Virginia Gravity Flow Winery:  
A Transformative Journey

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ABSTRACT

This thesis is embodied by the design of a new gravity flow winery on the eastern slopes of the Blue Ridge Mountains in Northern Virginia. The 100 acre site is home to an existing winery with grape vines aged over a decade.

From its initial inception, this thesis has been in part a response to the rapidly growing wine industry in Virginia and the typical ad hoc architecture associated with the wineries serving the state. The swelling interest in the culture of wine has sparked an evolution of the role of wineries. The winery of today is both an establishment for the production of wine as well as a venue for the enjoyment of its product and the delight of its natural setting. Creating a dialogue between site and visitor via thoughtful engagement of earth, air and sky is key for establishing a sense of place. The winery at the heart of this thesis is the quintessence of these ideals.

The architecture of this winery embraces the steps of gravity flow winemaking, which aims to preserve the integrity of the grapes by utilizing gravity instead of electric pumps. The design seeks to make these steps perceivable and understandable, taking a visitor from the wind swept heights of the mountainside to the cool air of the winery’s subterranean vaults and back again. From vine to glass and from layperson to student of wine, this shared journey engenders a transformation of both grape and visitor.
This thesis is embodied by the design of a new gravity flow winery on the eastern slopes of the Blue Ridge Mountains in Northern Virginia. The 100 acre site is home to an existing winery with grape vines aged over a decade.

From its initial inception, this thesis has been a response and possible solution to the rapidly growing wine industry in Virginia and the typical ad hoc architecture—which is to say additions are made without acknowledging or responding to the existing buildings—associated with the wineries serving the state. The winery of today is both an establishment for the production of wine as well as a venue for the enjoyment of its product and the delight of its natural setting. Creating a dialogue between site and visitor via thoughtful engagement of earth, air and sky is key for establishing a sense of place. The winery at the heart of this thesis is the quintessence of these ideals.

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>ii</td>
</tr>
<tr>
<td>General Audience Abstract</td>
<td>iii</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>iv</td>
</tr>
<tr>
<td>Initial Models / Drawings</td>
<td>1</td>
</tr>
<tr>
<td>Proposed Winery Final Design</td>
<td>8</td>
</tr>
<tr>
<td>Views of Proposed Winery</td>
<td>17</td>
</tr>
<tr>
<td>Citations &amp; Image Credits</td>
<td>36</td>
</tr>
</tbody>
</table>
AREA MAP: The eastern slopes of the Blue Ridge Mountains were ideal for the progression of gravity flow winemaking.

ABOVE & BELOW: Exploring the flow of a winery in and out of the earth. (opposite page)
JOURNEY OF WINE & VISITORS: Early drawings of gravity flow design and ideation for winery layout.
MASSING STUDIES: Early models showing vinification and tasting buildings as two separate, parallel structures. Later development moved these structures in line with one another, favoring a more unbroken, linear journey wherein the overall axial order of the winery was established.
UNDERSTANDING SITE: This physical site model provided early concepts for traffic circulation and initial establishment of the axial order of the building.
UNDERSTANDING SCOPE: Topography and slope realized—the site boasts a 700’ increase in elevation from eastern boundary to western boundary.
SITE INVESTIGATION: Existing land use (top of page) and proposed building orientation (right).
SITE PLAN: The entire winery in situ.
WEST ELEVATION: This view readily demonstrates the gradually decreasing influx of light as the wine and visitor progress further down the vinification space.
WEST SECTION: The section plane has been made in a manner that allows an uninterrupted view of the entire vinification space.
UPPER FLOOR PLAN

1. Tower of the Winds
2. Entrance
3. Funiculars
4. Tasting Room
5. Restrooms
6. Hallway
7. Kitchen / Break Room
8. Administrative Office
9. Winemaker’s Lab
10. Winemaker’s Office
OVERALL FLOOR PLAN

1. Loading / Crushing Floor
2. Funicular Mechanical Room
3. Fermentation Vats
4. Secondary Fermentation Vats
5. Blending & Stainless Storage Vats
6. Barrel Storage
7. Bottling
8. Funicular Loading / Unloading
9. Cryptoporticus Tasting Room
10. Long-term Barrel Storage
11. Lounge
12. Event Hall / Tasting Room
13. Restrooms
14. Tasting Room
15. Upper Patio
16. Lower Patio
APPROACH TO TOWER: Inspired by the original Tower of the Winds in Greece.
TOWER INTERIOR: The octagonal tower boasts reliefs of the eight gods of the winds from ancient Greek mythology known as Anemoi, each representing a cardinal direction. Openings on each face of the tower allow visitors to perceive the vineyard in the greater context of the region while becoming hyperaware of the air that is so iconic among these high slopes.
CROSSING THE BRIDGE: The concrete walkway leads visitors to the winery’s main entrance and affords them a chance to take in the many levels of the winery.
TASTING AREA: With a polished stone bar at its center, this uppermost tasting area provides an opportunity for a taste of what is to come before a visitor’s educational wine journey through the vinification space.
Funicular: Like the tower before it, the loading area for the funicular accentuates the above-ground condition by promoting high visibility and light from multiple directions.
CRUSH FLOOR: Winery employees work unimpeded as guests are ferried slowly down the funicular’s track. The view here shows how the long horizontal bands of windows give both visitors & employees alike a constant vista of the horizon... an awareness of place.
VINIFICATION SPACE: While each level has a clear distinction, they all make up a continuous space dedicated to winemaking. As seen here, employees on the main crush floor have clear views to the lower levels of production.
FERMENTATION VATS & CRUSH PAD: As seen looking south from the descending funicular. Each level of the gravity flow process is visually delineated by concrete columns as well as the changing elevation of each floor.
BARREL STORAGE: The staging area for wine prior to bottling. Ramps on this level allow winery staff to easily move racked barrels and pallets of bottled wine via the funicular.
BELOW GROUND: The funicular’s terminus is a subterranean grotto of stone wherein visitors experience the cool atmosphere afforded to the barrels of wine.
CRYPTOPORTICUS TASTING ROOM & BARREL STORAGE.
RE-SURFACING: After the long descent of the funicular, the floor plateaus and guides visitors through a sheltered lounge area. As the visitor moves along their course, each arch and lintel widens... stone gives way to glass... light levels return to those seen at the start of the journey. This all serves to exaggerate and draw attention to the experience of returning above ground.
EVENT HALL & TASTING ROOM: The octagonal hearth serves as a punctuated conclusion to the winery’s heavy northside wall which subsequently supports a cantilevered roof for the winery’s light-filled hall.
A VENUE FOR ENJOYMENT: The colossal concrete mezzanine gives visitors the chance to revisit the sun-drenched vineyard and gain perspective on where their journey has taken them.
NORTHERN APPROACH: This perspective showcases the ancillary entrance from the nearby drop-off area as well as one of the two lots of tasting vines giving visitors the chance to try various varietals right off the vine.
SOUTHERN FACADE: The glass enclosure for the stairwell provides valuable thermal protection on the south face of the vinification structure. Terraced Idyllwild Junipers and peach trees ease the transition from the forested path to this more exposed side of the vinification structure.
SOUTHERN APPROACH: Repeat visitors to the winery may arrive more directly to the winery via the southern walkways that connect to the secondary parking lots. More tasting vines give visitors an opportunity to taste the various grape varietals.
SOUTHWESTERN APPROACH: The main chipseal road runs below the visitor walkways, giving winery employees their own area to come and go.
CITATIONS


IMAGE CREDITS


All other photography, models, & drawings by author.