

# City of Brookings **WORKSHOP Agenda**

## **CITY COUNCIL**

**Monday February 6, 2012, 4:00pm**

City Hall Council Chambers, 898 Elk Drive, Brookings, OR 97415

### **A. Call to Order**

### **B. Roll Call**

### **C. Topics**

1. Code Revisions for Review and Approval of Final Subdivision Plats [Planning, pg. 2]
2. Review of Draft Engineering Requirements and Standard Specifications for Public Works Infrastructure. [Public Works, pg. 3]
  - a. Draft Standards and Specifications [pg. 4]
3. Franchise Fees [City Manager, pg. 69]
  - a. Scotts Mills Telephone Franchise Ordinance [pg. 71]
  - b. CCEC Construction Contract for three street lights [pg. 74]

### **D. Council Member Requests for Workshop Topics**

### **E. Adjournment**

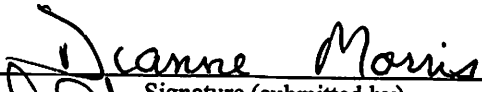
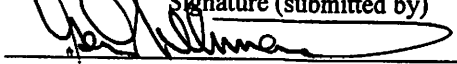
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# CITY OF BROOKINGS

## Council WORKSHOP Report

Workshop Date: Feb. 6, 2012

Originating Dept: Planning

  
Signature (submitted by)  
  
City Manager Approval

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**Subject:** Proposed Code Revisions concerning review and approval of Final Subdivisions Plats

**Recommendation:** Schedule hearing on the proposed revision with the addition of language that would provide oversight

**Financial Impact:** Reduction in costs to applicants and the City.

**Background/Discussion:** The Planning Commission reviewed Code revisions concerning extensions of time for previously approved Conditional Use Permits, Partitions, and Subdivisions. They agreed that in an effort to save the applicant both time and money it is appropriate for staff for review and approve these requests. The Planning Commission recommended approval to the City Council.

The Planning Commission also considered a proposed revision to allow staff to review and approve Final Subdivision Plats. The Legislature has changed the law regarding this review process making it no longer a quasi-judicial matter and allowing staff to approve administratively. The review of a Final Subdivision Plat involves making sure all conditions of approval have been met, and that the plat is in "substantial conformance with the approved preliminary plat". "Substantial conformance" is a standard term used statewide that allows for slight changes to the angle of a lot line, for instance, that may result when final survey work is done. Although the Planning Commission expressed confidence in the current staff to make these decisions, they felt future staff may allow significant changes to the plat that the Planning Commission had not approved. They recommended denial of the proposed revision.

The revision would result in saving of time and also the majority of the current \$515 fee. Perhaps a compromise would be to add this language to the revision:

"Staff shall provide a copy of the final subdivision plat to the Planning Commission at their next meeting. If the Commission does not believe the plat is in substantial conformance with the preliminary approval, the Commission may notify the Council and request re-instatement of Planning Commission approval of final plats."


If City staff would approve a final plat that is significantly different that what was preliminarily approved, they may also be signing off on building permits, Conditional Use Permits, etc. that don't meet requirements. This Final Plat language may provide oversight to bring a potential problem to light.

# CITY OF BROOKINGS

## COUNCIL WORKSHOP REPORT

Meeting Date: 2/6/12

Originating Dept: Public Works

  
\_\_\_\_\_  
Signature (submitted by)  
\_\_\_\_\_  
City Manager Approval

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Subject: Public Works Standards and Specifications Update

Background/Discussion:

Staff has been finalizing the draft *Engineering Requirements and Standard Specifications for Public Works Infrastructure* and the document is approximately 80% complete. Attached is the current 80% version for Council's review and to solicit comments and/or questions. The document consists of written specifications and construction drawings. Staff has only minor comments remaining on the specifications portion and the construction drawings are approximately 50% complete. Staff's goal in preparing these standards is as follows; 1. Accurately reflect proper construction materials and technique. 2. Simplify the standards to eliminate redundancy or unnecessary information. 3. Create a document that is inclusive, accurate and usable.

The construction drawings are currently being revised by Tony Baron and we are anticipating approximately one more month for a complete set of details, and finalizing the document. Staff will accordingly resubmit the final draft to Council and Department of Environmental Quality (DEQ) for review. Staff will be applying for an "Engineering Design Review Exemption" with the submittal to DEQ. This Exemption would allow for the Public Works Director to review and approve all future sewer collection and treatment projects under her Oregon Civil Engineering registration rather than a separate review by DEQ. The Standards and Specifications will be a key document in obtaining the exemption as it will demonstrate design and construction standards consistent with DEQ requirements.

Attachments:

- a. Draft Standards & Specifications

**ENGINEERING REQUIREMENTS  
And  
STANDARD SPECIFICATIONS  
For  
PUBLIC WORKS INFRASTRUCTURE**

**CITY OF BROOKINGS CURRY  
COUNTY, OREGON**

*February, 2012*

**DRAFT**



## **Chapter 18.05**

### **Division 1**

#### **General Information and Requirements for Submitting Plans**

##### **18.05.001 SCOPE**

The purpose of this document is to establish correct procedures, outline acceptable standards of workmanship and required specifications for any work or projects being accomplished within City of Brookings jurisdictional rights of way that involves additions to, amendments, or repairs to City infrastructures, or infrastructure that is being constructed with intention to be dedicated to the City and accepted into the inventory of City infrastructure.

##### **18.05.002 DEFINITIONS**

- A. Engineer: A person holding a current Registered Civil Engineering license in the State of Oregon.
- B. City: As used herein the term "City" or "City Engineer" shall denote the City Engineer, the City Manager or his/her designated representative.
- C. Contractor: A private person or organization that has entered into a contractual obligation to perform improvements, repairs or maintenance to public facilities or construct facilities proposed to become public facilities.
- D. Original developer: A person, partnership, firm, corporation, or other legal entity in whose name the land development to which BMC 17.168.020, 17.168.050, 17.168.060, 17.168.080, and 17.168.100 is applicable, or the legal heirs, assigns or successors of said developer.
- E. On-site improvements are defined as improvements made on private properties. Off-site improvements are defined as construction, repair, maintenance, enlargement and extension to City infrastructure that exists in dedicated rights of way or easements.

##### **18.05.003 ABBREVIATIONS AND ACRONYMS**

Whenever the following abbreviations are used in these specifications or on the plans, they are to be construed the same as follows:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
APWA	American Public Works Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing Materials
AWS	American Welding Society
AWWA	American Water Works Association
BMC	Brookings Municipal Code
BMP	Best Management Practice
CCB	Construction Contractors Board

CRSI	Concrete Reinforcing Steel Institute
CSI	Construction Specifications Institute
DEQ	Department of Environmental Quality
DOH	Department of Health
EPA	Environmental Protection Agency
IBC	International Building Code
IEEE	Institute of Electrical and Electronics Engineers
MUTCD	Manual of Uniform Traffic Control Devices
NBFU	National Bureau of Fire Underwriter's
NEC	National Electric Code
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
OAR	Oregon Administrative Rules
ODOT	Oregon Department of Transportation
OHD	Oregon Health Division, Drinking Water Section
ORS	Oregon Revised Statutes
OSHA	Occupational Safety and Health Act (both Federal and State Agencies)
OUCC	Oregon Utilities Coordinating Council
PUE	Public Utility Easement

#### 18.05.004 GENERAL

A. These specifications establish a minimum standard for development projects under City of Brookings jurisdiction. However, designs must follow a standard of engineering excellence for clarity and readability. All work must comply with the approved plans. The City of Brookings does not assume responsibility or liability for a developer's alternate methods, recommendations, or engineering designs that deviate from this document.

B. If unusual conditions arise during construction that warrants changes, the City may require a deviation from the typical sections and details of this document.

C. All work should proceed in a systematic manner, with a minimum of inconvenience to the public or impact to City rights of way.

D. Any work, repair, maintenance, additions, or alteration being performed to City infrastructure must be performed under the supervision of a licensed contractor and if it is being performed in a right of way a right of way permit is required per BMC 12.10.05, 13.10.110, 12.15.010, 13.35.040, 12.10.050, 17.170.070, 8.10.020. Revise BMC to specifically require a permit for any work in the public right of way.

E. Additions or extensions to City infrastructure that are not included in the final approval of a subdivision plat will require a formal dedication to the City.

F. Disturbed or obliterated property corner monuments or survey reference monuments must be restored per ORS 209.150 and 209.155.

G. All construction within Oregon State Highway Rights-of-Way shall be in conjunction with the "General Provisions of the Oregon Department of Transportation."

H. All construction within the Curry County Rights-of-Way shall be in conjunction with the "Curry County Road Department Specifications".

### 18.05.005 RESPONSIBILITIES

A. The Contractor: is responsible to provide all labor, materials and equipment that are necessary to complete the work as specified in the approved plans. If the contractor has questions about City requirements, they are urged to discuss any issues with City staff prior to commencement of work. Work shall not commence until permits have been issued. Work shall not commence until the City has been notified at least 48 hours in advance and a written "Notice to Proceed" or signed permit is issued by the City of Brookings. If work has been discontinued for the time period specified herein, it shall not resume until the City has been notified in writing. All work shall proceed according to the approved plans and latest City standards, which include, but are not limited to, Zoning Ordinances, Subdivision Ordinance, and this document. Any work not meeting these standards is subject to removal and replacement by the City at the Contractor's expense. Other considerations are:

1. Traffic safety, worker safety and safety devices are the responsibility of the contractor, and failure to comply with safety as outlined in this document may result in a cease work order, fine or both.
2. The contractor is responsible for the repair of damaged underground or above ground facilities and the quick restoration of services. The City is not liable for damages the contractor may have caused to private property.
3. Work shall not proceed beyond required inspections. The project shall be inspected under the direction of the City and constructed to the satisfaction of the City.
4. The contractor is responsible to notify Oregon Utilities Coordinating Council (OUCC) and to proceed with underground projects with the appropriate care necessary to avoid damage to underground facilities. The contractor shall pothole and verify the location of marked underground City utilities, their pipe sizes, valves, and etc., and meet all requirements of the OUCC document.
5. Right of Way permits are required for projects that take place in City rights of way. The permit remains current for 6 months provided a scheduled inspection occurs every 6 months. A one-time extension of 6 months is permitted providing the applicant submits a request in writing before the current permit expires.
6. A performance bond equal to 100% of the estimated cost of those projects \$25,000 or greater shall be required. (Authorization in BMC Chapter 12 is required).
7. Developments that must install public utilities such as communication and electric facilities in the right of way or PUE must coordinate the installation of those facilities, such as conduits, junction boxes and poles with the appropriate utility company.
8. One-year warranty bond equal to 10 percent of the value for the total public improvements that exceeded \$25,000, for a period of one year, as required per

(BMC 17.80.090). (A warranty bond is outlined in Chapter 17, BMC, but needs to be taken out of 17 and placed in Chapter 12, then referenced here.)

9. Contractor is responsible for all clean up of construction debris and excess excavation materials. All existing ditches, culverts, signposts, and similar items are to be left as found, or as specified by a contract or on the approved plans.

10. The temporary shut-down of water services and water mains requires prior notification. The contractor shall notify the City and all affected residents and businesses a minimum of 48 hours prior to the start of a service curtailment. The shut-down will be completed by City personnel only.

11. Contractor is required to keep his Oregon Construction Contractors Board (CCB) license current and a Brookings City business license is required per BMC 5.05.060.

12. The contractor is required to keep a set of approved plans, attached specifications, and permit available to the job site while work is being performed.

B. The City: will thoroughly review construction plans to assure that all correct materials, their locations, installation procedures and workmanship specifics, that are required, are shown on the plans or included as attachments. City will make available any special requirements pertinent to the project in attachments. When the plans have been deemed correct, work permits will be issued, in writing. City will furnish the Contractor with contact information to several City personnel who are familiar with the project, and who will be available during normal City work hours. In addition, City has available a 24 hour emergency contact number for use in the event of an emergency. City will provide a list of the required inspections pertinent to the project. Also:

1. Although advanced notice for inspections have a 24 hour maximum time limit, City personnel will make every effort to perform inspections as soon as possible.

2. City is responsible for locating underground City infrastructure within the tolerances described in OUCC documents. City will provide surface marks indicating the location of undergrounded City infrastructure and the Contractor shall perform pot-hole verifications. In the event City is not able to locate existing underground utilities from as-built plans or by other technical surface means, City will perform pothole investigation, mark, and provide actual location information to the contractor. The contractor may, at his discretion, expense, and risk, perform actual locate investigation.

3. Upon successful completion of a final inspection the City will authorize new installations to be connected to City systems.

#### **18.05.006 SUBSTITUTIONS**

A. Alternate Materials, Equipment and Methods: Requests to substitute products specified by manufacturer or manufacturer's model number, use of alternate equipment or installation procedures as specified throughout this document shall be

in writing and be accompanied with sufficient information to allow the City to identify the nature and scope of the request. Types of information to be provided shall include:

1. All submittal information required for the specified equipment, including all deviations from the specified requirements necessitated by the proposed substitution.
2. Materials of construction, including material specifications and references.
3. Performance data including performance curves and guaranteed power consumption, over the range of specified operating conditions.
4. Dimensional drawings, showing required access and clearances, including any changes to the work required to accommodate the proposed substitution.
5. Piping, process and instrumentation drawings, along with control descriptions where applicable.
6. Information and performance characteristics for all system components and ancillary devices to be furnished as a part of the proposed substitution.
7. If the substitution requires any mechanical, electrical, or structural changes, the Contractor will be responsible for the costs of evaluating a requested substitution. The City will provide an estimate of costs associated with determining the evaluation of alternatives. The cost for such an evaluation will be determined on a case-by-case basis, after receipt of written request. The City will notify the Contractor in writing of said cost. If the Contractor wishes to proceed, he shall advise the City in writing and submit additional information as may be requested. The decision to allow a substitution must be made by the City.

#### **18.05.007 GENERAL ENGINEERING REQUIREMENTS**

A. Public improvement plans are required to be stamped by an Engineer licensed to perform Civil Engineering in the State of Oregon, and peer reviewed by the City Engineer in the following circumstances:

1. Developments that involve infrastructure and street additions or improvements in conjunction with the subdivision of land.
2. Construction on sites that are subject to the requirements of Chapter 17.100, "Hazardous Building Sites" of the BMC may require additional geologic, flood plain, drainage, erosion, and other professional assessments.
3. Developments that involve extensions of existing infrastructure.
4. Developments in areas where the existing infrastructure is undersized or incompatible.

B. At the time of the first review of a permit application by the Site Plan Committee, developments that are small or simple in nature, such as those that involve single-family residences may be exempted from these engineering requirements, peer review, or both. The applicant will be notified in writing within 10 working days of submission of plans. If peer approval is necessary, the letter will

include a consent form authorizing City to peer review the project. Within 10 working days of receiving the signed authorization form from the applicant, the plans will be peer reviewed, and the applicant will be notified in writing of the final comments on the project. The fees for peer review are "actual cost" and must be paid before a permit shall be issued.

C. All engineered specifications and plans are required to meet or exceed the requirements of this document.

#### **18.05.08 PLAN SUBMITTAL**

A. Three sets of preliminary plans, electronic files, and fees must be provided to the City for plan review and comment. Plans shall be prepared in accordance with requirements of the City. No improvement work shall commence until a minimum of 5 sets of approved final construction plans, stamped and signed by the applicant's engineer, are received and permits are issued. Approved plans shall be valid for 1 year after City's approval date. Failure to execute substantial construction on the development or project within that time shall cause plan approval to expire. The applicant may submit and obtain approval for a one-time extension of one year, in writing, prior to a normal expiration.

B. Plans showing new City facilities or repairs and maintenance of existing facilities must be placed on the Oregon State Plane Coordinate System, South Zone, North American Datum of 1983 (NAD 83), and elevations shall be referenced to the North American Vertical Datum of 1988 (NAVD 88). Upon review by Site Plan Committee, projects that are small or simple in nature may be exempted from this requirement, and may be placed on assumed coordinates and elevations.

C. In addition to City of Brookings approval, other jurisdictions have authority over certain types of projects, and their approvals are also required. It is not feasible for the City to keep the documents of other jurisdictions current with this document. An applicant is advised that there may be requirements from Oregon Department of Human Services, Health Division, Oregon Department of Environmental Quality, other State and Federal regulatory agencies and Curry County Road Department not kept current in this document. City will make every effort to keep said agencies requirements current, on file and perform an advisory role to help an applicant obtain approval from other jurisdictions. The City of Brookings has obtained authority for plan review on water systems by the Oregon Department of Human Services, Health Division, which will permit local review of planned water improvements by the City. An additional fee for plan review will be assessed on each project for which this applies.

#### **D. Construction Plan Requirements:**

Plans shall be submitted in a scale that allows for easy reading, but shall not be produced on paper larger than 24-inch by 36-inch. Vertical plans shall be drawn in an exaggerated vertical scale of 10 times the horizontal scale, and contain the following general information:

1. A vicinity map, north arrow and scale bar.
2. A title block that includes name and addresses of the applicant and/or his agent, sheet title and page number, and date and revision number.

3. A planimetric map (bird's eye view) showing the location of all existing structures and facilities, and proposed facilities, both above and below ground within the project area. By example, but not limited to, show the right of way boundaries of adjacent streets, their edge of pavement and physical and actual centerlines, curb and gutter, and pedestrian facilities.
  4. Topographic data in contours or spot elevations or both.
  5. All existing and proposed easements not in rights-of-way that are pertinent to the project shall be shown on the plans.
  6. When applicable, a centerline profile is required with typical stationing which indicates the location of any cross-section details.
  7. When applicable, a below grade cross-section detail showing all proposed underground improvements and their relationship to existing underground utilities.
  8. When applicable, cross section details showing proposed improvements such as curb gutter and above ground utilities with spot elevations.
  9. In order to achieve a matched layering affect, the various plan and profile views and cross-section details of water, sewer, storm water facilities and street improvements must be kept on the same scale and stationing throughout the plan sheets.
  10. Electrical plans
    - a. Shall show the location of all existing and proposed electrical utilities such as lines, transformers, pedestal-type connection points, conduit size and lengths, power source connections and street light circuits and controls.
    - b. Location in trench section detail (including proposed telephone and/or television transmission lines). [Ord. 91-O-484 § 1(1A.07.e). Formerly 16.15.110.]
  11. The drafted plans must clearly differentiate between on- site and off-site, existing and proposed improvements. Use diverse pen weights, shading, and line types, or draw the various improvements on separate sheets.
- E. Inspection Required improvements shall be inspected under the direction of a registered professional engineer, and constructed to the satisfaction of the City. The City may require changes in typical sections and details if unusual conditions arising during construction warrant such changes in the public interest. Sewer and water systems shall be approved by the city engineer, or his authorized designee, prior to final hookup. [Ord. 91-O-484 § 1(1A.09). Formerly 16.15.140.]
- F. Final as-built plans:
1. Within 60 days of project completion submit final plans showing all project information, as-built changes, a copy of newly recorded easements and include:
    - a. One original map on 4-mil double mat Mylar, in archivable ink; and 2

paper copies on 20# bonded white paper.

b. For those projects completed on computer software, submit electronic files in Autocad compatible ".dwg" or ".dxf" extension formats, copied to an archivable CD disk.

#### **18.05.009 REIMBURSEMENT PROCEDURES**

Whenever an original developer as defined in BMC Chapters 17.168 or 17.170 provides, pays for, installs, or causes off-site improvements to be installed, BMC 17.168.020 (F) authorizes this document to establish a reimbursement procedure. As outlined herein, said developer shall be entitled to reimbursement of a portion of his approved costs **for up to 10 years** in accordance with the following criteria and procedures:

A. The original developer seeking reimbursement must submit, within 90 days of acceptance of said improvements by the City, an accounting of the actual costs in performing the off-site infrastructure improvements. Actual costs shall be reviewed by the City, which shall then determine the amount of "Approved Costs."

B. Upon the request of the original developer, City shall prepare a reimbursement agreement between City and developer whereby the original developer may recover those portions of the cost of the improvements through a special connection fee collected from other benefitting property owners. The maximum term of said agreement shall be 10 years.

C. City shall identify those properties that are or have a potential to benefit from the infrastructure improvements installed by the original developer, including the properties of the original developer. City shall prepare an analysis indicating how the approved costs would be allocated to all benefitting properties. Such analysis shall, generally, be in the same manner as the procedure used in determining benefit in the formation of a Local Improvement District, but may also include other factors such as parcel size, zoning and property characteristics. Said apportionments shall become a "special connection fee" appurtenant to the benefitting parcels which are not a part of the original development. Said special connection fee shall be collected at the same time as the City collects connection fees and System Development Charges from the identified parcels.

D. Special connection fees collected in accordance with this provision shall be remitted to the original developer within 60 days of receipt by the City. The actual cost to the City in determining the special connection fee cost allocation and in administering the agreement shall be deducted from the amount of reimbursement.

**E. City Council approval shall be required in some instances.**

#### **END OF DIVISION**

**Chapter 18.10**  
**Division 2**  
**Standard Construction Workmanship**

**18.10.001 CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL**

A. The contractor will implement Best Management Practices (BMPs) for protection of ground water and dust abatement. Depending upon topography, size, proximity to waterways, State and Federal regulations may apply, and relevant agency approvals must be obtained.

B. Erosion protection shall be placed in a manner to prevent any site materials from entering waterways and the measures shall be inspected regularly to ensure effectiveness.

**18.10.002 DUST ABATEMENT**

The Contractor shall maintain all work areas reasonably free from dust. Methods of abatement such as sprinkling, chemical treatment, light bituminous treatment, or similar methods shall be used. Sprinkling must be repeated in intervals that keeps the ground damp at all times.

**18.10.003 CLEARING, GRADING, EXCAVATION AND GRUBBING**

A. Contractor is responsible for removing and disposing of all vegetation. The following are considerations:

1. The contractor shall remove all cleared materials to approved disposal sites. In some instances burning is allowed. Burn permits are required.
2. All stumps, roots and other embedded wood shall be completely removed.
3. Any holes created shall be filled with a suitable material and compacted.
4. Safety barricades, covers and warning lights shall be implemented.
5. Land clearing in sensitive areas, such as, delineated wet lands is not allowed.

