COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

REQUEST FOR A WAIVER FROM THE AMERICAN IRON AND STEEL REQUIREMENT

This request for a waiver from the American Iron and Steel requirement is completed by a PENNVEST funding recipient when there is a need to use a foreign-made iron/steel component and the component is not expected to be placed on the De Minimus list.

PENNVEST Funding Recipient	Pittsburgh Water
PENNVEST Project:	Aspinwall Pump Station Improvements, Bruecken Pump Station Improvements, and Clearwell Bypass
ME Number:	[redacted]
Recipient/Engineer Contact Name:	Barry King, PE
Telephone:	[redacted]
Email:	[redacted]

Waiver requested on the basis of:

☐ **Public Interest (complete sections A and B below)**

☒ **Availability (complete sections A and C below)**

☐ **Cost (complete sections A and D below)**

Waivers may be requested using more than one basis.

PLEASE SUBMIT WAIVER REQUEST TO:

Completed requests can be either mailed or emailed to:

[redacted]

[redacted]

A. General

Describe the unit process which contains the proposed foreign-made iron/steel component:

Steam Safety Relief Valve Drip Elbows: The proposed foreign-made iron/steel items are components of a steam heating system which contains boilers, heat exchangers, valves, air separators, etc.

Additional materials attached. (☐)

Describe the foreign-made iron/steel component:

Steam Safety Relief Valve Drip Elbows: Installed on the outlet of safety relief valves, these elbows direct discharged steam or condensate safely downward, preventing damage to equipment and ensuring personnel safety.

Additional materials attached. (☐)

Proposed foreign-made manufacturer:

Name: [redacted]

Address: [redacted]

B. Public Interest (N/A ☒)

Why is the use of the product in the public interest? For example, is the use of a foreign-made iron/steel component necessary because of compatibility with existing components in the water or wastewater system, or other reason?

Additional materials attached. (☐)

C. Availability (N/A ☐)

Describe requirements in the project plans, specifications or permits which describe the required quantity and quality of the product:

Steam safety relief valve drip elbow materials: Body - Cast iron or carbon steel. Provide concentric type with flanged steam connections and NPT threaded condensate connections. Install on the discharge of boiler steam safety valves and where required to eliminate drips from steam safety valves. See attached specs for more details.*

*Date of needed product installation (below) unknown as contractor has yet to submit a schedule. NTP is 8/25/2025.

Excerpts from plans, specifications and/or permits must be attached.

When is the product needed for installation: Month: Year:

Describe the efforts to use domestic suppliers: The three suppliers listed below were contacted in October 2024 by online request forms, no responses were received. These suppliers were contacted again several times by phone and email, this time with mixed responses. Some required part numbers to verify compliance with AIS/BABA which were unable to be determined. As such, the vendors were unable to confirm AIS/BABA compliance nor did they offer a suitable alternative product that was compliant.

Additional materials attached. (☒)

Provide information from potential domestic suppliers:

Name Of Domestic Supplier Contacted	Supplier Contact Person/Email	Availability	Delivery Date (Month/Year)
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted] contact

Additional materials attached. (☐)

D. Cost (N/A ☒)

Cost of project with domestic components: $_____

Cost of project with foreign-made components: $_____

Will the use of domestic components increase the project cost by more than 25%?

☐ Yes ☐ No

If no, cost is not a valid basis.
If yes, attach a detailed cost comparison of the domestic and foreign-made options.

This waiver request was submitted to the EPA by the state of Pennsylvania and applies only to the project in the subject line. All supporting correspondence and/or documentation from contractors, suppliers or manufacturers included as a part of this waiver request was done so by the recipient to provide an appropriate level of detail and context for the submission. There may be documents with project diagrams, schedules, and supplier correspondence in formats that do not meet the Federal accessibility requirements for publication on the Agency's website. Hence, these exhibits have been omitted from this waiver publication. They are available upon request by emailing DWSRFWaiver@epa.gov.

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Completed requests can be either mailed or emailed to:

[redacted]

[redacted]

A. General

Describe the unit process which contains the proposed foreign-made iron/steel component:

Air release valve: The proposed foreign-made iron/steel items are components of a steam heating system which contains boilers, heat exchangers, valves, air separators, etc.

