

SECTION 22 SEWER SYSTEM ROOT FOAMING

22-01 GENERAL

This section covers the work necessary to apply a chemical root control agent designed specifically to kill the root growth present in the lines and to inhibit root re-growth and sewer line intrusion without permanently damaging the vegetation producing the roots and without disrupting water treatment plant processes. These specifications represent **minimum** requirements and the Contractor shall abide by any manufacturer specifications that exceed these specifications.

22-01.01 Contractor Submittals

Submittals shall be submitted to the Engineer within 10 calendar days after issuance of the Notice to Proceed. The Engineer must approve all submittals prior to the start of construction. Required submittals are as follows:

- A. Specimen/Chemical Root Control Agent labels with Material Safety Data Sheets.
- B. Pollution Liability Insurance Certificate.
- C. Contractor qualifications including all related pesticide licenses and certifications.
- D. List of references, (minimum of 3 all from different jobs).
- E. Contractor's Federal DOT number.
- F. Evidence that the Contractor and all his subcontractors have obtained pollution liability coverage.
- G. Traffic Control Plan including shop drawings and signage in accordance with MUTCD guidelines.
- H. Written approval from Palo Alto RWPCP to use proposed root foaming material.

All submittals shall identify the specification(s) they address.

22-01.02 Water Treatment Plant Protection

The Contractor shall take all steps necessary and appropriate to prevent adverse effects on the Palo Alto Regional Water Pollution Control Plant (RWPCP). Introduction of any materials into the RWPCP must be with the written approval of the RWPCP operator. The Contractor shall obtain all necessary permits from Palo Alto RWPCP. The Engineer has the right at any time to limit or stop chemical application in order to safeguard RWPCP processes. The Contractor shall provide the date and time of all intended work, name and telephone number

of the Contractor's onsite supervisor, and provide any additional information requested by either the RWPCP operator or the Engineer.

The Contractor shall maintain daily communication with the RWPCP operator to assure that no adverse effects on RWPCP operations results from Contractor's work.

The Contractor shall be financially responsible for any adverse effect on RWPCP processes directly or indirectly caused by chemical application, including but not limited to damages to plant processes or equipment, clean-up and restoration costs, fines imposed by State or Federal agencies, pollution of receiving waters, and civil suits. The Contractor shall further indemnify and hold harmless the City, and the operator of the wastewater treatment plant, against all costs, including legal expenses, relating to treatment plant failure or other damages or pollution caused, directly or indirectly, by the applications of chemicals by the Contractor.

22-01.03 Compliance with Transportation Laws

The Contractor is directed to ensure compliance with all USDOT regulations relative to commercial vehicle numbering, place carding and registration; driver licensing, driver drug testing, and record keeping; and all other pertinent requirements contained in Federal Motor Carrier Safety Regulations. The Contractor's Federal DOT number, if required, must be submitted.

22-01.04 Pollution Liability Insurance

The Pollution Liability Insurance described herein is in addition to all other insurance required of the Contractor by the Engineer, including any insurance described in the general conditions, any insurance required by law, or any other insurance requested by the Engineer. The Contractor's commercial general liability limits must include pesticide or herbicide applicator coverage. Nothing contained in this section shall be construed as limiting the extent of the Contractor's responsibility for payment of damages resulting from his operations under the contract.

22-01.05 Contractor Qualifications

The Contractor must demonstrate a minimum level of 3 years direct experience in applying chemical sewer root control of the type specified herein. The Contractor must have performed similar jobs in size and scope to the work specified herein, and have treated in excess of 250,000 linear feet of sanitary sewer with its own personnel. Any work performed by subcontractors for the Contractor will not be considered. The Contractor must be licensed as a pesticide application business with the California Department of Pesticide Regulation prior to submitting a bid proposal. The Contractor must employ a State Certified pesticide applicator on the job site at all times.

Certified Pesticide Applicators licensed with the California Department of Pesticide Regulation shall perform all work. Certified Pesticide Applicators shall have a minimum three years experience in performing the type of work specified.

22-01.06 Project Documentation

Upon completion of the project and accompanying the final invoice, or whenever requested to by the Engineer, the Contractor shall submit log sheets and reports which show, as a minimum, the following information:

- the report date,
- the date each given sewer line was treated,
- street name for each given sewer line,
- a description (manhole numbers, house numbers, cross streets, etc.), which will enable the Engineer to accurately identify the exact location of each sewer line,
- the pipe size for each given sewer line,
- the length (manhole to manhole) for each given sewer line,
- quantity of chemicals used on each sewer line,
- special conditions found by the Contractor's crew,
- the date for each sewer line when the guarantee expires.