B. Grading, clearing and excavation of street rights-of-way, lot areas, and real estate parcels, when required by the planning commission or the city council, shall be under the supervision of an engineer or geologist who is knowledgeable and skilled in the treatment of soils, soil stabilization, and soil erosion. Due consideration shall be given to the existing terrain, cross-slope and vegetation. Approval of the grading, clearing and excavation plan by the city engineer and the city council shall be given to any construction or work upon the premises. [Ord. 91-O-484 §1(1A.07.f). Formerly 16.15.120.]

**18.10.004 MULCHING**

Seeded areas and mulched areas which become damaged shall be fertilized, seeded and mulched as necessary to restore them to specified conditions, when so directed, and the Contractor shall bear all expense involved in such restoration work.

#### **18.10.005 FIELD CHANGES**

During the normal progress of construction minor relocations of improvements or horizontal and vertical deviations may be necessary. City or other jurisdictions having authority must be notified and prior approval obtained.

#### **18.10.006 PUBLIC SAFETY AND CONVENIENCE**

A. The Contractor shall comply with all rules and regulations of City, County, State, and Federal authorities regarding the closing, detouring, and load limits of all public streets or highways. No road, public or private, shall be closed or detoured by the contractor except by permit from the City. Traffic must be kept open on all roads and streets when no detour is possible. The Contractor shall, at all times, perform his work assuring the least possible obstruction to traffic.

B. Access for Police, Fire, Postal, Ambulance and School Bus Service. The contractor shall notify the Brookings Fire Department, Police Department and when applicable, the School and Postal Service before closing or portions thereof.

C. The Contractor shall furnish, install and maintain suitable signs, lights, plating, barricades, fences or other protective measures to insure the safety of the public and construction crew.

D. Contractor shall coordinate the work with all local utilities, affected private property owners, and other affected public agencies.

E. School Crossing Supervision – Modified from Oregon Supplement to MUTCD Section 7E.05, adult cross guards shall use school flags. A STOP paddle is not permitted.

#### **18.10.007 CONSTRUCTION SAFETY MEASURES**

Contractor shall comply with all Oregon OSHA requirements.

#### **18.10.008 COMPLIANCE WITH REGULATORY REQUIREMENTS**

Contractor shall at all times observe and comply with all Federal and State laws and obtain all necessary permits prior to construction.

#### **18.10.009 BARRICADES, WARNING SIGNS AND TRAFFIC CONTROL**

Signs, flags, lights, and other warning and safety devices shall meet the ODOT requirements as outlined in "Temporary Traffic Control Handbook". In addition, depending on the length of time, the Federal "Manual on Uniform Traffic Control Devices" may apply.

#### **18.10.010 SCHEDULING**

Prior to issuance of a Public Works Permit, the City shall review and approve an overall schedule for completion of the work. The contractor is expected to provide 48-hours notice prior to commencing construction.

#### **18.10.011 RESTORATION AND SITE CLEANUP**

Worksite shall be kept clean and orderly at all times and shall be free of excess material and rubbish. Restore all impacts to the original condition or better.

**18.10.012 PROTECT IN PLACE**

All existing improvements, utilities and properties both inside and outside the public right of way, surface and subsurface shall be protected from damages by the Contractor.

**END OF DIVISION**

**Chapter 18.15**  
**Division 3**  
**Road and Earthwork**

**18.15.001 GENERAL**

- A. Earthwork is defined herein as road work, surface and subsurface excavation and backfill in the public right of way or dedicated easement to the City.
- B. Aggregate base is defined herein as crush rock import used for backfilling subgrades capable of passing through a defined screen size and provides a structural element to the backfill.
- C. If unfavorable weather conditions necessitate interrupting filling and grading operations, prepare areas of compaction of surface and grading to avoid collection of water. Provide adequate temporary drainage.
- D. Shoring, sheeting and bracing is required per Oregon OSHA Standards.

**18.15.002 EXCAVATIONS AND BACKFILL REQUIREMENTS**

A. Definitions:

- 1. 95% compaction backfill standard is defined as backfill materials or soils compressed to a 95 % "maximum density" when tested in accordance to AASHTO method T-80, A. Compaction equipment shall be utilized in fills in layers not to exceed 12 inches. The burden of proof of meeting compaction requirements is placed on the contractor. If the City requires additional compaction tests and those tests fail, the contractor is responsible for the costs of the tests. If those compaction tests pass, the City shall pay for the tests.
- 2. Subsurface investigation is defined as physical efforts to bore and/or pothole to determine the underlying soil type and conditions. A geotechnical engineer and/or Proctor test is required when there is a question on the characteristics of the subsurface for compaction.

B. Excavations/types:

1. Surface:

- a. Pavement removal and replacement: Trenches placed in existing paved streets shall provide for a "T" type patch per standard detail number 3-2. This will require an initial and final sawcut just prior to paving.
- b. Curb removal. Curbs shall be sawcut through their full thickness and removed. If the adjacent panel is broken, replace the entire panel.
- c. Sidewalk removal shall include replacement of the panel between control joints. If the adjacent panel is broken, replace the entire panel.
- d. Land clearing and grubbing. Removal of vegetation shall comply with Division 2 Section 3 of the Standards and Specifications.

2. Subsurface:

- a. Trench excavation is defined as any man made cut and required for undergrounding of infrastructure, repair, or maintenance of utilities. The

trench width must provide a clear working space of 6 inches on each side of the pipe for pipes 4 inches in diameter and larger.

b. Potholing of existing utilities is required to verify location, material, and size prior to trench excavation. Potholing is required for all critical and conflicting infrastructure, such as high pressure water mains, sewer interceptors, gas mains, and other utilities that must be protected in place.

c. Foundation stabilization excavation is removal of additional subgrade soil which in the opinion of the Engineer is structurally unsound to use as subgrade. This is determined by the Proctor test or field inspection such that the backfill is unable to compact consistently and evenly. These soils are usually high in clay and/or organic content and are not able to compact to 95% compaction as measured in the Proctor Test.

d. Rock excavation is determined by the City when an excavator of the 44,000 pound class, such as Caterpillar 320D L, or equivalent equipment, is unable to excavate the site and requires drilling. Blasting is prohibited.

#### C. Backfills

##### 1. Definitions:

a. Class I and II backfill is defined as native material excavated from within the limits of the project, free from vegetation or materials that interfere with compaction and have a maximum particle size of 3 inches. To be approved for trench backfill, these native materials must meet the desired characteristics for surface loading for that location.

b. Class III backfill is defined as 3/4-inch to 1-1/2-inch minus crushed rock that conforms to the requirements of Section 02630 of the ODOT / APWA Standard Specifications for Construction, except 70 percent of the particles, by weight, shall have at least one mechanically fractured face based on grading requirements of the section. The fracture requirements shall be applicable uniformly through the grading materials involved. (All gravel sizing shall have fracture faces applicable by screen sizes to the 70% level). In section 02630.10(c) the sediment height requirements shall be 3½ inch maximum.

c. Class IV, Controlled Low Strength Material (CLSM) backfill is a highly fluid lean concrete mix of fly ash, Portland cement, fine aggregates and water which results in a dense, non-settling fill, when cured, that can be later broken with hand tools. CLSM shall conform to Section 00420 of the current version of ODOT/APWA Standard Specification for Construction, modified in the following manner: Class IV subgrade must be able to be removed with a hand tool.

d. Road embankment is defined herein as backfill required for the structural integrity of a road. Contractor must submit stamped geotechnical or civil engineering plans for approval of any road embankment work and is subject to regulatory approval when near a waterway.

e. Foundation Stabilization backfill is a granular material used to stabilize the bottom of a roadway subgrade or pipe trench below the pipe zone. The

material shall be 2-inch minus imported crushed rock conforming to ODOT standards excepting the sediment height requirements shall be "3.5" maximum."

**D. Roadway and Subgrade Backfill Requirements**

**1. Utility Trench**

a. Top leveling rock. Aggregate base 3/4-inch minus crushed quarry rock conforming to the requirements for aggregate base as specified in Section 02630 of the ODOT standards 2 inch minimum depth in roadway. In some instances other clean 3/4-inch or minus material, such as recycled asphaltic pavement, can be used subject to City approval.

b. Roadway base course beneath the top leveling rock within the right of way shall be compacted to achieve to a depth of 8 inches of 1½-inch or minus crushed rock. Aggregate base shall be placed and compacted in maximum 6-inch lifts.

c. Trench backfill within paved areas (new and existing) shall be Class III backfill aggregate base consisting of ¾-inch or 1-inch minus crushed rock and conforming to the requirements for base aggregates in Section 02630.10 of the 2008 ODOT Standard Specifications for Construction except in Section 02630.10 (c) Sediment height requirements shall be "3.5" maximum."

d. Native soils may be used for backfilling trenches between the roadway base and pipe zone or outside of roadways providing they can meet compaction standards and provide a sound subgrade. Lifts shall not exceed 6-inches.

e. Pipe Zone - Bedding material placed in the pipe zone shall be 5/8 inch to minus to the extent of the pipe zone. The pipe zone is defined as the full width of the trench from within 6 inches below the pipe to 6 inches above the pipe barrel.

f. Foundation stabilization zone as previously defined herein.

g. Paving fabric shall be considered for installation on a case by case bases.

**2. Curb, sidewalk and catch basins**

a. Aggregate base 3/4-inch minus crushed quarry rock conforming to the requirements for aggregate base as specified as top leveling rock herein.

**3. Manholes**

a. Poured in place base – Subgrade shall be native material compacted to a minimum of 90% compaction or foundation stabilization if determined by the City.

b. Prefabricated base – Subgrade shall be Class III compacted to 90% and leveled.

**E. Workmanship**

1. Contractor to notify the City 48 hours prior to placement of subgrade.
2. Final grades shall be within a 0.5-inch tolerance, any drainage impacts due to altered grades are the responsibility of the Contractor.
3. Cleanup. All materials and soils are to be disposed of or recycled from the construction site and adjacent areas in a timely manner. Disposal of all waste materials shall conform to all laws, regulations, and ordinances.

**18.15.003 ROADWORK**

**A. Asphalt Concrete (AC) Pavement**

**1. General**

a. Depth of AC determined by, existing road conditions, and traffic conditions on roadway. Minimum 3" AC installed in one lift and 4" AC depth installed in two, 2-inch lifts.

**b. Materials**

i. Asphalt concrete shall be Dense Graded Mix ½" (formerly called Class C) conforming to Section 00745 of the ODOT Standard Specifications for Construction.

ii. Asphalt tack coat shall conform to Section 00730.11 of the ODOT Standards and Specifications.

**2. Workmanship**

a. Minimum AC temperature at the time of placement shall be 250° F and shall not be placed when the ambient temperature is below 35° F.

b. Weather conditions – AC to be installed in favorable weather conditions for curing and meeting compaction requirements.

c. Surfacing of the AC after compaction shall be smooth and true to established cross section and grade. There shall be no sign of roller marks, loose or broken surface, and when compacted shall conform to the existing grades.

d. Do not leave subsurface exposed to traffic. Temporary measures shall be made for roadway surfaces by installing cold patching or plating an open trench.

**3. Compaction and Lifts**

a. Shall be at least 92 percent as determined by AASHTO T-230 for each lift. Additional lifts shall not be placed on top of a lift that has not yet met the recommended compaction level.

b. Lifts shall not exceed a compacted depth of three (3) inches.

**4. Testing**

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a. The City will use discretion to determine if laboratory and field testing will be required. If the testing results conclude that the AC composition or installation does not meet standards, the Contractor is responsible for all testing charges and shall remove and replace the AC to standard.

B. Tack coat

1. Install at contact surfaces of manholes, catch basins, gutters and existing pavements. Do not place on wet surfaces.
2. Install at joints between the existing and the new AC pavement.

C. Striping

1. General

a. Materials- shall be white, preformed thermoplastic with LKF Type 1 top beading suitable for asphalt or concrete applications.

b. Apply in accordance with Section 02840 of the current edition of ODOT/APWA Standard Specifications for Construction.

2. Crosswalks and Stop Bars width shall be 12 inches.
3. Centerline, traffic lanes, bike lanes, and parking lanes width shall be 4 inches.
4. ADA per current building code and standard details 3.15 and 3.16.
5. School crossings per current MUTCD.
6. Workmanship
  - a. The pavement surface shall be free of dirt, grease, moisture, and other foreign material prior to placement of striping and pavement markers. Air blast the pavement with an acceptable high-pressure system to remove loose or foreign material.
  - b. Apply at a temperature of 200-230° C. Minimum drying time shall be 10 minutes based on 20° C and slight wind.
  - c. Limits of striping shall comply with the area disturbed by construction.

**END OF DIVISION**

**Chapter 18.20**  
**Division 4**  
**Utilities**

**18.20.001 DEFINITIONS**

- A. This section contains specifications for water, sewer and storm drain material and installation requirements.

**18.20.002 GENERAL**

- A. As determined by the City, the City may require parts and material submittals prior to issuance of a Public Works permit.
- B. Civil engineering plans will be required unless determined by Site Committee meeting the project poses no risk for damages or potential for health and safety risk.
- C. All domestic water systems design and construction shall be in accordance with OAR 333-061-0050, Department of Human Services Health Division and as supplemented here.
- D. All sanitary sewer design and construction shall be in conjunction with OAR 340-52 and Oregon Department of Environmental Quality "Sanitary Sewer Design Notes" and as supplemented here.
- E. All projects impacting storm water surface run-off shall be directed to the Oregon Department of Environmental Quality 1200-C permit for applicability.
- F. Refer to the applicable ASTM and AWWA standards for detailed specifications on pipe materials.
- G. This document sites manufacturers' materials that are commonly stocked by suppliers in Southern Oregon.
- H. Alternative materials will be considered by submittal and is outlined in Division
- I. All parts and materials shall be new and unused.
- J. Any poured in place concrete be in accordance with Division 5 Concrete specifications unless otherwise specified herein.
- K. All materials shall be installed according to manufacturer's recommendations.
- L. Inspect all pipe and fittings prior to lowering into trench to ensure no cracked, broken or otherwise defective materials are used. Prevent foreign material from entering the pipe while it is being placed in the trench. Remove all foreign material from the inside of the pipe and joint before the next pipe is placed. Clean ends of pipe thoroughly. Keep debris, tools, rags or other materials out of the pipes at all times. Follow pipe-laying operations closely with joint coating operations as required and backfilling of trenches as specified in Division 3 of these Specifications.
- M. Joint deflection and pipe bending for radial curvature shall not exceed the manufacturer recommendations.
- N. Remove all damaged or rejected pipe from the job site. Do not drop or dump pipe into trenches.

- O. Refer to Division 3 herein for subgrade requirements.
- P. Deviation from alignment on plans must be approved by the City.
- Q. Provide concrete thrust blocking in accordance with the standard details at the end of this division. Allow concrete to cure to needed strength prior to charging the main.
- R. Tracing wire is not required for gravity sewer and storm drain installations.
- S. Proper measurements of OD, approved fittings and materials, and adequate staff is available to construct the improvements must be demonstrated to the City prior to shutdown of any water main.

**Table 4.1 Piping Schedule**  
**Allowable Piping Materials for the City of Brookings Utility Construction**

Type		Application	Size	Material	Specification	Interior surface or coating	Pipe end
Storm Drain	Gravity	Main	All	HDPE	ADS N-12, WT	Corrugated outside, inside smooth	Push on gasket
	-	Main	4"-15"	PVC	SDR 35, ASTM D-3034	NA	Push on gasket
	-	Main	18" and greater	PVC	SDR 35, T-1 thickness ASTM F-679	NA	Push on gasket ASTM F-477
		Main	All sizes	Aluminized steel	Type 2 AASHTO M-274 971	Corrugated metal	
	-	Main	18" and under	Concrete	Class 3 reinforced ASTM xxx?	NA	ASTM C443/AASHTO M198
	-	Main	21" and larger	Concrete	Class 3 reinforced ASTM C 76-74	NA	ASTM C443/AASHTO M198
	-	Laterals	2"	PVC	Not used, smallest size 4"	NA	NA
	-	Laterals	4" -15"	PVC	SDR 35, ASTM D-3034	NA	Push on gasket
	Gravity	Main	4"-15"	PVC	SDR 35, ASTM D-3034	NA	Push on gasket
Sewer	-	Main	18" and greater	PVC	SDR 35, T-1 thickness ASTM F-679	NA	Push on gasket ASTM F-477
	-	Lateral	4"	PVC	SDR 35, ASTM D-3034	NA	Insert a tee
	Pressure	Main	4" - 12"	PVC	AWWA C-900, DR 18, CL-150	NA	MJ Fitting, Bell and Spigot Main Connection
	-	Main	> 12"	PVC	AWWA C-905, DR-18, CL-235	NA	MJ Fitting, Bell and Spigot Main Connection
	Pressure	Lateral	3/4" and 1"	Polyethylene	Pressure class 200, IP Sized, HDPE	NA	IP compression

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		Lateral	2"	PVC	Schedule 40	NA	Glued
		Main or Lateral	4" - 12"	PVC	AWWA C-900, DR 18, CL-150	NA	MJ Fitting, Bell and Spigot Main Connection
		Main	> 12"	PVC	AWWA C-905, DR-18, CL-235	NA	MJ Fitting, Bell and Spigot Main Connection
		Main	4-12"	DI	CL 52	Cement lined	Flg, MJ, or push on
		Main	Any	HDPE	Upon special consideration	NA	Fusion
		Air Vac assembly	2"	Brass	CL 125 ANSI/ASME B16.15	NA	Threaded nipple per ASTM B687-88

**18.20.003 STORM DRAIN**

**A. General**

1. Design Consideration – Pipe material and size is dictated by depth of pipe, slope, hydrological and geological conditions and type of pipe and size selected shall be approved by the City. Hydraulic and hydrology calculations signed by a registered civil engineer may be required.

**b. Materials**

**1. Main Line Pipe**

**a. Polyvinyl Chloride Pipe (PVC)**

- i. Small diameter Main (under 15 inches) shall be SDR 35 conforming to ASTM D-3034.
- ii. Large Diameter (18 inches and greater) shall be SDR 35, T-1 wall thickness with elastomeric gasket seals conforming to ASTM F-477.
- iii. Gasket shall be an integral bell gasketed water tight joint in accordance with ASTM F-1803.

**b. Corrugated High Density Polyethylene (HDPE) Pipe shall be ADS N-12 HDPE series 65 (smooth interior wall) as manufactured by Advanced Drainage Systems, Inc. or Hi-Q as manufactured by Hancor for pipe sizes 8 through 36-inches.**

- i. New installation – all new ADS N-12 pipe installation shall be constructed with push on water tight, gasket connections.
- ii. Connection to existing ADS N-12 HDPE – when tying into existing ADS N-12 pipe with a new storm drain connection, install an Inserta Tee fitting.
- iii. Couplings shall be corrugated to match the pipe corrugations, and the width shall be not less than 1/2 the nominal diameter of the pipe and shall engage an equal number of corrugations on each side of the pipe joint.

- iv. Shall meet the requirements of high density polyethylene pipe requirements of AASHTO M252 and M294. Smooth interior coat required.
- c. Concrete Pipe and Fittings
  - i. 18" and under shall be Class 3 reinforced pipe that conforms to ASTM C XXX
  - ii. 21" and larger pipe shall be Class 3 reinforced pipe that conforms to ASTM C 76-74
  - iii. All concrete pipe shall have rubber ring joints in accordance with ASTM C443/AASHTO M198 "Joints for Circular Concrete Sewer and Culvert Pipe."
- 2. Corrugated Metal Pipe and fittings.
  - a. Corrugated Metal Pipe and fittings shall be round Aluminized Steel, Type 2 and shall meet the requirements of AASHTO M-274 971. Pipe and fittings shall be from the same manufacturer. Material thickness shall be 0.079 inch (14 gauge).
  - b. Pipe end connections shall be with manufacturer's joint strap/band that provides full 360-degree contact. Band couplers shall have a full annular corrugation at each end to prevent sliding and pulling apart. Joints shall have rubber "O" rings or neoprene strip gaskets providing watertight seal.
  - c. Aluminized Steel Pipe Type 2 by Contech, AK.
- 3. Laterals
  - a. Storm drain laterals shall be a minimum diameter of 4-inches.
  - b. Pipe material shall be PVC SDR 35, ASTM 3034.
  - c. New City owned lateral connections from catch basins are 12-inch minimum. Catch basin lateral connections shall include a manhole at the connection point to the new main.
  - d. New lateral connections less than 12-inches are private connections to existing gravity mains. Contractor may use in Inserta Tee fitting or cut in tee and does not require a manhole.
- 4. Appurtenances
  - a. Catch basin
    - i. Formwork shall be internal and external for poured in place catch basins.
    - ii. Materials
      - 1) Concrete shall be Type II Portland Cement conforming to ASTM C-94, 3,000 psi at 28 days, maximum aggregate size 1-1/2 inches and 2-4 inch slump. All concrete work must be mechanically vibrated.
      - 2) Mortar used between precast top and poured in place bottom shall conform to ASTM C-387 and adhere to the concrete and

comprise of one part Portland Cement to two-parts clean Mason's sand passing a 1/8-inch screen.

- iii. Type – to be determined by site specific drainage characteristics.
  - 1) Type 2 Catch Basin Double Grate– shall be in accordance with ODOT standards.
  - 2) Curb inlet per standard details.
- iv. Precast units may be used in lieu of cast-in-place units when approved by the City. Details of proposed units must be submitted for approval.

v. Frame and Grates - Get vendor information. Do we want to include info on how to weld your own grate?

How do we address allowing them to weld these themselves?

- b. Manhole Lids and Catch Basin Access ways shall be slotted cover Olympic Foundry H-20 loading, Model MH-26 G, with lettering "SD".

D. Testing - Testing of storm drain facilities shall be through visual inspection. Since there is no formal testing for gravity flow drainage facilities, special attention will be paid to workmanship and adherence of manufacturer installation requirements.

#### **18.20.004 SANITARY SEWER**

##### **A. Gravity**

##### **1. Polyvinyl Chloride (PVC) Pipe**

- a. Small diameter Main (under 15 inches) shall be SDR 35 conforming to ASTM D-3034.
- b. Large Diameter (18 inches and greater) shall be SDR 35, T-1 wall thickness with elastomeric gasket seals conforming to ASTM F-477.
- c. Gasket shall be an integral bell gasketed water tight joint in accordance with ASTM F-1803.

