Control Joint Spacing vs Shrinkage

Crack Control

HISTORICAL LOOK AT MOISTURE CONTROLLED UNITS & JOINT SPACING

In May 1990, FC&PA published the following note in the Shapes & Sizes Manual on page 2:

Note: "*Please be advised that due to the high rainfall and humidity in Florida, Type I Moisture controlled units Are not available. Control joint spacing and location should be designed utilizing Type II non-moisture controlled units.*"

Subsequently the moisture controlled "Type 1" designation was removed from ASTM C90.

FC&PA Published recommended joint spacing, shown here.

Florida Concrete & Products Association Recommendations
MAXIMUM HORIZONTAL SPACING OF VERTICAL CONTROL JOINTS
IN CONCRETE MASONRY WALLS (feet)

Average Annual Relative Humidity	Wall Location	Vertical Spacing Of Bed Joint Reinforcement (Inches)	Concrete Masonry II Non-moisture
Greater than 75%	Exterior	None	20
		16	26
		8	32
	Interior	None	26
		16	32
		8	36

Note for Engineers:
It is recommended that the project should be designed to take into account the shrinkage requirements of ACI 530 which calls for designing for 1/2 of the potential linear shrinkage or 3/16" in 100 lf.

Page C-34 Ref 4.2.5.1 (TMS 402-16)

CONCRETE MASONRY

$K_m = 0.5\ S_L$

Section 4.2.5 Notation (TMS 402-16

K_m : coefficient of shrinkage of concrete masonry
(The value that should be considered in the design of the structure)

S_L = total linear drying shrinkage of concrete masonry units determined in accordance with ASTM C 426

What is a good value for "S_L" in Florida?

You may want to check with your concrete producer; however, a good general value for S (for normal weight units—125 pounds per cubic foot or more, oven dry weight for concrete), is 0.032%

Example Coefficient of shrinkage for Type II masonry units:

$K_m = 0.5\ S_L$
$= 0.5\ (.032\%)$
$= .016\%$

How much shrinkage in 100 feet? ≃ 3/16"!

Potential linear shrinkage for typical florida masonry units for 100 inear feet of wall:

$= 0.016\%\ (100')\ (12')$
$= 0.016\% \times 1200$
$= 0.192"$ = about 3/16" (3/16" = 0.1875)