Additional materials attached. (☐)

Describe the foreign-made iron/steel component:

Air release valve: automatically vents trapped air from the piping to ensure efficient steam flow and prevent air-related blockages or pressure issues

Additional materials attached. (☐)

Proposed foreign-made manufacturer:

Name: [redacted]

Address: [redacted]

B. Public Interest (N/A ☒)

Why is the use of the product in the public interest? For example, is the use of a foreign-made iron/steel component necessary because of compatibility with existing components in the water or wastewater system, or other reason?

Additional materials attached. (☐)

C. Availability (N/A ☐)

Describe requirements in the project plans, specifications or permits which describe the required quantity and quality of the product:

Air release valve materials: Body - Cast iron; Internals - stainless steel. Provide the balanced pressure thermostatic type specifically designed for steam service. Provide air release vents that automatically release air while preventing the release of either condensate or steam. Provide an outlet check valve to prevent the re entry of air. See attached specs for more details.*

*Date of needed product installation (below) unknown as contractor has yet to submit a schedule. NTP is 8/25/2025.

Excerpts from plans, specifications and/or permits must be attached.

When is the product needed for installation: Month: Year:

Describe the efforts to use domestic suppliers: The two suppliers listed below were contacted in October 2024 by online request forms, no responses were received. These suppliers were contacted again several times by phone and email, this time with mixed responses. Some required part numbers to verify compliance with AIS/BABA which were unable to be determined. As such, the vendors were unable to confirm AIS/BABA compliance nor did they offer a suitable alternative product that was compliant.

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Name Of Domestic Supplier Contacted	Supplier Contact Person/Email	Availability	Delivery Date (Month/Year)
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]

Additional materials attached. (☐)

D. Cost (N/A ☒)

Cost of project with domestic components: $_____

Cost of project with foreign-made components: $_____

Will the use of domestic components increase the project cost by more than 25%?

☐ Yes ☐ No

If no, cost is not a valid basis.
If yes, attach a detailed cost comparison of the domestic and foreign-made options.

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pennsylvania
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Telephone:	[redacted]
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PLEASE SUBMIT WAIVER REQUEST TO:

Completed requests can be either mailed or emailed to:

[redacted]

Email: [redacted]
Phone: [redacted]

A. General

Describe the unit process which contains the proposed foreign-made iron/steel component:

Low pressure steam condensate pumps: The proposed foreign-made iron/steel items are components of a steam heating system which contains boilers, heat exchangers, valves, air separators, etc.

Additional materials attached. (☐)

Describe the foreign-made iron/steel component:

Low pressure steam condensate pumps: collects and returns condensed steam (condensate) back to the boiler, maintaining system efficiency and preventing water hammer or flooding in low-pressure applications.

Additional materials attached. (☐)

Proposed foreign-made manufacturer:

Name: [redacted]

Address: [redacted]

B. Public Interest (N/A ☒)

Why is the use of the product in the public interest? For example, is the use of a foreign-made iron/steel component necessary because of compatibility with existing components in the water or wastewater system, or other reason?

Additional materials attached. (☐)

C. Availability (N/A ☐)

Describe requirements in the project plans, specifications or permits which describe the required quantity and quality of the product:

1. Condensate Return Units: Consist of receiver, inlet strainer, pumps, float switches, control panel and accessories.
2. Condensate Receiver: Cast iron, equipped with externally adjustable float switches, water level gauge, dial thermometer, pressure gauges on pump discharge, bronze isolation valves between pumps and receiver, and lifting eye bolts.
3. Inlet Strainer: Cast iron with vertical self-cleaning bronze screen and large dirt pocket, mounted on receiver. Screen shall be easily removable for cleaning.
4. Steam-Operated Pumps: Single pump system of the pressure motive type with mechanical controls, check valve, and vented receiver.
5. Electrical Pumps: One stage, vertical design, bronze fitted with stainless steel shaft, bronze impeller, renewable bronze case ring, mechanical shaft seal close coupled to 1750 rpm motor.
6. Control Cabinet:

a. NEMA 250 enclosure UL listed with piano hinged door grounding lug terminal strip and fusible control circuit transformer

b. Combination magnetic starters with overload relays circuit breakers and cover interlock

c. Electric alternator

1) Operate pumps on high level alternating after each cycle

2) Operate second pump upon failure of first pump and alarm

7. 'Auto-Off' switch.
8. Test button high level alarm light acknowledge button alarm horn

See attached specs for more details.*

*Date of needed product installation (below) unknown as contractor has yet to submit a schedule. NTP is 8/25/2025.

