

*Davis-Bacon/Purchaser Wage Rate
Adjustments*

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All projects must first be estimated as if being built by public works contracts with respect to Davis-Bacon wage rates. For Timber Sale Contracts, the engineer's estimate must then be adjusted by the difference between Davis-Bacon and local wage rates to determine the Specified Road Cost (Specified Road Construction Cost plus augmentation if any).

The following labor percentage ranges are typical and include equipment operator, truck drivers and laborers. The actual percentage selected should be documented. Use of percentages different than those indicated and the reason for the selection should also be documented.

LABOR PERCENTAGE RANGES			
Work Item	Labor % Range	Low Percent Factors	High Percent Factors
Clearing & Grubbing	20-55	Small or scattered timber, light ground cover gentle terrain, scattering	Large timber, "doghair", heavy ground cover, rugged terrain, piling & burning
Excavation	20-45	Gentle terrain, good soils, easy construction, wide tolerance, sidecast type construction,	Rugged terrain, poor soils and rock, difficult construction, rip/blasting, close tolerances, end-haul
Base and Surfacing	30-50	Crushed pit rock, wide gradation tolerance	Crushed quarry rock, close gradation tolerance
Asphalt	20-40	Large project, road mix, wide tolerance, surface treatments,	Small project, plant mix, close tolerance, labor intensive
Mobilization	20-40	Minimum labor required on project preparation	Project preparation is very labor intensive
Culverts	30-60	Flat slopes, soil with little rock, minimal labor requirements, small dia, dry	Steep slopes, soil with large amount of rock, labor intensive, large dia, wet
Stabilization	35-70	Hydromulch, flatter slopes, large projects	Hand placed mulch, multiple processes, steeper slopes, small projects

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See individual items in text of Cost Guide for other labor percentages. Note that contract items (items not normally accomplished by woods crews such as engineering and asphalt items) are not to be reduced, if the subcontractor is expected to pay Davis-Bacon wage rates. See Labor Rates in the back portion of this Guide for D-B wage rate information.

To determine the Specified Road Construction Cost allowance for any item, the following procedure must be followed:

1. Determine the Davis Bacon wage rate area and/or zone. For instructions, see the previous section of this guide, Engineer's Estimate.
2. Determine labor percentage for applicable item in the body of this Guide or from the table on the previous page.
3. Select the appropriate labor factor from the following chart.

ADJUSTMENT FACTOR FOR WAGE DIFFERENTIALS

LABOR %	IDAHO			MONTANA		
	AREA 1		AREA 2			
	ZONE 1	ZONE 2	ZONE 2	ZONE 1	ZONE 2	ZONE 3
5	1.01	1.01	1.01	1.00	1.00	1.01
10	1.02	1.02	1.02	1.00	1.00	1.01
15	1.02	1.03	1.03	.99	1.01	1.02
20	1.03	1.05	1.04	.99	1.01	1.02
25	1.04	1.06	1.05	.99	1.01	1.03
30	1.05	1.07	1.06	.99	1.01	1.03
35	1.06	1.08	1.07	.99	1.02	1.04
40	1.07	1.10	1.08	.98	1.02	1.04
45	1.08	1.11	1.09	.98	1.02	1.05
50	1.09	1.12	1.10	.98	1.02	1.06
55	1.10	1.14	1.11	.98	1.03	1.06
60	1.11	1.15	1.13	.98	1.03	1.07
65	1.12	1.17	1.14	.97	1.03	1.07
70	1.13	1.18	1.15	.97	1.03	1.08
75	1.14	1.20	1.16	.97	1.04	1.09
80	1.15	1.21	1.18	.97	1.04	1.09
85	1.16	1.23	1.19	.97	1.04	1.10
90	1.17	1.25	1.20	.96	1.04	1.11
95	1.18	1.26	1.22	.96	1.05	1.11
100	1.19	1.28	1.23	.96	1.05	1.12

4. Determine Specified Road Construction Cost for applicable item by dividing the public works cost by the labor factor determined in No. 3.

