



Outdoor Learning Station Project Plan: Materials Budget and Construction Instructions for Large Songbird Sanctuary (3-sided Garden)

*A 3-sided garden is built against your school building so that the 4th side of the garden is the building's brick wall. BEFORE you choose to build your garden against the building, you should look for "weep holes" in the brick (see pic on right). Do not cover your weep holes with garden soil as the soil will clog the holes. If the weep holes are less than 6 inches from the ground they would be covered by garden soil, and you need to build a 4-sided garden that is 2-3 inches out from the wall.



A Songbird Sanctuary is an area that provides a home or habitat (food, water, shelter & places to raise young) for songbirds. In your Habitat Lab, this large Songbird Sanctuary includes native trees and shrubs provide shelter and produce mast (nuts or fruit) that provide food for backyard birds. Bird baths and feeders can supplement their food and water sources. A raised bed of native perennial wildflowers will provide seeds as well. Artificial nesting boxes should be included for cavity-nesting birds such as bluebirds or wrens.

❖ Habitat Requirements:

- Low Traffic Flow (so that students are not continuously walking by the bird feeders and/or nesting boxes)
- Established "Cover" (if you have existing bushes or trees so the birds will feel safe from predators you will not need to purchase them for your Materials List below)
- Area Approved for Digging (areas where a tree(s) will be planted must not have any utility lines that could be damaged due to digging or from the root system(s) of the tree(s))
- Full sun for 6-8 hours per day for optimal plant growth

❖ Example Large Songbird Sanctuary Pictures & Educational Sign:





Project Plan for Large Songbird Sanctuary (3-sided Garden)

❖ Materials List with Estimated Budget:

*Listed prices are as of June 2025. They are subject to change.

Example Large Songbird Sanctuary (3-sided Garden)

Trees, bushes, bird bath, bird feeders, and bird houses. Raised bed - Actual Size: 3 ft 8 in (W) x 13 ft 8 in (L) x 6 in (D)
3-sided raised bed garden against school building → ~19 CF

Station	Materials & Supplies	Estimated Cost	Example Source	Final Cost
Required Large Songbird Sanctuary Materials, Signage & Plants				
Lg-3-Sngbrd	(1) Can of Rust-Oleum Professional White Water-based Marking Paint (for laying out garden) @~\$9.98 ea	\$10	Lowe's Item #429750	
Lg-3-Sngbrd	(40) 4" x 12" Retaining Wall Blocks (to create three sides of raised bed against school building) @~\$3.28 ea	\$130 total	Lowe's Item #477088	
Lg-3-Sngbrd	(1) 6'x50' Sta-Green Professional Landscape Fabric (weed barrier) (16' used for this garden) @~\$33.98 ea	\$35	Lowe's Item #510606	
Lg-3-Sngbrd	(4) 32-Quart (1CF) Bags of Evergreen Organic Potting Soil Mix @~\$6.38 ea (for garden)	\$25 total	Lowe's Item #380608	
Lg-3-Sngbrd	(13) 1 CF/32 Qt Bags of Evergreen Organic Top Soil (7 for garden; 6 to mix with current soil and other amendments - 1 bag/ bush, 2 bags/ tree) @~\$2.18 each	\$30 total	Lowe's Item #648834	
Lg-3-Sngbrd	(4) 1 CF Bags of Evergreen Organic Compost & Manure (2 for garden; 2 to mix with current soil and other amendments - ¼ bag/ bush, ½ bag/ tree) @~\$3.68 ea	\$15 total	Lowe's Item #380606	
Lg-3-Sngbrd	(5) 2 CF Bags of Evergreen Organic Drainage and Aeration Soil Conditioner (3 for garden; 2 to mix with current soil and other amendments - ¼ bag/ bush, ½ bag/ tree) @~\$4.58 ea	\$25 total	Lowe's Item #648829	
Lg-3-Sngbrd	(3) 2 CF Bags of Evergreen Natural Dark Brown Pine Bark Mulch (for garden) @~\$3.48 ea **do NOT get black mulch, it gets hot & kills plants	\$10 total	Lowe's Item #92118	
Lg-3-Sngbrd	(1) Package of 40 6" Black Plastic Landscape Edging Pieces (18 to create (3) 3 ft dividers between the plant species to make plant ID & weeding easier) @~\$21.98 ea	\$20	Lowe's Item# #379805	
Lg-3-Sngbrd	(16) Native Perennials (4 species – e.g. Purple Coneflower, Black-eyed Susan, Narrowleaf Sunflower & Cardinal Flower) @~\$7 ea *See planting diagram on pg 8.	\$115 total	Nursery via HLL Specialist	
Lg-3-Sngbrd	(1) Mature Tree (see species list at www.alabamawildlife.org/habitat-lab-plant-suggestions/#songbird) @~\$125 ea	\$125	Nursery via HLL Specialist	
Lg-3-Sngbrd	(2) Fruit-producing Bushes *need male & female of same species (see species list at www.alabamawildlife.org/habitat-lab-plant-suggestions/#songbird) @ ~\$30 ea	\$60 total	Nursery via HLL Specialist	





