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Horticulture

Pathway Specific Equipment Specifications

The purpose of this document is to provide school districts a standard purchasing procedures document to use when installing or upgrading computer labs. This document provides minimum specifications for equipment, software, furniture, and so forth. The district will be responsible for purchasing and maintaining all equipment, providing proper security, replacing missing equipment, and providing annual funds for the operation of the program. The district is also responsible for providing site preparation and electrical wiring. Schools that wish to purchase items different from those in this specification document will require written permission from the MDE.

Due to budget constraints, districts are encouraged to use existing hardware, software, and furniture and supplement with new items as needed. For existing items, the MDE will waive the requirement to purchase new items if the existing product meets the minimum specifications listed here. Some items in these specifications are listed as “optional,” and it is at the school district’s discretion whether these items should be purchased.

Important Notes Concerning this Document

- **When configuring labs, please refer to both the General Equipment Specifications and Pathway Specific Equipment documents located on the Curriculum Download page. The General Equipment Specifications document contains a list of equipment needed to successfully implement all programs. The Pathway Specific document contains a list of equipment needed for a specific pathway. You will need to order the necessary equipment from both lists in order to implement your program.**
- If labs are shared for multiple programs, be sure the minimum specifications are met for all programs.
- Any requests for Apple computers and/or hardware will be handled on a case-by-case basis by the Mississippi Department of Education. Apple should certify that all curricula, hardware, and software will run with items listed elsewhere in this document
- An existing server may be used with approval from local information technology (IT) personnel and the MDE.
- Existing networking equipment may be used if minimum specifications are met.
- Districts that install a wireless lab must gain permission from the MDE. Contact Christy Todd at ctodd@mde.k12.ms.us.
- Districts may choose to purchase switches with fewer than 48 ports, matching the number of ports to the size requirements of the labs. If using a wireless network, wired switch(es) would be shared among labs according to the district's needs.
- Alternate office productivity, keyboarding, creative suite, and/or CAD software may be used upon approval of the MDE. It is recommended that each district investigate existing software licenses to see if these programs may be added.
- This equipment specification document contains preferred items as well as an alternate “thin client” option. If the thin client option is chosen, it is imperative that ample Internet access be available as online software is readily used with this option.

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A. Computer Systems and Peripherals

Minimum specifications for lab hardware are based on the current Express Products List (EPL). The Mississippi Department of Information Technology Services (ITS) EPLs have stated dollar spending limits. For instance, for hardware EPLs, the limits are:

- **For purchases over \$50,000, the customer MUST solicit quotations from two or more EPL sellers.**
- For K-12 Schools, the dollar limitation is interpreted by ITS to be \$200,000 per project per school or campus per fiscal year, with a maximum dollar limitation of \$1,000,000 per school district per fiscal year for a project that spans multiple schools within the district.
- Projects costing in excess of \$200,000 are beyond the scope of this delegated process and subject to full ITS review and authorization. Authorization to exceed the EPL dollar limitation is described in the ITS Procurement Handbook under the ***EPL Planned Purchase*** process, article 013-080. <http://dsitspe01.its.ms.gov/its/procman.nsf/TOC4?OpenView>

Schools that choose to use the ITS EPLs will need to follow the ITS EPL instructions. Schools that choose to advertise for bids are encouraged to use the EPLs to compare prices and quality of equipment submitted on bids.

Inside delivery, installation, and setup must take place by the specified target date. School districts may choose to install the equipment and software themselves or have the EPL vendors perform the installation. If a school prefers that the hardware installation be done by the EPL vendor, the EPL quote must include installation, setup, and training (to be scheduled by each local school district). If a school prefers that the software installation be done by the EPL vendor, the EPL quote must also include pre-loading the software described in Section B “Software,” with the school providing the vendor media and proof of license. Vendors should assume that they will perform hardware and software installation unless otherwise indicated by the school in the quote request.

Vendors must propose systems which are configured with all components provided by the base system manufacturer. If a component is not available from the base system manufacturer, the vendor may propose a compatible third party component only if described in their written proposal. Systems and peripherals must be fully configured prior to shipment.

If a warranted defect is found in an item, that item must be repaired or replaced on-site within five working days of notification. A toll-free or local telephone number with a 24-hour response time must be provided for troubleshooting purposes. In the event that a component must be returned to the manufacturer for warranted repairs, a replacement will be provided by the vendor. Charges for shipping and handling of the component and its replacement must be borne by the vendor during the on-site warranty period. All warranty repairs made to the system during the warranty period must maintain full compatibility of the system with installed software. Any components found to be defective must be replaced with the same brand and model or its successor.

