

COMMODITY HAUL ROAD MAINTENACE COST ESTIMATING SHEET

| Sale Project Name: | | Mongold Stwd ReOffer | | DISTRICT: | | Detroit | | | | | | | | | | |
|--|-----------|----------------------|-----------------------|-----------------|---------------|---------------|-----------------|-------------------|--------------------|------------------------------|------------------|-----------------|---------------|--------------|-------------------|--------------|
| Units | CCF | 1783 | Road Completion Date: | | | | | | | | | | | | | |
| Road Number | Termini | | Actual Miles | T-811 | T-812 | T-813 | T-831 | T-834 | T-836 | T-838 | T-839 | T-841 | T-842 | T-851 | T-854 | T-891 |
| | From | To | | Blade Lane Mile | Dust Ton | Surface C.Y. | Ditch Mtc. Mile | Drain Struct. EA. | Joint Limited Mile | Joint Use Mile | Project Use Mile | Veg Estab. Acre | Cut Veg. Mile | Log Out Mile | Danger Trees Mile | Water M-Gal. |
| 2200123 | 0.07 | 0.00 | 0.07 | | | | | | 0.00 | 0.07 | 0.00 | | 0.07 | | 0.07 | |
| 2200120 | 0.68 | 0.32 | 0.36 | 0.36 | | 30 | | | 0.00 | 0.36 | 0.00 | | 0.36 | | 0.36 | 1.26 |
| 2200120 | 0.32 | 0.00 | 0.32 | 0.32 | | | | | 0.00 | 0.32 | 0.00 | | 0.32 | | 0.32 | 1.12 |
| 2200113 | 0.26 | 0.04 | 0.22 | 0.22 | | | | | 0.00 | 0.22 | 0.00 | | 0.22 | | 0.22 | 0.77 |
| 2200113 | 0.04 | 0.00 | 0.04 | 0.04 | | | | | 0.00 | 0.04 | 0.00 | | 0.04 | | 0.04 | 0.14 |
| 2200100 | 0.27 | 0.00 | 0.27 | | | | | | 0.00 | N/A Deposit | 0.00 | | | | | |
| Total Cost = | | | | \$ 390 | \$ - | \$ 1,374.30 | \$ - | \$ - | \$ - | \$ 1,335 | \$ 0 | \$ - | \$ 425 | \$ - | \$ 279.08 | \$ 83.79 |
| | | | | | | | | | | | | Subtotal = | | \$ 3,887.12 | | |
| Note: 3.5 M-Gal per mile used to calculate T-891. Spot rock quantities are to be use on any section of the included road. T-811 Light Mtce used for calculation. Spot rock to be used on any portion of given rd | | | | | | | | | | Total Purchaser Mtce. Cost = | | \$ 3,887.12 | | | | |
| | | | | | | | | | | Total Rate/CCF = | | \$ 2.18 | | | | |
| | T-811 | T-812 | T-813 | T-831 | T-834 | T-836 | T-838 | T-839 | T-841 | T-842 | T-851 | T-854 | T-891 | | | |
| | Blade | Dust | Surface | Ditch Mtc. | Drain Struct. | Joint Limited | Joint Use | Project Use | Veg Estab. | Cut Veg. | Log Out | Danger Tree | Water | | | |
| | Lane Mile | Ton | C.Y. | Mile | EA. | Mile | Mile | Mile | Acre | Mile | Mile | Mile | M-Gal. | | | |
| Used: | \$592 | \$58 | \$65 | \$242 | \$131 | \$1,322 | \$1,322 | \$1,083 | \$288 | \$601 | \$349 | \$276 | \$25 | | | |
| Light | \$415 | \$41 | \$46 | \$169 | \$92 | \$925 | \$925 | \$758 | \$202 | \$421 | \$244 | \$193 | \$18 | | | |
| Med | \$592 | \$58 | \$65 | \$242 | \$131 | \$1,322 | \$1,322 | \$1,083 | \$288 | \$601 | \$349 | \$276 | \$25 | | | |
| Heavy | \$740 | \$73 | \$82 | \$302 | \$164 | \$1,652 | \$1,652 | \$1,354 | \$360 | \$752 | \$436 | \$345 | \$32 | | | |

Note: No T-812 or T-841 cost estimate incorporated until a need arises.