Project Plan for Large Songbird Sanctuary (3-sided Garden)

❖ Materials List with Estimated Budget (continued):

Lg-3-Sngbrd	(2) Evergreen Shrubs (see species list at www.alabamawildlife.org/habitat-lab-plant-suggestions/#songbird) @ ~\$30 ea	\$60 total	Nursery via HLL Specialist	
Lg-3-Sngbrd	(2) 26-in H Natural Concrete Birdbath Pedestal (bird bath pedestal and bowl sold separately) @ ~\$19.98 ea	\$40	Lowe's Item #10011	
Lg-3-Sngbrd	(2) 4-in H Natural Concrete Birdbath Bowl @ ~\$19.98 ea	\$40	Lowe's Item #10014	
Lg-3-Sngbrd	(2) Mademax Solar Bird Bath Fountain Pump, Upgrade 1.4W Solar Fountain with 4 Nozzle, Free Standing Floating Solar Powered Water Fountain Pump @ ~\$16.79 ea	\$35	https://a.co/d/d4lvX4y	
Lg-3-Sngbrd	(2) FEED GARDEN 76 Inch Three Shepherd Hooks with 5 Prong Base, 2 Pack @ ~\$32.59 ea	\$65	https://a.co/d/czW36Od	
Lg-3-Sngbrd	(2) 18 in. Wrap Around Squirrel Baffler (to keep squirrels from climbing feeder station pole) @ ~\$24.99 ea	\$50	Home Depot Internet #203074700	
Lg-3-Sngbrd	(2) HomeGrown Eastern Red Cedar Wood Seed/Suet Bird Feeder @ ~\$13.98 ea	\$30	Lowe's Item #791983	
Lg-3-Sngbrd	(2) Style Selections Green Plastic Hopper Bird Feeder @ ~\$18.68 ea	\$40	Lowe's Item #1508755	
Lg-3-Sngbrd	(2) Perky-Pet Favored Pinch-Waist Glass Hanging Squirrel-Resistant Nectar Hummingbird feeder - 16-oz @ ~\$10.98 ea	\$25	Lowe's Item #926625	
Lg-3-Sngbrd	(4) National Audubon Society 11-oz Suet (multiple varieties available) @ ~\$1.98 ea	\$10 total (recurring)	Lowe's Item #926626	
Lg-3-Sngbrd	(1) National Audubon Society 40-lb Black Oil Sunflower Bird Seed (smaller bags are available if needed based on storage abilities and use) @ ~\$34.98 ea	\$35 (recurring)	Lowe's Item #926646	
Lg-3-Sngbrd	(2) Woodlink 8-in H Tan Wood Wren Nesting Box Bird House @ ~\$30.19 ea	\$60	Lowe's Item #1287037	
Lg-3-Sngbrd	(2) CARTMAN 0.5 Inch Thick Blue Bird Box House @ ~\$12.34 ea	\$25	https://a.co/d/26i0YOM	
Lg-3-Sngbrd	(4) Severe Weather 4-in x 4 in. x 6-ft #2 Ground Contact Wood Pressure Treated Lumber (1 each for birdhouses) @ ~\$10.28 ea	\$40 total	Lowe's Item #312530	
Lg-3-Sngbrd	(2) 50-lb bag Fast Setting Concrete Mix (for birdhouse posts – ½ bag per post) @ ~\$6.91 ea	\$15	Lowe's Item #10437	
Lg-3-Sngbrd	(4) 18 in. Dia Black Powder Coat Squirrel Deflector For 4 x 4 Post (to keep predators from climbing posts) @ ~\$29.10 ea	\$120 total	Home Depot Internet #205188267	





