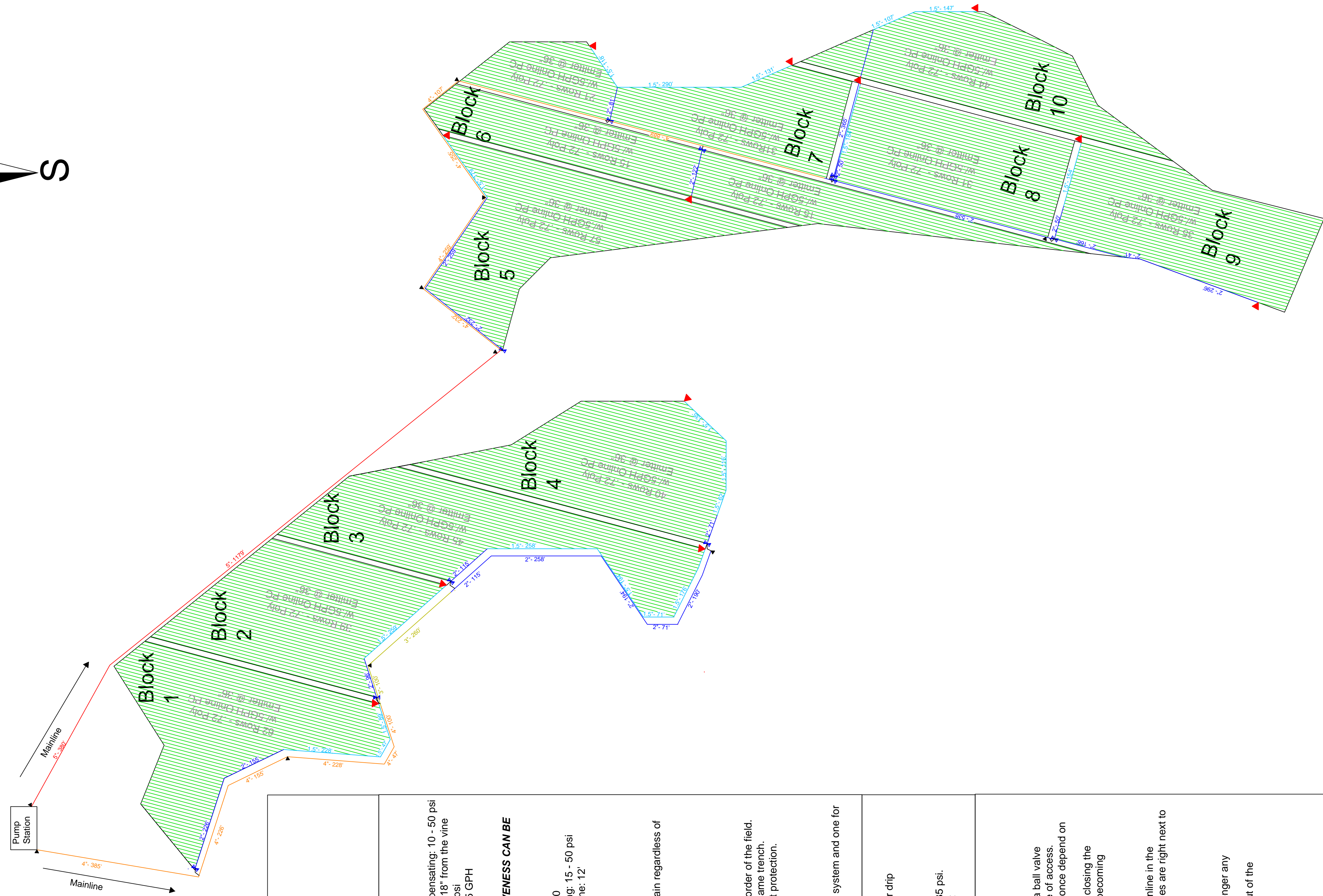
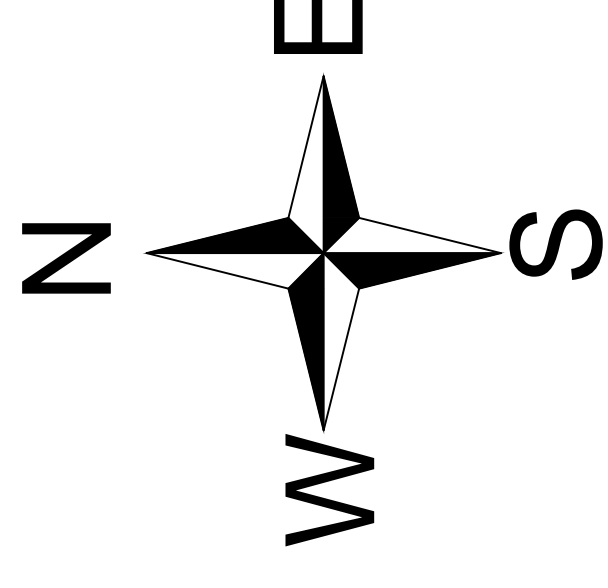
