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Address:		Specifier:	
Phone Fax:		E-Mail:	
Design:	Concrete - Dec 22, 2025	Date:	12/22/2025
Fastening point:			

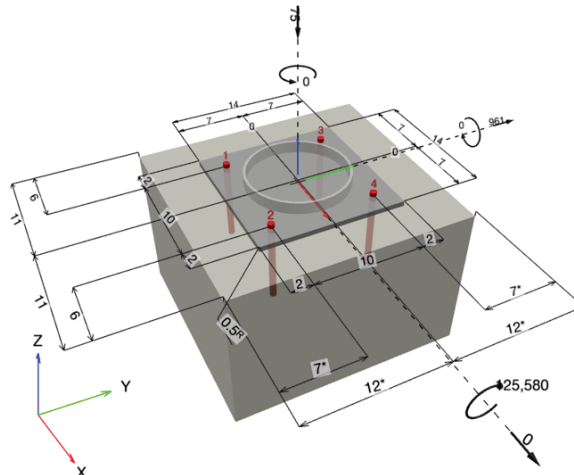
Specifier's comments:

1 Input data

Anchor type and diameter:	HDA-P (Carbon Steel) M16x190/60	
Item number:	331551 HDA-P M16x190/60	
Specification text:	Hilti Ø M16x190/60 HDA-P (Carbon Steel) with 7.48 in nominal embedment depth per ICC-ES ESR-1546 , Hammer drill bit installation per MPII	
Effective embedment depth:	$h_{ef,act} = 7.480$ in., $h_{nom} = 7.480$ in.	
Material:	8.8	
Evaluation Service Report:	ESR-1546	
Issued Valid:	3/1/2024 3/1/2026	
Proof:	Design Method ACI 318-19 / Mech	
Shear edge breakout verification:	Row closest to edge (Case 3 only from ACI 318-19 Fig. R.17.7.2.1b)	
Stand-off installation:	$e_b = 0.000$ in. (no stand-off); $t = 0.500$ in.	
Anchor plate ^R :	$l_x \times l_y \times t = 14.000$ in. x 14.000 in. x 0.500 in.; (Recommended plate thickness: not calculated)	
Profile:	Round HSS (AISC), HSS10X.250; (L x W x T) = 10.000 in. x 10.000 in. x 0.250 in.	
Base material:	uncracked concrete, 3000, $f'_c = 3,000$ psi; $h = 420.000$ in.	
Installation:	Hammer drilled hole, Installation condition: Dry	
Reinforcement:	tension: not present, shear: not present; no supplemental splitting reinforcement present edge reinforcement: > No. 4 bar	

^R - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [lb, in.lb]





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1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = -75; V _x = 0; V _y = 961; M _x = -125,580; M _y = 0; M _z = 0;	no	69



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2 Proof I Utilization (Governing Cases)

Loading	Proof	Design values [lb]		Utilization	Status
		Load	Capacity	β_N / β_V [%]	
Tension	Concrete Breakout Failure	11,086	16,196	69 / -	OK
Shear	Concrete edge failure in direction y+	961	8,168	- / 12	OK

Loading	β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
Combined tension and shear loads	0.685	0.118	5/3	56	OK

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!



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4 Remarks; Your Cooperation Duties

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