Project Plan for Large Songbird Sanctuary (3-sided Garden)

❖ Materials List with Estimated Budget (continued):

Lg-3-Sngbrd	(1) Box of Hillman 8 x 2-in Wood To Wood Deck Screws (attach boxes to posts) *will not need all 50 for this project, hold onto extras for other OC projects @ ~\$7.98 ea	\$10	Lowe's Item #755728	
Lg-3-Sngbrd	(7) Plant ID Signs (one for each plant species) @~6 ea	\$30 total	Ask HLL Specialist	
Lg-3-Sngbrd	(7) Biomarkers to hold Plant ID signs (13" stake with a 2" x 4" plate) @ ~\$3 ea (includes S&H)	\$20 total	Via HLL Specialist or mcgbiomarkers.com/shop/	
Lg-3-Sngbrd	(1) Gorilla Clear 3.75-fl oz Liquid Extreme Condition Waterproof, Quick Dry, Multipurpose Adhesive @~\$9.28 ea (to attach Plant ID signs to stakes)	\$10	Lowe's Item# 955829	
Lg-3-Sngbrd	(1) 6 ft. U-Post for Fence (for educational sign) @~\$10.69 ea	\$10	Lowe's Item#: 493054	
Lg-3-Sngbrd	Educational Sign (to explain songbird habitat)	\$75	Ask HLL Specialist	
Lg-3-Sngbrd	(1) Hillman 1/4-in x 1-1/2 in Zinc-Plated Coarse Thread Hex Bolt (2-count) @~\$0.88 ea	\$5 total	Lowe's Item #137634	
Lg-3-Sngbrd	(2) Hillman 1/4-in x 20 Zinc-Plated Steel Hex Nut @~\$0.10 ea		Lowe's Item #63301	
Lg-3-Sngbrd	(2) Hillman 1/4-in Zinc-Plated Standard Flat Washer @~\$0.15 ea		Lowe's Item #63306	
Estimated Total Cost for Garden Materials (with signage & plants): \$1,450				

Additional *Optional* Large Songbird Sanctuary Materials, Signage & Plants				
Station	Materials & Supplies	Estimated Cost	Example Source	Final Cost
Lg-3-Sngbrd	Mature Trees (see species list at www.alabamawildlife.org/habitat-lab-plant-suggestions/#songbird) @ ~\$125 ea	Depends on Quantity	Nursery via HLL Specialist	
Lg-3-Sngbrd	Fruit-producing Bushes *need male & female of same species (see species list at www.alabamawildlife.org/habitat-lab-plant-suggestions/#songbird) @ ~\$30 ea	Depends on Quantity	Nursery via HLL Specialist	
Lg-3-Sngbrd	Evergreen Shrubs (see species list at www.alabamawildlife.org/habitat-lab-plant-suggestions/#songbird) @ ~\$30 ea	Depends on Quantity	Nursery via HLL Specialist	





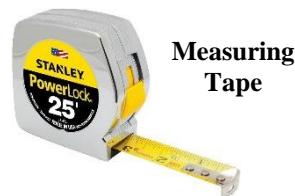
Project Plan for Large Songbird Sanctuary (3-sided Garden)

❖ Materials List with Estimated Budget (continued):

