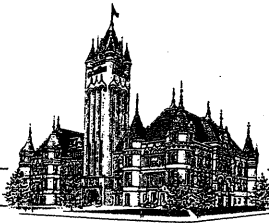


S P O K A N E C O U N T Y



PUBLIC WORKS DEPARTMENT

**PROJECT CONSTRUCTION CERTIFICATION PROCEDURES**

for

**SPOKANE COUNTY  
ROAD, DRAINAGE, AND SEWER PROJECTS**

**APRIL, 2002**

PREPARED BY

SPOKANE COUNTY  
DEPARTMENT OF PUBLIC WORKS

in association with

AMERICAN COUNCIL OF ENGINEERING COMPANIES OF WASHINGTON  
SPOKANE COUNTY CONSTRUCTION CERTIFICATION COMMITTEE

**County Engineer**

Handwritten signature of Ross Kelley in black ink.

Ross Kelley, P.E.

4/11/02

Date

**Utilities Director**

Handwritten signature of N. Bruce Rawls in black ink.

N. Bruce Rawls, P.E.

4/18/2002

Date

## INTRODUCTION

The Construction Certification Committee is comprised of representatives of the Spokane County Public Works Department and the local chapter of the American Council of Engineering Companies of Washington (ACEC). The Committee has been working over the past three years to address issues of concern regarding the construction certification procedures for projects within Spokane County. There has been a major focus by this Committee on the development of guidelines to insure a consistent approach to the technical and administrative procedures during the construction phases of projects.

The initial meeting of the Committee was held on February 12, 1999. Meetings were initially held twice a month and then changed to once monthly. Meeting minutes were kept and distributed to Committee members and to the ACEC membership as a whole as the work progressed.

The committee's first interim report was completed and made available to interested parties (local developers, contractors, and engineers) in June of 2000. Workshops were scheduled and held with the development/contracting community on June 15, 2000, and subsequently on March 21, 2001 to present the interim work products of the Committee and to receive comments on the committee's findings and recommendations.

The procedures developed by the Committee and presented herein are intended to foster consistent high quality products for the developer, and to facilitate the subsequent transfer of ownership of the finished products to Spokane County. The procedures have been derived from the committee's interim report documents, with consideration of comments received and concerns expressed by the development/contracting community, and have been adopted by the Division of Engineering and Roads, and by the Division of Utilities.

These procedures provide the needed framework for effective interaction between the sponsor, the Sponsor's Engineer, and the Department of Public Works. Additionally, the procedures promote adherence to the County's adopted Standards for Road and Sewer Construction. Note that these procedures apply to public and private road and sewer projects. It is anticipated that specific separate procedures will be developed for and adopted by the County for commercial and industrial development projects.

## GUIDELINES and PROCEDURES

<b>Authority of County</b>	Prior to the start of construction, the County will determine the specific reporting needs for a project, and the sponsor will identify the Sponsor's Engineer and the Project Coordinator. The County will identify areas of particular technical concern and historical problem areas to the Sponsor's Engineer. The County has defined the general structure for objective measurements and/or determination methods for construction acceptability (See Attachment 3). The Sponsor's Engineer is responsible for the reasonable application of those methods to the specific project. County inspectors will make site visits intermittently during the construction of the project to verify progress and will periodically discuss inspection activities with the Project Coordinator.
<b>Sponsor's Engineer</b>	The Sponsor's Engineer shall be a licensed Professional Engineer in the State of Washington. Inspections are to be performed by that engineer, or by his/her representative. An outline of Construction Phase Services is presented in Attachment 1 to this document.
<b>Project Coordinator</b>	The project sponsor shall designate a Project Coordinator for each project. The Project Coordinator shall be responsible for managing the day-to-day operations of the project including traffic control, citizen concerns, and overall coordination. The

Project Coordinator shall be the contact for the County personnel. The Project Coordinator's responsibilities are separate from construction inspection and certification duties of the Sponsor's Engineer. The Sponsor's Engineer need not be the Project Coordinator, although he/she can be if the developer so designates.

