

Appendix E



estimating

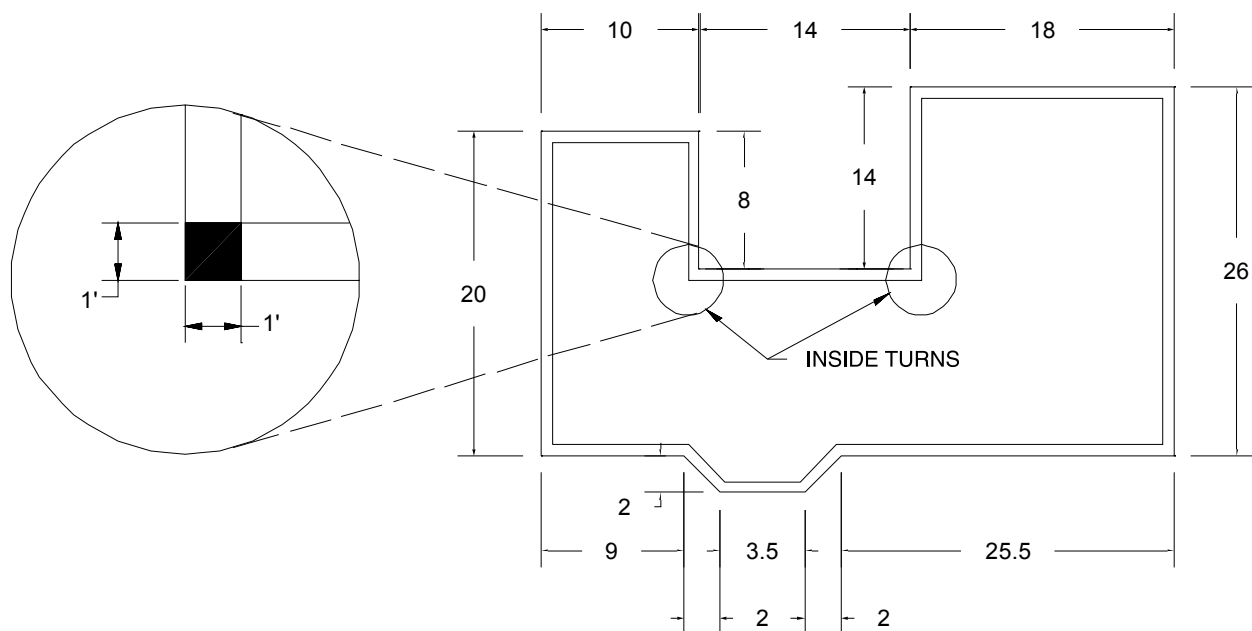
INFORMATION GATHERING

Estimating is a simple task with Arxx™. In order to complete an estimate of materials required for a typical Arxx project, you will need to gather the following information from the plans for the building.

Lineal Footage of Wall

Begin by adding the length of all walls that will be built with Arxx. It is typically easier to look at each floor separately when calculating lineal footage. After the lineal footage is calculated, return to the plans and count the total number of inside turns. For each inside turn, add two lineal feet. This is to accommodate for the two lineal feet of material that are not dimensioned on most plans. (Refer to Figure E.1.)

FIGURE E.1 – OVERLAP OF DIMENSIONS



In the above example, the total lineal footage would be:

$$10 + 8 + 14 + 14 + 18 + 26 + 25.5 + 3 + 3.5 + 3 + 9 + 20 = 154$$

$$154 + (2 \times 2) = 158$$



ARXX HAS DEVELOPED AN ESTIMATING PROGRAM WHICH IS AVAILABLE ON THE WEB SITE.



90° Turns

While still looking at the floor plan, determine how many times the wall turns 90° (inside and outside together). You will use this number to determine how many 90° corner forms are required.

Again referring to Figure E.1, there are eight (8) 90° turns.

Variable Degree Turns

From the floor plan, determine how many times the wall turns other than 90° (inside and outside together). You will use this number to determine how many adjustable corner forms are required.

Again referring Figure E.1, there are four (4) variable degree turns.

Number of Courses

Next, you will need to determine the number of courses of forms required. From the section drawings, you can determine the height of the wall section that is being estimated. With this dimension, turn to the coursing chart in Appendix F to determine the most economical combination of full courses of forms and height adjusters.