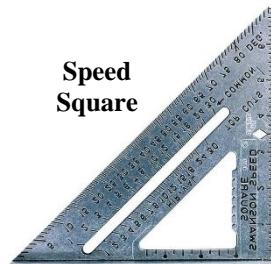
Lg-3-Sngbrd	1 CF/32 Qt Bags of Evergreen Organic Top Soil (to mix with current soil and other amendments) @~\$2.18 each	1 bag/ bush 2 bags/ tree	Lowe's Item #648834	
Lg-3-Sngbrd	1 CF Bags of Evergreen Organic Compost & Manure (to mix with current soil and other amendments) @~\$3.68 ea	¼ bag/ bush ½ bag/ tree	Lowe's Item #380606	
Lg-3-Sngbrd	2 CF Bags of Evergreen Organic Drainage and Aeration Soil Conditioner (to mix with current soil and other amendments) @~\$4.58 ea	¼ bag/ bush ½ bag/ tree	Lowe's Item #648829	
Lg-3-Sngbrd	Plant ID Signs (one for each plant species) @~6 ea	Depends on Quantity	Ask HLL Specialist	
Lg-3-Sngbrd	(3) Biomarkers to hold Plant ID signs (13" stake with a 2" x 4" plate) @~\$3 ea (includes S&H)	Depends on Quantity	Via HLL Specialist or mcgbiomarkers.com/shop/	
Lg-3-Sngbrd	Bird House with Camera - Wireless & Solar Powered @ ~\$139.95	\$140	https://a.co/d/3tCmeE4	
Lg-3-Sngbrd	Smart Feeder with Camera, Watching, Auto Capture Bird Videos & Motion Detection @ ~\$139.99	\$140	https://a.co/d/hZuxWmo	

❖ Construction Tools:

- (1) 20 ft Measuring Tape
- (1) Speed Square for measuring angles
- (4-6) Shovels (2-3 for adults; 2-3 for children)
- (1-2) Wheelbarrows for moving grass clumps, soil & mulch
- (24-30) 1-gallon milk jugs (with tops cut off but handles remaining) for students to move dirt, sand, soil, etc.
- 24-inch I-beam Level
- (4-6) Hand-held Trowels (for stirring soil amendments together)
- Water hose for watering plants at the end of day
- Drill for attaching signs to posts
- Twine (40 ft long)
- (4) Garden Stakes or Flags