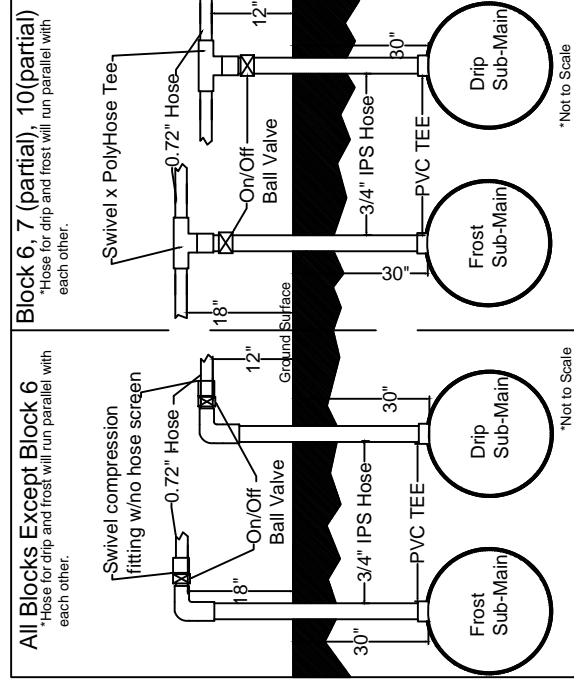


