 6" diameter, V-Port ball valve with standard bore, carbon steel body and stainless steel ball and trim and 2.) Pneumatic Actuator with a double acting cylinder set up for air-to-open (valve to close at minimum signal) operation on a 3 to 15 psi input signal. The control unit shall be Dezurik model number 0600, fig. 552, F, 4, L, MWG5C6, P11 or approved equal.
- C. Installation - The flow control valve shall be installed as shown on the plans and in such a manner to insure a leak tight installation. The valve shall be installed with the seat on the



pump side as shown on the plans. The valve positioner shall be set using the adjustable open position stop, to maintain a minimum valve opening of twenty-two percent (22%).

19.03 Replacement of Pneumatic Controller

- A. General - The existing "Bristol" pneumatic controller shall be removed from the existing control panel and the new controller unit shall be installed in its place in accordance with the manufacturer's recommendations. Any scratches or abrasions occurring to the control cabinet during removal or installation will be touched up in a neat, professional manner per the finish schedule in paragraph 20.05, F of this specification.
- B. Pneumatic Controller - The Pneumatic Controller shall be an indicating, proportional controller with direct action, gain control range of 50-0.25, output signal of 3-15 psi, non-resetting design and a 0-150 inch measuring element that is accurate within  $\pm 0.5\%$  of the span distance. The unit shall be capable of operating off of a 20 psig air supply and consume no more than 0.1 scfm at balance. The controller shall be Bristol model 624-II as manufactured by ACCO, Inc., or approved equal.
- C. Installation - The new controller shall be installed in place of the existing controller in the pump station control panel. The gain shall be set at 1.0 following installation. The controller output shall be connected to the valve actuator with standard instrument air tubing in a neat, leak tight manner as shown on the control schematic.

19.04 Pneumatic Instrumentation

- A. General - The instrumentation connections shall be made with standard instrument air tubing installed in a neat, leak tight manner as shown on the control schematic, with the exception of the high pressure air connections which shall be by copper tubing installed in a neat, leak tight manner, as shown on the control schematic.



- B. Pressure Switches - Existing pump control pressure switches shall be reused and reset as herein noted. A low air pressure alarm switch shall be installed in the high pressure air supply and set to alarm at 50 psi. This switch will be wired to telemetry by others.
- C. Pressure Regulating Valve with Air Filter - A new pressure regulating valve with air filter and supply gauge shall be supplied and installed in the air supply line as shown on the control diagram in the plans. The valve shall be preset to allow for an output pressure of 20 psi. The valve, filter and gauge shall be supplied by the same manufacturer as the pneumatic controller and shall be compatible for use with the specific controller used.
- D. Air Flow Regulator - An existing air flow regulator and valve shall be reinstalled as shown on the control diagram.
- E. Pressure Gauges and Valves - Existing pressure gauges and pneumatic instrument piping fittings and valves will be reused where practicle.
- F. Air Compressor - The existing air compressor will be reused. The air compressor pressure control switch is to be reset as follows:
  - LOW PRESSURE    ON - 60 psi
  - HIGH PRESSURE OFF - 80 psi
- G. Control Elevation Settings - The elevations for control settings shall be as shown on the plans. These settings are shown for both pump control switches and flow control valve.

19.05 Extension of Access Tube

- A. General - The pump station access and attached accessories are to be extended, as shown on the plans, a total of four feet (4').
- B. Quality Assurance for Extension of Tube
  - 1. Codes and Standards
    - a. Structural Steel shall conform to ASTM A7, A113 or A283.



b. AWS D5.2 Welding Code.

c. AWWA D100 Standards for ....stand  
pipes.....

2. Qualifications for Welding Work - Qualify welding processes and welding operators in accordance with the AWS "Standard Qualification Procedure".

Provide certification that welders to be employed in the work have satisfactorily passed AWS qualification tests within the previous 12 months.

If recertification of welders is required, retesting will be the Contractor's responsibility.

3. Metal Surfaces - For the fabrication of miscellaneous metal work items which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness. Remove such blemishes by grinding or by welding and grinding prior to cleaning, treating and application of surface finishes including zinc coatings.

4. Cutting, Fitting and Placement

a. Perform cutting, drilling and fitting required for the installation of the miscellaneous metal items. Set the work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels.

b. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication and are intended for bolted or screwed field connections.



5. Field Welding - Comply with AWS Code for the procedures of manual shielding metal-arc welding, the appearance and quality of welds made and the methods used in correcting welding work.
  6. Touch-Up Painting - Immediately after erection, clean field welds, bolted connections and abraded areas of shop paint, rust and scale and paint all exposed areas as per the finish schedule detailed elsewhere in these specifications.
  7. Provide protective coating between differing metals, particularly aluminum and steel, wherever they come in contact with each other, to effectively eliminate galvanic action and deterioration of one or both metals.
- C. Extension of Related Items - All items attached to and affected by the access tube extension shall also be extended by the same amount (four feet). These items include but are not limited to:
- 3/4 inch conduit for alarm system.
  - 1½ inch conduit for blower switch and duplex box.
  - Blower vent piping.
  - Interior access ladder.
- D. Electrical Connections - All electrical wiring affected by the access tube extension shall be extended with equivalent materials to those which are existing. Splices shall be made only where allowed by State and local electrical codes. Splices made shall be made in a manner approved by State and local electrical codes.
- All external conduit connections and boxes shall be made watertight.
- E. Ladders - The internal ladder shall be extended using a ladder of similar construction and attached in a similar manner as the existing ladder.



- F. Finishes - All finished areas on the interior of the pump station that have been damaged during construction and all new exposed areas shall be coated with a minimum of 4 mils of "Paceco" nylon formulated coating #902 white in accordance with manufacturer's recommendations.

All exposed areas on the exterior of the pump station shall be coated with a minimum of 16 mils of Inertol Poxitar black in accordance with manufacturer's recommendations.

- 19.06 Access Platform - The Contractor shall construct a steel access platform at the Hess Creek Pump Station as shown on the plans. Quality Assurance for this construction shall be as described in Paragraph 19.05 above. All platform materials shall be hot dip galvanized and any abraded or exposed areas on the finished unit shall be touch-up painted.
- 19.07 Payment - Payment for all work and materials required to construct the Hess Creek Pump Station Modifications shall be included in the lump sum bid price as listed in the Proposal for "Hess Creek Pump Station Modifications, Complete".

20.00 MANHOLES TO BE SEALED

As noted on the plans, certain existing manholes on Line "C" are to have their existing manhole lids drilled, tapped and bolted to the existing frames. The Contractor shall install two- $\frac{1}{2}$ " x  $1\frac{1}{2}$ " cadmium plated hexagon head bolts in each existing manhole casting. The bolts shall be on opposite sides of the cover. Payment for all work and materials involved in bolting existing manhole lids down shall be included in the unit price bid items listed in the Proposal as "Drill and Bolt Down Existing Manhole Lids" per each lid so bolted.

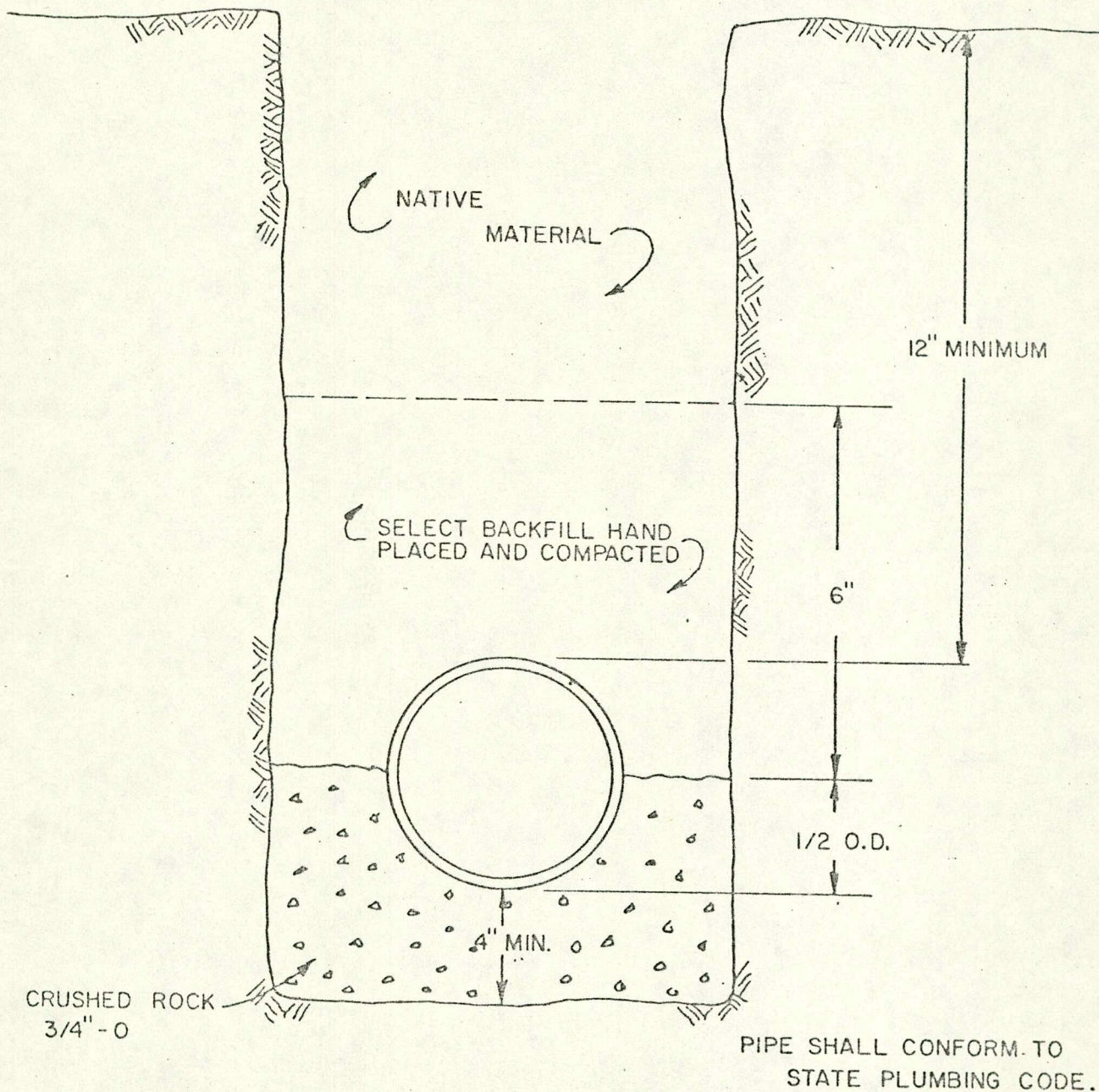
21.00 STANDARD DETAILS

The following City of Newberg Standard Details shall be used:

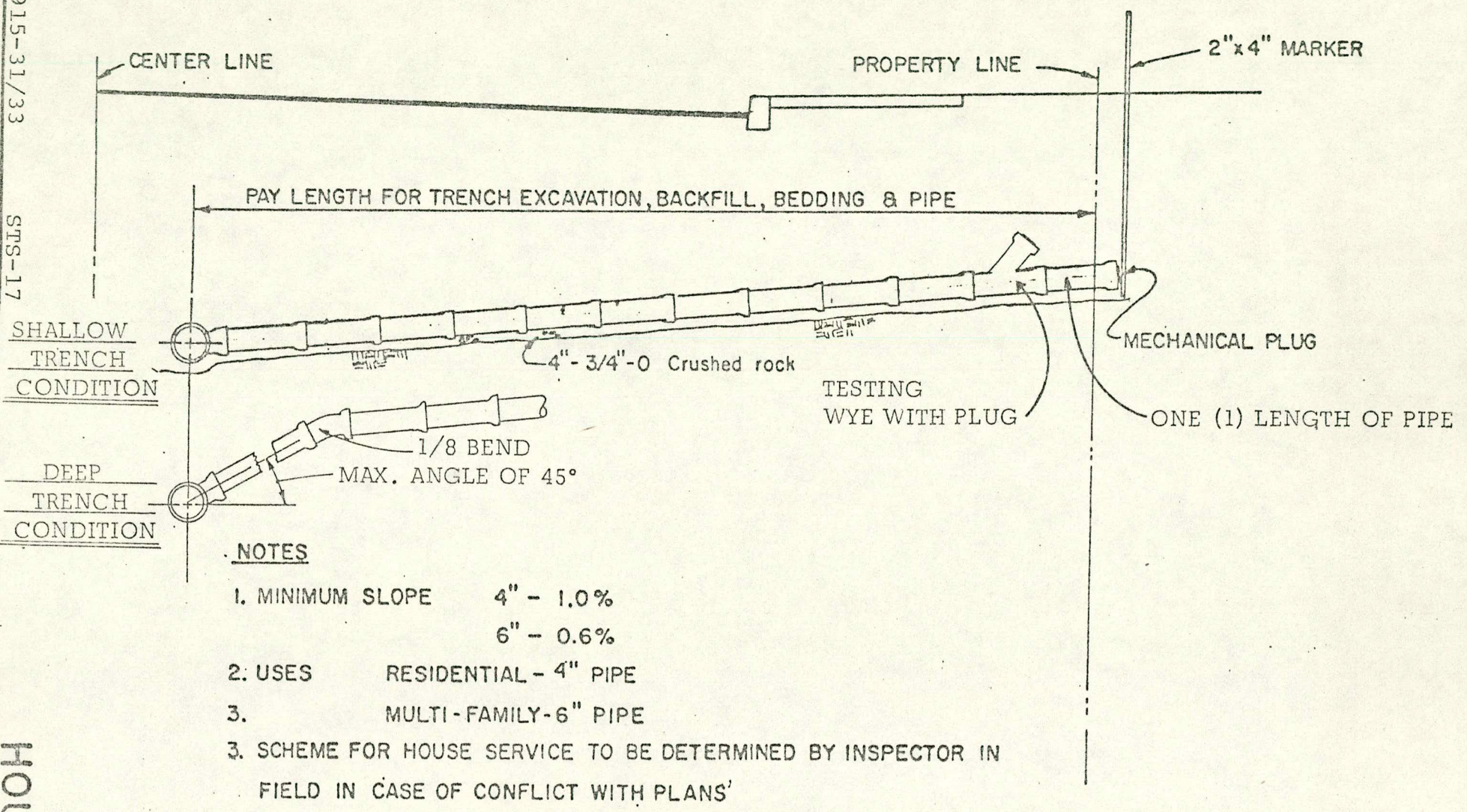
- A. Standard Plan S-3, "House Laterals".
- B. Standard Plan S-4A, "House Service".
- C. Standard Plan S-5, "Manhole Frame & Cover".
- D. Standard Plan ST-2, "Curb and Gutter".



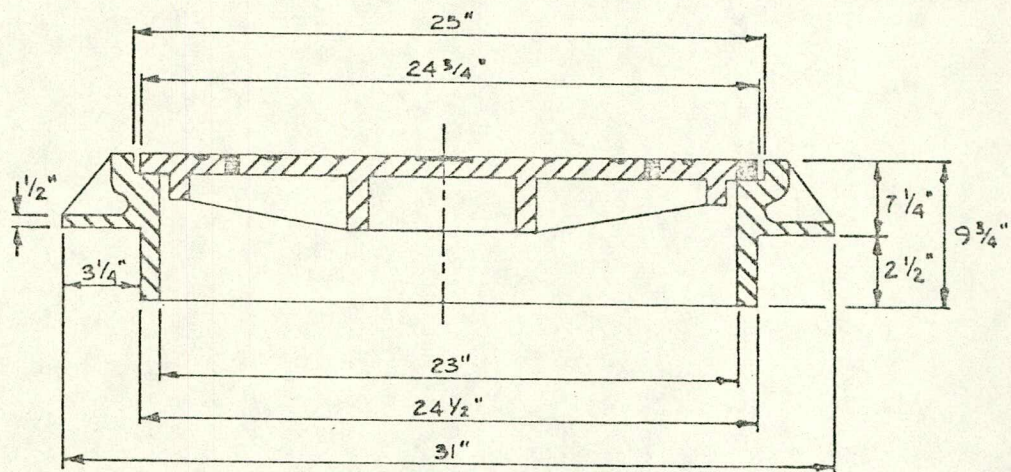
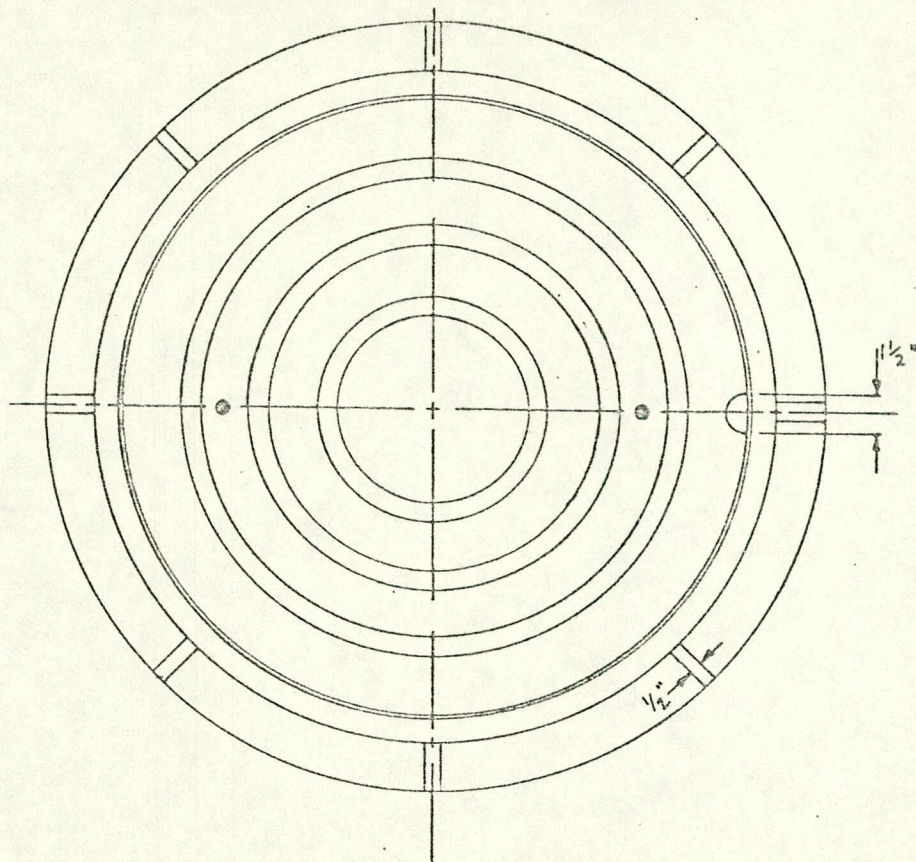
# PIPE BEDDING AND BACKFILL (OUTSIDE OF RIGHT OF WAY)







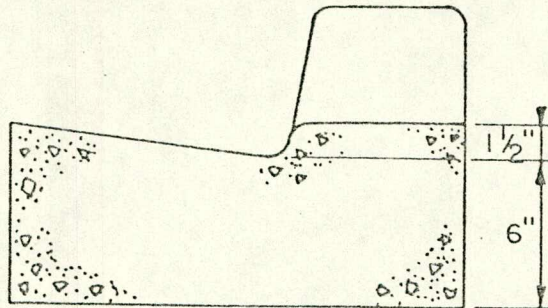




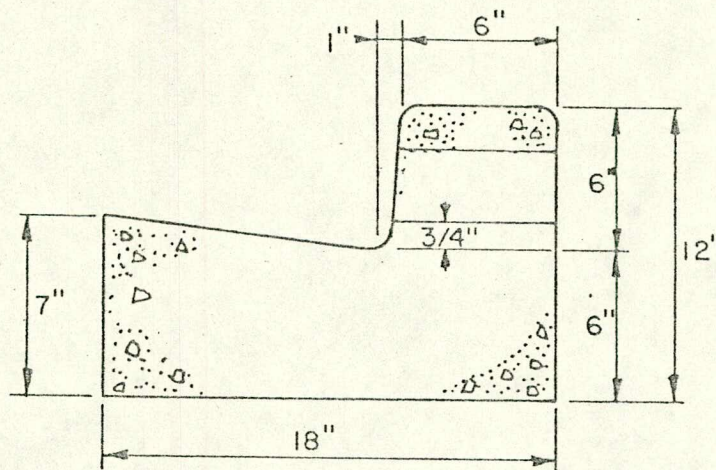
NOTE:

HEAVY DUTY MANHOLE FRAMES AND COVERS  
ARE TO BE USE ON ALL MANHOLES UNLESS  
OTHERWISE APPROVED BY THE CITY ENGINEER





TYPICAL CURB & GUTTER  
AT DRIVEWAY APPROACH



TYPICAL CURB & GUTTER

Notes

1. Concrete to have breaking strength of 3000 p.s.i. after 28 days.
2. Transverse expansion joints:
  - A) To be provided at each point of tangency of the curve and at other locations as required to limit the spacing to a maximum of 40'
  - B) Material to be premolded non-extruded material with a minimum thickness of 1/2"
3. Transverse contraction joints=
  - Spacing to be not more than 10'
4. Drainage blockouts or weep holes:
  - A) Drainage access through existing curbs shall be saw-cut with a minimum top width of 1' to satisfactory patching of curb.
  - B) Drainage blockouts shall not be provided unless needed.