Excerpts from plans, specifications and/or permits must be attached.

When is the product needed for installation: Month: Year:

Describe the efforts to use domestic suppliers: The supplier listed below was contacted in October 2024 by online request form, no response was received. Supplier was contacted again by phone, this time returning the call and determining that AIS/BABA compliance could not be achieved.

Additional materials attached. (☐)

Provide information from potential domestic suppliers:

Name Of Domestic Supplier Contacted	Supplier Contact Person/Email	Availability	Delivery Date (Month/Year)
[redacted]	[redacted]	[redacted]	[redacted]
Additional materials attached. (☐)			

D. Cost (N/A ☒)

Cost of project with domestic components: $_____

Cost of project with foreign-made components: $_____

Will the use of domestic components increase the project cost by more than 25%?

☐ Yes ☐ No

If no, cost is not a valid basis.
If yes, attach a detailed cost comparison of the domestic and foreign-made options.

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Recipient/Engineer Contact Name:	Barry King, PE
Telephone:	[redacted]
Email:	[redacted]

Waiver requested on the basis of:

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☐ **Cost (complete sections A and D below)**

Waivers may be requested using more than one basis.

PLEASE SUBMIT WAIVER REQUEST TO:

[redacted]

Email: [redacted]
Phone: [redacted]

A. General

Describe the unit process which contains the proposed foreign-made iron/steel component:

Steam safety relief valve: The proposed foreign-made iron/steel items are components of a steam heating system which contains boilers, heat exchangers, valves, air separators, etc.

Additional materials attached. (☐)

Describe the foreign-made iron/steel component:

Steam safety relief valve: failsafe that protects the boiler and piping from dangerous overpressure by venting excess steam when system controls malfunction.

Additional materials attached. (☐)

Proposed foreign-made manufacturer:

Name: [redacted]

Address: [redacted]

B. Public Interest (N/A ☒)

Why is the use of the product in the public interest? For example, is the use of a foreign-made iron/steel component necessary because of compatibility with existing components in the water or wastewater system, or other reason?

Additional materials attached. (☐)

C. Availability (N/A ☐)

Describe requirements in the project plans, specifications or permits which describe the required quantity and quality of the product:

Steam safety relief valve materials: Body - Cast iron; Internals - Bronze; Spring - Carbon steel. Provide the enclosed spring type ASME steam safety valves with external lifting levers. Valves shall be rated for 150 psig steam with V Code stamp as required by ASME Code Section I. See attached specs for more details.*

*Date of needed product installation (below) unknown as contractor has yet to submit a schedule. NTP is 8/25/2025.

Excerpts from plans, specifications and/or permits must be attached.

When is the product needed for installation: Month: Year:

Describe the efforts to use domestic suppliers: The three suppliers listed below were contacted in October 2024 by online request forms, no responses were received. These suppliers were contacted again several times by phone and email, this time with mixed responses. Some required part numbers to verify compliance with AIS/BABA which were unable to be determined. As such, the vendors were unable to confirm AIS/BABA compliance nor did they offer a suitable alternative product that was compliant.

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Name Of Domestic Supplier Contacted	Supplier Contact Person/Email	Availability	Delivery Date (Month/Year)
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]

Additional materials attached. (☐)

D. Cost (N/A ☒)

Cost of project with domestic components: $_____

Cost of project with foreign-made components: $_____

Will the use of domestic components increase the project cost by more than 25%?

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Telephone:	[redacted]
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Waivers may be requested using more than one basis.

PLEASE SUBMIT WAIVER REQUEST TO:

Completed requests can be either mailed or emailed to:

[redacted]

Email: [redacted]
Phone: [redacted]

A. General

Describe the unit process which contains the proposed foreign-made iron/steel component:

Steam Sample Coolers: The proposed foreign-made iron/steel items are components of a steam heating system which contains boilers, heat exchangers, valves, air separators, etc.

Additional materials attached. (☐)

Describe the foreign-made iron/steel component:

Steam Sample Coolers: Used to safely cool and condense steam samples for analysis, these units protect testing equipment and personnel by reducing temperature and pressure before discharge.