**Inspection  
Bonding**

The inspection and construction bonds/securities will not be released until the project is certified and the project is accepted by the County and written authorization for release is received from the Sponsor's Engineer. In some cases, partial releases of certain types of construction securities may be allowed by the County Engineer or the Utilities Director.

**Pay Requests**

The sponsor should include review of the construction pay requests for percent complete and/or items complete as a part of the engineering services contract. This is related to the County's requirements for security reductions. The percent complete or items completed will need to be signed off by the Sponsor's Engineer and certified before a financial security reduction is allowed.

**Record  
Keeping**

At a minimum, there will be weekly project summary reports submitted to the County by the Sponsor's Engineer, even if no work was performed. Specific reporting requirements will be discussed at the pre-design meeting and established prior to construction. For some projects, the County will require daily reports to be submitted.

**Reporting  
Forms**

All lab and field-testing reports need to be included in the final certification package. Test reports that show failing tests need to have follow-up test reports that show passing tests for the area of failure. On-site samples need to be used for testing. The use of test reports from other projects to certify work on the project being certified is not allowed. Any nonconforming issues shall be fully documented with subsequent documents on how the issue was corrected.

**Traffic Control**

The Project Coordinator for the project needs to make sure that the requirements for traffic control on a project are being properly handled.

**Construction  
Complaints**

Complaints from citizens regarding the project need to be documented by the Project Coordinator and resolved. Spokane County personnel need to be involved in the process when the County's authority needs to be used to resolve an issue.

**Drainage  
Swale  
Inspections**

The Sponsor's Engineer will verify that the volume of each finished drainage swale equals or exceeds the design volume of the swale at a six-inch depth. Additionally, the Sponsor's Engineer will verify that there is adequate and continuous grade from the road to the swale for the effective conveyance of runoff. The Sponsor's Engineer and the County will monitor the performance of swales during the construction and warranty period for proper percolation. Swales that do not percolate properly will require corrective work or measures.

**Utility  
Inspections**

A sewer inspection policy has been developed by the Division of Utilities and adopted by the Board of County Commissioners (See Attachment 4, Resolution No. 98-0771).

In addition, the Division of Utilities has developed a protocol for the scheduling and review of television inspections, which is Attachment 5 to this document.

Whenever pipe installation or pipe zone material placement and compaction is underway, the Sponsor's construction engineer, or his/her representative, shall observe the work on a continual basis.

**Changes  
During  
Construction**

Changes during construction that affect the scope of the project and/or the accepted individual lot plans must be submitted for review by the County. Minor changes do not need to be reviewed by the County, but must be documented in the daily and weekly inspection reports.

**Acceptance  
vs. Approval**

The County uses these terms in the following ways:

Acceptance: Pertains to construction plans, calculations, and details. Spokane County has not prepared them, and relies upon the responsible engineer's stamp.

Approval: Related to design and/or construction deviation from the County Standard. County approval is required for all deviations from Standards.

**Project  
Acceptance  
After  
Construction  
Completion**

1) The Sponsor's Engineer performs an inspection with the contractor and as necessary issues a punch list to be completed.

2) The "walk through" with the County is scheduled as soon as possible after the Sponsor's Engineer is satisfied that all punch list items are completed.

3) The "walk through" with Spokane County is performed and any remaining deficiency items are noted to a punch list. If no deficiency items are noted, this is considered the "final walk through". The Sponsor's Engineer may then submit certified Record Drawings and Project Certification documents to the County requesting acceptance of the project.

4) The sponsor should consider taking verification photographs immediately following the "final walk through". The sponsor continues to be responsible for correction of all deficiencies until the Board of County Commissioners (the Board) accepts of the project. Verification photographs can be helpful in resolving cases of damage by third parties (e.g. utility companies, builders, landscapers, etc.)