If the school district chooses not to use the ITS EPLs, the Vendor Certification for IT Equipment and software Statement must be signed by the bidder and returned with the bid.

Districts may exercise the option of having all items bid and installed in the specified configuration by a single vendor or multiple vendors. All upgrades are to be installed and operational by the Target Date.

NOTE: If labs are shared for multiple programs, be sure the minimum specifications are met for all programs. Schools may choose wired or wireless labs. They may also choose to use standard computers or the thin-client option.

Capitalized Items

Spec Item No	Description	Suggested Quantity
1	<p>Landscape Utility Vehicle (John Deere TS 4x2 or equal)</p> <p><i>Minimum Specifications</i></p> <ul style="list-style-type: none"> • 4 x 2 drive • Seating capacity for 2 (driver and passenger) • Adjustable driver’s seat • Cargo box with 500-lb. capacity • Gas engine with 5-gal. capacity • Setup included - ready for use 	1
2	<p>Greenhouse</p> <p><i>Minimum Specifications</i></p> <ul style="list-style-type: none"> • Structure <ul style="list-style-type: none"> ○ 30’ X 96’ X 8’ sidewalls ○ Galvanized steel frame ○ Column Post: 2” X 4” X 14 gauge rectangle w/welded plates – 6’ spacing ○ Bows: 2” X 3” X 14 gauge rectangle – 6’ spacing ○ Trusses: 2” X 2” X 14 gauge square, spans 29’ 3 ¼” wide ○ Uprights: 1 3/8” round ○ Purlins: 12 Runs 3/8” round ○ Ridge: Extruded aluminum ridge cap ○ Roof Glazing System: Extruded aluminum roof channels spaced 6 ft. apart ○ Roof Glazing: 8 mm clear twin wall no drip polycarbonate panels (10 yr. warranty) ○ Eave Glazing System: Aluminum extruded eave channels ○ Eave Glazing: 8 mm clear twin wall no drip polycarbonate (10 yr. warranty) • End Gables <ul style="list-style-type: none"> ○ Front End Gables <ul style="list-style-type: none"> ▪ Front End Gables: Framed for 2 – 48” exhaust fans and 1 – 42” x 6” personnel doors ▪ Framing Studs: 2” X 2” X 14 gauge square w/ brackets for wedge anchor attachment ▪ Horizontal Purlins: 2” X 2” X 14 gauge square ▪ Base Extrusion: Aluminum base extrusion to “trim out” base of greenhouse ○ Rear End Gables <ul style="list-style-type: none"> ▪ Rear End Gables: Framed for 5’ X 20’ evaporative cooling system and 1 – 42” X 6’ – 6” personnel door ▪ Framing Studs: 2” X 2” X 14 gauge square w/ brackets for wedge anchor attachment. ▪ Horizontal Purlins: 2” X 2” X 14 gauge square ▪ Base Extrusion: Aluminum base extrusion seals and “trims out” base of greenhouse <p>End Gable Glazing: 8 mm clear twinwall no drip polycarbonate panels, complete framing, glazing, and extrusion package (10 yr. warranty)</p>	1

Greenhouse cont.

Minimum Specifications

- **Ventilation**

- 2 – 48” slant wall exhaust fan 1hp: 19563 cfm ea. at .10 SP 110V or 220V. 1 fan two speed and 1 fan single speed, both equipped with shutter and guard. Offering a minimum of 1.3 air exchanges per minute at .10 inches of static pressure.
- 1 – 39” motorized shutter, located above cooling pad to provide a fresh air intake at the minimum stage cooling.
- 5 X 20 ft. stainless steel evaporative cooling system with trough, plate and 6” thick pad. Uses a 65/15 degree water/air flow with a 420 per maximum face velocity. System is self-contained and does not require a reservoir tank. Included sump pump and float valve for proper water level regulation.
- 5 X 20 ft. automatic wall vent located behind the evaporative cooling system (10 yr. warranty 8 mm polycarbonate covering)

- **Heating**

- 1 – 300,000 BTU natural gas high efficiency heater with aluminized burner, time delay, propeller fan with guard, vent pipe and hanger assembly.
- Maintains inside temperature of 68 degrees with an outside temperature of 0 degrees and a 15 mph wind.
- Equipment with power vent and spark ignition.
- 4 – horizontal air flow fans (HAF) 18” – 3 bladed fans complete with guard and a split capacitor 115 volt 60 Hz motor, 2.9 amps develops 3815 CFM.