Measuring Tape



Speed Square



I-beam Level

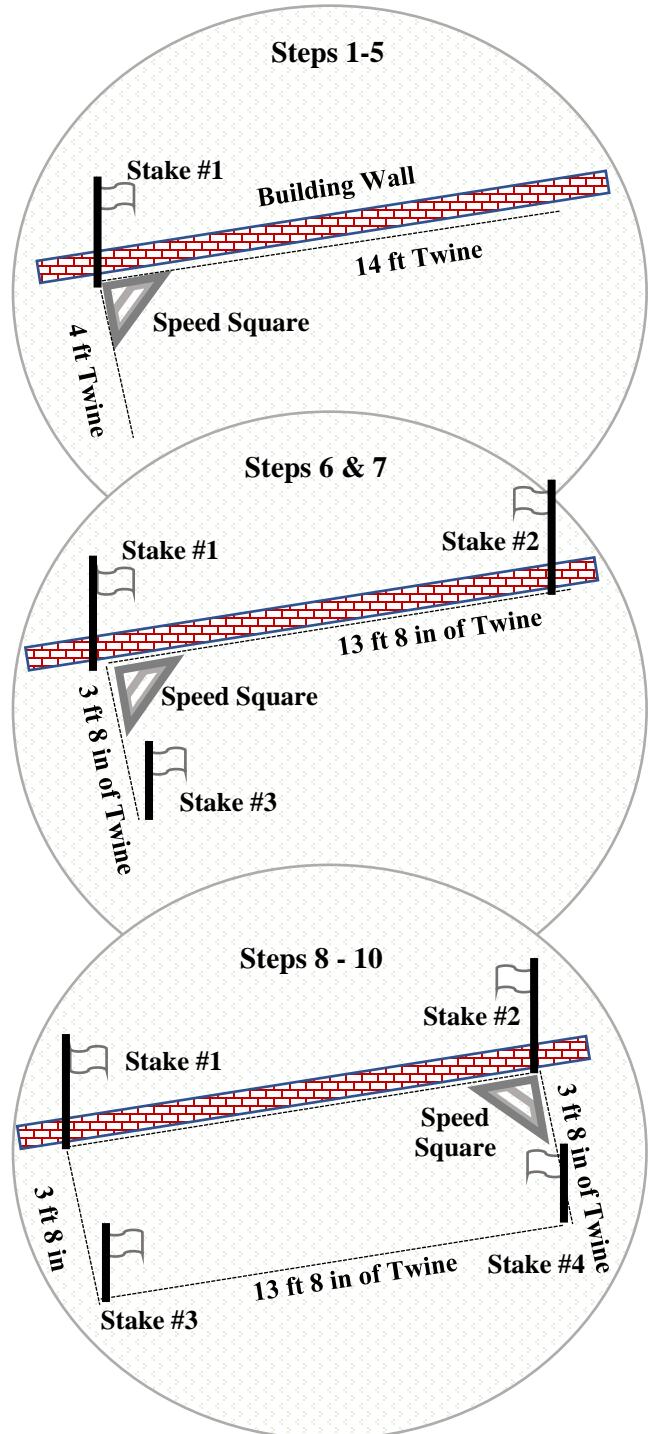




Project Plan for Large Songbird Sanctuary (3-sided Garden)

❖ Construction Instructions for Large Songbird Sanctuary (3-sided):

- 1) Gather construction tools and purchase supplies to have them on-hand for the construction day.
- 2) To create the perimeter of your garden, begin by placing a **Stake #1 (or flag)** in the ground where you want the back-left corner to be located against the building.
- 3) Place the **speed square** on the ground against the wall to measure the 90-degree angle needed for the inside of the back-left corner of your garden.
- 4) Cut the **twine** into two pieces that are 4 ft long and two pieces that are 14 ft long.
- 5) Tie the end of a 4 ft piece of twine and at the end of a 14 ft piece of twine to Stake #1.
- 6) Place the end of the **measuring tape** at Stake #1, and follow the edge of the building wall as you measure out 13 ft 8 in to create the first long-side of the garden. Place **Stake #2** in the ground next to the wall to mark the second corner. Pull the 14 ft long piece of twine from Stake #2, and tie the end of it to Stake #2 to create a straight line.
- 7) Place the end of the measuring tape at Stake #1 again, and then follow the edge of the speed square as you measure out 3 ft 8 in from the wall. Place **Stake #3** in the ground to create the first short-side of the garden. Make sure that the measuring tape stays straight and follows the outer edge of the speed square, so that the inside of the first corner forms a 90-degree angle. Pull the 4 ft long piece of twine from Stake #1 to Stake #3, and tie the end of it to Stake #3 to create a straight line.
- 8) Next place the speed square on the ground against the wall by Stake #2 to determine the 90-degree angle needed for the inside of the back right corner of your garden.
- 9) Place the end of the measuring tape at the second stake, and follow the opposite edge of the speed square as you measure out 3 ft 8 in. Place **Stake #4** in the ground to mark the third corner. Make sure that the measuring tape stays straight, so that the second corner continues to form a 90-degree angle. Pull the 4 ft long piece of twine from Stake #2 to Stake #4, and tie the end of it to create a straight line.