5) The Sponsor's Engineer shall compile and submit a certification package to the County. The package shall include all related construction documents, one set of mylar record drawings, and a stamped and signed certification statement from the Sponsor's Engineer. See Attachment 3 for an example checklist presenting the minimum certification requirements.

6) If the engineer's submittal is not received within two weeks of the walk through, or if deficiencies are noted during the walk through, another walk through inspection with the County inspector may be required. NO NEW ITEMS WILL BE ADDED TO THE LIST AT THIS TIME, UNLESS NEW DAMAGE HAS OCCURRED SINCE THE PREVIOUS "WALK THROUGH".

7) If the certification package is incomplete, or otherwise unacceptable, the Sponsor's Engineer shall be required to provide the missing documents before the County will issue the Notice of Substantial Completion.

8) The County will review the certification documents within a two-week period and issue a Notice of Substantial Completion if appropriate. This Notice of Substantial Completion is conditioned upon no further deficiencies becoming evident before the Board has accepted the project.

9) If no acceptance by the Board is required (i.e. sewers, private roads etc,) the Notice of Substantial Completion shall be considered the point of acceptance by Spokane County for the project, and the start of the warranty period.

10) For projects requiring the Board's acceptance, the County staff will make reasonable efforts to bring the project before the Board for acceptance within a six-week period following the Notice of Substantial Completion. The sponsor will remain responsible for the condition of the project as documented during the final walk through until formal acceptance by the Board.

11) A flow chart of this procedure is included as Attachment 2.

**Conflict Resolution**

During the construction process, occasional differences may arise between the Sponsor's Engineer and County staff regarding the interpretation of policies, standards or guidance documents. When the Sponsor's Engineer does not agree with an interpretation made by County staff, the Sponsor's Engineer may appeal to the County Engineer or Utilities Director, as appropriate. The County Engineer or Utilities Director will review the circumstances and make a determination in support of the position of the Sponsor's Engineer or County staff. If the Sponsor's Engineer disputes the outcome of this review process, he/she may request that the issue be referred to an Engineering Review Panel with a structure similar to that of the panel identified in the County's Standards for Road and Sewer Construction for the resolution of design deviation issues.

**Record Drawings**

Changes from the originally accepted documents shall be clearly noted with "clouds." Revised notes, elevations, grades or other text should be lined through. "Clean new sheets" are not desired. Any changes to easements need to be clearly shown on the Record Drawings. The Record Drawings should be marked "Record Drawings."

General Guidance: If a change represents a change from the design intent or system performance in the judgment of the engineer, then it should be clearly shown. Record Drawings are to reflect the correct location of that which is in the field. Spot elevations (on swales, curb, gutter, etc.) to depict the final grades should be taken and compared with the final design, and differences noted on the Record Drawings. Elements of the plans that were not built need to have a design change acceptance from Spokane County prior to final inspection and submittal of Record Drawings.

The County will provide examples of acceptable Record Drawings at the request of the Sponsor's Engineer.

**Warranty Period and Damage by Third Parties**

The start date and the extent of the warranty period shall be as stipulated in the County Standards for Road and Sewer Construction. The County will hold the sponsor responsible for any damage until final acceptance by the Board has occurred. Once the project has been accepted by the Board, the County will hold the property owner, utility company, builder, etc., responsible for damages that may occur that are not warranty items.

**ATTACHMENTS**

- Attachment 1 – Construction Phase Services Outline
- Attachment 2 – Flow Chart – Project Acceptance
- Attachment 3 – Final Certification Checklist - Sample
- Attachment 4 – Interim Policy Regarding Sewer Construction Inspections
- Attachment 5 – Spokane County TV Inspection Protocol

## **ATTACHMENT 1 – CONSTRUCTION PHASE SERVICES**

### **AMERICAN COUNCIL OF ENGINEERING COMPANIES OF WASHINGTON SPOKANE COUNTY PUBLIC WORKS CONSTRUCTION CERTIFICATION SUBCOMMITTEE**

