Building a Bike Training Obstacle Course Kit

Building a Bicycle Training Obstacle Course Kit will teach attendees how to build a stackable, modular set of components for use in creating an obstacle course. Attendees will become familiar with the construction concepts, the materials, and the skills needed to build the kit. A scale model will be used to demonstrate how to use the kit to conduct bike-handling/decision-making training on many different levels by changing the difficulty of the course and modifying the layout of the components. Attendees will receive a set of plans to construct their own easy-to-store kit. Invented and presented by members of the Denton Police (TX) Bicycle Team.

Obstacle Course Kit
Materials and Cut List

**Pallets** (8 - Pallets + 2 half pallets)

Materials List
5 - 4' X 8' sheets of 5/8” CDX Plywood  @ $24.75 each = $123.75
24 - 2” X 6” X 8’ @ $3.86 each = $92.64
Total cost $216.39

Cut List
24 - 2” X 6” X 45
20 - 2” X 6” X 44 5/8
6 - 2” X 6” X 21
8 - 48” X 44 5/8”
2 - 24” X 44 5/8”

**Short Ramp** (2 - Short ramps)

Materials List
6 - 2” X 4” X 92 5/8 (stud) @ $2.12 each = $12.72
2 - 4’ X 8’ sheets of 5/8” CDX Plywood @ $24.75 = $49.50
1 - 4’ X 4’ sheet of 5/8” CDX Plywood left over from pallet project
Total cost $62.22

Cut List
6 - 2” X 4” X 92 5/8 Cut to match diagram = 6 of each piece
4 - Triangle end caps cut from the 4’ X 4’ sheet of 5/8 CDX Plywood (you will have a 48” X 12” piece left over that you will use on the Long Ramp project)
2 - 48” X 48” pieces of 5/8” CDX Plywood (cut from one sheet)
2 - 48” X 18” pieces of 5/8” CDX Plywood (You will have a piece 30” X 8” left over that you will use on the long ramp project)

**Long Ramp** (3 - Long Ramps)

Materials List
5 - 4’ X 8’ sheets of 5/8” CDX Plywood @ $24.75 = $123.75
15 - 2” X 4” X 92 5/8 (stud) @ $2.12 each = $31.8
1 - 48” X 12” piece left over from Short ramp program
1 - 30” X 8’ piece left over from Short ramp program
Total cost $155.55

Cut List
15 - 2” X 4” X 92 5/8 Cut to match diagram = 15 of each piece
3 Sheets of 4’ X 8’ X 5/8” CDX Plywood used whole
3 - 8” X 18” cut from one sheet of CDX and the 30” X 8’ left over from the short ramp project.
1 Sheet of 4’ X 8’ X 5/8” CDX Plywood cut according to diagram (makes the end caps and braces)
1 - 48” X 12” piece left over from Short ramp program cut into 8” X 12” brace configuration - modified from the 8” X 12 3/4” the diagram shows

**Wall** (2 side supports and 1 center section)

Materials List
13 - 2” X 4” X 8’ @ $2.71 each = $35.23
4 - 4’ X 8’ sheet of 5/8” CDX Plywood @ $24.75 = $99.00
Total cost $134.00

Cut List
17 - 41 5/8” X 2” X 4”
4 - 48” X 2”X 4”
2 - 96 X 2” X 4”
4 - 44 5/8” X 48” X 5/8 CDX Plywood
2 - 44 5/8” X 96” X 5/8 CDX Plywood
Building a Bike Training Obstacle Course Kit

Officer Don L. Lane
Denton Police Department

We needed something to use for:
- In service training
- Basic Police Cyclist Course
- Advanced Police Cyclist Course
- Local competition.

We were looking for:
- A variety of obstacles
- Obstacles with multi-purpose applications
- Portability
- Storability
What we came up with:

- A set of obstacles
  1. Ramps
  2. Pallets
  3. Wall
- Uniform size
  1. Stack ability
  2. Interchangeability
  3. Least amount of wasted material

Construction Materials

- 2” x 4” x 8”
- 2” x 4” X 92 5/8” (studs)
- 2” x 6” x 8’
- 5/8” CDX plywood
  - Cheaper grade of plywood
  - Rougher surface with better traction
- Screws
  - 3” X 8 Deck Mate Philips square drive screws
  - 1 5/8” X 7 Deck Mate Philips square drive screws

Construction Plans

- This ain’t Bob Vila, This Old House or the New Yankee Workshop
- The cost projections came from our local Home Depot and will vary for your area
- Materials list is pretty accurate
Reading the plans

- Materials list for pallets
  - 6 - 48 X 44 5/8 X 5/8
  - 2 - 24 X 44 5/8 X 5/8
  - 24 - 2 X 5 1/2 X 45
  - 20 - 2 X 5 1/2 X 44 5/8
- What to purchase
  - 5 - 4' X 8' 5/8 CDX Plywood @ $24.75 = $123.75
  - 24 - 2 X 6 X 8' @ $3.86 = $92.64
  - Total project = $216.39

What to purchase

- 5 - 4' X 8' 5/8 CDX Plywood @ $24.75 = $123.75
- 24 - 2 X 6 X 8' @ $3.86 = $92.64
- Total project = $216.39

Tools

- Circular Saw
- Saw guide or 8' straight edge
- Electric Drill with screw driver bit
- Tape Measure
- "C" clamps
- Square
- Miter Saw *
- Table Saw *

*Nice to have but not necessary

Construction techniques

- Measuring
  - Measure twice. Cut once.
  - Remember to take into account the saw's "kerf"
  - Use one standard of measure

Reading the measurements
Cutting

- Use a Saw guide
  - Clamp the guide in place
  - Wear eye protection
  - Measure twice / Cut once
  - Know your saw’s offset

- Cut the required number of pieces all at once

Assembly

- Pallets
  - Use 3” X 8 screws
  - Two screws per joint is sufficient
  - Drill pilot holes through the first piece *
  - Attach the Plywood with 1 5/8” screws
  - Optional

- Ramps
  - Make an assembly jig and cut the frame pieces
  - The jig acts as a saw guide

- Use the assembly jig to build the frames
Assembly
- Build 16 frames with braces
- Attach end caps to the other side of 5 of the 16 frames
- Build 5 frames with end caps only, instead of braces.
- End caps and braces both attached with 1 5/8" screws

Assembly
- Attach the back to frames with 1 5/8" screws
- Attach the ramp surface with 1 5/8" screws

Assembly
- Wall (can be used as a short pallet)
  - Build the center "I" beam first
  - Use 3" X 8 screws to build the framework

Assembly
- Assemble frames for the side supports and center wall
- Attach Plywood to both sides of the two side supports
- Attach Plywood to one side of the center wall
Assembly

- Aligning and drilling the side supports
- Stand one side support and the wall on edge and position in a “T”
- Using a long drill bit drill through the side support and the outside frame of the center wall.

While the bolt is tight, drill and install the other 2 bolts and threaded inserts.
Repeat for the other side support.
Mark each side support and corresponding end of the wall so the same side support always goes on the same end.