##### **2. Fittings**

- a. Flexible couplings for connecting PVC to existing concrete service lateral piping, shall be Fernco Series 1006.
- b. Flexible couplings for connecting PVC to existing asbestos cement service lateral piping, shall be Fernco Series 1051.
- c. Flexible couplings for lateral connections shall be of the appropriate Fernco Series 1006.
- d. Provide wyes for all cleanouts.
- e. End plugs to be installed for service laterals, sanitary sewer main stubs from manholes and wye fittings of cleanouts.

##### **3. Laterals – refer to Standard Detail 4.11.**

- a. Existing sewer – Romac Tapping Saddle Style CB, sized for connecting pipe diameter. Stainless steel strap and bolts.
- b. In new installations; service laterals shall only be made through a wye fitting per Standard Detail 4.11
- c. Service lateral connections to existing systems shall use a standard (4") saddle truss type connector for each residence (IDU), and shall be placed a minimum of 18" apart.
- d. In the event a service lateral is to be abandoned, it must be removed and capped (plugged) at its connection point to the main.
- e. Tee-wye shall not be closer than 12 inches to any joint or bell of main line sewer main, which is 12 inches or less in diameter.
- f. Provide ends of all service laterals or fittings with approved watertight end plugs, suitably braced to prevent blow-off during internal air testing.
- g. Provide ending elevation of new sewer service lateral on as-builts.
- h. Backwater check valve will be required by the City in locations where the pad elevations are relatively close to the sewer main elevation and poses a risk of backing up. **TYPE**

#### 4. Testing

- a. General. Prior to final inspection the system must be flushed clean which includes manholes. The contractor is responsible for everything necessary to flush the system clean. It is permissible to use City fire hydrants for this purpose. Testing is performed after each section to be tested is (inspected), backfilled and compacted. DEQ requirements must be met. The project engineer is responsible to obtain the correct DEQ documents, perform the test, and submit the completed test results to DEQ. The City must be notified prior to the test and shall be present to witness the tests.
- b. Bore site. Alignment for gravity mains must pass the "bore site" inspection which is a visual inspection sighting through the pipe with a laser, from end to end. The inspector must be physically able to see through the entire length of pipe to pass the "bore site" inspection.
- c. Air test
  - i. All gravity sanitary sewers including service laterals shall successfully pass a low-pressure air test prior to acceptance and shall be free of leakage. Test first section of pipe laid, as hereinafter specified, to establish that the pipe material is capable of preventing infiltration and that the sanitary sewer mains are being installed to insure that infiltration of ground water will not exceed the amount set forth. Section of pipe tested shall be at least 300 feet in length. If test indicates infiltration exceeding amount specified, defective material or workmanship shall be corrected and test will be rerun until leakage is within the amount specified. Manholes shall be tested as specified in 5. D. 1 herein.

- ii. Place all air testing equipment above ground and allow no one to enter a manhole or trench where a plugged sewer is under pressure. Release all pressure before the plugs are removed. Testing equipment used must include a pressure relief valve designed to relieve pressure in the sewer under test at 10 psi or less and must allow continuous monitoring of test pressures in order to avoid excessive pressure. Use care to avoid the flooding of the air inlet by infiltrated ground water. (Inject the air at the upper plug if possible.) Use only qualified personnel to conduct the test.
- iii. Contractor to perform air test prior to backfilling.

Table 4.2  
DURATION AIR TEST PRESSURE DROP

Pipe Diameter (in.)	Minimum Time (Min: Sec)	Length for Minimum Time (Ft.)	Time for Longer Length (Sec.)
4	2:00	597	0.190 L
6	3:00	398	0.429 L
8	4:00	298	0.760 L
10	5:00	239	1.187 L
12	6:00	199	1.709 L
15	7:00	159	2.671 L
18	8:30	133	3.846 L
21	10:00	114	5.235 L
24	11:30	99	6.837 L
27	13:00	88	8.653 L
30	14:30	80	10.683 L

d. TV Test. Contractor shall conduct an internal television inspection of all installed mainline sewers and service laterals to the property line, with a movable eye internal camera that permits investigation of each lateral connection to the mainline. Lines shall be evaluated for compliance with Standard Specifications. Contractor shall provide a copy to City for review of complete color videotape in VCR compatible or digital format for review by the City. Inspection shall be conducted by a City-approved, licensed and bonded technical service, which is equipped to make an audio-visual record. A voice accounting of suspected deficiencies shall be made on the sound track. Inspection firm shall provide the City with written record of any problems noted, on a form approved by the City staff, with stationing and any noted concerns for needed corrective action. Video/digital report and written report shall be submitted to the City, and will become property of the City. If defects are noted in the television inspection, repairs shall be conducted to eliminate defects, and lines shall have a new television inspection provided under identical circumstances until all noted deficiencies are corrected. All costs shall be at developer's expense.

e. Mandrel Test. The Mandrel Test is conducted by pulling the test device through a completed sewer run from manhole to manhole. If the Mandrel gets caught in the pipe and cannot be pulled from manhole to manhole in a straight

pass, then the line will fail the Mandrel Test. This test is required for all sewer main construction. Mandrel shall be appropriate size for the pipe to be inspected.

5. Workmanship

- a. There shall be no sags or dips in the pipe to allow for proper drainage.
- b. Minimum slope is 0.5%. Pipe design size shall be for optimum cleaning velocity.
- c. Pipe to be installed with spigot end in the direction of flow. Take care to properly align the pipe before push on joints are connected.

B. Force Main

1. General

- a. All pipe shall have a 150-psi minimum working pressure designed for 5-foot minimum depth.

2. Polyvinyl Chloride Pipe (PVC)

- a. 4-inches to 12-inches diameter shall be AWWA C-900, DR 18, Class 150 and conforming to the outer diameter of cast iron pipe.
- b. Greater than 12-inches shall be in compliance with AWWA C-905, DR-18, Class 235.

3. HDPE will be considered on a case by case basis and upon approval by the City Engineer.

4. Restraints

- a. Thrust blocks; see detail 4.52.
- b. Mechanical Joint Fittings used with ductile iron and C900 PVC pipe shall conform to ANSI/AWWA C-110/A21.10 and ANSI/AWWA C-111/A21.11, or ANSI/AWWA C 153/A21.53.
- c. Ductile iron fittings are not required to be cement mortar lined for force main sewer applications.
- d. Joint restraints required on vertical and horizontal bends and fittings shall be manufactured of high strength ductile iron ASTM A536, Grade 65-45-12.
  - i. Foster Adapter shall be manufactured by Infact Corporation.
  - ii. PVC Pipe restrainers shall be EBBA Megalug Series 2000 or approved equal.
- e. Testing
  - i. Please refer to potable water section for testing requirements.

C. Appurtenances

1. Manhole

- a. Requirements - Specify the manhole lid cover must have "S" – specify brand – Manufacturer.

- b. Manhole connectors shall be flexible pipe to manhole to main sewer pipe to precast manholes and shall be KOR-N-SEAL® as manufactured by NPC Inc., Milford, New Hampshire.
  - c. Provide tees for drop manholes.
  - d. Manholes shall be formed as shown in the construction details herein.
2. Cleanouts
- a. Frames shall conform to the applicable provisions for manhole frame and covers herein. **Need to include Riser and Lid**
3. Fittings
- a. All fittings shall be of the same materials as the pipe unless otherwise specified.
  - b. Elbows to be installed for cleanouts.
  - c. Flex couplings for connecting PVC to existing concrete service lateral piping shall be Fernco Series 1051 or approved equivalent.
  - d. Flex coupling for connecting PVC to existing asbestos cement service lateral piping shall be Fernco Series 1051 or approved equivalent.

#### **18.20.005 MANHOLE REQUIREMENTS (Sewer and Storm Drain)**

##### **A. General**

- 1. Please refer to the sewer and storm drain sections herein for particular requirements for sewer and/or storm drain manholes.
- 2. Where a full section of pipe is laid through a manhole, break out the top section to the full width of pipe and diameter of manhole. Cover exposed edges of pipe completely with mortar.

##### **B. Design criteria**

- 1. Manholes shall be installed preferably every 400 feet but no greater distance than 500.
- 2. All manholes shall be concentric type.
- 3. Refer to Division 3, "Road and Earthwork" for subgrade information.
- 4. Manhole diameters shall be in accordance with the following table;

Pipe Diameter	Manhole Diameter
6" – 18"	48"
21" - 42"	60"
48" – 54"	72"
Greater than 54"	Engineered vault

##### **C. Types**

- 1. Poured in place manhole base

- a. Construction of a poured in place manhole base requires formwork. Forms for exposed surface shall be steel, plywood or other approved material. Trench walls, large rock or earth is not an approved form material.
- b. Portland Cement concrete shall conform to ASTM C-94, Type II. Compressive strength for bases shall not be less than 3,000 psi for 28 days. Maximum aggregate size shall be 1-1/2 inch with a 2 to 4-inch slump.

2. Precast manhole

iv. Contractor to provide factory submittal verifying that the manhole complies with ASTM C-478.

- i. Minimum wall thickness is 5-inches. Cones shall have the same thickness and reinforcement as manhole sections.
- ii. Keylock joints grouted and sealed tight with jointing material described herein.
- iii. Jointing materials
  - 1) Mortar – shall conform to ASTM C-387 and adhere to the concrete and comprise of one part Portland Cement to two-parts clean Mason's sand passing a 1/8-inch screen.
  - 2) Ram-Nek, Kent-Seal or approved equivalent shall be installed at all jointing sections.

iv. Grade rings

- 1) General. Install to the subgrade as indicated in the standard details.
- 2) Height. New construction of manholes will have no greater than 6-inches height. Existing manholes brought to grade shall not have greater than 18-inches of grade rings. If greater than 18-inches, Contractor will replace the barrel.
- 3) Installation shall be plumb.

v. Frame, Cover and Collar

- i. Set frames in concrete collar with collar being 12" wide, rectangular or circular, and a minimum of 6" depth. Allow for 2" AC lift to grade and tack to manhole cover.
- ii. Traffic rated to H-20 loading.
- iii. The bearing seat shall not rock when checked with a testing jig.
- iv. Manhole frames and covers shall be Olympic Foundry Co., Inc., Part Number MH626S, or approved equal.
- v. Manhole paving risers shall be Olympic Co. Inc., Part Number MH26R or approved equal.

vi. Manhole Connector

- i. A flexible manhole connector shall be installed for precast storm and sewer manholes.

ii. The connector shall be KOR-N-SEAL or approved equal.

vii. **Abandonment of Manhole Stubouts**

i. Abandonment of existing stubouts shall be concrete sealed and at main line connection. Fernco Cap - Frank

3. High Density Polyethylene (HDPE) Manholes with a maximum height of 12 feet and an outside diameter of 48 inches may be used in place of precast concrete manholes as approved by the Engineer and considered on a case by case basis.

D. Testing

1. Vacuum test

a. General. All manholes shall be vacuum tested which consists of plugging all inlets and outlets and applying a 5 psi or 10-inch Hg vacuum to the manhole. The allowable vacuum pressure loss shall not exceed 1 psi or 2 inches Hg for the time period stated below.

Table 4.4 Vacuum Test

Depth of Manhole (ft.)	Duration (sec) required for manhole diameters	
	48"	60"
8	20	26
10	25	33
12	30	39
14	35	46
16	40	52
18	45	59
20	50	65
22	55	72

E. Toning Wire and Tape

1. Toning wire shall be No. 12 AWG, solid copper with green-colored insulation. Only installed on sewer pressure force mains, clean outs and laterals.

2. Underground warning tape shall be 6-inch wide, APWA standard green color, reading "Caution – Sewerline Buried Below."

3. Workmanship

a. Wire and tape shall be buried the entire length of trench and placed above pipe per standard trench detail drawing.

b. Tape shall be placed over the pipe zone material, approximately 6 inches above top of installed pipe. Lay flat and untwisted.

c. Wire shall be brought towards the surface of cleanout.

**18.20.006 POTABLE WATER**

A. General. All materials must be approved for use in potable water systems.

1. Pipe

a. Main

i. PVC and Fittings

- 1) Pipe under 4-inch diameter shall be Schedule 80, Type 1, Grade 1, NSF approved, conforming to ASTM D-1785. Joint shall be solvent welded slip type. Solvent cement shall conform to ASTM D 2564.
- 2) Pipe 4-inches to 12-inches diameter shall be AWWA C-900, DR 18, Class 150 and conforming to the outer diameter of cast iron pipe.
- 3) Pipe greater than 12-inches shall be in compliance with AWWA C-905, DR-18, Class 235.
- 4) All fittings shall be mechanical joint conforming to AWWA C-111 cement line ductile iron, unless a fully restrained fitting is required.

ii. Ductile Iron Pipe and Fittings

- 1) Centrifugally cast ductile iron pipe and spools shall be Class 52 conforming to AWWA C-151 and AWWA C-150.
- 2) Ductile iron shall be cement lined on the inside conforming to AWWA C-104. Outside coating shall be a bituminous coat 1 mil thick, conforming to AWWA C-151.
- 3) Joints shall be mechanical joint conforming to AWWA C-111. The bell shall be cast integrally and the pipe shall be provided with an exterior flange and socket with annular recesses for the sealing gasket. Provide sealing gasket, follower gland with boltholes, black iron tee headed bolts, washers and hexagonal nuts.
- 4) Flanged joints shall meet AWWA C-115. The bolt circle and hole spacing shall conform to ANSI B16.1, Class 125.
- 5) Gasket material for flanged joints shall be commercial neoprene conforming to ASTM D 2000 approved for potable water.

iii. HDPE only used in special cases as approved by the City Engineer.

iv. Brass pipe pressure class 125 or greater meeting ANSI/ASTM B16.15 for combination air and vacuum release and blow-off valves. Threaded brass fittings to conform to ASTM B687-88.

b. Service and Lateral Assembly

- i. 1" laterals shall be polyethylene (HDPE) pipe pressure class 200, IP sized pipe.
- ii. 2" laterals shall be Schedule 40 PVC pipe.
- iii. Corporation stops. Corporation stops used with ¾-inch and 1-inch tap shall be Ford Meter Box Company, Type FB1101-3 or Type FB1101-4 or approved equal. Stop shall be furnished with iron pipe thread inlet and PE pack joint outlet, IPS.
- iv. Gate valves are used for 2-inch services and greater as specified in the gate valve section herein. Ends shall be IP thread.

v. Angle meter stop

- 1) Angle meter stops used with 1-inch polyethylene pipe shall be Catalog No. BA63-332W and BA63-444W respectively, as manufactured by Ford Meter Box Company or approved equal.
- 2) Angle meter stops that use 2-inch PVC pipe shall be Catalogue Nos. BFA 13-666W and BFA13-777W, respectively, as manufactured by Ford Meter Box Company or approved equal. Reinforced rubber gaskets required. Furnish angle meter stops with male iron pipe thread by iron pipe PVC pack joint coupling.

vi. Meter box

- 1) Service boxes for  $\frac{3}{4}$  and 1-inch service meters shall be Christy, B-12 for  $\frac{3}{4}$ -inch and 1-inch, or approved equal.
- 2) Double meter installation in one service box shall be Brooks No. 11-2 or approved equal. If double service box is utilized installation shall use a bronze manifold for meters part #UVB63-42W.
- 3) Meter boxes for  $1\frac{1}{2}$ -inch and 2-inch meter services shall be Brooks No.36H or approved equal.

2. Fittings

- a. All fittings to be ductile iron fittings cast iron sized. Fittings shall be cement mortar lined, 250 psi working pressure. Cement mortar lining must not be damaged or compromised.
- b. Compression fitting to be installed for 1" water services with IP connector.
- c. Mechanical Joint Fittings used with ductile iron and C900 PVC pipe shall conform to ANSI/AWWA C-110/A21.10 and ANSI/AWWA C-111/A21.11, or ANSI/AWWA C 153/A21.53.
- d. Joint restraints required on vertical and horizontal bends and fittings shall be manufactured of high strength ductile iron ASTM A536, Grade 65-45-12.
  - i. Foster Adapter shall be manufactured by Infact Coporation.
  - ii. PVC Pipe restrainers shall be EBBA Megalug Series 2000 or approved equal.

e. Couplings

- i. Contractor to verify pipe outside diameter for proper coupling size.
- ii. Cast coupling and cast reducing couplings. Transition and straight couplings shall have ductile iron sleeve and end rings and resilient gaskets. Furnish with corrosion resistant, high strength, stainless steel SS 316 bolts and nuts. Supply coupling and assembly with fusion – bonded epoxy coating and lining.
- iii. Couplings shall be Ford FC2A ductile iron transition coupling, Romac Macro ductile iron coupling, or approved equivalent.
- iv. End Caps. End cap couplings shall have ductile iron sleeves, end rings, and end caps and resilient gaskets, Smith Blair "482", Romac "EC501", or approved equal. Furnish with corrosion resistant, high-

strength, low alloy bolts and nuts. Supply with fusion bonded epoxy coating and lining. All end caps shall have a blow-off assembly as shown in Detail 4.35.

f. Tapping Saddle

- i. Connections to AC and DI pipe shall use a Romac Style 101NS & 202NS or approved equivalent.
- ii. Connection to C-900 PVC shall be Ford Brass saddle model S91, one piece, two piece or hinged?
- iii. 4" pipe and larger shall be SSTii ss316
- iv. Other tapping saddles

i. Tapping sleeve shall stainless steel Clow No. F-5205 or approved equal.

ii.

3. Appurtenance

a. Fire hydrant

- i. Location of fire hydrants shall be as directed in the BMC Title 17 "Land Development Code" and under the direction of the Fire Chief.
- ii. Shall be AWWA C502 Compression type, 200-psi working pressure, dry barrel with main valve to remain closed if barrel should be accidentally broken. Length of barrel shall be field determined but must maintain a minimum of 3' of bury over the top of pipe and hydrant shall be installed to finish grade, with base flange 6-inch above adjacent ground. Riser extensions will be permitted if needed to maintain these conditions.
- iii. Hydrants shall have "O" ring seals, rugged main valve, positive drain valve, bronze weather cap, and non-kinking chains. Hydrants shall have bronze to bronze seat retainers and bronze cap nuts. Entire valve mechanism, including drain valves, must be easily removed without digging. Hydrant shall be capable of 360-degree rotation on stem. Operating nut shall be 1½-inch pentagon, National Standard, counter-clockwise opening.
- iv. Each hydrant shall be equipped with two, 2½-inch hose nozzles and one, 4½-inch threaded pumper nozzle all with National Standard threads. Size of hydrant valve opening shall be 5¼ inch. Hydrant inlet shall be mechanical joint.
- v. Fire Hydrants shall be backed by manufacturer's 5-year warranty on materials and workmanship. Hydrants shall meet or exceed AWWA C502. Color shall be yellow.
- vi. Hydrants shall be Clow Corporation "F-2500", or Waterous "Pacer". No other hydrants will be considered.
- vii. Barrel extensions shall be manufactured by the hydrant manufacturer.

b. Valve

- i. Valve extensions are required when the turning is greater than 3 feet below grade.
- ii. Gate valve are required every 400', on all legs of tees and crosses, fire hydrant runs and on 2" water services.
  - 1) Gate valves shall conform to AWWA C509 resilient wedge gate valves. All internal parts shall be accessible without removing the body from the line. The wedge shall be cast iron encapsulated in resilient material in accordance with ASTM D 429. Non-rising stem shall be cast bronze and be manufactured to open when the stem is rotated counterclockwise. Furnish with a 2-inch square operating nut. Valve shall be 200-psi working pressure and factory hydrostatically tested at 400 psi. The stuffing box shall have two "O-Ring" seals above the thrust collar. Bonnet bolts must be tightened before installation. Valve trim shall be 316 SS.
  - 2) Special note should be taken of the end configuration of valves as indicated on the drawings for various installation conditions. Flanged and mechanical joints on valves shall conform to pipe materials specifications. Gate valves used with combination air and vacuum release and blow-off valves shall be furnished with iron pipe threads.
  - 3) Coating shall be fusion bonded epoxy for the body and bonnet. Interior and exterior coating per AWWA C550.
  - 4) Zone valves shall be supplied with a 5-sided nut.
  - 5) Valve shall not have a manufacturer date of more than one year prior to installation.
- iii. Butterfly valve. Install for buried service, 14-inch pipe main size and larger.
  - 1) Butterfly valves shall conform in all respects to the physical and performance requirements of AWWA C504, short body type having operators suitable for direct burial. Furnish Class 150B valves unless otherwise indicated. Furnish valves having two-inch square operating nuts which shall rotate counter-clockwise to open. All valves shall be 150-psi working pressure, 300-psi test pressure and be furnished with a continuous rubber seat bonded to the body.
- iv. Backflow
  - 1) General
    - a) Backflows shall comply with OAR 333-061-0070.
    - b) Backflows supplied shall be certified as approved backflow prevention assemblies from one of the following institutions; University of Southern California, Foundation for Cross Connection Control and Hydraulic Research, or other equivalent testing laboratories approved by the OAR Department.
  - 2) Reduced Pressure (RP) or Double Check Detection Valve

a) OAR standards 333-061-0070 Table 48 defines premises requiring RP and Air Gap backflow prevention, or double check depending on the risk of health hazard.

v. Air Release/Relief Valves

- 1) Combination Air Vacuum/Air Release shall be full body, fusion epoxy both internal and external with stainless steel 316 trim and accessories.
- 2) Valve shall have cast iron body, covers and baffle and stainless steel float, designed for normal usage of 150 psi. All other trim shall be stainless steel with the exception of Buna-N seat and adjustable Viton Orifice.
- 3) One 2-inch gate valve, IPxIP, installed at service connection and as specified shall allow removal and reconditioning of combination air/vacuum relief valve. Connections to water main shall be made through the use of specified service saddle.

4) Canister

vi. Valve box

- 1) Refer to standard detail x
- 2) Valve box shall be traffic rated when in roadway or driveway.
- 3) Shaft shall be 7-inch inside diameter. Cover shall be "lift pocket" type and lettered "WATER."
- 4) Boxes shall be Christy G5 or approved equal.

c. Blow off Assembly

- A. Blow-off valves shall be constructed per standard details, with one 2-inch gate valve, as specified, installed for manual operation.
- B. Miscellaneous piping shall be brass as specified.
- C. Connection to water main shall be made through use of specified service saddle or end cap.

d. Service Saddles Compare with what Tim gave me

A. PVC Pipe (AWWA C900)

- 1) Saddles with ¾-inch to 2-inch taps on 4-inch to 12-inch C900 PVC pipe shall be solid brass, with "O" ring gasket and silicon bronze screw. Supply with I.P. taps with single outside diameter to fit pipe size.

