



# A REDEFINED EMBED PORTFOLIO FOR

Curtain Wall Façades





# WE HELP TAKE CARE OF THE EMBEDS

## So you can focus on the glass

For over a decade, curtain wall contractors have entrusted Hilti to help securely attach their façades. During this time, Hilti's Façade team has gathered data to help provide a more optimized and cost-effective anchor channel portfolio for curtain wall applications, Hilti HAC-V.

The additional benefits beyond the higher performance include helping reduce the number of different embeds on-site, reduction of clashes with slab elements, reducing the number of T-bolts, changing rebar channels to studs, and others. HAC-V is the result of the dynamic collaboration between our trusted façade customers and Hilti.



### NEW!

#### HAC-V

Most feasible anchor channel type. Outperforms its predecessor by up to one embed size.



### NEW!

#### HAC-V Rebar XTS

Up to 5X higher concrete tensile performance than traditional anchor channels.

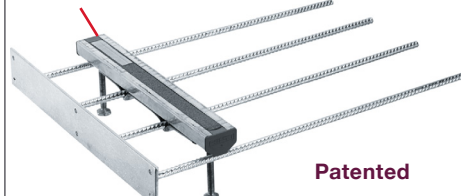


HAC-V Rebar XTS improves the steel performance of its predecessor by up to 20%

### NEW!

#### HAC-V EDGE\* (Lite)

Up to 6X higher concrete edge breakout shear performance than traditional anchor channels.



HAC-V EDGE improves the steel performance of its predecessor by up to 30%

### ICC ESR-3520

The most comprehensive approval for cast-in anchor channels

- 2D Static
- 3D Static and Seismic
- Smooth and Serrated 3D Seismic
- Lightweight concrete
- Small edge distances
- Reduced edge distances for heavy duty embeds
- Anchor channels with reinforcing bars for face of slab applications
- AT System for T-bolt Installation

ICC ESR-3520 can be downloaded [here](#).



### AT SYSTEM SIW 6AT-A22

Hilti's SIW 6AT-A22 Cordless Impact Wrench with the smart Hilti Adaptive Torque Module SI-AT-A22 (AT System) allows you to set the HAC-V T-bolts while collecting data points for each embed T-bolt installed. The installation is method covered by ICC ESR-3520.

\* Since the EDGE Plate is not structurally connected to HAC-V, the product itself is covered by ICC ESR-3520. 19 out of 20 failures modes are covered by ICC ESR-3520. The concrete edge failure mode in shear is based on a Hilti method to account for the positive influence of the edge plate.



# BENEFITS OF HAC-V



## Helps increase project profitability

- Compared to its predecessor, HAC-V may allow you to go one channel size down.
- The extended portfolio (HAC-V 35) offers a more cost-effective solution for low to medium load range applications.
- Increased anchor-channel connection performance may lead to less anchors, helping to optimize the overall embed cost.
- Increased anchor length provides exponential concrete gains at a marginal product cost increase.
- Increased channel lip performance may lead to a smaller number of T-bolts and/or smaller curtain wall bracket, which help bring aluminum savings.



## Helps drive on-site simplicity

- Less anchors due to increased connection capacity means less clashes with slab elements.
- Simplify the number of different anchor channels on-site.