#### Required Items to be completed by the Sponsor's Engineer:

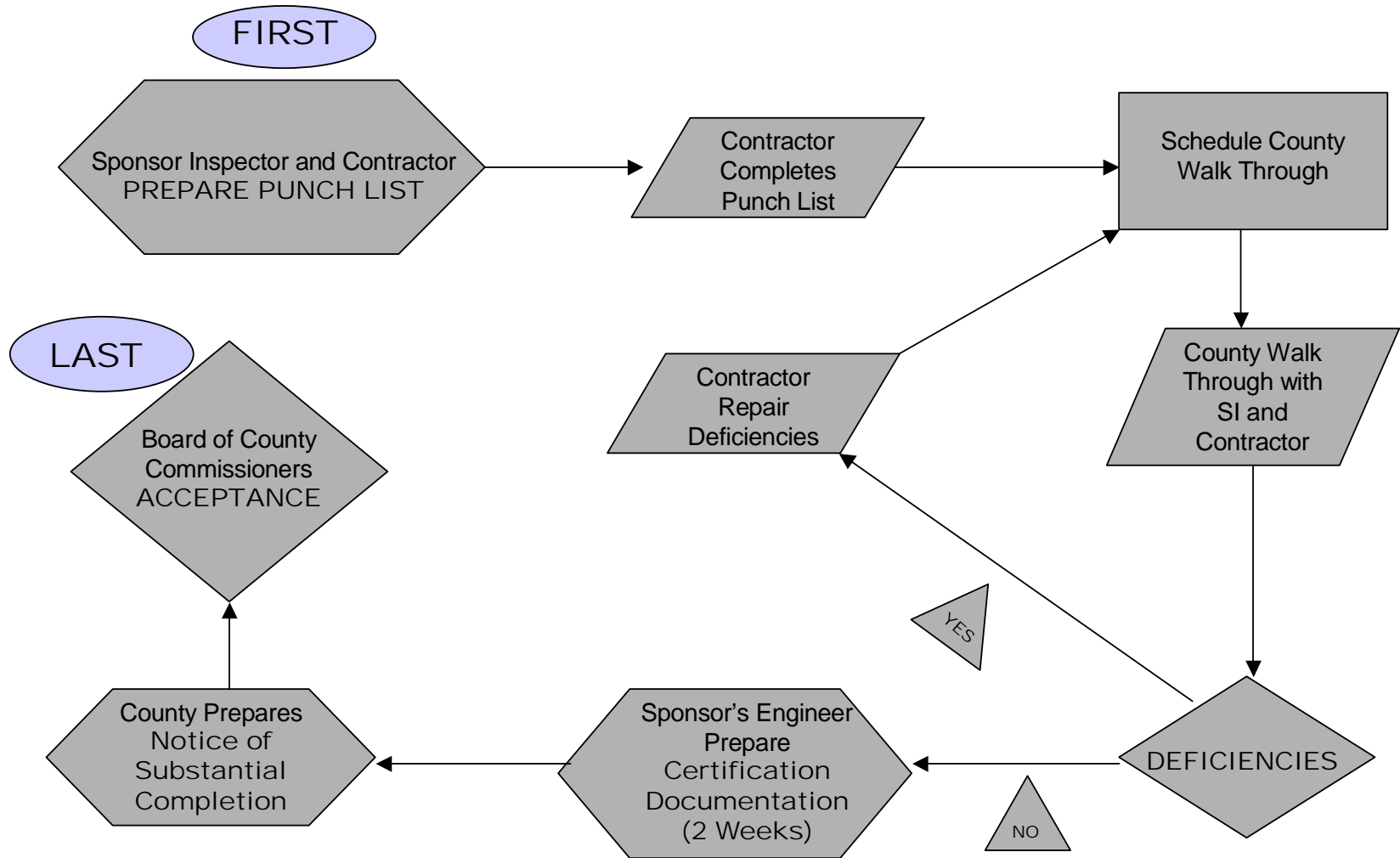
- I. Specific Certification Inspections
  - A. Roads
    - Erosion Control.
    - Drainage Improvements/Testing.
    - Embankment Placement/Density Control.
    - Trenching Backfill/Density Control.
    - Subgrade Line and Grade/Density Control.
    - Surfacing Line and Grade/Density Control.
    - Curbs and Sidewalks/Material Quality.
  - B. Sewer
    - Full time inspection and testing during pipe installation and pipe zone material placement.
- II. Review and approval of changes to approved plans including approval through the County if necessary.
- III. Record keeping and weekly reporting to the County.
- IV. Contractor pay requests/bond reduction assistance.
- V. Project acceptance of construction (See interim report flow chart).
- VI. As built survey/record drawings and side sewer (stub) reports.
- VII. Certification report.

