

OALCF Task Cover Sheet

Task Title: Preparations before pouring Concrete

Learner Name:					
Date Started:	Date Completed:				
Successful Completion: Yes No)				
Goal Path: Employment ✓ Apprenticeship ✓ Se	econdary School Post Secondary Independence				
Task Description:					
Carpenters build forms to hold concrete. They	also review waterstop and rebar information to make				
decisions about materials to be used before the	e concrete is poured.				
Competency:	Task Group(s):				
A: Find and Use Information	A1: Read continuous text				
B: Communicate Ideas and Information	A2: Interpret documents				
C: Understand and Use Numbers	B2: Write continuous text				
D: Use Digital Technology	C3: Use measures				
Level Indicators:					
A1.1: Read brief texts to locate specific detail	S				
A1.2: Read texts to locate and connect ideas a	and information				
A2.2: Interpret simple documents to locate a	42.2: Interpret simple documents to locate and connect information				
B2.1: Write brief texts to convey simple ideas	2.1: Write brief texts to convey simple ideas and factual information				
B2.2: Write texts to explain and describe information and ideas					
C3.3: Use measures to make multi-step calculations; use specialized measuring tools					
0.1: Perform simple digital tasks according to a set procedure					
D.2: Perform well-defined, multi-step digital tasks					
Performance Descriptors: see chart on last page	ge				
Materials Required:					
• Pencil					
Calculator					
Waterstops Chart					
Concrete Formwork Computations docu	ument				
Rebar Information document					
	1				



Task Title: Preparations before pouring Concrete

Carpenters build forms to hold concrete. They also review waterstop and rebar information to make decisions about materials to be used before the concrete is poured and to estimate the amount of materials required. When doing computations, carpenters use calculators for accuracy.

Look at the Waterstops Chart, Concrete Formwork Computations document, and Rebar Information document.

Learner Information and Tasks:

Task 1: Use the Waterstops Chart to complete these tasks.

a) Where are center-placed waterstops attached before the concrete is placed?

b) What is done to the fins of a Split-fin waterstop at the First Placement stage?

c) Name one factor in determining the type of waterstop to be used to prevent water leakage at a vertical joint of concrete.

Task 2: Use the Concrete Formwork Computations document to complete tasks b and c.

a) Search the internet to look up the definitions of "walers" and "strongbacks". In your own words, write the definitions.

b) It is determined that 107.5 linear feet of lumber is required to form a concrete project. In order to compensate for waste, what is the estimated range of lumber, in linear feet, to be ordered for this project? Note: "linear feet" means the length of the material.

c) Plywood may be used for sheathing. What forms require sheathing?

Task 3: Use the Rebar Information document to complete these tasks.



- a) What can be done to improve concrete's lateral load resistance?
- b) Where will the carpenter find the information about placing and spacing of rebars?

c) It is determined that rebar, 2.223 cm in diameter, is required to provide lateral strength to the concrete to be poured for a structure. What size of rebar is to be used?



Waterstops Chart

Heavy Construction 115

A waterstop made of rubber, neoprene, polyvinyl chloride (PVC), or other plastic is installed to prevent water leakage at a vertical construction joint. Center-placed waterstops (waterstops placed at the center of the wall) are available in various designs,

including single piece, split fin, labyrinth, and cellular. They are placed and attached to the bulkhead before the first placement of concrete. See Figure 5-16.



Figure 5-16. Waterstops prevent water leakage in vertical construction joints. The type of waterstop used is determined by water pressure, wall thickness, and anticipated wall movement.



Concrete Formwork Computations

Form Materials and Concrete Quantity Takeoff

Estimating form materials and concrete is a rough calculation of the amount of form materials and volume of concrete required for a specific construction project. Professional estimators commonly estimate the form materials and concrete for heavy construction projects. On small construction projects, such as construction of foundation footings and walls for a residence, the estimating is performed by the contractor or job supervisor.

Form Materials Quantity Takeoff

Form materials are estimated separately for each section of the concrete work. When estimating, dimensions of the form materials are rounded to the next highest foot increment before calculations are performed. For example, the dimension of a wall section measuring 5' $4\frac{1}{2}$ " is rounded to 6'.

When estimating plywood form components, the total surface area of the forms is determined by multiplying the length of the forms by the height. When estimating dimensional lumber such as planks, studs, walers, braces, and stakes, the total length of the lumber is calculated.

Waste occurs when form components are cut from standardized sizes of form materials. Estimators add 5% to 15% of the total amount of form materials to compensate for waste. Underestimation of form materials results in a delay in form construction.

Sheathing

Sheathing is the form material in direct contact with the concrete. Plywood or 2" thick members are used as sheathing for foundation and pier footing forms. Foundation walls are sheathed with plywood reinforced with studs and/or walers, or 2" thick members reinforced with cleats and strongbacks.