When determining course layout, keep in mind such things as floor elevations and height of openings within the wall, as these can help to determine where height adjusters should be placed, or whether it would be better to add another course of forms to make floor installation simpler. Now is the time to build the project on paper before you get to the site.

Area of Openings

Next, you will determine the total square footage of openings. Using the window and door schedules (if provided) is the easiest way to determine the total area of openings. However, you will sometimes need to go through the floor plans looking at each opening to determine its dimensions and calculate its area.

Buck Saver™

While gathering the data for total area of openings in the wall, make note of the head and jamb dimensions of each opening. These will be used to determine the quantity of Buck Saver required on-site. It should be noted that the Buck Saver is available to fit the 6 1/4" forms. It can easily be modified for use with the 8" forms also.

Masonry Veneer

Looking at the plans, you should be able to determine if the project will require support for masonry veneer. If so, does it require a tapered top form, or an extended brick ledge form? Now determine how many lineal feet of tapered top or extended brick ledge forms will be required.

Waterproofing and Parging

If the area being estimated will be partially below grade (i.e. a basement or crawlspace), it will be necessary to provide waterproofing and other coatings materials to the outside of the wall. Calculate the average height of backfill around the building.

Maxx™ Foundation Wrap

If instead of Arxx™ Waterproofing Membrane, decision is made to use Maxx Foundation Wrap, you will need to total (separately) the lineal footage of the foundation wall where the backfill height (from top of footing to finished grade) will be:

- a) Less than or equal to 6'-6"
- b) Greater than 6'-6" and less than or equal to 8'-0" AND
- c) Greater than 8'-0"

Armed with the information collected above, flip to Table E.1 – Arxx Estimating Formulas and use this information to calculate the forms and other materials required for your project.

Reinforcing Steel

To determine reinforcing steel requirements, you need to determine an average length of reinforcing steel required for each form unit to be placed. When determining this average per form, be sure to account for horizontal and vertical reinforcing separately since the horizontal and vertical rebar are often different sizes. Typically, it is easier to account for stirrups (for both lintels and extended brick ledge), opening reinforcing, and lintel rebar separately from the normal wall reinforcing.

Arxx Lok

Using the lineal footage of wall and the number of courses of Arxx Lok to be used, you can determine the required Arxx Lok quantity. Remember that Arxx Lok should be used in every fourth or fifth course starting with the second course.

Concrete

Concrete quantities are determined using the dimensions of the concrete wall to be cast. The lineal footage of wall, height of wall, thickness of wall, and total SF of openings are the critical pieces of information that must be captured from the plans. Refer to Table E.2 – Concrete Estimating.

Labor

Arxx strives to collect accurate data with respect to man-hour labor rates. In order to ensure that any such data can be applied accurately, there must be some knowledge applied with respect to such elements as the following:

- › Expected weather conditions (winter vs. summer)
- › SF of openings versus Gross SF of wall
- › Available access on-site
- › Crew size and experience level, etc.

To this end, Arxx has developed a tool called the **Arxx Guide to Estimating Man-Hour Rates**. The guide is re-printed later in this chapter.

