Pour Strips Elimination at the Upper Levels in PT Parking Structures

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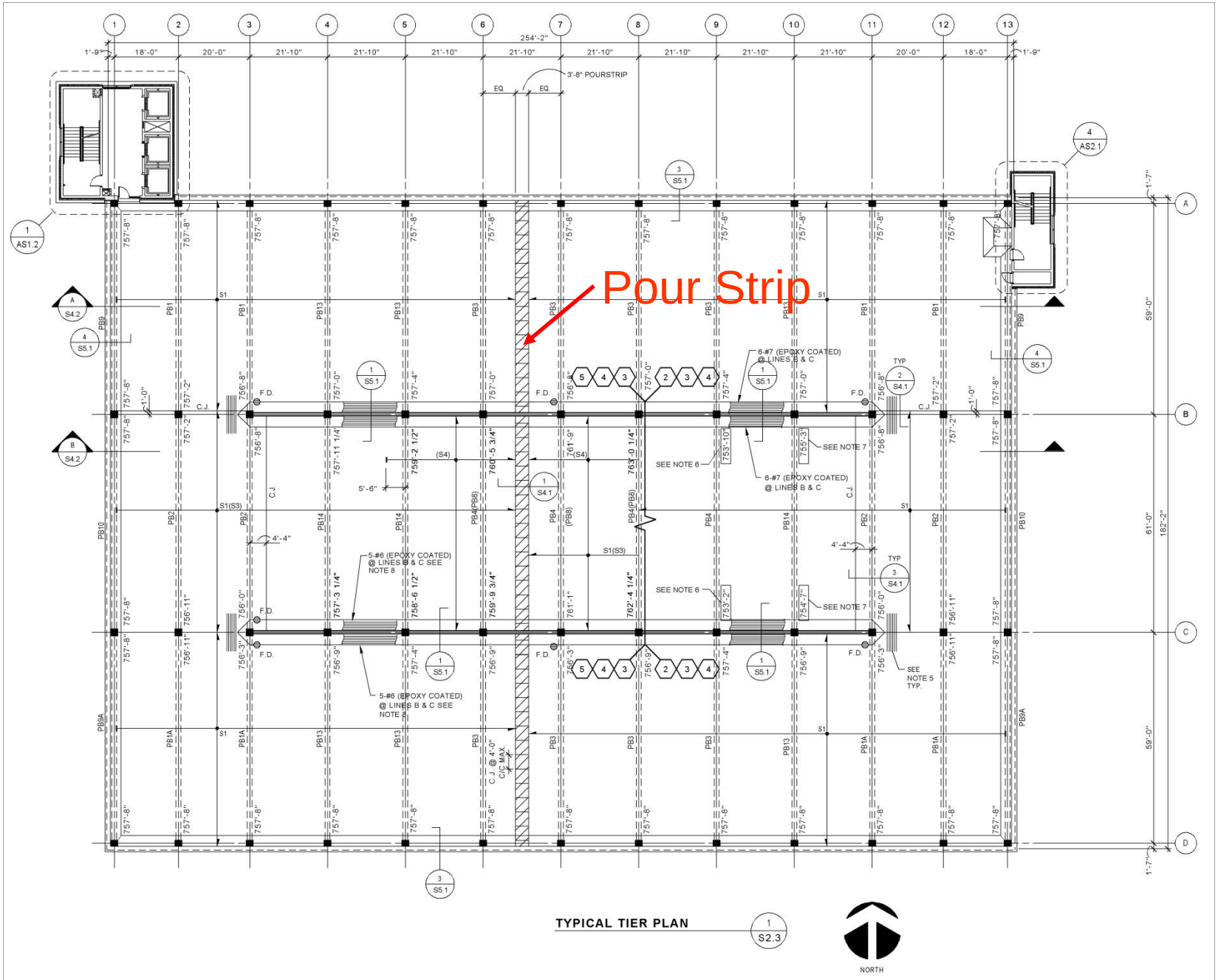
Pour Strips

Pour Strips are provided to temporarily isolate the post-tensioned floor system from restraining columns or walls to reduce the effect of volume changes on the structure.



