Chapter 1: General Contractor Installation

1 Installation Instructions

1.1 Installation Safety for all Contractors

- The GREEN MACHINE will be installed near locations where highly flammable and explosive gasoline vapors may be present.
- Installation of the GREEN MACHINE must comply with the National Electric Code, federal, state, and local codes, as well as other applicable safety codes.
- Use extreme caution due to the risk of fire or explosion, which could result in serious injury or even death.
- If you are working in an area where vehicle traffic may occur, always block off the work area during installation, testing, and service to protect yourself and others.
- Do not use power tools that can generate sparks if there is a risk of flammable or explosive vapors being present.
- Read and understand all materials related to installing, testing, and operating the GREEN MACHINE prior to installation.

1.2 Preparing the GREEN MACHINE for Installation

Follow these steps to prepare the GREEN MACHINE for installation:

1. Verify that all the items are in the shipping crate:
   - GREEN MACHINE - VST-GM3-CS2A-101
   - Aluminum Cover
   - VST Control Panel
   - (4) 20” Steel Legs
   - (4) Pipe flanges to install the GREEN MACHINE to a concrete pad
   - (1) 0.063” dia. Orifice
   - GREEN MACHINE Quick Installation Guide
2. Visually inspect all the items for any obvious damage.
3. CAUTION: Unpack and install the four legs on the GREEN MACHINE prior to transporting to the installation site. Installing the legs on site without proper support may cause damage to the unit.

1.3 Installing the Legs on the GREEN MACHINE

1. Support the GREEN MACHINE with a forklift or a set of saw horses so the legs can be installed.
2. Install the 4 legs on the GREEN MACHINE. Screw on each flange to each leg and then screw on each leg to the base.

1.4 GREEN MACHINE Dimensions & Weight

Unit	Dimensions	Weight
GREEN MACHINE	L-27.2” x W-26.8” x H-46” Height includes 20” legs	203 lbs. w/out Cover w/out Control Panel
Aluminum Cover	L-27.2” x W-26.8” x H-26” (one-piece unit)	11 lbs.
VST Control Panel	L-5.2” x W-11.8” x H-13.5”	11 lbs.

1.5 Ground Mount Locations

- NOTE: Minimum vapor-piping slope must always be maintained for all GREEN MACHINE mounting options.
    - VST requires a minimum slope of ¼” per foot on all vapor piping away from the GREEN MACHINE to the vent risers.
    - Select a location for the concrete pad next to the vent risers to minimize piping and pressure drop.
- The GREEN MACHINE must be protected from damage:
    - Install bollards or another suitable method to protect the GREEN MACHINE.
- VST recommends a clear 18” perimeter around the GREEN MACHINE for maintenance and testing.
- The GREEN MACHINE must be located within 20 feet of the vent risers.
- To minimize the installation cost and to maximize operating efficiency, locate the GREEN MACHINE adjacent to the existing vent risers.
- A new air outlet vent riser connected to the GREEN MACHINE must be installed to release air to the atmosphere.
- VST recommends setting the GREEN MACHINE on a concrete pad with the following minimum dimensions: 36” long x 36” wide, 6” thick.
    - Install the concrete pad as outlined in this manual.
- Follow the local jurisdiction’s building codes.
- VST does not provide any hardware to install the GREEN MACHINE on the pad.

1.6 Setting the Concrete Pad

- The soil must have the following capabilities:
  - Allowable bearing pressure: 1000 psf
  - Lateral bearing: 150 psf
  - Coefficient of sliding: 0.25

- The GREEN MACHINE must be installed on a concrete pad, on grade, and permanently anchored to the concrete pad.
  - Install the concrete pad level.
  - Use steel re-enforced rebar in the pad for additional strength.
  - The GREEN MACHINE CANNOT be installed directly on or anchored directly to asphalt. It must be installed and anchored directly to a concrete pad.

- The GREEN MACHINE can be installed on an existing concrete pad, provided:
  - The existing concrete is of sufficient strength and thickness to support the GREEN MACHINE.
  - VST recommends a minimum of 6” thick concrete to accommodate 4 1/2” expansion-type anchor bolts.
  - Cracked concrete without re-bar may NOT be of sufficient strength to properly support the GREEN MACHINE.
  - The GREEN MACHINE is installed level.
  - NOTE: VST CANNOT BE HELD RESPONSIBLE FOR DAMAGE CAUSED BY IMPROPER GREEN MACHINE FOUNDATION SUPPORT.