- 2) Saddle shall be Romac 202 N or approved equal.

B. Ductile Iron Pipe

- 1) Saddles with 1-inch taps on ductile iron pipe shall be stainless steel double strap with stainless allow nuts. Supply with I.P. taps.

**C. Transite (Asbestos Cement) Pipe**

1) Saddles with 2-inch taps on transite pipe shall be ductile iron per ASTM A-536 Grade 65-45-12 covered with black nylon fused coating 10-12 mils thick, with double stainless steel brands.

**e. Pipe Supports**

**f. Toning Wire and Tape**

1. Toning wire shall be No. 12 AWG, solid copper with Blue-colored insulation.
2. Underground Warning Tape shall be 6-inch wide, APWA Standards Blue color, reading "CAUTION – WATERLINE BURIED BELOW".
3. Install toning wire on all water main and service installations.
4. Workmanship
  - a. Wire and tape shall be buried the entire length of trench and placed above pipe per standard trench detail drawing, approximately 6 inches above top of installed pipe. Lay flat and untwisted.
  - b. Wire shall be brought to the surface and connected at each valve box frame/lid. Distance between tracer lead access locations shall not be more than 1,000 feet. Joints or splices in wire shall be waterproof. If greater than 1,000 feet, a toning wire box is required per Detail 4.51.
  - c. Wire shall be laid above each water service lateral and brought to the surface at each service meter.
  - d.

*(Heading and Outline numbering needs checked from here on)*

**A. Workmanship**

**B. PIG flush**

1. Pigging" is required for all water mains 6-inch diameter and greater. Pigging is to be accomplished prior to hydrostatic testing and disinfection. Material for "pigs" shall be polyurethane foam as manufactured by Knapp Polly Pig, Inc. or as approved by the City. If other than commercial pigs are used, the size and shape of pigs shall be determined by City.
2. A minimum of three (3) pigs shall be flushed through the waterline. The Contractor has the option of running all three (3) pigs at the same time or running the pigs one at a time. If all three (3) pigs are run at the same time, the pigs shall be identified individually.
3. Contractor shall provide erosion control as required to prevent damage to existing vegetation/ground.
4. Contractor shall be responsible for flushing "pigs" through waterlines and retrieving "pigs" after operation. If one or more pigs fails to run complete length of waterline, Contractor shall be responsible for retrieving pigs and repeating the pigging operation.

5. If after pigging and disinfection, the bacteriological test fails, the Contractor shall re-pig the waterline.
6. The Contractor shall notify the City a minimum of 24 hours prior to pigging the waterlines and review erosion control methods for Engineer's approval. Engineer can require waterlines to be 're-pigged' if excessive foreign material is encountered during 'pigging'.
7. The Contractor will be required to temporarily remove and replace the necessary pipe and fittings as required to place and remove "pigs" for flushing.
8. All waterlines that are not "pigged" shall be flushed through an opening at least six (6) inches in diameter.
9. The Contractor shall provide all fittings and pipe necessary to perform the flushing.
10. The Contractor may use water provided by the Owner to perform the pigging and flushing.
11. The Contractor shall provide erosion protection where necessary.

**C. Disinfection**

1. Prior to connecting new water mains and appurtenances to the active water system (including installation of valve clusters, fire hydrants, and service saddles/corporation stops), disinfection shall be completed to the satisfaction of the Engineer in compliance with Oregon State Health Division OAR Chapter 333-61-050, including passing the bacteriological test. The Contractor shall tie into the water system as soon as reasonably possible, but not more than 72 hours after the bacteriological test has been passed.
2. The Contractor shall use the Continuous-Feed Method for disinfecting water mains. This section references AWWA C651-86.
3. The Contractor shall use liquid chlorine or sodium hypochlorite or calcium hypochlorite in the disinfection operations.
  - a. Liquid chlorine contains 100% available chlorine and is packaged in steel containers usually of 100-pound, 150-pound or 1-ton net chlorine weight. Liquid chlorine shall be used only (1) in combination with appropriate gas-flow chlorinators and ejectors to provide a controlled high-concentration solution feed to the water to be chlorinated; (2) under the direct supervision of a person who is familiar with the physiological, chemical, and physical properties of liquid chlorine, and who is trained and equipped to handle any emergency that may arise; and (3) when appropriate safety practices are observed to protect working personnel and the public.
  - b. Sodium hypochlorite or calcium hypochlorite is available in liquid form in glass, rubber-lined, or plastic containers typically ranging in size from 1 quart to 5 gallons; containers of 30 gallons or larger sizes may be available in some areas. Sodium Hypochlorite contains approximately 5% to 15% available chlorine, but care must be used in control of conditions and length of storage to minimize its deterioration.
4. Water from the existing distribution system shall be made to flow at a constant, measured rate (measured by City water meter) into the newly laid water main.

5. At a point not more than 10 feet downstream from the beginning of the new main, water entering the new main shall receive a dose of chlorine fed at a constant rate such that the water will have not less than 25 mg/L free chlorine. To assure that this concentration is provided, the Contractor shall use Table 4.5, which gives the amount of chlorine required for each 100 feet of pipe of various diameters. Solutions of 1% chlorine may be prepared with sodium hypochlorite or calcium hypochlorite. The latter solution requires 1 pound of calcium hypochlorite in 8 gallons of water.

**TABLE 4.5**  
**Chlorine Required to Produce 25-mg/L Concentration in 100 feet of Pipe**  
**(by diameter)**

Pipe Diameter (inches)	100% Chlorine (pounds)	1% Chlorine Solution (gallons)
4	0.013	0.16
6	0.030	0.36
8	0.054	0.65
10	0.085	1.02
12	0.120	1.44
16	0.217	2.60

During the application of chlorine, no part of the main being tested shall be connected to existing valves. Chlorine application shall not cease until the entire main is filled with heavily chlorinated water. The chlorinated water shall be retained in the main for at least 24 hours, during which time all valves and hydrants in the treated section shall be operated to ensure disinfection of the appurtenances.

At the end of this 24-hour period, the treated water in all portions of the main shall have a residual of not less than 10 mg/L free chlorine.

Direct feed chlorinators, which operate solely from gas pressure in the chlorine cylinder, shall not be used for application of liquid chlorine. The preferred equipment for applying liquid chlorine is a solution-feed, vacuum-operated chlorinator and a booster pump. The vacuum-operated chlorinator mixes the chlorine in solution water; the booster pump injects the chlorine solution into the main to be disinfected. Sodium Hypochlorite solutions may be applied to the water main with a gasoline or electrically powered chemical feed pump designed for feeding chlorine solutions.

When the 24-hour contact time has elapsed, the main shall be flushed until the chlorine, as measured by a comparator in the discharge of the pipe, is 1.5 PPM or less. Adequate precaution shall be taken during flushing of the main to preclude property damage or saturation of the surrounding material.

Upon completion of flushing, a sample of the discharge shall be collected in a bacteriological test bottle for testing by the City. The Contractor shall comply with the County Health Department requirements for conducting the test. The City, upon notification by the Contractor, shall arrange for the taking of the sample and shall notify the Contractor of the results as soon as they are available.

If the test fails (results are positive), the main must be disinfected, flushed, and sampled again. Such operations must be repeated until results are negative.

Full compensation for disinfection shall be considered as incidental to the project and no separate payment shall be made. All costs related to disinfection shall be included in the various other applicable items of work.

#### D. Potable Water Main and Sewer Force Main Testing

##### 1. General

a. Pressure Testing Pipeline shall take place after water main disinfection and bacteriological testing, and shall be conducted per these specifications.

b. Full compensation for pressure testing the pipeline shall be considered as incidental to the project and no separate payment shall be made. All costs related to pressure testing the pipeline shall be included in the various other applicable items of work.

##### 2. Procedure

a. The water pressure test, or leakage test, shall establish that the section of line to be tested, including all joints, fittings and other appurtenances, will not leak within the limits of the applicable leakage allowance.

b. The Contractor shall provide all necessary apparatus for testing. A double check valve assembly meeting the requirements of the Department of Health shall be used at all times. All necessary taps on the main for testing purposes shall be provided and installed by the Contractor at locations designated by the Engineer.

c. All service saddles, corporation stops, fire hydrants, fire lines, blow-offs, air vacuum valves and appurtenances are to be installed on the main pipeline prior to testing. Tie-ins shall be observed by the Engineer at operating pressure prior to backfill.

d. The Contractor shall apply a pressure of 50 percent above normal operating pressure for all tests. This pressure shall be maintained as constant as possible throughout the period of test. All additional water pumped in during the testing period shall be measured and recorded. The Contractor shall provide and use an air relief valve so air trapped in the line during test will not affect test results.

e. After test pressure is reached, Contractor shall use a calibrated water container and record the quantity of water installed to maintain the test pressure. Compare with the following equation results or for longer pipelines, or if the same parameters, compare with the following leakage chart.

f. The test duration shall be two hours, and the allowable leakage shall be determined by the formula:

$$L = \frac{ND\sqrt{P}}{1000}$$

7400

where:

L = allowable leakage (gallons per hour)

N = number of joints in the length of pipeline tested

D = nominal diameter of the pipe (inches)

P = average test pressure during the test (pounds per square inch gauge)

Leakage values determined by the above formula are shown in the following table:

**Leakage Allowable (Gallons per 1,000 feet per hour)**

**(1,000 feet = 50 joints)**

Pipe Size (Inches)	Test Pressure (psi)				
	50	100	150	200	250
4	0.19	0.37	0.33	0.38	0.43
6	0.29	0.41	0.50	0.57	0.64
8	0.38	0.54	0.66	0.76	0.85
10	0.48	0.68	0.83	0.96	1.07
12	0.57	0.81	0.99	1.15	1.28

Should the test of the pipe installed disclose leakage in excess of the specified allowable, the Contractor shall, at the Contractor's expense, locate and repair the defective joints until the leakage is within the specified allowance.

**END OF DIVISION**

**Chapter 18.25**  
**Division 5**  
**Site Work**

**18.25.001 DEFINITIONS**

- A. This section contains specification information on right of way improvements, usually above ground or related to surface features and site specific standards.

**18.25.002 Formwork**

**A. General**

- 1. Formwork described herein includes falsework and is temporary or permanent molds into which concrete is poured.
- 2. Shall conform to ACI-347 "Standards Recommended Practice for Concrete Formwork," current edition.

**B. Materials**

- 1. Plywood shall be 5/8 inch thickness or greater as required to support concrete at rate of placement.
- 2. Each sheet shall be stamped with an APA stamp.
- 3. Steel forms may be used at the approval of the City.
- 4. All wood used shall be "construction grade" and certified by an approved agency such as West Coast Lumber Inspection Bureau.
- 5. Manufacturers' assemblies may be used as forms provided that maximum loadings and deflections used on jacks, brackets, columns, joists and other manufacturer's devices do not exceed the manufacturer's recommendations.
- 6. Include all items devices necessary for proper placement, spacing, supporting and reinforcing steel in place for City approval.

**7. Form Ties**

- a. Bolts, rods or other approved devices shall be used for internal form ties and shall be of sufficient quantities to prevent spreading of the forms.
- b. Ties shall be placed 1 inch away from the finished surface of the concrete.
- c. The use of ties consisting of twisted wire loops will not be permitted.
- d. Bolts and rods that are to be completely withdrawn shall be coated with grease.
- e. Ties application shall be as recommended by the manufacturer for conditions of installation.

**C. Workmanship**

- 1. Shall prevent leakage or washout of concrete.

1. Shall resist spreading, shifting, settling and deflection no greater than 1/8 inch between supports and after concrete placement. Construct forms to required grades dimensions and surfaces. Forms to be tight and well braced
2. Public shall be protected from injury or damage from wood or steel stakes with rebar caps, caution tape, barricades and/or cones.
3. Construct to transmit loads without creating bending or shearing stresses in concrete.
4. Align snap ties horizontally and vertically where concrete is exposed to view.
5. Falsework shall be constructed in accordance with ACI 347-68.
6. Do not remove formwork until concrete has hardened and attained sufficient strength to permit safe removal and adequate support of inherent and imposed loads.

#### **18.25.003 Reinforced Steel**

##### **A. Submittals**

1. Shop drawings to include; bending and placing diagrams by supplier and in accordance with ACI publication 315-65, product description and coating, sample, certificates of compliance and Mill Test results.

##### **B. Product Delivery, Storage and Handling**

1. Deliver reinforcing and accessories to site not more than 48 hours before placement.
2. Store in manner as to prevent excessive rusting and fouling with grease, dirt, or other bond weakening coatings.
3. Take precautions to maintain identification after bundles are broken.

##### **C. Materials**

1. Reinforcing bars shall be new billet steel, ASTM A615, Grade 60.
2. Tie wires shall be ASTM A-82-66.
3. Welded wire fabric shall be ASTM A-185-72.
4. All steel furnished shall be American made.

##### **D. Workmanship**

1. Shop fabricate and cold-bend as detailed on reviewed shop drawings.
2. Conform to requirements as ACI 316-65 and ACI 301-66 Section 504, or current edition, where specific details are not shown on drawings or specifications.
3. Ensure placement will permit concrete protection in conformance with ACI 318-63, Section 308, or current edition, or to extent shown.

4. Support and fasten bars securely with concrete blocks, spacers, chairs or ties. Wire-tie bar intersections, secure bars at intervals not exceeding 80 x diameter of bar for horizontal bars and 192 x diameter of bar for vertical bars.
5. Do not bend bars around openings or sleeves. Wherever conduits, piping, inserts, sleeves etc., interfere with placement of reinforcing, obtain the City's approval of placement before placing concrete.
6. Splices and laps in conformance with ACI 318-63, Section 805 or current edition.
7. Reinforcing steel shall be cleaned of mill dust, dried concrete, or other coatings that may reduce bond. When concrete placement is delayed, reinforcement shall be cleaned with sand blasting if directed by the Engineer.
8. Safety- secure plastic caps on ends of exposed rebar. Contractor shall adhere to OSHA requirements for impalement protection.

E. Testing – Inspection in accordance with current building code.

#### **18.25.004 Cast in Place Concrete**

##### **A. General**

1. Concrete shall be truck mixed, ready mixed concrete conforming to ASTM C94.
2. Manufacturer to provide submittals and is responsible for the design of the concrete mix which shall conform to ASTM C94 requirements for ready-mix concrete, or current edition. The design mix information shall show names and brands of materials, admixtures, proportions, slump, strength, gradation of course and fine aggregates, and location of job to be used on.
3. Concrete shall have a 3000 psi minimum compressive strength after 28 days when tested in accordance with ASTM C39 for curb and gutters, catch basins, walks, manhole bases, thrust blocking, collars, sign post bases and other flatwork unless specified otherwise.
4. Type I Portland Cement conforming to ASTM C 150
5. 1½ -inch maximum size for aggregate.
6. Concrete shall have a 4-inch maximum slump when tested in accordance with ASTM C 143.
7. Cement shall be 5½ sacks per cubic yard of concrete, minimum.
8. Admixtures to follow ASTM C494 only, or as approved by Engineer.
9. Non-shrink grout shall be Master Builders "Embeco" or approved equal.

##### **B. Workmanship**

2. The concrete shall be placed in a maximum elapsed time of 1½ hours after the mixing water and cement has entered the drum until completion of discharge.

3. Construction of Portland Cement Concrete Pavement shall not be in progress or continued when a descending air temperature in the shade and away from artificial heat falls below 40 degrees Fahrenheit.
4. Patch all rock pockets and irregularities with a stiff mixture of Portland Cement and sand mixed in the same proportion as the original mix. Trowel a smooth finish. Protect concrete from damage during 7-day curing time.
5. Compaction. The Contractor shall compact the concrete by means of vibrating screeds, mechanical tampers, tamping templates and such other implements as approved. A vibrating screed or automatic screeding and tamping machine may be substituted for a tamping template, subject to approval. The Contractor shall operate the equipment in such a manner that a satisfactory compaction of the concrete is produced and the surface of the concrete is uniform and true to grade and cross section. Immediately after placement of the concrete upon the subgrade and before initial set has occurred, the Contractor shall strike off the concrete and tamp by means of a tamping template, used at right angles to the center line of the street, until the concrete is thoroughly consolidated to specific grade and crown section and sufficient mortar is brought to the surface for finishing purposes.

C. Sidewalks – Refer to Standard Detail 5.13

1. Subgrade – please refer to Division 3, 18.15.002 herein.
2. Mix shall be as stated in 18.25.004 herein.
3. Thickness – 4-inches.
4. Control Joints – as specified in Standard Detail 5.13.
5. Workmanship
  - a. Broom finish, smooth even surface with 2% cross fall. Defects may require replacement of panel.
  - b. As specified in 18.25.004 herein.
  - c. Contraction joints shall be installed every 15 feet and aligned with adjacent curb contraction joints.

D. Curb and Gutter – Standard Detail 5.10.

1. Curb and gutter section must be integrally placed as a monolithic unit.
2. Curb and gutter shall have contraction joints in 5 foot intervals not to exceed 15 feet. Align contraction joints with adjacent sidewalk contraction joints where possible. Install per Subsection F and Standard Details herein.

E. Driveway Approach

1. Subgrade - please refer to Division 3, 18.15.002 herein.
2. Mix shall be as stated in 18.25.004 herein.
3. Thickness – 6 inches.

4. Control joints - as specified in Standard Detail 5.13 and Subsection F herein.
- F. Control joints
1. Install as shown on plans, as specified and as need to allow for expansion and contraction of concrete.
  2. Expansion joints
    - a. Install where sidewalks abut vertical surfaces. In sidewalks, expansion joints shall be installed at right angles
    - b. Install along curb and gutter at 15 foot intervals not to exceed 45 feet.
    - c. Install at interface of straight curb and short radius section, interface with new and old curb, and both sides of driveway cut.
    - d. Bring joint material to within one (1) inch of top surface, fill remainder of joint material with standard sealing compound.
    - e. Expansion joint material shall be ½ inch thick preformed asphalt fiberboard conforming to ASTM D 994.
  3. Contraction joints
    - a. May be hand sawed or hand formed with joint depth to be a minimum of one-fourth the total depth of the section.

#### **18.25.005 Sign Posts**

- A. General -This item shall consist of the furnishing, fabricating, galvanizing and erecting of sign posts in conformity with the lines, grades, dimensions and locations as directed or provided by the City of Brookings.
- B. Materials
1. Posts shall be 2-inch x 2-inch square fit or Telespar posts (holes 4 sides) zinc-coated as manufactured by Traffic Safety Supply or approved equal.
  2. Anchor section shall be 2-1/4 inch x 2-1/4 inch x 3- foot.
  3. Base section of post consists of 2-1/2 inch x 2-1/2 inch x 18-inch long base sleeve.
  4. All posts to be set in 3,000 psi concrete footings as specified herein.
- C. Workmanship
1. Posts shall be installed in accordance with the double 12-gauge installation that utilizes a two-piece breakaway anchor. Check detail
  2. Posts shall be set in cylindrical foundations. For concrete foundations, hole shall be excavated for the bury depth of the post: not less than 12 inches in diameter.

3. Sign posts shall be erected and maintained at a true vertical.

#### **18.25.006 Street Signs**

- A. General – All new signage must meet the minimum retroreflectivity requirements as identified by the MUTCD.
- B. Retroreflectivity Requirements Summary
  1. White copy on overhead guide signs must be made from prismatic sheeting.
  2. White copy on ground mounted street name signs cannot be made from Type I sheeting.
  3. Warning signs (black on yellow or orange) cannot be made from Type I sheeting.
  4. Regulatory signs (black on white) must retain a minimum retroreflectivity level of  $\geq 50 \text{ cd/lx/m}^2$  (while use of Type I sheeting—with an initial retroreflectivity value of  $70 \text{ cd/lx/m}^2$ —is allowed, sign life will be short and may result in poor life cycle value).
  5. Stop signs (white on red) have a minimum contrast ratio of  $\geq 3:1$  (white reflectivity  $\div$  red reflectivity).

#### **18.25.007 Street Lights**

- A. General – Street lights shall be provided for all developments within the City.
- B. Location
  1. New Streets – As part of a new street development, street lighting shall be installed at intersections and at a maximum distance of 220 feet apart with the following exceptions:
    1. A cul-de-sac where the terminus is less than 150 feet from the nearest lighted intersection; otherwise, a street light shall be installed at the end of the cul-de-sac.
    2. For streets serving industrial areas, there shall be a minimum of one (1) street light at each intersection.
  2. Existing Streets – Developments having 200 feet or more of frontage on an existing street shall install a minimum of one (1) street light for the first 200 feet, plus one (1) street light per 220 feet of additional frontage. A development with less than 200 feet of frontage on an existing street shall enter into a deferred improvement agreement for future street light installation.
  3. As determined by Site Committee or traffic engineering designee to prevent a hazardous driving condition.
  4. Alternative Standards. Residential homeowner's associations may propose alternative lighting standards under the following conditions; the

proposed lighting configuration and specifications are stamped by a registered civil engineer, and the Homeowners association shall take full responsibility for maintenance and powering of the street lights through recordation of covenants, codes and restrictions (CC&Rs). The homeowners association must be formed and in accordance with Oregon law. The CC&Rs **COMPLETE THIS SECTION**

C. Types

1. Chetco Avenue Downtown Decorative Lights
2. "Tear Drop" Decorative Lights
3. Standard Cobra Head Light

- D. Service – Nearest facility carrying 120 volts secondary and controlled by individual photoelectric control devices. All services shall be underground.