22.00

OREGON STATE HIGHWAY DIVISION PERMITS

See following pages 21 - 24



State of Oregon  
DEPARTMENT OF TRANSPORTATION  
Highway Division

APPLICATION AND PERMIT TO  
OCCUPY OR PERFORM  
OPERATIONS UPON A  
STATE HIGHWAY

Permit Number: **21254**

Name and Address of Applicant:

City of Newberg  
414 E. First Street  
Newberg, OR 97132

Applicant hereby applies to the State Highway Division for permission to perform the following operations upon the right of way of the Pacific West Highway, No. 1W, Yamhill county, between/or near Newberg, and \_\_\_\_\_, as shown on the map or plan attached hereto and by this reference made a part hereof.

☐ Construct, operate and maintain a \_\_\_\_\_ pole line.

☐ Construct, operate and maintain a \_\_\_\_\_ buried cable.

☒ Construct, operate and maintain a sanitary sewer pipe line.

Highway Ref. Map No. 7B-29-12

☐ Erect and maintain a non-commercial sign.

☐ Miscellaneous operations and/or facilities as described.

POLE LINE, BURIED CABLE OR PIPE LINE TO BE CONSTRUCTED ALONG OR ACROSS SAID HIGHWAY AT:

| Mile Point to | Mile Point | ENGINEERS Station to Station |        | Side of Hwy. or Angle of XING. | DISTANCE FROM |          | BURIED CABLE OR PIPE |                                             | Span Length |
|---------------|------------|------------------------------|--------|--------------------------------|---------------|----------|----------------------|---------------------------------------------|-------------|
|               |            |                              |        |                                | Centerline    | R/W Line | Depth                | Size and Kind                               |             |
| 23.06         | 23.11      | 834+00                       | 836+60 | north                          | 170-87'       | -        | 30" min,             | 18" A.C.                                    | -           |
| 23.11         | -          | 836+60                       | -      | 70°                            | -             | -        | 39'                  | 18" dia. A.C./24" dia., 5/16, steel-casing. | 220'        |

RECEIVED

JAN 22 1980

ROBERT E. MEYER  
CONSULTANTS

SIGN TO BE ERECTED ON SAID HIGHWAY AT:

| Mile Point | Engineers Station | Distance from Highway Centerline | Distance from Shoulder | Side of Highway | Remarks |
|------------|-------------------|----------------------------------|------------------------|-----------------|---------|
|            |                   |                                  |                        |                 |         |

DESCRIPTION AND LOCATION OF MISCELLANEOUS OPERATIONS AND/OR FACILITIES

Recommended for approval:

ORIGINAL SIGNED BY KERRY J. DAYTON

District Engineer

Regional Engineer

This permit is issued by the Department subject to the terms and provisions contained herein and/or attached hereto; this permit is accepted and approved by applicant subject to said terms and provisions.

Applicant: \_\_\_\_\_

By: \_\_\_\_\_

DEPARTMENT OF TRANSPORTATION  
Highway Division  
By: H. Valentine UTILITY PERMIT ENGINEER

Date of Application: \_\_\_\_\_

Effective Date: 1-21-80



## GENERAL PROVISIONS

The appropriate General Provisions contained in "Oregon State Highway Commission, GENERAL PROVISIONS, for Pole Line, Buried Cable, Pipe Line, Non-Commercial Signs, and Miscellaneous Operations and/or Facility Permits, July, 1969," as supplemented and modified by the following Special Provisions, shall apply to this permit, and by this reference are made a part hereof. It shall be the obligation of the applicant to obtain said General Provisions from the Department and to determine which of the various provisions are applicable before commencement of work under said permit.

## SPECIAL PROVISIONS

1. The section of highway involved ~~has~~/has not\* been designated as a Freeway.
2. The section of highway involved ~~does~~/does not\* require a permit from the United States Forest Service.
3. General Provision V, A regarding insurance shall/~~shall not~~\* apply during the initial installation of facilities.
4. General Provision V, B regarding bond ~~shall~~/shall not\* apply during the initial installation of facilities. Bond in the amount of \$\_\_\_\_\_ is required.
5. General Provision VI, H shall/~~shall not~~\* apply to the following crossings of the highway:
  - a. ( ) All crossings covered by this permit.
  - b. (X) Crossings as shown on the attached Exhibit Map. If applicable, trenching nearer than 4 feet from the toe of the fill slope or outer edge of surfacing will not be permitted.
6. General Provision VI, H ~~shall~~/shall not\* apply to the following crossings of intersecting roads or streets, road approaches or driveways:
  - a. ( ) All such crossings covered by this permit.
  - b. ( ) Crossings as shown on the attached Exhibit Map. If applicable, trenching nearer than \_\_\_\_\_ feet from the toe of the fill slope or outer edges of the surfacing will not be permitted.
7. Open cutting of the paved or surfaced portion of the highway under General Provision VI, I ~~is~~/is not\* permitted.
8. The work area during any construction or maintenance performed under the permit provisions shall be protected in accordance with the current "Manual on Uniform Traffic Control Devices for Streets and Highways, U.S. Department of Transportation."
9. Inspection will be required in accordance with Section II, B and Section III, G. of the General Provisions of Oregon State Highway Commission, General Provision, for pole line, buried cable, pipe line, etc. July 1969. Actual inspection charges incurred will be billed after the completion and final inspection of the project.
10. Mr. Rick Kuehn, District Engineer, or his utility inspector Bob Doran shall be notified 48 hours prior to commencement of the project on highway right of way.
11. Contractor shall have in his possession prior to commencement of work an approved copy of this permit and attached plans.

\* Strike out word or words not applicable.



State of Oregon  
DEPARTMENT OF TRANSPORTATION  
Highway Division

APPLICATION AND PERMIT TO  
OCCUPY OR PERFORM  
OPERATIONS UPON A  
STATE HIGHWAY

Permit Number: **21255**

Name and Address of Applicant:

City of Newberg  
414 E. First Street  
Newberg, OR 97132

Applicant hereby applies to the State Highway Division for permission to perform the following operations upon the right of way of the Yamhill-Newberg Highway, No. 151, Yamhill county, between/or near Newberg, and \_\_\_\_\_, as shown on the map or plan attached hereto and by this reference made a part hereof.

☐ Construct, operate and maintain a \_\_\_\_\_ pole line.

☐ Construct, operate and maintain a \_\_\_\_\_ buried cable.

☒ Construct, operate and maintain a sanitary sewer pipe line.

Highway Ref. Map No. 7B-29-7

☐ Erect and maintain a non-commercial sign.

☐ Miscellaneous operations and/or facilities as described.

POLE LINE, BURIED CABLE OR PIPE LINE TO BE CONSTRUCTED ALONG OR ACROSS SAID HIGHWAY AT:

| Mile Point | to Mile Point | ENGINEERS Station to Station |       | Side of Hwy. or Angle of XING. | DISTANCE FROM |               | BURIED CABLE OR PIPE |                                     | Span Length       |
|------------|---------------|------------------------------|-------|--------------------------------|---------------|---------------|----------------------|-------------------------------------|-------------------|
|            |               |                              |       |                                | Centerline    | R/W Line      | Depth                | Size and Kind                       |                   |
|            | 11.04         | 39+00                        | 39+20 | Northeast                      |               | from 0' to 8' | 7 to 8'              | 15" Dia., C14, CL3 conc. sewer pipe | <del>20</del> ft. |

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JAN 22 1980  
ROBERT E. MEYER  
CONSULTANTS

SIGN TO BE ERECTED ON SAID HIGHWAY AT:

| Mile Point | Engineers Station | Distance from Highway Centerline | Distance from Shoulder | Side of Highway | Remarks |
|------------|-------------------|----------------------------------|------------------------|-----------------|---------|
|            |                   |                                  |                        |                 |         |

DESCRIPTION AND LOCATION OF MISCELLANEOUS OPERATIONS AND/OR FACILITIES

Construction of new 15" dia. sanitary sewer line from N.E. right-of-way line to an existing manhole located approximately 8 ft. from that right-of-way line.

Recommended for approval:

ORIGINAL SIGNED BY KERRY J. DAYTON

District Engineer

Regional Engineer

This permit is issued by the Department subject to the terms and provisions contained herein and/or attached hereto; this permit is accepted and approved by applicant subject to said terms and provisions.

Applicant: City of Newberg, Oregon

DEPARTMENT OF TRANSPORTATION  
Highway Division

By: St Valentine UTILITY PERMIT ENGINEER

Date of Application: \_\_\_\_\_

Effective Date: 1-21-80



## GENERAL PROVISIONS

The appropriate General Provisions contained in "Oregon State Highway Commission, GENERAL PROVISIONS, for Pole Line, Buried Cable, Pipe Line, Non-Commercial Signs, and Miscellaneous Operations and/or Facility Permits, July, 1969," as supplemented and modified by the following Special Provisions, shall apply to this permit, and by this reference are made a part hereof. It shall be the obligation of the applicant to obtain said General Provisions from the Department and to determine which of the various provisions are applicable before commencement of work under said permit.

## SPECIAL PROVISIONS

1. The section of highway involved ~~has~~/has not\* been designated as a Freeway.
2. The section of highway involved ~~does~~/does not\* require a permit from the United States Forest Service.
3. General Provision V, A regarding insurance ~~XXXX~~shall not\* apply during the initial installation of facilities.
4. General Provision V, B regarding bond ~~shall~~shall not\* apply during the initial installation of facilities. Bond in the amount of \$\_\_\_\_\_ is required.
5. General Provision VI, H ~~shall~~shall not\* apply to the following crossings of the highway:
  - a. ( ) All crossings covered by this permit.
  - b. ( ) Crossings as shown on the attached Exhibit Map. If applicable, trenching nearer than \_\_\_\_\_ feet from the toe of the fill slope or outer edge of surfacing will not be permitted.
6. General Provision VI, H ~~shall~~shall not\* apply to the following crossings of intersecting roads or streets, road approaches or driveways:
  - a. ( ) All such crossings covered by this permit.
  - b. ( ) Crossings as shown on the attached Exhibit Map. If applicable, trenching nearer than \_\_\_\_\_ feet from the toe of the fill slope or outer edges of the surfacing will not be permitted.
7. Open cutting of the paved or surfaced portion of the highway under General Provision VI, I ~~is~~/is not\* permitted.
8. The work area during any construction or maintenance performed under the permit provisions shall be protected in accordance with the current "Manual on Uniform Traffic Control Devices for Streets and Highways, U.S. Department of Transportation."
9. Inspection will be required in accordance with Section II, B and Section III, G of the General Provisions of Oregon State Highway Commission, General Provision, for pole line, buried cable, pipe line, etc. July 1969. Actual inspection charges incurred will be billed after the completion and final inspection of the project.
10. Mr. Rick Kuehn, District Engineer, or his utility inspector Bob Doran shall be notified 48 hours prior to commencement of the project on highway right of way.
11. Contractor shall have in his possession prior to commencement of work an approved copy of this permit and attached plans.

\* Strike out word or words not applicable.



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FOR  
SEWERS AND DRAINS

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STANDARD TECHNICAL SPECIFICATIONS  
FOR  
SEWERS AND DRAINS

1.00     GENERAL

The following standard specifications will govern the installation of sanitary sewers, storm drains and appurtenances. If there is a conflict between this standard section and any other Contract Document, the order of preference in the General Conditions shall govern.

2.00     PLAN AND PROFILE

The ground line profile or ground surface contours shown on the drawings are approximate only. The actual ground elevations will not be determined until the final stake-out of the work is completed. The exact depth of manholes and lines cannot be scaled from the profile.

3.00     STAKE-OUT

The Engineer will provide line and elevation stakes at the manholes and up stream from the manhole at twenty-five feet (25'), fifty feet (50'), one-hundred feet (100') and every one-hundred (100') feet thereafter. The Contractor shall protect the stakes and will be required to pay for the replacement of stakes destroyed through his negligence. The Contractor shall request staking at least five (5) working days in advance. The Engineer shall not be responsible for delays in construction due to insufficient notice for staking.

4.00     EXISTING UTILITIES, INTERFERENCES AND OBSTRUCTIONS

The drawings show the location of existing sewers, water mains, and other utilities adjacent to the lines of sewer construction. This data has been compiled from the best available sources but are to be used for informational purposes only, and accuracy is not guaranteed. The Contractor shall make site inspections, excavations, and borings ahead of his work where necessary to determine the exact location of obstructions, underground pipes, or other features which might interfere with construction. He shall support and protect pipes or other services where they conflict with the trench and shall be responsible for all damages incidental to interruptions of service that may be due to his operations. At certain places, power, light and telephone poles may interfere with excavation and the operation of the Contractor's equipment. The Contractor shall obtain necessary approvals from utility companies for moving, supporting or maintaining utilities or obstructions.

Existing survey monuments and corner pins and other property markers may be disturbed by the Contractor during construction operations. The Contractor shall retain at his own expense a licensed land surveyor to reference and reset any markers that could be disturbed.



Where rural carrier service exists, the Contractor shall cooperate with the mail service and temporarily install mail boxes in a convenient location. As soon as the work is completed, all mail boxes removed shall be replaced undamaged in their original location. No extra payment will be made for work incidental to removing, temporarily relocating, and replacing mail boxes, signs and other interferences and obstructions.

Payment for work under this section shall be considered incidental and included in the per foot price for pipe, excavation, and backfill.

#### 5.00 TRENCH MAINTENANCE AND PROTECTION

No trench shall be opened until all material is on hand to insure rapid completion of the work. The amount of open trench shall be held to an absolute minimum. Where intersecting streets, alleys and driveways are cut, adequate temporary bridges shall be provided if access for emergency vehicles is required or if any building requires vehicular traffic for business purposes. It is the intent of these specifications that no property or building be cut off from vehicular or pedestrian traffic for an unreasonable length of time. Failure of the Contractor to provide adequate bridging, or to backfill promptly, will be cause for having all other work stopped until such instructions are carried out.

Except with special permission of the Owner, not more than one street intersection shall be closed to traffic at any one time. The Contractor shall notify the police and the fire department having jurisdiction of the closing and opening of streets. On streets where traffic is heavy, the Engineer may require the construction of two-way bridges of adequate design; they shall be provided with guard rails and shall be well lighted at all times. Detours as required by the Engineer shall be surfaced with gravel or crushed rock and maintained in good condition. Detours for pedestrians shall not exceed one block in length and foot bridges over the trenches shall be provided with adequate handrails.

All work shall be carried on with due regard for safety. Open trenches shall be provided with barricades in conformance to state highway traffic maintenance practices. Safety instructions received from the Engineer or Owner shall be observed, but the following of such instructions shall in no way relieve the Contractor of his responsibility or liability should any accident or loss occur as the result of his construction operations.

The final compaction and replacement of streets, driveways, and sidewalks shall be at all times not more than 1000 feet or 5 work days behind the backfilling for each pipe laying crew. The Engineer reserves the right to withhold stake-out on any portion of remaining line when the final compaction and replacement is not as specified.

For the work required in this section, all expense involved in the maintenance of traffic, detours, bridges, etc. shall be borne by the Contractor, and the amount thereof shall be absorbed in the unit prices of the bid.



## 6.00 RIGHTS-OF-WAY

The Owner shall provide all necessary rights-of-way and easements. However, in most instances the Contractor will be limited to certain widths and restrictions across property not controlled by the Owner. It shall be the responsibility of the Contractor to ascertain for himself to what extent the restrictions in width of usable rights-of-way will affect his operations. Information regarding the width, status, and special conditions attached to rights-of-way or easements may be obtained from the Owner in advance of the bid date.

It shall be the responsibility of the Contractor to inform himself of all permits, insurance, bonds, flagmen, special inspection, construction procedures, and specifications required by the right-of-way upon which the work is to be done. All costs whatsoever incurred shall be included and absorbed in the prices named in the proposal.

The Owner shall provide all Contract Documents required for application of permits.

6.01 Right-of-way and Access Delays - If the Contractor is delayed at any time in the progress of the work by any act or neglect of the Owner to acquire right-of-ways, access-ways or furnish materials offered, the Contractor shall be entitled to an extension of time equal to such delays.

Any delay resulting from the failure of the Owner to promptly make available any such right-of-way, materials sources, or access, shall not constitute grounds for any claim or recovery of any damages, loss, or expenses incurred by reason of such delay, and the consideration of an adjustment in contract time shall constitute the Contractor's sole remedy for such delay.

## 7.00 LANDSCAPED AREAS

### 7.01 Site Restoration and Cleanup

At all times during the work, keep the premises clean and orderly, and upon completion of the work, leave the project free of rubbish or excess materials of any kind.

During construction, stockpile the excavated trench materials so as to do the least damage to adjacent lawns, grassed areas, gardens, shrubbery, or fences, regardless of whether these are on private property, City, State, or County rights-of-way. Separate excavated materials from grassed and planted areas, and leave these surfaces in a condition equivalent to their original condition and free from all rocks, gravel, boulders, or other foreign material. Replace topsoiled areas as specified, raked and graded to conform to their original contours. All existing drainage ditches and culverts shall be reopened and graded and natural drainage restored. Restore culverts broken or damaged to their original condition and location.

Upon completion of pipe laying and backfilling operations in any section, hand-rake and drag all former grassed and/or planted areas leaving all 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, and shall be free-draining, free from holes, rough spots, or other surface features detrimental to a seeded area.



## 7.02 Planting Restoration

The Contractor will be responsible for all reseeding and fertilizing of all grassed and lawn areas and for replanting all areas where trees, shrubs or plants existed prior to the construction, including those areas within the easement limits obtained by the Owner.

All ground preparation and reseeding shall be done in accordance with the best accepted practices for lawn planting. The Contractor should coordinate his restoration of the surface with the property owner so that adequate water is applied to the replanted area. The Contractor shall be solely responsible for obtaining a satisfactory grass turf acceptable to the property owner.

The balling and burlapping of trees, shrubs, or plants which must be removed to allow construction shall conform to the recommended specifications set forth in the American Standard For Nursery Stock. All balls shall be firm and intact and "made" balls will not be accepted. All balled and burlapped trees shall at all times be handled by the ball and not by the top.

Upon completion of the pipe laying, backfilling, compaction and leveling of the trench, replant the trees, shrubs or plants in their original position. Should any tree, shrub or plant that has been removed and replanted die within six months from the time that it was disturbed, it shall be replaced in kind and size by the Contractor at his expense.

The Contractor shall make himself aware of the planting and growing season and shall observe local planting practices during restoration of the site.

The costs under this section shall be included in excavation and backfill unit prices.

## 8.00 PRIVATE ROADS AND DRIVEWAYS

At entrances to business properties where vehicular traffic is necessary, bridges shall be provided and maintained; they shall be adequate in width and strength for the service required. No private road or driveway may be closed without approval of the Engineer unless written authority has been given by the Owner whose property has been affected. Driveways shall be left open and ready for use at the end of shift.

All expense involved in providing for construction, maintenance and use of private roads or driveways, etc., shall be borne by the Contractor and the amount thereof absorbed in the unit prices of the bid.

## 9.00 PUBLIC ROADS AND STATE HIGHWAYS

Where a sewer is to be constructed wholly or partly upon the right-of-way of a Public Road or State Highway, the Owner will procure from the proper agency(s) any right-of-way permit necessary for such work, but the Contractor shall obtain all construction permits and pay all fees or charges and furnish a bond if necessary to insure that all requirements will be observed and the roadway and appurtenance restored to their original conditions. A copy of all permits shall be kept on the work for the use of the Engineer and all requirements shall be strictly observed as though they were stated fully herein.



## 10.00 HIGHWAY AND RAILROAD UNDERCROSSINGS

State Highway Departments and most railroads require that, if possible, all crossings be made by means of boring or jacking.