- VST does not provide any hardware to install the GREEN MACHINE on the pad.

- VST recommends using an 18” minimum clearances around the perimeter of the GREEN MACHINE for maintenance and service.

- Concrete pad minimum dimensions:
  - 36” long x 36” wide
  - 6” thick (minimum)
  - **See Figures 1-1 and 1-2**

- Install expansion-type bolts after completing the concrete pad. The bolts must be:
  - 1/4” diameter
  - Embedded 3” into the slab
  - Extend approx. 1-1/4” above the top of the slab

1.7 Installing the GREEN MACHINE on the Concrete Pad

- After the concrete has properly cured, install the expansion anchor bolts according to the manufacturer's recommendations. **See Figures 1-1 and 1-2.**

- For applications that require expansion anchors that are especially suited to seismic and cracked concrete, VST recommends using the HILTI KWIK TZ (KB-TZ) BOLT, KB-TZ2 1/4" X 4 1/2", (item number 2210176) or approved equal.

- The contractor or design engineer is responsible for sizing the expansion anchors and the concrete pad to meet seismic and cracked concrete specifications required by local, state, and federal jurisdictions.
  - Since seismic regulations may be different by location, VST has not included a specific drawing for this application.
  - For seismic design reference, www.us.hilti.com.

- After the appropriate anchor bolts have been installed, position the GREEN MACHINE onto the anchor bolts in the cement slab.

- Bolt the GREEN MACHINE into place (according to the manufacturer recommended installation guidelines) with 1/4" galvanized lock washers and bolts

