

**G5s Engine 39 Estimate 2009**

<b>Task/Category</b>	<b>Hours</b>	<b>Hrs. Sub T</b>	<b>Labor</b>	<b>Lbr. Sub T</b>	<b>Materials</b>	<b>Mat. Sub T</b>	<b>Grand Total</b>
<b>Admin. &amp; Supervision</b>							
CMO time @145 per hour	267		\$38,683.68				
Supervisor time @ \$120 per hour	1334		\$160,070.40				
Order materials @ \$45	40		\$1,800.00				
Unload materials @ \$45	40		\$1,800.00				
		<b>1681</b>		<b>\$202,354.08</b>			
<b>Complete Boiler</b>							
Make and install firebox side sheets	900		\$90,000.00		\$1,000.00		
Make and install staybolts	1100		\$110,000.00		\$1,000.00		
Install tubes	160		\$16,000.00		\$10,000.00		
Overhaul throttle and other boiler fittings	200		\$20,000.00		\$1,000.00		
Overhaul safety valves	60		\$6,000.00		\$1,000.00		
Install throttle and other boiler fittings	80		\$8,000.00		\$100.00		
Machine and install new dome lid	80		\$8,000.00		\$800.00		
Hydro test boiler	50		\$5,000.00				
Build and install superheaters	300		\$30,000.00		\$15,000.00		
Complete Form 4	20		\$2,000.00				
Build and install jacket frame and jacket	300		\$30,000.00		\$8,000.00		
Labor, boiler @\$45	325		\$14,625.00				
		<b>3575</b>		<b>\$339,625.00</b>		<b>\$37,900.00</b>	
<b>Running Gear &amp; Tender</b>							
Unload and organize at Strasburg @ \$45	80		\$3,600.00				
		<b>80</b>		<b>\$3,600.00</b>			

**G5s Engine 39 Estimate 2009**

<b>Task/Category</b>	<b>Hours</b>	<b>Hrs. Sub T</b>	<b>Labor</b>	<b>Lbr. Sub T</b>	<b>Materials</b>	<b>Mat. Sub T</b>	<b>Grand Total</b>
<b>Frame</b>							
Magnaflux frame	40		\$4,000.00				
Repair any cracks in frame	20		\$2,000.00				
True up shoe and wedge faces	80		\$8,000.00				
Fit pedestal binders	40		\$4,000.00				
Machine and tram shoes and wedges as needed	120		\$12,000.00		\$7,200.00		
Labor, frame @ \$45	30		\$1,350.00				
		<b>330</b>		<b>\$31,350.00</b>		<b>\$7,200.00</b>	
<b>Equalizing</b>							
Replace rusted springs	10		\$1,000.00		\$6,000.00		
Magnaflux equalizers, hangers, saddles & keys	60		\$6,000.00				
Overhaul equalizing parts as needed	120		\$12,000.00		\$1,000.00		
Labor, equalizing @\$45	19		\$855.00				
		<b>209</b>		<b>\$19,855.00</b>		<b>\$7,000.00</b>	
<b>Drivers</b>							
Magnaflux wheel centers	16		\$1,600.00				
Repair any cracks in wheel centers	10		\$1,000.00				
Measure tires for tread dia, wobble, back to back, out of round; Repair as needed	160		\$16,000.00				
Measure journals for minimum dia, variation & corrosion damage	6		\$600.00				
Inspect hub plates for looseness, variation & corrosion damage	3		\$300.00				
Measure crankpins for minimum dia, throw & quarter	40		\$4,000.00				
Reset tires as needed	16		\$1,600.00				