At the completion of the job the Contractor will submit a complete set of reports sorted by location.

22-01.07 Substitutes and Proven Equivalents

Should the Contractor wish to use any brand of material other than as specified herein, he shall submit to the Engineer for review and approval, complete descriptive literature naming the proposed substitution and manufacturer, as set forth in the Special Provision Section.

22-01.08 Access to Manholes

The Contractor shall be responsible for determining which manholes are not accessible to his vehicular equipment and shall plan his root foaming operations accordingly. No additional compensation will be allowed for pipe sections without direct vehicular access. In the event a specific pipe section is inaccessible to the extent beyond specified hose lengths for root foaming, the City will consider deleting this pipe section from the contract.

22-01.09 Notification

The Contractor shall provide 48-hour notices to the City's Maintenance Department prior to starting work on any portion of the contract. In the event that a problem arises with the root foaming operations, or there is a problem with any of the existing sewer lines, the Contractor shall notify the Maintenance Department immediately and report the problem.

22-01.10 Use of City's Municipal Service Center for Operations Base

The Contractor will not be permitted to use the City of Los Altos Municipal Service Center as a base of operations for the sewer root foaming operations.

22-02 MATERIALS

The chemical sewer root control treatment consists of root killing and root re-growth inhibition. The chemical root control agent shall be registered with the EPA and the State Pesticide Regulatory Agency, and shall be labeled for use in sewers to control tree roots. Only materials whose label instructions conform to these specifications shall be accepted. All application procedures must be in strict conformance with these specifications and label instructions. Use of any root control herbicide in a manner inconsistent with labeled instructions is a violation of Federal law. Chemicals intended, to be poured down, or blown into, the sewer lines as a dust, shall not be allowed. The active ingredient shall not adversely affect the performance of the wastewater treatment plant when applied properly in accordance with manufacturer's recommendations. Materials shall be non-volatile in order to minimize exposure to collections system workers, treatment plant operators and homeowners through inhalation. Compounds containing copper and/or other known priority pollutants, as defined by the Federal EPA, shall be disallowed.

22-02.01 Ingredients

A. Inert Ingredients

The root control material shall be formulated with foaming agents and surfactants sufficient to produce a stable, small bubble, dense foam capable of sustaining its shape and thus remaining on the treated roots. The foaming surfactants shall strip grease that typically clings to sewer root masses.

B. Root Killing Agent

The active component for destroying intruding roots in sanitary sewer lines shall be a potent, non-systemic toxin which kills contacted roots at low concentrations but which will not permanently affect parts of the plant distant from the treated roots. The active ingredient must be spontaneously detoxified by a natural chemical or biochemical process in a relatively short interval following its use.

C. Root Re-Growth Inhibitor

The active ingredient for inhibiting re-growth of root intrusions in sanitary sewer lines shall inhibit root cell growth on contact, but shall not be transported so as to damage other portions of the parent plant. The material shall bind firmly to the soil in the vicinity of openings in pipe joints so as to form a persistent chemical barrier suppressing the growth of root tips. The material shall be sufficiently stable under the conditions of use to provide protection for twelve months or longer, but shall be subject to decomposition in wastewater treatment plants without disturbing the treatment plant processes. A specimen product label(s) and Material Safety Data Sheets shall be submitted.

22-02.02 Equipment

The equipment used shall discharge foam at sufficient pressure as to force foam up connecting lateral sewers approximately 5 feet in small diameter pipe. In no case shall chemical agents reach the home or businesses.

22-03 CONSTRUCTION

Sewer pipe cannot be treated effectively when surcharging flow conditions exist. If a surcharging condition exists on a sewer to be treated (i.e., flow depth is greater than 30% of the pipe diameter), the Contractor will return to treat that sewer when the flow is normalized. The Contractor is responsible for monitoring weather to ensure that lines are not treated when the possibility of surcharging due to inflow and infiltration exist. If a sewer surcharges within a 12-hour period after a treatment has been made, the Contractor is will be required to retreat that section of sewer at the Contractor 's expense if the surcharging is a result of Contractor activities or inflow and infiltration resulting from wet weather.

