

## 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 1995, 1996, 1997**

OCTOBER 1998

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	738
Bituminous material	Ton	441
Aggregates 3/		
Purchased (by contractors)	Ton	14,354
Produced (by contractors)	Ton	3,479
Steel		
Structural (shapes, plates, H and sheet piling)	Ton	24
Reinforcing (pavement and structural reinforcement)	Ton	45
Culvert pipe (corrugated metal and structural plate, pipe arches and arches)	Ton	2
Miscellaneous (joint devices, tubular piling, etc.)	Ton	3
Concrete pipe (plain and reinforced)	Ton	73
Clay pipe and title (includes some PVC pipe)	Ton	-
Lumber (all lumber products except timber piling)	Board foot	6,980
Petroleum products 4/	Gallon	22,966
Guardrail (all types)	Linear foot	740
Bridge railing (all types)	Linear foot	156
Corrugated aluminum culvert	Pound	119
Signs (complete in place)	Dollar	10,473
Lighting (complete in place)	Dollar	11,673
Labor	Employee-hour	11,647

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 Federal-Aid and Design Division in the Office of Engineering.

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.