**G5s Engine 39 Estimate 2009**

<b>Task/Category</b>	<b>Hours</b>	<b>Hrs. Sub T</b>	<b>Labor</b>	<b>Lbr. Sub T</b>	<b>Materials</b>	<b>Mat. Sub T</b>	<b>Grand Total</b>
Turn journals/replace axles as needed	120		\$12,000.00		\$3,000.00		
Polish, turn, or replace crankpins as needed	240		\$24,000.00		\$1,500.00		
Labor, drivers @ \$45	61		\$2,749.50				
		<b>672</b>		<b>\$63,849.50</b>		<b>\$4,500.00</b>	
<b>Driving Boxes</b>							
Remove old crown brasses & hubliners as needed; repair and/or replace as needed	80		\$8,000.00				
Magnaflux driving boxes and cellars	15		\$1,500.00				
Repair cracks in driving boxes	40		\$4,000.00				
Machine shoe and wedge faces, crown brass fits, cellar box fits, & saddle seats as needed	180		\$18,000.00				
Machine crown brasses and hubliners	180		\$18,000.00		\$15,000.00		
Build new oil cellars	8		\$800.00		\$600.00		
Make and install cellar pads	24		\$2,400.00		\$500.00		
Labor, driving boxes @ \$45	53		\$2,371.50				
		<b>580</b>		<b>\$55,071.50</b>		<b>\$16,100.00</b>	
<b>Lead Truck</b>							
Disassembly	40		\$4,000.00				
Magnaflux truck frame and parts	60		\$6,000.00				
Repair and cracks in lead truck parts	40		\$4,000.00				
Measure wheels for tread dia, wobble & back to back	16		\$1,600.00				
Measure journals and hubs for minimum dia, variation & corrosion damage	6		\$600.00				

**G5s Engine 39 Estimate 2009**

<b>Task/Category</b>	<b>Hours</b>	<b>Hrs. Sub T</b>	<b>Labor</b>	<b>Lbr. Sub T.</b>	<b>Materials</b>	<b>Mat. Sub T</b>	<b>Grand Total</b>
Turn journals/replace axles as needed	48		\$4,800.00				
Overhaul boxes as needed. Face box hubliners to give correct lateral	40		\$4,000.00				
Overhaul brasses as needed	40		\$4,000.00				
Overhaul/replace lead truck pins as needed	40		\$4,000.00				
Reassemble lead truck	24		\$2,400.00				
Make and install cellar pads	18		\$1,800.00		\$300.00		
Labor, lead truck @\$45	37		\$1,674.00				
		<b>409</b>		<b>\$38,874.00</b>		<b>\$300.00</b>	
<b>Engines</b>							
Magnaflux cylinder block, pistons, rods, and valve parts	60		\$6,000.00				
Repair/reface cylinder head seats as needed	100		\$10,000.00				
Repair/replace studs as needed	50		\$5,000.00				
Measure piston rods for minimum dia, variation & corrosion damage	6		\$600.00				
Turn/replace piston rods as needed	100		\$10,000.00		\$1,800.00		
Replace piston rings	8		\$800.00		\$1,000.00		
Measure valve stems for minimum dia, variation & corrosion damage	4		\$400.00				
Overhaul piston valves as needed	120		\$12,000.00		\$800.00		
Overhaul crossheads as needed	80		\$8,000.00		\$500.00		
Overhaul wristpins as needed	60		\$6,000.00		\$300.00		
Overhaul crosshead guides as needed	160		\$16,000.00		\$400.00		

**G5s Engine 39 Estimate 2009**

<b>Task/Category</b>	<b>Hours</b>	<b>Hrs. Sub T</b>	<b>Labor</b>	<b>Lbr. Sub T</b>	<b>Materials</b>	<b>Mat. Sub T</b>	<b>Grand Total</b>
Overhaul piston rod packings as needed	32		\$3,200.00		\$300.00		
Assemble engines	160		\$16,000.00				
Labor, engines @\$45	94		\$4,230.00				
		<b>1034</b>		<b>\$98,230.00</b>		<b>\$5,100.00</b>	
<b>Rods</b>							
Press out old rod brasses	24		\$2,400.00				
Magnaflux rods	40		\$4,000.00				
Rebore rods as needed and for tram	60		\$6,000.00				
Overhaul knuckle pins as needed	120		\$12,000.00		\$500.00		
Machine and install new rod brasses	120		\$12,000.00		\$4,500.00		
Convert crankpins to oil lubrication	132		\$13,200.00		\$500.00		
Labor, rods @\$45	50		\$2,232.00				
		<b>546</b>		<b>\$51,832.00</b>		<b>\$5,500.00</b>	
<b>Valve Gear</b>							
Magnaflux valve gear parts	28		\$2,800.00				
Return/replace pins as needed	80		\$8,000.00		\$100.00		
Replace bushings as needed	80		\$8,000.00		\$250.00		
Regrind links	24		\$2,400.00				
Build up/replace link blocks	40		\$4,000.00		\$200.00		
Overhaul power reverse	180		\$18,000.00		\$500.00		
Labor, valve gear @\$45	43		\$1,944.00				
		<b>475</b>		<b>\$45,144.00</b>		<b>\$1,050.00</b>	