**18.25.008 Tree Trimming and Removal**

**A. COMPLETE THIS SECTION**

**18.25.009 Reserved**

**18.25.0010 Reservoir and Pump Station Facilities**

1. Paint and Colors
  - a. Roof is weathered wood.
  - b. Forest Green for Reservoirs and Pump Stations.

**18.25.008 Parks and Recreation Facilities - Reserved**

**END OF DIVISION**

**City of Brookings**  
**Standard Construction Details**  
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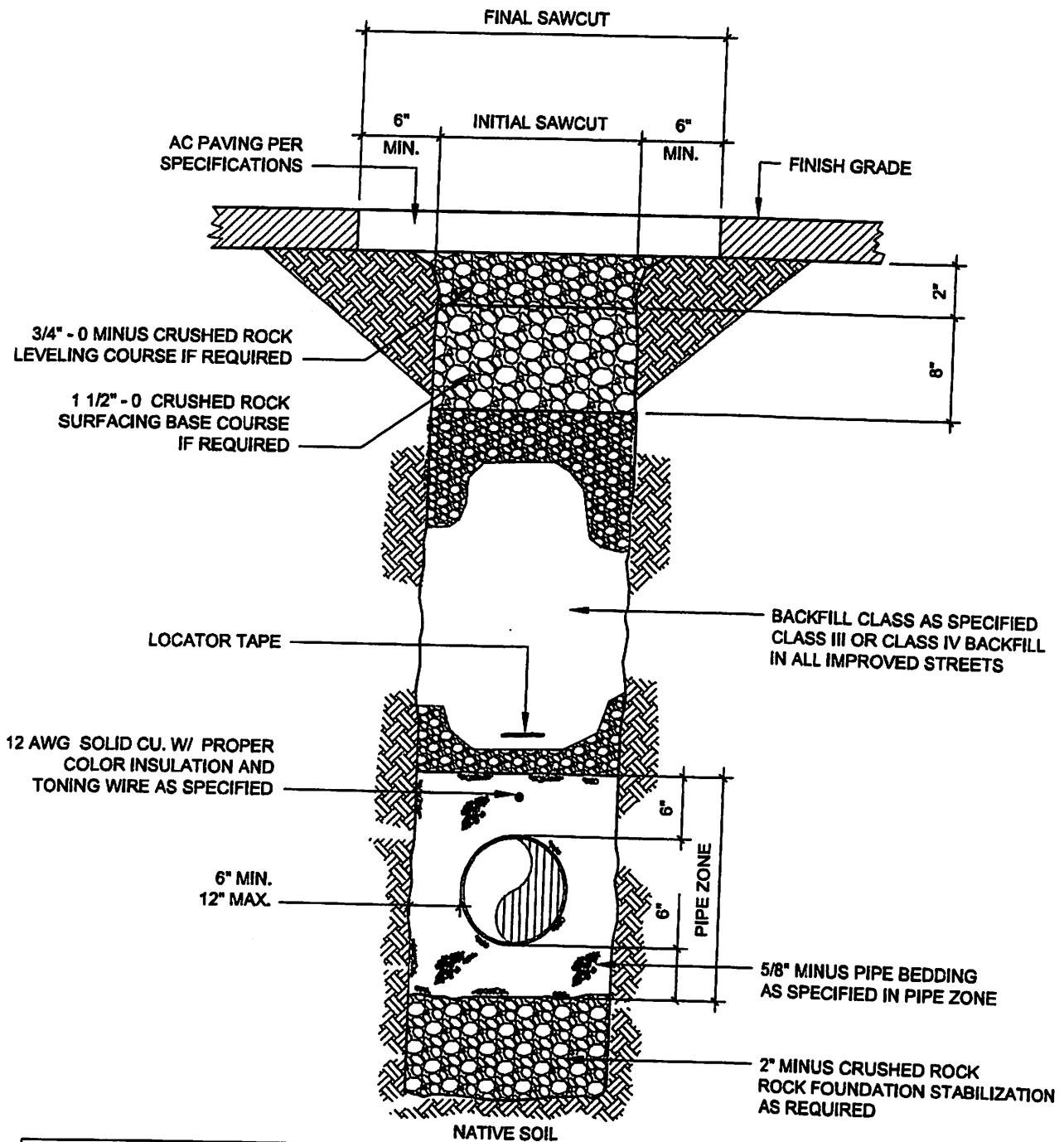
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- 5.33 Luminar Base
- 5.34 Mailbox Support Detail 1
- 5.35 Mailbox Support Detail 2

# T. PATCH



**NOTE:**  
TRENCH LINES LOCATED OUTSIDE IMPROVED (PAVED) ROADWAY WILL BACKFILL WITH NATIVE MATERIAL TO MATCH EXISTING GRADE



CITY OF BROOKINGS - STANDARD DETAIL

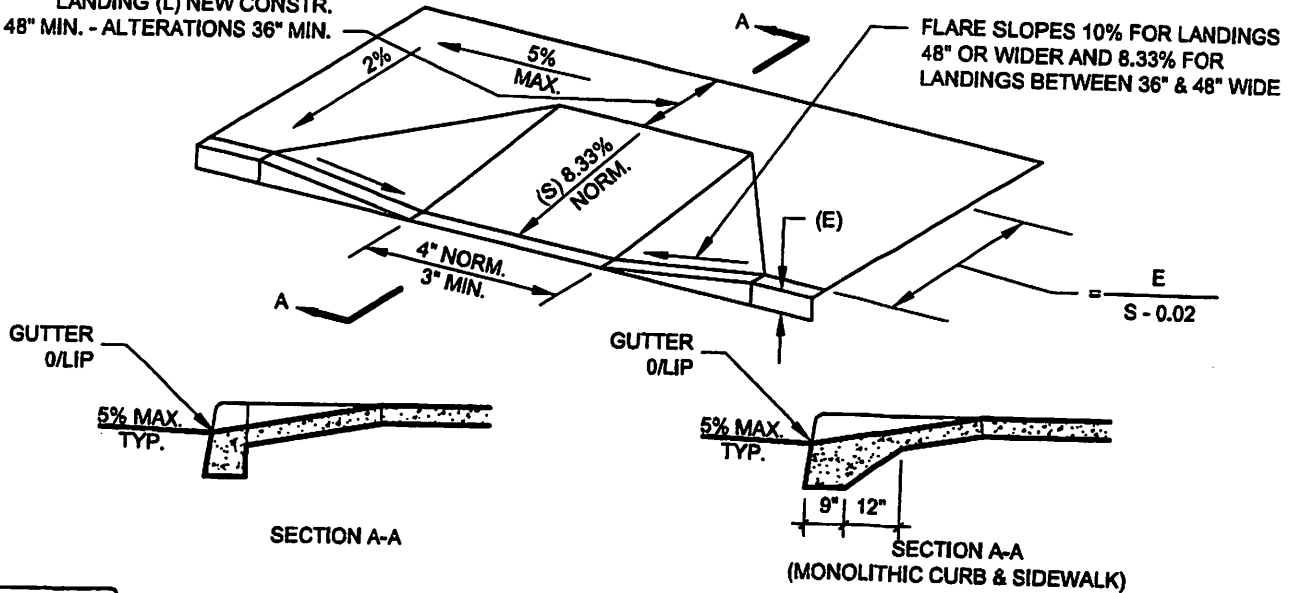
TYPICAL TRENCH DETAIL

3.10

APPROVED BY: \_\_\_\_\_  
PUBLIC WORKS DIRECTOR / CITY ENGINEER

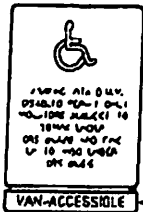
DATE: \_\_\_\_\_

LANDING (L) NEW CONSTR.  
48" MIN. - ALTERATIONS 36" MIN.



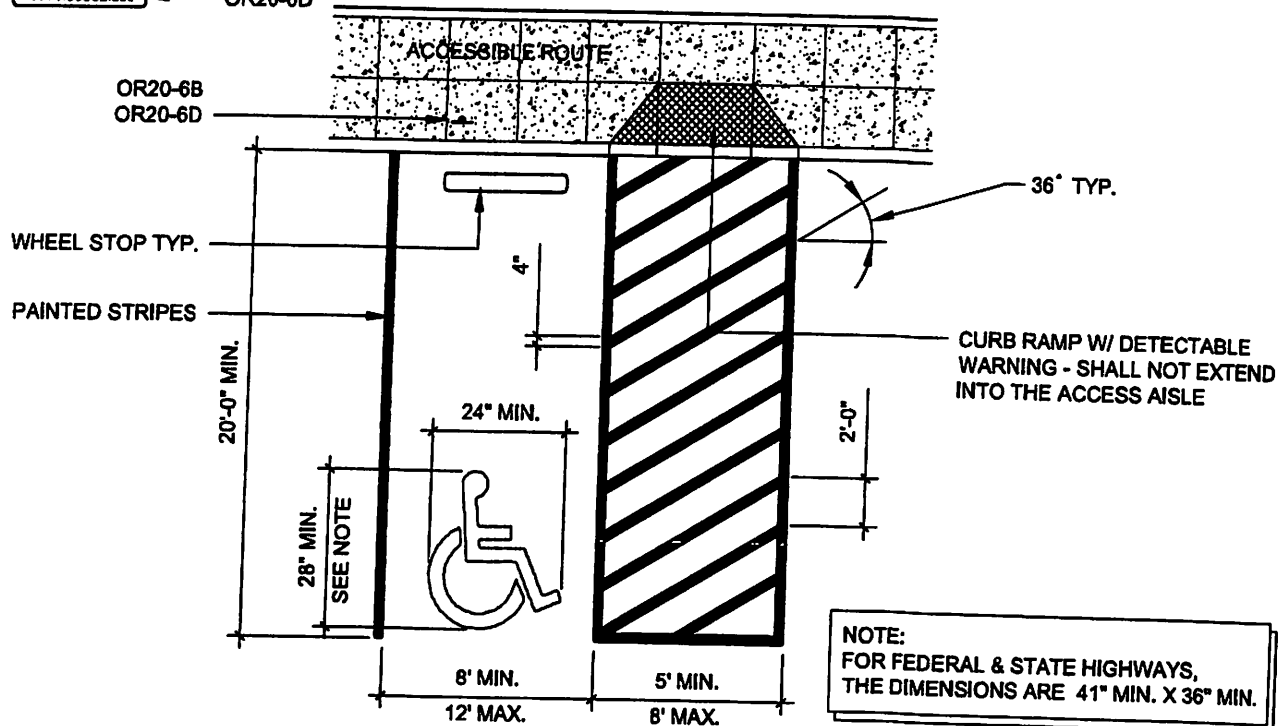
### PERPENDICULAR SIDEWALK RAMP DETAIL

USE PARALLEL OR COMBINED RAMP DETAIL  
WHEN REQD. LANDING CANNOT BE OBTAINED



OR20-6B

OR20-6D



### WHITE STRIPING AND PAVEMENT STENCIL REQUIRED

STROKE WIDTH ON SYMBOL IS 3" MINIMUM  
BLUE BACKGROUND AND BLUE PAINTED CURB OPTIONAL



CITY OF BROOKINGS - STANDARD DETAIL

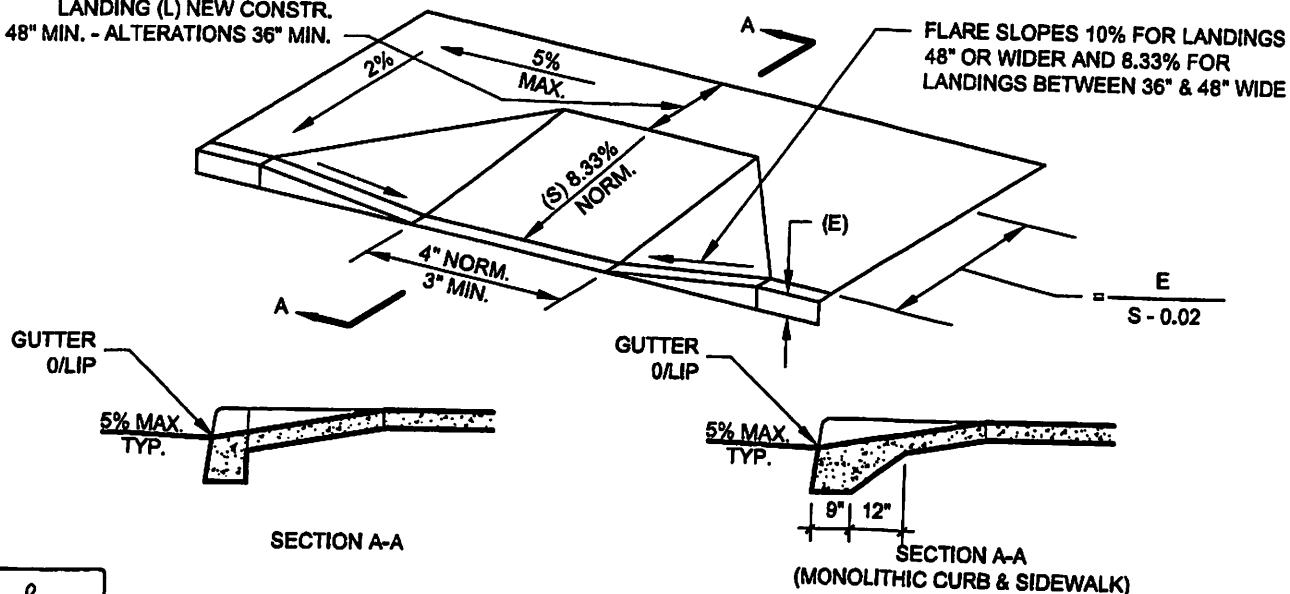
ADA SINGLE PARKING SPACE

3.15

APPROVED BY: \_\_\_\_\_  
PUBLIC WORKS DIRECTOR / CITY ENGINEER

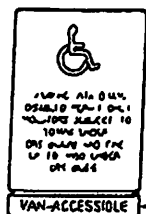
DATE: \_\_\_\_\_

LANDING (L) NEW CONSTR.  
48" MIN. - ALTERATIONS 36" MIN.



### PERPENDICULAR SIDEWALK RAMP DETAIL

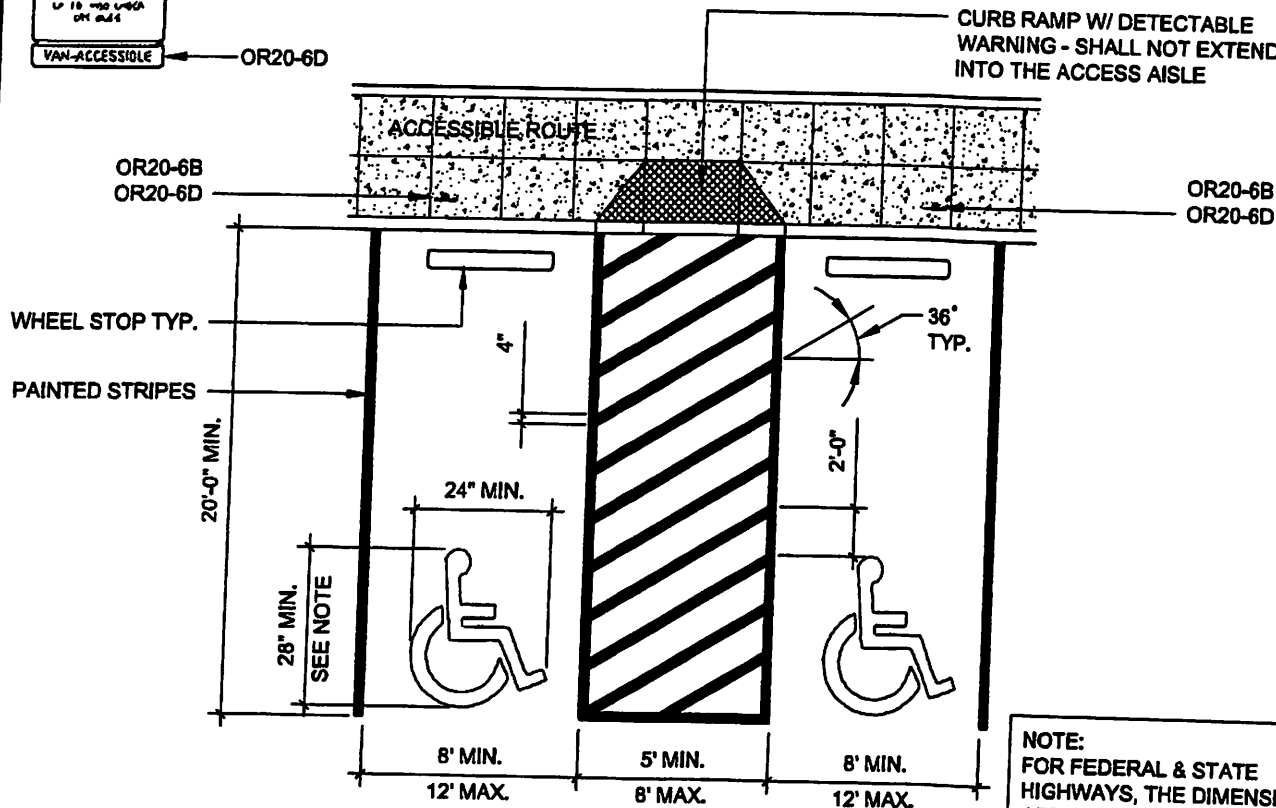
USE PARALLEL OR COMBINED RAMP DETAIL  
WHEN REQD. LANDING CANNOT BE OBTAINED



OR20-6B

OR20-6D

CURB RAMP W/ DETECTABLE  
WARNING - SHALL NOT EXTEND  
INTO THE ACCESS AISLE



NOTE:  
FOR FEDERAL & STATE  
HIGHWAYS, THE DIMENSIONS  
ARE 41\"/>

### WHITE STRIPING AND PAVEMENT STENCIL REQUIRED

STROKE WIDTH ON SYMBOL IS 3\"/>



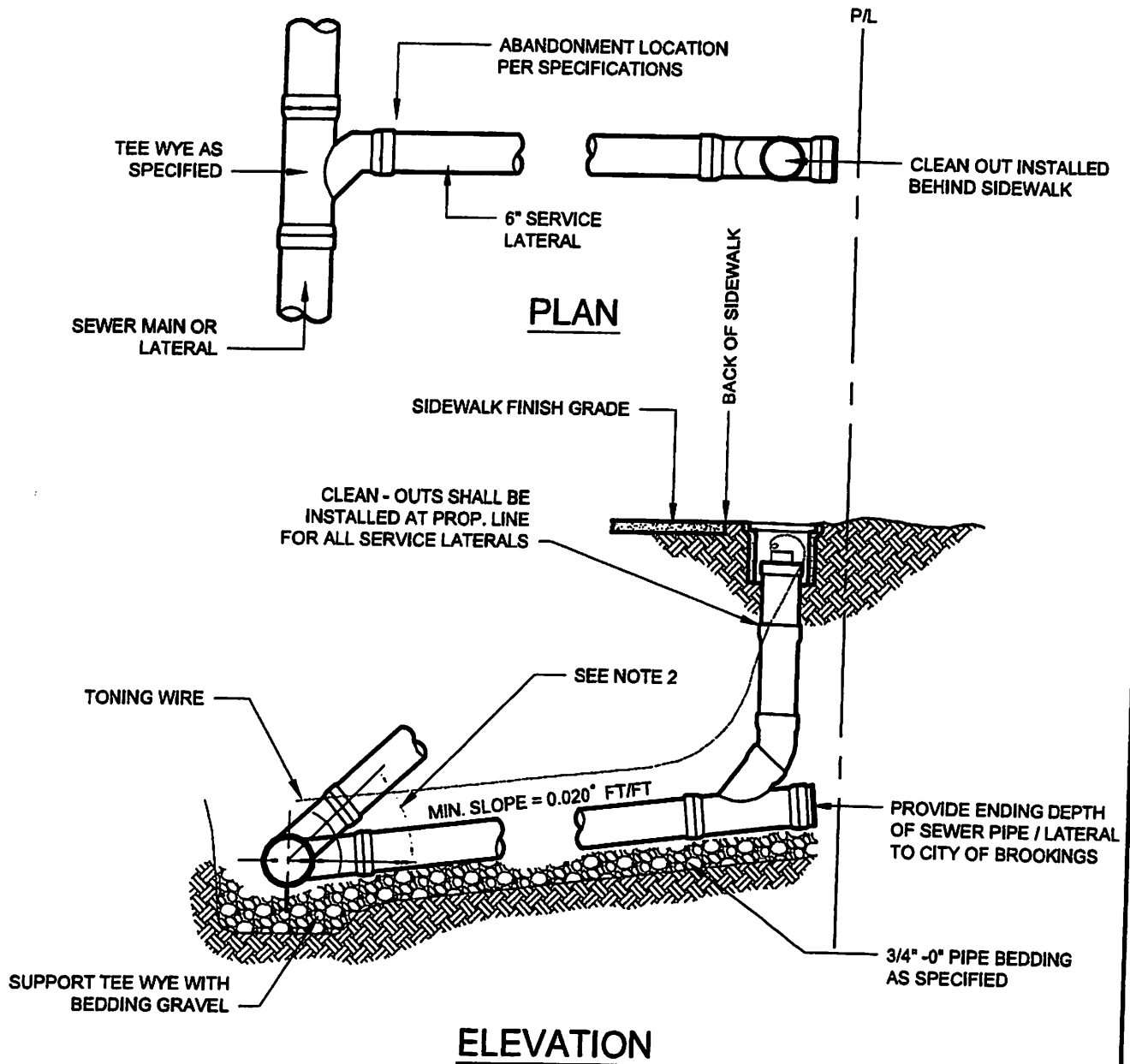
CITY OF BROOKINGS - STANDARD DETAIL

ADA DOUBLE PARKING SPACE

3.16

APPROVED BY: \_\_\_\_\_  
PUBLIC WORKS DIRECTOR / CITY ENGINEER

DATE: \_\_\_\_\_



**NOTES:**

- 1) MINIMUM DEPTH AT RIGHT-OF-WAY OR EASEMENT LINE SHALL BE 5 FEET
- 2) LAY SERVICE LATERAL AT MAX. 45° FROM HORIZONTAL TO ACHIEVE REQUIRED DEPTH AT PROPERTY LINE WHEN MINIMUM SLOPE RESULTS IN EXCESSIVE DEPTH.
- 3) NO. 12 AWG TONING WIRE SOLID COPPER WITH GREEN INSULATION WITH 18" TAG END IN CLEAN OUT BOX
- 4) IF LOCATED IN DRIVEWAY APPROACHES USE CHRISTY F08C LID OR APPROVED EQUAL
- 5) ALL LOCATIONS OF SERVICE LINES SHALL BE NOTED ON NEW CURB WITH A MARK "S".
- 6) NO CURB WEEP HOLES SHALL BE LOCATED WITHIN 18" OF THE CLEAN OUT BOX.