Example:

Public works excavation cost	\$1.75/cy (\$2.29/m ³)
Project location: Idaho, Area 1 (Zone 1)	
Excavation: labor percentage	25 percent
Labor factor	1.04
Specified road construction cost	\$1.75/1.04 = 1.68/cy (\$2.29/1.04 = \$2.20/m ³)

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TIME ESTIMATES AND CALCULATION OF MIDPOINT OF CONSTRUCTION

Even though there is no adjustment factor for inflation in this Cost Guide, care must be exercised when determining time estimates. The final time estimate should not be made until all contract clauses are known, including applicable C clauses for timber sale contracts. Be sure to consider operating season limitations. Project access and sequencing must also be considered.

Except in unusual circumstances, the time estimate shall not exceed two (2) full construction seasons. This may require increasing the size of the crew and the amount of equipment used in the estimate. In addition, this may require the adjustment of some cost items and contract clauses. Time estimates in excess of two full construction seasons shall be justified, documented, and approved by the Forest Engineer.

The midpoint of construction for estimating purposes is the cost weighted average of incremental construction periods or construction items. Midpoint may be determined by analyzing the project as a whole or by analyzing individual construction items or groups of related construction items.

Due to the requirements of the Federal Acquisition Regulations (FAR's), it is essential that the midpoint be computed based on the midpoint of work or estimated cash flow, not the midpoint of contract time. FAR 52.212-3 requires that contract time be established to include estimated winter shutdowns. Contract time will continue to count through the winter season.

The remainder of this section contains two examples of determining the midpoint of construction followed by two forms. The first form may be used in calculating the midpoint of construction, and the second for use in determining the number of contract days.

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Example 1: Analyzing Incremental Construction Periods

Advertise	May 1, 2002	Work Season	May 15 - Nov 15
Open Bids	June 2, 2002	Total Work Days	200
Contract Award	June 15, 2002	Completion Date	July 15, 2003
Start Work	July 1, 2002	Project Cost	\$300,000

	Date	Calendar Day	Project Day
Start Work 2002 Season:	Jul 1	182	1
Suspend Work 2002 Season by:	Nov 16	320	138
Resume Work 2003 Season:	May 15	135	318
Complete Work 2003 Season before:	Jul 16	197	381

2002 Season	138 - 1	137 Work Days
Shutdown	318 - 138	180 Days
2003 Season	381 - 318	63 Work Days

Total Work Days = 2002 Season (137) + 2003 Season (63) = 200 Days

Contract Days = Work Days + Winter Shutdown = 200 + 180 = 380 Days

Incremental Construction Periods:

2002 Construction Increment: 2002 Work Days / Total Work Days = 137/200 = 0.685

2002 Value = Project Cost x 2002 Increment = \$300,000 x 0.685 = \$205,500

2003 Construction Increment: 2003 Work Days / Total Work Days = 63/200 = 0.315

2003 Value = Project Cost x 2003 Increment = \$300,000 x 0.315 = \$94,500

Midpoint of Construction:

2002 Midpoint: 2002 Work Days / 2 = 137 / 2 = Proj Day 68.5

2003 Midpoint: 2002 Work Days + Winter Shutdown + 2003 Work Days / 2 = 138 + 180 + 63 / 2 = 348.5 Days

Weighted Midpoint = [(2002 Value x 2003 Midpoint) + (2003 Value x 2002 Midpoint)] / Project Cost

= [(205,500 x 68.5) + (94,500 x 348.5)] / 300,000 = Day 157

Midpoint of Construction = Project Day 157 = December 4, 2002

Note: The above is an example and must be modified using the correct dates.

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Example 2: Analyzing Construction Items (Same project schedule as used for Example 1):

Item	Date	<-- Start Work -->		<--Completed by-->		Midpoint	Cost
		Cal Day	Proj Day	Date	Cal Day		
Clr&Grub	7/01/2002	182	1	10/01/2002	274	93	\$75,000
Exc &CMPs	8/01/2002	213	32	6/15/2003	166	350	125,000
Season 1	8/01/2002	213	32	11/16/2002	320	139	96,900
Season 2	5/15/2003	135	319	6/15/2003	166	350	28,100
Aggr&Surf	5/15/2003	135	319	7/01/2003	182	366	90,000
Seed&Mulch	7/01/2003	182	366	7/16/2003	197	381	10,000

Clearing Midpoint: $\text{Clearing Work Days} / 2 = (93-1) / 2 = \text{Proj Day } 46$

Excavation & Culverts Midpoint: This item falls during portions of two seasons. There are 107 construction days available in 2002 and 31 days available in 2003 for a total of 138 days.