- **Doors**

- 2 – 42” X 6” A.D.A. compliant single swing door(s) with lever action lock and key
- Three quarter tempered glass
- Opens toward outside of greenhouse

- **Automatic Temperature Control**

- Five stage thermostat control individually labeled
- No overlapping of heating or cooling units
- Wired for 120 V

- **Hanging Basket Rails**

- 8 – runs of 1-3/8” X 17 gauge tubing running 84’ long rail length or length of benches.

- **Shade Cloth**

- 40’ by 98’ (3920 square ft.) shade cloth with 51% shading factor
- Grommets and taped two foot on centers.
- Covers the roof and attaches to the sides of the greenhouse
- 3/4” – 1 hole clamp with hardware and lace rope for shade cloth attachment

- **Emergency Lighting/Exit Signs/Fire Extinguisher**

- Located above doors
- Exit sign is constantly illuminated
- Emergency lights powered by rechargeable battery
- Emergency lights power on at any power interruption
- 1 – Multipurpose dry chemical A-B-C rated 10 lb. fire extinguisher charged with formulated siliconized dry chemical UL rated for fighting paper, wood, fabric, grease, flammable liquid and electrical fires.

Greenhouse cont.

Minimum Specifications

- **Benches**
 - Aluminum extrusions and rectangular galvanized steel tubing
 - Mesh ¾" X 13 gauge galvanized expanded metal
 - Cross braces made of 1" X 2" rectangular tubing and spaced 2 ft. apart
 - Bench legs consist of 1" X 2" rectangular tubing
 - 16 – 6' X 9' – 6" portable benches
 - 2 – 3' continuous benches 78' long
- **Double laundry sink 38-gal. capacity**
- **Eye Wash Station**
- **Chemical Storage Area** with 30-gal. capacity OSHA and NFPA approved
 - Manual closing door with three point latching system with key lock
- **Irrigation**
 - **Mist**
 - Complete system with brass high-pressure regulator, filter, punch tool, PVC pipe, gate valves, zone controller, and solenoids.
 - Plumbed above benches with 36" long misters spaced 2' on centers with manual shut off
 - Hanging basket drippers with adjustable flow
 - Drippers spaced 24" on centers and 24" long
 - **Fertilizer Injector**
 - 1 – Installed minimum of 30" ground for easy access
 - Outlets serviced through fertilizer injector
 - Maximum of 30 GPM of fertilizer/water solution output
 - Installed with bypass and gate valves
- **Controller: Sterling – 12**
- **Includes Galvanized Steel Solenoid Manifold minimum of 55 PSI**
- **Installation included – (complete setup of all parts including the following)**
 - All labor and materials to erect greenhouse
 - Test all equipment after installation
 - Provide training on operation and maintenance
 - Install 4 – 115 volt receptacles – two on each end of greenhouse
 - Wire all electrical into 100 amp breaker box
 - Keyless porcelain lamps with guard 12' apart down length of greenhouse 100 watt bulbs included
 - National Electric Codes certified
 - Plumbing including 7 spigots, 3 plumbed to injectors and 4 plumbed to clear water using PVC pipe
 - Evaporative cooling system
 - Irrigation system (if ordered)

Spec Item No	Description	Suggested Quantity
3	<p>Hand Pushed Tilt Truck (Rubbermaid 1305 Standard Duty or equal)</p> <p><i>Minimum Specifications</i></p> <ul style="list-style-type: none"> • 850 lb. capacity • .5 CU Yd. • Polyethylene body • 10-in. diameter rubber wheels • 38-5/8 inches height • 60 inches length • 28 inches width • Assembled 	1
4	<p>Gas Powered Pole Saw (ECHO Gas Powered Pole Saw 25.4cc, 12 In. L or equal)</p> <p><i>Minimum Specifications</i></p> <ul style="list-style-type: none"> • Powerhead, Shaft Assembly, Gear Case, Strap, Operators Manual, Wrench • Fuel Type Gas • 25.4 cc Engine Displacement • 12 In Bar length / 146 In Overall Length / 107 In Closed Length • Fuel Capacity 16.4 oz. • Oil Capacity 7.6 oz. • Chain Oiler Auto/Adjustable • Heavy-duty Gear Case W/ 12 In Bar • Recoil Starter Type 	1
5	<p>Wide Refrigerated Floral Cooler (Powers FS52GD 52" or equal)</p> <p><i>Minimum Specifications</i></p> <ul style="list-style-type: none"> • Two sliding glass display doors • Interior vertical LED lighting • Bottom mount refrigeration system • 41 cu. ft. interior volume • Automatic condensate evaporators • Louvered motor covers • Switch controlled vertical fluorescent lamps • 2 sections • 1/3 HP compressor • 115V, 7.3 amps • 521 weight • 52 width • 74.5 height • 32 depth 	1
6	<p>Powered Post Hole Digger Attachment 3-Point PTO (Titan 30 HP 3 Point PTO Post Hole Digger Attachment with Auger or equal)</p> <p><i>Minimum Specifications</i></p> <ul style="list-style-type: none"> • 540 rpm PTO speed • Steel • Gearbox rate: 2.92:1 • Auger bit: 6" • Oil filled gearbox • Safety cover on auger • For use with tractors up to 30 HP • Standard 3 point connection 	1

