



Client: Regional Foundation & Crawlspace Repair

Structural Calculations

Nolan Residence – Supplemental Floor Support
139 Jacob St.
Holly Springs, NC 27540

Structural analysis and design for the addition of supplemental Smart Jack posts, new supplemental beam, and Smart Jack footings/bases.

REVIEWED BY: Dennis Heier, PE



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Design Criteria

Design Loads

Dead Loads:

Roof Dead Load =	15	psf
Floor Dead Load =	20	psf
Exterior Wall Dead Load =	13	psf
Concrete Weight =	150	pcf
Masonry Weight =	78	psf
Chimney Weight =	45	psf
Deck Weight =	10	psf

Live Loads:

Roof (Live) =	20	psf
Roof (Snow) =	15	psf
Attic (Habitable w Sleeping Areas) =	30	psf
Attic (Uninhabitable w/ Storage) =	20	psf
Attic (Uninhabitable w/o Storage) =	10	psf
Floor =	40	psf
Deck =	40	psf



Project Loading (SJ350)

Vertical Design Loads:

Tributary Widths:

Transverse Direction (Smart Jacks 1-2. Ref: Plan View on S0.1)

Roof	15	ft	225	p/f
Third Floor	0	ft	0	p/f
Second Floor	0	ft	0	p/f
First Floor	13.5	ft	270	p/f
Ext. Walls	0.00	ft	0	p/f
			<u>495</u>	p/f
			$\Sigma_{DL} =$	

Live:

Roof (Snow)	15	ft	225	p/f
Attic	0	ft	0	p/f
Third Floor	0	ft	0	p/f
Second Floor	0	ft	0	p/f
First Floor	13.5	ft	540	p/f
			<u>765</u>	p/f
			$\Sigma_{LL} =$	

Max Trib = 4 ft

Pier Working Loads:

$P_{DL} =$	1980	lbs
$P_{LL} =$	<u>2160</u>	lbs
$P_{TL} =$	4140	lbs

USE 12" DIAMETER PRECAST FOOTING w/ 18" SQ. x 6" DP. CRUSHED ROCK BASE CAPACITY = 4.5K