Value of Work in 2002	107 days / 138 days x \$125,000	= \$96,900
Value of Work in 2003	31 days / 138 days x \$125,000	= 28,100
Midpoint 2002	$32 + (139 - 32) / 2$	= Proj Day 85.5
Midpoint 2003	$319 + (350 - 319) / 2$	= Proj Day 334.5

Excavation & Culvert Weighted Midpoint = $[(96,900 \times 85.5) + (28,100 \times 334.5)] / 125,000 = 141 \text{ Days}$

Aggregate Surfacing Midpoint = $\text{Item starting day} + \text{item days} / 2 = 319 + (366 - 319) / 2 = \text{Project Day } 342.5$

Seed & Mulch Midpoint = $\text{Item starting day} + \text{item days} / 2 = 366 + (381 - 366) / 2 = \text{Project Day } 373.5$

Weighted Midpoint = $[(46 \times 75,000) + (85.5 \times 96,900) + (334.5 \times 28,100) + (342.5 \times 90,000) + (373.5 \times 10,000)] / 300,000$
= Project Day 186

Midpoint of Construction = Project Day 186 or January 2, 2003

Note: The above is an example and must be modified using the correct dates.

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EXAMPLE OF INCREMENTAL CONSTRUCTION PERIODS

		DATE	DAY NUMBER
START WORK SEASON 1		_____	[A]_____
STOP WORK SEASON 1		_____	[B]_____
TOTAL DAYS SEASON 1	= [B] - [A]	= [C]_____ DAYS	
START WORK SEASON 2		= _____	[D]_____
STOP WORK SEASON 2		= _____	[E]_____
TOTAL DAYS SEASON 2	= [E] - [D]	= [F]_____ DAYS	
TOTAL CONTRACT DAYS	= [C] + [F]	= [G]_____ DAYS	
TOTAL DAYS [A] TO [D]	= (365 - [A]) + [D]	= [H]_____ DAYS	
VALUE OF WORK IN SEASON 1	= [C] / [G]	= [J]_____	
MIDPOINT OF SEASON 1	= [C] / 2	= [K]_____ DAYS	
VALUE OF WORK IN SEASON 2	= 1 - [J]	= [L]_____	
MIDPOINT OF SEASON 2	= [H] + [F] / 2	= [M]_____ DAYS	
WEIGHTED VALUE MIDPOINT	= [J] X [K] + [L] X [M]	= [N]_____ DAYS	
MIDPOINT OF CONSTRUCTION	= ([A] + [N]) - 365	= [P]_____	
MIDPOINT	= JAN. 1 + [P] = _____		

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TIME ESTIMATING AND SCHEDULING

Road completion date will be set by determining the timber sale advertisement and adding:

	Timber Sale (T.S.) Advertisement Date	_____
1.	Sale Advertising Period	<u>30 Days</u>
	Timber Sale Bid Opening Date	_____
2.	Period specified in the T.S. advertisement to allow the F.S. to solicit and award a P.W. Contract for the road construction. (120 days maximum without approval of additional time of Regional Forester prior to T.S. Advertisement date.)	<u>* 80 Days</u>
	Public Works Construction Award Date	_____
3.	Additional time needed between P.W. contract award date and date construction could start.	<u>10 Days</u>
	Public Works Construction Start Date	_____
4.	Total calendar days elapsed time allowed for completion of road construction Public Works contract.	<u>Days</u>
	Computed Construction Completion Date	_____
5.	Additional time for expected excusable delays for P.W. contracts. This time will <u>only</u> be added to determine the road completion date in a Timber Sale (C5.101) not to determine contract time for a Public Works contract.	<u>Days</u>
	Final Completion Date	_____
	Planned Timber Sale Termination Date	_____

* The following time requirements may vary by local policy, 120 days is the maximum time allowed without approval of the Regional Forester.

10 days to submit road package to Administrative Services.

10 days to prepare road contract and send notice to Commerce Business Daily (CBD).

15 days to public prior to solicitation.

30 days advertising period.

15 days to award contract after bid opening; consider additional time if access to project is not available due to inclement weather.

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End of Davis-Bacon/Purchaser Wage Rate Adjustment