

2018 National FFA Agricultural Technology & Mechanical Systems Career Development Event Team Activity

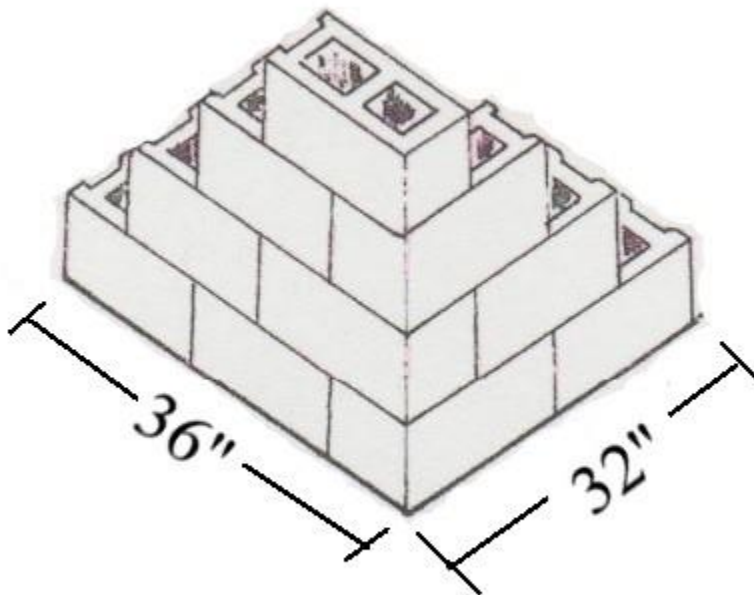
Scenario

You and your team members have created a small business that would like to specialize in providing high school students with experiences building small construction projects. You have been asked to provide a sample of your work by building a block wall corner along with completing an actual bid sheet on a much larger project. There are two major components involved in this

- 1. You will build a sample corner block wall for evaluation.*
- 2. You will complete an accurate bill of material and cost of labor necessary to construct a 100' retaining as specified in Appendix A. The bill of material form is located in Appendix B.*

Sample wall to construct for evaluation:

Construct a corner block wall that is approximately 36" by 32" by 32" high as pictured below:



Process to complete the sample wall:

- 1. Team members must wear appropriate safety gear. This includes gloves if you are handling blocks or mortar.***
- 2. Study the plans and read all the directions to make sure that you understand the task. You will use full blocks only. The first course will have 4 blocks. The second course will have 3 blocks. The third course will have 2 blocks and the final course will have 1 block.***
- 3. Lay out your wall on the provided tar paper. Be careful to make sure your corner is 90 degrees.***
- 4. Temper (mix) the mortar for your wall to your satisfaction. You should have as little mortar waste as possible.***
- 5. Lay the first course using a full mortar bed. Do not fill the cores with mortar. All blocks are to have a consistent 3/8" mortar joint between blocks.***
- 6. Lay additional courses until the sample wall is complete. Trim excess mortar flush with the blocks and tool mortar joints when appropriate.***
- 7. Clean up area and prepare your wall to be evaluated.***

Team Activity Written Report Details

- Each team will prepare and submit a typed report.
- The report format will be double-spaced, using 12-size font (Times New Roman).
- Left justify your paragraphs.
- Single-space between paragraphs.
- Use correct grammar and punctuation.
- Write in complete sentences.
- Use the following section headings:
 - *Introduction*
 - *Delegation of tasks*
 - *Description of the Project*
 - *Discussion / Success or Challenges*
 - *Safety Practices followed by Team Members*
 - *Bill of materials and estimated cost to construct 100' wall.*
 - *Use form in **Appendix B***
 - *Summary and Conclusions*
- The report will have a cover sheet with the following information:
 - *State Name*
 - *Name of Team Members*
 - *2018 National FFA Agricultural Technology & Mechanical Systems Career Development Event Team Activity*
- Each page will be numbered.
- A hardcopy of your report will be printed out and turned in as part of the completed project.
- A digital copy of your report will be saved to the flash drive and returned to the CDE Staff at the completion of the event.