Rebar Information

Reinforcing Steel

A concrete wall is subject to both compressive and lateral pressures. Concrete without reinforcement has a great deal of compressive resistance to vertical loads, but far less resistance to lateral loads. The lateral resistance of concrete walls is strengthened by placing *rebars* (steel reinforcing bars) in the walls. This combination is commonly referred to as *reinforced concrete construction*.

Rebars are steel bars with ridges and a rough surface. The uneven surface helps bond the concrete to the steel. Standard size rebars range from $\frac{3}{2}$ " to $\frac{2}{4}$ " in diameter and are identified n=by numbers from #3 to #18. The diameter of the rebar is found by multiplying the number designation by $\frac{3}{2}$ ". For example, a #6 rebar is $\frac{6}{8}$ " or $\frac{3}{4}$ ", in diameter. The size of the rebars required for a wall, as well as their placement and spacing, is shown in section view drawings of prints.

STANDARD REBAR SIZES							
Bar Size	Weight	Per Foot	Diameter		Cross-Sectional Area Squared		
	LB	KG	IN.	CM	IN.	CM	
#3	0.376	0.171	0.375	0.953	0.11	0.71	
#4	0.668	0.303	0.500	1.270	0.20	1.29	
#5	1.043	0.473	0.625	1.588	0.31	2.00	
#6	1.502	0.681	0.750	1.905	0.44	2.84	
#7	2.044	0.927	0.875	2.223	0.60	3.87	
#8	2.670	1.211	1.000	2.540	0.79	5.10	
#9	3.400	1.542	1.128	2.865	1.00	6.45	
#10	4.303	1.952	1.270	3.336	1.27	8.19	
#11	5.313	2.410	1.410	3.581	1.56	10.07	
#14	7.650	3.470	1.693	4.300	2.25	14.52	
#18	13.600	6.169	2.257	5.733	4.00	25.81	



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Answer Key

Task 1: a) bulkhead

b) The fins are closed and secured.

c) The answer should be one of the following factors:
 water pressure
 wall thickness
 anticipated wall movement

Task 2: a) Answers will vary but look for 'own words' written in full sentences. 'Straight' or 'straighten' should be included within the definitions; walers definition should include 'horizontal' and 'support'; strongbacks definition should include 'frame' or 'beam' or 'girder' and 'stiffen', 'support' or 'reinforce'; both provide support to formwork that will hold the concrete.

b) Realize 107.5 should be rounded to 108. Calculate 5% of 108 and add this to 108. Repeat for 15%. These results are the range of lumber, in linear feet, to be ordered for the project.

108 x 5% = 108 x .05 = 5.4

108 + 5.4 = 113.4

Round 113.4 up to 114. This is the lower range.

108 x 15% = 108 x .15 = 16.2

108 + 16.2 = 124.2

Round 124.2 up to 125. This is the upper range.

The range of lumber to be ordered for the project is 114 to 125 linear feet.

c) foundation and pier footing

- Task 3: a) by placing rebars in the walls
 - b) in section view drawings of prints
 - c) **#7**



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	Performance Descriptors	Needs Work	Completes task with support from practitioner	Completes task independently
A1.1	reads short texts to locate a single piece of information			
	follow simple, straightforward instructional texts			
A1.2	scans text to locate information			
	locates multiple pieces of information in simple texts			
	makes low-level inferences			
	 makes connections between sentences and between paragraphs in a single text 			
	 reads more complex texts to locate a single piece of information 			
	obtains information from detailed reading			
A2.2	performs limited searches using one or two search criteria			
	extracts information from tables and forms			
	uses layout to locate information			
	makes connections between parts of documents			
	makes low-level inferences			
B2.1	writes simple texts to request, remind or inform			
	conveys simple ideas and factual information			



	demonstrates a limited understanding of sequence		
	uses sentence structure, upper and lower case and basic punctuation		
	uses highly familiar vocabulary		
B2.2	writes texts to explain and describe		
	 begins to sequence writing with some attention to organizing principles (e.g. time, importance) 		
	 uses limited range of vocabulary and punctuation appropriate to the task 		
	 begins to select words and tone appropriate to the task 		
	begins to organize writing to communicate effectively		
C3.3	 calculates using numbers expressed as whole numbers, fractions, decimals, percentages and integers 		
	 manages unfamiliar elements (e.g. context, content) to complete tasks 		
	 makes estimates involving many factors where precision is required 		
	chooses and performs required operations; makes inferences to identify required operations		
	 interprets, represents and converts measures using whole numbers, decimals, percentages, ratios and fractions 		
D.1	follows simple prompts		
	follows apparent steps to complete tasks		
	interprets brief text and icons		
	locates specific functions and information		
D.2	selects and follows appropriate steps to complete tasks		
	locates and recognizes functions and commands		



•	makes low-level inferences to interpret icons and text		
•	performs simple searches using keywords (e.g. internet, software help menu)		

This task: was successfully completed____

needs to be tried again____

Learner Comments		

Instructor (print)

Learner Signature