**G5s Engine 39 Estimate 2009**

<b>Task/Category</b>	<b>Hours</b>	<b>Hrs. Sub T</b>	<b>Labor</b>	<b>Lbr. Sub T</b>	<b>Materials</b>	<b>Mat. Sub T</b>	<b>Grand Total</b>
<b>Tender</b>							
Overhaul tender trucks as needed	240		\$24,000.00		\$1,000.00		
Remove oil bunker	24		\$2,400.00				
Minor repairs to tank as needed	40		\$4,000.00				
Inspect and repair tender frame as needed	16		\$1,600.00				
Magnaflux drawbars	4		\$400.00				
Labor, tender as needed @\$45	32		\$1,458.00				
		<b>356</b>		<b>\$33,858.00</b>		<b>\$1,000.00</b>	
<b>Brakes</b>							
Overhaul air compressor as needed	360		\$36,000.00		\$1,500.00		
Overhaul brake cylinders as needed	40		\$4,000.00		\$400.00		
Overhaul brake valves as needed	120		\$12,000.00		\$300.00		
Overhaul foundation brake rigging as needed	120		\$12,000.00		\$500.00		
Labor, brakes @\$45	64		\$2,880.00				
		<b>704</b>		<b>\$66,880.00</b>		<b>\$2,700.00</b>	
<b>Final Assembly</b>							
Mount driving boxes on axles	9		\$900.00				
Lower frame onto drivers and lead truck	100		\$10,000.00				
Mount foundation brake rigging	80		\$8,000.00				
Mount side and main rods	80		\$8,000.00				
Mount valve gear	80		\$8,000.00				
Set valve timing	240		\$24,000.00				
Design, build and install ash pan	360		\$36,000.00		\$2,500.00		

**G5s Engine 39 Estimate 2009**

<b>Task/Category</b>	<b>Hours</b>	<b>Hrs. Sub T</b>	<b>Labor</b>	<b>Lbr. Sub T</b>	<b>Materials</b>	<b>Mat. Sub T</b>	<b>Grand Total</b>
Mount boiler on the frame	360		\$36,000.00		\$300.00		
Install front end	160		\$16,000.00		\$600.00		
Overhaul and install cab	240		\$24,000.00		\$1,200.00		
Overhaul and install running boards	40		\$4,000.00				
Overhaul and plumb injectors	180		\$18,000.00		\$800.00		
Plumb brake system	360		\$36,000.00		\$800.00		
Mount sand dome and plumb sanders	80		\$8,000.00		\$200.00		
Overhaul, mount and plumb lubricators	240		\$24,000.00		\$500.00		
Paint locomotive	200		\$20,000.00		\$2,000.00		
Labor, final assembly @\$45	480		\$21,600.00				
Misc. fabrication & assembly of parts	1000		\$100,000.00		\$25,000.00		
		<b>4289</b>		<b>\$402,500.00</b>		<b>\$33,900.00</b>	
<b>Subtotals</b>	<b>14940</b>	<b>14940</b>	<b>\$1,453,023.08</b>	<b>\$1,453,023.08</b>	<b>\$146,700.00</b>	<b>\$122,250.00</b>	
<b>15% contingency on labor and materials</b>	2241		\$217,953.46		\$22,005.00		
<b>Total</b>	17181		<b>\$1,670,976.54</b>		<b>\$168,705.00</b>		
<b>Grand Total Time &amp; Materials</b>							<b>\$1,839,681.54</b>