Spec Item No	Description	Suggested Quantity
7	<p>Rear-Tine Tiller (Troy-Bilt Bronco CRT 208cc 14-in CARB or equal)</p> <p><i>Minimum Specifications</i></p> <ul style="list-style-type: none"> • Counter-rotating tines • Cast-iron encased bronze gear transmission • 1-in handles • Agricultural tires • Limited lifetime warranty) • 208 cu. centimeters engine displacement • 14 inches maximum tilling width • 6 inches maximum tilling depth • Gear drive transmission type • 164 lbs. assembled weight • 10 inch pneumatic wheels • Gas fuel • 20 oz. 4-cycle oil capacity • 10 in tine length • 0.58 gal fuel tank capacity 	1
8	<p>Tractor (John Deere 4066M Compact Utility Tractor or equal)</p> <p><i>Minimum Specifications</i></p> <ul style="list-style-type: none"> • 66.0 HP 4-cylinder diesel engine • 3-point hitch • Standard folding ROPS • 4-wheel drive • Must have the capability to use the following Lawn and Landscape Implements <ul style="list-style-type: none"> ○ Disk Harrows ○ Cultivator ○ Broadcast Spreader ○ Sprayer ○ Aerator 	1
9	<p>Treated-Wood Utility Trailer (Carry-On Trailer 5-ft x 10-ft Treated Lumber Utility Trailer with Gate or equal)</p> <p><i>Minimum Specifications</i></p> <ul style="list-style-type: none"> • 1300-lb payload capacity • 13-in tire size • 2-in A-frame coupler with safety chains • 2-leaf springs • 3-in channel A-frame tongue • 2000-lb rated top wind jack and idler axle • Treated lumber floor and 30-in fender with back • 57-in W x 49-in H rear ramp gate • 5 feet Width & 10 feet Length • 2-in Ball size 	1

Spec Item No	Description	Suggested Quantity
10	<p>Riding Lawn Mower/Garden Tractor (CubCadet XT1 LT46" Lawn Tractor or equal)</p> <p><i>Minimum Specifications</i></p> <ul style="list-style-type: none"> • 22 HP engine • Twin Cast-Iron Sleeve Cylinders • 230 Cold Crank Amps Battery • 5.5 mph forward speed • 3.1 mph reverse speed • 3 gal fuel tank capacity • 2 QT. engine oil capacity • 47" wheelbase • 420-lbs estimated weight • 68" length & 54" width & 42.5" height • Automotive style disc brakes 	1

