

**CITY OF MEDFORD  
PUBLIC WORKS DEPARTMENT  
ENGINEERING AND DEVELOPMENT DIVISION**

**ASPHALT-CONCRETE PAVEMENT STRUCTURE  
DESIGN GUIDELINES (1998)**

Asphalt-Concrete pavement structures shall be designed using the City of Medford crushed rock equivalent method outlined as follows

**1) TRAFFIC INDEX**

The Traffic Index (TI) shall be determined using the following formulas and the street design criteria as provided by the Engineering and Development Division of the Public Works Department

$$EAL = (0.02) (VPD) (100 - \% Trucks) + (25.1) (VPD) (\% Trucks)$$

Where

- EAL = Equivalent Axle Loading expressed as the total number of equivalent 18,000 lb single-axle load applications expected during the 20-year design period
- VPD = Vehicles Per Day as provided by the Engineering and Development Division
- Trucks = % trucks (expressed as a percentage) as provided by the Engineering and Development Division

**Minimum EAL Design Value shall be 50,000**

And

$$TI = 9.0 (EAL/1,000,000)^{0.119}$$

The following standards shall be used for determining residential subdivision street traffic indexes

Street Classification	Design Capacity VPD	% Trucks	EAL	TI
Residential Lane & Minor Residential Street	1000	2	52,160	6.33
Standard Residential Street	3000	2	156,480	7.22
Minor Collector	6000	3	463,440	8.21
Major Collector	10,000	3	772,400	8.73

Arterial, Commercial and Industrial street TI's are to be calculated using the above formulas and design capacities provided by the Engineering and Development Division

2) **SUBGRADE SUPPORT**

The "R" (Washington) value for subgrade support shall be determined by actual soil tests certified by a Professional Engineer, registered in the State of Oregon. However, the City will accept an "R" (Washington) value of "2" for design purposes without verification by soil testing. The attached soil support correlation chart may be used to convert other soil support parameters, e.g. CBR &  $M_R$  to the required "R" (Washington) Value. The Engineer shall submit to the City a copy of the soils investigation and test results with the soil support values obtained.

3) **CRUSHED ROCK EQUIVALENCY**

Determine the asphalt pavement structure crushed rock equivalent using the attached rock equivalent (CRE) design chart and the TI and "R" values from the previous steps.

4) **ASPHALT CONCRETE PAVEMENT STRUCTURE DESIGN**

The Asphalt Concrete Composite Pavement Structure shall be designed using the above determined crushed rock equivalency and the following layer design parameters and minimum design standards. Materials and placement shall conform with the APWA Oregon Chapter 1990 Standard Specifications for Public Works as amended by the City of Medford.

