

Chapter 3 - Design of Pipe and Components

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1.0 SCOPE

The purpose of this chapter is to identify the system specific requirements for the design of *pipe*, and components used in the construction and operation of DENC and DESC *gas pipelines*.

2.0 REGULATORY REFERENCES

49 CFR Part 192 [Subpart C](#), [Subpart D](#); [\[192.67\]](#) [\[192.103\]](#) [\[192.105\]](#) [\[192.127\]](#) [\[192.179\]](#) [\[192.205\]](#) [\[192.517\]](#) [\[192.607\]](#) [\[192.634\]](#)

3.0 PROCEDURE(S)

The following groups are responsible for the design and documentation of DENC and DESC pipeline systems:

- Transmission Integrity
- GIS Services
- Project *Engineering*
- System Planning

The responsibilities of these groups include:

- Development and maintenance of GIS facilities mapping.
- Project management of large capital and replacement pipeline projects.
- Design of transmission and distribution systems.

Design criteria *may* be found in the documents listed in [7.0 Appendices](#).

4.0 TRAINING/QUALIFICATIONS

None at this time.

5.0 DOCUMENTATION/FORMS [[192.67](#)] [[192.103](#)] [[192.105](#)] [[192.127](#)] [[192.179](#)] [[192.205](#)] [[192.517](#)] [[192.607](#)] [[192.634](#)] [[192.636](#)]

Additional documentation is listed in the applicable manuals and design and construction standards for each operating system.

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5.1 Records Requirements for Steel Pipeline Systems Operating as Transmission

For Steel Transmission pipelines, pipe and components installed on or before July 1, 2020, existing documentation and records regarding the following items, *must* be retained for the life of the pipeline:

(a) Design Documentation:

If DESC has pipe design and the *determination* of design pressure in accordance with [192.103](#) and [192.105](#), these records must be retained for the life of the pipeline

(b) Pipe documentation:

Tests, inspections, and attributes required by manufacturing specifications applicable at the time the pipe was manufactured or installed including:

- Diameter
- Yield Strength
- Ultimate Tensile Strength
- Wall Thickness
- Seam Type
- Chemical composition (in accordance with §[192.53](#) and §[192.55](#))

(c) Component Documentation:

Manufacturing standard and pressure rating of:

- Valves
- Flanges
- Fittings

- Extruded outlets
- Anchor forgings
- Other components with strength grades of 42,000 psi (X42) or greater with nominal diameters greater than 2"

5.2 MAOP Reconfirmation [[192.67](#)] [[192.517](#)] [[192.619](#)] [[192.624](#)]

Effective July 1, 2020, for pipelines that do not have *TVC* records for documenting the design of the pipe, *MAOP* reconfirmation *shall* be performed in accordance with [192.624](#), per GD-OM-L-060-001, [MAOP Reconfirmation](#).

5.3 Requirements for Transmission Line Valves and Shut Off for Rupture Mitigation [[192.179](#)][[192.634](#)][[192.636](#)]

For new or replacement onshore transmission pipeline segments with diameters greater than or equal to 6 inches that are constructed after April 10, 2023, the operator must install rupture-mitigation valves (RMV) or an alternative equivalent technology whenever a valve must be installed to meet the appropriate valve spacing requirements of this section in accordance with §[192.179](#), §[192.634](#) and [GD-OM-L-060-002](#). Replacement sections of less than 2 miles are exempt from this rule.

In accordance with the provisions of §[192.636](#), when designing an RMV or alternative equivalent technology (e.g., manual valve), consider if it should be designed to be open for more than 30 minutes at the onset of a potential rupture. If so, notification shall be made to PHMSA in accordance with [192.18](#) that closing the RMV or alternative equivalent technology would be detrimental to public safety.

This notification must be coordinated with appropriate local emergency responders, and the operator and emergency responders must determine that it is safe to leave the valve open. This notification must also include written procedures for determining whether to leave an RMV or alternative equivalent technology open, including plans to communicate with local emergency responders and minimize environmental impacts.

Possible considerations include:

- A rupture that has taken place in an area that affects public safety
- One-way feeds that provide gas to cities/towns
- Weather dependent
- Hospitals without an alternate fuel source
- Hard to evacuate locations

An RMV or alternative equivalent technology (e.g., manual valve) must have a back-up power source to maintain SCADA systems or other remote communications for remote-control valve (RCV) or automatic shut-off valve (ASV) operational status, or be monitored and controlled by on-site personnel.

6.0 RELATED DOCUMENTS

None at this time.

7.0 APPENDICES

State Specific: South Carolina

- [Design and Installation Manual \(DESC\)](#) (online manual)

- [Transmission Design and Installation Manual \(DESC\)](#), (online manual)
- [Construction Details \(DESC\)](#), (online manual)

(UNCONTROLLED IF PRINTED)