
CFLHD SUPPLEMENT 11.4.2-1

11.4.2 Design Standards and Guidance

Add the following:

This Supplement describes guidelines on the use of the catalog method for aggregate surfacing thickness design. This method can be applied on all CFLHD projects employing aggregate surfacing.

Exhibit 11.4.2-A presents a design catalog of recommended surface aggregate layer thicknesses. This catalog may be used to determine the aggregate layer thickness required for a project when more detailed information about the project is not available. The thicknesses shown are based on specific ranges of 18-kip ESAL applications at traffic levels:

High	60,000 to 100,000
Medium	30,000 to 60,000
Low	10,000 to 30,000

Two other assumptions inherent in this thickness design are that the effective resilient modulus of the aggregate material is 30,000 psi, regardless of the quality of the roadbed soil; and there is a 0.5 inch aggregate loss per year. Exhibit 11.4.2-A is from the AGDPS.

Determine the in situ soil properties and then use Exhibit 11.4.2-B and 11.4.2-C to determine the Relative Quality of Roadbed Soil.

For Soil Classification, use: ASTM Classification of Soils for Engineering Purposes (ASTM D 2487), or AASHTO Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes (AASHTO M 145)

For Strength of Roadbed Soil, use: Resistance Value (AASHTO T 190); California Bearing Ratio (AASHTO T 193); and/or the Resilient Modulus (AASHTO T 307)

When test results from subgrade soil are not available, visually estimate the Unified Soil Classification using ASTM D 2488 or other means. Then use the AASHTO and ASTM Soil Classification chart in Exhibit 11.4.2-B and Roadbed Soil Strength chart in Exhibit 11.4.2-C to determine the Relative Quality of Roadbed Soil.

Determine the U.S. climatic region designation from Exhibit 11.4.2-D. This exhibit is from the AGDPS.

Using Exhibit 11.4.2-A with the appropriate Relative Quality of Roadbed Soil, traffic level, and U.S. climatic region designation, determine the minimum thickness of aggregate surfacing in inches. When a higher type of pavement design is recommended from Exhibit 11.4.2-A, contact the Division Pavement Engineer.

Exhibit 11.4.2.-A Aggregate surfaced thickness design catalog:
Recommended aggregate thickness (in inches)
for the six U.S. climatic regions, five relative
qualities of roadbed soil and three levels of traffic.

Relative Quality of Roadbed Soil	Traffic Level	U.S. Climatic Region					
		I	II	III	IV	V	VI
Very Good	High	8*	10	15	7	9	15
	Medium	6	8	11	5	7	11
	Low	4	4	6	4	4	6
Good	High	11	12	17	10	11	17
	Medium	8	9	12	7	9	12
	Low	4	5	7	4	5	7
Fair	High	13	14	17	12	13	17
	Medium	11	11	12	10	10	12
	Low	6	6	7	5	5	7
Poor	High	**	**	**	**	**	**
	Medium	**	**	**	15	15	**
	Low	9	10	9	8	8	9
Very Poor	High	**	**	**	**	**	**
	Medium	**	**	**	**	**	**
	Low	11	11	10	8	8	9

* Thicknesses of aggregate required (in inches).

