

Administrative Rules for Cured-in-Place Pipe (CIPP) Lining of Privately Maintained Pipe in the Public Right-of-Way

ENB-4.33

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CITY OF PORTLAND
working for clean rivers

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These are administrative rules of the Bureau of Environmental Services (BES) governing the use of cured-in-place pipe (CIPP) lining technology in privately maintained pipe located within the public right-of-way or a public sewer easement.

1. Applicability

These rules apply to the use of CIPP lining to repair private sewer lines and laterals within the public right-of-way (ROW) or a public sewer easement that are not the City's maintenance responsibility as described in Portland City Code (PCC) Section 17.32.070.

2. Purpose

To use CIPP lining to repair private sewer lines and laterals within the ROW or a public sewer easement, three approvals must be obtained from BES: approval of the lining type and end seal product, confirmation that contractors are qualified to install the lining product, and a BES lateral repair permit (UR permit) to perform the work.

The purpose of these rules is to establish the decision-making criteria BES will use to:

- A. Approve CIPP lining systems;
- B. Confirm a contractor as an approved CIPP installer; and
- C. Review, issue, and finalize UR permits involving CIPP lining.

Review and approval of the CIPP lining system and confirming contractor qualifications (Section 5 and Section 6 of these rules) is performed by the BES Standards and Practices (BES S&P) group and must be completed prior to permitting. The permitting process (i.e., permit review, issuance, and approval) is performed by BES UR/UC permitting staff.

3. Definitions

These rules use the definitions of PCC Chapter 17.32, BES Administrative Rules ENB-4.14 and ENB-4.17, and the following:

- A. **“Cured-in-place pipe (CIPP)”** means a resin-impregnated tube inserted into an existing host pipe and expanded to tightly conform to the wall of the existing host pipe and cured to form a new, watertight pipe.
- B. **“End seal”** means a continuous hydrophilic O-ring or a manufacturer-specific product that will completely seal the liner from any annular space leakage between the liner and the existing host pipe and meet the requirements of the City's Standard Construction Specifications (SCS) and current special provisions.



- C. **“Facial Challenge”** means a challenge to a requirement that is based on an argument that the requirement cannot be applied fairly or reasonably in any situation. By contrast, an as-applied challenge is one based on an argument that a requirement should not be applied to the challenger’s particular situation because of factors that, in the challenger’s view, distinguish it from similar situations.

4. Regulatory Authority

These rules are authorized by PCC Chapters 3.13 and 17.32.

5. City Approval Required for Liner System and End Seal Products

All liner systems and end seal products must be reviewed and approved by BES S&P. BES S&P will review submittals based on the requirements of this section. Submittals must include technical information about the liner system and how the system effectively meets the end seal requirement. The manufacturer must provide the following information in the submittal:

A. Liner system. Documentation demonstrating the product’s ability to meet the requirements of:

1. The City’s SCS and any special provisions (see 2020 SCS Section 00410 and 2020 special provision 00408), and
2. American Society for Testing and Materials (ASTM) D790, ASTM F1216 and ASTM F1743 for thermal-cure or ASTM D790, ASTM F2019 and ASTM 1743 for UV-cure.

B. Manufacturer details for liners with end seals. A manufacturer’s details for end seal products and specified installation methods must document that the product will create a watertight repair and prevent inflow and infiltration of groundwater and migration of fine aggregate.

C. Manufacturer details for liners without end seals. Documentation must demonstrate that products not requiring end seals achieve the same results as the industry standard hydrophilic O-ring gasket. BES S&P will review alternatives to the end seal requirement based on the product’s overall ability to seal the ends of the CIPP liner with the host pipe to create a watertight repair and prevent inflow and infiltration of groundwater and migration of fine aggregate. BES S&P will take the following into consideration during its review:

1. Means and methods for the liner system to expand and tightly conform to the host pipe.
2. Means and methods for product curing. Submittals must describe product testing data for potential shrinkage and the potential for annular space to develop between the sealant and the host pipe.
3. Manufacturer test results demonstrating that the lining system can withstand an external hydrostatic pressure test of 7.25 psi without leaking for the full length of pipe. Results must demonstrate that the product will meet City performance standards without the additional use of end seals to create a watertight repair and prevent inflow and infiltration of groundwater.



6. City Approval of CIPP Installer Required

A contractor must submit to BES S&P documentation confirming the contractor is certified by the manufacturer to install the liner system. BES S&P review and approval of this documentation must be completed prior to permit issuance. Submittal requirements and the timing for City review is provided below:

- A. Manufacturer documents must certify that the contractor's personnel are fully trained and competent to install each liner system type proposed.
- B. BES S&P will complete its review and issue a determination within four weeks of receiving a complete submittal.