TYPICAL TIER PLAN 1 S2.3

Benefits of eliminating the pour strips

- Pour strips require extra mild reinforcement. Elimination of pour strips minimizes the reinforcement.
- Simplified forming - no or fewer re-shoring is required, which frees' up floor space and reduces obstacles for all trades
- No special concrete mixes are required (mixes that require polypropylene fibers)
- Narrower width of traffic topping is required (typically a 6-ft. wide traffic topping over the pour strip can be reduced to a 2-ft. wide traffic topping at the construction joint)

Benefits of eliminating the pour strips (cont.)

- Elimination of one sealant joint per strip, plus all the orthogonal joints
- Fewer joints mean less maintenance
- Safer working environment as there is no opening (hole) in the slab
- Potential of saving two weeks in schedule, usually at the end of the project

Pour Strips

- Design pour strips as cantilevers to simplify intensive re-shoring operations
- Recommend keeping the pour strips at the first supported level, but eliminate at upper levels

Pour Strips

Per Post-Tensioning Manual, 5th edition, figure 5.25:

About 40 percent of shrinkage or creep takes place within the first 28 days

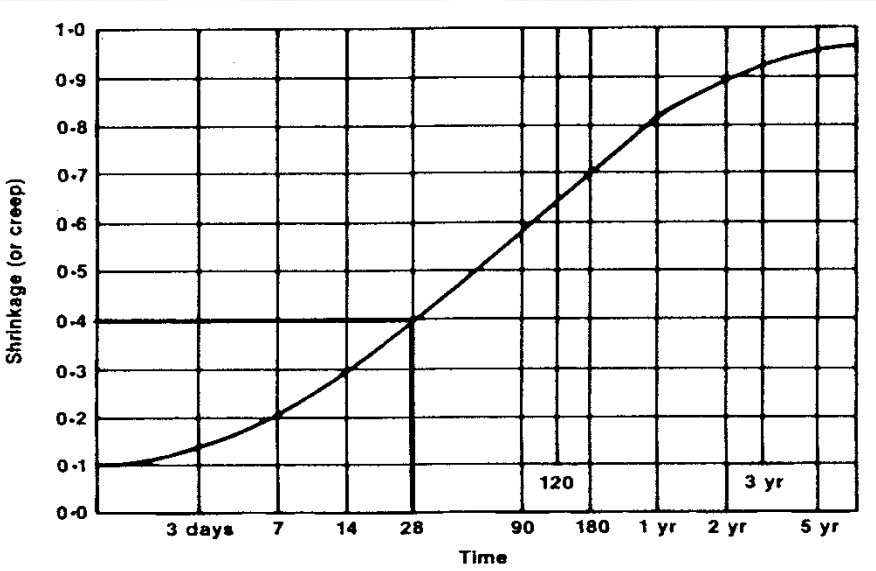


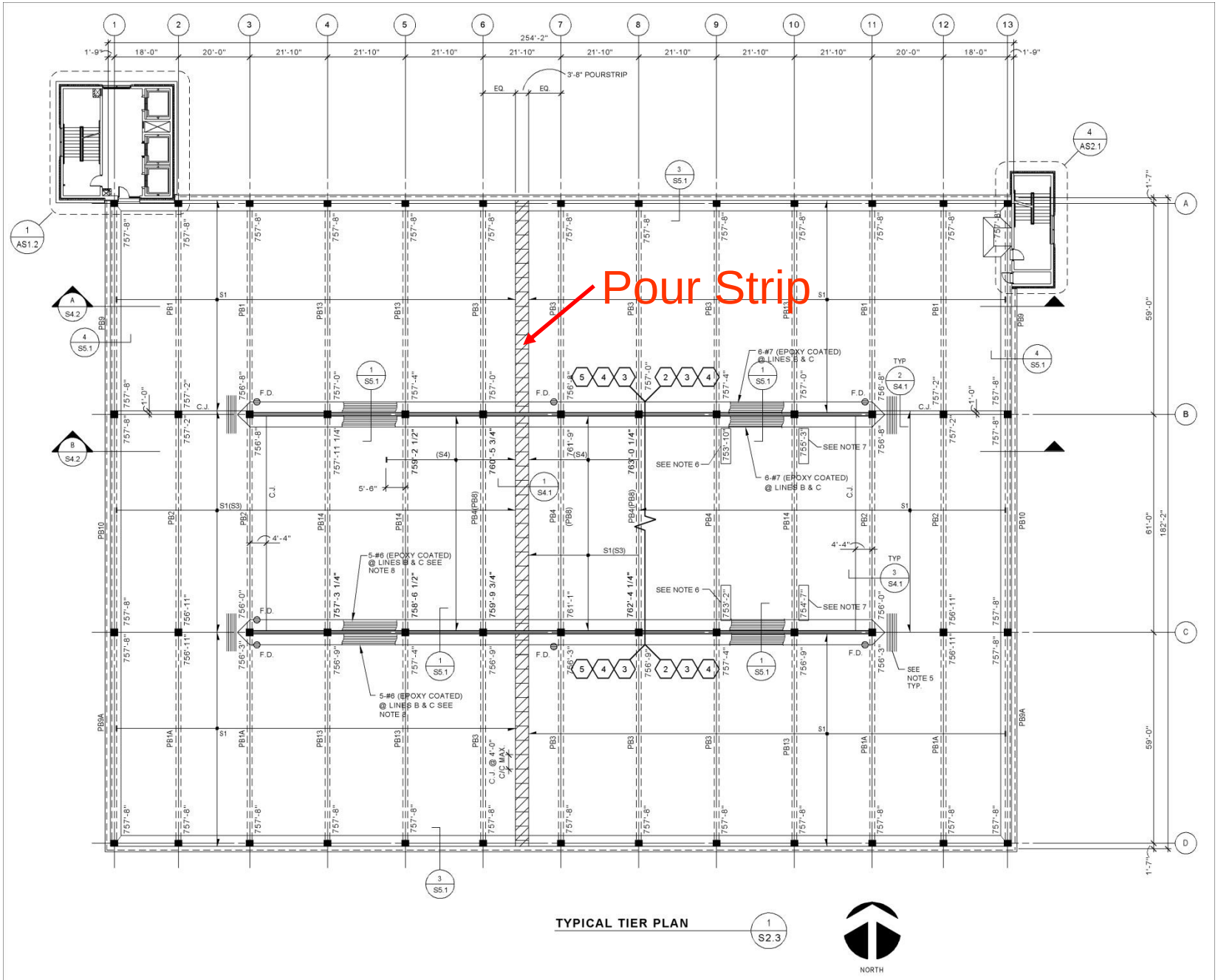
Fig. 5.25 — Approximate proportion of final shrinkage or creep vs. time

CONTRIBUTION OF DIFFERENT FACTORS TO TYPICAL SLAB SHORTENING*

DESCRIPTION	PERCENTAGE %
SHRINKAGE	66
CREEP	11
ELASTIC SHORTENING	7
TEMPERATURE	16
TOTAL	100

*For a parking structure in Southern California

Source: Restraint Cracks and their Mitigation in Unbonded Post-Tensioned Building Structure By Bijan O. Aalami and Florian G. Barth, Post-Tensioning Institute, 1988