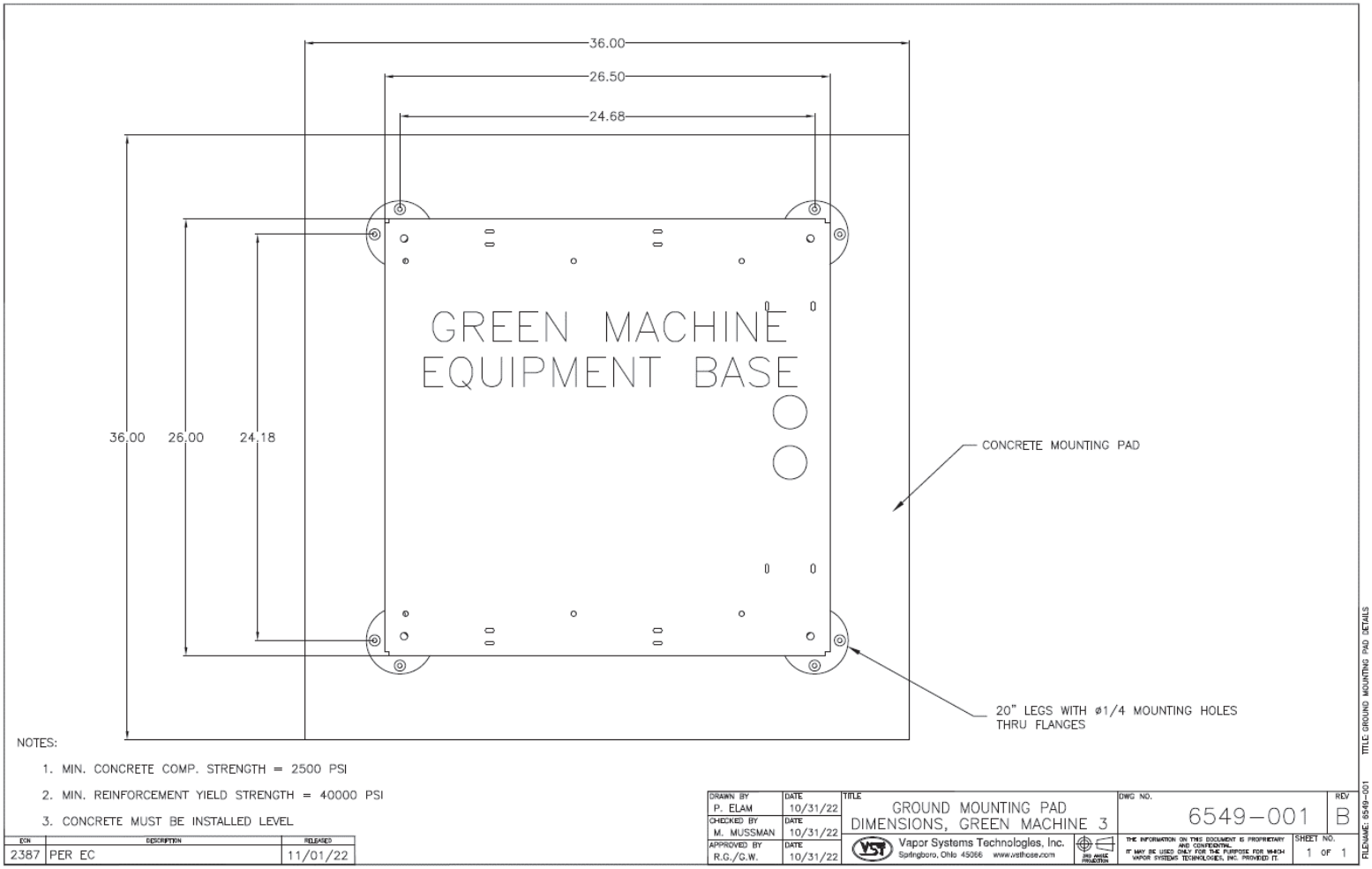

Figure 1-1: Concrete mounting pad dimensions

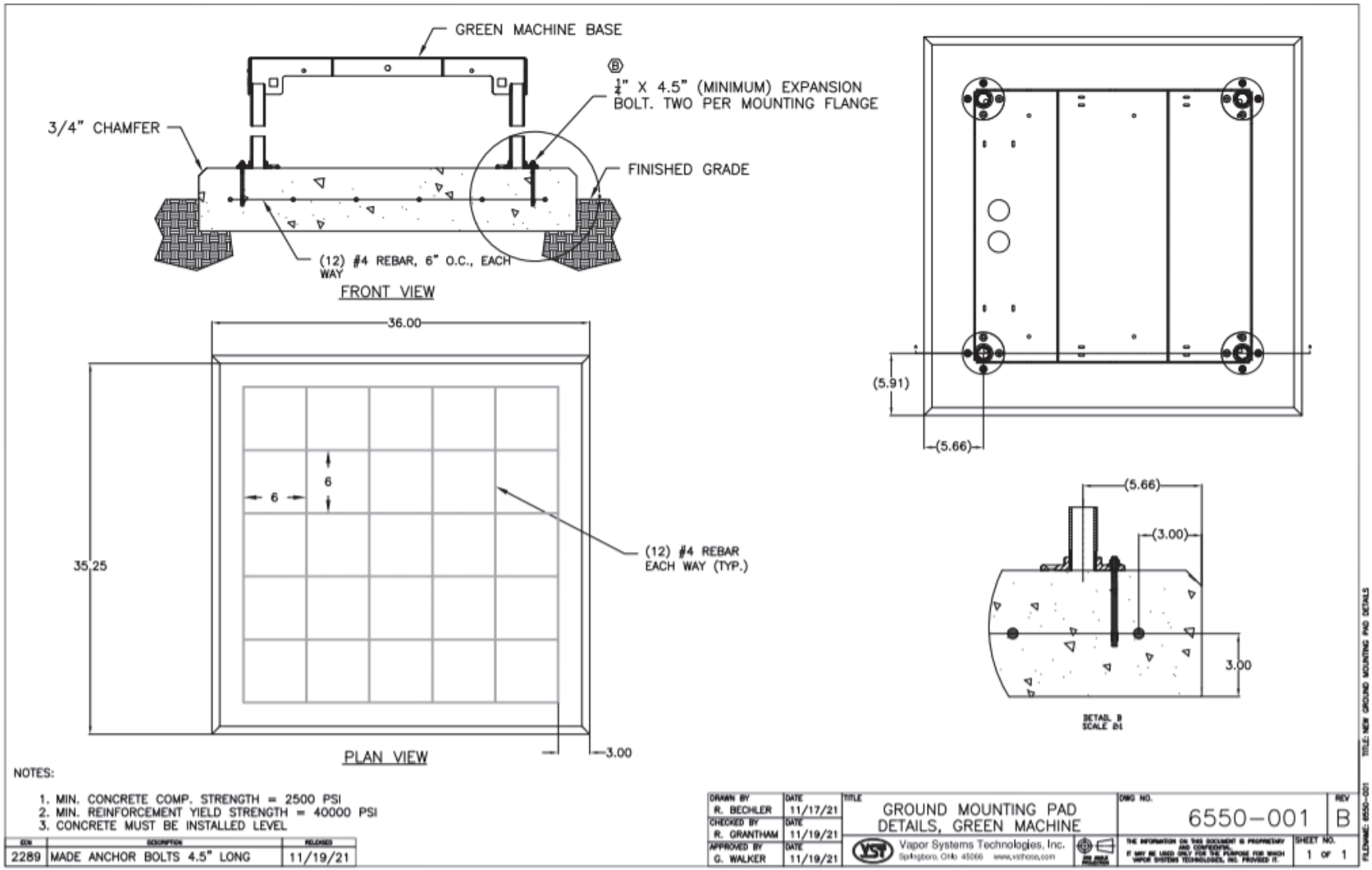

Figure 1-2: GREEN MACHINE Ground Mounting Pad

1.8 Roof-Top Installation

- NOTE: Minimum vapor-piping slope must always be maintained for all GREEN MACHINE mounting options.
  - VST requires a minimum slope of ¼" per foot on all vapor piping away from the GREEN MACHINE to the vent risers.

- The GREEN MACHINE may be installed on a station's roof provided the structure can support the weight of the GREEN MACHINE.

- All safety and code concerns must be taken into consideration prior to a roof-top installation.

- Due to a variety of roof construction designs, VST cannot recommend how the GREEN MACHINE should be mounted on the roof; however, the GREEN MACHINE must be installed at a height allowing the piping inlet and outlets to be above or through the building parapet.

- The GREEN MACHINE has 20" legs that can be attached to the base, but the legs may be removed and the GREEN MACHINE secured to a steel structure attached to the roof.

- A new air outlet vent riser connected to the GREEN MACHINE must be installed to release air to the atmosphere.

- A Design Engineer is responsible for designing the support structure, support base, all required hardware and bolting connections, and the support structure foundation to meet all regulatory specifications that may be required by local jurisdictions.

1.9 Canopy-Top Installation

- NOTE: Minimum vapor-piping slope must always be maintained for all GREEN MACHINE mounting options.
  - VST requires a minimum slope of ¼" per foot on all vapor piping away from the GREEN MACHINE to the vent risers.

- The GREEN MACHINE may be installed on a station's canopy provided the structure can support the weight of the GREEN MACHINE.