Installation shall be in accordance with applicable highway and railroad requirements. It is the responsibility of the Contractor to determine for himself the requirements of the highway or railroad with respect to maintaining traffic, amounts of insurance, and allowable construction procedures.

Should the Contractor determine that it is not possible to bore the lines due to subsurface conditions, it shall be the responsibility of the Contractor to inform the agency to obtain permission to open-cut such crossings. Open cutting shall be performed in accordance with Highway Department or Railroad requirements and the payment will be the same as if bored.

The casing pipe shall be installed on the same slope as the sewer pipe as shown on the plans.

The metal casing shall be steel pipe with a minimum wall thickness to comply with the governing agency. The casing inside diameter shall be sufficient to give a minimum of one inch (1") clearance for the top of the sewer pipe's bells. This minimum clearance is required in order to get the sewer pipe in or out. The casing shall be field welded at joints to provide a rigid watertight joint.

The bore pits shall be a minimum of six feet (6') from the toe of the slope, kept to a minimum size and located to provide the least interference with traffic.

The sewer shall be tested in accordance with the Technical Specifications.

Refer to Special Technical Specifications for crossings that require deviation from standard construction procedures.

All costs due to the existence of the highway and railroad facilities and their respective requirements shall be covered by the price bid in the Contractors proposal.

## 11.00 MATERIALS

All material installed shall be made by reputable manufacturers and shall be new and of first class quality. Rejection of an entire shipment will be considered justified when a significant amount of defective material in a shipment is detected. Material shall be carefully handled and installed in good working order, free from defect in manufacture, storage or handling.

### Abbreviations and References

AASHTO

American Association of State Highway  
and Transportation Officials



|      |                                                                                    |
|------|------------------------------------------------------------------------------------|
| ACI  | American Concrete Institute                                                        |
| ANSI | American National Standards Institute<br>(formerly-American Standards Association) |
| APWA | American Public Works Association                                                  |
| ASTM | American Society for Testing Materials                                             |
| AWWA | American Water Works Association                                                   |

References to various specifications shall mean the latest revision of these specifications unless otherwise noted in the Special Technical Specifications.

**II.01**    Pipe - The type of pipe shall be as shown on the drawings or in the Special Technical Specifications. If not specified elsewhere, the pipe for gravity lines shall be concrete, asbestos cement or polyvinyl chloride and pressure piping shall be cast iron, ductile iron, asbestos cement or polyvinyl chloride. All pipe used on each project shall be the specified type, and from a single manufacturer unless otherwise approved by the Engineer.

A. Concrete Pipe Unreinforced - All unreinforced concrete sewer, culvert and storm drain shall conform to ASTM C-14, Class 2 requirements unless otherwise designated on the plans or in the Special Technical Specifications.

B. Concrete Pipe Reinforced - All reinforced concrete sewer, culvert and storm drain pipe shall conform to ASTM designation C-76. The class shall be noted on the drawings or in the Special Technical Specifications. Bells and spigots shall be reinforced in all sizes thirty inches (30") and over. When used with flexible gasket joint for sanitary sewer pipe in addition to C-76 requirements, it shall also conform to the permeability and hydrostatic test requirements of C-14.

C. Asbestos-Cement Non-Pressure Gravity Sewer Pipe - All asbestos-cement gravity sewer pipe and couplings shall conform to ASTM designations C428, Type II. The class shall be as specified on the drawings or in the Special Technical Specifications. Testing shall conform to ASTM C500. Joints shall conform to ASTM D1869 in addition to the specifications herein.

D. Polyvinyl Chloride (PVC) - Gravity pipe meeting ASTM D3033 or D3034 PSM SDR 35 specifications may be used for the sewer and building connection lines, when called for on the plans or Special Technical Specifications.

E. Cast Iron Pressure Pipe - All cast iron pipe shall conform to AWWA Standards C-106 or C-108. Cast iron pipe shall be cement mortar lined inside in accordance with AWWA C-104 and coal tar coated outside unless otherwise specified.

F. Ductile Iron Pressure Pipe - All ductile iron pipe shall conform to AWWA Standard C-151. Ductile iron pipe shall be cement mortar lined inside in accordance with AWWA C-104 and coal tar coated outside unless otherwise specified.



Ductile iron pipe will be used for gravity sewers where the sewer crosses less than 18 inches below waterlines. At such crossings, the sewer shall be constructed of ductile iron pipe for a distance of nine (9) feet on each side of the waterline.

G. Asbestos-Cement Pressure Pipe - All asbestos-cement pressure pipe shall conform to AWWA Standards C-400. All fittings shall be cast iron. Pressure class, length, special fittings, and couplings shall be as specified in the Special Technical Specifications. Instructions for laying pipe shall be in accordance with AWWA C-603.

H. PVC Pipe, Pressure Pipe - The pipe shall be unplasticized polyvinyl chloride (PVC) pipe conforming to ASTM D1784, D2241, and Commercial Standard CS 256-63, 160 psi (SDR 26).

## 11.02 Jointing Materials

A. Flexible Gasketed Joints - Flexible joints shall be rubber gasketed when used with concrete pipe and conform to ASTM C443. Rubber rings for asbestos-cement and PVC joints shall conform to ASTM D1869. Gasketed material shall be stored in a cool, clean place, protected from sunlight and contaminants until ready for installation on the pipe. Pipes with gaskets affixed shall be installed in the sewer line within 28 days unless adequately protected against sunlight and contaminants.

All surfaces of the joint upon or against which the gasket may bear shall be smooth, free from spalls, cracks or fractures and imperfections which would adversely affect the performance of the joint. The joints of the pipe shall be of such design that they will withstand the forces caused by the compression of the gasket, when joined, without cracking or fracturing. The rubber type gasket shall be the sole element depended upon to make the joint flexible and watertight. The gasket shall be a continuous ring which fits snugly into the annular space between the overlapping surfaces of the joints of the pipe to form a flexible watertight seal.

B. Couplings for Cast Iron and Ductile Iron Pipe - Mechanical joint type couplings shall conform to the AWWA Specification C-111. "Push-on" joints shall conform with Federal Specifications WW-P-42 1b. Flanged couplings shall be drilled and faced in accordance with American Standard B-16.1 or B-16.2.

C. Couplings for Asbestos-Cement Pressure Pipe - Every coupling shall include an asbestos-cement sleeve of the same composition as the pipe and two rubber rings. The couplings shall be mechanical so as to insure a tight joint with the pipe. The rubber rings used to seal the joints of the asbestos-cement pipe shall conform to the latest requirements of ASTM designation D1869.

D. Coupling for PVC Pipe - Shall be of the double gasketed type and made of the same quality as the pipe to meet ASTM D-1784.

E. Couplings for Dissimilar Pipe - Couplings for connecting dissimilar gravity pipe shall provide a flexible joint. Couplings shall be as manufactured by Fernco Joint Sealer Co., or approved equal.



### 11.03 Fittings

A. Tees and Wyes, Sewer Pipe - A tee or wye fitting shall be provided in the main line sewer for all side sewer, catch basin, and inlet connections. Fitting branch shall be of sufficient strength to withstand all handling and load stresses normally encountered. The fittings shall be of the same material as the pipe except that cast iron fittings shall be used with asbestos-cement pipe. The fitting branch bell shall be made for a rubber gasketed connection unless otherwise specified and shall be fitted with a rubber gasketed plug, easily removed without damage to the bell.

B. Fittings for Cast Iron and Ductile-Iron Pipe - Ordinary cast iron fittings shall conform to the latest applicable current standard of AWWA Standard C-110. Cast iron fittings for use with Federal Specifications Type II and Type III cast iron water pipe shall conform to the same specifications except that joints shall be mechanical type and include cast iron glands, plain rubber gaskets, and T-head cast iron bolts and nuts per ASA A-21.11 or an approved compression type with rubber gasket.

C. Fittings for PVC Pipe - Shall be made to the same quality as the pipe to meet ASTM D-1784.

D. Fittings for Asbestos-Cement Pressure Pipe - Ordinary fittings for asbestos-cement pressure pipe shall be cast iron conforming to AWWA Standard C-110 and shall be designed for installation with rubber rings. Fittings shall be equal to TIFCO pipe fittings as manufactured by the Independent Fitting Company, Portland, Oregon.

E. Fittings for PVC Pressure Pipe - All elbows, tees and crosses shall be cast iron equal to TIFCO fittings as manufactured by the Independence Fitting Company, Portland, Oregon, or approved equal.

11.04 Manholes - Standard manholes may be constructed of precast units set on either a precast base or a poured in place concrete base, all in accordance with Standard Details and these specifications. Drop manholes shall be constructed in accordance with Standard Details and these specifications. Extreme care shall be given in backfilling of the trench and drop manhole to prevent breakage or settlement of the riser and inlet pipe.

A. Base Sections - Base sections for manhole construction shall be poured in place concrete (not less than 6 inches in thickness) or precast sections conforming to the requirements for precast manhole sections, unless otherwise provided in the drawings and Special Provisions. If a precast manhole base is used, the channels shall be poured and shaped after manhole is in place. Base sections shall be constructed to form a watertight structure.

B. Openings - Openings to receive pipe shall be circular, tapered in toward the inside of the section and held to the minimum size possible to accommodate the pipe to be inserted and to effectively seal the joints. Openings for pipe up to 24-inch diameter may be provided in 48-inch base sections. Openings for pipe up to 42-inch diameter may be provided in 72-inch base sections. Where pipe of larger diameters are to be accommodated, a monolithic base structure shall be provided.



C. Precast Manhole Sections - Standard precast manhole sections shall conform to ASTM C478 and consist of circular sections in standard nominal diameters. No more than two lift holes shall be cast into each section. Holes shall be located so as to not damage reinforcing or expose it to corrosion. At the manufacturer's option, steel loops may be provided for handling, in lieu of lift holes.

Inside drop precast concrete manhole sections conforming to ASTM C-478 may be used when approved by the Engineer prior to commencing construction of the project.

D. Steps - Unless otherwise provided in the Special Technical Specifications steps shall be installed in each section so that sections placed together in any combination will provide a continuous vertical ladder with rungs equally spaced. Steps shall project uniformly from the inside wall of the manhole as shown on the standard drawings and shall be cast or firmly grouted in place so as to insure watertightness.

Manhole steps shall be hot dipped galvanized deformed bar steps conforming to ASTM A615 and the galvanizing shall conform to ASTM A123. Step dimensions and patterns shall conform to the drawings. The diameter of the bar steps shall not be less than 3/4 inch. The spacing shall conform to local and/or state safety code. Wrought iron or fiberglass coated steps may be used as an alternate when approved by the Engineer.

Steps shall be omitted in manholes under three (3') feet in height measured from the top of the manhole cover to the invert elevation at the center of the manholes.

Where it is intended that manholes be installed without fixed steps, the Special Provisions shall so specify.

E. Precast Cones - Standard precast cones shall be eccentric, unless otherwise specified, and shall conform to ASTM C478.

F. Flat Slab Covers - Flat slab covers shall conform to ASTM C478.

G. Frames and Covers - Manhole frames and covers shall be of the size and shape detailed in the Standard Details. Castings shall be tough, close-grained, gray iron free from blow holes, shrinkage and cold sheets. They shall conform to ASTM A48 and shall be sound, smooth, clean and free from blisters and defects. Castings shall be machined and ground when necessary to insure uniform contact surfaces. Covers shall be true and shall seat within the ring at all points. Castings shall be of manufacture and model as shown on the drawings.

Frames and covers, if they are used under street traffic conditions, shall be of cast iron suitable for heavy traffic. Lightweight sidewalk type covers and frames may be used when street traffic is not encountered or where permitted by the drawings. Watertight manhole frames and covers shall be used where called for on the drawings or ordered by the Engineer. Covers for traffic and suburban manholes shall have two vent holes.

## 11.05 Concrete

A. Structural Concrete - Concrete for manhole bases and other minor structures shall have a minimum compressive strength of 3300 pounds per square inch at 28 days. Minimum cement content shall be 6-1/2 sacks (601 pounds) per cubic yard and cement shall be Type II, L.A. conforming to ASTM designation C150.



B. Concrete Cradle - Concrete for use in Class A bedding shall have a minimum 28 day compressive strength of 2000 pounds per square inch and shall have a minimum cement content of 4 sacks (376 pounds) per cubic yard and cement may be Type II L.A. or Type III conforming to ASTM designation C150.

11.06 Bedding Material, Granular - The granular material used for bedding shall be approved by the Engineer before delivering to the job. It shall be a noncohesive material which will flow readily and can be consolidated when sliced with a shovel and which will not bulk with moisture.

Type 1 - Crushed Rock - Gradation shall be as follows: Not less than ninety-five percent (95%) passing 3/4 inch and not less than ninety-five percent (95%) to be retained on a #4 sieve.

Type 2 - Pea Gravel - Gradation shall be as follows: Not less than ninety-five percent (95%) passing 1/2 inch and not less than ninety-five percent (95%) to be retained on a #4 sieve.

Granular Subgrade - Stabilization of subgrade if required shall be with 2-1/2"-0" crushed rock upon approval of Engineer.

11.07 Backfill Material, Granular - The granular backfill material shall be hard, clean and well-graded. All granular material sources shall be approved by the Engineer before delivery to the job. Sand and river-run gravel may vary considerably from the same source. Therefore, approval of samples and/or portion of the material shall not be a blanket approval of the entire source. Sand will be used only upon specific approval of the Engineer prior to starting excavation for each individual job. Type of granular backfill will be shown on the drawings or specified elsewhere. The types are:

Type 1 - Crushed Rock - Gradation shall be as follows:

| <u>Sieve Designation</u> | <u>Percentage Passing</u> |
|--------------------------|---------------------------|
| 2-1/2 inch               | not less than 95          |
| 1 inch                   | 65                        |
| No. 4                    | 35                        |
| No. 200                  | 12                        |

Type 2 - River Run Gravel - Gradation may vary. However, the maximum size shall be such that ninety-five percent (95%) will pass two and one-half inch (2-1/2") and all be retained on a #60 sieve.

## 12.00 EXCAVATION AND BEDDING

12.01 Clearing and Grubbing - The Contractor shall perform all clearing and grubbing necessary for the construction of sewers and drains. Cost of clearing and grubbing shall be included in unit prices of the bid. The Contractor shall confine all clearing and grubbing to the easements or right-of-way provided. The Contractor shall dispose of all debris and vegetation by off-site disposal at a location approved by the Owner.

12.02 Classification of Material - Trench excavation for this project is to be bid as unclassified material. No extra payment of any kind will be allowed for the presence of water, rock, sand, peat, hardpan, sandstone, boulders, old



wearing surfaces, debris, or any other type of earth or foreign objects found in or near the trench excavation. The Contractor shall have conducted such investigations prior to the bid as he deems necessary to properly acquaint himself with existing ground conditions and materials. Dewatering of the trench shall be considered as incidental to the construction and all costs thereof shall be included in various unit contract prices in the proposal, unless otherwise provided in the Special Technical Specifications.

12.03 Excavation - The trench shall be excavated to the line and grade shown on the drawings. The sides shall be vertical from the bottom of the trench to a distance of twelve inches (12") over the top of the pipe and shall be limited in width as follows: 21-inch pipe and under, the width shall not exceed the inside diameter plus eighteen inches (18"); 24-inch and over pipe, the width shall not exceed the inside diameter plus twenty-four inches (24").

The last pass of the backhoe in trench subgrade preparation shall be with the heel of the bucket and not with the teeth to insure against disturbing the subgrade.

The width of the upper portion of the trench shall be determined by the Contractor in consideration of the nature of the soil, depth of trench, proximity to obstructions and interferences, and safe working conditions. The minimum width shall be determined by type of pipe and joint and backfill requirements. Sufficient space must exist between side of trench and pipe to inspect the joint and compact backfill. Trenches wider than the maximum specified in the pipe zone will not be permitted. If the maximum trench width is exceeded by the Contractor, he shall obtain written authorization from the Engineer to provide pipe of higher strength classification, or to provide a higher class of bedding at no additional cost to the Owner.

At no time shall the trenching equipment be farther than 300 feet ahead of each pipe laying crew. In commercially zoned areas, at no time shall the trenching equipment be farther ahead than 150 feet of each pipe laying crew, except by the authority of the Engineer. The Engineer reserves the right to withhold line and grade on any portion when, excessive trench is being opened ahead of the pipe laying operation.

12.04 Structure Excavation - Excavation for manholes and other structures shall be sufficient to provide a minimum of twelve inches (12") between their surfaces and the sides of the excavation.

12.05 Excavated -Material - The location of spoil piles shall be determined by traffic and trench conditions. The material shall be confined to the smallest area possible. Sufficient distance shall exist between the spoil pile and trench edge to prevent overloading side walls and material falling into the trench. It shall be piled in such a manner as will cause a minimum of inconvenience to public travel, and provision shall be made for merging traffic where such is necessary. Free access shall be provided to all fire hydrants, water valves and matters, and clearance shall be left to enable free flow of storm water in all gutters, other conduits, and natural water courses.

12.06 Blasting - Excavation which requires the use of explosives shall be carried out in strict conformance to all local and State laws pertinent to this type of work. All shots shall be covered by suitable mats or such other precautions as may be



necessary for protection of life and property. The Contractor shall be responsible for all accidents and/or damages caused by blasting operations.

12.07 Shoring, Sheeting and Bracing of Trenches - Whenever necessary to prevent caving or lateral movement which might damage adjacent property, surfacing, or utilities; excavation in sand, gravel, sandy soil, or other unstable material shall be adequately sheeted and braced. Such sheeting, and bracing shall conform to the safety requirements of the State or Local public agency having jurisdiction over such matters. All sheeting and shoring must be removed unless removal would disturb the pipe. In lieu of bracing and shoring, where permitted, the trench may be widened at the top and the sides sloped. No additional payment will be allowed for this type of construction. All restoration costs shall be included in the payment for excavation and backfill.

12.08 Tunneling - If the Contractor wishes to tunnel under existing utilities, interferences, and surfacing, the method must have prior approval of the Engineer. Payment for tunneling will be the same as if the open cut method were used.

12.09 Dewatering - Excavations and trenches shall be kept free of groundwater seepage, rain water, and runoff, by equipment furnished and operated by the Contractor. Remove all water during periods when concrete is being deposited, when pipe is being laid, or other work is being done, during the placing of backfill, and at such other times as required for efficient and satisfactory construction. The static water level shall be drawn down a minimum of one (1') foot below the bottom of the excavation so as to maintain the undisturbed state of the foundation soils and allow the placement of any fill or backfill to the required density. Furnish adequate dewatering equipment and operate such equipment to keep the water level down to permit the construction. Dewatering shall be done in a manner that will avoid settlement or damage to the pipe or to adjacent property. Dispose of water pumped out of the excavations and trenches in a manner that will not damage adjacent property.

12.10 Pipe Bedding - Proper preparation of foundations material where required and placement of bedding material shall precede the installation of all sewer and drain pipe. This shall include necessary leveling of the native trench bottom or the top of the foundation material as well as placement and compaction of required bedding materials to a uniform grade, so that the entire length of pipe will rest firmly on a well compacted material. The backfill material around the pipe will be placed in a manner to meet requirements specified hereinafter.

12.11 Class of Bedding - Pipe bedding shall be in accordance with Standard Details for Class A, B, or C as shown on the drawings and as specified hereunder.

A. Class A Bedding - Place the pipe on a cradle of 2,000 psi concrete. The minimum thickness of the concrete under the pipe shall be equal to 1/4 the inside diameter or four inches (4"), whichever is greater. The maximum thickness shall be twelve inches (12"). The concrete shall extend up along the pipe to 1/4 the outside diameter for the full width of the trench.



D. Class B Bedding - The pipe shall be laid on a thoroughly compacted bedding of granular material. The depth of the bedding below the inlet shall be as follows:

| <u>Inside Pipe<br/>Diam., In.</u> | <u>Minimum Bedding Depth<br/>Below Pipe Barrel</u> |
|-----------------------------------|----------------------------------------------------|
| 4, 6, or 8                        | 4 inches                                           |
| 10, 12, or 15                     | 5 inches                                           |
| 18 and larger                     | 6 inches                                           |

After the pipe has been laid to grade and line, additional granular bedding material shall be placed around the pipe up to 1/2 of its outside diameter for the full width of the trench. This additional material shall be compacted by spading, rodding, tamping, or other means which will compact the material.

