TEMPORARY ROAD
COST ESTIMATING

COST ESTIMATING FOR TEMPORARY ROADS

The decision to construct temporary roads for a timber sale or other activity is based on transportation planning and resource objectives that are documented in a NEPA decision. Temporary roads generally are built for one or two seasons of use for limited traffic. The National Forest Management Act (NFMA) requires that any temporary road built as part of a timber sale or other permit/ lease shall be designed with the goal of reestablishing vegetative cover on the roadway and adjacent disturbed area within ten years after the termination of the contract, permit, or lease. In addition to this NFMA requirement, the timber sale contract requires outsloping, removal of culverts and ditches, and building water bars or cross ditches after the road is no longer needed. Obliteration costs shown in Table T-3 reflect a wide variation in required work.

For timber sales, the Timber Sale Appraisal Handbook FSH 2409.18, part 45.23a, outlines the general procedures for estimating the costs of temporary roads. Temporary road cost estimates shall be based on the data and procedures contained in the current Cost Guide for road construction. The responsibility for the accuracy of temporary road cost estimates rests with the Forest Engineer (See FSM 7721.04c). Following the example estimate in this section is a sample form for documenting temporary road costs estimates.

The following procedure, or an estimate by time and equipment, should be used to develop temporary road costs which will be included on Line 21 of FS 2400-17's. If time and equipment methods are used, the estimator should use the labor rates and equipment rental rates (for old equipment) contained in this Cost Guide. The labor rates need to be adjusted per section entitled Davis-Bacon/ Purchaser Wage Rate Adjustments which appear earlier in this publication and have the profit of 6% removed..

Step 1: Using Table T-1, determine costs for clearing and grubbing. Enter Table T-1 with State, sideslope (SS%), and right-of-way volume per acre. Move horizontally and read the clearing cost per mile. The cost of felling, bucking, and skidding the right-of-way timber on temporary roads is considered a logging cost and not a road cost. Therefore it is included in the logging costs on FS 2400-17 and not in Table T-1. If additional clearing width is desired for windrow placement, etc make necessary cost allowance.

Step 2: Using Table T-1, determine excavation cost per mile by continuing horizontally on the same line used in Step 1. If turnouts or turn-arounds are desired, adjust excavation costs accordingly.

Step 3: Using Table T-1, determine seeding cost per mile by continuing horizontal on the same line used in Steps 1 and 2. The costs of seeding includes the road bed. **NOTE**: seeding costs do not make allowances for native seed, if native seed is required, contact supplier for cost and availability.

Step 4: Determine the cost of obliteration using Table T-3. This item should be included in every temporary road.

Step 5: Total the unit per mile costs determined in Steps 1-4.

Step 6: Multiply unit cost from Step 5 by the length of the temporary road(s).

Step 7: Determine the total cost of drainage structures:
Dips: $125 each
Culverts: See Table T-2

Step 8: Add the costs determined in Steps 6 & 7. Add the appropriate allowance for Mobilization (See Table T-4).

Step 9: Remove Profit allowance by dividing the total in Step 8 by 1.06. Enter the resulting figure on Line 21 of FS 2400-17.

Example Temporary Road Calculation:

Location: Idaho
Average side slope: 30 percent
Estimated length: 1.5 miles
Timber volume: 20 MBF/ acre
Drainage structures: 3 dips
1 - 18" culvert, slope, 20%
1 - 24" culvert, slope, 20%
Average scarification needed for obliteration

Solution:

Step 1: Clearing and grubbing = $4,040/ mile

Step 2: Excavation = $2,270/ mile

Step 3: Seeding = $820/ mile

Step 4: Obliteration = $1,800/ mile

Step 5: (1) + (2) + (3) + (4) = $8,930/ mile

Step 6: $8,930/ mile x 1.5 miles = $13,395

Step 7: Drainage structures:

3 dips x $125/ dip	= $375
1 18" culvert	= $685
1 24" culvert	= $775
	$1,835

Step 8: (6) + (7) = $13,395 + $1,835 = $15,230

Mobilization = $15,230* 0.07 = $1,066

Total = $16,296

Step 9: $16,296/ 1.06 (profit) = $15,370(rounded)

Enter $15,370 on Line 21, FS 2400-17

Note: Temporary erosion control measures are not included in above example, refer to Section 157 for additional information. Also, this example did not include truck turnouts or turn-arounds or additional clearing for windrows.