ESTIMATING FORMULAS

TABLE E.1 – ARXX™ ESTIMATING FORMULAS

PRODUCT	FORMULA				
Standards ²	$\frac{\text{LF}^1 - \text{Footage of Turns (90}^\circ, \text{ Fixed 45}^\circ\text{ and Adjustable}^4)}{4} \times \# \text{ of Courses of Standards}$				
90° Corners	# of 90° Turns x # of Courses				
Double Fixed 45° Corners ³	$\frac{(\# \text{ of 45}^\circ \text{ Turns} \times \# \text{ of Courses})}{2}$				
Adjustable Corners ⁴	# of Adjustable Turns x # of Courses				
Extended Brick Ledge	$\frac{\text{LF of EBL}}{4} + 1 \text{ Unit/Turn}$				
Tapered Tops	$\frac{(\text{LF of TT}) - \text{Footage of Turns (90}^\circ, \text{ Fixed 45}^\circ \text{ and Adjustable)}}{4}$				
Feet of Height Adjusters	LF x 2 sides x # of Courses of Height Adjusters				
Feet of Arxx Lok	LF x # of Courses of Arxx Lok				
Rolls of Filament Tape	$\frac{\text{Total \# of Forms}}{50}$				
LF of Buck Material	(Jamb Height x 2) + Width				
Waterproofing Membranes	<table border="0"> <tr> <td>Arxx™ 40 mil Waterproofing Membrane</td> <td>Polyguard® 650XTP and 650XTM Termite Barrier Membranes</td> </tr> <tr> <td>$\frac{\text{Area to Be Covered}}{235 \text{ Sq. Ft. per Roll}}$</td> <td>$\frac{\text{Area to Be Covered}}{144 \text{ Sq. Ft. per Roll}}$</td> </tr> </table>	Arxx™ 40 mil Waterproofing Membrane	Polyguard® 650XTP and 650XTM Termite Barrier Membranes	$\frac{\text{Area to Be Covered}}{235 \text{ Sq. Ft. per Roll}}$	$\frac{\text{Area to Be Covered}}{144 \text{ Sq. Ft. per Roll}}$
Arxx™ 40 mil Waterproofing Membrane	Polyguard® 650XTP and 650XTM Termite Barrier Membranes				
$\frac{\text{Area to Be Covered}}{235 \text{ Sq. Ft. per Roll}}$	$\frac{\text{Area to Be Covered}}{144 \text{ Sq. Ft. per Roll}}$				
Maxx™ Foundation Wrap	<table border="0"> <tr> <td>6'-6" Rolls Backfill Ht. = 6'-6" or less</td> <td>8'-0" Rolls Backfill Ht. is greater than 6'-6"⁵</td> </tr> <tr> <td>$\frac{\text{LF of wall}}{66.5 \text{ Sq. Ft. per Roll}}$</td> <td>$\frac{\text{LF of wall}}{66.5 \text{ Sq. ft. per Roll}}$</td> </tr> </table>	6'-6" Rolls Backfill Ht. = 6'-6" or less	8'-0" Rolls Backfill Ht. is greater than 6'-6" ⁵	$\frac{\text{LF of wall}}{66.5 \text{ Sq. Ft. per Roll}}$	$\frac{\text{LF of wall}}{66.5 \text{ Sq. ft. per Roll}}$
6'-6" Rolls Backfill Ht. = 6'-6" or less	8'-0" Rolls Backfill Ht. is greater than 6'-6" ⁵				
$\frac{\text{LF of wall}}{66.5 \text{ Sq. Ft. per Roll}}$	$\frac{\text{LF of wall}}{66.5 \text{ Sq. ft. per Roll}}$				
Mold Strips (6'-6" Each)	LF of wall x .195 strips/LF ⁶				
Maxx™ Wrap Screw Plugs	LF of wall x 3 plugs/LF ⁶				
Bags of PrepCoat B2000	$\frac{\text{Area to Be Covered}}{75 \text{ Sq. Ft. per Bag}}$				
Rolls of Fiber Mesh	$\frac{\text{Area to Be Covered}}{475 \text{ Sq. Ft. per Roll}}$				
Feet of Rebar	Total # of Form Units x (Est'd Footage of Rebar per Form Unit)				
Feet of EBL Rebar	# of EBL Forms x 14' of #3 (10M)				
Sets of Alignment System	(LF / 6) + Allowance for Corners				

¹ Add 2' 0" to total lineal footage for every inside 90° turn

² One standard form unit = 5.58 sf of wall area (4 LF of wall)

³ One fixed 45° turn = 2.71 sf of wall area (2 LF of wall)

⁴ One adjustable form unit = 4.19 sf of wall area (3 LF of wall)

⁵ If building site has several grade heights (both below 6'-6" and above 8'-0"), consider using 8'-0" rolls of Maxx™ Wrap throughout so that the waste from the top of the shorter sections can be used for the extension layer for the areas taller than 8'-0". As wall backfill heights approach 12'-0" consider using 2 rolls of 6'-6" wrap in place of 8'-0" rolls.

⁶ These calculations provide for adequate coverage of material on most typical residential jobs. Consider increasing by 10% for more complex plan layouts or plans with numerous below grade window installations.

