

**TENNESSEE DEPARTMENT OF REVENUE
REVENUE RULING # 12-24**

WARNING

Revenue rulings are not binding on the Department. This ruling is based on the particular facts and circumstances presented, and is an interpretation of the law at a specific point in time. The law may have changed since this ruling was issued, possibly rendering it obsolete. The presentation of this ruling in a redacted form is provided solely for informational purposes, and is not intended as a statement of Departmental policy. Taxpayers should consult with a tax professional before relying on any aspect of this ruling.

SUBJECT

The applicability of the Tennessee sales and use tax industrial machinery exemption in the expansion of a [REDACTED] manufacturing facility.

SCOPE

Revenue Rulings are statements regarding the substantive application of law and statements of procedure that affect the rights and duties of taxpayers and other members of the public. Revenue Rulings are advisory in nature and are not binding on the Department.

FACTS

Since [YEAR], the Taxpayer has operated an industrial facility in [CITY], Tennessee (the "Facility"). The Facility, used for manufacturing, is being expanded to accommodate the manufacturing of [REDACTED] products for resale and consumption off the premises (the "Expansion Project"). The Expansion Project will include the purchase of new, specialized machinery, the installation of supporting facilities, and the creation of an energy and cost efficient environment to reduce any potential impact of the process on the environment. The Taxpayer states that the weight of the new machinery necessitates a unique design of the infrastructure of the manufacturing facility by specialized engineering firms. The expanded Facility will contain the machinery, equipment, appurtenances, and other items listed in the table below. These items are purchased and installed by the Taxpayer's contractors.

In general, the operations and activities at the manufacturing plant consist of the procurement of [TYPE OF] materials [REDACTED] and the transformation of these materials into large [BATCHES OF] products. Machinery in this phase of production is located in [AREA 1] of the manufacturing facility. Once the large [BATCHES OF] products are produced, the machinery and appurtenances transform the large [BATCHES] into consumer usable [REDACTED] products, and are subsequently packaged for delivery. Machinery in this phase of the production is located in [AREA 2] of the manufacturing facility.

RULING

Are the items that will be purchased in conjunction with the Expansion Project (and listed in the table below) exempt for purposes of the Tennessee sales and use tax under TENN. CODE ANN. § 67-6-206(a) (2011)?

Ruling: All of the items listed in the table below and purchased in conjunction with the Expansion Project are exempt from the Tennessee sales and use tax under TENN. CODE ANN. § 67-6-206(a) (2011), except for the following: all pilings, concrete, rebar accessories, and structural steel that become a part of the Facility building; formwork; hanger and pipe supports; cable trays; conduits; and trays and supports.

ANALYSIS

The following table lists the items purchased in conjunction with the Expansion Project, states whether a particular item is exempt, and references an enumerated explanation as to the item's taxability. The enumerated explanations appear after the table. A description of each particular item is set forth in Appendix A.

Table of Items

Item	Exempt When Purchased for the Expansion Project?	Explanation
Pilings that become part of the Facility building	No	6
Pilings that become part of a base for industrial machinery	Yes	2
Underground Piping (Effluent)	Yes	5
Truck Dock Equipment	Yes	4
Ventilation Environmental Control Systems	Yes	1
Process Piping	Yes	1, 4, 5
Insulation of Piping and Ducts	Yes	2
Interior Wall Environmental Controls	Yes	1, 2
Environmental Process Louvers	Yes	1, 2
Vacuum Stacks	Yes	5
Medium Voltage Drives	Yes	3
Low Voltage Switchgear	Yes	3
Low Voltage Drive Control	Yes	3
Medium Voltage Motor Control Center	Yes	3
Low Voltage Motor Control Center	Yes	3
Unit Power Source	Yes	3