Table T-1
Idaho
Basic Temporary Road Costs

SS %	R/W Vol/Ac	Temporary Road Clearing	Cost/Mile Excav	12 ft w/o ditch Seeding
0	0	$3,440	$1,420	$690
10	0	$3,030	$1,420	$610
20	0	$3,280	$1,650	$690
30	0	$3,740	$2,270	$820
40	0	$4,630	$3,540	$1,020
50	0	$6,810	$5,300	$1,360
0	5	$3,460	$1,420	$690
10	5	$2,990	$1,420	$610
20	5	$3,280	$1,650	$690
30	5	$3,830	$2,270	$820
40	5	$4,820	$3,540	$1,020
50	5	$7,320	$5,300	$1,360
0	10	$3,500	$1,420	$690
10	10	$2,970	$1,420	$610
20	10	$3,290	$1,650	$690
30	10	$3,900	$2,270	$820
40	10	$5,010	$3,540	$1,020
50	10	$7,830	$5,300	$1,360
0	15	$3,520	$1,420	$690
10	15	$2,940	$1,420	$610
20	15	$3,310	$1,650	$690
30	15	$3,970	$2,270	$820
40	15	$5,220	$3,540	$1,020
50	15	$8,340	$5,030	$1,360
0	20	$3,560	$1,420	$690
10	20	$2,910	$1,420	$610
20	20	$3,310	$1,650	$690
30	20	$4,040	$2,270	$820
40	20	$5,410	$3,540	$1,020
50	20	$8,850	$5,300	$1,360
0	25	$3,590	$1,420	$690
10	25	$2,880	$1,420	$610
20	25	$3,320	$1,650	$690
30	25	$4,120	$2,270	$820
40	25	$5,600	$3,540	$1,020
50	25	$9,350	$5,300	$1,360

Table T-1 *(Continued)*
Idaho
Basic Temporary Road Costs

SS %	R/W Vol/Ac	Temporary Road Clearing	Cost/Mile Excav	12 ft w/o ditch Seeding
0	30	$3,620	$1,420	$690
10	30	$2,860	$1,420	$610
20	30	$3,330	$1,650	$690
30	30	$4,190	$2,270	$820
40	30	$5,810	$3,540	$1,020
50	30	$9,860	$5,300	$1,360
0	35	$3,650	$1,420	$690
10	35	$2,820	$1,420	$610
20	35	$3,340	$1,650	$690
30	35	$4,260	$2,270	$820
40	35	$6,000	$3,540	$1,020
50	35	$10,370	$5,300	$1,360
0	40	$3,680	$1,420	$690
10	40	$2,800	$1,420	$610
20	40	$3,340	$1,650	$690
30	40	$4,350	$2,270	$820
40	40	$6,200	$3,540	$1,020
50	40	$10,880	$5,300	$1,360
0	45	$3,710	$1,420	$690
10	45	$2,770	$1,420	$610
20	45	$3,360	$1,650	$690
30	45	$4,420	$2,270	$820
40	45	$6,390	$3,540	$1,020
50	45	$11,390	$5,300	$1,360
0	50	$3,740	$1,420	$690
10	50	$2,750	$1,420	$610
20	50	$3,370	$1,650	$690
30	50	$4,490	$2,270	$820
40	50	$6,600	$3,540	$1,020
50	50	$11,890	$5,300	$1,360

Table T-1
Montana
Basic Temporary Road Costs

SS %	R/W Vol/Ac	Temporary Road Clearing	Cost/Mile Excav	12 ft w/o ditch Seeding
0	0	$3,660	$1,320	$730
10	0	$3,220	$1,320	$640
20	0	$3,490	$1,620	$730
30	0	$3,980	$2,240	$870
40	0	$4,920	$3,490	$1,080
50	0	$7,260	$5,240	$1,450
0	5	$3,720	$1,320	$730
10	5	$3,220	$1,320	$640
20	5	$3,520	$1,620	$730
30	5	$4,090	$2,240	$870
40	5	$5,160	$3,490	$1,080
50	5	$7,830	$5,240	$1,450
0	10	$3,780	$1,320	$730
10	10	$3,220	$1,320	$640
20	10	$3,570	$1,620	$730
30	10	$4,200	$2,240	$870
40	10	$5,400	$3,490	$980
50	10	$8,400	$5,240	$1,450
0	15	$3,840	$1,320	$730
10	15	$3,230	$1,320	$640
20	15	$3,610	$1,620	$730
30	15	$4,310	$2,240	$870
40	15	$5,640	$3,490	$1,080
50	15	$8,970	$5,240	$1,450
0	20	$3,900	$1,320	$730
10	20	$3,220	$1,320	$640
20	20	$3,650	$1,620	$730
30	20	$4,420	$2,240	$870
40	20	$5,870	$3,490	$1,080
50	20	$9,540	$5,240	$1,450