**CITY OF BROOKINGS - STANDARD DETAIL**

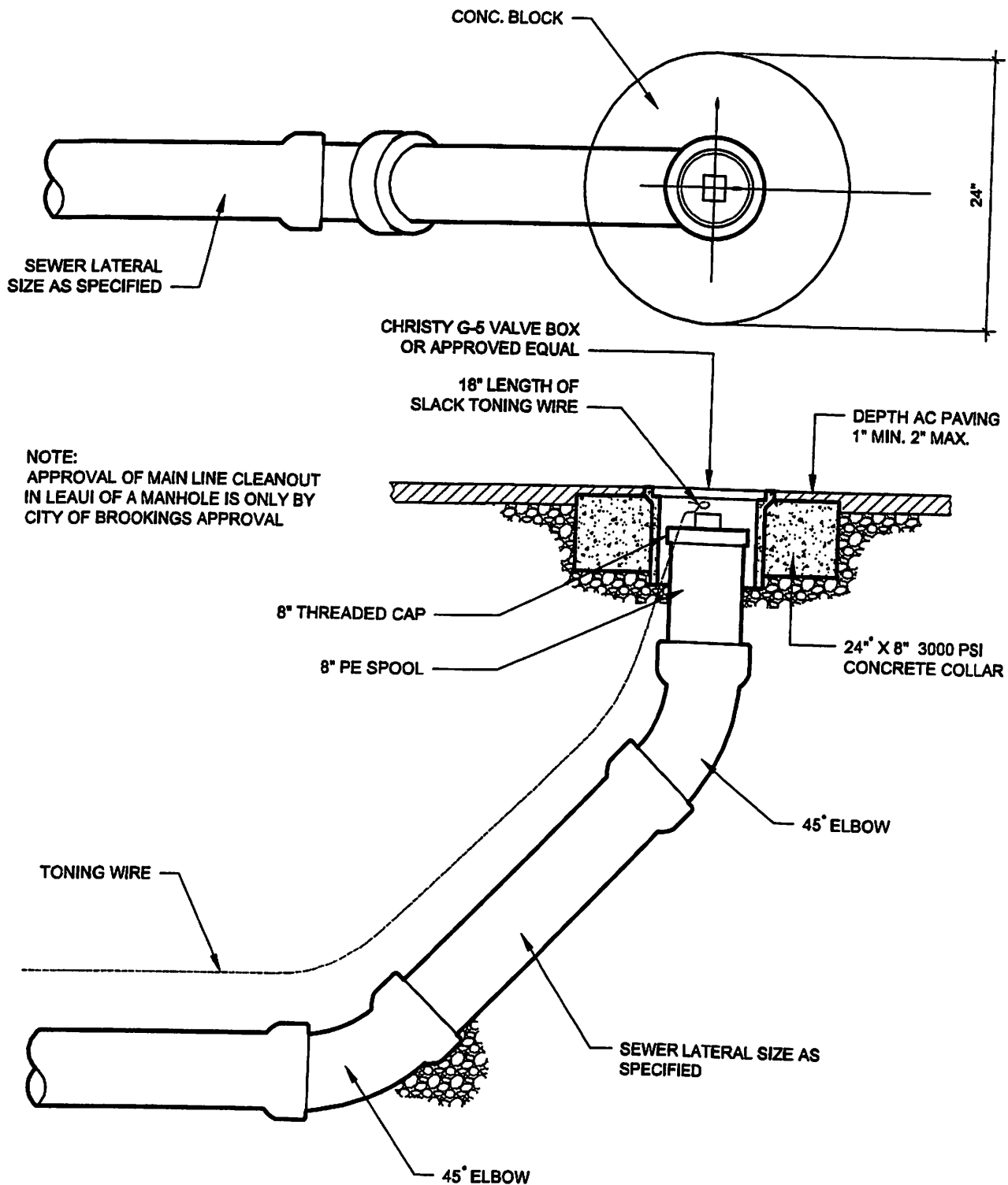
**SEWER SERVICE LATERAL**

**4.11**

APPROVED BY: \_\_\_\_\_

PUBLIC WORKS DIRECTOR / CITY ENGINEER

DATE: \_\_\_\_\_



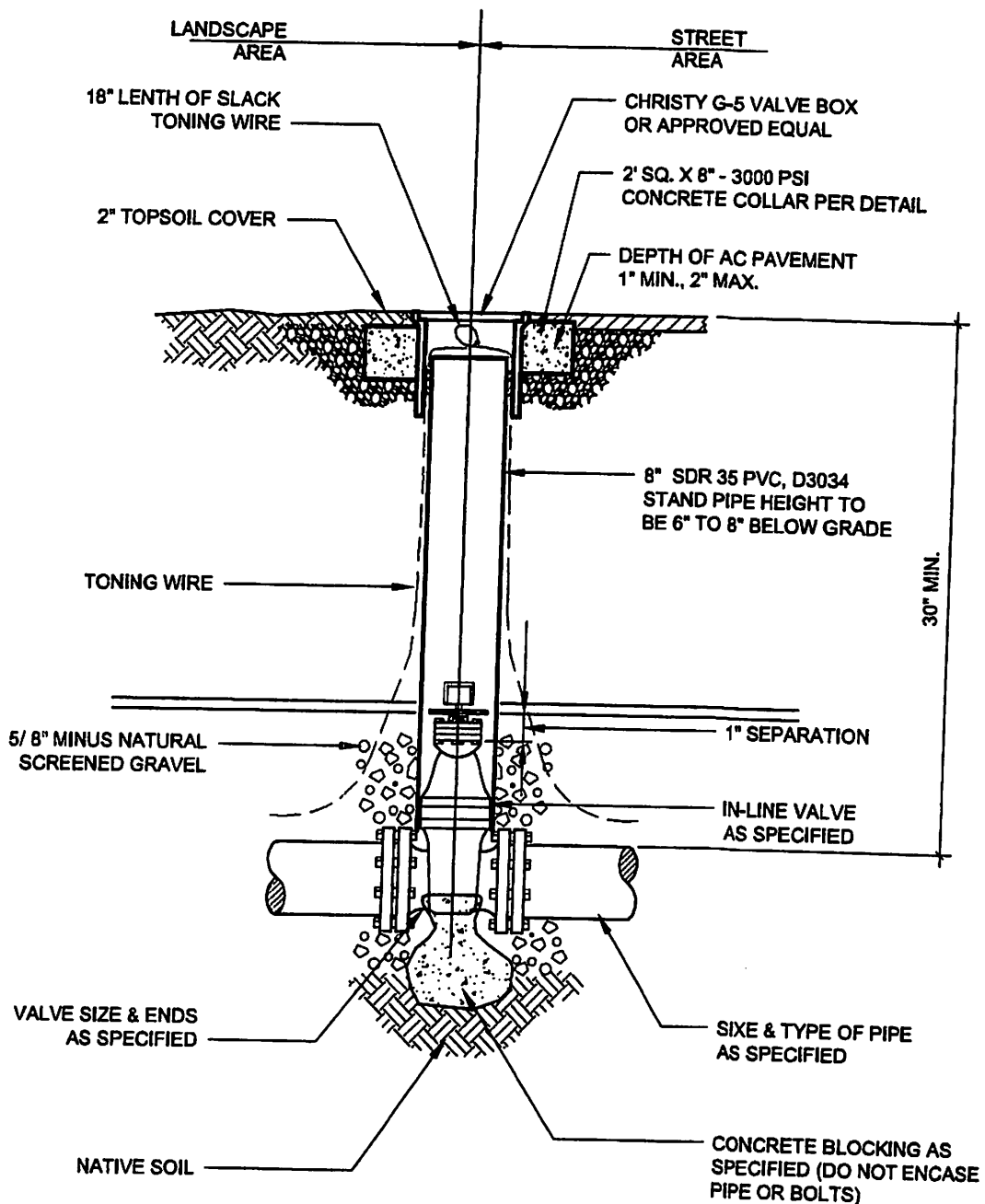
# CITY OF BROOKINGS - STANDARD DETAIL

## MAINLINE CLEANOUT

APPROVED BY: \_\_\_\_\_  
PUBLIC WORKS DIRECTOR / CITY ENGINEER

DATE: \_\_\_\_\_

4.12



**NOTE:**

1. VALVE STEM EXTENSION NECESSARY IF GRADE TO TOP OF VALVE NUT IS GREATER THAN 3'-0".
2. MAY USE VC212 SELF CENTERING VALVE STAND PIPE SETTER FOR 8\" SDR 3034.
3. BLUE CARSONITE STAKE REQUIRED WHEN VALVE IS OUTSIDE CITY RIGHT OF WAY IN VEGETATED AREA'S.



## CITY OF BROOKINGS - STANDARD DETAIL

### TYPICAL POTABLE WATER VALVE BOX

**4.31**

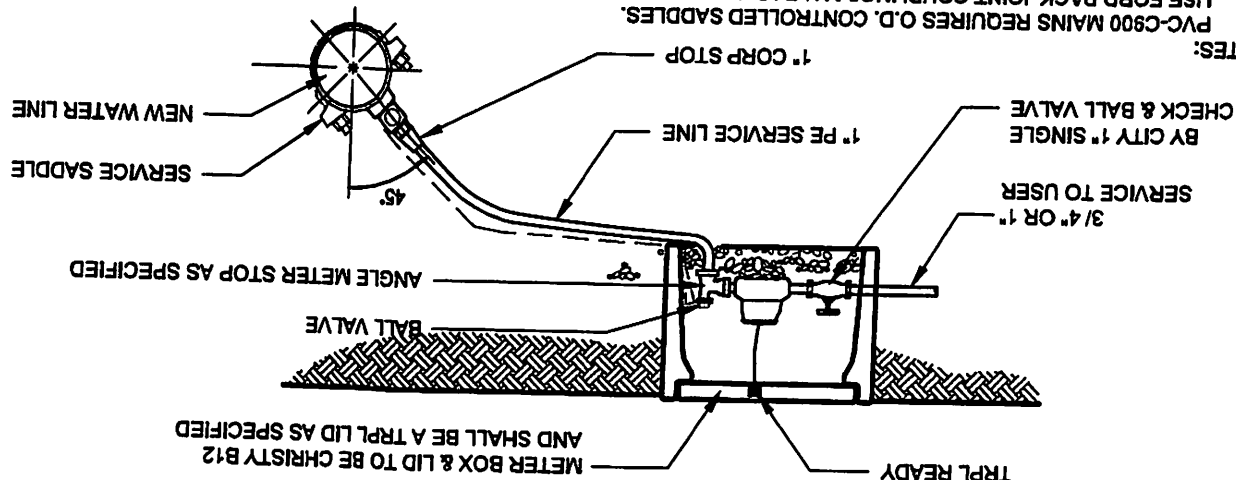
APPROVED BY: \_\_\_\_\_

PUBLIC WORKS DIRECTOR / CITY ENGINEER

DATE: \_\_\_\_\_

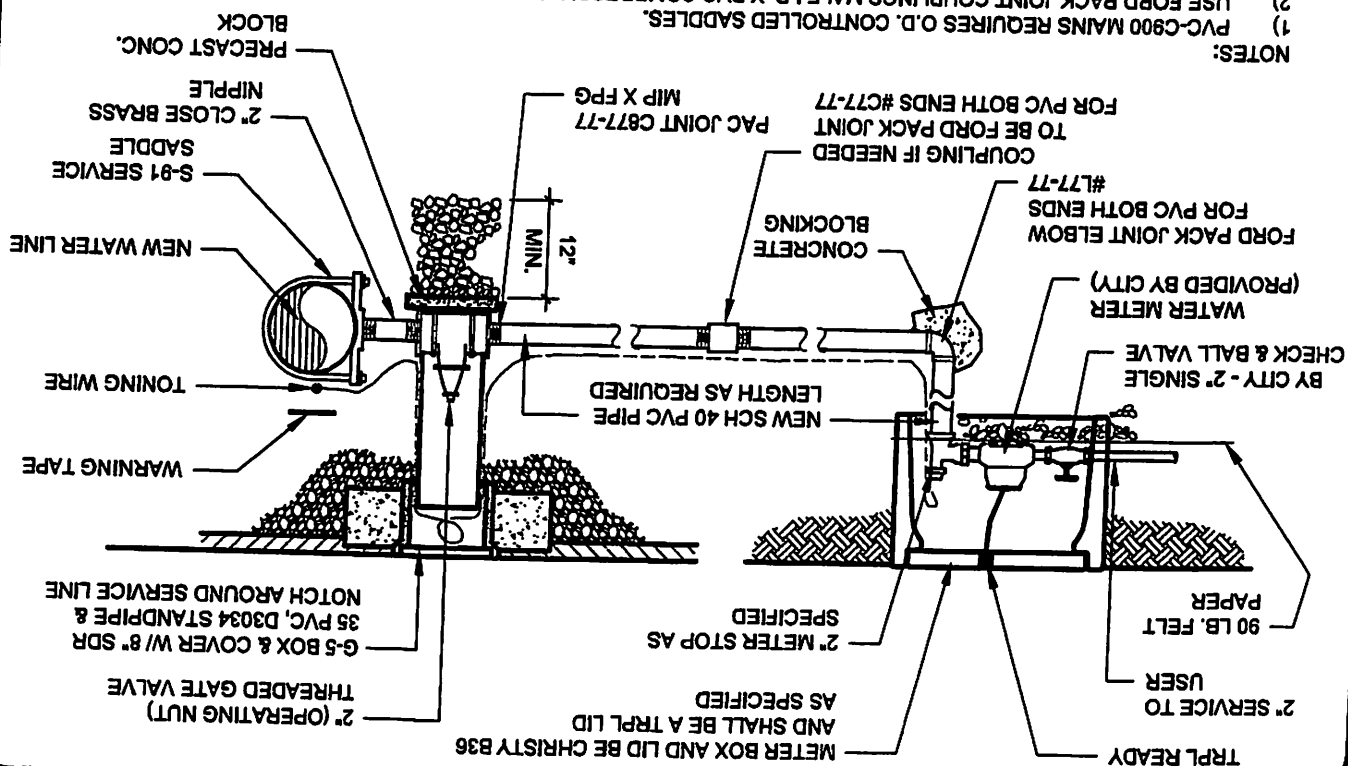
**TYPICAL 1" WATER SERVICE**

- NOTES:
- (1) PVC-C900 MAINS REQUIRES O.D. CONTROLLED SADDLES.
  - (2) USE FORD PACK JOINT COUPLINGS MALE I.P. X PE COMPRESSION AT TAPPING VALVE, AND AT CONNECTION TO ANGLE METER STOP. (NO PVC MALE OR FEMALE ADAPTERS)
  - (3) NO. 12 AWG TONING WIRE SOLID COPPER WITH BLUE INSULATION.
  - (4) P.E. SERVICE TO BE TAPPED 90° OFF OF MAINLINE EITHER 3 OR 9 O'CLOCK POSITION UNLESS APPROVED BY UTILITIES SUPERINTENDENT.
  - (5) WHEN INSTALLING 3/4" METER USE FORD A24 METER BUSHING FOR 1" ANGLE METER STOP. MAY INSTALL WYE BRANCH FOR 5/8" X 3/4" METERS UPON UTILITY SUPERINTENDENTS APPROVAL.



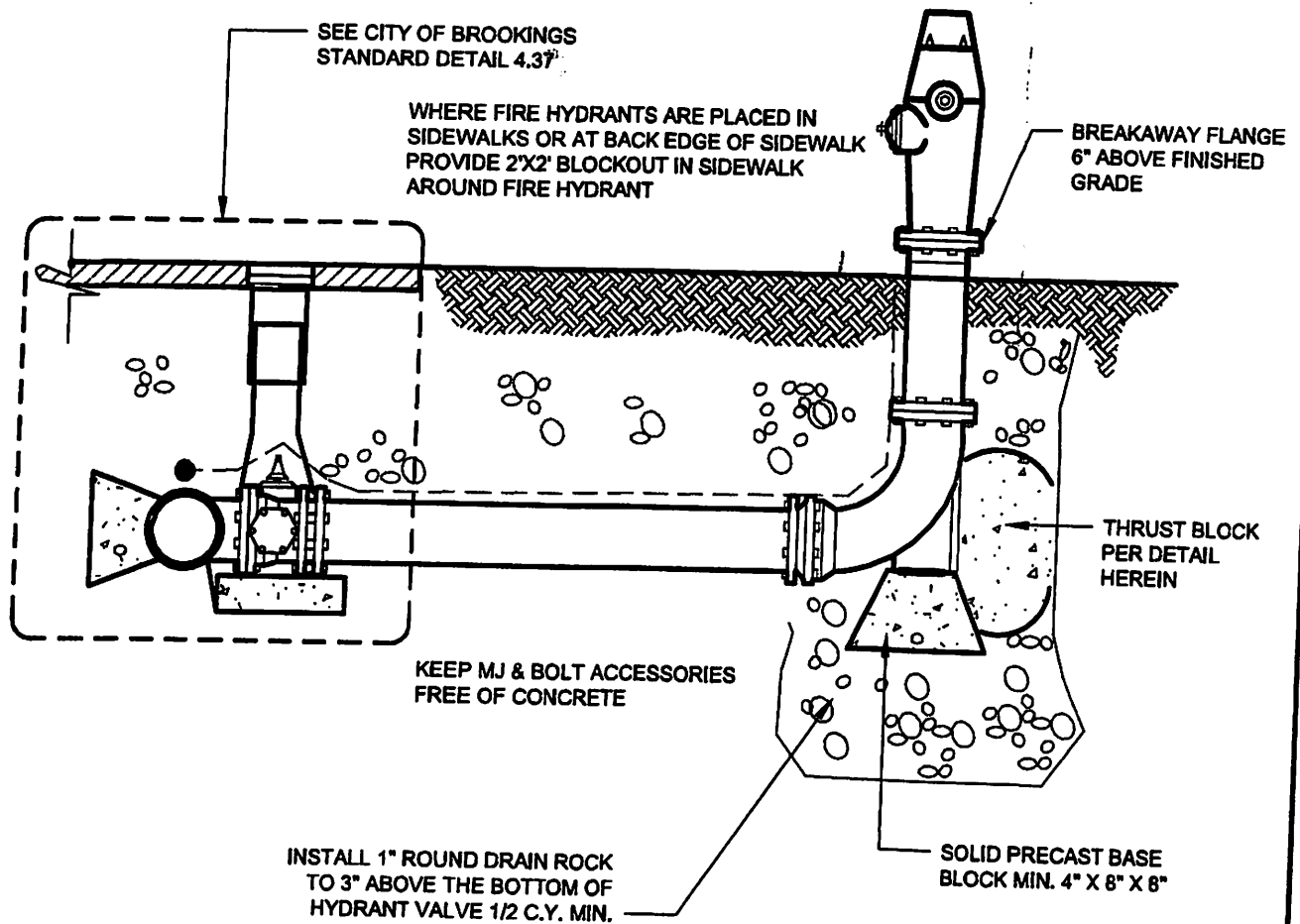
**TYPICAL 2" WATER SERVICE**

- NOTES:
- (1) PVC-C900 MAINS REQUIRES O.D. CONTROLLED SADDLES.
  - (2) USE FORD PACK JOINT COUPLINGS MALE I.P. X PVC COMPRESSION AT TAPPING VALVE
  - (3) PVC 90° BEND & ANGLE METER STOP. (NO PVC MALE OR FEMALE ADAPTERS)
- NO. 12 AWG TONING WIRE SOLID COPPER WITH BLUE INSULATION.





VARIABLES - FIELD DETERMINE BARREL LENGTH  
FOR EACH FIRE HYDRANT LOCATION



#### NOTES

- 1) RETAINER GLANDS ARE REQUIRED FOR ALL MECHANICAL JOINT FITTINGS, "MEGA LUG" OR "APPROVED EQUAL".
- 2) THERE SHALL BE A MINIMUM OF 36" HORIZONTAL CLEARANCE AROUND HYDRANT.
- 3) FIRE HYDRANTS SHALL BE PLACED TO PROVIDE A MINIMUM OF 5' CLEARANCE FROM DRIVEWAYS, POLES, AND OTHER OBSTRUCTIONS.
- 4) WHEN PLACED ADJACENT TO CURB, HYDRANT PORT SHALL BE 24" FROM FACE OF CURB & MAINTAIN ADA SIDE WALK WIDTHS.
- 5) CONCRETE THRUST BLOCKS SHALL BE CONSTRUCTED AS PER THRUST BLOCK STANDARD DRAWING. DO NOT BLOCK DRAIN HOLES & COVER MJ GLANDS & ACCESSORIES.
- 6) EXTENSIONS REQUIRED FOR HYDRANT SYSTEMS SHALL BE INSTALLED TO THE MANUFACTURER'S SPECIFICATIONS.
- 7) HYDRANT PUMPER PORT SHALL FACE DIRECTION OF ACCESS.