TYPICAL TIER PLAN 1 S2.3

CONTRIBUTION OF DIFFERENT FACTORS TO TYPICAL SLAB SHORTENING WITH A POUR STRIP

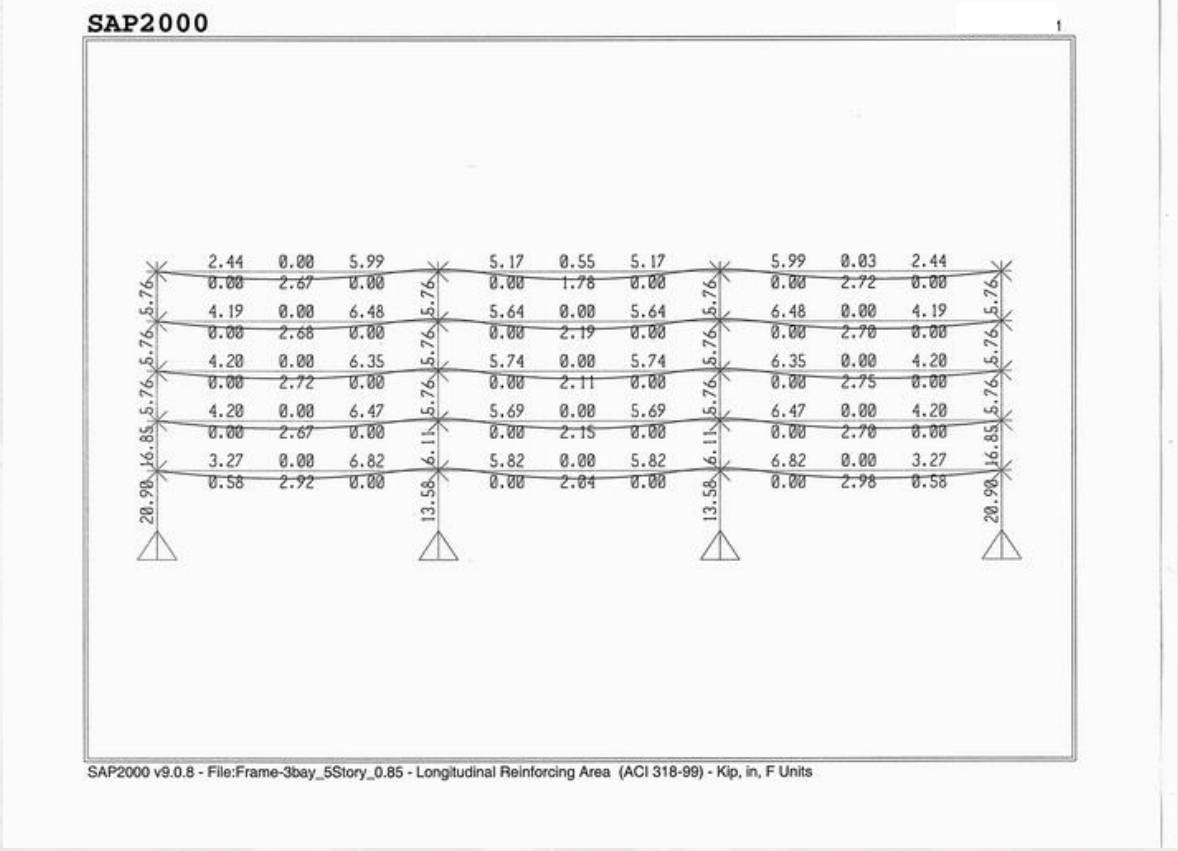
DESCRIPTION	MOVEMENT inch	
	0 TO 28 DAYS BASED ON HALF STRUCTURE	BEYOND 28 DAYS BASED ON FULL STRUCTURE
SHRINKAGE	0.13	0.40
CREEP	0.02	0.07
ELASTIC SHORTENING	0.07	
TEMPERATURE		0.16
TOTAL	0.22	0.63

Pour Strips

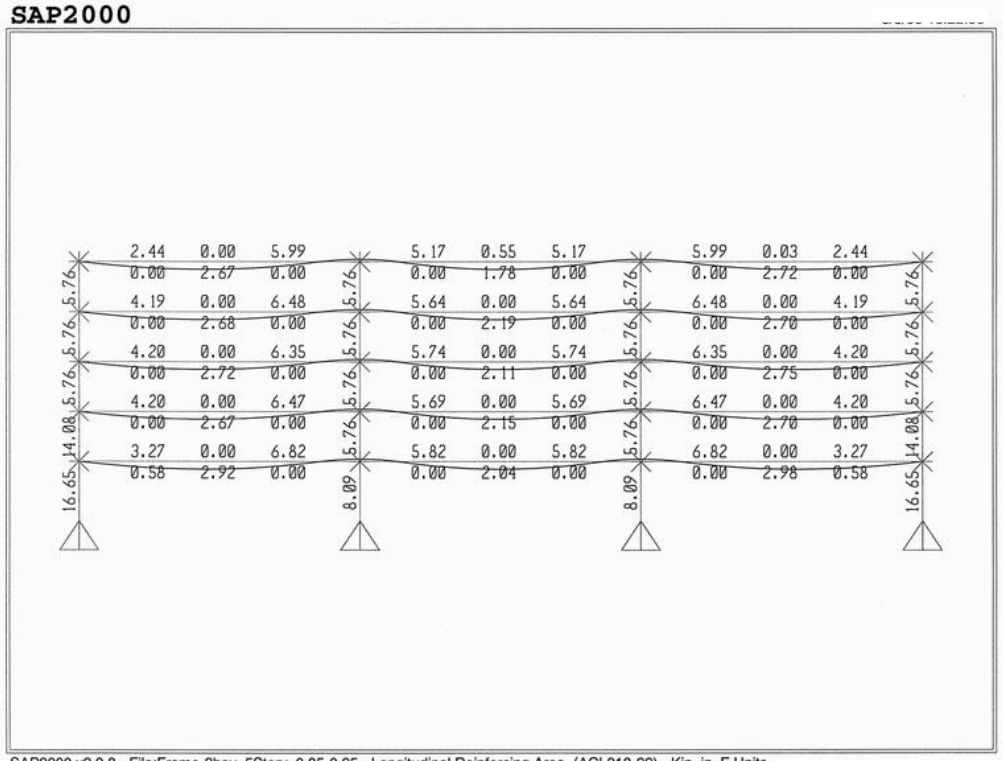
In our example the movements are as follow:

- Equivalent movement at each end = 0.95” without pour strip
- Equivalent movement at each end = 0.85” with a pour strip that remains open for 28 days

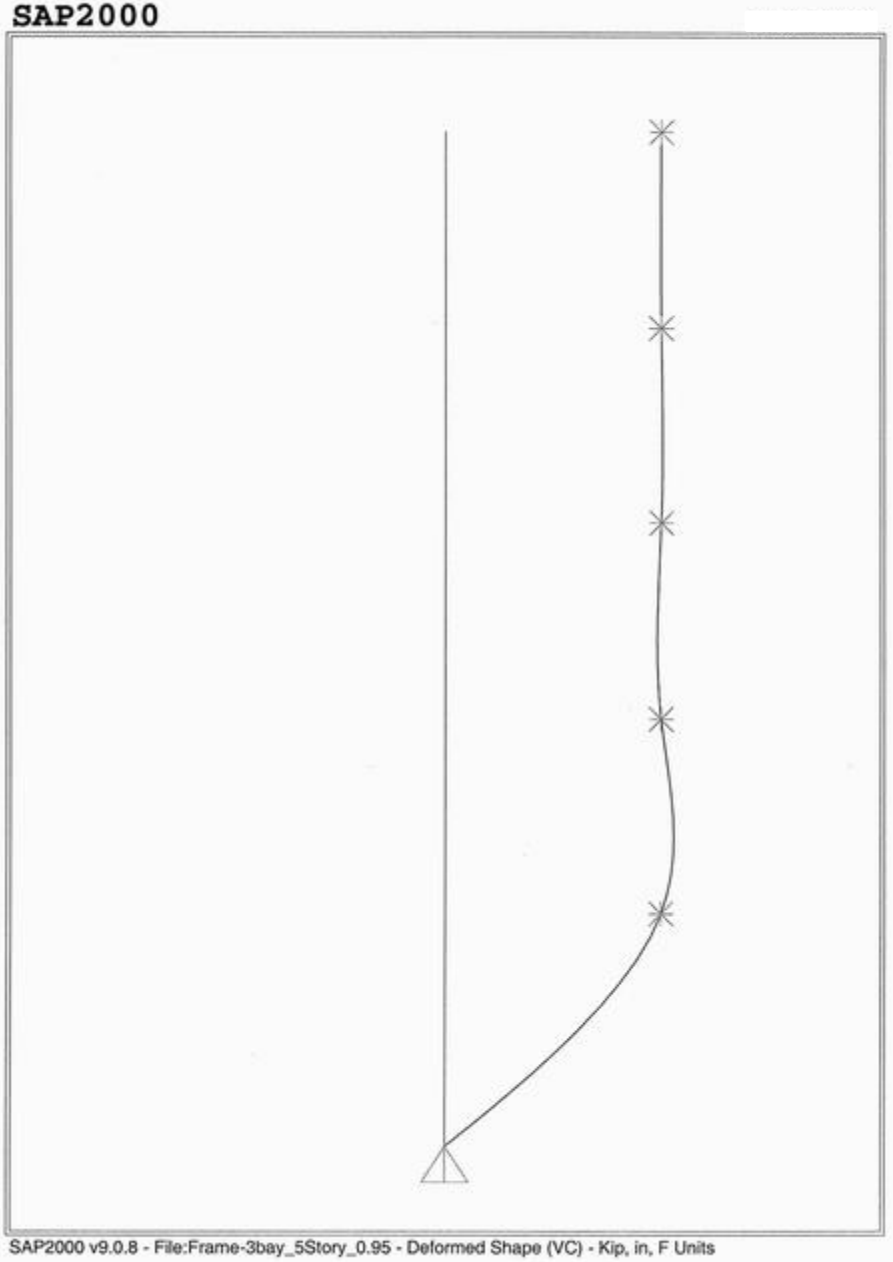
Pour strip at all tiers



Pour strip at first supported tier only



Pour strip at all tiers



Δ=0.85”