#### Required Items that may be completed by designated Project Coordinator or Sponsor's Engineer:

- I. Pre-Construction meeting.
- II. Construction staking.
- III. General project administration, coordination, and schedule monitoring.
- IV. Traffic and dust control.
- V. Response to construction complaints and resolution of complaints.
- VI. Monumentation.

ATTACHMENT 2 FLOW CHART

PROJECT ACCEPTANCE AFTER CONSTRUCTION COMPLETION



### ATTACHMENT 3 – FINAL CERTIFICATION CHECKLIST (SAMPLE)

**Project:** \_\_\_\_\_

**Certificate Head Letter:** \_\_\_\_\_

Statement of intent to certify the project.  
PE Stamp and Signature.

**Record Drawings Mylar Drawings:** \_\_\_\_\_

PE Stamp and Signature  
Lettered certification statement (9.10 Spokane County Standards)

**Project Documents:** \_\_\_\_\_

**Daily Inspection Reports:** \_\_\_\_\_

**Field Reports:** \_\_\_\_\_

Inspection of Asphalt Paving:  
100% On site inspection during paving. \_\_\_\_\_

Compaction Reports:  
Sewer trench lifts. \_\_\_\_\_  
Water trench lifts. \_\_\_\_\_  
Utility trench lifts. \_\_\_\_\_  
Crushed Rock Lifts. \_\_\_\_\_

**Material Documents: Field and Laboratory Tests:** \_\_\_\_\_

	Field Test		Lab Test
Concrete:	_____	(Slump, Air Content, Temp.)	_____ (Break Test)
Sub-Grade:	_____	(Compaction)	_____ (Gradation, Proctor)
Crushed Rock:	_____	(Compaction, Depth)	_____ (Gradation, Proctor)
Asphalt:	_____	(Compaction, Thickness)	_____ (Rice, Gradation, Oil Content)

**On Site Inspections Of Drainage Items:** \_\_\_\_\_

Drywells: \_\_\_\_\_  
Gutter Inlets: \_\_\_\_\_  
Culverts: \_\_\_\_\_  
Sidewalk Vaults: \_\_\_\_\_  
Drainage Ditches: \_\_\_\_\_  
Other: \_\_\_\_\_

**Incoming / Outgoing Correspondence:** \_\_\_\_\_

(This is a guide line of required documents, but not limited to, for final certification.)

**ATTACHMENT 4****INTERIM POLICY REGARDING SEWER CONSTRUCTION INSPECTIONS,  
RECORD DRAWINGS & ENGINEER'S STATEMENT****Inspection Requirements**

These requirements apply to all public and private sewer lines eight inches and larger in diameter, and to sewer service stubs extended from those lines to the property lines of individual parcels. Note that all sewer service lines six inches and smaller in diameter, other than those service stubs noted above, will be inspected by Spokane County Division of Utilities.

On all sewer construction for development, inspections will be performed by the Sponsor's Engineer or his/her designated representative. At the request of the sponsor, the County may provide the sewer inspection services, provided that the sponsor agrees to pay all costs associated with the County inspections and provided that the County determines that staff is available to perform the inspections.