COST REFERENCE

T-811 Blading, Maintenance

Cost estimate based on 1.0 blading per 1 mmbf hauled. Surface blading ONLY

| Equipment | Work | Unit Rate | Number of Bladings | Units | Est. Hours | Allowance Unit Price |
|--|------------------------|-----------|--------------------|-------|------------|----------------------|
| SUBSEQUENT | | | | | | |
| Grader 140H/G, CAT | Grading | \$ 104.54 | 1 | Mile | 1.00 | \$ 104.54 |
| Grader 140H/G, CAT | Scarification | \$ 104.54 | 1 | Mile | 1.00 | \$ 104.54 |
| Roller, single drum vibratory 66" | Compaction | \$ 88.20 | | Hour | 2.00 | \$ 176.40 |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | 1 | Hour | 2.00 | \$ 113.40 |
| Lowboy truck and trailer 35 ton 2 axle | Mobilization | \$ 93.39 | | Hour | 1.00 | \$ 93.39 |
| | | | | | \$ / Mile | \$ 592.27 |

T-813 Surfacing, Maintenance Level 2, 3 & 4

Reference TSA Handbook: Each log truck generates 4.7 Equivalent Single Axle Loads (ESAL), or 0.0213 cy/s / ESAL
 20 cy/s aggregate loss / 1 mmbf / mile. 222 log truck loads / 1 mmbf (from RR-S NF = 4.5 mbf, or 8.5 ccf / log truck)
 (20 cy/s / mmbf / mile) / 222 loads = wear rate factor 0.0901 cy/s / load / mile.
 0.0901 cy/s / load / mile * 1.4 (cy-ton factor) = 0.1261 ton / load / mile. Aggregate loss per mile = (miles * # loads * wear rate)

| Equipment | Work | Unit Rate | CY | Ton | Est. Hours | Unit Price |
|--|------------------------|-----------|-----|----------|-------------|-------------|
| Surface Rock Replacement | | | 30 | 0 | | |
| Grader 140H/G, CAT | Place and grade finish | \$ 104.54 | | | 4.00 | \$ 418.16 |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | | | 4.00 | \$ 226.80 |
| Roller, single drum vibratory 66" | Compaction | \$ 88.20 | | | 4.00 | \$ 352.80 |
| Water Truck, 3500 gal. | Watering | \$ 99.53 | | Hour | 2.00 | \$ 199.06 |
| Water pump 2" skid mount | Truck fill & standby | \$ 2.34 | | Hour | 0.50 | \$ 1.17 |
| Quoted price for Aggregate | | | CY | \$ 13.93 | \$ AGG cy/s | \$ 417.90 |
| Quoted price for Aggregate Haul / CY / Mile | | | CY | \$ 11.58 | Haul | \$ 347.40 |
| Quoted price for Aggregate | | | TON | \$ 9.95 | \$ AGG Tons | \$ - |
| Quoted price for Aggregate Haul / Ton / Mile | | | TON | \$ 8.28 | Haul | \$ - |
| | | | | | \$ / Mile | \$ 1,963.29 |

Water source is critical for haul cost. If not immediately available cost using the HAUL tab.

BASED ON HAUL OF 30 MILES.

| | | | |
|--|----------|--|----------|
| Summary cost of aggregate cost per CY: | | | \$ 65.44 |
| Stand Rate | mbf/mile | | \$ 1.96 |
| Deposit Unit Rate FS OH: | | | \$ 1.96 |
| Winter Rate | mbf/mile | | \$ 2.45 |
| Deposit Unit Rate FS OH: | | | \$ 2.45 |

T-831 Ditch Maintenance 2, 3 & 4

Allowance for cleaning (not pulling) cut bank slough and woody and other debris from roadside ditches.

| Equipment | Work | Unit Rate | Est. Hours | Allowance Unit Price |
|----------------------------|------------------------|-----------|------------|----------------------|
| Grader 140H/G, CAT | Cleaning | \$ 104.54 | 1.50 | \$ 156.81 |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | 1.50 | \$ 85.05 |
| | | | \$ / Mile | \$ 241.86 |