C. Class C Bedding - The pipe shall be laid on a shaped trench which provides a fairly uniform contact under approximately the lower 1/6 of the pipe surface. After the pipe has been laid fine, select earth shall be compacted under and around the pipe to a depth of 1/4 the outside diameter for the full width of the trench.

D. Bedding in Rock - In rock foundation, the pipe is to be bedded on a thoroughly compacted cushion of granular material. The depth of the cushion below the pipe shall be as follows:

| <u>Inside Pipe<br/>Diam., In.</u> | <u>Minimum Bedding Depth<br/>Below Pipe Barrel</u> |
|-----------------------------------|----------------------------------------------------|
| 4, 6, or 8                        | 4 inches                                           |
| 10, 12, 15, or 18                 | 6 inches                                           |
| 21 and larger                     | 8 inches                                           |

After the pipe has been laid to grade and lined, additional granular bedding material shall be placed around the pipe to 1/2 the outside diameter for the full trench width.

E. Bedding in Unstable Ground - The bedding of pipe in unstable ground shall be conducted in the presence of the Engineer. In areas where additional granular material is needed to stabilize the pipe foundation, the trench shall be excavated to the necessary depth. The additional depth shall be filled and compacted with 2 1/2" (inch) minus clean crushed rock, with even gradation from coarse to fine. In instances where concrete cradle, piling, and/or longitudinal trench timbers are required the use and amount of such materials shall be determined for the particular job. After the pipe has been laid to grade and line, granular bedding material shall be placed around the pipe up to 1/2 of its outside diameter for the full trench width.

The Contractor will be responsible for the proper stabilization of the pipe and will replace or repair any pipe damaged due to settlement or misalignment at his expense.



12.12 Pipe Cover - In all classes of bedding, the pipe shall be covered with a layer of selected material that extends from the bedding to a minimum depth over the barrel of the pipe of twelve inches (12"). The type of material depends upon the type of backfill specified. Where granular material is specified for backfill, the pipe cover shall be granular material. It shall be compacted sufficiently to support the pipe, backfill and any surfacing to a relative density of ninety-five percent (95%) as determined by AASHTO Method T-99, "A". Where excavated earth is specified for backfill, the pipe cover shall be fine selected earth. This material shall be placed in layers of not more than six inches (6") before compaction, and thoroughly compacted to insure against settlement or pipe movement to a relative density of ninety-five percent (95%) as determined by AASHTO Method T-99, "A".

### 13.00 SEWER PIPE LAYING

13.01 Line and Grade - The Contractor shall check each length of pipe for line and grade, and in the event they do not meet specified limits described hereinafter, the work shall be immediately stopped, the Engineer notified, and the cause remedied before proceeding with the work.

13.02 Pipe Laying - Laying of sewer pipe shall be to line and grade in the trench only after it has been dewatered and the foundation and/or bedding has been prepared. Mud, silt, gravel and other foreign material shall be kept out of the pipe and off the jointing surfaces. All pipe laid shall be retained in position to maintain alignment and joint closure until sufficient backfill has been completed to adequately hold the pipe in place. Where a coffin is used, the pipe shall be anchored to prevent misalignment or pulled joints caused by moving the coffin. Take all precautions necessary to prevent uplift or floatation of the pipe prior to completion of backfill.

All pipe shall be laid to conform to the prescribed line and grade shown on the drawings. Any section found with adverse grade will be corrected by the Contractor at his expense. The sewer pipe, unless otherwise approved by the Engineer, shall be laid up grade from point of connection on the existing sewer or a designated starting point. The sewer pipe shall be installed with the bell end forward or upgrade. When pipe laying is not in progress, the forward end of the pipe shall be kept tightly closed with an approved temporary plug.

Where pipe lines are to be laid on specified curves of sufficiently short radius to deflect the pipe joints in an amount greater than recommended by the manufacturer, the pipe ends shall be canted at the factory in an amount necessary to meet the manufacturer's recommendations. The pipe lines laid on curved alignment will be measured for payment along the center line of the pipe, and no additional compensation will be allowed for canting.

All pipe, fittings, and accessories shall be inspected before lowering into the trench. After inspection they shall be placed in the trench in such a manner as to prevent damage. Dropping of the pipe onto the trench bottom will not be allowed. Any pipe or appurtenance which inadvertently or otherwise has not been laid or jointed in accordance with the Contract Documents, shall upon direction of the Engineer at any time before final acceptance of the contract or before expiration of the guaranty period, be repaired or be removed and replaced at the expense of the Contractor, and to the satisfaction of these Contract Documents.



13.03 Service Connection Sewers - The type and size of service connections shall be as indicated on the drawings or in the Special Technical Specifications.

The tee or wye branch shall normally be turned up so that it is on a  $45^{\circ}$  angle with the horizontal. The end shall be plugged or capped against ground water. Any service which would rise at more than a  $45^{\circ}$  angle to the property line may be constructed with a vertical riser. The cost will be included in the payment for service connections.

Where a service connection sewer is to be installed under this contract, a one-eighth bend shall be inserted in the branch fitting and the line laid on a straight and uniform grade to its end. The end shall be permanently plugged or capped if the actual connection is delayed. If a representative of the Engineer is not present when branches and service connections are installed, the Contractor shall note the station and depth of the tee, wye or service connection.

The minimum cover at the property line shall be (4) four feet unless otherwise directed in writing by the Engineer or property Owner.

Pipe locating tape such as "Terra" tape shall be laid over the pipe 12" below the finished surface. The material shall be laid the full length of the service connection and extend to the finished surface above the end of the pipe. The cost for this item will be included in the bid price for service connection pipe.

13.04 Dewatering - Dewatering, sufficient to maintain the ground water level at or below the surface of trench bottom or base of the bedding course shall be accomplished prior to pipe laying and jointing, if not prior to excavation and placing of the bedding as called for in Section 12.09. The dewatering operation, however accomplished, shall be carried out so that it does not destroy or weaken the strength of the soil under or alongside the trench.

13.05 Bedding - The pipe bedding shall be placed so that the entire length of the pipe will have full bearing. No blocking of any kind shall be used to adjust the pipe to grade except when a concrete cradle is used. Bell holes shall be dug as required to assure uniform support along the pipe barrel. All pipes shall be laid with Class B standard bedding unless otherwise indicated, specified or ordered by the Engineer.

13.06 Plugs and Connections - Plugs for pipe branches, stubs or other open ends which are not to be immediately connected shall be made of an approved material and shall be secured in place with a joint comparable to the main line joint.

13.07 Thrust Blocks - All changes in direction in force mains shall be anchored with concrete thrust blocks or other means as approved by the Engineer.

14.00 BACKFILLING - After completion of bedding and pipe cover, the pipe shall be backfilled so as not to damage or dislodge the pipe. Under no circumstances allow sharp, heavy pieces of material to drop directly onto the pipe or pipe zone material. Do not use backfill material of consolidated masses larger than one cubic foot.



All trenches shall be backfilled each day unless specific permission from the Engineer is given otherwise. Backfill continuously to maintain no more than 50 ft. of open trench as the work progresses. Completion of backfill, cleanup, and yard restoration in landscaped yards shall be done within 10 days after the lines are in. Planting and seeding shall be done within 30 days unless extended in writing by the Engineer. In no instance shall rock, hard clay lumps, cobbles, or debris be placed within twelve inches (12") of the pipe.

Where the Contractor elects to use the water settlement method, he shall determine the correct procedures and provide the quantity of water required to effectively complete saturation and settlement of the backfilled material. Any subsequent settlement of the trench or ditch during the guarantee period shall be considered to be the result of improper water settlement and shall be corrected at no expense to the Owner.

Water Settling of Trench Backfill - Backfill the trench as specified, to a point level with or slightly above the required grade to allow for settlement. Place water in the trench so that all portions of the backfill material for the entire trench depth becomes saturated.

When using the jetting method of water settlement, a minimum 1-inch pipe and supply hose shall be used. Extend the jetting pipe into the backfill to within two (2) feet of the pipeline, and operate until the trench is thoroughly saturated. Start at the lower end of the trench inserting the pipe on alternating sides of the trench at maximum 3-foot intervals.

Provide and maintain temporary surfacing over the trench to permit crossings and the normal flow of traffic until permanent street restoration is completed.

Any settlement of surfacing, shoulders, or yards during construction or the warranty period shall be the Contractor's responsibility and shall be promptly repaired by the Contractor at no cost to the Owner.

The Engineer may change the class of backfill or bedding when field conditions warrant without causing a change in the contract unit prices.

The portion of the trench from a point twelve inches (12") over the top of the pipe barrel to the surface of the ground or subgrade shall be backfilled as follows:

A. Class A Backfill - Backfill the trench with the material excavated. Place the material in lifts not to exceed two (2) feet and compact to insure that no bridging occurs. Mound the excess material over the trench. If trench is compacted, dispose of excess material.

B. Class A-1 Backfill - Backfill as required for Type A except the compaction in two (2) foot lifts may be eliminated.

C. Class B Backfill - Backfill the trench with the material excavated. Place the material in the trench and compact by water settling, vibrating and/or other approved methods, to achieve a relative density of ninety percent (90%) as



determined by AASHTO Method T-99 "A" or until no further settlement occurs. Mound the excess material over the trench, except where trench area is to be restored, improved by surfacing, or other means. Top the trench with uncompacted topsoil as specified in Section 7.00 of this specification when in landscaped areas. Dispose of excess material.

D. Class C Backfill - Backfill the trench with the material excavated. Place the material in six (6") to eight (8") inch layers and compact with mechanical tampers to a relative density of ninety-five percent (95%) as determined by AASHTO Method T-99 "A" or until no further settlement occurs.

Upon the Contractor's written request, the thickness of the layers may be increased if the moisture content and material is suitable and the Contractor can demonstrate that he can consistently meet the compaction requirements.

E. Class D Backfill - Backfill the entire trench with approved granular material. Compaction shall be by flooding, vibration, or other approved methods to achieve a relative density of ninety-five percent (95%) as determined by AASHTO Method T-99 "A" or until no further settlement occurs. When mechanically compacting, the material shall be vibrated in 12" layers until no further settlement occurs, unless a thicker layer is approved by Engineer and demonstrated to meet compaction requirements. Excavated material shall be loaded directly into trucks and removed from the trench site.

14.01 Testing - Any portion of the backfill may be tested for specified compaction. Failure of the material to achieve the specified density will be just cause for rejecting any portion of, or all of the material represented by the test. Payment for performing tests by a licensed testing laboratory shall be made by the Owner. The Contractor shall pay for all subsequent retesting if any tests fail to meet specifications. All other costs associated with this test or any delays caused by it, shall be borne by the Contractor. Whether or not the Engineer calls for tests will not relieve the Contractor of his responsibility to provide adequate compaction and to restore any subsequent settlement.

#### 15.00 MANHOLE CONSTRUCTION

15.01 Dewatering - Dewatering of the site shall conform to the requirements for sewer trench dewatering as described elsewhere in these specifications.

15.02 Subbase Preparation - Adequate foundation for all manhole structures shall be obtained by removal and replacement of unsuitable material with well graded granular material; or by tightening with coarse ballast rock, or by such other means as provided for foundation preparation of the connected sewers. Where water is encountered at the site, all cast-in-place bases or monolithic structures shall be placed on a one-piece waterproof membrane, so placed as to prevent any movement of water into the fresh concrete.

15.03 Bedding - Precast base sections shall be placed on a well graded granular bedding course conforming to the requirements for sewer bedding but not less than four (4") inches in thickness and extending either to the limits of the excavation or



to a minimum of 12 inches outside the limits of the base section. In the latter case, the balance of the excavated area shall be filled with select material compacted to the level of the top of the bedding to positively prevent any lateral movement of the bedding when the weight of the manhole is placed upon it. The bedding course shall be firmly tamped and made smooth and level to assure uniform contact and support of the precast elements.

15.04 Concrete Base - The concrete base for precast manholes shall be constructed to permit the first section of the precast manhole to have uniform bearing throughout the full circumference of the manhole wall. Sufficient mortar shall be deposited on the concrete base to provide a watertight seal between the base and the manhole wall. The concrete base shall not be placed in water and if the trench foundation is not stable the Contractor shall over-excavate to a depth below invert to provide a firm foundation. The over-excavation shall be brought to grade with clean crushed rock.

The Contractor will include all costs in the unit price for manholes for adapting precast bases to final alignment as staked, including stubouts and service connections.

Precast concrete bases shall be formed without channels. The channels will be formed after the manhole and lines are in place.

15.05 Manhole Invert - The invert of the manhole shall conform to details shown on the drawings. Care shall be taken to construct the invert of the manhole to provide smooth flow characteristics. No sharp edges or rough sections which will obstruct the flow of sewage will be permitted. In general, the invert shall be constructed to a section identical with that of one-half the sewer pipe. Where size of sewer pipe is changed at the manhole, the invert shall be constructed in the form of a smooth transition without abrupt breaks or unevenness of invert surfaces.

Where a full section of concrete sewer pipe is laid through the manhole, the top half shall be broken out and the exposed edge of the pipe completely covered with mortar. During construction of the invert section, and for a period of not less than 24 hours following placement of concrete or mortar in the invert sections, the Contractor shall temporarily divert existing flows of groundwater or sewage to prevent damage to the fresh concrete or mortar until initial set has been achieved.

15.06 Manhole Walls - Manhole walls shall be constructed plumb and true in accordance with the details shown on the drawings. Where walls are constructed using precast concrete sections, joints shall be sealed with Ram-Nek, Polymeric Water Gel or equal to provide a watertight joint which will prevent infiltration of groundwater into the manholes.

15.07 Pipe Connection and Stubouts - All unreinforced pipes entering or leaving the manhole shall be provided with flexible joints within 12 inches of the exterior wall of the manhole structure and shall be placed on firmly compacted bedding, particularly within the area of the manhole excavation which normally is deeper than that of the sewer trench. Special care shall be taken to see that the openings through which pipes enter the structure are thoroughly sealed with grout to ensure watertightness. Smooth wall pipe, such as PVC, shall be fitted with seepage prevention devices as recommended by the pipe manufacturer, to prevent leakage. Unless otherwise noted on the Plans, pipe for future connections of sewers to manholes shall be furnished in the shortest practicable length. The maximum length of the stub, measured from the outside of the manhole wall shall be 1 foot.



15.08 Finish Grade Adjustment - Final elevation for each manhole frame in surfaced areas will be tilted to conform to the existing street surface plane and grade and raised 3/8" to prevent surface water from entering the manhole. Set manholes 2"-6" above finished ground in undeveloped areas and 1" in landscaped areas.

15.09 Street at Grade - Where work is in paved streets or areas which have been brought to grade, not more than 12 inches of concrete grade rings shall be provided for adjustment of the casting ring to street grade. Provide additional steps, if necessary, to maintain 24 inch maximum to first step from the top of the manhole lid.

15.10 Backfill - Backfill around the manhole shall be as specified for pipe backfill.

15.11 Manhole Steps - Manhole steps shall be placed at a maximum spacing of 12 inches. The bottom step shall not be more than 12 inches above the channel of the manhole. The top step shall not be more than 24 inches below the top of the manhole cover. Manhole steps shall be placed parallel to lines flowing through where possible.

15.12 Manhole Coating - After the manhole is constructed, the entire outside area of the manhole shall be coated with a coal tar material when normal high ground water is above the sewer. The dry thickness of the coal tar after application shall not be less than 1/16 inch.

#### 16.00 STREET SURFACING, DRIVEWAYS, CURBS AND SIDEWALKS

Pavement or other street surfaces shall be neatly cut only to the minimum width which will permit the proper excavation and bracing of the trench. All surfacing destroyed or damaged by the Contractor's equipment and operations outside the trench area shall be the responsibility of the Contractor to restore. Sidewalks shall be removed to regular lines and squares, but where practicable, removal may be avoided by tunneling. Where possible, the cutting of curbs shall also be avoided by the use of tunnels. Where the bid prices provide payment for cutting and replacing pavement, sidewalks or curbs, and if in order to minimize surface disturbance and traffic interference, the Contractor elects to use the tunnel method, he shall be allowed the same full measurement as though all material had been removed.

Pavement and concrete materials removed shall be hauled from the site and not used for trench backfill. Wherever old pavement is encountered at any depth below an existing wearing surface, no extra payment will be made for work incidental to cutting, removal, restoration of such pavement. It is the responsibility of the Contractor to ascertain for himself the conditions which exist with regard to old pavements or wearing surfaces and all costs due to their existence and restoration shall be absorbed in the unit price of his bid.

The Contractor shall replace all street surfacing damaged during construction. The restoration shall be at least equal in workmanship and materials to the original surface. The restoration shall comply with the requirements of the governing authorities having jurisdiction over the particular street or road. Asphaltic concrete surfacing located in the State of Oregon shall meet the requirements of the Oregon State Highway Department specifications for Class B or C asphaltic concrete. Asphaltic concrete surfacing located in the State of Washington shall conform to Washington State Highway Department specifications for Class C asphaltic concrete.



16.01 Trench Maintenance - Before the replacement of permanent surfacing, the Contractor shall maintain the trenches in an acceptable condition. Trenches shall be maintained during all seven (7) days of the week. Where asphalt concrete or Portland cement concrete surfacing is to be replaced, a temporary cold asphalt surface patch shall be applied within 24 hours after backfilling.

The Contractor shall be responsible for the replaced pavement for a period of one (1) year should it fail due to inadequate compaction of backfill or use of inferior surfacing materials. If the Contractor should fail to restore such trenches after proper notice, the Owner may restore the trench and charge the work to the Contractor or deduct the cost from any monies due the Contractor.

If patching is required during the warranty period to the extent where approximately fifty percent (50%) of the surface area is patched, the entire trench area, including the warranty patching, shall then be seal coated.

16.02 Subbase Depth - The depth of the compacted base and subbase for the following surfacing, unless specified otherwise on the drawings or in the Special Technical Specifications, shall be as follows:

| Type of Surfacing          | Size of Material | Depth of each course | Total Depth of base material |
|----------------------------|------------------|----------------------|------------------------------|
| Asphalt Concrete (2" & 3") | 2-1/2"-0"        | 8"                   | 14"                          |
|                            | 3/4"-0"          | 2"                   |                              |
| Asphalt Concrete (4")      | 2-1/2"-0"        | 12"                  | 14"                          |
|                            | 3/4"-0"          | 2"                   |                              |
| Gravel                     | 2-1/2"-0"        | 8"                   | 8"                           |
| Concrete                   | 3/4"-0"          | 8 1/2"               | 8 1/2"                       |
|                            |                  |                      |                              |
| Driveways                  | 2-1/2"-0"        | 4"                   | 6"                           |
|                            | 3/4"-0"          | 2"                   |                              |
| Walks                      | 3/4"-0"          | 2"                   | 2"                           |
| Oil Mat                    | 2-1/2"-0"        | 6"                   | 8"                           |
|                            | 3/4"-0"          | 2"                   |                              |



Compaction of base and subbase shall be 95% relative density as determined by AASHTO Method T-99 "A".

16.03 Surfacing Depth - Asphalt concrete surfacing over 2" in depth shall be installed in equal lifts not to exceed 2" in thickness. The upper lift shall be Class C. The depth of the compacted and completed surfacing unless specified otherwise on the drawings or in the Special Technical Specifications, shall be as follows:

| <u>Type of Surfacing</u>       | <u>Depth</u> |
|--------------------------------|--------------|
| Class "C" Asphalt Concrete     | 2" - Class C |
| Class "B & C" Asphalt Concrete | 3" & 4"      |
| Gravel                         | 3"           |
| Concrete                       |              |
| Streets                        | 7"           |
| Driveways                      | 6"           |
| Walks                          | 4"           |
| Oil Mat                        | 2"           |

16.04 Asphalt Concrete - The method of placement shall be as follows:

Remove the subbase material to the depth of pavement specified. Level and compact the exposed material. Clean the exposed edges of mud and loose material and if the surfacing has cracked beyond the trench edge, recut the surfacing to that point and replace or overlap existing surfacing with one continuous patch with uniform width. Prime the exposed edges with a tack coat, consisting of either an RS-1 or RS-2 emulsion or RC-2 or RC-3 liquid asphalt. Use plant mix asphalt concrete with a gradation equal to Oregon State Highway Class "B" or "C" mix at a minimum temperature of 250°. Compacted asphalt concrete shall not be placed when the temperature is below 45°F., or in water. The patch shall be left no more than 1/8" higher than the existing surface.

16.05 Gravel Surfacing - Gravel surfacing shall be replaced with the same type thickness of material leveled to a minimum depth of three inches (3"), with eight inches (8") of subbase.