Item	Exempt When Purchased for the Expansion Project?	Explanation
125-Volt Direct Current Power Source	Yes	3
Concrete that becomes part of the Facility building	No	6
Concrete that becomes part of a base for industrial machinery	Yes	2
Formwork	No	6
Rebar Accessories that become part of the Facility building	No	6
Rebar Accessories that become part of a base for industrial machinery	Yes	2
Grating Trench	Yes	5
Structural Steel that becomes part of the Facility building	No	6
Structural Steel that becomes part of a base for industrial machinery	Yes	2
Hanger and Pipe Supports	No	6
Lube & Hydraulics	Yes	2
Cable Trays	No	6
Conduits	No	6
Electrical Cable Connections	Yes	2
Grounding Wire	Yes	2
Transformers	Yes	3
Instrument Stands	Yes	1, 2
Tubing & Valves	Yes	1, 2
Trays & Supports	No	6

Explanations

Under the Retailers' Sales Tax Act, TENN. CODE ANN. §§ 67-6-101 to -907 (2011), the retail sale¹ of tangible personal property in Tennessee is generally subject to the Tennessee sales and use tax, unless an exemption from taxation applies. TENN. CODE ANN. § 67-6-206(a) (2011) exempts "industrial machinery" from the sales and use tax, providing that "[a]fter June 30, 1983, no tax is due with respect to industrial machinery."

In order for an item to qualify as exempt industrial machinery, the Taxpayer must qualify as a manufacturer. A manufacturer, for purposes of the industrial machinery exemption, is "one who engages in ... fabrication or processing as one's principal business." TENN. CODE ANN. § 67-6-102(46)(A)(i) (2011); *cf.* TENN. CODE ANN. § 67-6-206(b)(2). Manufacturing is a taxpayer's principal business if more than fifty percent of its revenues at a given location are derived from fabricating or processing tangible personal property for resale. *Tenn. Farmers' Coop. v. State ex rel. Jackson*, 736 S.W.2d 87, 91-92 (Tenn. 1987); *see also Beare Co. v. Tenn. Dep't of Revenue*, 858 S.W.2d 906, 908 (Tenn. 1993).

Under the facts presented, the Taxpayer qualifies as a manufacturer. The Taxpayer has indicated that its only business at the Facility in [CITY], Tennessee, is the manufacturing of [REDACTED] products for resale and consumption off the premises. Thus, it follows that more than fifty percent of the Taxpayer's revenues at that location derives from fabricating or processing tangible personal property for resale. The Taxpayer is therefore a manufacturer for purposes of the industrial machinery exemption.

The term "industrial machinery" is generally defined in pertinent part² as

[m]achinery, apparatus and equipment with all associated parts, appurtenances and accessories, including hydraulic fluids, lubricating oils, and greases necessary for operation and maintenance, repair parts and any necessary repair or taxable installation labor therefor, that is necessary to, and primarily for, the fabrication or processing of tangible personal property for resale and consumption off the premises ... where the use of such machinery, equipment or facilities is by one who engages in such fabrication or processing as one's principal business.

TENN. CODE ANN. § 67-6-102(46)(A)(i).

The term "industrial machinery" includes "[m]achines used for generating, producing, and distributing utility services, electricity, steam, and treated or untreated water." TENN. CODE ANN. § 67-6-102(46)(D)(i). Also included in the definition is "[e]quipment used in transporting raw

¹ TENN. CODE ANN. § 67-6-102(78) (2011) defines a "retail sale" as any "sale, lease, or rental for any purpose other than for resale, sublease, or subrent." The term "sale" is defined under the Tennessee sales and use tax laws in pertinent part as "any transfer of title or possession, or both, exchange, barter, lease or rental, conditional or otherwise, in any manner or by any means whatsoever of tangible personal property for a consideration." TENN. CODE ANN. § 67-6-102(80)(A).

² Note that the definition of "industrial machinery" is extensive; this revenue ruling will discuss only those portions of the definition that are applicable in the context of the Expansion Project.

materials from storage to the manufacturing process, and transporting finished goods from the end of the manufacturing process to storage.” TENN. CODE ANN. § 67-6-102(46)(D)(ii).

Finally, “industrial machinery” includes “pollution control facilities,” which is defined in pertinent part as

any system, method, improvement, structure, device or appliance appurtenant thereto used or intended for the primary purpose of eliminating, preventing or reducing air or water pollution, ... when such pollutants are created as a result of fabricating or processing by one who engages in fabricating or processing as such person’s principal business activity, which, if released without such treatment, pretreatment, modification or disposal, might be harmful, detrimental or offensive to the public and the public interest.

