

WBS	Activity ID	Description	Quantity	Unit	Labor	Equipment	Material	Subbid	Total
2 Filing Cabinet					\$0.00	\$120.42	\$179.20	\$400.00	\$699.61
	24	Construct Cabinet Prototype			\$0.00	\$120.42	\$179.20	\$400.00	\$699.61
	24-1	Metal sheets for cabinet •12 in x 48 in x 0.125 in Aluminum bare sheets 5086 H32 (\$41.05/sheet) http://www.onlinemetals.com/merchant.cfm?pid=8106&step=4&id=755&CAWELAID=120293320000055981&gclid=Cj0KCQiArYDQBRDoARIsAMR8s_Tp2CBb8MScaXLb3ELy9h-7eWAhqUQCtKV3h8o4IEp-hX3xObOckXgaAI7YEALw_wcB	4	sheets	\$0.00	\$0.00	\$164.20	\$0.00	\$164.20
	24-2	Machine shop •Must contract with a shop in order to machine metals •Assume about \$50 per hour on desired machinery •Each sheet requires about 2 hours to machine •Therefore, machining is about \$100 per sheet	4	sheets	\$0.00	\$0.00	\$0.00	\$400.00	\$400.00
	24-3	Transportation to and from machine shop •Machinic, 2325 3rd Street, Suite 299, San Francisco, CA 94107 http://www.sanfrangasprices.com/index.aspx?fuel=D Gas costs around \$3.35 per gallon •Assume car rates around 20 miles per gallon •(\$3.35/gal)/(20 mi/gal) = \$0.17/mile •Going to and from shop = 1 trip •Require 1 Trip per sheet (4 trips total)	30	miles/trip	\$0.00	\$20.40	\$0.00	\$0.00	\$20.40
	24-4	Tools for piecing machined parts together • https://www.homedepot.com/s/nut%2520and%2520bolt?NCNI=5 Nut and bolt assortment costs \$15 • https://www.homedepot.com/b/Tools-Power-Tools-Drills/N-5yc1vZc27f Drill costs \$100 and requires 1 kWh to complete build • https://www.bls.gov/regions/west/news-release/averageenergyprices_sanfrancisco.htm Electricity costs around \$0.20/kWh •Therefore, total equipment costs = \$100 + (\$0.20/kWh)(1kWh) = \$100.20	8	hours	\$0.00	\$100.02	\$15.00	\$0.00	\$115.01
3 Automated Filing System					\$345.00	\$26.11	\$95.25	\$0.00	\$466.36
	33	Gather materials for automated filing system			\$0.00	\$25.11	\$95.25	\$0.00	\$120.36
	33-1	Research and confirm materials required for system • https://www.energguide.be/en/questions-answers/how-much-power-does-a-computer-use-and-how-much-co2-does-that-represent/54/ Computer requires about 600 kWh/year •Electricity costs \$0.20/kWh •Total costs = (\$0.20/kWh)(600kWh/year)/(365 day/year)(24 hour/day)(8 hour) = \$0.11	8	hours	\$0.00	\$0.11	\$0.00	\$0.00	\$0.11
	33-2	Purchase required materials • https://www.adafruit.com/product/362 Near Frequency Communication (NFC) tags cost \$2.50/tag Require at least 5 tags for prototype build and tests Therefore, NFC tag total cost = (\$2.50/tag)(5 tag) = \$12.50 • https://www.adafruit.com/product/789 NFC reader costs \$39.95 • https://www.adafruit.com/product/50 Electricity costs around \$0.20/kWh/50 Arduino microcontroller costs \$24.95 • https://www.adafruit.com/product/758 Breadboard wires cost \$3.95 • https://www.adafruit.com/product/239 Breadboard costs \$5.95 • https://www.adafruit.com/product/276 5V power supply adaptor costs \$7.95	10	materials	\$0.00	\$0.00	\$95.25	\$0.00	\$95.25
	33-3	Shipping costs of purchased materials •Assume shipping costs about \$2.50 per material	10	materials	\$0.00	\$25.00	\$0.00	\$0.00	\$25.00
	36	Test Automated Filing System			\$345.00	\$1.00	\$0.00	\$0.00	\$346.00
	36-1	Wiring and programming micro-controller •Assume programming requires a total of 5kWh to complete •Electricity costs around \$0.20/kWh	5	kWh	\$0.00	\$1.00	\$0.00	\$0.00	\$1.00
	36-2	Hire people to test and evaluate system •Hire people for \$10 to test automated system •Tests require at least 15 people	15	people	\$150.00	\$0.00	\$0.00	\$0.00	\$150.00
	36-3	Read evaluations •Reading and analyzing requires at least 1 hour per evaluation (15 hours total) • https://sfgov.org/olse/minimum-wage-ordinance-mwo Minimum wage in SF is \$13.00/hour •Costs associated with reading evaluations because of not working at minimum wage job (\$13/hour)(15 hour) = \$195	13	\$/hour	\$195.00	\$0.00	\$0.00	\$0.00	\$195.00