16.06 Concrete Surfacing

Unless specified elsewhere, restore concrete surfacing as follows: The backfill shall be carried to a point 10 inches below the existing paving grade and compacted as specified elsewhere in these Specifications. The remaining 10 inches shall be backfilled with 8-1/2 inches of 3/4"-0" crushed rock thoroughly compacted and paved with a temporary layer of 1-1/2 inches of Asphaltic Concrete conforming to the crown and grade of the existing pavement.

When, in the opinion of the Engineer, all settlement of the backfill has occurred, he shall require the Contractor to remove the temporary asphalt paving and any settled, broken or otherwise displaced sections of concrete paving adjacent to the trench resulting from the Contractor's work or because of trench settlement, and resaw the paving as directed. The Contractor shall excavate the existing backfill to 7 inches below finish grade for the full trench width, and 10 inches where damaged existing concrete has been removed and use the salvaged 3/4"-0 crushed rock to level these sections to 7 inches below finish grade. The



concrete shall then be placed to conform to the crown and grade of the existing pavement, and expansion joints shall be placed wherever necessary to match those existing pavement.

The concrete shall have a strength of 3,300 psi for street and 2,500 for driveways, walks and curbs. Before placing concrete, the subgrade shall be thoroughly wetted.

Expansion joint materials shall be W.R. Grace Company, "Kork-Pak", non-extruding expansion joint filler Code 1321 or equivalent material meeting requirements of ASTM C-1752.

The concrete shall be deposited on subgrade evenly to avoid rehandling and segregation of aggregates. The surface of new work shall match the existing finish and marking. Only complete squares of sidewalks shall be replaced. The surface of all concrete shall be cured by keeping continuously wet or by application of an approved membrane.

16.07 Oil Mat - The surface replacement of oiled and light bituminous streets and roads shall be with plant mix asphalt for small trenches and patches. However, where sixty percent (60%) of the entire surface width and length has been damaged on any street, the Contractor shall have the option to use new gravel, reshape the street, and apply an Oregon State Highway Type 09 surface as required to restore the street to original crown and width.

The Contractor shall comply with OSHD requirements for materials and workmanship. He shall make repairs of all defects as needed during the initial cure and prior to expiration of the one-year warranty.

If surface replacement is required under this section because of damage to existing surfacing, the Contractor shall be paid on the same basis as set forth in Section 19.00, PAYMENT, within the limits described therein. The Contractor shall be responsible for any additional costs for damages to existing surfaces including areas outside the limits indicated, or for any additional costs associated with this method of surface restoration.

16.08 Maintenance of Drainage Ditches and Existing Utilities - The maintenance of drainage ditches, culverts and existing utilities on the job site during and after construction until final acceptance shall be the responsibility of the Contractor.

A. Ditches - The ditches shall be kept clean to allow the movement of water. Damming will be allowed provided flooding on the adjacent property can be prevented. Damages due to flooding shall be the responsibility of the Contractor.

Drainage ditches crossed or paralleled by sewer trenches shall be brought back to prior ditch grade and cross-section after settlement of the sewer trench backfill.

If sand is used for backfill along or across ditches, the ditch and banks shall be stabilized with material approved by the Engineer, such as, one layer of 2-1/2" aggregate to prevent the sand from sloughing into the ditch.

B. Culverts and Existing Utilities - The excavation under and immediately adjacent to existing utilities shall be backfilled with crushed rock. All utilities shall be restored to equal or better than the condition as specified elsewhere. Utilities damaged by the Contractor shall be repaired or replaced at his expense.



16.09 Surfacing Around Manholes, Cleanouts and Valve Boxes - In unpaved or unimproved areas, sterilize the soil a minimum of one (1) foot from the outside of the structure. Place a minimum of three inches of asphalt or 3/4 crushed rock with cold bitumastic emulsion, to prevent vegetation from camouflaging structures. The cost shall be included in the payment for excavation and backfill.

17.00 CLEANUP

Cleanup of all construction, debris, excess excavation, excess materials and complete restoration of any and all structures or other items damaged by the Contractor's operation, shall be completed 10 working days after final backfill. Clean all spilled dirt, gravel, or other foreign material caused by the construction operations from all streets and roads at the conclusion of each day's operation.

Give all streets, roads, or detours used for hauling material to or from the construction area an oil dust preventive treatment or continually water to prevent dust.

Dust prevention measures shall be continuous until final acceptance by the Owner.

All sewer lines, force mains, and manholes shall be clean and free from dirt, gravel, rock and debris. The use of pressure flushing or a ribbed flushing ball will be required, when flushing, to remove foreign matter from all sewer lines. Such materials shall not be flushed into other sewer lines, treatment plants or pumping stations. Should any such material reach such pumping station or treatment facilities, it shall be removed and any damage repaired by the Contractor in accordance with the requirements of the Engineer.

Failure to comply with these requirements will be just cause to withhold progress payments until deficiencies are corrected.

18.00 TESTING FOR ACCEPTANCE

All sanitary sewer pipe service connections, and appurtenances shall be cleaned by flushing, and shall be tested. Service connections must be completed prior to testing. Where aggregate or other debris is in the lines, they shall be cleaned by pressure flushing, such as a hydraulic rodder, or a ribbed flushing ball prior to testing.

Storm drain pipe and appurtenances shall be cleaned and may be tested after backfill, when specified.

Force mains shall be cleaned and shall be tested after backfill by a pressure test. The Contractor shall furnish all labor, materials, tools, and equipment necessary to make the test, clean the line and perform all work incidental thereto. Precautions shall be taken to prevent joints from drawing during tests, and any damage resulting from tests shall be repaired by the Contractor at his own expense. The manner and time of testing shall be subject to approval of the Engineer, provided that the Engineer may limit pipe footage to be laid without testing.



The first section of pipe not less than three hundred (300) feet in length installed by each crew shall be tested, if required by the Engineer, in order to qualify the crew and/or the material; and successful installation of this section shall be prerequisite to further pipe installation by the crew.

In the event any test section fails to meet the "test" requirements, the Contractor will be required to correct the defective material or workmanship in a manner approved by the Engineer, and a test rerun until the test section meets the respective requirements.

Pipe failing to "test" shall be repaired by the "Plastic Injection Method," or approved equal, providing the pipe is acceptable to the Engineer. Generally this shall be accomplished by forcing chemical sealing materials, under pressure, into the infiltration point through a system of pumps, hoses and sealing device. Structurally unsound pipe shall be replaced. In no case will the use of "anti-hydro" be permitted to effect repairs.

The fact that an entire section may pass the test requirements will not relieve the Contractor of locating, repairing, or replacing faulty joints, visual leaks, or sections causing a considerable portion of leakage.

**18.01** Water Testing of Gravity Lines - The gravity lines shall be tight against leakage. The Engineer may require a hydrostatic test on any or all portions of the completed line. The test may be either interior or exterior and shall have a head that will cover all joints by four feet (4').

**A. Leakage Requirements** - Pipe and joints shall sustain a maximum leakage limit of four-tenths (0.4) gallons per hour per inch diameter per one-hundred (100) feet of pipe when field tested by actual infiltration conditions. For exfiltration testing the requirement is the same, except that an allowance of an additional ten percent (10%) of gallonage shall be permitted for each additional two (2) foot head over a basic four (4) foot minimum internal head. Head shall be measured from the crown of the lower end of the pipe section being tested.

**B. Allowance for Absorption** - At the Contractor's option, pipe may be filled up to twenty-four (24) hours prior to the time of exfiltration testing to permit normal absorption into the pipe walls to take place. Where water for infiltration is supplied by flooding the trench, such flooding shall be commenced at the Engineer's option, up to twenty-four (24) hours prior to the time of testing or until such lesser time as measured infiltration becomes reasonably constant.

**C. Inclusion of Laterals and Manholes** - All lateral branches included in the test section shall be taken into account in computing allowable leakage. An allowance of 0.2 GPH per foot of head above invert shall be made for each manhole included in a test section. If a test produces more than the allowable leakage the Contractor should test manholes and line separately.

**D. Plugging of Wyes, Tees or Stubs** - All wyes, tees or stubouts shall be plugged with flexible-jointed caps, or acceptable alternates, securely fastened to withstand the internal test pressure. Such plugs or caps shall be readily removable and their removal shall provide a socket suitable for making a flexible-jointed lateral connection or extension.



E. Testing Equipment and Procedures - The Contractor shall furnish all necessary testing equipment, and shall perform the tests in a manner satisfactory to the Engineer. Any arrangement of testing equipment which will provide readily observable and reasonably accurate measurements of leakage under the specified conditions will be permitted.

In the event the Contractor elects to test large diameter pipe one (1) joint at a time, leakage allowances shall be converted from GPH per one hundred (100) feet to GPH per joint, by dividing by the number of joints occurring in one hundred (100) feet.

18.02 Pneumatic Testing of Gravity Sewer Lines - All sewer lines constructed shall be tested for leakage and all tests approved by the Engineer. Branch laterals shall be included in the allowable loss determination. The Contractor shall test the sewer line with a low pressure air test as follows:

The Contractor shall furnish all facilities and personnel for conducting the test under the observation of the Engineer. The equipment and personnel shall be subject to the approval of the Engineer. When the section of pipe to be tested is securely plugged, air shall be slowly supplied to the test section until the internal air pressure reaches 4.0 pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe. At least two minutes shall be allowed for temperature stabilization before proceeding further.

The rate of air loss shall then be determined by measuring the time interval required for the internal pressure to decrease from 3.5 to 2.5 pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe. The pipeline shall be considered acceptable when tested at an average pressure of 3.0 pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe. If the pipe installation fails to meet these requirements, the Contractor shall determine at his own expense the source or sources of leakage and shall repair or replace all defective materials or workmanship. The completed pipe installation shall then be retested, and shall meet the requirements of this test.

The average back pressure of any ground water shall be computed by adding 0.433 psi for each foot of ground water submerging the pipe to be tested. The ground water elevation shall be determined by the Contractor in a manner satisfactory to the Engineer.

Gauges shall be calibrated with a standardized test gauge calibration set at the commencement of each day of testing, or when called for by the Engineer. Calibrations will be witnessed by the Engineer. The Contractor shall furnish a stop watch for conducting all air tests with each set of test equipment. The minimum allowable time for the pressure drop to occur shall be computed by using the method, equations, and nomograph as published in the articles "Low Pressure Air Tests for Sanitary Sewers" previously quoted.

18.03 Force Main Pressure Test - All force mains shall be subjected to a pressure test in the presence of the Engineer. A separate test shall be made on each section of the project whenever any section of the work is installed in such a



manner as to permit its segregation as a unit. When the section of the work is ready for testing, a corporation stop shall be installed on the pipe to which a pressure gauge shall be installed. A curb stop shall then be installed before connecting to the pressure pump. The section of pipe to be tested shall be completely filled with water and care shall be taken to insure that no air pockets exist. The test pressure shall then be raised to 150 psi unless specified otherwise in the Special Technical Specifications. The test pressure shall then be held for one (1) hour, without losing over ten (10) pounds of that specified.

18.04 Testing Manholes - A random sample of sanitary sewer manholes selected by the Engineer not to exceed ten percent of the project amount or a minimum of five manholes, whichever is the greater, shall be tested by the Contractor by hydrostatic means. Leakage shall not be greater than 0.5 gallons per hour per foot of manhole depth.

If more than 50% of the manholes tested fail to conform with the allowable leakage specified herein, the Contractor will be required to test all or as many manholes as the Engineer shall deem necessary. If less than 50% of the manholes tested fail to conform, but the failures indicate a volume of infiltration in excess of 2 times the allowable, all, or as many manholes as the Engineer shall require, shall be tested.

Manholes failing to meet the test specifications shall be repaired by the Plastic Injection Method or equal, as approved by the Engineer.

18.05 TV Inspection - The Owner may conduct a video television inspection on the sewer mains prior to acceptance of the project. The Contractor will be required to correct any deficiencies prior to final payment. If more than 2 television inspections are required to insure the work complies with project requirements, the additional costs will be deducted from the final payment.

## 19.00 PAYMENT

All work not specifically included in the schedule of prices shall be absorbed within the various bid items.

19.01 Pipe, Excavation and Backfill - The payment for pipe, excavation and backfill shall include the cost of such items as, excavation for bell holes, manholes, fitting anchors, bracing, shoring, sheeting, pumping of water, handling of materials, bedding, backfilling, testing, disposal of excess material, maintenance of trench until surfacing is complete, cleanup and yard restoration and all other labor, material and other services necessary in connection with laying pipe, excavation, and backfilling of the trench. Where "V" trenching is done, payment for backfill will be the same as vertical wall trenching, and no additional allowance will be made for costs to restore the trench, additional pavement, existing facilities and utilities or structures.

No payment will be made for pipe until it has met the testing requirements.

A. Gravity Sewer Line or Storm Drain - Payment for gravity sewer or storm drain pipe, excavation, and backfill shall be based on the depth of the trench



per horizontal lineal foot of pipe installed, measured from the center of the beginning and ending manholes or cleanouts, and to the end of service connection sewers. The depth shall be measured from the center line ground elevation to the invert, or flow line of the pipe. The unit price per foot for each increment of depth shown on the proposal, shall include all costs incurred for the pipe, excavation, backfilling and testing. Service connection sewers and gravity lines installed with more than a 15% slope, will be paid on the actual footage installed.

B. Pressure Sewer Line - Payment for pressure sewer pipe, excavation, and backfill, per horizontal lineal foot installed shall be based on a depth that will permit a minimum of thirty-six inches (36") of cover over the top of the pipe, unless otherwise specified on the drawings or in the Special Technical Specifications. The unit price per foot shall include all costs incurred for the pipe, excavation and backfill.

C. Bedding - Where Class B & C bedding is specified, the applicable costs of bedding excavation, material, and placement shall be included in the payment for gravity or pressure line trench excavation and backfill. Class A bedding shall be paid on a horizontal lineal foot basis and shall include additional materials and methods that exceed Class B bedding costs.

D. Highway & Railroad Undercrossings - The payment for highway and railroad undercrossings shall be the cost per foot for furnishing all plant, labor and materials necessary to construct the bores according to the plans and specifications. The work shall include the casing in place, connecting to existing stubouts where applicable, sewer or force main pipe, necessary blocking and support, granular filler when specified, testing, and all related work to provide a complete installation. Pavement restoration will be paid for separately under the applicable item for replacing pavement.

19.02 Manholes - Standard manholes will be paid for at the unit price bid for each eight (8) foot deep manhole. The depth shall be measured from the invert to the top of the casting. The unit price for a standard manhole shall contain the concrete base, channels, barrel section, steps, frame and cover as a complete unit as detailed on the standard drawings.

Drop manholes shall be paid for as a separate bid item and shall include pipe fittings, steel reinforcement, extra excavation, and concrete required to complete the manhole as required and as detailed on the standard drawings.

Extra depth of manholes will be paid for on a unit price per foot of depth over eight (8') feet measured from the center of the manhole.

No extra payment will be made for excavating and backfilling in connection with manhole construction.

19.03 Stub-out, Wyes, Tees, Fittings, 1/8 Bends, and Plugs or Caps - The cost of these items will be paid for under the applicable items of the Proposal on a unit basis.

Payment for stub-outs shall include the plug.



Blockouts may be used in lieu of stub-outs for future connections with the written approval of the Engineer. There will be no payment for blockouts except when ordered by the Engineer.

19.04 Service Connection Sewers and Vertical Risers - Excavation and backfill from the eighth bend to the end of the service lateral shall be measured and paid for as described in the applicable paragraphs of Section 21.01.

Excavation and backfill for vertical risers shall not be paid separately, but shall be included in the payment for the main line sewer.

19.05 Clean-outs - Payment for clean outs shall be for each unit installed. The price for each unit shall include labor, excavation, and materials. No allowance shall be made for varied depths of cleanouts.

19.06 Surfacing - Payment for surfacing area shall be computed by taking the actual centerline distance of the surfacing cut times a width which shall be equal to the inside diameter of the pipe plus two feet (2') (one foot for each side of the pipe measured from the pipe centerline). Should a trench follow along the edge of a surfacing, the area for payment shall be computed on the "neat line" actually cut, measured from the pipe centerline, not to exceed the amount stated above. No additional allowance will be made for replacing pavement resulting from cave-ins or "V" trenching. Surface replacement at manholes shall be the area calculated for the trench plus three (3) square yards.

Should the Contractor elect to tunnel any curb, sidewalk, or street, he shall be paid on a square footage basis for the surfacing as if he had cut and replaced the curb, sidewalk, or street.

19.07 Granular Bedding for Reinforcement of Subgrade - Where granular bedding material is required to reinforce the trench bottom for pipe or manhole bedding, it shall be paid for by the cubic yard. The amount used shall be determined by multiplying the depth by the trench width by the trench length. The cost per cubic yard shall include the costs of additional bedding, excavating and disposing the unstable material, and all handling and placement.

19.08 Testing - Testing shall be included in the unit contract price for pipe.

## 20.00 FINAL INSPECTION

The work will not be considered complete or the final payment certificate issued until all rubbish, unused material, or equipment shall have been removed, and the premises left in a condition satisfactory to the Owner and the Engineer.



# CITY OF NEWBERG, OREGON

## SEWERAGE SYSTEM IMPROVEMENTS

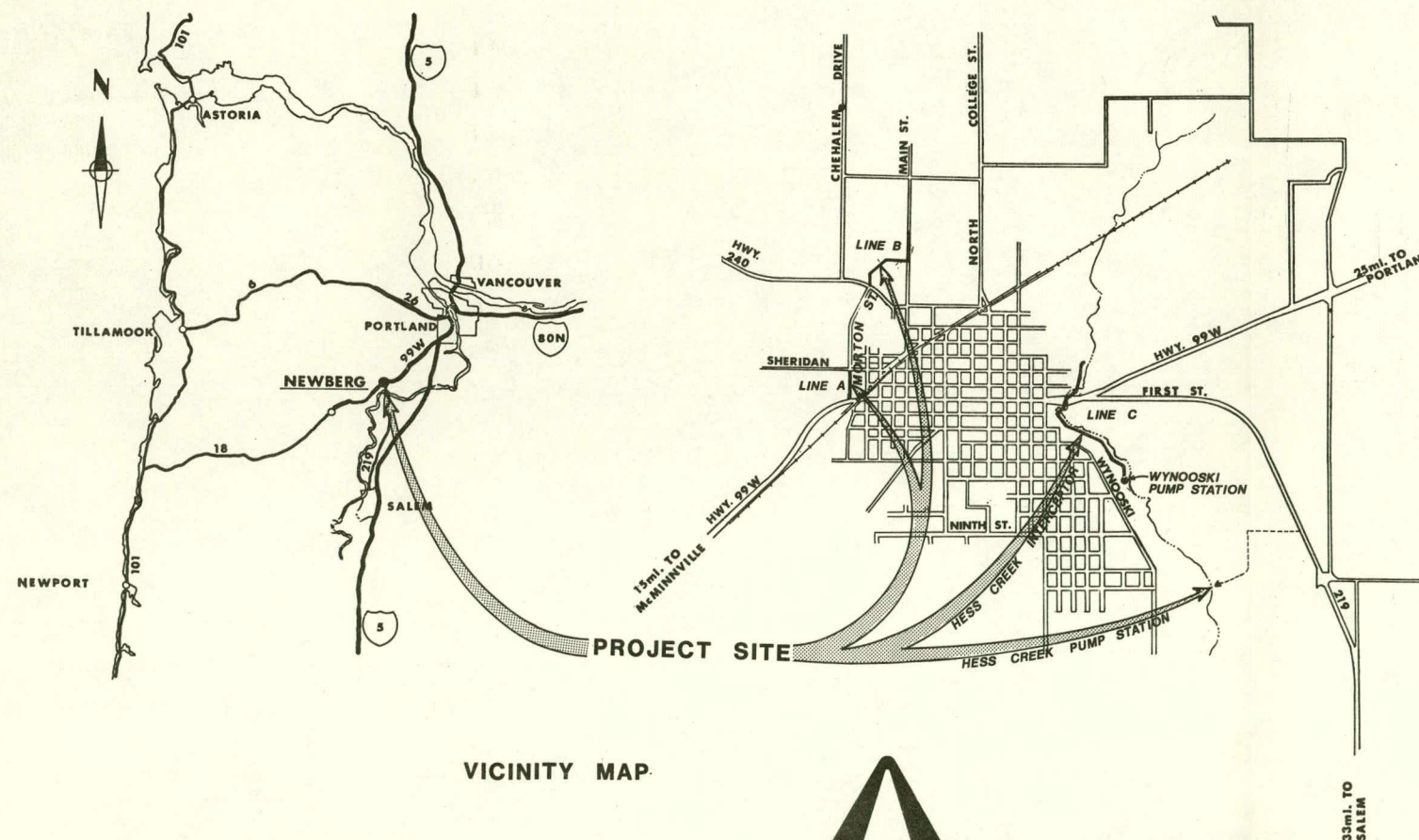
MORTON STREET INTERCEPTOR UPGRADING  
 HESS CREEK INTERCEPTOR UPGRADING  
 HESS CREEK PUMP STATION MODIFICATIONS  
 JULY , 1980