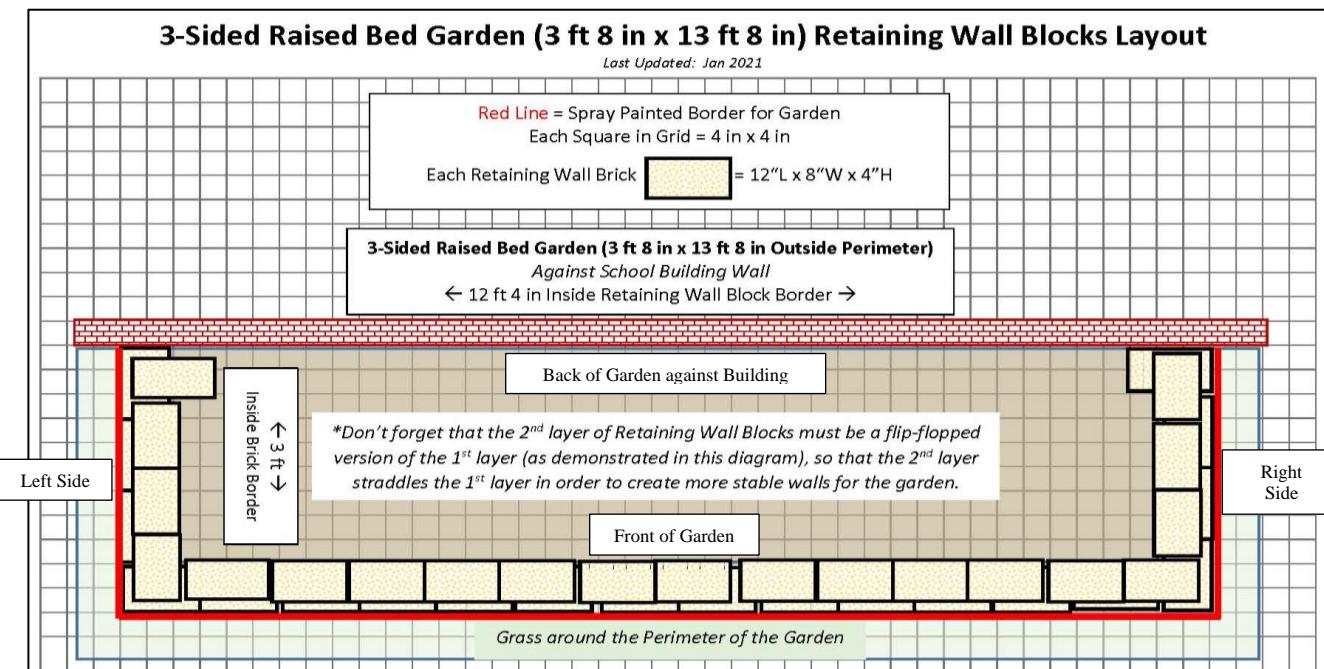




Project Plan for Large Songbird Sanctuary (3-sided Garden)

❖ Construction Instructions (continued):

- 10) Next, tie one end of the remaining 14 ft piece of twine to Stake #4 and the other end Stake #3. This should create 90-degree angles in the third and fourth corners, and you can use your speed square to confirm this.
- 11) Lastly spray paint lines along the ground following the **OUTSIDE** of the garden perimeter that was created by the twine. (*See diagram below*)



- 12) Dig and remove the grass in a path that is 1 inch deep and 8 inches wide along the **INSIDE** of the spray painted garden perimeter to create a base on which to place the retaining wall blocks. Use your shovel/trowel to create a flat surface for the base to keep the retaining wall blocks level.
- 13) Place the first retaining wall block in the back left corner with the 8-inch side of the block against the building and the 12-inch side creating the left side of the garden. Use your I-beam level to make sure the block is level from side-to-side and front-to-back. Add a little dirt or sand and use your trowel to level the base surface if needed. Place the next block directly next to the first one, and use your level to make sure that the second block is level with the first block. Continue adding blocks until you have placed and leveled three blocks (3 ft) in a row. You should have 8 inches of base surface remaining without a block.
- 14) Place a retaining wall block at the end of your first side but place it perpendicular to the other blocks so that the 8-inch width of the new block fills in the final 8 inches of the first side of the garden. Use your I-beam level to make sure the new block is level and adjust it if needed. Continue adding blocks until you have placed and leveled thirteen blocks (13 ft) in a row to create the front of the garden. You should have 8 inches remaining in the front right side of your garden without a block.