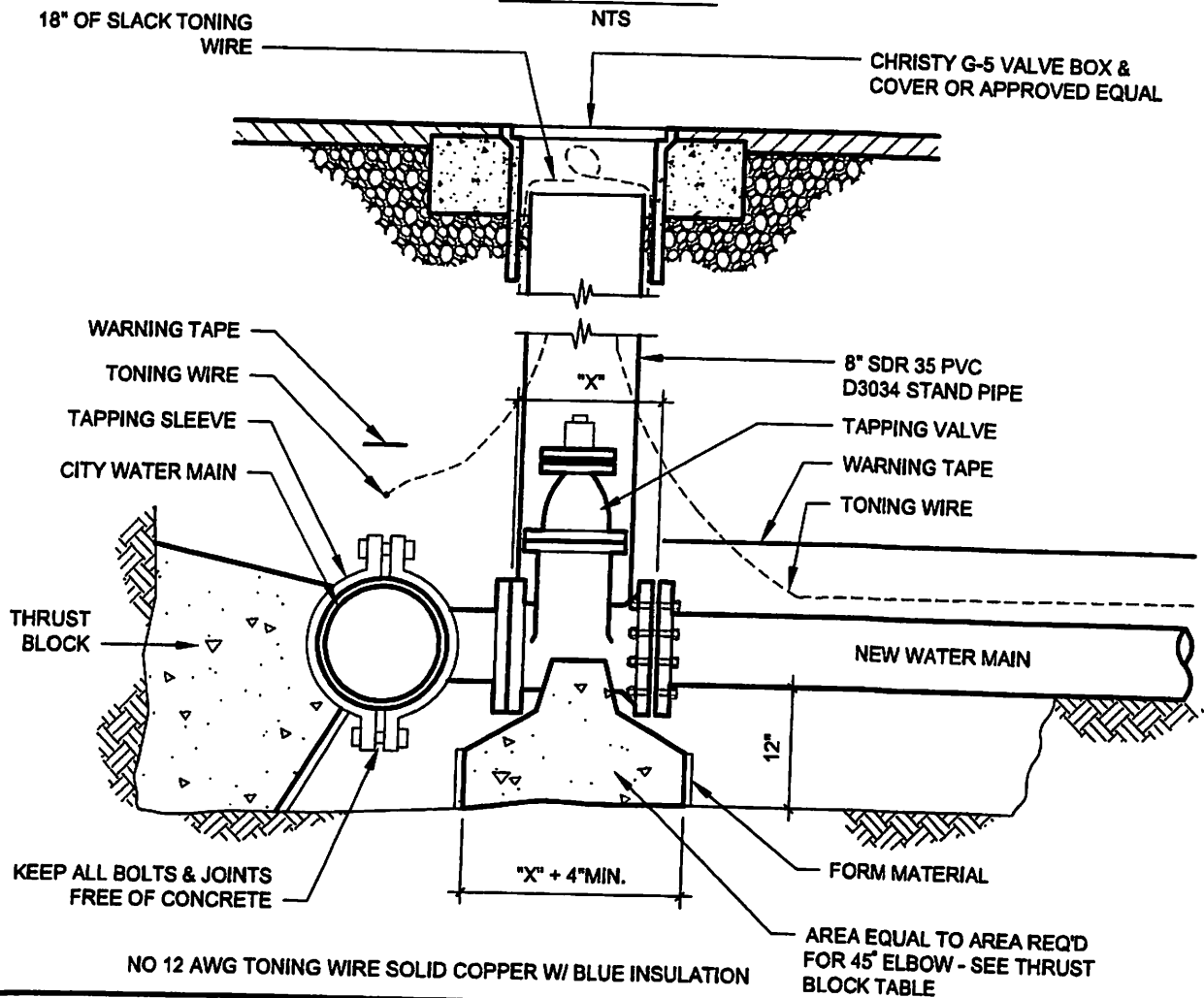
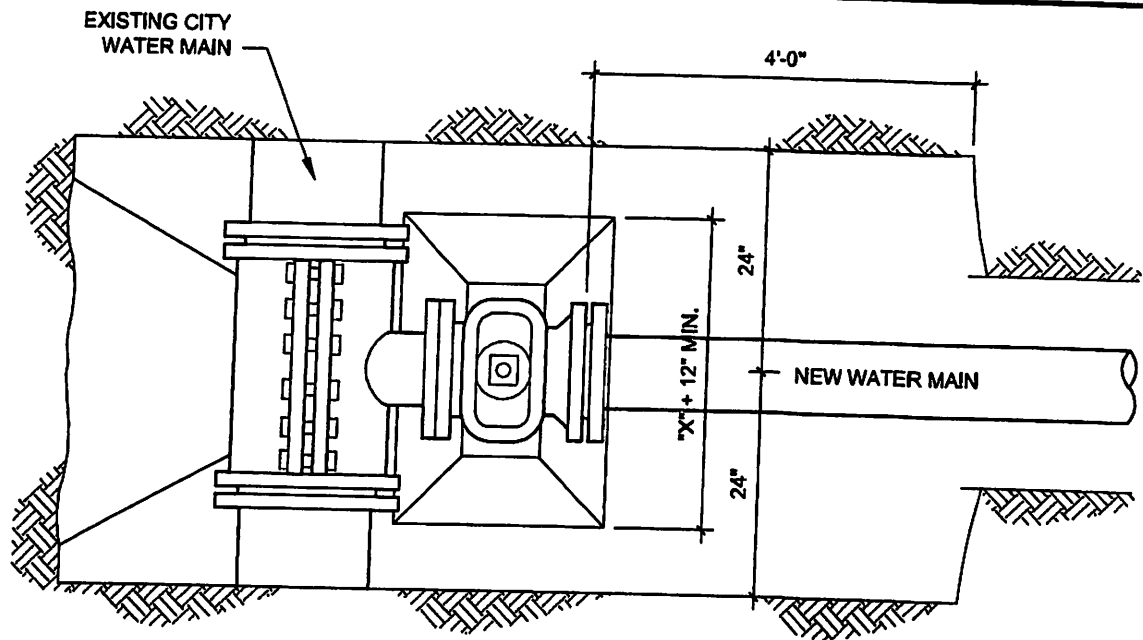
## CITY OF BROOKINGS - STANDARD DETAIL

### FIRE HYDRANT ASSEMBLY

# 4.37

APPROVED BY: \_\_\_\_\_  
PUBLIC WORKS DIRECTOR / CITY ENGINEER

DATE: \_\_\_\_\_



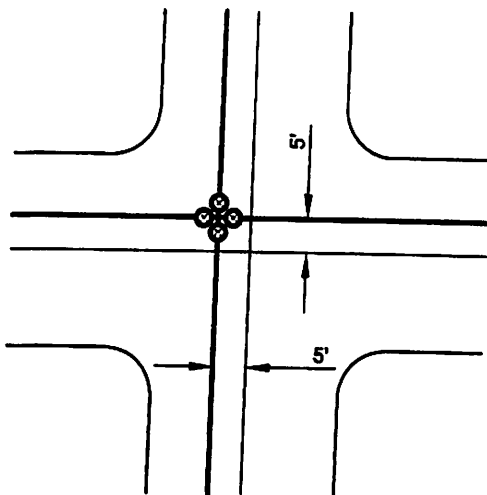
## CITY OF BROOKINGS - STANDARD DETAIL

### 4" - 12" TAPPING SLEEVE & VALVE

**4.38**

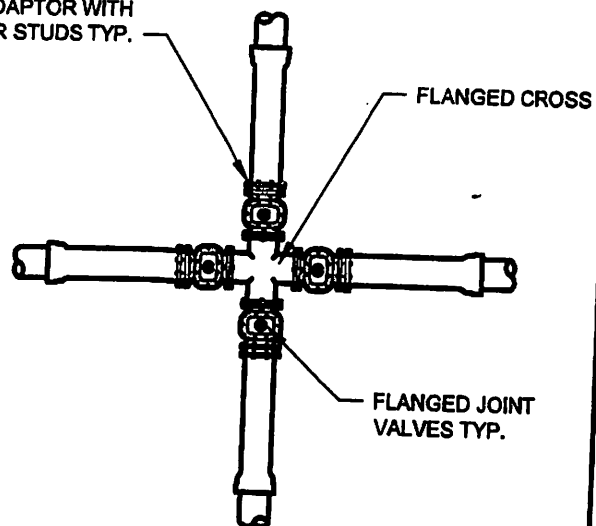
APPROVED BY: \_\_\_\_\_  
PUBLIC WORKS DIRECTOR / CITY ENGINEER

DATE: \_\_\_\_\_

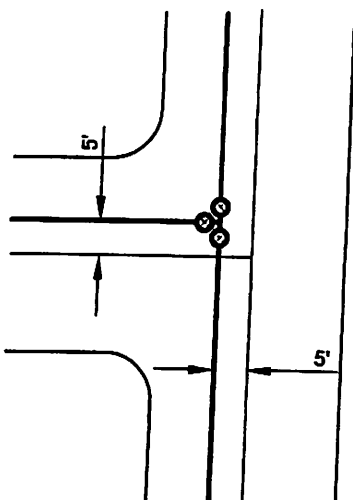


**PLAN**  
NTS

FLANGED COUPLING  
ADAPTOR WITH  
ANCHOR STUDS TYP.



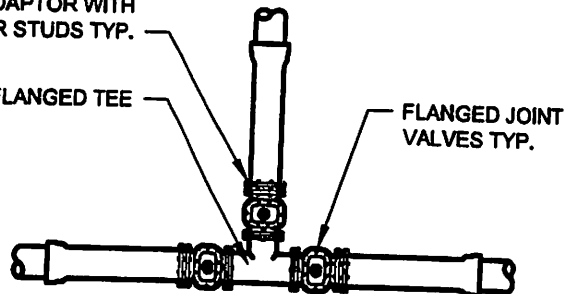
**CROSS - TYPICAL CONNECTIONS**  
NTS



**PLAN**  
NTS

FLANGED COUPLING  
ADAPTOR WITH  
ANCHOR STUDS TYP.

FLANGED TEE



**TEE - TYPICAL CONNECTIONS**  
NTS

**NOTES:**

1. VALVES SHALL GENERALLY BE LOCATED ON EACH BRANCH OF WATER MAIN INTERSECTIONS. WHERE RELATIVELY SHORT LINES (LESS THAN 500 FEET IN LENGTH) ARE INVOLVED, ONE OF THE TWO VALVES BETWEEN INTERSECTIONS MAY BE OMITTED.
2. WATER MAINS IN PUBLIC STREETS SHALL BE LOCATED PARALLEL TO AND 5 FEET NORTH OR WEST OF STREET CENTERLINES WHENEVER POSSIBLE.



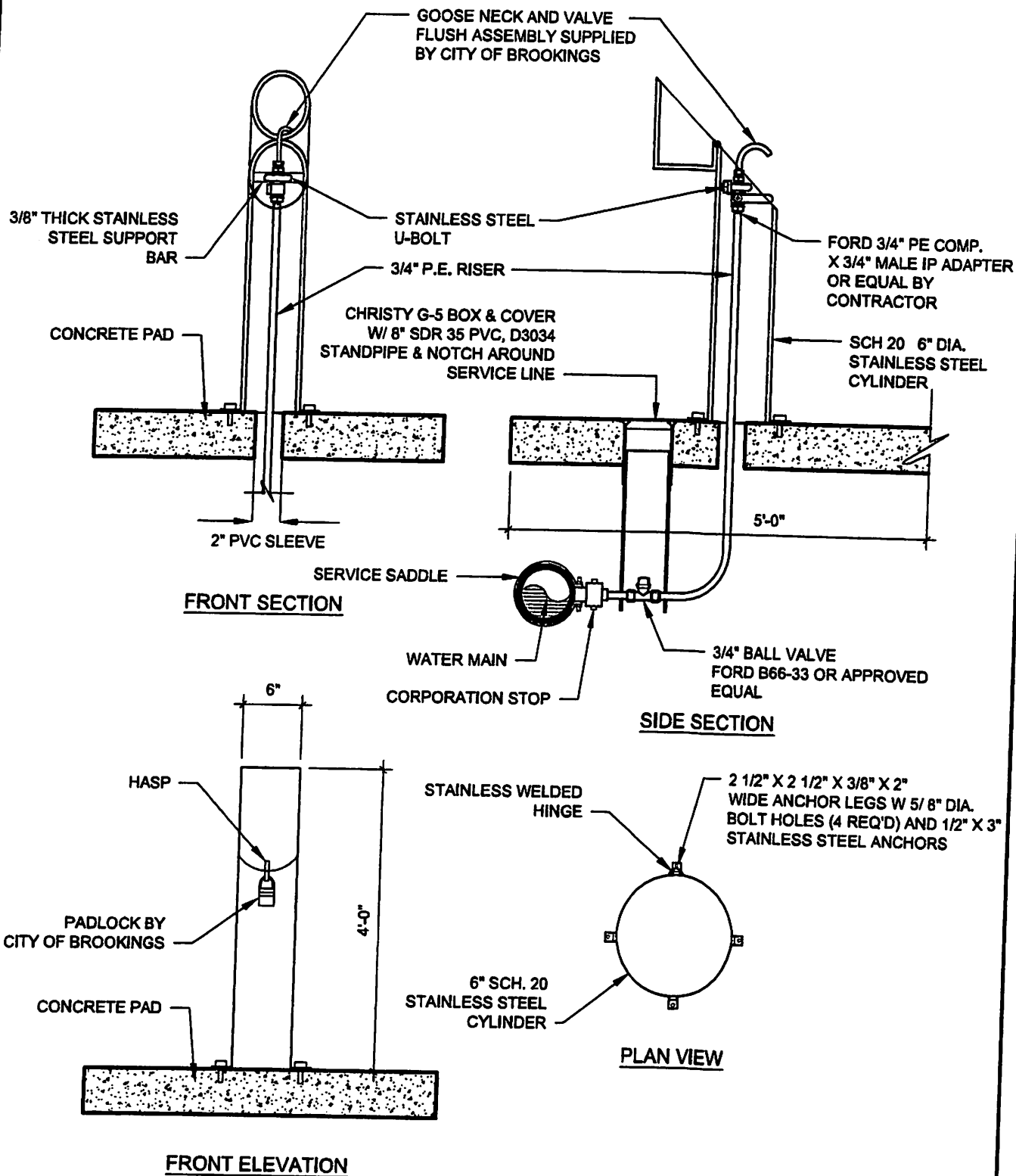
**CITY OF BROOKINGS - STANDARD DETAIL**

**WATER MAIN CONNECTION AT INTERSECTIONS**

APPROVED BY: \_\_\_\_\_  
PUBLIC WORKS DIRECTOR / CITY ENGINEER

DATE: \_\_\_\_\_

**4.40**



## CITY OF BROOKINGS - STANDARD DETAIL

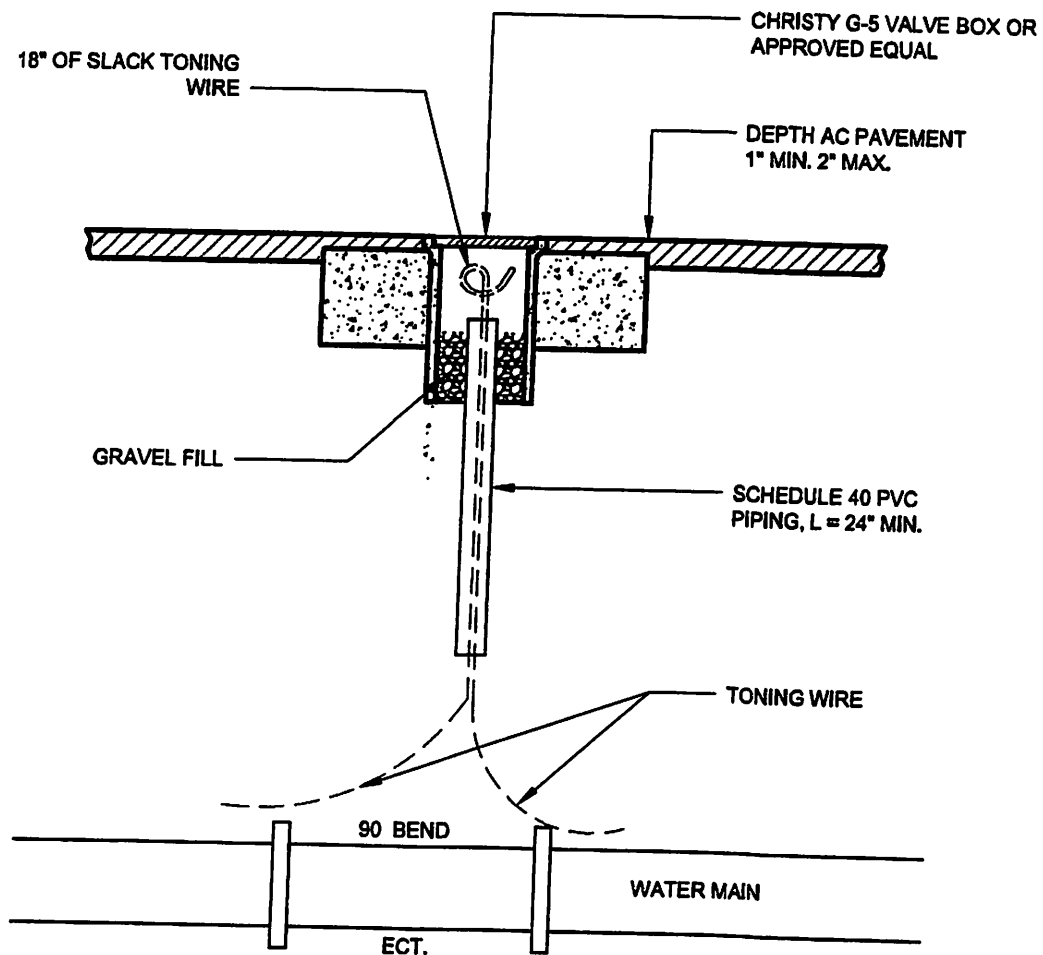
### WATER SAMPLING STATION

**4.46**

APPROVED BY: \_\_\_\_\_

PUBLIC WORKS DIRECTOR / CITY ENGINEER

DATE: \_\_\_\_\_



**NOTES:**

- 1) PLACE TONING WIRE BOX ABOVE NEW WATERLINE. TONING WIRE SHALL BE BROUGHT TO SURFACE INSIDE EACH TONING WIRE BOX LOCATED ABOVE D.I.P. FITTING.
- 2) WHEN WATER VALVES ARE NOT AVAILABLE FOR TONING WIRE STATIONS.
- 3) SURFACE TONING WIRE AT 500' SPACING.



**CITY OF BROOKINGS - STANDARD DETAIL**

**TONING / LOCATING WIRE BOX**

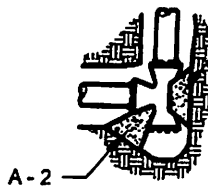
APPROVED BY: \_\_\_\_\_  
PUBLIC WORKS DIRECTOR / CITY ENGINEER

DATE: \_\_\_\_\_

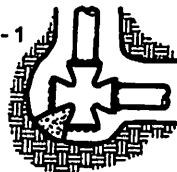
**4.51**

(HORIZONTAL) BEARING AREA OF THRUST BLOCK IN SQUARE FEET						
FITTING SIZE	V.L.V., TEE, WYE, DEAD END AND HYDRANT	STRADDLE BLOCK	90° BEND PLUGGED CROSS: TEE PLUGGED ON RUN	45 BEND	22-1/2 BEND	11-1/4 BEND
2	0.2	0.2	0.3	0.2	0.1	0.05
3	0.5	0.9	0.8	0.4	0.2	0.1
4	0.9	1.4	1.3	0.7	0.4	0.2
6	2.1	2.8	3.0	1.6	0.8	0.4
8	3.8	4.8	5.3	2.9	1.5	0.7
10	5.9	7.3	8.3	4.5	2.3	1.2
12	8.5	10.3	12.0	6.5	3.3	1.7
14	11.5	13.8	16.3	8.8	4.5	2.3
16	15.1	17.8	21.3	11.5	5.9	3.0
18	19.1	22.4	27.0	14.6	7.4	3.7
20	23.6	27.5	33.3	18.0	9.2	4.6
24	33.9	39.2	48.0	26.0	13.2	6.7

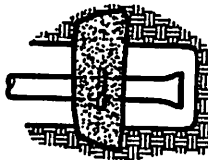
(VERTICAL) VOLUME OF THRUST BLOCK IN CUBIC YARDS				
FITTING SIZE	90 BEND	45 BEND	22-1/2 BEND	11-1/4 BEND
2	0.2	0.1	0.0	0.0
3	0.4	0.2	0.1	0.1
4	0.7	0.4	0.2	0.1
6	1.5	0.8	0.4	0.2
8	2.7	1.5	0.8	0.4
10	4.3	2.3	1.2	0.6
12	6.1	3.3	1.7	0.8
14	8.3	4.5	2.3	1.2
16	10.9	5.9	3.0	1.5
18	13.8	7.5	3.8	1.9
20	17.0	9.2	4.7	2.4
24	24.5	13.3	6.8	3.4



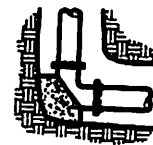
TEE



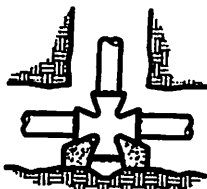
CROSS



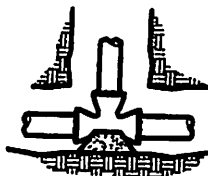
STRADDLE BLOCK



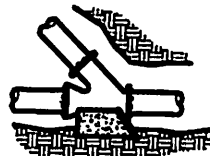
BEND



CROSS



TEE



WYE



VERTICAL BEND

#5 REBAR W/4"  
MIN. HOOK

**NOTES:**

- 1) CONCRETE BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
- 2) ALL CONCRETE TO BE 3000 PSI
- 3) INSTALL ISOLATION MATERIAL BETWEEN PIPE AND/OR FITTINGS BEFORE POURING BLOCKING.
- 4) CONCRETE SHALL BE KEPT CLEAR OF ALL JOINTS AND ACCESSORIES WITH FORMS.
- 5) SEE TYPICAL HYDRANT SETTING DETAILS FOR BLOCKING LOCATIONS.

RODS FOR VERTICAL BENDS		
FITTING SIZE	ROD SIZE	EMBEDMENT
12" AND LESS	#5	30"
14"-16"	#8	36"

BEARING AREA OF REDUCERS SHALL BE THE DIFFERENCE BETWEEN VALUES FOR DEAD ENDS FOR EACH END SIZE (IE. 6X8: 3.8-2.1 = 1.7 SQ. FT.)

VALUES BASED ON 150 PSI WATER PRESSURE AND 2000 PSF SOIL BEARING CAPACITY.