TENN. CODE ANN. § 67-6-102(46)(A)(ii).

1. Machinery, Apparatus, and Equipment

Each item listed in the table above with a (1) in the explanation column qualifies for exemption from the Tennessee sales and use tax pursuant to TENN. CODE ANN. § 67-6-206(a).

TENN. CODE ANN. § 67-6-102(46)(A)(i) defines “industrial machinery” in pertinent part as “machinery, apparatus and equipment ... that is necessary to, and primarily for, the fabrication or processing of tangible personal property for resale and consumption off the premises.”

An item of tangible personal property will therefore be exempt from the Tennessee sales and use tax as industrial machinery if the following requirements are met: 1) the item is properly considered machinery, apparatus or equipment; 2) the item is necessary to the fabrication or processing of the products sold by the Taxpayer; and 3) the item is primarily for the fabrication of the products sold by the Taxpayer.

First, each item listed in the table above with a (1) in the explanation column qualifies as machinery, apparatus, or equipment. In particular, several such items are properly considered an apparatus.

The Retailers’ Sales Tax Act does not define the term “apparatus” for purposes of Tennessee sales and use taxation. The Tennessee Supreme Court has stated that when a statute does not define a term, it is proper to look to common usage to determine the term’s meaning. *See, e.g., Tenn. Farmers Assur.*, 197 S.W.3d at 782-83; *Beare Co.*, 858 S.W.2d at 908. The Tennessee Supreme Court in *AFG Indus., Inc. v. Cardwell*, 835 S.W.2d 583, 585 (Tenn. 1992) in fact looked to various dictionaries for the meaning of “apparatus” in the context of the industrial machinery exemption, noting that the term is defined as the “totality of means by which a designated function is performed or a specific task executed,” and as “a set of materials or equipment designed for a particular use.” The court added that the term “contemplates a collection of

component parts ‘designed for a specific mechanical or chemical action or operation.’”³ *See, e.g., AFG Indus., Inc.*, 835 S.W.2d at 585 (holding that a tin bath constituted an exempt apparatus that was “an integral part” of a glass manufacturing process). For example, the Taxpayer’s ventilation environmental control system is properly considered an apparatus because the system is a set of equipment, materials, and component parts designed for a particular use, *i.e.*, to create a stable and sterile environment by controlling and monitoring the temperature, humidity, and environmental conditions in the Facility.

Additionally, the Tennessee Supreme Court has interpreted the phrase “machinery, apparatus, and equipment” to include “the devices conveying the materials and components from one part of the manufacturing or fabricating process to another.” *Eastman Chemical Co. v. Johnson*, 151 S.W.3d 503, 509-510 (Tenn. 2004). With respect to the Expansion Project, the court’s interpretation extends to the tubing and a portion of the process piping,⁴ resulting in these items being considered industrial machinery.

Finally, the facts indicate that each item listed in the table above with a (1) in the explanation column is necessary to and primarily for the manufacturing process.

The term “necessary” is not defined by the Tennessee Code or the Tennessee courts for Tennessee sales and use tax purposes. A common definition of the term “necessary” is “absolutely needed; required.” MERRIAM-WEBSTER’S COLLEGIATE DICTIONARY 828 (11th ed. 2007). Thus, in order for a piece of machinery, equipment, or apparatus to be “necessary” to the manufacturing process, it must be absolutely needed for that process to work. Stated conversely, for the machinery, equipment, or apparatus to be considered “necessary,” the manufacturing process must not be able to function in the item’s absence. The facts indicate that each item listed in the table above with a (1) in the explanation column is necessary to the Taxpayer’s manufacturing or fabricating process.

The Tennessee Supreme Court, in applying the industrial machinery exemption, found that the term “primarily” means “first of all; principally; or fundamentally.” *Woods v. General Oils, Inc.*, 558 S.W.2d 433, 436 (Tenn. 1977) (citing WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY (1961)). The court also noted that the term has been held to mean “first in rank or importance, chief, principal, basic or fundamental.” *Id.* (citing *Breen v. Indus. Acc. Bd.*, 436 P.2d 701 (Mont. 1968); *Twentieth Century Mfg. Co. v. United States*, 444 F.2d 1109 (Ct. Cl. 1971)). The machinery, equipment, or apparatus satisfies the requirement that it be “primarily for” the fabrication of the taxpayer’s products if more than fifty percent of its use is in the manufacturing operation. The facts indicate that each item listed in the table above with a (1) in the explanation column is primarily for the Taxpayer’s manufacturing or fabricating process.