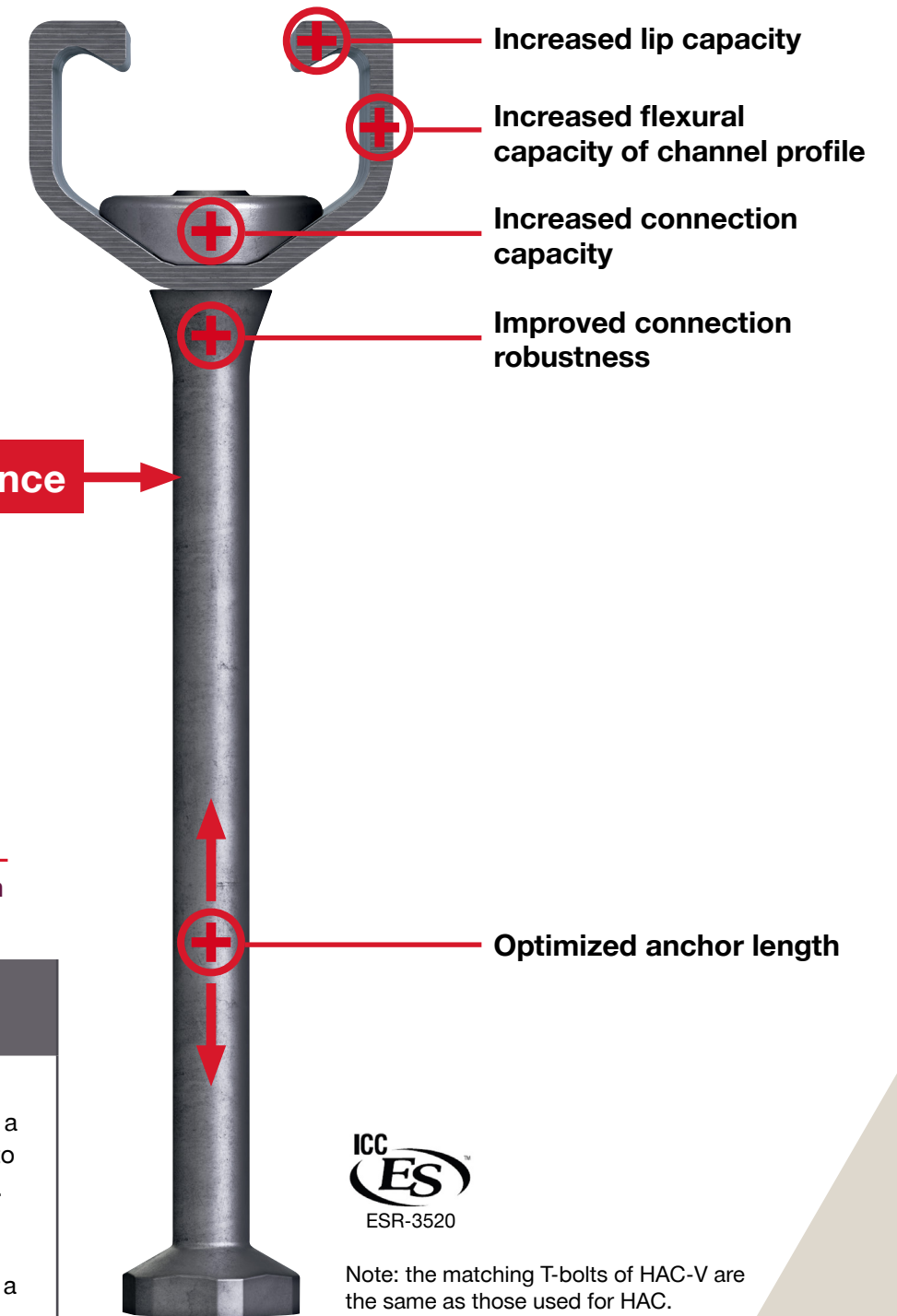
## Higher performance where you need it most

- Heavy-duty embeds have reduced edge distances. In the trending thin slab applications, this can help lead to simpler solutions.



# NEW HILTI CAST-IN ANCHOR CHANNEL VALUE ADDED; HAC-V

An improved and extended embed portfolio tailored for curtain wall applications with simplicity in mind



**HAC-V IS NOW AVAILABLE IN PROFIS ANCHOR CHANNEL**  
**PROFIS Anchor Channel offers a simple way to quickly and accurately design cast-in anchor channels.**

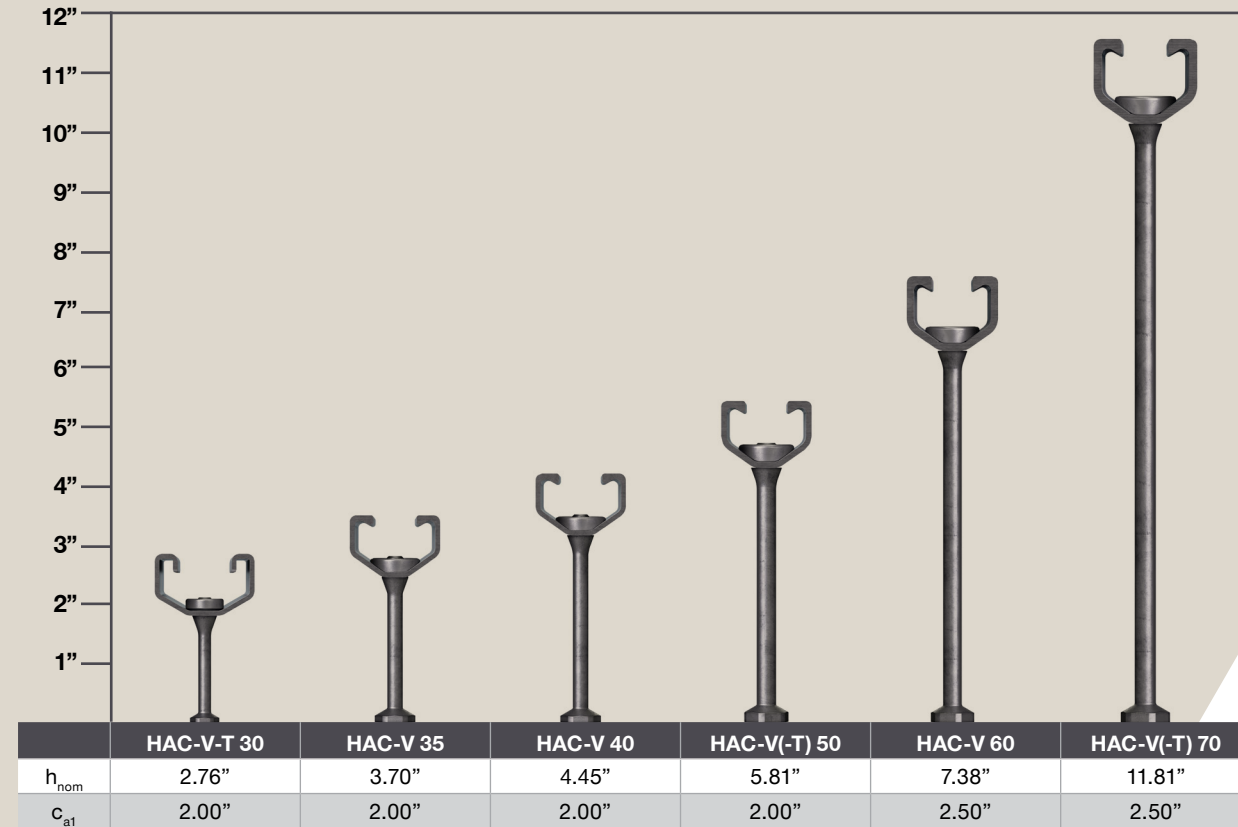
COMPLY	OPTIMIZE	PRODUCTIVITY GAINS
<ul style="list-style-type: none"> <li>• Design models are compliant with ICC ESR-3520, ACI 318, and/or applicable testing and design provisions of AC232.</li> <li>• Help maximize the probability of a successful submittal approval via model code compliant designs.</li> </ul>	<ul style="list-style-type: none"> <li>• Explore different bracket geometries for an optimum fixture and anchor channel selection.</li> </ul>	<ul style="list-style-type: none"> <li>• Help reduce design engineering hours with a user-friendly interface to simplify embed design.</li> <li>• All failure mode verifications shown in real time at the click of a button.</li> </ul>