The inspection of sewers shall include the items listed below. However, the listing provided below is not intended to be all inclusive. It will be the responsibility of the Sponsor's Engineer to determine additional inspection activities that may be needed for a specific project in order to report substantial conformance of the project with the County's standards.

1. Conformance of all construction materials with County standards shall be verified prior to installation.
2. The sewer trench shall be inspected for proper dimensions and pipe zone clearances prior to placement of pipe.
3. The placement and compaction of the pipe zone material and bedding shall be inspected.
4. The pipe joints shall be inspected visually for proper insertion.
5. Horizontal alignment and grade of the pipe shall be checked for conformance to the standards prior to backfilling of the trench.
6. Sewer service tees and stubs shall be inspected for correct installation prior to backfilling of the trench.
7. Accurate measurements shall be made and recorded to facilitate the reestablishment of sewer service tee locations and stub end locations. The placement of the required stub markers shall be verified.
8. Manholes shall be inspected for proper materials, location, assembly, and installation.
9. Trench backfilling operations shall be observed and compaction tests shall be performed. Minimum requirements for backfilling shall be as set forth in the accepted plans and/or specifications for the project.
10. Mandrel testing, hydrostatic and/or air pressure testing, and manhole testing shall be performed following completion of trench backfilling operations. The testing shall be observed until passing results are obtained. Manhole testing shall be performed on ten percent of the manholes in the project, in accordance with Department of Ecology's "Criteria for Sewage Works Design".
11. The Sponsor's Engineer shall schedule television inspection of the sewer lines through the Division of Utilities once the other testing has been satisfactorily completed. The Division of Utilities will then perform the television inspection and review the tapes for deficiencies requiring correction or repair.

12. Daily inspection reports shall be prepared, summarizing construction activities, contractor work force and work period, testing results, problems encountered, and other pertinent information.

The project sponsor or the sponsor's Construction Engineer shall notify the Division of Utilities 48 hours in advance of the start of construction of the sewer system, and shall provide a generalized schedule for the progress of the work. County inspection personnel will make occasional site visits to inspect the work and do materials testing as deemed necessary. County inspection personnel will address concerns and questions to the Engineer of Record. The cost of these occasional site visits will be charged to the Construction Permit for the work.

The sponsor will bear the cost of all inspections and materials testing. The Division of Utilities shall have access to all construction inspection records and reports. Before the County accepts the sewer system, the Sponsor's Engineer shall submit all construction records to the Division of Utilities. This shall include but not be limited to Daily Inspection Reports, correspondence, manufacturers' certifications, and material test reports.

When changes to the design are necessary, the sponsor shall be responsible for coordinating the proposed design changes with the sponsor's Design Engineer. The sponsor's Design Engineer shall forward two copies of the proposed plan changes, together with related calculations, to the Division of Utilities for review and acceptance prior to construction.

The Sponsor's Engineer shall schedule a final inspection meeting between the Sponsor's Engineer, the sponsor, and the Division of Utilities at the completion of construction and testing of the sewer system. Deficiencies found shall be corrected by the sponsor prior to the County's acceptance of the sewer.

#### **Record Drawings & Engineer's Statement**

During construction the sponsor's Surveyor and/or Construction Engineer shall record any changes to the accepted plans. All substantive changes shall be indicated and noted on the accepted final sewer plans and the plans shall be annotated as "Record Drawings". In those cases where the County provides the inspection services, the County will produce the Record Drawings.

Side sewer stub sketches shall also be prepared on the County's standard form. As-built elevations, locations, pipe lengths, and pipe slopes must be verified on the Record Drawings. The following statement shall be lettered on the Record Drawings and stamped and signed by the sponsor's Construction Engineer on the Record Drawings: "I have reviewed the construction of this sewer system and to my knowledge find it to be in substantial conformance with the accepted plans and Spokane County Standards except as noted."