Appendix A

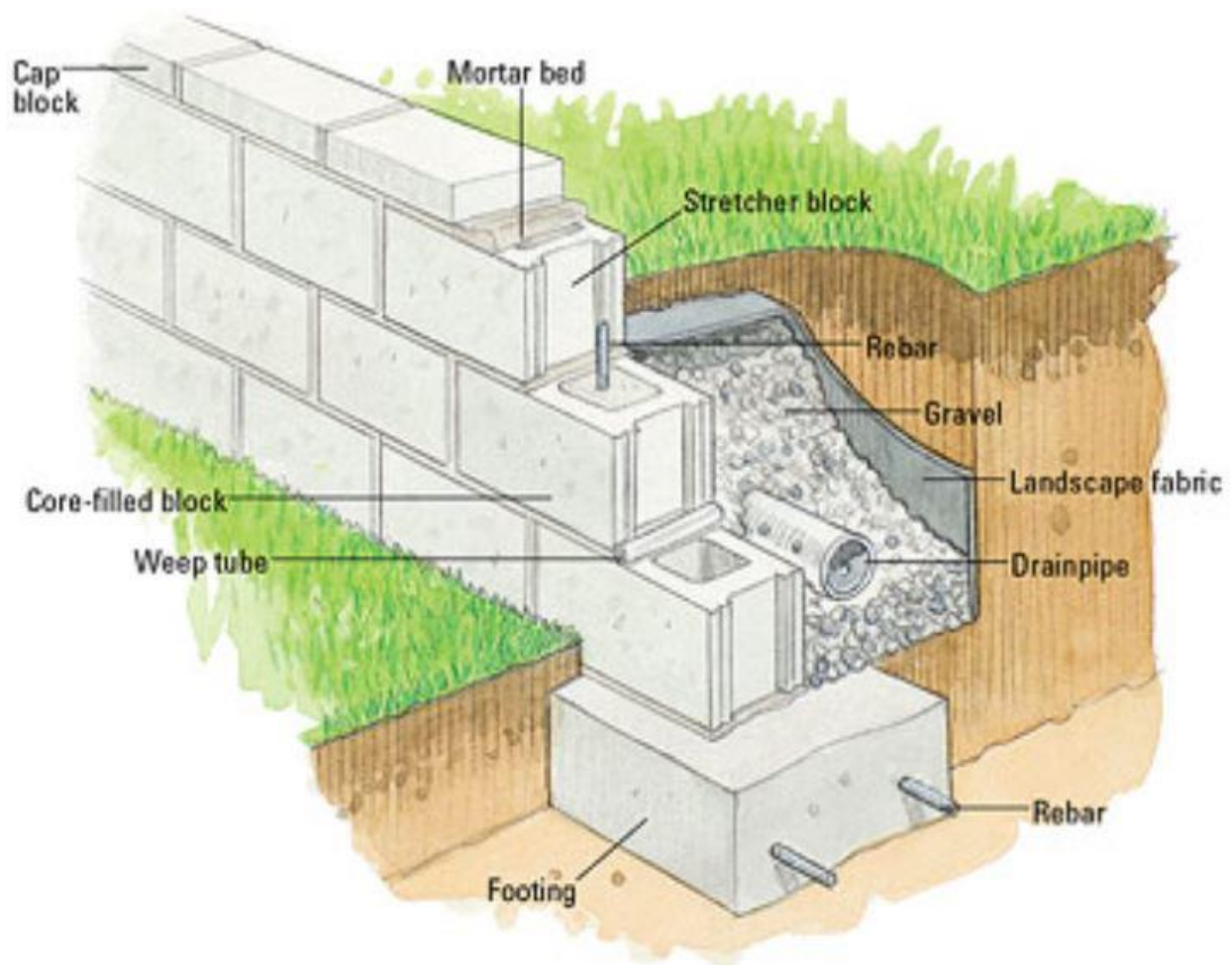
Plan details for a 100' long retaining wall. Project specifications:

Wall height 26" (including a 2" cap block)

Footing 16" wide x 8" deep (with 2 - ½" rebar)

Block wall rebar 30" long spaced every 5'

Footing drain is 1'x 1' and has a 4" drainpipe running the length of the wall. The footing drain is filled with gravel and has landscape fabric between the gravel and the soil.



Cost of materials

Standard 8x8x16 concrete block – \$1/block

Standard 2x8x16 concrete cap block – \$1.80/block

Bags of pre-mix mortar (1 80# bag per 10 blocks) - \$5/bag

Concrete – \$100 per yard placed (no additional labor costs – this includes all form work and rebar installation).

½" rebar - \$6/10' length

Gravel - \$60/yard placed (no additional labor costs)

Landscape fabric – \$5/yard (no additional labor costs)

4" Perforated drainpipe – \$10/10'

Labor – \$15/hour

- a. Estimate being able to install 20 blocks per hour of labor which includes rebar installation.**

Excavation costs - \$25/linear foot

Backfill and cleanup - \$5/linear foot

***All prices include the appropriate taxes. Estimate any other costs that may not have been listed above. You may neglect the concrete that would be used to fill the concrete blocks cores containing rebar.**

Appendix B

Bill of materials:	Number	Cost
Standard 8x8x16 concrete block – \$1/block	_____	_____
Standard 2x8x16 concrete cap block – \$1.80/block	_____	_____
Bags of pre-mix mortar (80# bag) - \$5/bag	_____	_____
Concrete – \$100 per yard	_____	_____
½" rebar - \$6/10' length	_____	_____
Gravel - \$60/yard placed	_____	_____
Landscape fabric – \$5/yard	_____	_____
4" Perforated drainpipe – \$10/10'	_____	_____
Excavation costs - \$25/linear foot	_____	_____
Backfill and cleanup - \$5/linear foot	_____	_____
List any additional items not listed above but needed		
_____	_____	_____
_____	_____	_____
_____	_____	_____
Total cost of materials.....	_____	_____
Total cost of Labor.....	_____	_____
Total cost of bid to build 100' Wall.....	_____	_____