7. Permit Required

A BES UR permit is required for repairs to privately maintained sewer lines and laterals within the public ROW or public sewer easement. CIPP liner repairs are subject to these rules as a standard condition of UR permits. UR permits are reviewed, issued, approved, and enforced through the application of BES Administrative Rule ENB-4.17.

8. Pre-lining Installation Requirements

After a BES UR permit has been issued but prior to CIPP lining installation, the contractor must:

- A. **Verify host pipe dimensions and compatibility with liner.** The contractor must ensure that the liner diameter matches the host pipe, taking into consideration the length, diameter, any diameter transitions, and condition of the host pipe.
- B. **Prepare Host Pipe.** The contractor must remove all penetrations or protrusions within the host pipe that could prevent successful pre-installation video inspection and installation of the liner. The host pipe must be cleaned and clear of all debris including roots, grease, sand, rocks, and sludge.
- C. **Examine Host Pipe Condition.** The contractor must examine the host pipe for defects that would prevent proper liner installation. Failure to address defects within the host pipe prior to liner installation may require excavation and replacement of the host pipe for UR permit approval.

For defects the contractor considers minimal and that will not impact the function of the lateral post-lining, the contractor may submit a pre-installation video and justification for lining over defects to BES Sewer Lateral UR UC Permitting for pre-lining consideration. Submittals must describe the defect location stating its location using CCTV footage, extent of defect, and site conditions to be considered.



BES will not approve or finalize the associated UR permit where the host pipe contains:

1. Holes, cavities, or voids.
2. Sags or bellies greater than a ½ inch.
3. Infiltration of water from the surrounding soil or subsurface.
4. Ovality of more than 3%.

9. Pre-Lining Closed-Circuit Television (CCTV) Video Inspection Required

Once the contractor has determined the host pipe is suitable for the approved lining product, the contractor must conduct a pre-lining CCTV video inspection meeting the standards and requirements of Section 10 of these rules.

10. CCTV Video Inspection Requirements

The standards and requirements of this section pertain to both pre-lining and post-lining CCTV videos.

- A. Site verification.** Videos must include the outside of the building and point of entry into the sewer system in a manner that clearly documents the site location and address. Videos must include voice over narration, clearly stating the building address, point of entry into the sewer system, operator's name, sewer company and date of video.
- B. Water flow required.** Water must be introduced into the building sewer for no less than one minute prior to beginning the video inspection. Water flow must continue during the video inspection until the camera reaches the public main. The water flow must be stopped prior to reversing the camera at public main to help identify defects including sags and bellies.
- C. Extent of video inspection.** Video inspections must provide an uninterrupted recording that traverses the entire segment of pipe from the point of entry at the building sewer to the public main and reversed back to the point of entry.
- D. Image quality.** Lighting and camera shall provide a clear, in-focus color picture of the pipe for a length of three pipe diameters.
- E. Footage counter.** The video must display a footage counter during the entire duration of the video inspection.
- F. Voice over narration.** The video inspection must provide a running voice over narration describing:
 1. Pipe size and material.
 2. All transitions in pipe size and grade breaks.
 3. Wye or tee connections and clean-outs.
 4. Defects, obstructions, and intrusions.
 5. Location of property line, curb or edge of pavement, and public main.



- 6. For post-inspection video, the location of the liner’s downstream end relative to curb, edge of pavement, or City maintenance area for unpaved streets.

11. Liner Installation and Locate Marker Requirements

The following requirements apply during the installation process in addition to manufacturer installation requirements:

- A. CIPP liners must be prepared, installed, and cured in place per the manufacturer’s recommendations. A liner may only extend into the publicly maintained portion of the sewer lateral to the extent necessary to provide a permanent, continuous, properly trimmed, water-tight seal between the new liner and host pipe.
- B. If a permanent, continuous, properly trimmed, water-tight seal between the new liner and host pipe is not achieved, the contractor must excavate from the ground surface and construct a positive connection between the CIPP liner and publicly maintained pipe. Surface restoration inspection will be required by the Portland Bureau of Transportation (PBOT) ROW inspection staff. Contact 503-823-7002 to coordinate surface restoration inspection.
- C. The contractor must remove all installation and curing equipment from the original pipe once the curing process is complete. No material other than the cured CIPP liner is to remain in the repaired pipe.
- D. Lateral liner locate markers (e.g., curb markers and marker balls) must be installed per Standard Detail P-262 and SCS Section 00446. Requirements for curb markers and marker balls are provided in Table 1.

Table 1. Curb Marker and Marker Ball Installation Requirements

Site Condition	Marker Type and Location
Paved street with curb.	Install curb marker per COP Standard Detail P-262 and SCS Section 00446.42(d).
Paved street without curb.	Install marker ball per COP Standard Detail P-262 and SCS Section 00446.41(a).
Unpaved street.	Install marker ball per COP Standard Detail P-262 and SCS Section 00446.41(a) 14-feet from right-of-way centerline.