NON-CAPITALIZED ITEMS

1. Plant Presses (1 Per Student)
2. First-Aid Kit (1)
3. Fire Extinguisher (6)
4. pH Meter (6)
5. Soil Test Kit (4)
6. Soil Salinity Meter (2)
7. Soil Probe (1)
8. Day/Night Timers (4)
9. Heating Pads or Cables for Hotbed (2)
10. Shade Cloth for Greenhouse (1)
11. Emergency Backup Heaters (4)
12. Water Hoses with Racks or Reels (4)
13. Watering Nozzles and Breakers (6)
14. "Hose-on" Sprayers (4)
15. Buckets (6)
16. Wheelbarrows (2)
17. Greenhouse Carts (6)
18. Flat Carriers (6)
19. Trash Can (1)
20. Sink with Running Water (1)
21. Hedge Shears (6)
22. Lopping Shears (6)
23. Hand Pruners (6)
24. Manual Pole Pruner (1)
25. Hand Towels (6)
26. Grafting Knife (2)
27. Pruning Saws (4)
28. Hand Pump Pressure Sprayers (3)
29. Respirators (6)
30. Face Masks (6)
31. Safety Gloves (6)
32. Protective Suit (1)
33. Safety Goggles/Glasses with Monitor Case (1)
34. Floral Shears (4)
35. Ribbon Shears (4)
36. Glue Guns (4)
37. Picking Machines (4)
38. Wire Cutters (6)
39. Glue Pans (4)
40. Small Engine Tool Set (1 Set Per 2 Students)
 - Pliers
 - Screwdrivers
 - Small Wrenches
 - Sockets
41. Hoes (4)
42. Garden Rakes (4)
43. Leaf Rakes (4)
44. Pitchfork (1)
45. Pick (1)
46. Potato Fork (1)
47. Scuffle Hoe (1)
48. Round Point Shovels (4)
49. Square Point Shovels (4)

50. Axe (1)
51. Kaiser Blade (1)
52. Sledge Hammers (2)
53. Claw Hammers (2)
54. Manual Posthole Digger (1)
55. Fertilizer Spreaders (2)
56. Files (6)
57. Bench Grinder (1)
58. Power Drill (1)
59. Hand Held Circular Saw (1)
60. Measuring Tapes (4)
61. Extension Cords (4)
62. Light Meter (1)
63. Hand Misters (4)
64. Measuring Cups and Spoons (4)
65. Tissue Culture Kit (1)
66. Cash Register (1)
67. Calculators (6)
68. Sales Slip Dispenser (1)
69. Filing Cabinets (2)
70. Soil Temperature Meters (2)
71. Minimum/Maximum Registering Thermometers (4)
72. Drafting Tables (1 Per 2 Students)
73. Drafting Tools and Instruments (1 Classroom Set, 1 Per Student)
74. Lawn Edgers (2)
75. Hedge Trimmers (2)
76. Lawn Blowers (2)
77. Soil Plugger (1)
78. Bulb Planters (4)
79. Aerator – Hand Pushed (1)
80. Wreath Frame Systems (2)
81. Eye Wash Station (1)
82. Potting Benches (1 Per 3 Students)
83. Misting System (1 Per Greenhouse)
84. Misting Timer (1 Per System)
85. Fertilizer Proportioners (5)
86. Plant Mobile with Florescent Light (1)
87. Power-Operated Pressure Sprayer (1)
88. Water Pool with Recirculating Pump (1)
89. Rotary Mower, Self-Propelled (1)
90. String Trimmer (1)
91. Lawn Roller (1)
92. Leaf Blowers/Vacuums (6)
93. Small Engines for Training (6)
94. Sprayer Calibration Kit (1)
95. Automatic Seeder (1)
96. Chainsaw with Case (1)
97. Mechanics Tool Set (1)
 - With Sockets – ¼”, 3/8” and ½”
98. Wrenches Combination (1)
 - Standard ¼” – 1”
 - Metric 5 mm – 20 mm
99. Screwdriver Set (1)
 - Standard
 - Phillips

- 100.Mechanics Large Tool Box (1)
- 101.Plant Growth Models (4)
- 102.Landscape Design Software Package (1 Classroom Set)
- 103.Plant Identification Kit (Slides or CD-ROM Software) (1)
- 104.Plant Disease Identification Kit (Slides or CD-ROM Software) (1)
- 105.Insect Identification Kit (Slides or CD-ROM Software) (1)
- 106.4 GB USB2 Flash Drives (1 Per Student)
- 107.Microscopes (1 Per 4 Students)
- 108.Soil Mixer (1)
- 109.Soil Sterilizer (1)
- 110.Lath House (1)
- 111.Germination Chamber and Seed Incubator (1)
- 112.Chemical Storage Cabinet (1)
- 113.Flammable Storage Cabinet (1)
- 114.Front-Tine Tiller (1)
- 115.Mulching Machine/Shredder (1)
- 116.Reel Mower (1)
- 117.Dethatcher (1)
- 118.Disk Harrows (Tractor Attachment) (1)
- 119.Cultivator (Tractor Attachment) (1)
- 120.Broadcast Spreader (Tractor Attachment) (1)
- 121.Sprayer (Tractor Attachment) (1)
- 122.Aerator (Tractor Attachment) (1)
- 123.Trailer Hitch (1)