LAYERS RANCH VINEYARD

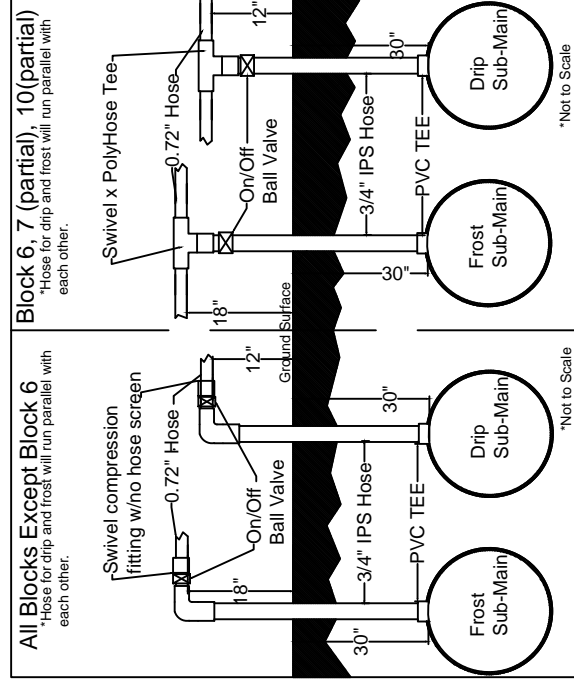


<p>LAYERS RANCH</p> <p>Location: Glennville, California Elevation: 3100 Feet Slope: Downhill SW to NE Crop: Wine grapes Area: 32.3 Acres Field 1: 13.3 Acres separated into 4 Blocks Field 2: 19 Acres separated into 6 Blocks</p> <p>TECHNICAL SPECIFICATIONS</p> <p>Pump Requirements: - TDH: 52 psi - Flowrate: 470 GPM</p> <p>Water Source: - 2 springs on the property with unknown capacities.</p> <p>Estimated Peak ET: - 0.26 in/day</p> <p>Vine Spacing: - 8' between rows - 6' between vines</p> <p>Application Rate: Net: 0.011 in/hr Gross: 0.0114 in/hr</p> <p>Filter System: - 3 - 48" media tanks - #18 Crushed Silica media - Gravel required, on under-drain regardless of brand</p> <p>Pipelines and Laterals: Pipe: - PVC PR, 3.5", 125 psi; 2.5 - 2", 160 psi; 1.5", 200 psi - All pipe should have 30' cover - Mainline is not outside the vineyard layout instead it is right on the border of the field. - In most places the mainline and two sub-mainlines are placed in the same trench. - Note: There are two sub-mains: one for drip system and one for frost protection. They are identical size and should be laid out in that manner. See detailed drawings for more information.</p> <p>Laterals: - Each row has 2 parallel 0.72" poly-hose on the vine: one for the drip system and one for frost protection. See detailed drawings for more information</p>	<p>Drip Emitters: Netafilm Woodpecker - Online Pressure Compensating: 10 - 50 psi - 2 emitters per vine @ 18" from the vine - Typical Pressure: 20 psi - Average Flowrate: 0.5 GPH</p> <p>Frost Protection: * NO GUARANTEE OF EFFECTIVENESS CAN BE PROVIDED</p> <p>Pulsator: - Wade Rain AT22-FB80 - Pressure compensating: 15 - 50 psi - Spaced every other vine: 12" - 2 GPH @ 15 psi</p>	<p>Pressure Regulator Operation</p> <p>- Each Pressure Regulator should be set to maintain a pressure of 25 psi for drip and 35 psi for frost protection. - To set the pressure regulator: - Measure the pressure at the first lateral - Adjust the pressure regulator so the pressure at this point is 25 or 35 psi. - Adjustment of the pressure regulator should not occur every irrigation, but should be checked periodically and adjusted when needed.</p>	<p>SYSTEM OPERATION</p> <p>Drip System: -The system has 10 blocks. Each block can be manually turned on/off with a ball valve upstream of the pressure regulator. The valves are next to the road for ease of access. - Capacities of the springs are unknown. The number of blocks operated at once depend on this value. Each block has been designed to require less than 55 GPM. - When changing blocks, open the ball valve for intended block first before closing the valve on the block currently in operation. This will prevent the system from becoming over-pressurized.</p> <p>Frost Protection System: *No Guarantee of Effectiveness Can Be Provided - Both the drip system and frost protection system are connected to the mainline in the same location. Each system has the same valve assembly. These assemblies are right next to each other at the beginning of each block.</p> <p>Flushing System: - Flushing once every 2 weeks should be adequate - All hose ends need to be opened, allowing water to flow until there is no longer any sediment seen in the water. - Flush out valves should also be opened to allow sediment to be flushed out of the sub-mainlines.</p>
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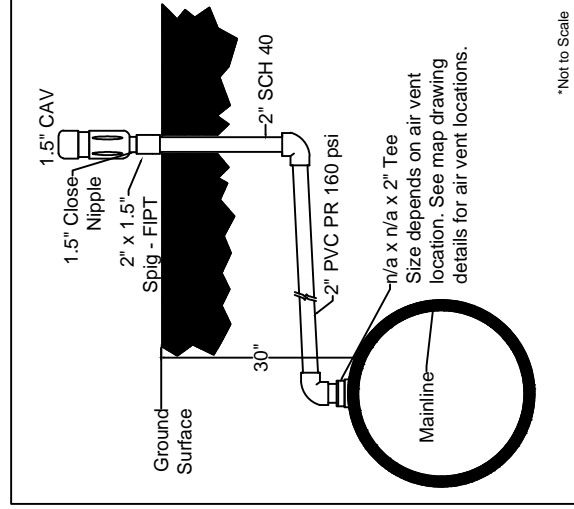
Sub-Mainline Flush Out Detail