- Due to a variety of canopy construction designs, VST cannot recommend how the GREEN MACHINE should be mounted on the canopy.

- All safety and code concerns should be taken into consideration prior to a canopy-top installation.

- The GREEN MACHINE has 20" legs that can be attached to the base, but the legs may be removed and the GREEN MACHINE secured to a steel structure attached to the canopy support structure.

Canopy-Top Installation, continued…

- A new air outlet vent riser connected to the GREEN MACHINE must be installed to release air to the atmosphere.

- A Design Engineer is responsible for designing the support structure, support base, all required hardware and bolting connections, and the support structure foundation to meet all regulatory specifications that may be required by local jurisdictions.

1.10 Vent-Stack Mount Installation

- NOTE: Minimum vapor-piping slope must always be maintained for all GREEN MACHINE mounting options.
  - VST requires a minimum slope of ¼" per foot on all vapor piping away from the GREEN MACHINE to the vent risers.

- The GREEN MACHINE may be installed elevated on the existing vent risers provided there is an existing structure that can support the weight of the GREEN MACHINE, or a structure can be installed to support the weight of the GREEN MACHINE.

- Due to a variety of construction designs, VST cannot recommend how the GREEN MACHINE should be installed or mounted on a vent riser support structure; however, the structure that supports the GREEN MACHINE must be designed and installed at a height allowing the piping inlet and outlets to connect to the existing vent risers.

- The GREEN MACHINE has 20" legs that can be attached to the base, but the legs may be removed for the GREEN MACHINE to be secured to a steel support structure.