ESTIMATING FORMULAS

TABLE E.2 – CONCRETE ESTIMATING

CONCRETE FORM ¹	IMPERIAL (YD ³)	METRIC (M ³)
4"	$\frac{(\text{GSF of Wall} - \text{SF of Openings}) \times 0.334}{27}$	$\frac{(\text{GSF of Wall} - \text{SF of Openings}) \times 0.334}{35.315}$
6"	$\frac{(\text{GSF of Wall} - \text{SF of Openings}) \times 0.522}{27}$	$\frac{(\text{GSF of Wall} - \text{SF of Openings}) \times 0.522}{35.315}$
8"	$\frac{(\text{GSF of Wall} - \text{SF of Openings}) \times 0.667}{27}$	$\frac{(\text{GSF of Wall} - \text{SF of Openings}) \times 0.667}{35.315}$
10"	$\frac{(\text{GSF of Wall} - \text{SF of Openings}) \times 0.84}{27}$	$\frac{(\text{GSF of Wall} - \text{SF of Openings}) \times 0.84}{35.315}$
ADD FOR EBL	Lineal Feet of EBL x 0.0066 yd ³	Lineal Feet of EBL x 0.005 m ³

¹ Does not allow for extra concrete required for concrete pump (usually $\frac{1}{3}$ m³ or $\frac{1}{2}$ yd³)



WHEN ORDERING, PLEASE KEEP IN MIND THE QUANTITIES IN WHICH ARXX™ WALLSYSTEM FORMS ARE BUNDLED FOR SHIPPING.



WHEN PERFORMING ESTIMATES, PLEASE CONTACT YOUR LOCAL ARXX WALLSYSTEM DISTRIBUTOR FOR MOST RECENT PRICING AND AVAILABILITY.

GUIDE TO ESTIMATING MAN-HOUR RATES

Instructions

In each of the 20 categories on the next page, circle one of the three choices that most closely matches your building. Add up the points from each category into a grand total. This is your building's rating. Apply the building rating to determine your estimated man-hours per gross square foot of wall surface, (mh/gsf). To calculate the total Arxx™ man-hours for your building, simply multiply the man-hour rate by the gross square feet of wall surface in your building (do not deduct for openings). This is an approximate calculation. Contractors are to utilize their best judgment in applying lighter or heavier point ratings. This guide is based on historical job reports and covers all phases of the Arxx work, including unloading and handling forms, stacking forms, fabricating/installing bucks, fabricating/installing reinforcing steel, handling/installing BMAS, installing embedded metal connections, placing/consolidating concrete, stripping BMAS, and final clean-up. Good contractors will track their mh/gsf and create their own historical database to improve their accuracy in future estimates.

❖ The top twelve categories have heavier point ratings than the bottom eight categories.

TABLE E.3 – MAN-HOUR RATE

POINT SYSTEM	WEATHER CONDITIONS	#90 CORNERS/COURSE TOTAL FORMS/COURSE	ADJ. OR 45° CORNERS/COURSE TOTAL FORMS/COURSE	TYPICAL # OF COURSES/STORY	# OF POINTS	MAN-HOUR RATE CHART	
1	mild	0–16%	0	1–7		BUILDING RATE	MAN-HOUR RATE MH/GSF
3	rain/snow	17–24%	1–16%	8–10		20	0.03
5	severe hot/cold	25% +	17% +	11 +		21–24	0.04
						25–28	0.05
						29–32	0.06
						33–36	0.07
						37–38	0.08
						39–40	0.09
						41–42	0.10
						43–44	0.11
						45–47	0.12
						48–50	0.13
						51–55	0.14
						56–61	0.15
						62–67	0.16
						68–73	0.17
						74–79	0.18
						80–82	0.19
						83–84	0.20
POINT SYSTEM	SF OF OPENINGS GSF OF WALL SURFACE	SF OF RADIUS WALL GSF OF WALL SURFACE	AVERAGE LINTEL HAS	ARXX™ CREW EXPERIENCE LEVEL	# OF POINTS		
1	0 – 7%	0	no stirrups	high			
3	8 – 20%	1 – 10%	C stirrups	medium			
5	21% +	11% +	rectangular cage stirrups	low, unless job is 2000+ forms			
POINT SYSTEM	SITE ACCESS AND GROUND CONDITIONS	WINDOW AND DOOR HORIZONTAL RIP CUTS	# OF TEES OR PILASTERS/STORY	EMBEDMENTS	# OF POINTS		
1	ideal	no rip cuts	0	few & simple			
2	fair	up to 4" rip cuts	1 – 4	many/complex			
5	poor	4" rips at top & bottom	5 +	many & complex			
POINT SYSTEM	COURSES OF HEIGHT ADJUSTERS	COURSES OF BRICK LEDGE PER STORY	LF REINFORCING PER STANDARD FORM	# OF STORIES INCL. BASEMENT	# OF POINTS		
1	0	0	0 – 9	1			
2	1	1	10 – 14	2			
3	2 +	2 +	15 +	3 +			
POINT SYSTEM	CREW SIZE	BOTTOM COURSE ON A:	CONCRETE PLACEMENT	DIMENSIONS ARE ARXX™-FRIENDLY	# OF POINTS		
1	1 – 4	slab	boom pump	8" increments			
2	5 – 10	strip footer	chute	non 8" increments			
3	11 +	piles	crane & bucket or line pump	many wall lengths less than 3'			
				TOTAL			