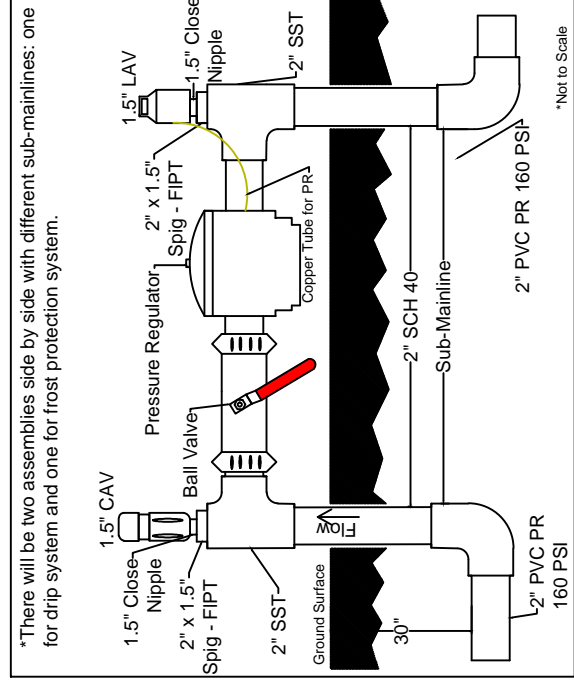
Frost and Drip Hose Riser Detail



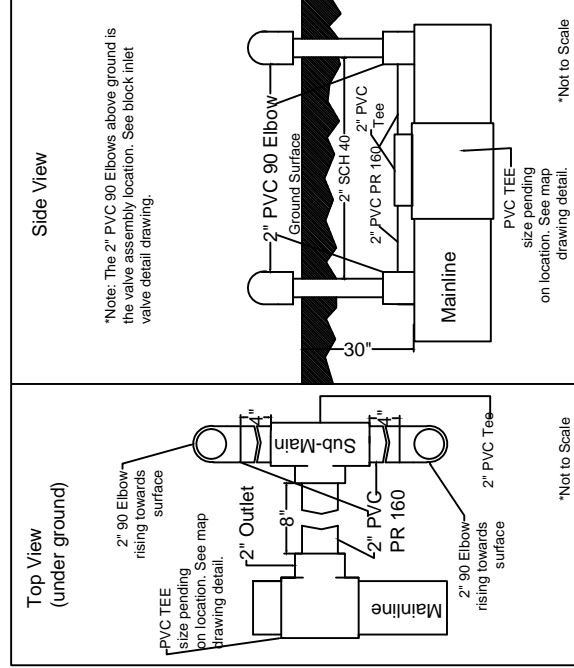
Air Vent Detail



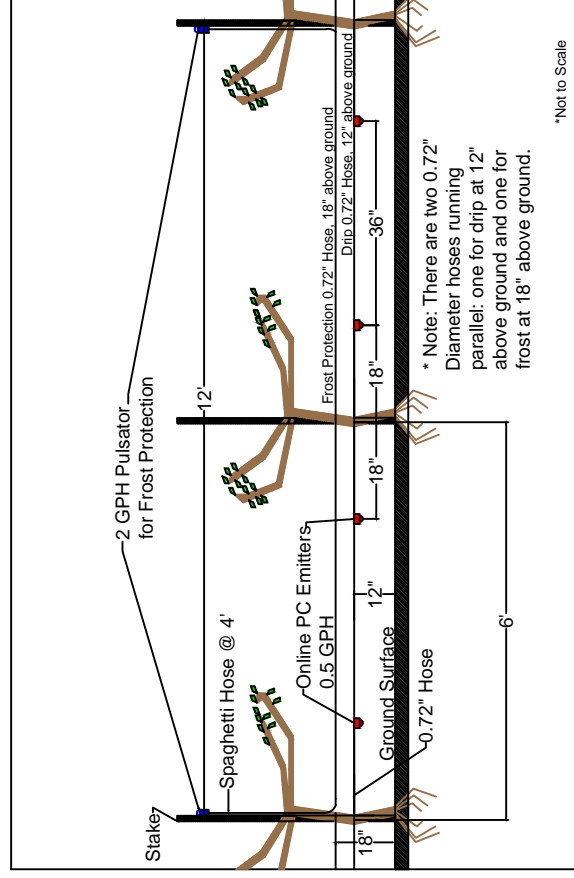
Block Inlet Valve Detail



Inlet into Block Detail



Pulsator and Emitter Detail



- 4" PVC PR 125 PSI
- 3" PVC PR 125 PSI
- 2" PVC PR 160 PSI
- 1.5" PVC PR 200 PSI
- .72" Netafilm Poly Hose

- Block Inlet Valve/Pressure Regulator/Air Vent Assembly
- 16" Road between Blocks
- Sub-Mainline Flush out Assembly
- Air Vent

Irrigation Layout

Scale 1:100

June 4, 2010

A.J. Borba