- A new air outlet vent riser connected to the GREEN MACHINE must be installed to release air to the atmosphere.

- All safety and code concerns must be taken into consideration prior to vent stack mount installation.

- A Design Engineer is responsible for designing the support structure, support base, all required hardware and bolting connections, and the support structure foundation to meet all regulatory specifications that may be required by local jurisdictions.

- **See Figure 1-3** for illustration.

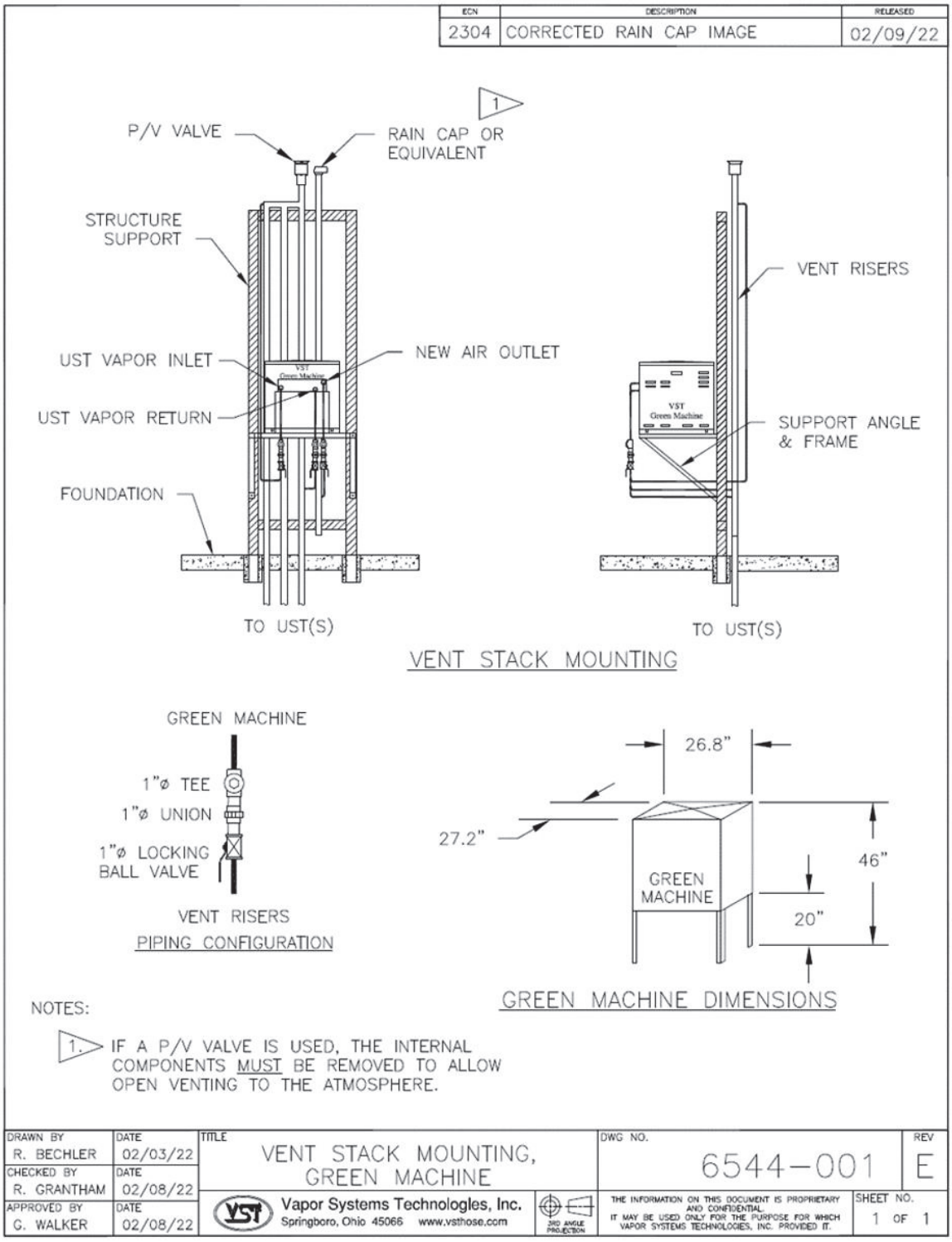

Figure 1-3: Vent Stack Installation

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