Additional materials attached. (☐)

Proposed foreign-made manufacturer:

Name: [redacted]

Address: [redacted]

B. Public Interest (N/A ☒)

Why is the use of the product in the public interest? For example, is the use of a foreign-made iron/steel component necessary because of compatibility with existing components in the water or wastewater system, or other reason?

Additional materials attached. (☐)

C. Availability (N/A ☐)

Describe requirements in the project plans, specifications or permits which describe the required quantity and quality of the product:

Steam safety relief valve materials: Body - Type 304 or 316 Stainless Steel; Coil - Type 316 Stainless Steel. Provide the sample coolers complete with mounting kits for 3/8" or ½" NPT cooling water connections and ¼" NPT sample connections. Sample cooler shall be rated for 150 psig minimum. See attached specs for more details.*

*Date of needed product installation (below) unknown as contractor has yet to submit a schedule. NTP is 8/25/2025.

Excerpts from plans, specifications and/or permits must be attached.

When is the product needed for installation: Month: Year:

Describe the efforts to use domestic suppliers: The two suppliers listed below were contacted in October 2024 by online request forms, no responses were received. These suppliers were contacted again several times by phone and email, this time with mixed responses. Some required part numbers to verify compliance with AIS/BABA which were unable to be determined. As such, the vendors were unable to confirm AIS/BABA compliance nor did they offer a suitable alternative product that was compliant.

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Provide information from potential domestic suppliers:			
Name Of Domestic Supplier Contacted	Supplier Contact Person/Email	Availability	Delivery Date (Month/Year)
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]

Additional materials attached. (☐)

D. Cost (N/A ☒)

Cost of project with domestic components: $_____

Cost of project with foreign-made components: $_____

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SECTION 15520

STEAM HEATING AND CONDENSATE SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Scope: This section specifies various steam and condensate piping accessories and specialties. Specified in this section are steam traps, vacuum breakers, air release valves, steam safety relief valves and drip pan elbows, steam sample coolers, and steam/condensate strainers. Strainers for steam or condensate service shall be the "Y" type as specified in this Section.

B. Equipment to be provided in Aspinwall.

1.2 SUBMITTALS

A. Procedures: Section 01330.

B. Action Submittal Items for this Section:
1. A copy of this Section, addendum updates included, with each paragraph check-marked to indicate compliance or marked to indicate requested deviations from Section requirements.
2. Performance calculations developed for the specific application. Performance calculations shall show flow, pressure, capacity and all information to confirm compliance with the requirements of this Section.
3. Drawings showing general dimensions and confirming the size of equipment, and piping connections.
4. Shop and field painting systems. Include manufacturer's descriptive technical catalog literature and specifications.
5. Manufacturer's data including materials of construction, construction details of equipment, and weight of equipment.
6. Catalog data for all items, including cutaway views, construction features, size and capacity data.

1.3 ENVIRONMENTAL REQUIREMENTS

A. Do not install instruments when areas are under construction, except rough in, taps, supports and test plugs.

1.4 FIELD MEASUREMENTS

A. Verify field measurements before fabrication.

1.5 WARRANTY

A. Furnish five year manufacturer warranty for piping specialties.

1.6 EXTRA MATERIALS

A. Furnish two pressure gages with pulsation damper and dial thermometers.

B. Furnish two service kits for each size and type of steam trap.

1.7 QUALITY ASSURANCE

A. Reference Standards:
1. This Section incorporates by reference the latest revisions of the following documents. They are part of this Section insofar as specified and modified herein. In the event of conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail.
2. Unless otherwise specified, references to documents shall mean the documents in effect on the effective date of the Agreement. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued.

Reference	Title
ANSI/ASME B31.1	Code for Power Piping
ANSI/ASME B31.3	Code for Process Piping
ANSI/ASME B31.9	Building Services Piping
ASME	Boiler and Pressure Vessel Code, Section I, V, and VIII
OSHA Part 1910	General Industry Safety and Health Regulations
PA UCC	Pennsylvania Uniform Construction Code

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS/PRODUCTS

A. Candidate manufacturers of steam and condensate specialties include the following:
1. Float and thermostatic steam traps: Xylem, Spirax Sarco, Armstrong, or Equal.
2. Vacuum release valves: Xylem, Armstrong, or Equal.
3. Steam safety relief valves: Kunkle, Spirax Sarco, Crane, or Equal.
4. Air release valves: Armstrong, Spirax Sarco or Equal.
5. Steam safety relief valve drip elbows: Kunkle, Crosby, Crane Co., Spirax Sarco, or Equal.
6. Steam/condensate strainers: Mueller Steam, Spirax Sarco, Armstrong or Equal.