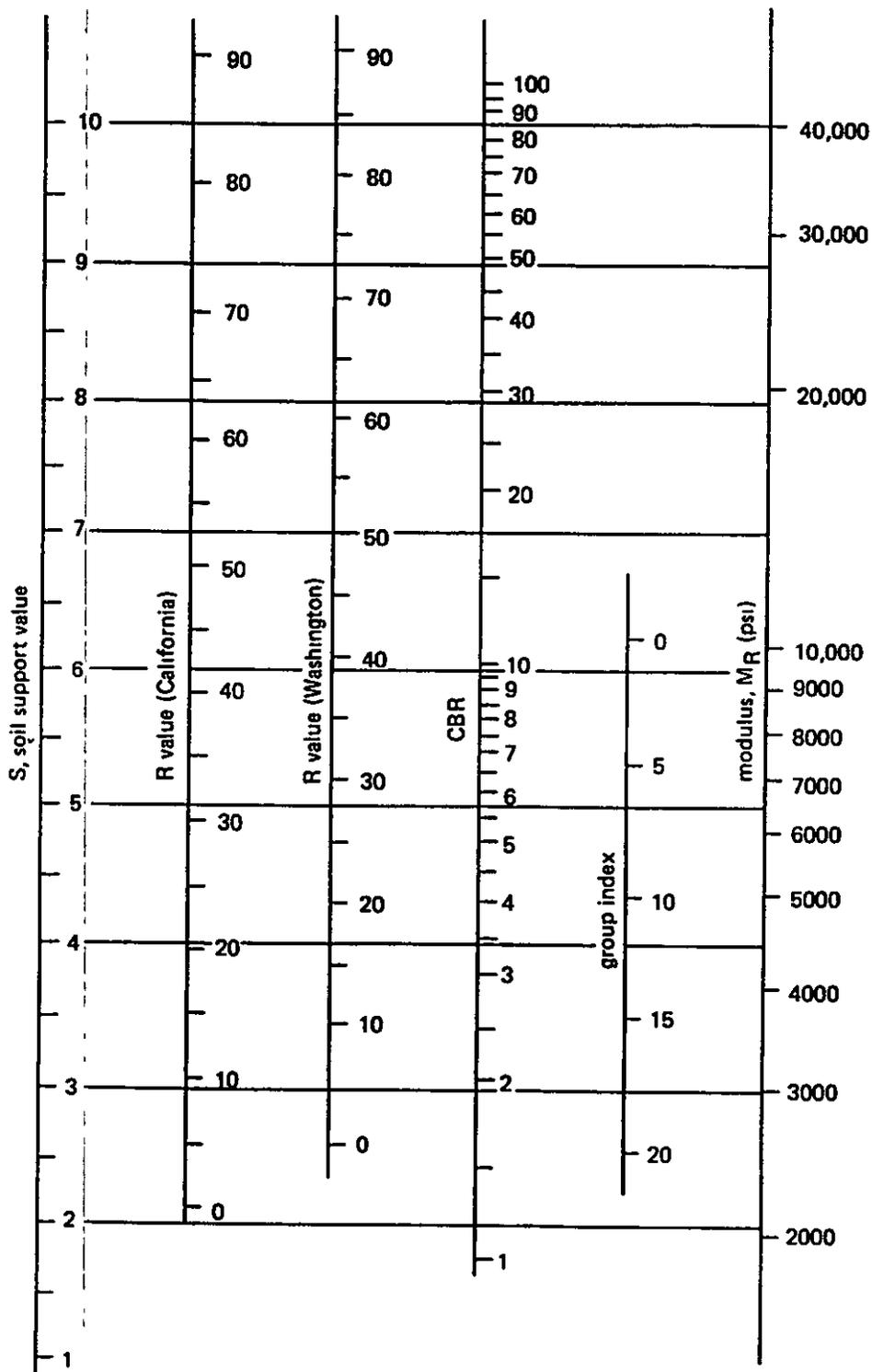
- Structural Section Design Parameters
  - 1-inch of Asphalt = 2 inches CRE
  - 1-inch of 1"-0 or 3/4" -0 crushed rock = 1-inch CRE
  - 1-inch of 4"-0 crushed rock = 0.70 CRE
  - 1-inch of Jaw run shale = 0.50 CRE
  - Geotextile Fabric = 0 CRE
- Minimum Asphalt Pavement Thickness
  - 3" minimum for Residential Streets
  - 4" minimum for Collector designated streets
  - 5" minimum for Arterial designated streets
- Minimum Jaw-Run shale layer thickness shall be twice the "Jaw" dimension
- Non-woven subgrade geotextile conforming to 1996 ODOT Standard Specifications for Highway Construction Section 02320 shall be used on all street sections except those placed on solid rock subgrade or subgrades with R (Washington) value exceeding "65"

5) **NEW STREET CONSTRUCTION RETAINING EXISTING ROADWAY  
STRUCTURAL SECTION**

If it is desirable to retain the existing roadway section within the new construction limits, the following investigation of the existing roadway section will be required

The existing roadway shall be cored along the centerline and 2-foot inside of both roadway edges at 200' intervals. The core shall include a representative sample of the subgrade material. The subgrade material shall be analyzed per section 2 and the structural section designed using sections 1, 3 & 4 of this guideline.

# Soil Support Correlations



**CITY OF MEDFORD**  
**STREET STRUCTURAL SECTION**  
**DESIGN CHART**  
**(CRUSHED ROCK EQUIVALENT METHOD)**