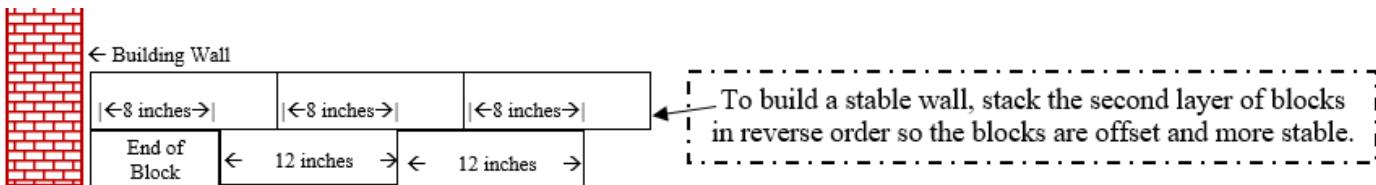




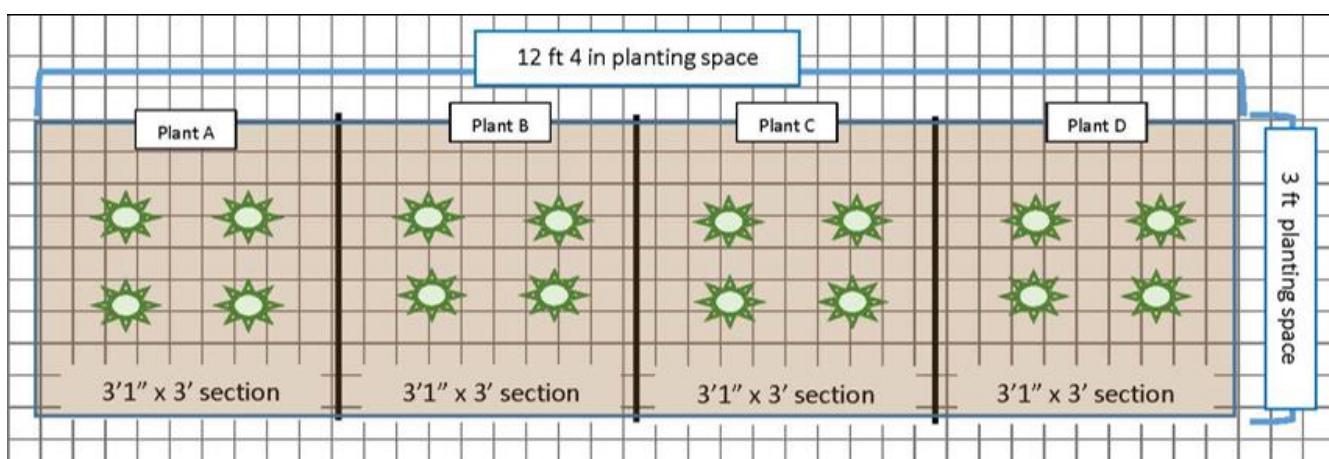
Project Plan for Large Songbird Sanctuary (3-sided Garden)

❖ Construction Instructions (continued):

- 15) Place a block perpendicularly at the end of the second side of your garden, so that the 8-inch width of the new block fills in the final 8 inches of the second side. Use your I-beam level to make sure the new block is level and adjust it if needed. Place and level two more blocks, leaving the remaining 8 inches of the third side of the garden without a block.
- 16) Lastly, place a block perpendicularly at the end of the third side of your garden with the 12-inch side against the wall, so that the 8-inch width of the new block fills in the final 8 inches of the third side. Use your I-beam level to make sure the new block is level and adjusted if needed. The first level of your garden is complete.
- 17) Place the landscape fabric (weed barrier) on the grass inside the garden area, push the fabric against the insides of the retaining wall blocks and up against the building wall, and lay the edges of the fabric on top of the blocks so that the fabric is sandwiched and held in place between the first and second layers of retaining wall blocks. If your fabric is not wide enough to cover the insides of the block and have the edge of the fabric lay on top of the block, then you need to make your garden a little smaller (less wide).
- 18) Next, start laying the second layer of blocks from the back-right corner that you just completed for the first layer of blocks, and then place the blocks in reverse order (counter-clockwise). Lay the 8-inch end of first block against the wall with the 12-inch side starting the right side of the second layer of blocks. Don't forget—the second layer of retaining wall blocks should straddle the first layer to create more stable walls for your garden. (*See diagram on page 7 and example drawing below.*)



- 19) Fill the bottom of the garden with top soil, add the compost and manure, and then add the potting soil and soil conditioner to retain moisture in the soil. Use trowels to turn and mix the soils.
- 20) Install 3 ft dividers of the landscape edging inside the garden to create (4) 3 ft 1 in x 3 ft planting sections—each section for a different plant species. (*see the lines | in the diagram below*)





Project Plan for Large Songbird Sanctuary (3-sided Garden)

❖ Construction Instructions (continued):