** Higher type pavement design recommended.

Exhibit 11.4.2.B
AASHTO and ASTM Soil Classification

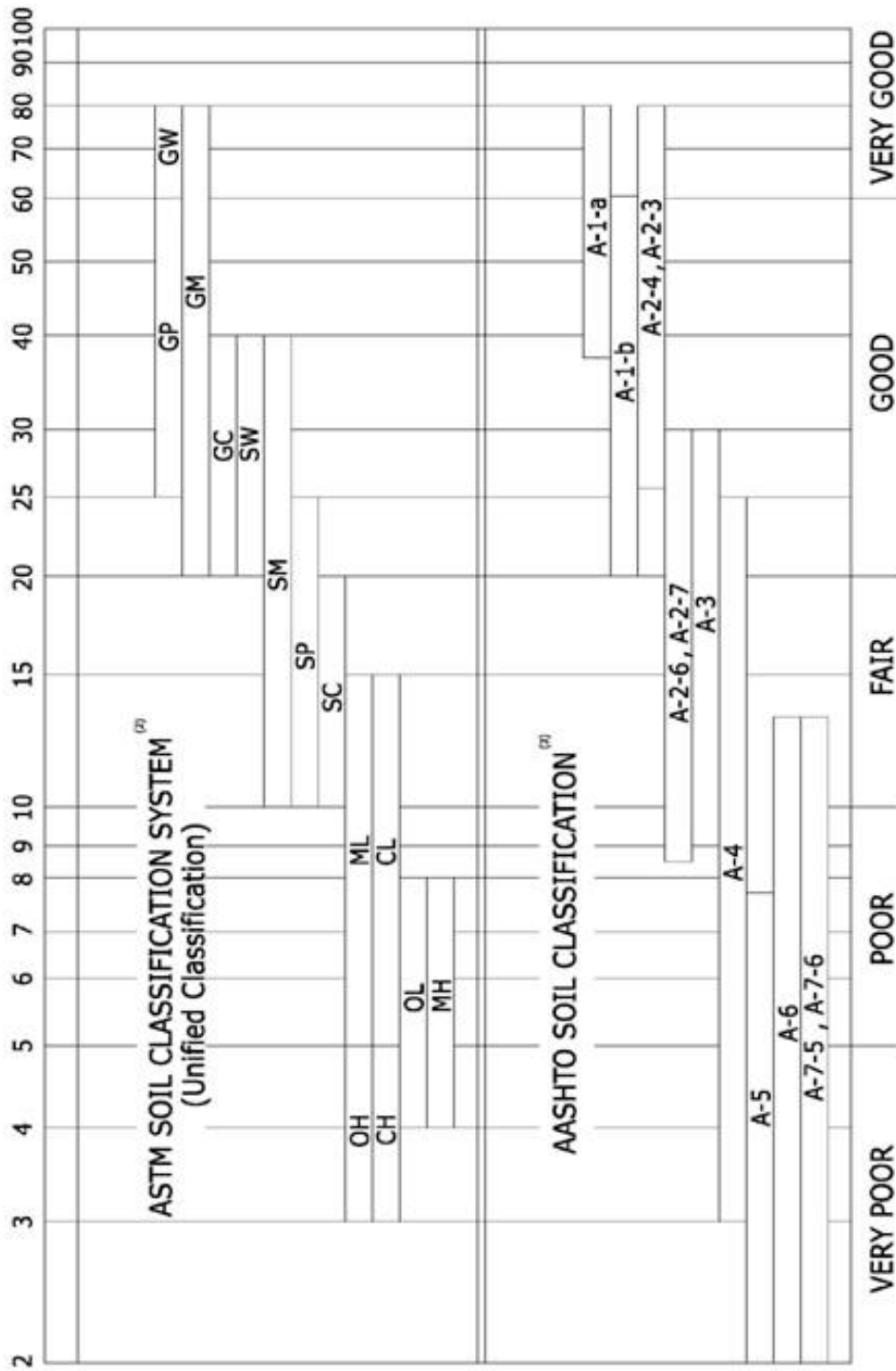


Exhibit 11.4.2.C
Roadbed Soil Strength

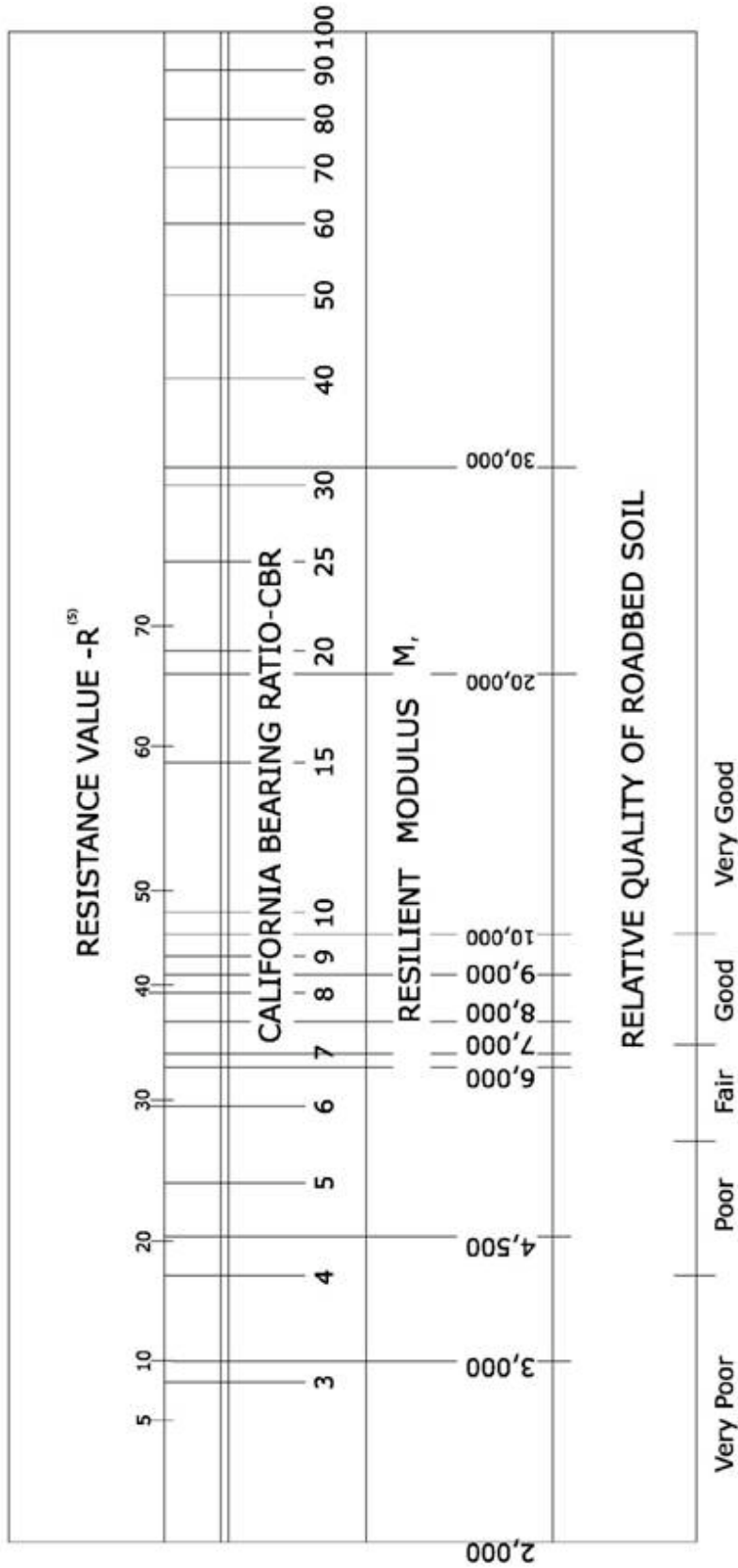
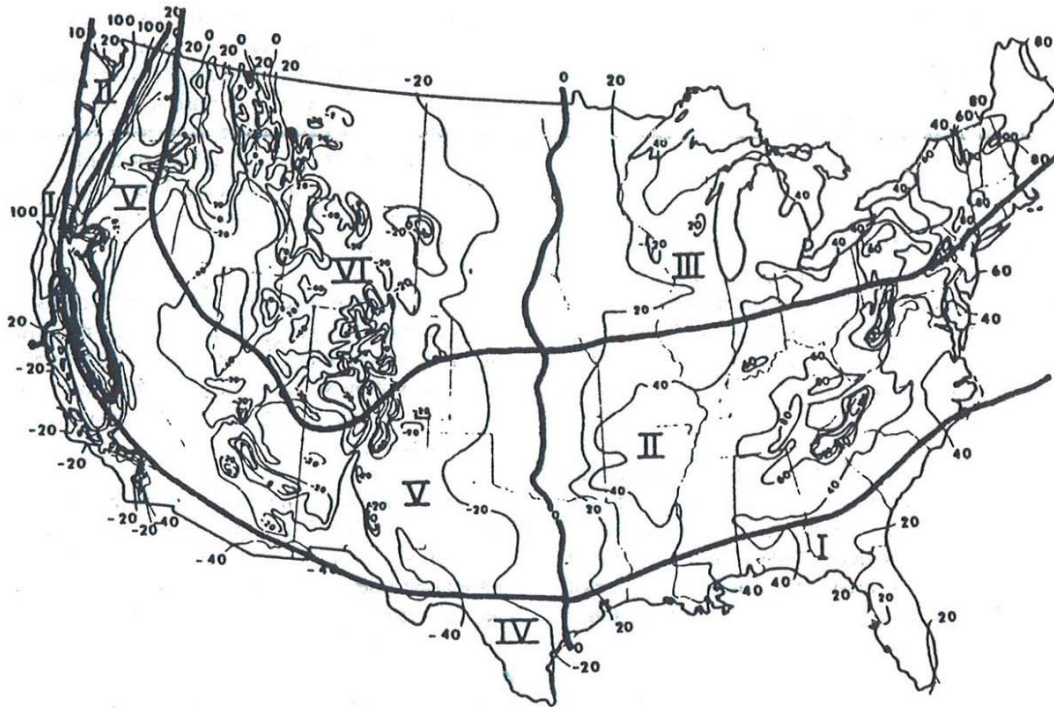


Exhibit 11.4.2-D The six climatic regions in the United States.



<u>REGION</u>	<u>CHARACTERISTICS</u>
I	Wet, no freeze
II	Wet, freeze – thaw cycling
III	Wet, hard-freeze, spring thaw
IV	Dry, no freeze
V	Dry, freeze – thaw cycling
VI	Dry, hard freeze, spring thaw