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| Address:         |  | Specifier: |           |
| Phone   Fax:     |  | E-Mail:    |           |
| Design:          | CO#90743-01 - SA-3 Case 1 (Shear and Moment) | Date:      | 1/31/2025 |
| Fastening point: | Restraint Arm Condition                      |            |           |

**Specifier's comments:** Case A - Shear and Moment

## 1 Input data

|                                    |   |  |
|------------------------------------|---|--|
| <b>Anchor type and diameter:</b>   | <b>HIT-RE 500 V3 + HAS-R 304/316 SS 1</b>   |  |
| Item number:                       | not available (element) / 2123401 HIT-RE 500 V3 (adhesive)  |  |
| Specification text:                | Hilti $\varnothing$ 1 in HIT-RE 500 V3 + HAS-R 304/316 SS with 18 in nominal embedment depth per ICC-ES ESR-3814 , Hammer drilled installation per MPII |  |
| Effective embedment depth:         | $h_{ef,act} = 18.000$ in. ( $h_{ef,limit} = -$ in.)   |  |
| Material:                          | ASTM F 593  |  |
| Evaluation Service Report:         | ESR-3814  |  |
| Issued   Valid:                    | 3/1/2023   1/1/2025   |  |
| Proof:                             | Design Method ACI 318-19 / Chem   |  |
| Shear edge breakout verification:  | Up to first three rows, as applicable (Case 1, 2 from ACI 318-19 Fig. R.17.7.2.1b)  |  |
| Stand-off installation:            | $e_b = 0.000$ in. (no stand-off); $t = 1.000$ in.   |  |
| Anchor plate <sup>R</sup> :        | $l_x \times l_y \times t = 30.000$ in. x $30.000$ in. x $1.000$ in.; (Recommended plate thickness: not calculated)                                      |  |
| Profile:                           | W shape (AISC), W8X24; (L x W x T x FT) = $7.930$ in. x $6.500$ in. x $0.245$ in. x $0.400$ in.   |  |
| Base material:                     | cracked concrete, 4000, $f'_c = 4,000$ psi; $h = 21.000$ in., Temp. short/long: 32/32 °F  |  |
| <b>Installation:</b>               | <b>Hammer drilled hole, Installation condition: Submerged</b>   |  |
| Reinforcement:                     | tension: not present, shear: not present; no supplemental splitting reinforcement present<br>edge reinforcement: none or < No. 4 bar                    |  |
| Seismic loads (cat. C, D, E, or F) | Tension load: yes (17.10.5.3 (d))<br>Shear load: yes (17.10.6.3 (c))  |  |

<sup>R</sup> - The anchor calculation is based on a rigid anchor plate assumption.