³ The court’s citations are from the AMERICAN HERITAGE DICTIONARY (1969); WEBSTER’S NINTH NEW COLLEGIATE DICTIONARY (1990); and WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY (1976).

⁴ Depending on its use, a particular piece of process piping will qualify for the industrial machinery exemption under TENN. CODE ANN. § 67-6-102(46)(A)(i), (A)(ii), or (D)(ii).

2. Associated Parts, Appurtenances and Accessories

Each item listed in the table above with a (2) in the explanation column qualifies for exemption from the Tennessee sales and use tax pursuant to TENN. CODE ANN. § 67-6-206(a).

“Industrial machinery,” as defined in pertinent part under TENN. CODE ANN. § 67-6-102(46)(A)(i), includes “[m]achinery, apparatus and equipment with all associated parts, appurtenances and accessories.” (Emphasis added.) Therefore, items that are not necessarily machinery themselves, but become a part of, or are attached to, qualifying machinery, apparatus, or equipment are also exempt as industrial machinery.

The majority of the items listed in the table above with a (2) in the explanation column are attached to and have become a part of a larger, more integral piece of machinery, apparatus, or equipment that itself qualifies for the industrial machinery exemption. Such items (*i.e.*, those with a (2) in the explanation column) are properly considered associated parts, appurtenances, or accessories for purposes of the exemption.

Additionally, with respect to the Expansion Project, a portion of the pilings, concrete, rebar accessories, and structural steel is used to create bases that are built specifically to hold up or support large items of industrial machinery. All pilings, concrete, rebar accessories, and structural steel used in this manner are properly considered appurtenances, and are exempt as such.⁵

3. Machines used to generate, produce, and distribute electricity

Each item listed in the table above with a (3) in the explanation column qualifies for exemption from the Tennessee sales and use tax pursuant to TENN. CODE ANN. § 67-6-206(a).

The term “industrial machinery” includes “[m]achines used for generating, producing, and distributing utility services, electricity, steam, and treated or untreated water.” TENN. CODE ANN. § 67-6-102(46)(D)(i). With respect to the Expansion Project, the drives, switchgear, drive controls, motor control centers, power sources, and transformers all work together to distribute electricity to the machinery and thus are exempt as industrial machinery.

4. Equipment used to transport raw materials and finished products

Each item listed in the table above with a (4) in the explanation column qualifies for exemption from the Tennessee sales and use tax pursuant to TENN. CODE ANN. § 67-6-206(a).

⁵ Importantly, the pilings, concrete, rebar accessories, and structural steel that become part of the Facility building (*i.e.*, that form part of the Facility’s floor, ceiling, walls, and so on) are not properly considered associated parts, appurtenances, or accessories. As discussed in greater detail under Explanation #6, below, the pilings, concrete, rebar accessories, and structural steel that become part of the Facility building fail to qualify for the industrial machinery exemption. Additionally, the formwork is not properly considered an associated part, appurtenance, or accessory. The formwork, which functions as a frame or mold for concrete, is used solely in the construction of the Facility and is removed once the concrete hardens.

Equipment used to transport raw materials from storage to the manufacturing process and to transport the finished product to storage after completion of the manufacturing process is treated as industrial machinery, pursuant to TENN. CODE ANN. § 67-6-102(46)(D)(ii).

Note that the Taxpayer's truck dock equipment is exempt as industrial machinery because it is used solely for this purpose. Under a different factual scenario, truck dock equipment may not qualify for the industrial machinery exemption.

5. Pollution Control Facilities

Each item listed in the table above with a (5) in the explanation column qualifies for exemption from the Tennessee sales and use tax pursuant to TENN. CODE ANN. § 67-6-206(a).

