ULTIMATE 10 TON STAGED FLEXIBLE PAVEMENT DESIGN USING SOIL FACTORS [1,4]

Required Gravel Equivalency (G.E. in inches) for various Soil Factors (S.F.)

For new construction or reconstruction use projected ADT or HCADT; for reconditioning projects use present ADT or HCADT

Designs shown here are for an initial 9 Ton pavement structure. Agencies can add pavement structure to increase to 10 Tons in the future

9 TON Staged : < 150 HCADT

S.F.	Minimum Bit G.E.	Total G.E.
50	7	10.3[5]
75	7	13.9
100	7	17.5
110	7	19
120	7	20.5
130	7	22

9 TON Staged: 151 to 300 HCADT

S.F.	Minimum Bit G.E.	Total G.E.
50	7	14
75	7	17.5
100	7	21
110	7	22.4
120	7	23.8
130	7	25.2

9 TON Staged: 301 to 600 HCADT

S.F.	Minimum Bit G.E.	Total G.E.
50	7	16
75	7	20.5
100	7	25
110	7	26.8
120	7	28.6
130	7	30.4

9 TON Staged: 601 to 1100 HCADT

S.F.	Minimum Bit G.E.	Total G.E.
50	8	18.5
75	8	23.7
100	8	29
110	8	31.1
120	8	33.2
130	8	35.3

9 TON Staged: 1101 to 1500 HCADT[2]

S.F.	Minimum Bit G. E.	Total G.E.
50	8	20.3
75	8	26.4
100	8	32.5
110	8	35
120	8	37.4
130	8	39.8

TYPE OF MATERIAL	SPECIFICATION	G.E. FACTOR
Bituminous Pavement	2360	2.25
Cold-Inplace Recycling (CIR)	2331	1.5
Rubblized Concrete	2231	1.5
Full Depth Reclamation	2331	1.0
Stabilized Full Depth Reclamation	2331	1.5
Aggregate Base class 5 & 6	3138	1.0
Aggregate Sub-Base class 3 & 4	3138	0.75
Select Granular Mat'l	3149.2B2	0.5

AASHTO SOIL CLASS	SOIL FACTOR (S.F.)	ASSUMED R-VALUE	GENERAL [3] PLASTICITY
A - 1	50 - 75	70 - 75	NP
A - 2	50 - 75	30 - 70	SP
A - 3	50	70	NP
A - 4	100 - 130	20	SP
A-5	130+	na	na
A - 6	100	12	P
A - 7 - 5	120	12	P
A - 7 - 6	130	8	P

Values may not be exact due to rounding

[1]For 10 Ton design see Bituminous Pavement Design Chart (Aggregate Base). Increase calculated 18 kip design EASL's by 12% to determine required 10 ton design G.E. in the chart.

[2]For HCADT over 1500 more advanced design procedures should be used; please contact MnDOT's Pavement Design Unit

[3]General Plasticity: NP = nonplastic; SP= semi-plastic; P = plastic; na = not applicable (An A-5 soil rarely occurs in Minnesota)

[4] Safety edge (30° to 35° wedge) are recommended to minimize edge dropoff. See www.dot.state.mn.us/stateaid/safety-edge.html

[5] These GE values are for the finished pavement section. During construction additional GE may be warranted for a construction platform.