# CITY OF BROOKINGS - STANDARD DETAIL

## THRUST BLOCKING

**4.52**

APPROVED BY: \_\_\_\_\_  
PUBLIC WORKS DIRECTOR / CITY ENGINEER

DATE: \_\_\_\_\_

PACK TIGHT LAYERS OF EXPANDED  
POLYETHYLENE OR POLYURETHANE  
ROPE TYPE FILLER

STRUCTURE

PIPE

APPLY 1" OF GUN GRADE  
ELASTOMERIC SEALANT IN  
ANNULAR SPACE - BOTH SIDES OF  
STRUCTURE

ANNULAR SPACE 1" MIN.  
ALL AROUND



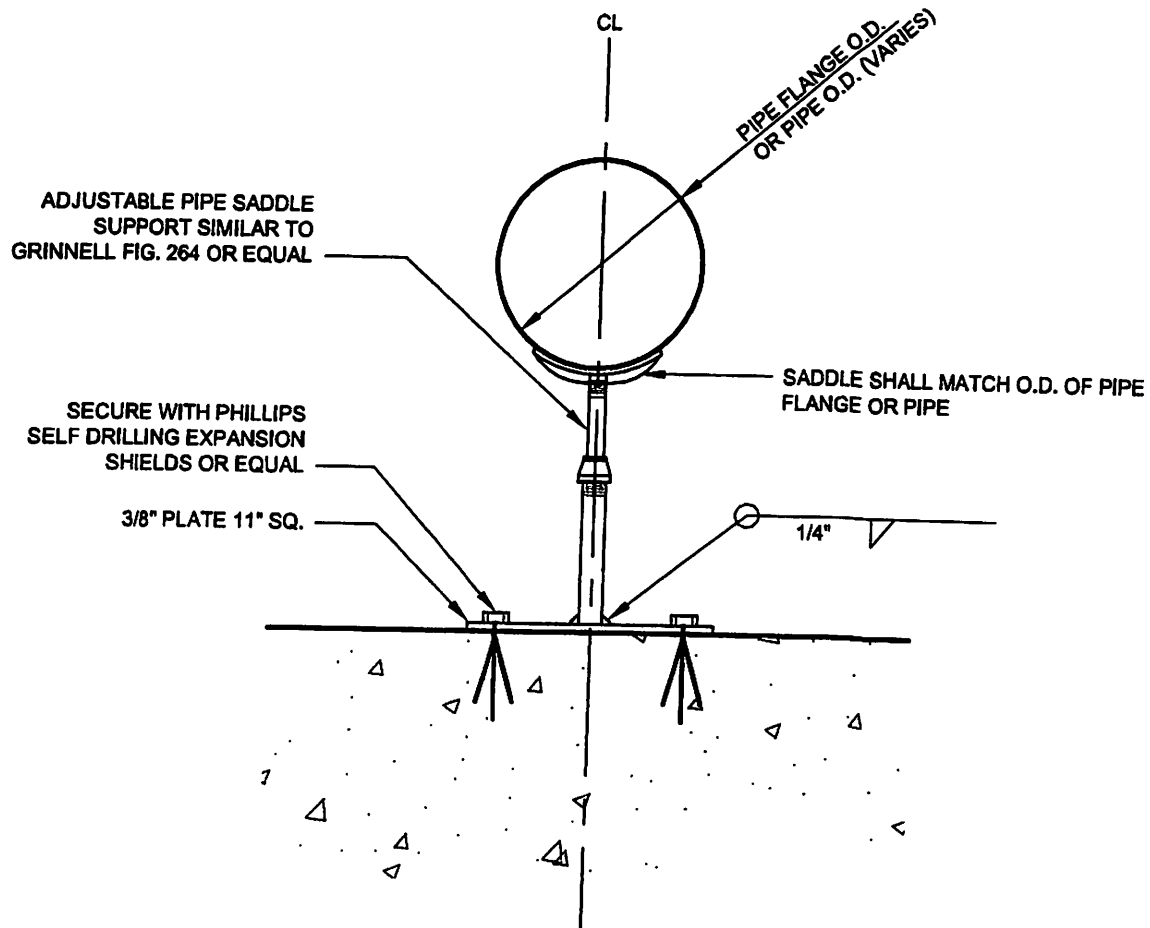
## CITY OF BROOKINGS - STANDARD DETAIL

### PIPE PENETRATION DETAIL

**4.53**

APPROVED BY: \_\_\_\_\_  
PUBLIC WORKS DIRECTOR / CITY ENGINEER

DATE: \_\_\_\_\_



CITY OF BROOKINGS - STANDARD DETAIL

PIPE SUPPORT DETAIL

APPROVED BY: \_\_\_\_\_  
PUBLIC WORKS DIRECTOR / CITY ENGINEER

DATE: \_\_\_\_\_

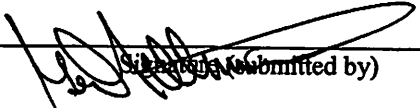
4.54

# CITY OF BROOKINGS

## COUNCIL WORKSHOP REPORT

Meeting Date: February 6, 2012

Originating Dept: City Manager

  
\_\_\_\_\_  
(Submitted by)  
\_\_\_\_\_  
City Manager Approval

---

Subject: Franchise Fees

Background/Discussion:

The City Council has discussed franchise fees at several prior workshops. Staff has received direction from the City Council regarding franchise fees in connection with the current negotiations with Frontier Communications, and is seeking direction with regard to the Coos Curry Electric Cooperative.

### **FRONTIER**

Staff contacted Frontier Communications to initiate franchise negotiations using a franchise fee of 5.0 per cent. Frontier provided a draft new franchise ordinance in the form they executed with the City of Scotts Mills in July 2011. It provides for a 7.0 per cent franchise fee, Frontier's franchising representative stated that 7.0 per cent has become the "standard" rate in the industry. The franchise fee would have no affect on local telephone service rates as it is considered a cost of doing business. They are perfectly willing to modify the amount to 5.0 per cent. The proposed ordinance provides that Frontier would not pay any additional fees for performing construction work in the street; the City typically charges an inspection fee to private entities who excavate in the City streets.

As proposed, the franchise fee would only apply to "gross annual revenue for local exchange service." The City Manager is currently researching the legal limitations on services upon which the franchise fee can be levied, and the Public Works Director is reviewing the public works related sections of the Scotts Valley ordinance.

### **COOS CURRY ELECTRIC COOPERATIVE**

CCEC has identified all street lights in town and has collected GIS information on each location, which can be entered into the City's GIS utility overlay mapping. CCEC is currently providing 288 street lights to the City under the franchise agreement. This includes the lights on the Chetco River Bridge.

According to the franchise agreement, CCEC is to provide 279 lights as of the date of the agreement plus one additional light for each additional 21 residents. The current population estimate from Portland State University is 6,370, which means that CCEC should be providing 307 lights. CCEC agrees with this number. According to CCEC management, their files had

indicated they were providing 302 street lights; however, the recent field audit confirmed that they are providing 288; this includes two new lights on Lone Ranch Parkway adjacent to the College.

The City pays separately for electricity **and** maintenance of the new downtown street lights, which the City owns. Staff believes that the difference between the 302 and 288 above is: When the new downtown lights were installed, existing street lights located on CCEC poles were removed, decreasing the overall number of "franchise lights."

It appears that CCEC has not been fulfilling the terms of the franchise agreement with regards to the number of street lights it provides in lieu of paying a franchise fee for several years.

### **Short-Term Resolution**

Staff has previously brought to the attention of the Council a situation where the developers in two small residential subdivisions never completed the installation of street lights in those projects. Those projects were "finaled" a number of years ago and the developers are no longer reachable. We have secured estimates for completing the electrical connections for these three street lights amounting to approximately \$2,000 (based upon a quote in May, 2011). Staff proposes that the City approach CCEC with a proposal that CCEC pay for completing the work to connect these three street lights to the electrical system as a form of settlement for under payment and add them as "franchise lights," bringing the number of franchise lights to 292.

Under the terms of the current franchise agreement, this would still leave CCEC short of the number of franchise lights it is obligated to provide by 15.

A recent review of CCEC invoices indicates that the City may also be paying the electric charge for traffic signals on Highway 101. Public Works Director Loree Pryce is conferring with ODOT maintenance management on this topic. If, under some form of agreement with ODOT, the City is required to pay for a portion of the traffic signal electrical costs, perhaps the City could receive some form of credit under the street lighting provision of the franchise agreement.

### **Long Term Resolution**

Staff will also be looking for direction from the Council as to whether we should be pursuing a change in the franchise agreement with respect to franchise fees.

#### **Attachment(s):**

- a. Scotts Mills telephone franchise ordinance.
- b. CCEC Construction Contract for 3 street lights.

**ORDINANCE NO 88**

**AN ORDINANCE GRANTING A FRANCHISE FOR ALL TELEPHONE AND OTHER COMMUNICATION PURPOSES TO FRONTIER COMMUNICATIONS NORTHWEST INC. BY THE CITY OF SCOTTS MILLS**

AN ORDINANCE GRANTING TO FRONTIER COMMUNICATONS NORTHWEST INC. SOMETIMES REFERRED TO AS "GRANTEE", ITS SUCCESSORS AND/OR ASSIGNS, THE FRANCHISE RIGHT AND PRIVILEGE TO PLACE, ERECT, LAY, MAINTAIN AND OPERATE IN, UPON, OVER AND UNDER THE STREETS, ALLEYS, AVENUES, THOROUGHFARES AND PUBLIC HIGHWAYS, PLACES AND GROUNDS WITHIN THE CITY OF SCOTTS MILLS, POLES, WIRES WHETHER COPPER, FIBER OPTIC OR OTHER TECHNOLOGY, AND OTHER APPLIANCES AND CONDUCTORS FOR ALL TELEPHONE AND OTHER COMMUNICATION PURPOSES; FIXING THE CONSIDERATION TO BE PAID BY SAID GRANTEE UNDER SAID FRANCHISE, THE TERM THEREOF AND THE MODE OF ACCEPTANCE OF SAID GRANT BY SAID GRANTEE; AND DECLARING AN EMERGENCY

**THE CITY OF SCOTTS MILLS, OREGON ORDAINS AS FOLLOWS:**

**SECTION 1.** There is hereby granted by the City of Scotts Mills ("City") to Frontier Communications Northwest Inc., its successors and/or assigns, the non-exclusive right and privilege within said City to place, erect, lay, maintain and operate in, upon, over and under the streets, alley, avenues, thoroughfares and public highways within the said City, poles, wires whether copper, fiber optic or other technology and other appliances and conductors for all telephone and other communication purposes. Such wires and other appliances and conductors may be strung upon poles or other fixtures above ground, or at the option of the Grantee, its successors and/or assigns, may be laid underground in pipes or conduits or otherwise protected, and such other apparatus may be used as may be necessary or proper to operate and maintain the same. In locations where aerial or above ground utility facilities (including aerial cable supports) exist as of the effective date of this Franchise, Grantee shall be allowed to overbuild, upgrade, maintain, replace or add to its existing aerial facilities and supporting structures unless all facilities, in such area have been mandated to be placed underground per a plan as outlined by the City in accordance with ORS 758.210 – ORS 758.270. Grantee shall be allowed to place above ground, in locations approved by the City, its fiber distribution hubs, cross connect/digital subscriber line boxes and other cabinet type facilities that are normally placed above ground.

**SECTION 2.** It shall be lawful for Frontier Communications Northwest Inc., its successors and/or assigns to make all needful excavations and erections in any of such streets, alleys, avenues, thoroughfares and public highways, in said City for the purpose of placing, erecting, laying and maintaining poles or other supports or conduits, for said wires whether copper, fiber optic or other technology and appliances and auxiliary apparatus or repairing, renewing or replacing the same. All work, erections, erections of poles and appliances and laying of wires shall be done in compliance with such necessary rules, regulations, ordinances, or orders now in affect. City will enter discussions with Grantee to achieve acceptable solutions to issues identified by Grantee regarding proposed changes to City ordinances, resolutions, rules or orders whenever such discussions are practicable. Grantee must comply with future City ordinances, resolutions, rules and orders that generally apply to the reasonable management of the safety and use of public rights of way within the City. However, by entering this Agreement Grantee is not waiving its right to challenge or otherwise dispute the legality, validity, or enforceability of any changes to

disclosure of sensitive proprietary information of Grantee, in the event that such sensitive proprietary information is nevertheless included and Grantee requests confidentiality of such information the City will maintain confidentiality of such sensitive proprietary information to the extent permitted under Oregon Public Records Law including, without limitation, ORS 192.502(4).

**SECTION 3.** Whenever Grantee, its successors and/or assigns, shall disturb any streets, alleys, highways, or other public places for the purposes aforesaid, it shall restore the same to a condition at least equal to the condition which existed prior to construction, unless the City allows Grantee to restore such area to a lesser standard, as soon as practical without unnecessary delay, and failing to do so the City shall have the right to set a reasonable time within which such repairs and restoration of streets and other public places shall be completed, and to notify Grantee in writing of its time requirement for repair and restoration, and upon failure of such repairs being made by said Grantee, its successors and/or assigns, within the time so reasonably prescribed, the said City may cause such repairs to be made at the expense of said Grantee, its successors and/or assigns after having provided Grantee, its successors or assigns, with written notice and an opportunity to cure. Restoration to the condition that existed before excavation or construction does not require Grantee to restore areas larger than the areas of excavation and construction.

The City may cause the Grantee to relocate, in a like manner, any pole, underground conduit or equipment belonging to the Grantee whenever the relocation is for public necessity, and the cost shall be borne by the Grantee unless such cost is chargeable by law or tariff to another party, necessitated for the benefit of a third party other than the City or for a commercial purpose of the City. Whenever it is a public necessity to remove a pole, underground conduit, or equipment belonging to the Grantee or on which a wire or circuit of the Grantee is stretched or fastened, the Grantee, shall, upon 60 days written notice from the City, meet with City representatives and agree in writing to a plan and date certain to remove such poles, underground conduit, equipment, wire, or circuit at Grantee's expense. If Grantee fails, neglects, or refuses to do so, the City, may remove it at Grantee's expense. "Relocation for public necessity" shall mean removal or relocation to accommodate the construction or reconstruction of transportation roadways that are undertaken and funded by the Oregon Department of Transportation or by the City; it shall not include relocation to accommodate private or third party construction of public infrastructure that is required as a condition of approval of private property development or redevelopment. When facilities are relocated for aesthetic purposes; for commercial purpose of the City or for the benefit of a third party other than the City, the cost shall be borne by the party requesting relocation. "Third party activity" includes any activity conducted under a site/building development permit issued to a private party pursuant to the city code.

**SECTION 4.** Nothing in this ordinance shall be construed in any way to prevent the proper authorities of the City from putting in a sewer system, grading, rocking, paving, repairing, altering or improving any of the streets, alleys, avenues, thoroughfares and public highways, within the City in or upon which the poles, wires, or other conductors of said Grantee shall be placed, but all such work or improvements shall be done, if possible, so as not to obstruct or prevent the free use of said poles, wires, conductors, conducts, pipes or other apparatus.

**SECTION 5.** Whenever it becomes necessary to temporarily rearrange, remove, lower, or raise the wires, cables or other plant of Grantee for the passage of buildings, machinery or other objects, Grantee shall temporarily rearrange, remove, lower or raise its wires, cables or other plant as the necessities of the case require; provided, however, that the person or persons desiring to move any such buildings, machinery or other objects, shall pay the entire actual cost to Grantee of changing, altering, moving, removing or replacing its wires, cables or other plant so as to

**SECTION 8.** In further consideration of the rights and privileges herein granted, the Grantee, its successor and/or assigns hereby grants, to the City the right and privilege to suspend and maintain on poles placed by Grantee, its successors and/or assigns, in the streets, roads, alleys and thoroughfares, such wires as are necessary for the exclusive use of the City for non-commercial fire alarm and police purposes in accordance with the terms and conditions of Grantee's pole attachment or conduit joint use Agreement and applicable law. Any such wiring installations made and to be made by the City shall be made in conformity to the requirements of all applicable Federal, State and City electrical codes and in conformity with standard practices. City agrees to transfer their facilities, at the City's cost, to new poles placed by Grantee within 30 days of notification

**SECTION 9.** The rights, privileges and franchise herein granted shall continue and be in force the period of Fifteen (15) years from and after July 7, 2011.

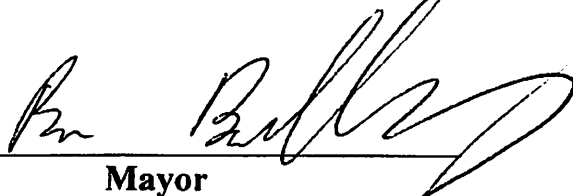
**SECTION 10.** The Grantee shall file with the Recorder of the City its written acceptance of the rights and franchise hereby granted and the regulations hereby imposed, within sixty (60) days from and after the date when this ordinance shall become effective; and this Ordinance shall become null and void unless such acceptance is so filed. The Grantee shall at all times, fully and faithfully perform all of the terms, provisions and conditions of this Ordinance and all other ordinances and orders of the Council as specified in Section 2 hereof.

**SECTION 11. Emergency Clause.** It being necessary for the peace, health, safety and sound development of the City, an emergency is hereby declared to exist. Upon adoption by the Scotts Mills City Council and upon signature by the Mayor, Ordinance 88 shall become effective on July 7, 2011.

Read for the record in full and by title only on July 7, 2011.

Passed by the Common Council of the City of Scotts Mills, Oregon and signed by the Mayor this 7th day of July, 2011.

Ayes: 4 Nays: 0 Absent: 2

  
\_\_\_\_\_  
Mayor

Attest:

  
\_\_\_\_\_  
City Recorder

Work Order# 110289  
Structure# BDT6L7T & BMHAR1L2T

WR# 2366  
Location#

**COOS-CURRY ELECTRIC COOPERATIVE, INC.  
ELECTRIC SERVICE AND LINE CONSTRUCTION CONTRACT**

This Contract made and entered into this 2 day of May, 2011, by and between City of Brookings (the "Member") and COOS-CURRY ELECTRIC COOPERATIVE, INC., PO BOX 1268, PORT ORFORD, OR 97465 (the "Cooperative").

WHEREAS, the Member/has requested the Cooperative to install electric facilities as described:

**Brookings City Street Lights to be located within the City of Brookings Street ROWS all located in the NW Quarter of Section 36, Township 40 South, Range 14 West, Willamette Meridian, Curry County, Oregon.**

**NOW, THEREFORE, in consideration of the mutual covenants hereinafter set forth, it is mutually agreed as follows:**

**1. SALE**

The Cooperative agrees to sell and deliver to the Member, under the terms and conditions hereof, and the Member agrees to purchase and pay for electric power and energy located on the above-referenced Member's property.

**2. SERVICE CHARACTERISTICS**

Delivery facilities will be installed, owned and maintained by the Cooperative.

Member is not allowed to change power requirements or horse power without the written permission of the Cooperative.

The Cooperative reserves the right to disconnect the Member's service equipment from the Cooperative's system at any time during the life of this service, if the Cooperative experiences system power quality problems caused by the Member's facilities operating on the Cooperative's system. The Member, at his/her expense, agrees to install the necessary equipment to remedy power quality problems caused by the Member.

**3. SCOPE OF WORK**

**CCEC will install three (3) 200 Watt HPS street lights on consumer owned poles.**

4. **COST OF CONSTRUCTION**

<u>Item</u>	<u>Description</u>	<u>Total</u>
A.	COST OF CONSTRUCTION:	\$ 2,027.71
B.	ENGINEERING FEE	\$< 0.00 >
	TO BE PAID BY MEMBER PRIOR TO CONSTRUCION	\$ 2,027.71

The costs above are valid for ninety (90) days from the date received by the Member. If construction is delayed more than ninety (90) days from the date received, a new cost will be prepared and, if necessary, costs recomputed. If the construction is cancelled, any construction fees already advanced will be refunded, less the Engineering Fee, any additional engineering costs and those funds advanced for special equipment and/or long-lead time material.

The Cost of Construction shall be paid in full by the Member prior to any material being ordered or any actual construction beginning.

The above Cost of Construction does not include additional costs due to unnecessary problems, delays, changes, etc. caused by the Member or Member's contractor(s) or subcontractor(s). If additional costs are anticipated, as determined solely by the Cooperative, a new cost will be prepared and shall be paid in full by the Member before any further materials will be ordered or construction activities recommenced.

5. **PAYMENT SCHEDULE**

Member shall pay the Cooperative for service hereunder at the rates and upon the terms and conditions set forth in the applicable Rate Schedule of the Cooperative. It is understood and agreed that the Cooperative has the absolute right to establish, amend, or supplement rate charges and payment requirements for services rendered hereunder as determined to be necessary or appropriate by the Board of Directors of the Cooperative.

6. **MEMBERSHIP**

The Applicant shall become a member of the Cooperative, if not already a member, by applying and paying the membership fee and is hereby bound by the provisions of the Articles of Incorporation and Bylaws of the Cooperative as amended from time to time, and by such policies, rules and regulations as may be adopted from time-to-time by the Cooperative's Board of Directors.

**7. CONTINUITY OF SERVICE**

The Cooperative shall use reasonable diligence to provide a constant and uninterrupted supply of electric power and energy. The Cooperative is not, however, guarantor of power supply, and shall be excused from performance under this Contract and shall not be liable for any loss or damage sustained by the Member (a) if the supply of electric power and energy, or facilities, equipment, parts or material shall fail, be interrupted, curtailed, or become defective, through an Act of God, governmental authority, action of elements, public enemy, accident, strikes, labor trouble, required maintenance work, or any other cause beyond the control of the Cooperative; or (b) if the wholesale power supply to the Cooperative is unavailable, restricted, curtailed or interrupted.

**8. TERM OF LINE EXTENTION CONTRACT**

This Contract shall become effective on the date written. Member will comply with the general provisions outlined in the Cooperative's Policy No. 300-060, Line Construction Policy.

**9. MAINTENANCE AND OWNERSHIP OF FACILITIES**

The delivery facilities installed by the Cooperative upon the premises shall be maintained by the Cooperative and shall remain the property of the Cooperative notwithstanding the attachment of such facilities to the premises, and shall not be subject to any voluntary or involuntary encumbrance or disposition of any nature allowed or caused by the Member. It is agreed and the Member specifically grants to the Cooperative, a permanent easement across and upon the premises as specified in the Cooperative's Policy No. 300-060, Line Construction Policy, for the purpose of installation of the delivery facilities, and for the maintenance, repair, replacement, inspection, and relocation of such facilities, or for any other purpose reasonably related.

**10. DUE AUTHORIZATION**

The Member represents that he/she has the authority to execute this Contract, and that all persons required to create terms, conditions and contracts have executed this Contract below.

**11. BINDING EFFECT**

It is mutually agreed by and between the parties hereto that the conditions, terms, and covenants of this Contract shall be binding upon and shall inure to the benefit of the heirs, executors, administrators, successors and assigns of the respective parties hereto.

**12. SPECIAL CONDITIONS**

Member will be responsible for back-filling and compaction of trench to the Cooperative's satisfaction. Prior to back-filling, a Cooperative representative will inspect and approve the installation. The Cooperative will allow joint use of its facilities in accordance with existing joint use agreements that conform to applicable state codes (excluding sewer and gas). The Cooperative may allow the Member to participate toward the construction of facilities (i.e. trenching and conduit installation). In these instances, the Member agrees to indemnify, defend and hold harmless the Cooperative and its directors, officers, agents, owners, and employees from all claims of whatsoever nature or kind, including those brought by employees or subcontractors of the Member, arising out of or as a result of any act or failure to act, whether or not negligent, in connection with the performance of the work to be performed pursuant to this Contract by the Member, its employees, agents and sub-contractors.

**13. ACCEPTANCE**

IN WITNESS WHEREOF, the parties hereto have executed this Contract as of the date first written above.

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

*(Sign document using blue ink)*

\_\_\_\_\_  
Date:

Return Signed Original to:

Coos-Curry Electric Cooperative, Inc.  
Engineering Aid  
PO Box 1268  
Port Orford OR 97465

Rev 4/14/2011