The definition of "industrial machinery" includes pollution control facilities. "Pollution control facilities" is defined in pertinent part as "any system, method, improvement, structure, device or appliance appurtenant thereto used or intended for the primary purpose of eliminating, preventing or reducing air or water pollution, ... when such pollutants are created as a result of fabricating or processing by one who engages in fabricating or processing as such person's principal business activity, which, if released without such treatment, pretreatment, modification or disposal, might be harmful, detrimental or offensive to the public and the public interest." TENN. CODE ANN. § 67-6-102(46)(A)(ii).

With respect to the Expansion Project, the underground piping for effluent, a portion of the process piping, and the grating trench are part of the Taxpayer's system for collecting and treating the waste water generated in the manufacturing process. The vacuum stacks are part of the Taxpayer's vacuum system, which cleans and releases the air from the manufacturing facility. Thus, each of these items qualifies as pollution control facilities and, as such, is exempt as industrial machinery.

6. Taxable Items

Each item listed in the table above with a (6) in the explanation column fails to qualify for exemption from the Tennessee sales and use tax under TENN. CODE ANN. § 67-6-206(a). As a result, with respect to the Expansion Project, the following items are subject to the sales and use tax: all pilings, concrete, rebar accessories, and structural steel that become a part of the Facility building; formwork; hanger and pipe supports; cable trays; conduits; and trays and supports.

As discussed above, an item of tangible personal property will be exempt from the Tennessee sales and use tax as industrial machinery if it is properly considered "machinery, apparatus and equipment with all associated parts, appurtenances and accessories" that is "necessary to, and primarily for, the fabrication or processing" of the products sold by the taxpayer. TENN. CODE ANN. § 67-6-102(46)(A)(i).

Importantly, none of the items listed in the table above with a (6) in the explanation column are both necessary to and primarily for the fabrication of the Taxpayer's products. Rather, such items have only a secondary or indirect use with respect to the manufacturing process.

The term “necessary” is not defined by the Tennessee Code or the Tennessee courts for Tennessee sales and use tax purposes. A common definition of the term “necessary” is “absolutely needed; required.” MERRIAM-WEBSTER’S COLLEGIATE DICTIONARY 828 (11th ed. 2007). Thus, in order for a piece of machinery, equipment, or apparatus to be “necessary” to the manufacturing process, it must be absolutely needed for that process to work. Stated conversely, for the machinery, equipment, or apparatus to be “necessary,” the manufacturing process must not be able to function in the item’s absence. For example, in the Taxpayer’s case, conduits (which are pipes) protect cables from fire and other damage, and are used to support the cables between the cable trays and the monitors. While the conduits are certainly useful as a safety and support device, it is extremely doubtful that the Taxpayer would be unable to manufacture its products in the absence of the conduits.

The Tennessee Supreme Court has held in the context of the industrial machinery exemption that the term “primarily” means “first of all; principally; or fundamentally.” *Woods*, 558 S.W.2d at 436. The court also noted that the term has been held to mean “first in rank or importance, chief, principal, basic or fundamental.” *Id.* In applying these definitions, the court denied the industrial machinery exemption to an oil processing company, holding that tanks used to store oil awaiting processing had “at most, only a secondary and indirect use” in the manufacturing process. *Id.* Applying these definitions to the example of the Taxpayer’s conduits, the conduits’ principal function is to provide safety and support to cables. While this function is certainly important, as with the tanks in *Woods*, the function is nevertheless only secondary or indirect with respect to the manufacturing process.

Additionally, items that become part of a building generally do not qualify for the industrial machinery exemption. In the Taxpayer’s case, this includes all pilings, concrete, rebar accessories, and structural steel that become a part of the Facility building.