22-03.01 Applications

Application of the chemical root control agent shall be by foaming in accordance with the best-recommended practice for conditions present in the line under treatment. All foaming procedures shall be in strict accordance with the instructions on the container label.

A foam discharge hose shall be inserted throughout the entire length of the sewer section to be treated. Acceptable methods of conveying the foam discharge hose through the sewer section are: 1) manually or mechanically inserting or shoving the foam discharge hose through the section, or 2) floating a rope through the sewer section and using the rope to pull the foam discharge hose into the section.

The foam shall be pumped under sufficient pressure to assure that the entire sewer section is completely filled with foam, and to assure that the foam passes through lateral pipe connections to a distance of 5 feet in small diameter pipe. Sewer service to homeowners shall not be interrupted nor shall chemical agents reach the home or business. The Contractor must beware that excessive discharge pressure, and/or excessive quantities of material may cause foam to enter houses, or travel up forward clean-outs onto lawns.

Hose retrieval rates must be timed to evenly distribute the full quantity of foam throughout the entire area of treatment.

When required to enter or work within a manhole, the Contractor's employees and subcontractors shall in addition to abiding by the confined space regulations/requirements of OSHA shall also abide by any requirements spelled out by either the container label or the specimen/chemical control root agent's manufacturers requirements. This would include meeting the minimum protective clothing requirements and/or wearing air line breathing apparatus.

22-03.02 Contractor Responsibilities

Execute all work in a manner such that injury or damage to any person, animal, structure, service, property, crop or vegetation shall be avoided.

Provide all necessary equipment and barricades to prevent pets, children, and unauthorized persons from gaining access to the site of the work. Provide adequate protection for his employees engaged in the handling, mixing, and distribution of the chemicals and ensure all the employees correctly wear such protection.

Should any chemical root control agent spill on the ground, the chemical and affected soil shall be removed and safely disposed of in accordance to the State and Federal regulations pertaining thereto. The Contractor shall handle all spills in accordance with the appropriate Material Safety Data (M.S.D.) sheets and shall have on site materials and equipment to contain and handle spills. The area shall be restored to a condition equal to or better than before the spill.

Prevent all chemical agents from reaching homes and businesses along the sewers cleaning route. The Contractor shall also be accountable for any damage or death to trees, shrubs, lawns, crops and gardens that is attributable to the chemicals used in the process. Should the Contractor, or his employees or agents cause any damage to public or private property, the Contractor will be required to make repairs immediately.

Respect the rights of property owners, and inform the private property owner before entering the property.

Placing proper traffic warning devices to protect the specific job site, and to prevent accidents or personal injury to the public. The Contractor shall take safe traffic control measures as conditions dictate or when so directed by the Engineer. Some line sections may be located in heavy traffic areas.

Keep complete, accurate records of each day's operation. Records shall show date of treatment, sections of line treated, pipe size and distance, amounts of chemicals placed in the lines, and any other pertinent information. Log sheets shall be submitted with the invoice.

Ensure that chemicals are handled in accordance with manufacturer's recommendations, standard practices and appropriate statutory requirements, and that all precautions are then taken to avoid spillages.

Be responsible for obtaining permits and meters from the local water company for water supply and paying for all water usage. See the Special Provisions Section of these specifications for the name and phone number of the local water company.

22-03.03 Guarantee

For each sewer section (manhole-to-manhole) that is treated under the Contract, the Contractor shall guarantee the work for a minimum of two years as follows. At the option of the Owner, the Contractor shall, at his own expense, **re-treat a sewer section, or refund 100% of the payment received to treat that section,** in the event that: (1) live roots are found in the section within six months after the application; or, (2) the section plugs up and floods due to tree root obstructions within a period of two years, beginning on the date of treatment, and ending two years after the date of treatment. Re-treatments, performed at no charge in honor of the guarantee, do not extend the expiration date of the guarantee.

The guarantee applies to sewer stoppages caused by live tree roots. It does not apply to stoppages caused by grease or other foreign matter; flat, collapsed or deformed pipe; or flooding caused by a surcharged or plugged sewer section downstream from a guaranteed sewer section. This guarantee applies to main line sewers only. The Contractor is not responsible for any damages caused by main line sewer stoppages, regardless of cause. The decision of the City as to the cause of a stoppage is binding.