

## USAGE FACTORS FOR MAJOR HIGHWAY CONSTRUCTION MATERIALS AND LABOR 1/

**U.S. WEIGHTED AVERAGES FOR ALL FEDERAL-AID HIGHWAY CONSTRUCTION  
CONTRACTS OVER \$1,000,000 ON THE NATIONAL HIGHWAY SYSTEM  
REPORTED AS COMPLETED DURING CALENDAR YEARS 1999, 2000, 2001**

OCTOBER 2002

TABLE PT-4

TYPE OF MATERIALS AND LABOR	UNIT	NUMBER OF UNITS PER MILLION DOLLARS OF CONSTRUCTION COST 2/
Cement (excludes cement in concrete pipe)	Ton	457
Bituminous material	Ton	344
Aggregates 3/		
Purchased (by contractors)	Ton	11,611
Produced (by contractors)	Ton	3,071
Steel		
Structural (shapes, plates, H and sheet piling)	Ton	18
Reinforcing (pavement and structural reinforcement)	Ton	40
Culvert pipe (corrugated metal and structural plate, pipe arches and arches)	Ton	1
Miscellaneous (joint devices, tubular piling, etc.)	Ton	3
Concrete pipe (plain and reinforced)	Ton	56
Clay pipe and tile (includes some PVC pipe)	Ton	-
Lumber (all lumber products except timber piling)	Board foot	2,762
Petroleum products 4/	Gallon	19,909
Guardrail (all types)	Linear foot	599
Bridge railing (all types)	Linear foot	102
Corrugated aluminum culvert	Pound	136
Signs (complete in place)	Dollar	7,909
Lighting (complete in place)	Dollar	9,790
Labor	Employee-hour	9,421

1/ For comparable standards of design, the usage of materials and labor on Federal-aid work is not appreciably different from their usage on non-Federal-aid work. The data in this table are obtained from Form FHWA-47, prepared by the Office of Program Administration in the Office of Infrastructure.

2/ Right-of-way, preliminary engineering, and construction engineering costs excluded.

3/ Includes sand, gravel, clay gravel, slag, crushed stone, etc.; used for all highway construction including bases, subbases, concrete surfaces, bituminous surfaces, structural concrete, and drainage work.

4/ Fuel and lubricants for equipment and trucks. Grease converted to gallons on basis of 8 pounds per gallon.