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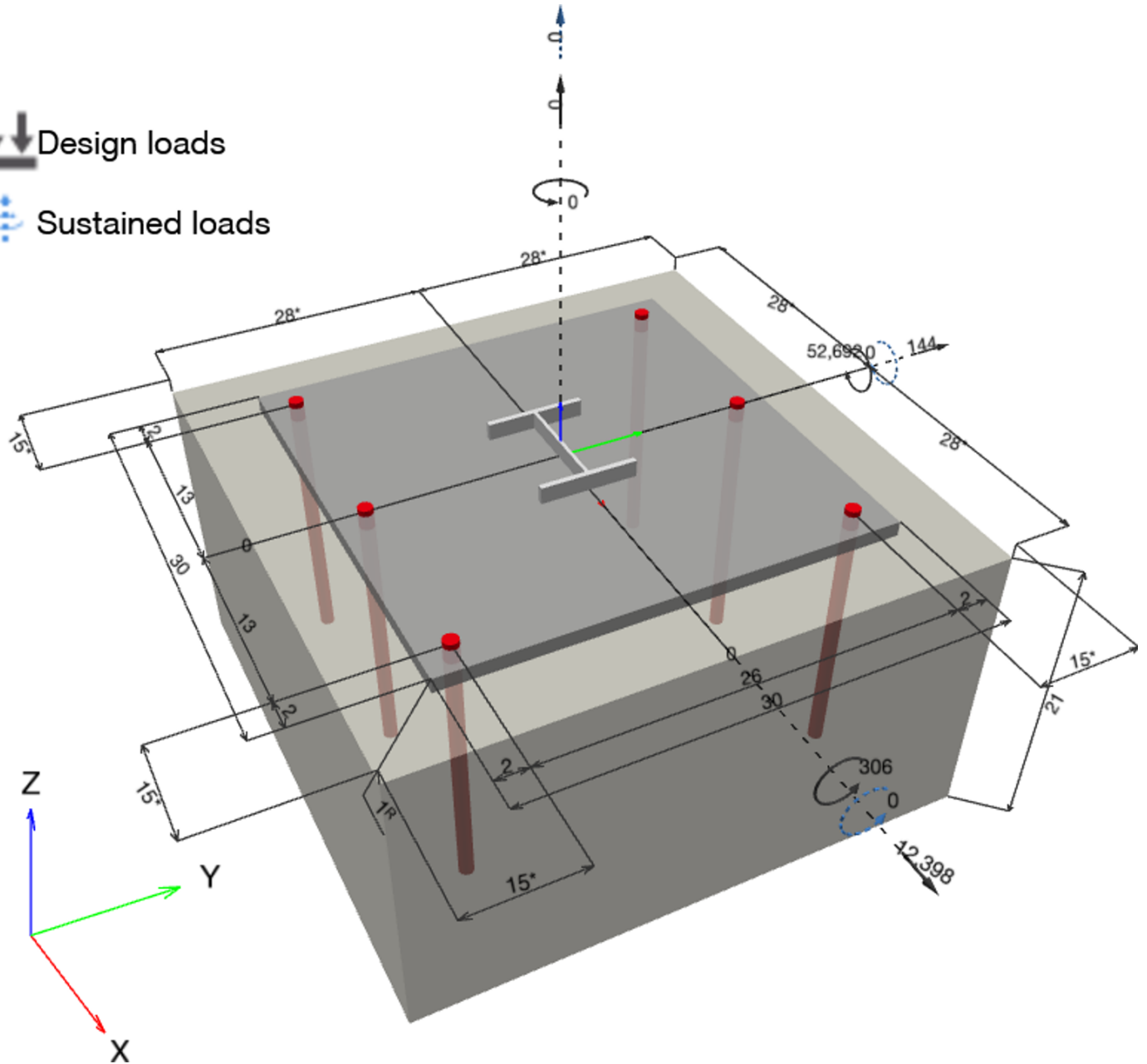
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 Restraint Arm Condition

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

Design loads

Sustained loads





# Hilti PROFIS Engineering 3.1.10

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## 1.1 Design results

| Case | Description   | Forces [lb] / Moments [ft.lb]   | Seismic | Max. Util. Anchor [%] |
|------|---------------|---|---------|-----------------------|
| 1    | Combination 1 | N = 0; V <sub>x</sub> = 12,398; V <sub>y</sub> = 144;<br>M <sub>x</sub> = 306.000; M <sub>y</sub> = 52,692.000; M <sub>z</sub> = 0.000; | yes     | 91                    |



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### 2 Proof I Utilization (Governing Cases)

| Loading | Proof                                 | Design values [lb] |          | Utilization             | Status |
|---------|---------------------------------------|--------------------|----------|-------------------------|--------|
|         |                                       | Load               | Capacity | $\beta_N / \beta_V$ [%] |        |
| Tension | Concrete Breakout Failure             | 28,075             | 38,033   | 74 / -                  | OK     |
| Shear   | Concrete edge failure in direction y+ | 12,399             | 25,444   | - / 49                  | OK     |

| Loading                          | $\beta_N$ | $\beta_V$ | $\zeta$ | Utilization $\beta_{N,V}$ [%] | Status |
|----------------------------------|-----------|-----------|---------|-------------------------------|--------|
| Combined tension and shear loads | 0.738     | 0.487     | 5/3     | 91                            | 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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