### INDEX

#### SHEET NO.

#### TITLE

- 1) PLAN & PROFILE LINE "A" STA 0+00 TO 6+25
- 2) PLAN & PROFILE LINE "B" STA 0+00 TO 13+16
- 3) PLAN & PROFILE LINE "C" STA 0+00 TO 12+25
- 4) PLAN & PROFILE LINE "C" STA 12+25 TO 21+50
- 5) PLAN & PROFILE LINE "C" STA 21+50 TO 32+35
- 6) SPECIAL DETAILS
- 7) STANDARD DETAILS
- 8) PUMP STATION MODIFICATIONS



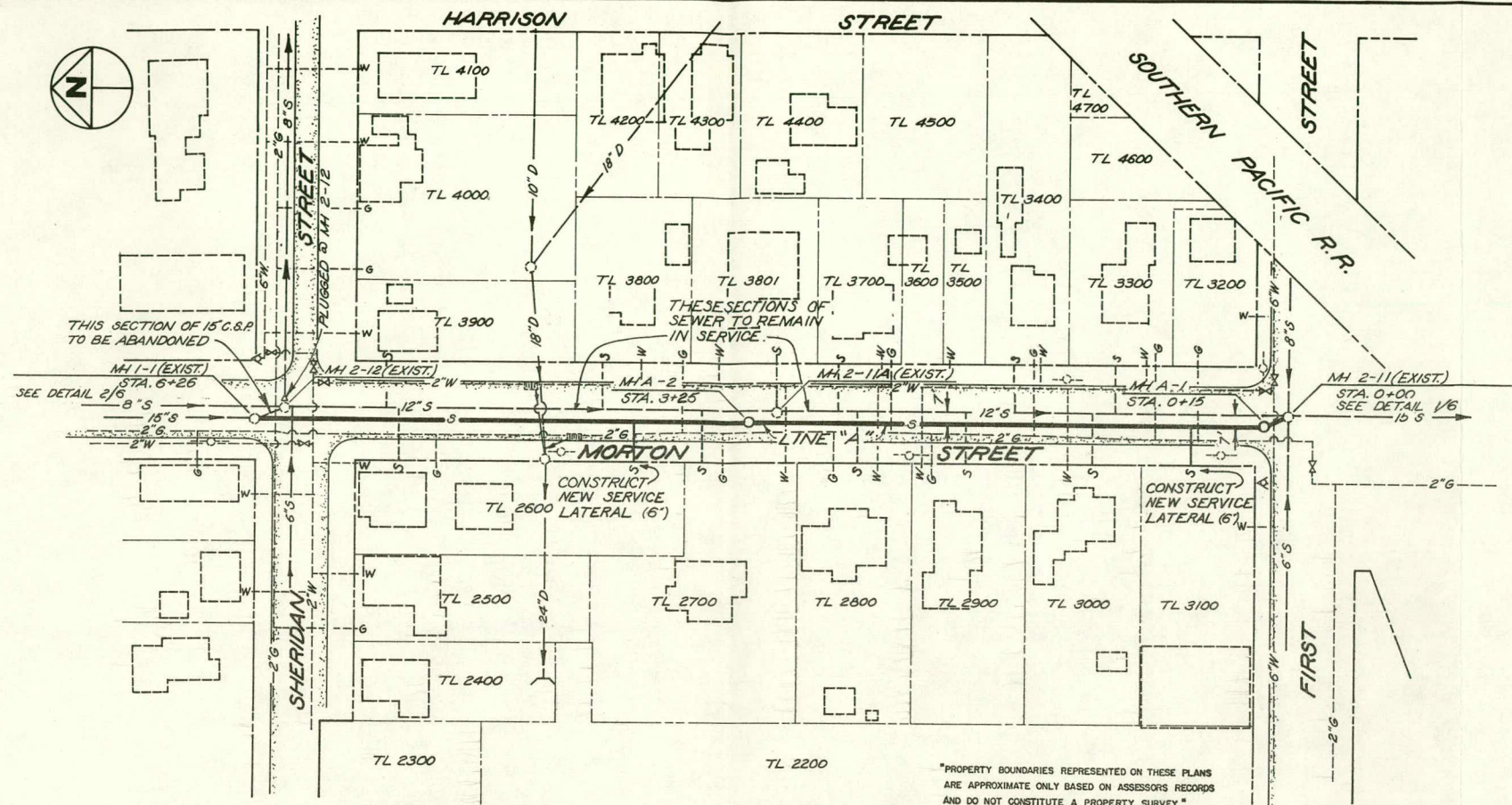
SET NO.

Robert E Meyer Consultants



# LEGEND

|                             |      |
|-----------------------------|------|
| SANITARY SEWER (NEW)        | —S—  |
| SANITARY SEWER (EXIST.)     | —S—  |
| SERVICE CONNECTION          | —S—  |
| BORE CASING                 | —S—  |
| MANHOLE (NEW)               | —○—  |
| MANHOLE (EXIST.)            | —○—  |
| STORM SEWER (EXIST.)        | —D—  |
| PROPERTY LINE               | —    |
| RIGHT-OF-WAY LINE           | —    |
| EASEMENT BOUNDARY           | —    |
| FENCE LINE                  | —x—  |
| WATER LINE                  | —W—  |
| GAS LINE                    | —G—  |
| TELEPHONE CABLE             | —TC— |
| UNDERGROUND POWER           | —E—  |
| DRAIN TILE                  | —o—  |
| ELECTRICAL OUTLET STANDPIPE | □    |
| UTILITY POLE                | —○—  |
| LUMINAIRE POLE              | ⊙    |
| CATCH BASIN                 | □    |
| BRIDGE                      | —    |
| CULVERT (EXIST.)            | —    |
| BACKFILL TYPE (PER SPEC.)   | —    |
| GATE VALVE                  | —    |
| FIRE HYDRANT                | ⊙    |
| CURB LINE (EXIST.)          | —    |

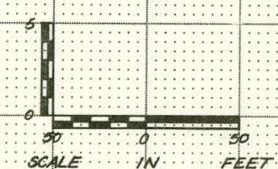
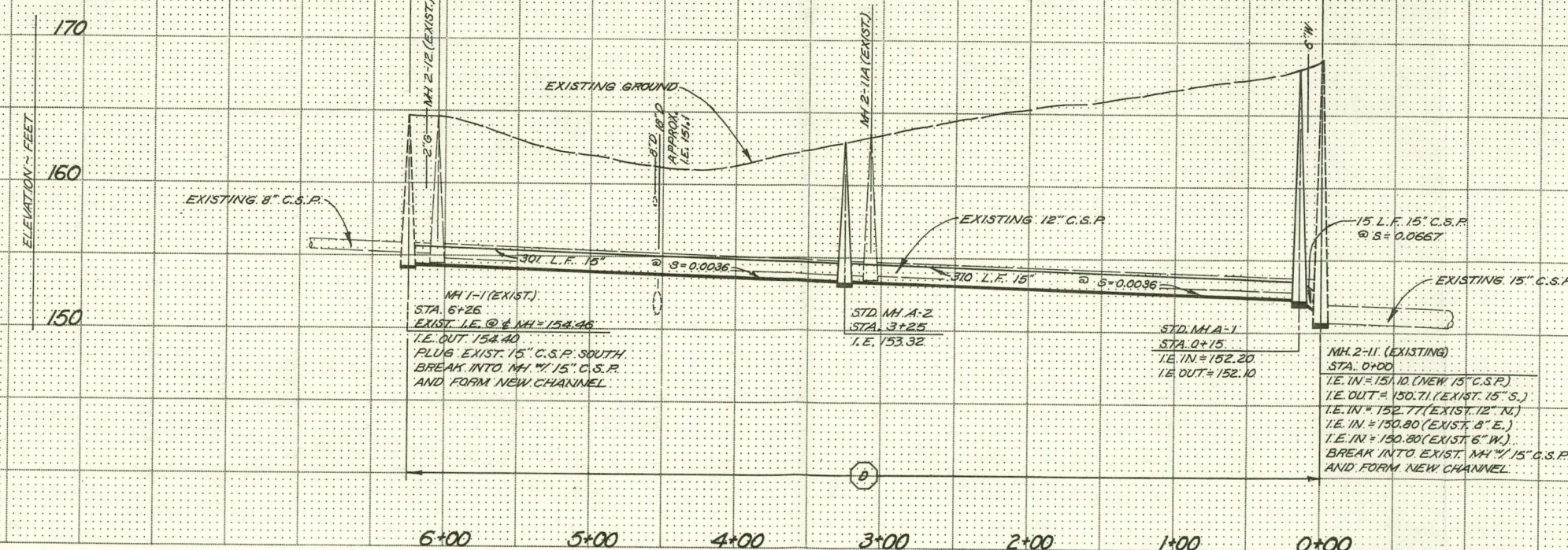


## GENERAL NOTES

- 1.) THE EXISTING UTILITIES ARE SHOWN ON THESE PLANS TO AID THE CONTRACTOR DURING BIDDING AND CONSTRUCTION. THE UTILITY LOCATIONS AS SHOWN ARE TAKEN FROM THE VARIOUS UTILITY COMPANY "AS CONSTRUCTED" PLANS. ROBERT E. MEYER CONSULTANTS, INC. TAKES NO RESPONSIBILITY FOR THE EXACTNESS OF THESE LOCATIONS. IT IS THE CONTRACTORS RESPONSIBILITY TO HAVE THESE UTILITIES FIELD LOCATED PRIOR TO CONSTRUCTION STAKE OUT AND TO PROTECT THEM DURING CONSTRUCTION.
- 2.) ELEVATION DATUM BASED ON U.S.C. & G.S. 1974 DATUM BENCH MARKS:  
A) TOP OF I.P. IN MONUMENT BOX LOCATED APPROX. 250' SOUTHWEST OF THE NATIONAL GUARD ARMORY IN E. OF MORTON ST.  
ELEV. = 164.31 (NEWBERG B.M. NO. 23)  
B) TOP OF MONUMENT BOX @ INTERSECTION OF 4TH ST. AND RIVER ST.  
ELEV. = 170.26 (NEWBERG B.M. NO. 6)
- 3.) GRADES & INVERT ELEVATIONS ARE CALCULATED AT CENTER LINES OF MAIN HOLES.
- 4.) FOR LINE "A", RECONNECT ALL WEST SIDE SEWER SERVICES TO NEW LINE, LEAVE EASTSIDE SERVICES CONNECTED TO EXISTING LINE. LOCATION OF SERVICE LATERALS AS SHOWN ON THE PLANS ARE SCHEMATIC ONLY. THE CITY WILL PROVIDE T.V. LOCATION REPORTS OF EXISTING SERVICE LATERALS.
- 5.) ALL BEDDING IS CLASS "B" PER SPECIFICATIONS. ALL BACKFILL TYPES ARE DESCRIBED IN THE "STANDARD TECHNICAL SPECIFICATIONS FOR SEWERS AND DRAINS."

## LINE "A"

REPLACE EXISTING  
PAYEMENT WITH  
3\"/>



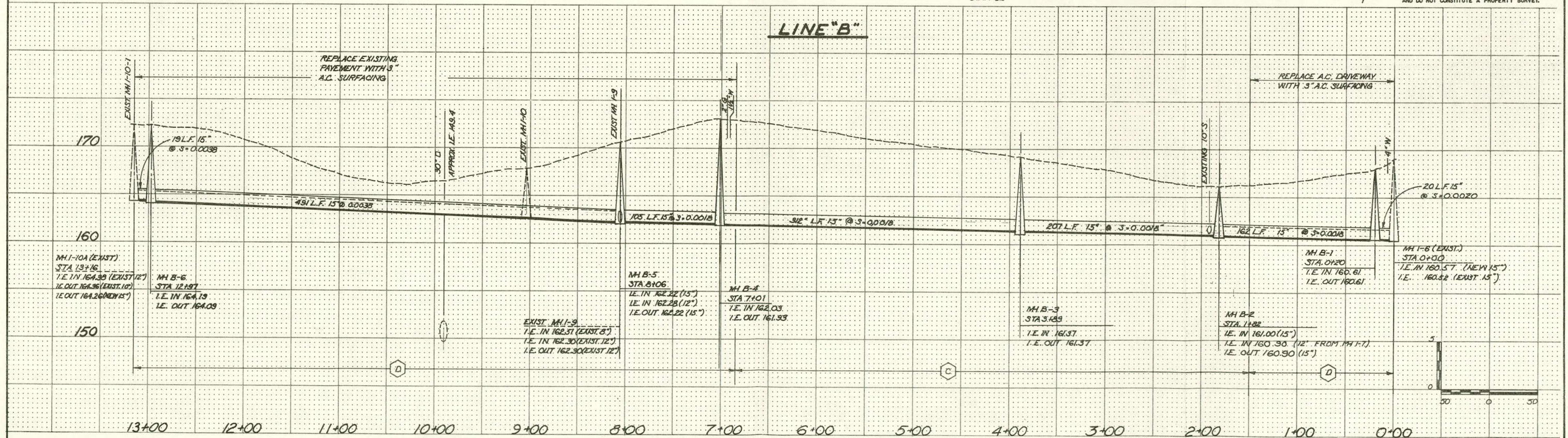
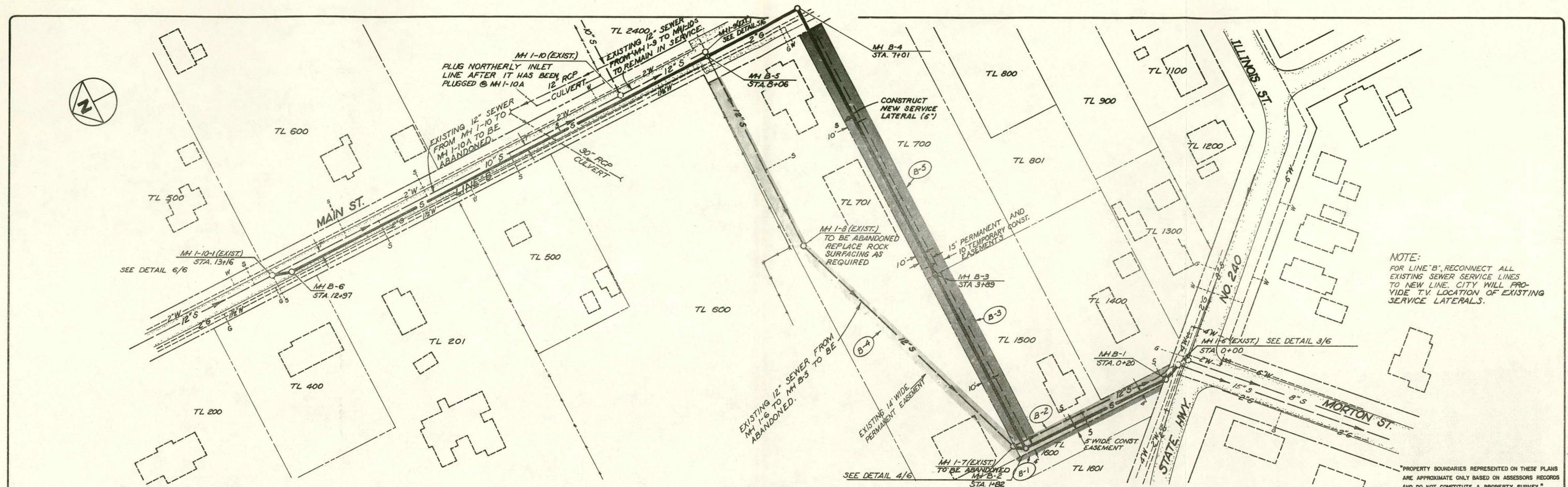
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14250 S.W. Allen Blvd.  
Beaverton, Oregon  
97005 (503) 643-7531

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| NO.       | BY | DATE |
| REVISIONS |    |      |

**CITY OF NEWBERG, OREGON**  
SEWERAGE SYSTEM IMPROVEMENTS

**PLAN & PROFILE**  
**LINE "A"**  
STA. 0+00 TO STA. 6+25





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NO. \_\_\_\_\_ BY \_\_\_\_\_ DATE \_\_\_\_\_  
DESIGN REVISIONS \_\_\_\_\_ G.R.S. 2/27/90

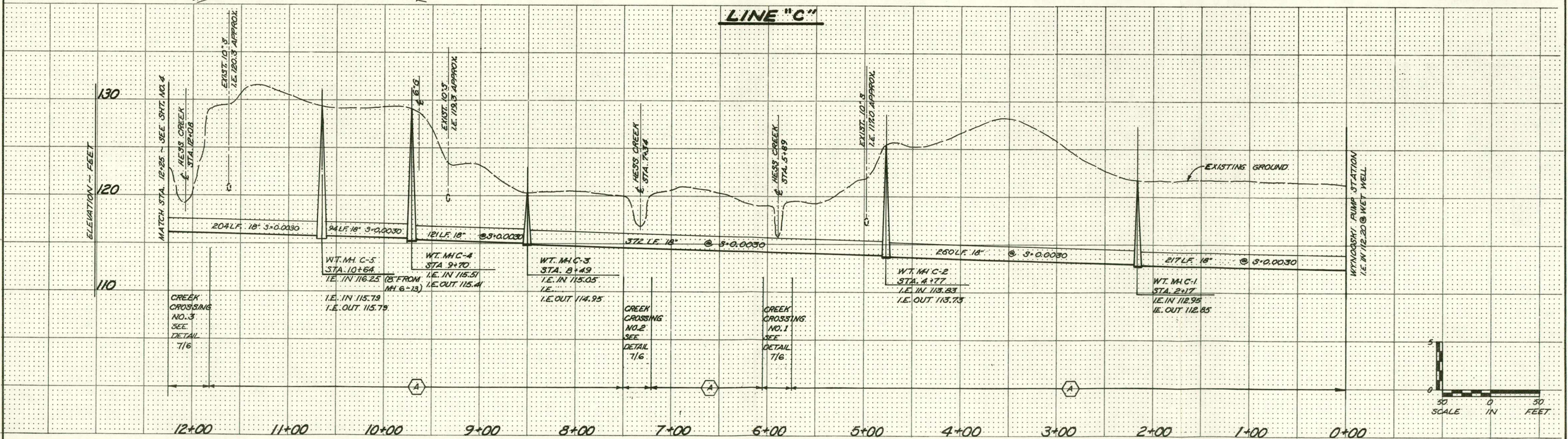
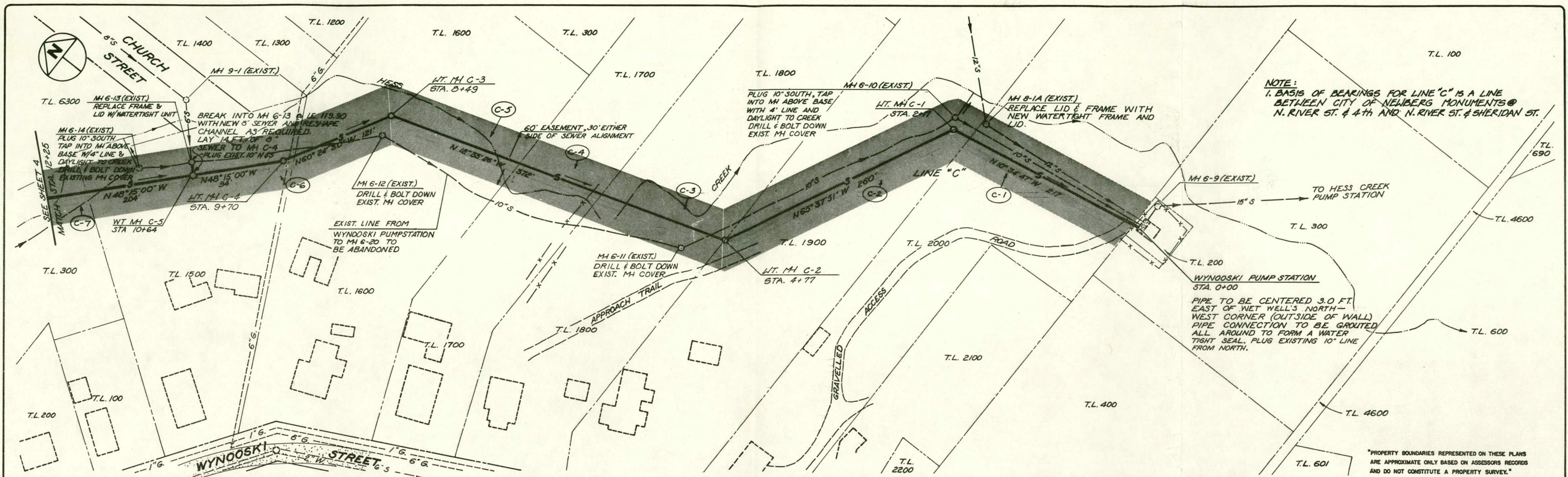
**CITY OF NEWBERG, OREGON**  
SEWERAGE SYSTEM IMPROVEMENTS