In *Tibbals Flooring Co. v. Huddleston*, 891 S.W.2d 196, 199 (Tenn. 1994) (“*Tibbals II*”), the Tennessee Supreme Court upheld a use tax assessment on parts that composed a specially insulated dry kiln, holding that the industrial machinery exemption did not apply. In denying the exemption, the court observed that the dry kiln was ultimately simply a building composed of a concrete floor, metal walls, a roof, and insulation. *Id.* The court found that the dry kiln could not be characterized as “machines functioning as a unit,” although the kiln did house such machines. *Id.* Similarly, the court also found that the kiln, while housing a collection of component parts designed for a specific mechanical purpose, was not itself such a collection of parts. *Id.* The court also rejected the characterization of the kiln as “equipment,” noting that the term was “specifically defined” to exclude buildings. *Id.* (likely referring to *Tibbals Flooring Co. v. Olsen*, 698 S.W.2d 60 (Tenn. 1985) (“*Tibbals I*”),⁶ where the court defined the term “equipment” in this manner).

⁶ In *Tibbals I*, the Tennessee Supreme Court applied the definition of “industrial machinery” as it existed prior to 1984 to a pre-dryer, which was a large building in which lumber was stacked for drying. The pre-1984 definition allowed only “machinery, including repair parts” and “equipment primarily used for air pollution control or steam pollution control” to qualify as industrial machinery. The court held that the pre-dryer was not industrial machinery, stating that, although it contained “certain mechanical appurtenances,” the predominant characteristic of the pre-dryer was that “it is a structure rather than ‘machinery’ as commonly understood.” *Tibbals*, 698 S.W.2d at 62. The “industrial machinery” definition was expanded in 1984 to include “machinery, apparatus and equipment with all associated parts, appurtenances and accessories.” Significantly, however, the extension of the definition to associated parts, appurtenances, and accessories did not result in the exemption of buildings and similar structures,

Like the nonexempt parts that composed the specially insulated dry kiln in *Tibbals II*, all pilings, concrete, rebar accessories, and structural steel that become part of the floor, walls, or roof of the Facility building are excluded from the definition of industrial machinery. While the Facility building requires specialized engineering due to the large size and weight of the Taxpayer's industrial machinery, it is ultimately a building whose primary function is to house that machinery. The Facility's housing function, while important, is nevertheless only secondary or indirect with respect to the manufacturing process. Like the dry kiln in *Tibbals II*, the Facility building is not itself machinery, equipment, or an appurtenance; rather, it is the structure that houses these items.

The burden is on the taxpayer to establish entitlement to an exemption from taxation. The Tennessee Supreme Court has stated that “[a]lthough the rule is well-established that taxing legislation should be liberally construed in favor of the taxpayer and strictly construed against the taxing authority, it is an equally important principle of Tennessee tax law that ‘exemptions from taxation are construed against the taxpayer who must shoulder the heavy and exacting burden of proving the exemption.’” *Am. Airlines, Inc. v. Johnson*, 56 S.W.3d 502, 506 (Tenn. Ct. App. 2000) (quoting *Rogers Group, Inc. v. Huddleston*, 900 S.W.2d 34, 36 (Tenn. Ct. App. 1995)). The Tennessee Supreme Court has also stated that the burden is on the taxpayer to establish the exemption, and any well-founded doubt is sufficient to defeat a claimed exemption from taxation. *Am. Airlines*, 56 S.W.3d at 506 (citing *Tibbals Flooring Co.*, 891 S.W.2d at 198; *United Cannery, Inc. v. King*, 696 S.W.2d 525, 527 (Tenn. 1985)).

With respect to the items listed in the table above with a (6) in the explanation column, sufficient doubt exists so as to defeat the application of the industrial machinery exemption to such items.

Kristin Husat
General Counsel

APPROVED: Richard H. Roberts
Commissioner of Revenue

DATE: 10/31/12

as demonstrated by the holding in *Tibbals II*. In its discussion of that holding, the Tennessee Supreme Court in *Eastman Chemical Co.*, 151 S.W.3d at 509, stated that *Tibbals II* (as well as *AFG Indus.*, 835 S.W.2d 583) established that “all components integral to manufacturing or processing are exempt under the definition of industrial machinery.” Because *Tibbals II* did not extend the exemption to buildings, it is evident that the Tennessee Supreme Court generally does not view buildings, however specialized their design, as a component that is integral to manufacturing or processing.