7. Steam sample coolers: Armstrong, Spirax Sarco or equal.
8. Low Pressure Steam Condensate Pumps: Bell and Gossett, Roth or Equal.

B. The steam and condensate specialties manufacturer's standard models or products may require modification to conform to specified requirements.

2.2 PERFORMANCE REQUIREMENTS

A. Operating Conditions: Provide safe, reliable steam system specialties suitable for the continuous delivery of nominal 70 - 80 psig saturated steam from the steam plant and 15 psig saturated steam distributed to equipment.

2.3 MATERIALS

A. Float and thermostatic type steam trap materials of construction shall be as follows:

Component	**Material**
Body	Cast iron or semi-steel
Float assemblies, seats, and air vents	Stainless steel
Float and lever mechanism	Stainless steel
Valves and seats	Stainless steel
Integral thermostatic air vent	Stainless steel

B. Vacuum release valves materials of construction shall be as follows:

Component	**Material**
Bonnet, spring, body	Stainless steel
Stem, disc, fastener	Stainless steel

C. Steam safety relief valve materials of construction shall be as follows:

Component	**Material**
Body	Cast iron
Internals	Bronze
Spring	Carbon Steel

D. Air relief valve materials of construction shall be as follows:

Component	**Material**
Body	Cast iron
Internals	Stainless steel

E. Steam safety valve drip pan elbow materials of construction shall be as follows:

Component	Material
Body	Cast iron or carbon steel

F. Steam/condensate strainer materials of construction shall be as follows:

Component	Material
Body	Cast iron or cast steel
Strainer screen	Type 316 stainless steel

G. Steam/condensate sample cooler materials of construction shall be as follows:

Component	Material
Coil	Type 316 stainless steel
Body	Type 304 or 316 stainless steel

H. Low Pressure Steam Condensate Pumps

1. Condensate Return Units: Consist of receiver, inlet strainer, pumps, float switches, control panel and accessories.
2. Condensate Receiver: Cast iron, equipped with externally adjustable float switches, water level gauge, dial thermometer, pressure gauges on pump discharge, bronze isolation valves between pumps and receiver, and lifting eye bolts.
3. Inlet Strainer: Cast iron with vertical self-cleaning bronze screen and large dirt pocket, mounted on receiver. Screen shall be easily removable for cleaning.
4. Steam-Operated Pumps: Single pump system of the pressure motive type with mechanical controls, check valve, and vented receiver.
5. Electrical Pumps: One stage, vertical design, bronze fitted with stainless steel shaft, bronze impeller, renewable bronze case ring, mechanical shaft seal, close coupled to 1750 rpm motor.
6. Control Cabinet:
   a. NEMA 250 enclosure, UL listed, with piano hinged door, grounding lug, terminal strip, and fusible control circuit transformer.
   b. Combination magnetic starters with overload relays, circuit breakers and cover interlock.
   c. Electric alternator.
      1) Operate pumps on high level, alternating after each cycle.
      2) Operate second pump upon failure of first pump and alarm.
7. 'Auto-Off' switch.
8. Test button, high level alarm light, acknowledge button, alarm horn.

2.4 FEATURES

A. Float and Thermostatic Steam Traps: Unless specified otherwise, all steam traps shall be of the float and thermostatic type, suitable for working pressure up to 100 psig minimum. Design float and thermostatic type traps to drain condensate from steam at pressures from 0 to 100 psig. Trap shall be the balanced pressure type that responds to the pressure-temperature curve of steam at any pressure from zero to maximum operating pressure to allow air to be vented at temperatures slightly below steam temperatures. Trap shall have an integral balanced pressure thermostatic air vent capable of resisting water hammer without sustaining damage. Internals of trap shall be completely serviceable without disturbing the piping. Connection sizes shall be as shown on the Drawings. Provide floor mounting bracket for applications on steam converters.

B. Vacuum Release Valves: The vacuum release valves shall have 1/2-inch threaded NPT connections and shall be rated for a 30-inch Hg vacuum, steam service, and temperatures up to 250 deg F minimum.