**PLAN & PROFILE**  
**LINE "B"**  
STA. 0+00 TO STA. 13+16

2 OF 8  
FILE 7067  
09/5-37

DESIGN: RFD, FRG DRAWN: RFD CHECKED: LKA APPROVED: [Signature] SCALE: HOR. 1"=50', VERT. 1"=5' DATE: DEC., 1979





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| NO. | REVISIONS | BY | DATE |
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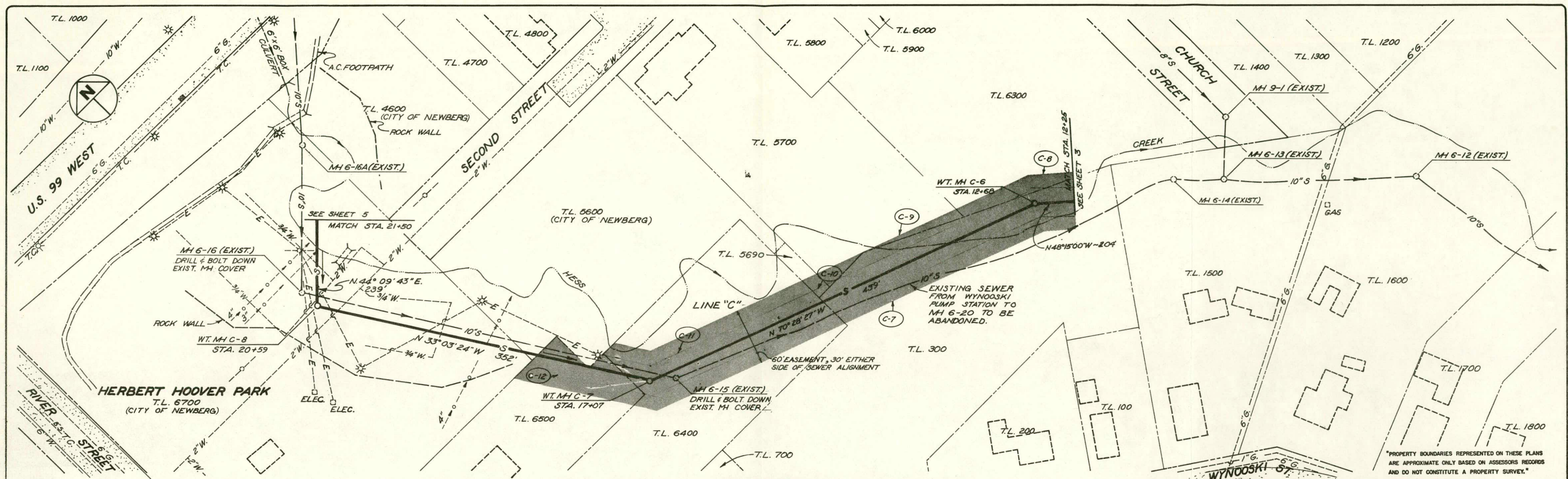
**CITY OF NEWBERG, OREGON**  
SEWERAGE SYSTEM IMPROVEMENTS

**PLAN & PROFILE**  
**LINE "C"**  
STA. 0+00 TO STA. 12+25

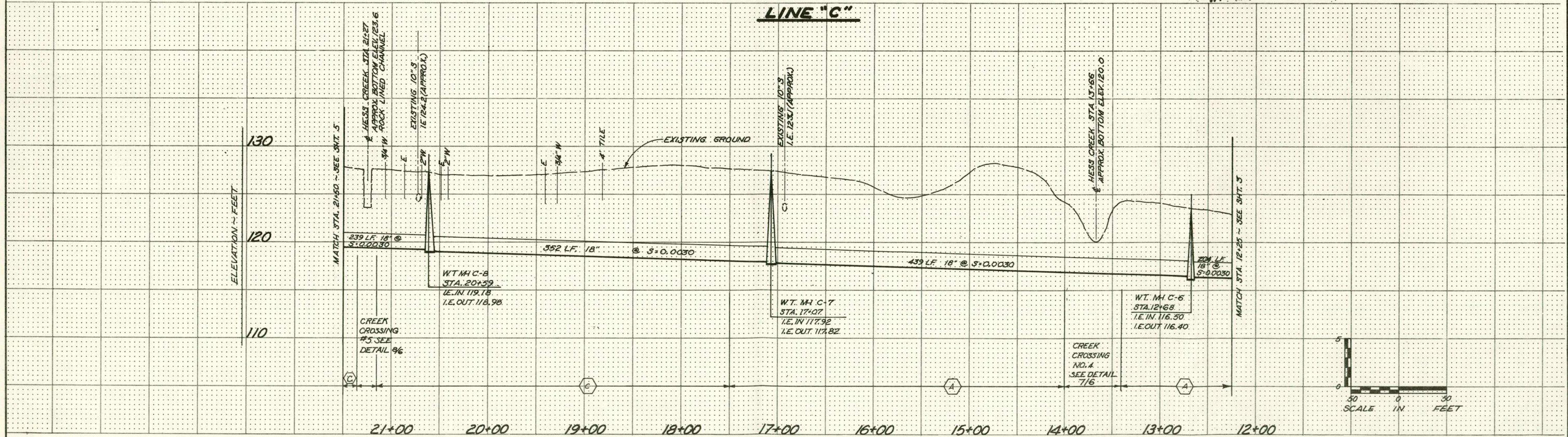
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FILE 7068  
09/15/31

DESIGN: RFD, FRG DRAWN: RFD CHECKED: LKA APPROVED: [Signature] SCALE: HORIZ: 1"=50' VERT: 1"=5' DATE: DEC. 1979





PROPERTY BOUNDARIES REPRESENTED ON THESE PLANS ARE APPROXIMATE ONLY BASED ON ASSESSORS RECORDS AND DO NOT CONSTITUTE A PROPERTY SURVEY.



SCALE 1" = 50' HORIZONTAL  
1" = 5' VERTICAL



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REVISIONS \_\_\_\_\_

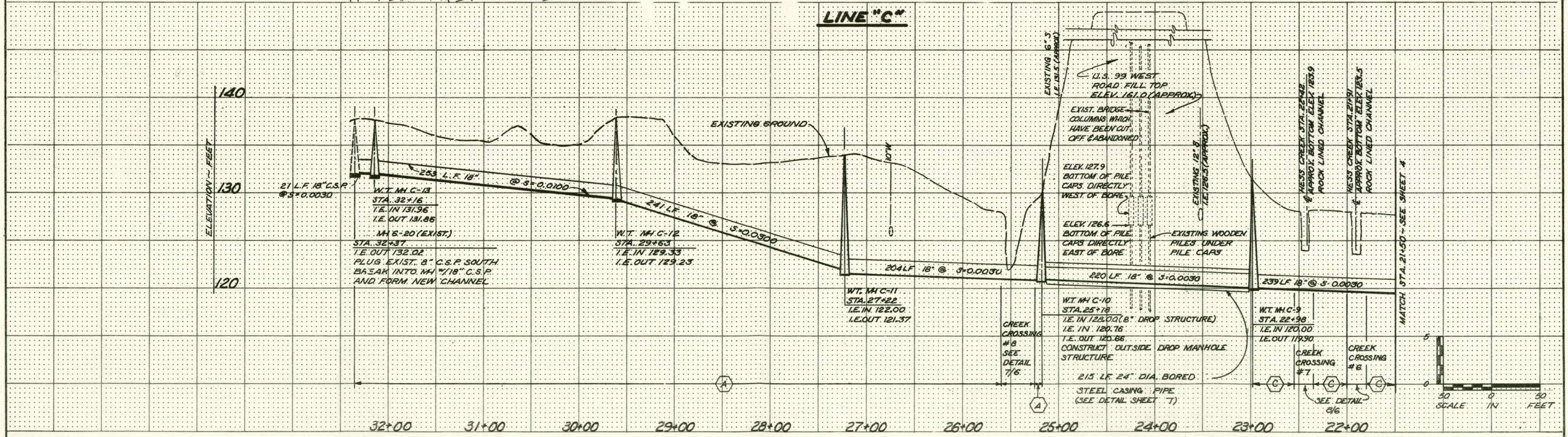
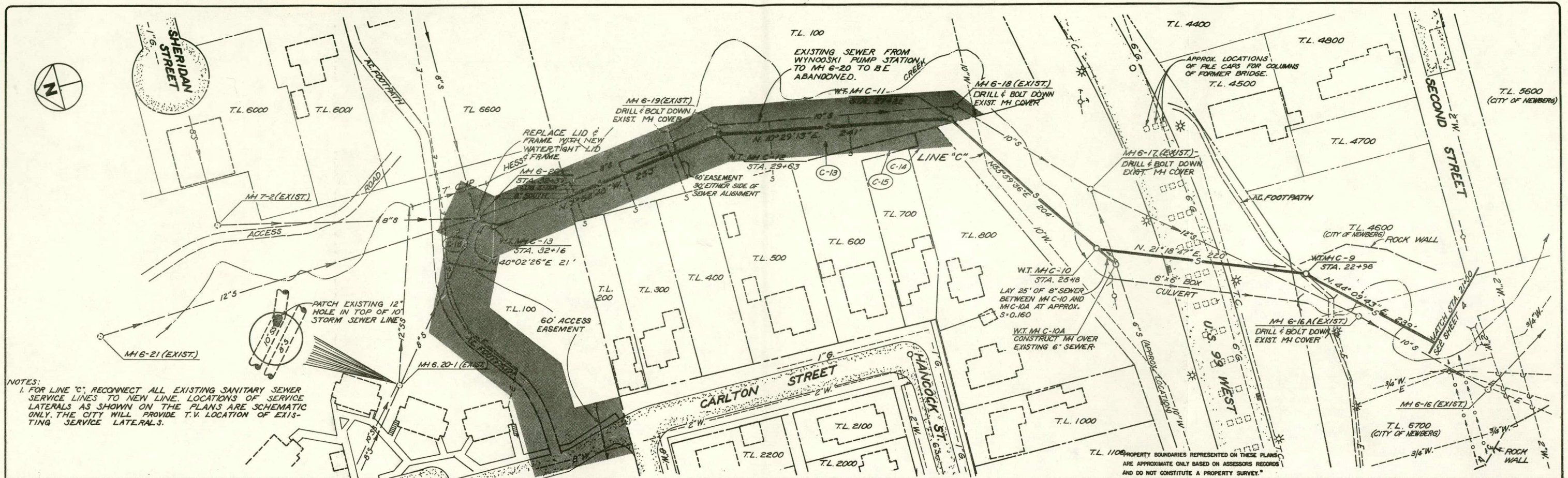
**CITY OF NEWBERG, OREGON**  
SEWERAGE SYSTEM IMPROVEMENTS

**PLAN & PROFILE**  
**LINE "C"**  
STA. 12+25 TO STA. 21+50

**4 OF 8**  
FILE 7069  
09/15/31

DESIGN: RFD, FRG DRAWN: RFD CHECKED: LKA APPROVED: J.C. SCALE: HOR. 1"=50' VERT. 1"=5' DATE: DEC. 1979





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**CITY OF NEWBERG, OREGON**  
**SEWERAGE SYSTEM IMPROVEMENTS**

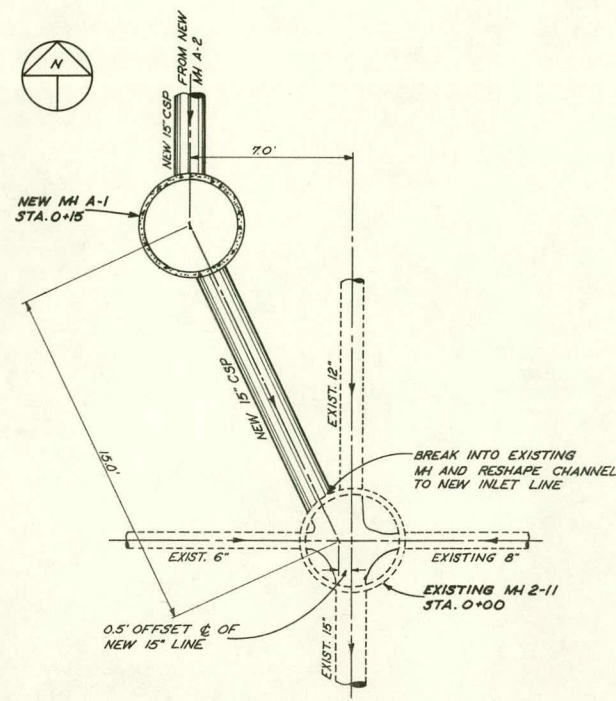
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**LINE "C"**  
**STA. 21+50 TO STA. 32+35**

**5 OF 8**

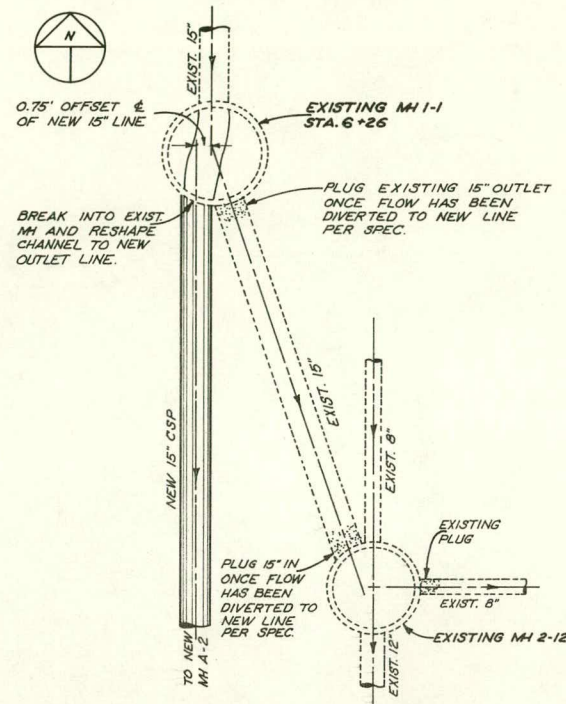
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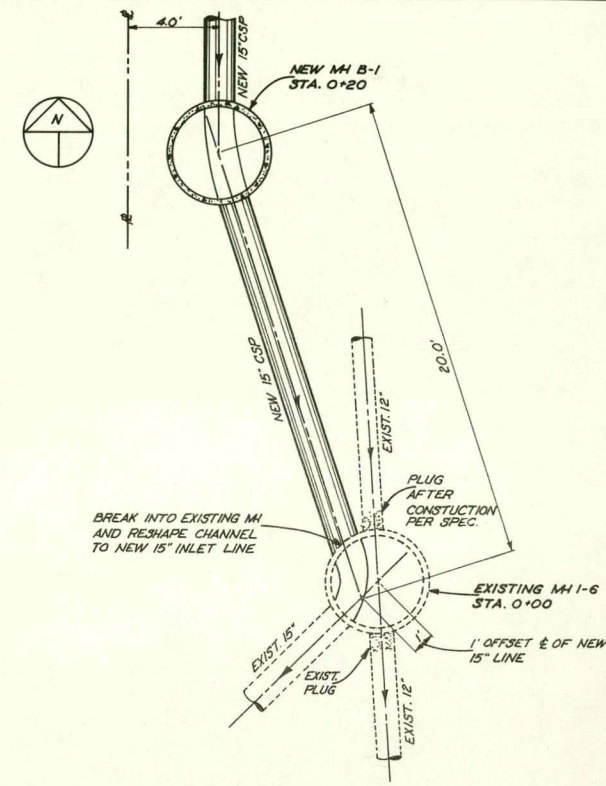




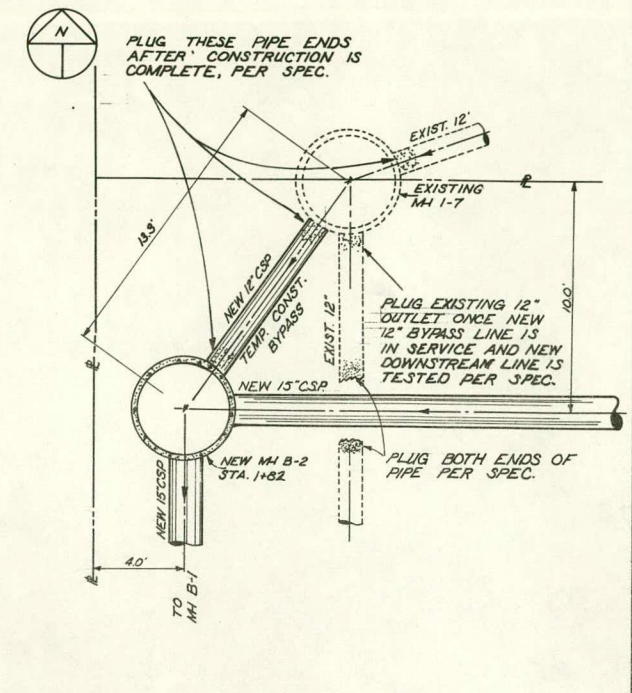
1 LINE A: MH 2-11 to MHA-1  
1" = 4'



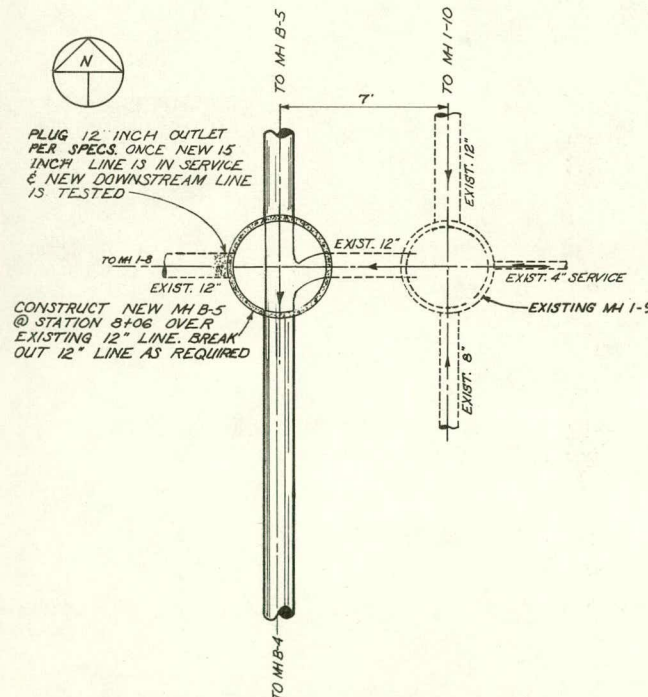
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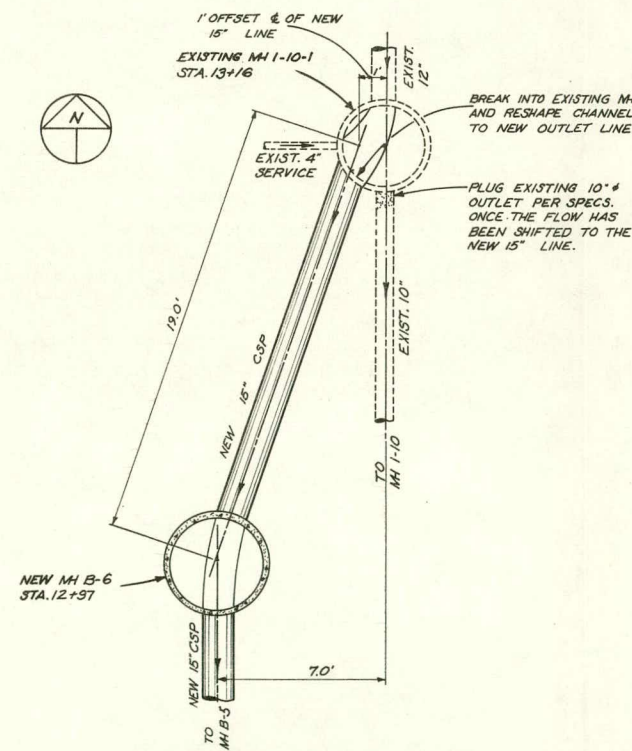
3 LINE B: MH 1-6 to MHB-1  
1" = 4'