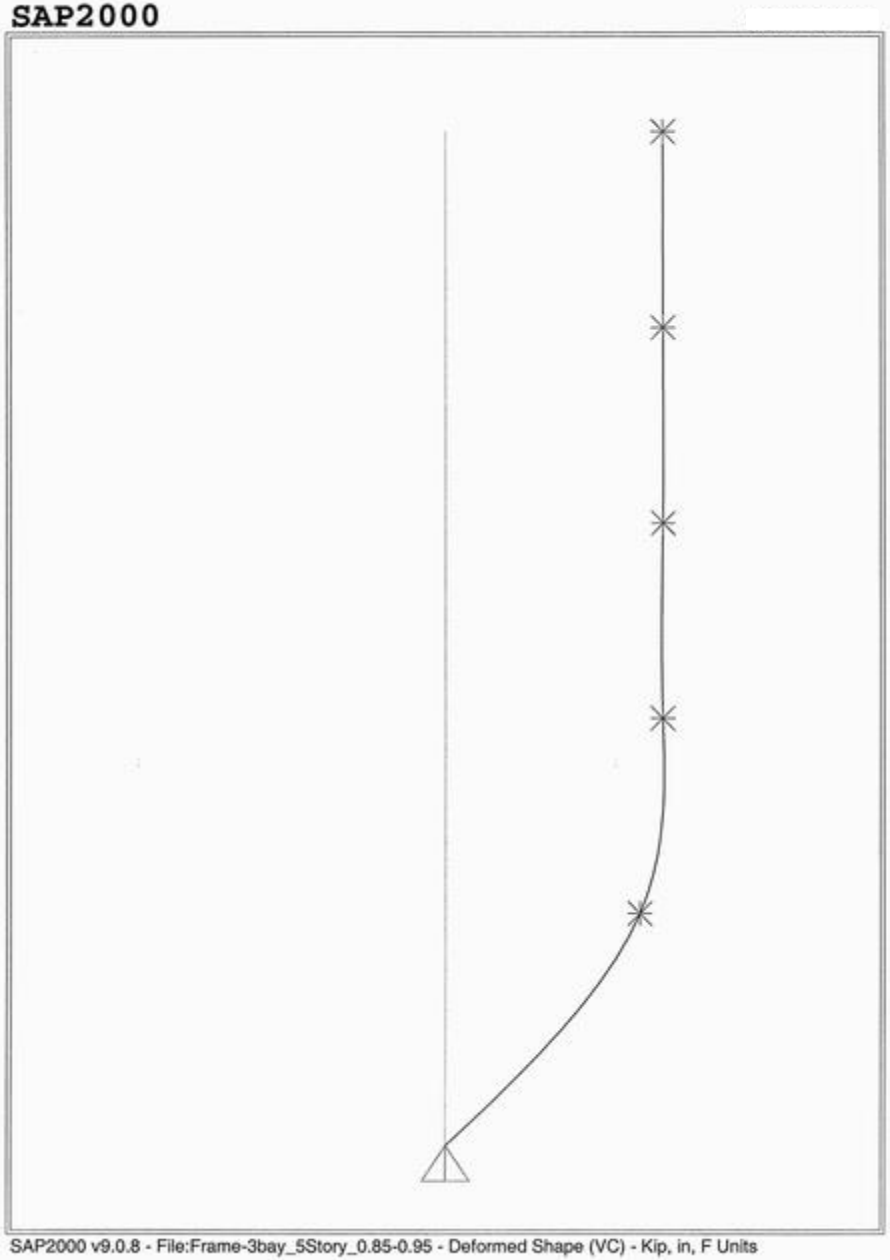
Δ=0.85”

Δ=0.85”

Δ=0.85”

Δ=0.85”

Pour strip at first supported tier only



Δ=0.95”

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Δ=0.85”

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P3

Thank You