12. Post-installation CCTV Video Inspection Required

The contractor must submit a post-installation CCTV video inspection. The post-installation video must meet the standards and requirements listed in Section 10 of these rules.



13. As-built Drawing Required

The contractor must prepare and submit a dimensioned as-built drawing of the entire CIPP installation. As-built drawings must be legible and include:

- A. Project address and date.
- B. Building footprint.
- C. Directional arrow pointing North.
- D. The number and degrees of bends, cleanouts, and fittings repaired with CIPP lining.
- E. Documentation of liner depths at its upstream and downstream ends.
- F. Installer name and signature.

14. Submittal Items Required for Permit Review and Approval

The following items must be submitted to BES UR/UC permitting staff for review:

- A. **Pre- and Post-Lining CCTV Video Inspections.** Provide a link to download the pre- and post-video inspections from a web-based hosting service. Links or downloads must not require memberships or registrations to view or access the video. CCTV video inspection requirements are provided in Section 10 of these rules.
- B. **Photos Confirming Curb Marker or Marker Ball Location.** Photo(s) of curb marker or marker ball installation that verify installation at property address.
- C. **BES CIPP As-Built Form.**

15. Permit Approval

BES will approve and finalize the UR permit if its review of the submitted documents demonstrates that:

- A. The pre- and post-installation videos meet the standards and requirements of Section 10 of these rules, and the post-installation video demonstrates that the CIPP liner:
 - 1. Fits tightly to the host pipe.
 - 2. Has no evidence of wrinkles, cracks, lifts, scalds, blisters, folds, holes, or delamination.
 - 3. Is continuous in length.
 - 4. Has no observable infiltration.
 - 5. Has end edges and seals fitted tightly and flush with the host pipe.
 - 6. Does not extend excessively into a publicly maintained pipe.
 - 7. Has no sags or bellies.
- B. The as-built drawing document is complete and legible.



- C. The liner locate marker photos show the property address and indicate that the marker has been installed as required in Table 1 of these rules.

If BES's inspection indicates that irregularities such as offset joints, protrusions, bumps, and deformations remain in the pipe following CIPP liner installation, BES may require the contractor to remove the defective liner and replace it with a new liner or a new pipe installed through open-trench methods.

If the required documentation has not been submitted prior to the expiration of the UR permit, then the permit applicant must pay the current UR permit fee to re-issue the UR permit for BES to complete final review and permit approval.

16. Administrative Review and Appeal

A person may request reconsideration of a BES decision through administrative review as described in this Section. Administrative review and appeal of a permitting and enforcement actions are governed by BES Administrative Rules ENB-4.17 and ENB-4.15. After the requestor has exhausted all BES administrative review, the requestor may file for an appeal of a decision with the Code Hearings Officer (CHO) per Portland City Code Title 22. A person may only appeal a decision that is subject to administrative review by BES.

A. Administrative Review Requests. A person to whom a notice was addressed will have 20 business days from the date the notice was issued to submit a written request for administrative review of a decision in the notice. The requestor must provide all information known to the requestor that supports an assertion made in the written request for administrative review. The requestor must provide such information via graphic, written, or recorded communication, or in person at the administrative review meeting. BES will hold an administrative review meeting within 15 business days of receipt of the written request for administrative review unless BES determines in its reasonable discretion that a delay is justified. The requestor may provide detailed information in writing in lieu of attending the administrative review meeting.

B. Non-Reviewable Items. A BES decision made under these rules is subject to administrative review except that BES will not grant administrative review of the following:

1. A **Facial Challenge**—as that term is defined in these rules—to a requirement in these rules or associated City Code, or to any technical standard; and
2. A requirement to meet a technical standard as applied by BES to a particular party.

Note: Although the technical BES decisions specified in Section 16.B.1–2 of these rules are not subject to administrative review, BES may reconsider and modify a BES staff decision on these matters based on site-specific facts. BES's final decision on these matters is not subject to administrative review, per section 16.B of these rules. BES's initial decision on an application for a permit to complete CIPP sewer repair work in a public right of way, including permit denial or imposition of permit conditions, is subject to administrative review; however, BES's final determination on such an application is not appealable to the CHO.



- C. BES Evaluation.** BES will use authorizing City Code, the provisions of these rules, City records, and the testimony and documentation provided by the requestor to make a final determination on the issue that is the subject of the administrative review.
- D. Final Determination.** BES will issue to the requestor a written final determination within 15 business days of the administrative review meeting unless BES determines that extenuating circumstances justify a reasonably longer period of evaluation. The written final determination will provide information about the process for filing an appeal to the CHO.