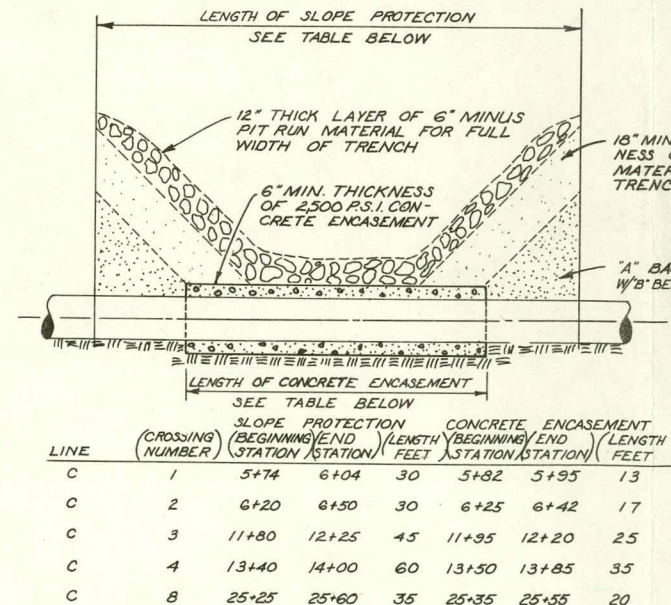
4 LINE B: MHB-2 to MH 1-7  
1" = 4'



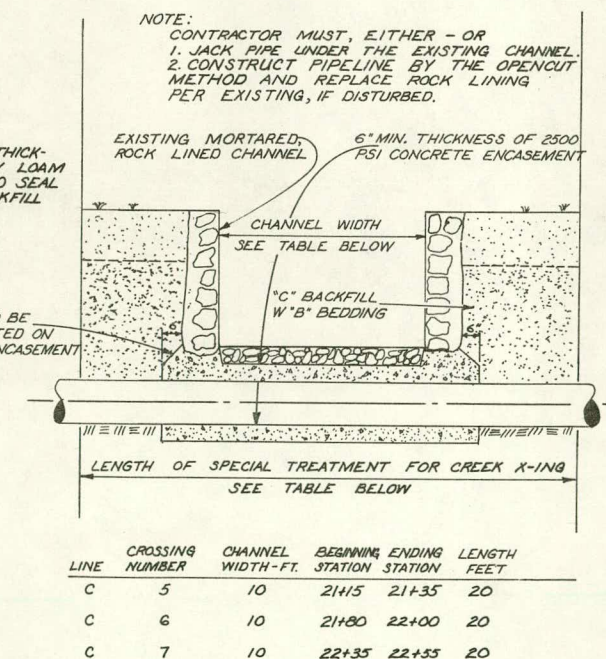
5 LINE B: MH 1-9 to MHB-5  
1" = 4'



6 LINE B: MH 1-10-1 to MHB-6  
1" = 4'



7 CREEK CROSSING DETAIL FOR NATURAL CHANNEL  
N.T.S.



8 CREEK CROSSING DETAIL FOR ROCK LINED CHANNEL  
N.T.S.



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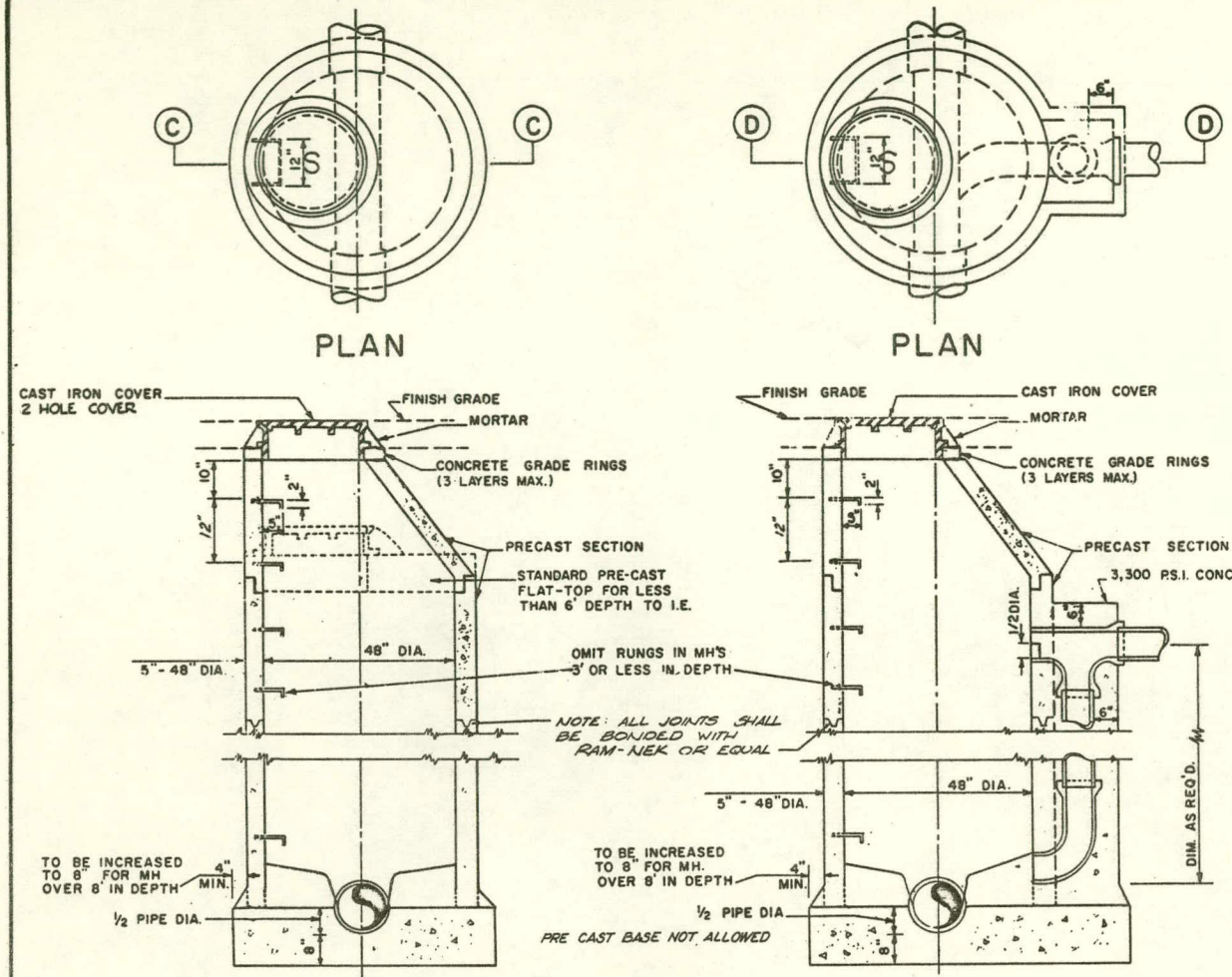
NO. BY DATE  
DESIGN REVISION  
GRS 2/26/80

CITY OF NEWBERG, OREGON  
SEWERAGE SYSTEM IMPROVEMENTS  
DESIGN FRG DRAWN JB CHECKED LKA

APPROVED  
SCALE AS SHOWN DATE DEC., 1979

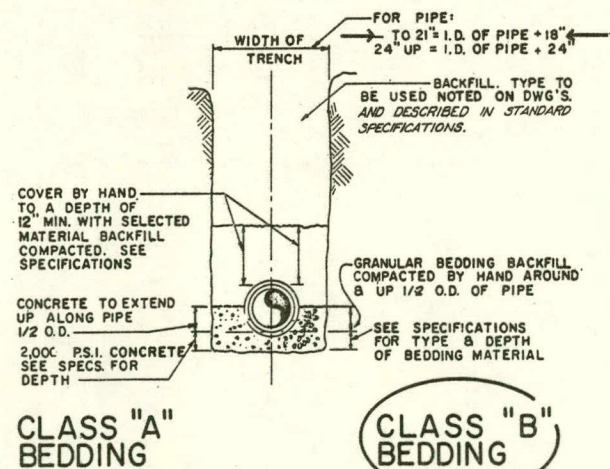
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9/5-31



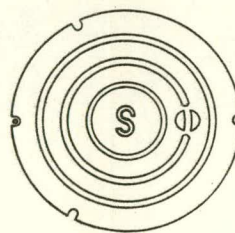


SECTION C-C  
STANDARD MANHOLE

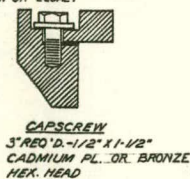
SECTION D-D  
OUTSIDE DROP MANHOLE



TYPICAL TRENCH SECTIONS



WATERTIGHT MANHOLE FRAME AND COVER - VALLEY IRON AND STEEL CO. NO. 101W OR EQUAL.

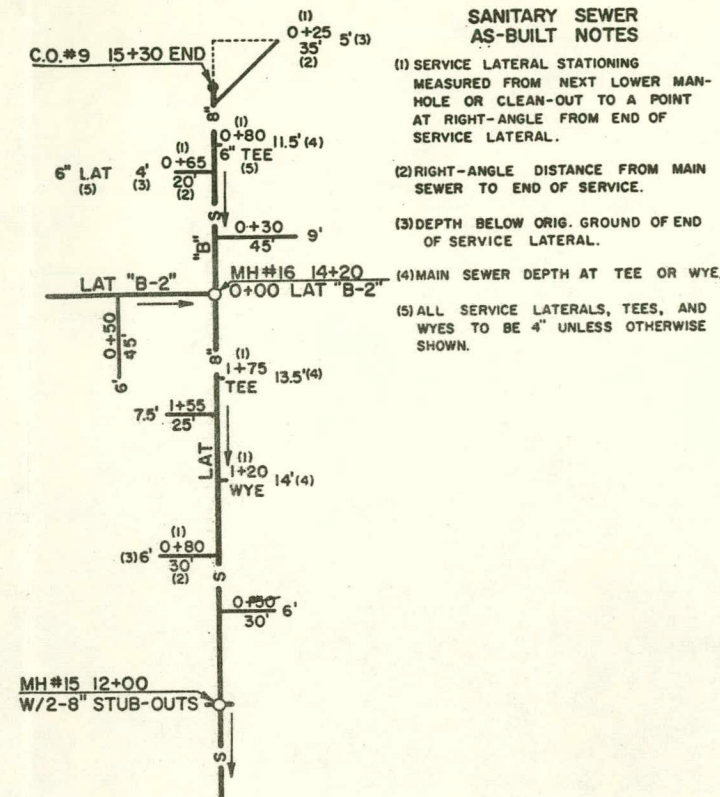


WATER TIGHT MANHOLE  
FRAME AND COVER

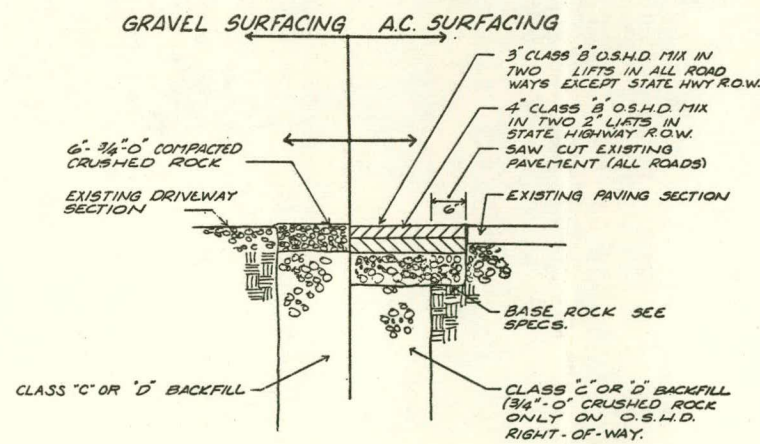
SEE SPECIAL TECHNICAL  
SPECIFICATIONS FOR CITY OF  
NEWBERG STANDARD DETAILS.

DEEP TRENCH  
SERVICE CONNECTION

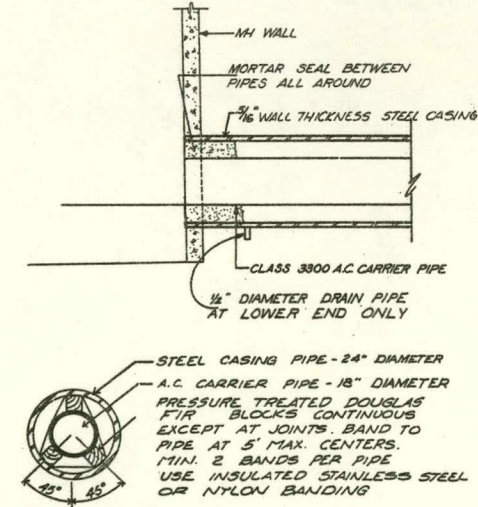
STANDARD FRAME & COVER  
CLEAN - OUT



AS CONSTRUCTED NOTATION



TYPICAL  
RESURFACING DETAILS



BORED OR JACKED  
CROSSING DETAIL



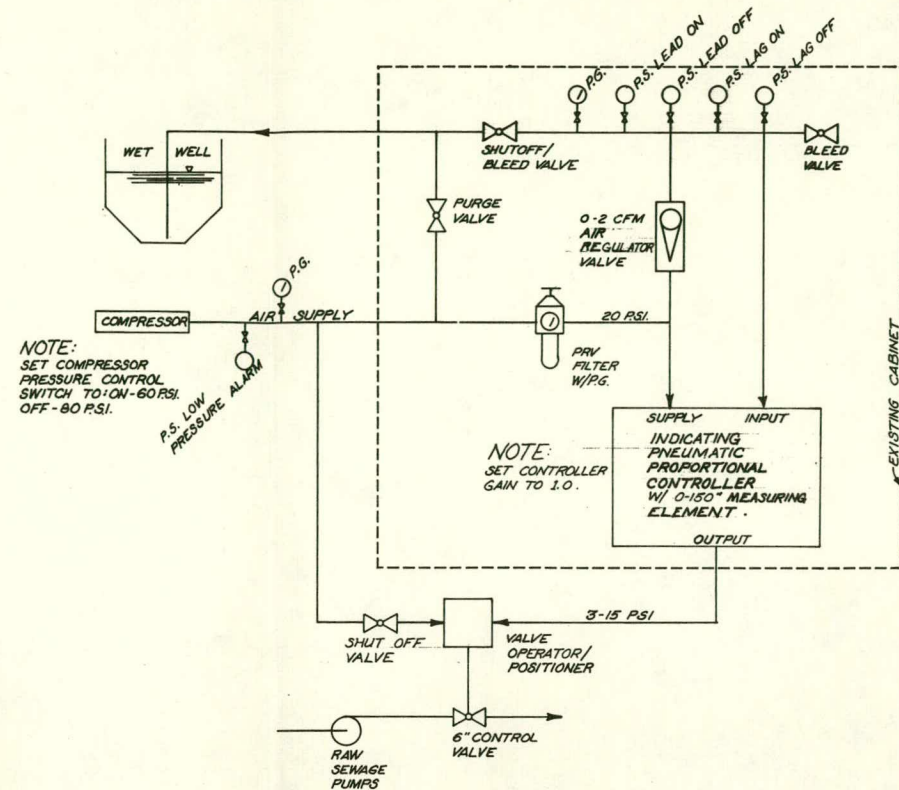
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**CITY OF NEWBERG, OREGON**  
SEWERAGE SYSTEM IMPROVEMENTS

**STANDARD DETAILS**  
DESIGN FRG, RFD DRAWN RFD CHECKED LKA APPROVED *[Signature]* SCALE NONE DATE DEC., 1979





|       |          |                        |
|-------|----------|------------------------|
| _____ | EL 102.0 | ALARM (OVERFLOW ELEV.) |
| _____ | EL 101.5 | LAG PUMP ON            |
| _____ | EL 101.0 | LEAD PUMP ON           |
| _____ | EL 100.8 | VALVE FULL OPEN        |

NO SCALE

EL.102.0 ALARM (OVERFLOW ELEV.)  
EL.101.5 LAG PUMP ON  
EL.101.0 LEAD PUMP ON  
EL.100.8 VALVE FULL OPEN

—EL. 96 ± FLOW LINE EXISTING INLETS

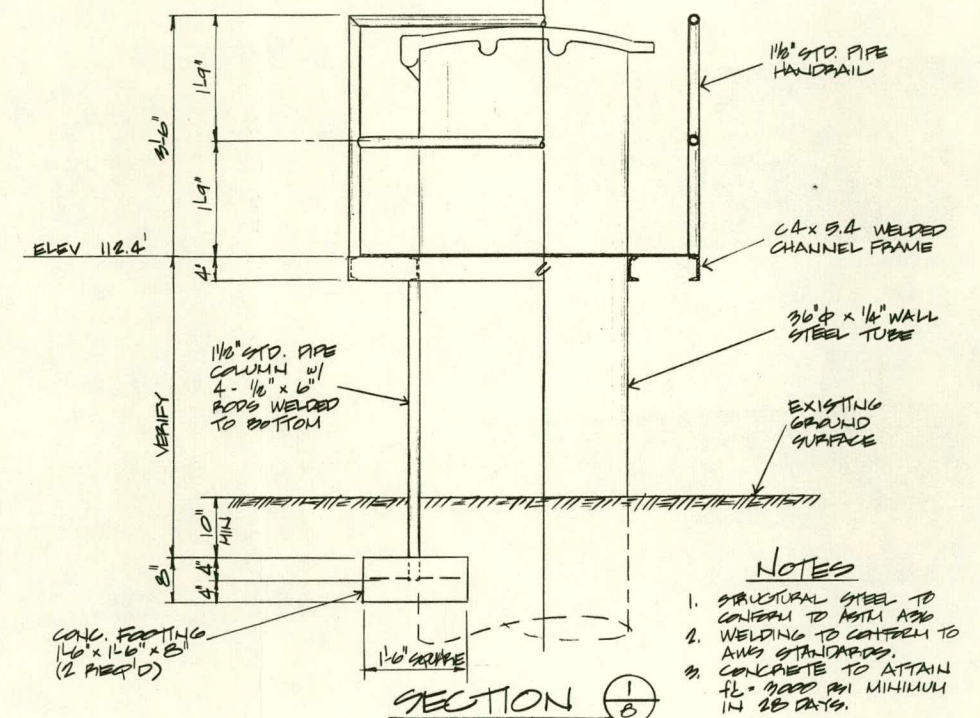
—EL. 94.0 LAG PUMP OFF

————— EL 91.05 VALVE 22% OPEN

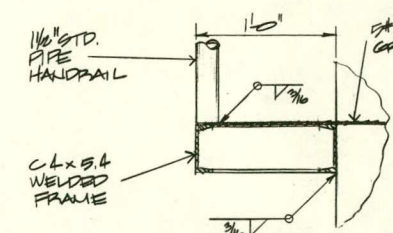
—————EL. 90.00 LEAD PUMP OFF

—————EL. 88.3 END OF BUBBLE PIPE

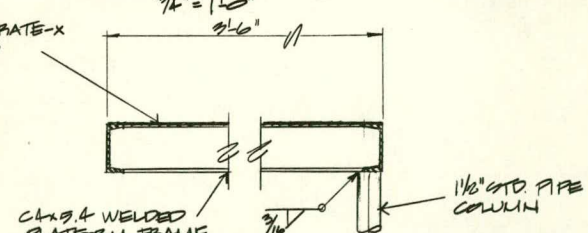
NO SCALE



SECTION 

$$\frac{m}{k} = 10$$
SECTION  $\frac{2}{2}$ 

|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
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| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|



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|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|

## NOTES

1. STRUCTURAL STEEL TO CONFORM TO ASTM A500
2. WELDING TO CONFORM TO AWS STANDARDS.
3. CONCRETE TO ATTAIN  $f_c = 3000$  PSI MINIMUM IN 28 DAYS.