**REVENUE RULING 12-24
APPENDIX A**

ITEMS PURCHASED IN CONJUNCTION WITH THE EXPANSION PROJECT

ITEM	DESCRIPTION/FUNCTION
Pilings	Located underground. Serve as support. Used to create a foundation for the building or for the machinery used in [AREA 1] and [AREA 2].
Underground Piping (effluent)	Channels and removes effluent from the machinery located in [AREA 1] and [AREA 2] and transports the effluent to the waste containment area where it is further processed.
Truck Dock Equipment	Engineered equipment used to load the finished product straight from processing onto trucks that deliver the product to the storage area.
Ventilation Environmental Control Systems	Control and monitor the temperature, humidity, and related environmental conditions in [AREA 1] and [AREA 2]. Create a stable and sterile environment and are necessary for strict quality control and environmental parameters.
Process Piping	Channels and removes effluent from the machinery located in [AREA 1] and [AREA 2].
Insulation of Piping and Ducts	Installed on piping and air ducts in [AREA 1] and [AREA 2]. Used to control the temperature of steam within the pipes that is used in the manufacturing process.
Interior Wall Environmental Controls	Made of thick insulated panels; serves as insulation and thermal regulation for machinery located in [AREA 1]. Functions as a unit to facilitate proper climate and environmental conditions for the production of [MATERIALS] into the intermediate product, similar to a cleanroom. Separate from (<i>i.e.</i> , not attached to) the interior walls of the building.
Environmental Process Louvers	Part of the Ventilation Environmental Control System. Control the intake and outtake of air available for use by machinery in [AREA 1].
Vacuum Stacks	Attached to and part of the Facility's vacuum system, which removes moisture from the [MATERIALS] being processed. Located at the vacuum pump outlet. Ensure the minimization of damaging pipe vibrations and noise control at the pumps located in [AREA 1].
Medium Voltage Drives	Used exclusively to drive large process equipment located in [AREA 1].
Low Voltage Drive Control	Runs the motors driving the large manufacturing equipment.
Medium Voltage Motor Control Center	Exclusively used to run the motors that drive the larger process equipment located in [AREA 1].
Low Voltage Motor Control Center	Exclusively used to run the motors that drive small process equipment located in [AREA 1].
Unit Power Source	Electrical control aperture that protects equipment and the control system during power outages.
125 Volt Direct Current Power Source	Part of the unit power source. Used to protect equipment and the control system during power outages.
Concrete	Used in the formation of the building structure as well as in specifically designed concrete foundations used to support machinery in [AREA 1] and [AREA 2]. The separate foundations directly support and touch the

ITEM	DESCRIPTION/FUNCTION
	machinery.
Formwork	Includes wooden forms or molds for the concrete used as a foundation for the machinery in [AREA 1] and [AREA 2].
Rebar Accessories	Permanent fixtures that reinforce bars that run through the building structure as well as the concrete foundations used to support the machinery in [AREA 1] and [AREA 2].
Grating Trench	Controls pollution and collects any process surge and overflows that occur during operations in [AREA 1] and [AREA 2]. Draws off process water toward the process water recovery system, which is located on the ground floor and allows wastewater and spills to be sent to a fiber recovery system. Once filtered, the process water is sent directly to the city's effluent treatment facility.
Structural Steel	Used to create the building or used to form the support for manufacturing equipment.
Hanger and Pipe Supports	Provide support for the process piping throughout the Facility.
Lube and Hydraulics	Ensure that the machinery and equipment perform at capacity. Used in the machines and consumed in the manufacturing process.
Cable Trays	Provide support for the electrical and instrument cables throughout the Facility.
Conduits	Pipes that protect the cables from fire and other damage. Used to support the cables between the cable trays and the motors.
Electrical Cable Connections	Located at all cable connection points throughout the Facility and used to connect the cables to the motors and control centers.
Grounding Wire	Prevents electrical discharge from the manufacturing systems, maintains a safe environment, and ensures the proper functioning of the machinery.
Transformers	An electrical component used to change the voltage level to accommodate manufacturing equipment.
Instrument Stands	Support manufacturing equipment throughout the facility. Attached to the equipment.
Tubing and Valves	Located on the pipes throughout the Facility. Regulate the pressure and volume within the pipes.
Trays and Supports	Support the tubing in the trays and help connect instruments to the main control.