C. Steam Safety Relief Valves: Provide the enclosed spring type ASME steam safety valves with external lifting levers. Steam safety valves shall be rated for 150 psig steam with V Code stamp as required by ASME Code Section I.

D. Air Release Valves: Provide the balanced pressure thermostatic type specifically designed for steam service. Provide air release vents that automatically release air while preventing the release of either condensate or steam. Provide an outlet check valve to prevent the re entry of air.

E. Steam Safety Valve Drip Pan Elbows: Provide concentric type with flanged steam connections and NPT threaded condensate connections. Install on the discharge of boiler steam safety valves and where required to eliminate drips from steam safety valves.

F. Steam/Condensate Strainers: Provide the "Y" type for steam or condensate service. Supply with ANSI 150 psi flanges for 2 1/2 inches and larger or threaded (screwed) for 2 inches and smaller sizes. Steam/condensate strainers shall be rated for 150 psig minimum. Perforations shall be 1/32" for 4" pipe size and below, and 1/16" for 6" pie size and above.

G. Steam Sample Coolers: Provide the sample coolers complete with mounting kits for 3/8" or ½" NPT cooling water connections and ¼" NPT sample connections. Sample cooler shall be rated for 150 psig minimum.

PART 3 EXECUTION

3.1 INSTALLATION

A. General:
1. Install steam and condensate specialties in the position and orientation required for the maximum effectiveness, and in accordance with the manufacturer's printed instructions.

2. Locate steam traps as shown on the Contract drawings. If not shown, locate traps in accordance with good engineering practice to keep lines free of condensate accumulation and prevent water hammer or damage to the piping system and equipment. Follow the trap manufacturer's recommendations in all cases.
3. Install vacuum breakers on all steam equipment and piping which has the potential to condense steam in a closed vessel. Install vacuum breakers where shown on the Contract Drawings and downstream of each steam control valve.
4. Install air release valves at the following locations:
   a. As required per ASME code and per good engineering practice.
   b. Provide an isolation valve upstream of each air vent. Field route discharge to floor drain.
5. Install steam safety valves on ASME pressure vessels.
6. Install steam drip pan elbows on each steam safety relief valve. Provide the safety relief valve outlet piping arranged to be as simple and direct as possible per ASME requirements. Firmly anchor the discharge pipe above the drip pan. Size piping adequately to avoid "blow back" of steam around the drip pan when the valve is discharging. Do not combine steam safety relief valve vent piping.
7. Install steam strainers on the piping to all steam traps. And upstream of steam control valves.
8. Install sample coolers where shown on the drawings. Field route cooling water to the coolers and to drain. Mount with sufficient space for a sample to be taken at a convenient height.
9. Tag all valves with brass tags per the Owner standard tagging procedures. Provide a valve tag schedule and schematic showing locations and sizes.

B. Equipment Mounting:
   1. Install float and thermostatic steam traps on for application on steam converters on a General Purpose Equipment Mounting System in accordance with the Equipment

C. Insulation: Insulate all steam and condensate piping, steam traps, steam strainers and safety/relief valves. Provide the removable, high temperature type flexible blanket or similar insulation. Insulation thickness shall be as required for steam services per Section 15250.

D. Provide condensate return pumps where indicated on the drawings and install per manufacturer's recommendations. Refer to equipment schedules for more information.

3.2 FIELD TESTING

A. Component Test Phase: perform the following field tests during the component test phase.
   1. Test the steam traps, the air release valves, the vacuum breakers, and the steam safety relief valves.
   2. Adjust the air release valves, and steam traps.
   3. Test the condensate return systems for proper functioning.

B. Perform functional testing of the steam system and equipment during the winter when the steam system is normally active. Non-heating season system testing is not possible due to the site boiler being deactivated.

3.3 MANUFACTURER'S SERVICES

A. On-Site Inspections and Training: Provide 8 hours of training by a factory-trained manufacturer's representative at the Site for the following activities. Specified durations do not include travel time to or from the Site.

1. Installation Inspections: Assist, supervise, and inspect the Contractor's activities during installation of steam and condensate specialties. Provide 4 hours total of installation inspection during installation of steam and condensate specialties.

3.4 FLUSHING AND CLEANING

A. Refer to section 15050 for piping system pressure testing, flushing and cleaning.

END OF SECTION