## **ATTACHMENT 5**

### **SPOKANE COUNTY DIVISION OF UTILITIES PROTOCOL FOR TELEVISION INSPECTION OF SEWERS**

In the interest of developing a consistent methodology for the coordination and review of television inspections, the following steps have been established:

#### **1. PRE-PAVING TELEVISION INSPECTION**

- a) At least two weeks prior to the desired pre-paving television inspection, the Contractor requests the television inspection through the Sponsor's Engineer. The Engineer submits the request (on standard form) to the Division of Utilities Sewer Design Section. (Utility contacts are B. Urhausen and G. Repp).
- b) Sewer Design Section schedules television inspection with the Wastewater Operations Section.
- c) In order for the inspection to take place, sewer mains will need to be high-pressure cleaned, mandrel tested, and pressure tested. In addition, manholes will need to be accessible by the TV van. Backfill must be in place around the cone sections of the manholes. If the contractor has placed temporary steel plates on top of the manholes, then the contractor will need to provide manpower and equipment to remove and replace the plates to facilitate the television inspection.
- d) Detailed television inspection is undertaken, noting tee locations/stations, irregularities, defects, etc.
- e) The Contractor shall pay the cost of the pre-paving television inspection.

#### **2. REVIEW OF PRE-PAVING TELEVISION INSPECTION**

- a) When the Sewer Design Section receives the VHS tapes and fault log from the Operations Section, the fault log will be reviewed for noted defects. The tapes and log will then be forwarded to Engineer for review.
- b) Engineer reviews tapes and log, and makes determination of any repairs that need to be undertaken.
- c) Engineer coordinates with Sewer Design Section Manager for concurrence on repairs that are needed. In some cases, this may necessitate joint review of the tapes.
- d) After concurrence between the Engineer and the Sewer Design Section Manager, the Engineer will stipulate the required repairs to the Contractor.

#### **3. ACCEPTANCE STANDARDS FOR GRADE DEVIATIONS**

- a) The Standard Specifications stipulate that reverse grades are not acceptable. In the review of television inspection tapes, the Engineer and the Sewer Design Section Manager will consider the combined effects of pipe joints, allowed variations in pipe diameter, and grade on any entrapped water appearing on the inspection tapes.

#### **4. POST-PAVING TELEVISION INSPECTION**

- a) After the roadway is substantially complete above the sewer, a post-paving television inspection will be scheduled, in the same manner as the pre-paving television inspection.
- b) This television inspection will be less detailed than the first, and will be undertaken to check for pipe cleanliness, and to identify any structural defects that may have occurred/presented since the initial television inspection.
- c) The review of the tapes and concurrence on needed repairs will proceed in the same fashion as identified for the pre-paving television inspection.
- d) The cost of the first post-paving television inspection shall not be charged to the Contractor. The cost of any subsequent television inspections performed to confirm the adequacy of repairs will be charged to the Contractor.

## **5. REMEDY PROVISIONS**

- a) In the case of a pipeline swale, or other defect, that is identified during the post-paving television inspection, the Engineer and the Sewer Design Section Manager shall determine the need for repair work to correct the defect.
- b) In certain cases, in lieu of undertaking the repair, the Contractor may be required to pay the estimated cost of making the repair to the County. Such payment will then be deposited in the County's sewer repair and replacement fund.

## **6. MANHOLE INSPECTIONS**

- a) The Engineer shall inspect the sewer manholes for conformance with Spokane County Standards. Observations regarding the condition of manholes made by the television inspection crew are to be considered as supplementary information, and are not intended to replace the Engineer's inspection.

## **7. MAKING CONNECTIONS TO NEW SEWER LINES**

- a) No connections to the new sewer lines will be allowed until the County has accepted the sewer lines for operation and maintenance. Before acceptance can occur, the Engineer must provide acceptable record drawings for the project to the Division of Utilities, together with the required Engineer's Statement. Additionally, the warranty period security must be provided by the developer as stipulated in the development agreement.