| T-832 Remove and End Haul Material | | | | | | |
|--|------------------------|-----------|------------------------|------------|----------------------|--|
| Average 1 slide per mile with an average of 30 cy's / slide | | | | | | |
| Equipment | Work | Unit Rate | | Est. Hours | Allowance Unit Price | |
| Dump Truck Highway, 10-13 cy | Haul | \$ 87.98 | | 1.00 | \$ 87.98 | |
| JCB 212 Backhoe loader 4x4 | Loading | \$ 75.04 | | 1.00 | \$ 75.04 | |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | | 1.00 | \$ 56.70 | |
| General Laborer | Shovel scooper | \$ 42.59 | | 1.00 | \$ 42.59 | |
| | | | | \$ / Mile | \$ 262.31 | |
| T-834 Drainage Structure Maintenance | | | | | | |
| This work consists of cleaning and reconditioning culverts and other drainage structures. | | | | | | |
| Equipment | Work | Unit Rate | | Est. Hours | Allowance Unit Price | |
| Dump Truck Highway, 10-13 cy | Haul | \$ 87.98 | | 0.50 | \$ 43.99 | |
| JCB 212 Backhoe loader 4x4 | Loading | \$ 75.04 | | 0.50 | \$ 37.52 | |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | | 0.50 | \$ 28.35 | |
| General Laborer | Shovel scooper | \$ 42.59 | | 0.50 | \$ 21.30 | |
| | | | | \$ / Each | \$ 131.16 | |
| T-835 Roadway Drainage Maintenance | | | | | | |
| Post Haul Drainage | | | | | | |
| Equipment | Work | Unit Rate | Based on 10 Water bars | Est. Hours | Allowance Unit Price | |
| JCB 212 Backhoe loader 4x4 | Const water bars | \$ 75.04 | 10 | 0.50 | \$ 37.52 | |
| Grader 140H/G, CAT | Out slope - In slope | \$ 104.54 | | 1.00 | \$ 104.54 | |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | | 1.00 | \$ 56.70 | |
| | | | | \$ / Mile | \$ 198.76 | |
| T-836 Maintenance For Limited Use - MLU | | | | | | |
| This work consists of making limited use roads passable for joint use by Purchaser and high clearance vehicles, and providing drainage from the traveled way and roadbed. Average haul 2.5 mmbf | | | | | | |
| Equipment | Work | Unit Rate | | Est. Hours | Allowance Unit Price | |
| INITIAL | | | | | | |
| Grader 140H/G, CAT | Remove water bars | \$ 104.54 | | 1.00 | \$ 104.54 | |
| Brush cutter, side boom, 4' rotary head | Brush & debris removal | \$ 101.12 | | 4.00 | \$ 404.48 | |
| Brush cutter, power saw | Felling and bucking | \$ 43.94 | | 2.00 | \$ 87.88 | |
| Brush cutter, power saw | Logging out | \$ 43.94 | | 4.00 | \$ 175.76 | |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | | 4.00 | \$ 226.80 | |
| | | | | | \$ 999.46 | |
| Post Haul Maintenance | | | | | | |
| Grader 140H/G, CAT | In-Out Slope & W-Bars | \$ 104.54 | | 2.00 | \$ 209.08 | |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | | 2.00 | \$ 113.40 | |
| | | | | | \$ 322.48 | |
| T-838 Maintenance For High Clearance Vehicle - MHC | | | | | | |
| This work consists of making limited use roads passable for use by Purchaser and providing drainage from the traveled way and roadbed. | | | | | | |
| Equipment | Work | Unit Rate | | Est. Hours | Allowance Unit Price | |
| INITIAL | | | | | | |
| Grader 140H/G, CAT | Remove water bars | \$ 104.54 | | 1.00 | \$ 104.54 | |
| Brush cutter, side boom, 4' rotary head | Brush & debris removal | \$ 101.12 | | 4.00 | \$ 404.48 | |
| Brush cutter, power saw | Felling and bucking | \$ 43.94 | | 2.00 | \$ 87.88 | |
| Brush cutter, power saw | Logging out | \$ 43.94 | | 4.00 | \$ 175.76 | |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | | 4.00 | \$ 226.80 | |
| | | | | | \$ 999.46 | |
| Post Haul Maintenance | | | | | | |
| Grader 140H/G, CAT | In-Out Slope & W-Bars | \$ 104.54 | | 2.00 | \$ 209.08 | |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | | 2.00 | \$ 113.40 | |
| | | | | | \$ 322.48 | |

