

## 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 1996, 1997, 1998**

OCTOBER 1999

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	498
Bituminous material	Ton	338
Aggregates 3/		
Purchased (by contractors)	Ton	12,604
Produced (by contractors)	Ton	2,901
Steel		
Structural (shapes, plates, H and sheet piling)	Ton	23
Reinforcing (pavement and structural reinforcement)	Ton	42
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	67
Clay pipe and title (includes some PVC pipe)	Ton	-
Lumber (all lumber products except timber piling)	Board foot	5,143
Petroleum products 4/	Gallon	21,455
Guardrail (all types)	Linear foot	814
Bridge railing (all types)	Linear foot	171
Corrugated aluminum culvert	Pound	116
Signs (complete in place)	Dollar	11,004
Lighting (complete in place)	Dollar	12,446
Labor	Employee-hour	11,014

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.