Table T-1 *(Continued)*
Montana
Basic Temporary Road Costs

SS %	R/W Vol/Ac	Temporary Road Cleaning	Cost/Mile Excav	12 ft w/o ditch Seeding
0	25	$3,960	$1,320	$730
10	25	$3,220	$1,320	$640
20	25	$3,680	$1,620	$730
30	25	$4,530	$2,240	$870
40	25	$6,110	$3,490	$1,080
50	25	$10,100	$5,240	$1,450
0	30	$4,020	$1,320	$730
10	30	$3,220	$1,320	$640
20	30	$3,720	$1,620	$730
30	30	$4,640	$2,240	$870
40	30	$6,350	$3,490	$1,080
50	30	$10,670	$5,240	$1,450
0	35	$4,090	$1,320	$730
10	35	$3,220	$1,320	$640
20	35	$3,750	$1,620	$730
30	35	$4,750	$2,240	$870
40	35	$6,600	$3,490	$1,080
50	35	$11,250	$5,240	$1,450
0	40	$4,150	$1,320	$730
10	40	$3,210	$1,320	$640
20	40	$3,790	$1,620	$730
30	40	$4,860	$2,240	$870
40	40	$6,840	$3,490	$1,080
50	40	$11,820	$5,240	$1,450
0	45	$4,210	$1,320	$730
10	45	$3,210	$1,320	$640
20	45	$3,840	$1,620	$730
30	45	$4,960	$2,240	$870
40	45	$7,070	$3,490	$1,080
50	45	$12,390	$5,240	$1,450
0	50	$4,270	$1,320	$730
10	50	$3,210	$1,320	$640
20	50	$3,880	$1,620	$730
30	50	$5,070	$2,240	$870
40	50	$7,310	$3,490	$1,080
50	50	$12,960	$5,240	$1,450

Table T-2
Culverts

SS %	CMP Dia In.	Length Ft	Price per Foot	Price per CMP
0	18	20	$23.51	$ 475.00
10	18	26	$23.53	$ 615.00
20	18	28	$24.37	$ 685.00
30	18	32	$25.34	$ 815.00
40	18	52	$26.34	$1,370.00
50	18	60	$27.42	$1,650.00
60	18	80	$30.56	$2,450.00
0	24	20	$ 26.78	$ 540.00
10	24	26	$ 26.86	$ 700.00
20	24	28	$ 27.56	$ 775.00
30	24	32	$ 28.48	$ 915.00
40	24	52	$ 29.54	$1,540.00
50	24	60	$ 30.69	$1,845.00
60	24	80	$ 33.84	$2,710.00

Table T-3
Obliteration of Temporary Roads

Description	Terrian	$/Mile
Surface scarification, outslope, revegetation	Gentle	$625 - $875
Scarification, CMP removal, outslope, waterbars, rounding of backslopes and revegetation	Moderate	$1,060 - $2615
	Steep	$1550 - $3300
CMP removal, recontouring, and revegetation	Gentle	$2350 - $4600
	Moderate to Steep	$3,300 - $6500

Note: Davis-Bacon/Purchaser Wage Rate Adjustment has been made for above costs. Obliteration requirements are highly variable, ranging from surface scarification and water bar placement to complete recontouring and revegetation of the former roadway. Costs may increase due to difficult or unique conditions. Costs shown above based on small dozer, excavator and sawyer.

Table T-4
Mobilization for Temporary Roads

Idaho: 7.0%
Montana: 7.0%

The following is an example form to be used when costing estimating for temporary roads.

COST ESTIMATE FOR TEMPORARY ROADS

Sale Name_____ Made by_____

Unit or Road No._____ Checked by_____

Reference: Cost estimating procedures for temporary roads from
Cost Guide - pages_____

Average Side Slope:
Length: _____ ft. = _____ Miles
Timber Volume: _____MBF/ Acre
Drainage Structures: _____Dips
_____18" CMP,_____ " CMP

Note: Do not adjust project costs for inflation or deflation.

(1) Clearing and Grubbing (Table T-1) =_____ / Mile

(2) Excavation (Table T-1) =_____ / Mile

(3) Seeding (Table T-1) =_____ / Mile

(4) Obliteration (Table T-2) = _____/ Mile

(5) Total Unit Cost (1)+(2)+(3)+(4) =_____ / Mile

(6) Basic Cost Total (5) x Length = _____/ Mile x _____Mile(s) =

(7) Drainage Structures
_____dips X _____/ Dip =
_____18" CMPs X_____/ CMP =
_____CMPs x/ CMP =
Drainage Cost Total =

(8) Subtotal Basic + Drainage Cost (6) + (7) Subtotal =
Mobilization (Table T-4) =_____ X _____% =
Subtotal + Mobilitation (6) + (7) + Mobilization = (8)

(9) TOTAL COST = (8)_____ / 1.06 (Profit) =_____ *

*Total Cost to be entered on Line 26, 2400-17

End of Temporary Road Cost Estimating