



**WESTERN MICHIGAN UNIVERSITY**

Bronco Construction  
Research Center

## Estimate

Item Code	Description	Quantity	\$ Each		Amount
<b>Staff Compensation</b>					
Center Director	Director	1	\$72.84/hour		
Labor- Research Associate	R3 Research Associate	1	\$33.76/hour		
Labor- Carpenter	Carpenter/General Labor	1	\$30.00/hour		
Labor- Mechanical Engineer	\$30/hour	1	\$30.00/hour		
Student Worker	\$20/hour	1	\$20.00/hour		
<b>Hardness</b>					
Rockwell Hardness	ASTM E18 – hardness of metallic materials	EA	\$48.00/each*		
Brinell Hardness	ASTM E10 Hardness of metallic materials by portable hardness testers	EA	\$120.00/each*		
Vickers – Hardness	ASTM E384 micro indentation hardness of materials	EA	\$120.00/each*		
Profile Harness	ASTM E384 micro indentation hardness of materials	EA	\$160.00/each*		
Case Depth	ASTM E384 – up to 10 hits per component	EA	\$160.00/each*		
<b>Facility Operating Expenses (Daily)</b>					
Facility Operating Expenses	Daily Rate	1	\$112.71/day		
<b>Equipment Costs</b>					
Equipment Costs (10-year depreciation)	Daily Rate	1	\$232.53/day		
<b>TOTAL</b>					

Above tests entail producing a data set and graphs, no analysis. Tests requiring machining, sample preparation, fixturing, or significant setup time will be charged by the hour at applicable rates plus materials costs. An estimate will be given upon receipt of samples

\*specimen preparation and fixturing is additional via Staff Compensation + Facility Operating Expenses