GUIDE TO ESTIMATING MAN-HOUR RATES

TABLE E.4 – MAN-HOUR PROJECT EXAMPLE

POINT SYSTEM	WEATHER CONDITIONS	#90 CORNERS/COURSE TOTAL FORMS/COURSE	ADJ. OR 45° CORNERS/COURSE TOTAL FORMS/COURSE	TYPICAL # OF COURSES/STORY	# OF POINTS	MAN-HOUR RATE CHART	
1	☼ mild	0–16%	☼ 0	☼ 1–7	3	BUILDING RATE	MAN-HOUR RATE MH/GSF
3	rain/snow	☼ 17–24%	1–16%	8–10	3	20	0.03
5	severe hot/cold	25% +	17% +	11 +	0	21–24	0.04
						25–28	0.05
						29–32	0.06
						33–36	0.07 ☼
						37–38	0.08
						39–40	0.09
						41–42	0.10
						43–44	0.11
						45–47	0.12
						48–50	0.13
						51–55	0.14
						56–61	0.15
						62–67	0.16
						68–73	0.17
						74–79	0.18
						80–82	0.19
						83–84	0.20
POINT SYSTEM	SF OF OPENINGS GSF OF WALL SURFACE	SF OF RADIUS WALL GSF OF WALL SURFACE	AVERAGE LINTEL HAS	ARXX™ CREW EXPERIENCE LEVEL	# OF POINTS		
1	0 – 7%	☼ 0	no stirrups	high	1		
3	☼ 8 – 20%	1 – 10%	☼ C stirrups	☼ medium	9		
5	21% +	11% +	rectangular cage stirrups	low, unless job is 2000+ forms	0		
POINT SYSTEM	SITE ACCESS AND GROUND CONDITIONS	WINDOW AND DOOR HORIZONTAL RIP CUTS	# OF TEES OR PILASTERS/STORY	EMBEDMENTS	# OF POINTS		
1	☼ ideal	no rip cuts	☼ 0	few & simple	2		
2	fair	up to 4" rip cuts	1 – 4	☼ many/complex	2		
5	poor	☼ 4" rips at top & bottom	5 +	many & complex	5		
POINT SYSTEM	COURSES OF HEIGHT ADJUSTERS	COURSES OF BRICK LEDGE PER STORY	LF REINFORCING PER STANDARD FORM	# OF STORIES INCL. BASEMENT	# OF POINTS		
1	0	☼ 0	☼ 0 – 9	☼ 1	3		
2	☼ 1	1	10 – 14	2	2		
3	2 +	2 +	15 +	3 +	0		
POINT SYSTEM	CREW SIZE	BOTTOM COURSE ON A:	CONCRETE PLACEMENT	DIMENSIONS ARE ARXX™-FRIENDLY	# OF POINTS		
1	1 – 4	☼ slab	☼ boom pump	8" increments	2		
2	☼ 5 – 10	strip footer	chute	☼ non 8" increments	4		
3	11 +	piles	crane & bucket or line pump	many wall lengths less than 3'	0		
TOTAL					36		

☼ Estimated Project Man-Hour Rate is 0.07 mh/gsf

Perform any necessary calculations here