- 21) Plant the flowers, grouping each of the different species of plants together within each square.
- 22) Add 1 inch of mulch around the plantings throughout the garden.
- 23) Decide where you want to plant your tree(s), bushes, &/or other plants, and place the plants in those locations. Spray-paint a circle twice the diameter of each plant's pot.
- 24) Plant the tree(s). See Alabama Cooperative Extension Publication ANR-1405 for tree planting instructions. (<https://ssl.acesag.auburn.edu/pubs/docs/A/ANR-1405/ANR-1405-archive.pdf>)
 - a. Dig a hole 2-3 times the width of the root ball of the tree and three inches deeper than the height of the root ball.
 - b. Mix the soil that has been excavated with the top soil, compost/ manure, and soil conditioner to create an enriched and aerated soil for the tree to grow in.
 - c. Loosen the soil at the bottom & sides of the hole, then add 3 inches of the enriched soil into the bottom of the hole.
 - d. Remove the tree from the pot and loosen the roots by hand. If the roots wrap around the root ball, try to loosen them or cut them so that they can spread outward. If the tree is in a burlap ball, place the tree in the hole and then carefully cut the burlap bag and let it fall into the hole. The burlap will biodegrade with time.
 - e. Place the tree in the hole, making certain that the trunk of the tree is straight and not leaning to one side. The top of the root ball should be even with the ground or slightly higher by no more than an inch. Fill the hole around the root ball with the enriched soil.

Plant Your Tree Properly

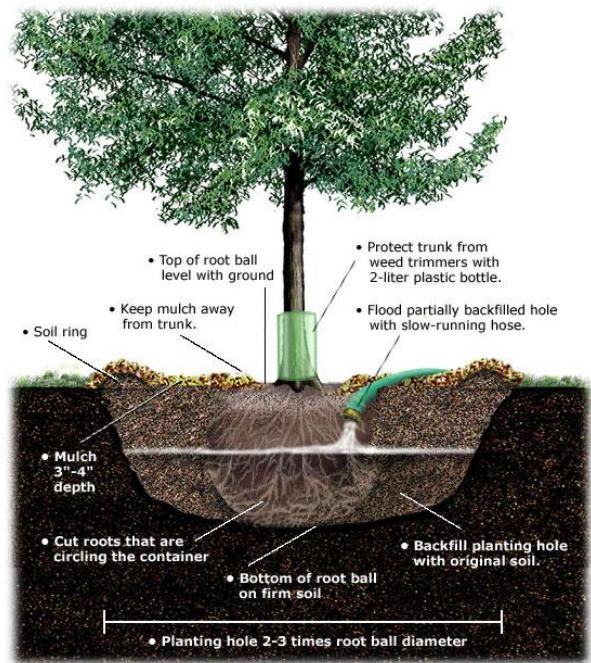


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- 25) Plant the fruit-bearing & evergreen shrubs following the same steps as those for planting the tree (above).
- 26) Attach Plant ID signs to stakes using adhesive. Sink the stakes a few inches into the ground in front of the appropriate plant species grouping, tree, or bush.
- 27) Insert the educational sign post (u-post) in the ground near the garden and attach the educational sign to it using the nuts, bolts, and washers.
- 28) Water all of the new plantings thoroughly.
- 29) Choose a spot for your bird feeder station(s) that is at least six feet from the closest tree or limb to help keep squirrels from jumping on the bird feeders. If possible, pick a location in front of a hall window where students can watch the birds. Install the bird feeder station(s) with shepherd hooks and a baffle half way up the pole.
- 30) Fill the bird feeders with seed, suet, meal worms, fruit, etc., and then attach each bird feeder to a shepherd's hook.





Project Plan for Large Songbird Sanctuary (3-sided Garden)

❖ Construction Instructions (continued):

- 31) Install the bird bath and add water to the basin. Install the solar fountain. Select bird bath location at least 6 feet from trees and bushes so that predators cannot ambush the birds in the bird bath.
- 32) Choose locations for bird houses (or nesting boxes) that are as far apart as possible while still remaining in the outdoor classroom area. If you are installing multiple bluebird boxes, refer to this site for information on placement. <https://nestwatch.org/learn/all-about-bird-houses/birds/eastern-bluebird/>.
- 33) Attach bird houses to top of 4" x 4"'s. Install baffles. Dig 1-ft-deep hole to install 4" x 4"'s one foot in the ground to stabilize the bird houses (or nesting boxes). Use concrete around the base of the 4"x4" in the hole if needed; if not, then pack dirt back in hole around the base of the 4" x 4".