| T-839 Maintenance for Project Use - MPU | | | | | | |
|--|-------------------------|-----------|---------------|--|------------|----------------------|
| This work consists of providing minimum access required for Purchaser's Operations and associated Forest Service contract administration and preventing unacceptable resource or road damage. | | | | | | |
| Equipment | Work | Unit Rate | | | Est. Hours | Allowance Unit Price |
| INITIAL | | | | | | |
| Grader 140H/G, CAT | Remove water bars | \$ 104.54 | | | 1.00 | \$ 104.54 |
| JCB 212 Backhoe loader 4x4 | Remove Berm | \$ 75.04 | | | 1.50 | \$ 112.56 |
| Brush cutter, side boom, 4' rotary head | Brush & debris removal | \$ 101.12 | | | 2.00 | \$ 202.24 |
| Brush cutter, power saw | Felling and bucking | \$ 43.94 | | | 2.00 | \$ 87.88 |
| Brush cutter, power saw | Logging out | \$ 43.94 | | | 3.00 | \$ 131.82 |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | | | 3.00 | \$ 170.10 |
| | | | | | | \$ 809.14 |
| Post Haul Maintenance | | | | | | |
| Grader 140H/G, CAT | In-Out Slope & W-Bars | \$ 104.54 | | | 1.00 | \$ 104.54 |
| JCB 212 Backhoe loader 4x4 | Install Closure | \$ 75.04 | | | 1.50 | \$ 112.56 |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | | | 1.00 | \$ 56.70 |
| | | | | | | \$ 273.80 |
| T-842 Cutting Roadway Vegetation, Level 3, 4, & 5 Roads | | | | | | |
| This work consists of cutting all vegetative growth, including trees and other vegetation less than 4 inches in diameter measured 6 inches above the ground, on roadway surfaces and roadsides. Based on 4' wide from shoulder and 4' from bottom of ditch | | | | | | |
| Equipment | Work | Unit Rate | | | Est. Hours | Allowance Unit Price |
| Brush cutter, side boom, 4' rotary head | Brush & debris removal | \$ 101.12 | | | 3.00 | \$ 303.36 |
| General Laborer | Brushing | \$ 42.59 | | | 3.00 | \$ 127.77 |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | | | 3.00 | \$ 170.10 |
| | | | | | \$ / Mile | \$ 601.23 |
| T-851 Logging Out | | | | | | |
| This work consists of removal of fallen trees and snags which encroach into the roadway or the 3 feet of roadside abutting the roadway on the cut side. | | | | | | |
| Equipment | Work | Unit Rate | | | Est. Hours | Allowance Unit Price |
| JCB 212 Backhoe loader 4x4 | Move logs | \$ 75.04 | | | 2.00 | \$ 150.08 |
| General Laborer | Cutting fallen log-tree | \$ 42.59 | | | 2.00 | \$ 85.18 |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | | | 2.00 | \$ 113.40 |
| | | | | | \$ / Mile | \$ 348.66 |
| T-854 Treatment and Disposal of Danger Trees | | | | | | |
| This work consists of felling and disposal of designated live or dead danger trees sufficiently tall to reach roads used by the Purchaser. Any removal of logs is subject to prior agreement between the Contractor Officer and the Purchaser. | | | | | | |
| Equipment | Work | Unit Rate | Cost per tree | | Est. Hours | Allowance Unit Price |
| JCB 212 Backhoe loader 4x4 | Move logs | \$ 75.04 | | | 0.50 | \$ 37.52 |
| Brush cutter, power saw | Felling and bucking | \$ 43.94 | | | 1.00 | \$ 43.94 |
| Highway Conventional 1 ton | Support and Fire Truck | \$ 56.70 | | | 1.00 | \$ 56.70 |
| | | | | | \$ / Tree | \$ 138.16 |
| | | | | | \$ / Mile | \$ 276.32 |
| Estimate 2 tree per mile | | | | | | |
| T-891 Water Supply and Watering | | | | | | |
| This work consists of providing facilities to furnish an adequate water supply, hauling and applying water. | | | | | | |
| Equipment | Work | Unit Rate | | | Est. Hours | Allowance Unit Price |
| Water Truck, 3500 gal. | Watering | \$ 99.53 | | | 1.00 | \$ 99.53 |
| Water pump 2" skid mount | Truck fill & standby | \$ 2.34 | | | 1.00 | \$ 2.34 |
| | | | | | 3500 | M-Gal/Mile \$ 203.74 |
| | | | | | | \$ / M-Gal \$ 25.47 |
| BASED ON HAUL OF LESS THAN 2 MILES. | | | | | | |