When determining the scope of the code of construction, review the following:

- Section I, Preamble
- ASME B31.1, Chapter 1, Scope and Definitions

These paragraphs, and Manufacturer’s documents establish the boundaries to which the ASME Code applies.
ASME Code Section I (Power Boilers) can be thought of as a “System Code Section” and includes by reference, ASME B31.1 (Power Piping) with specific rules for Boiler External Piping.

Section I Scope

- Boilers with an MAWP greater than 15 psi steam or 160 psi water or 250° F water.
PREAMBLE

This Code covers rules for construction of power boilers, electric boilers, miniature boilers, high-temperature water boilers, heat recovery steam generators, solar receiver steam generators, and certain fired pressure vessels to be used in stationary service and includes those power boilers used in locomotive, portable, and traction service. Reference to a paragraph includes all the subparagraphs and subdivisions under that paragraph.

The Code does not contain rules to cover all details of design and construction. Where complete details are not given, it is intended that the manufacturer, subject to the acceptance of the Authorized Inspector, shall provide details of design and construction which will be as safe as otherwise provided by the rules in the Code.

The scope of jurisdiction of Section I applies to the boiler proper and to the boiler external piping.

Superheaters, economizers, and other pressure parts connected directly to the boiler without intervening valves shall be considered as parts of the boiler proper, and their construction shall conform to Section I rules.

Boiler external piping shall be considered as that piping which begins where the boiler proper or isolable superheater or isolable economizer terminates at:

(a) the first circumferential joint for welding end connections; or
(b) the face of the first flange in bolted flanged connections; or
(c) the first threaded joint in that type of connection; and which extends up to and including the valve or valves required by this Code.

ASME Code Certification (including Data Forms and stamping the Certification Mark with appropriate Designator) and/or inspection by the Authorized Inspector, when required by this Code, is required for the boiler proper and the boiler external piping.

Construction rules for materials, design, fabrication, installation, and testing of the boiler external piping are contained in ASME B31.1, Power Piping. Piping beyond the valve or valves required by Section I is not within the scope of Section I, and it is not the intent that the Certification Mark be applied to such piping or any other piping.

The material for forced-circulation boilers, boilers with no fixed steam and water line, and high-temperature water
Interpretation Detail

Standard Designation: BPV Section I
Edition/Addenda: 2013
Para./Fig/Table No: Preamble
Subject Description: Preamble, Definition of Connection to Boiler
Date Issued: 10/21/2015
Record Number: 14-1363
Interpretation Number:

Question(s) and Reply(ies):

Question: The fourth paragraph of the Preamble defines the point where boiler external piping begins in terms of where the boiler proper terminates at, as follows: (a) the first circumferential joint for welding end connections; or (b) the face of the first flange in bolted flanged connections; or (c) the first threaded joint in that type of connection; and which extends up to and including the valve or valves required by this Code. In the case of boilers where the connection contains one or more fittings between the boiler and final point of connection (e.g. welding neck, elbow, or tee), must the Manufacturer list the first of any circumferential weld joint, flange face, or threaded joint as the connection on the Manufacturer’s Data Report?

Reply: No, one or more fittings may exist between the boiler and the external piping, provided the Manufacturer defines at which point the boiler proper terminates and BEP begins.
Excerpt: ASME Section I, Preamble

- The Scope of jurisdiction of Section I applies to the boiler proper and boiler external piping. Superheaters, economizers, and other pressure parts connected to the boiler without intervening valves shall be considered as part of the boiler proper, and their construction shall conform to ASME Section I rules.

- Construction rules for materials, design, fabrication, installation, and testing of the boiler external piping are contained in ASME B31.1, Power Piping.
Excerpt: ASME Section I, Preamble (cont.)

- first circumferential joint for welding end connections; or
- the face of the first flange in bolted flange connections; or
- the first threaded joint in that type of connection; and extends up to and including the valve or valves required by this Code.
Design of Boilers and Power Piping

- The Boiler Manufacturer has to define where the change from Boiler to Boiler External Piping and Boiler External Piping to Non-Boiler External Piping exists.
- This is typically done using Piping and Instrumentation Diagrams (P&ID’s) or drawings depicting where the terminal points occur.
- The terminal points are not required to be shown on the Manufacturer’s Data Report. They are required to be provided to the AI.
If the pressure containing part being considered in the boiler or BEP is protected by the drum mounted pressure relief devices, it is within the Scope of Section I Code. The Code may extend beyond this if there is a requirement for multiple valves. Examples of this are feedwater, blowoff, two valve drains, and main steam piping.
Single Boiler
Boiler Manufacturer Determines where BEP begins

Two or More Boilers Fed From One Common Source

BEP

NBEP

Feedwater

122.1.3(A.2) not less than pressure required to feed the boiler

[Section I PG-58.3.3, PG-58.3.4, PG-61, & [B31.1 122.1.3(A.2)]]
Section I Isolatable Economizer

Pressure Relief Valve (V) Required

Design Pressure Economizer = Pressure relief device set pressure

Intervening valves within the scope of the BEP

Stainless steel (3XX) is prohibited.

[Section I Preamble, PG-5.5, PG-67.2.1.6 & PG-69.1.6]
All piping outside of Section I Scope will be Non-boiler external piping. (NBEP)

Economizer, external to the boiler, (with or without a three valve bypass) shall be constructed in accordance with ASME Section VIII, Div. 1, including Special Service “DF” when the heat transfer surfaces are exposed to the products of combustion. Flame is not a consideration.

[ASME Section VIII, Div. 1, paragraphs U-1(h), UW-2(d) & UG-125]
The stop valve required by PG-58.3.1 may be omitted provided the prime mover throttle valve is equipped with an indicator to show whether the valve is open or closed and is designed to withstand the required hydrostatic pressure test of the boiler.

[Section I Preamble, PG-58.3.1]
Section I

PG-58.3 Boiler External Piping

- The Code Jurisdictional Limits of the boiler external piping systems are shown in Figure PG-58.3.1.
- The materials, design, fabrication, installation and testing shall be in accordance with B31.1, Power Piping.

B31.1, Scope and Definitions

Paragraph 100.1.2

- The terminal points themselves are considered part of the boiler external piping.