# HAC-V

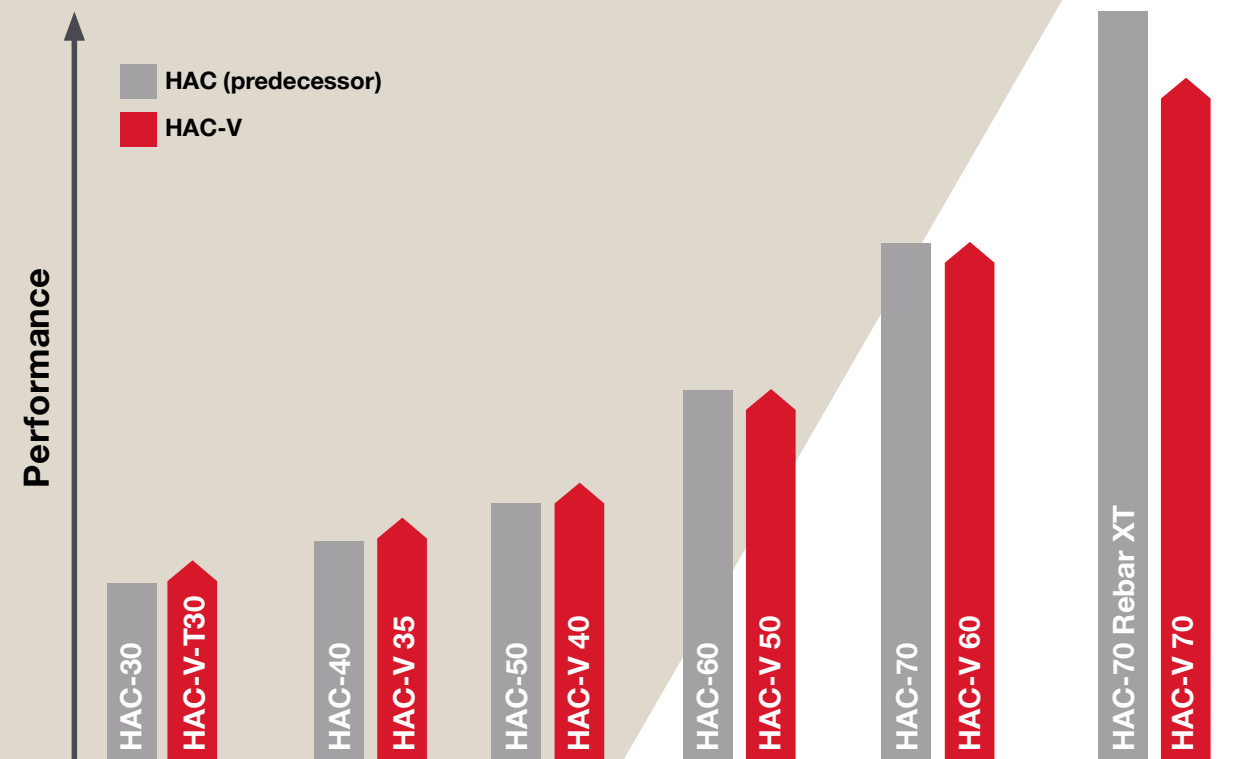
A tailor made portfolio for curtain wall façades

## HAC-V Portfolio



$c_{e1}$ : minimum edge distance,  $h_{nom}$ : nominal height

Hilti's new portfolio outperforms its predecessor by up to one embed size, without compromising its cost



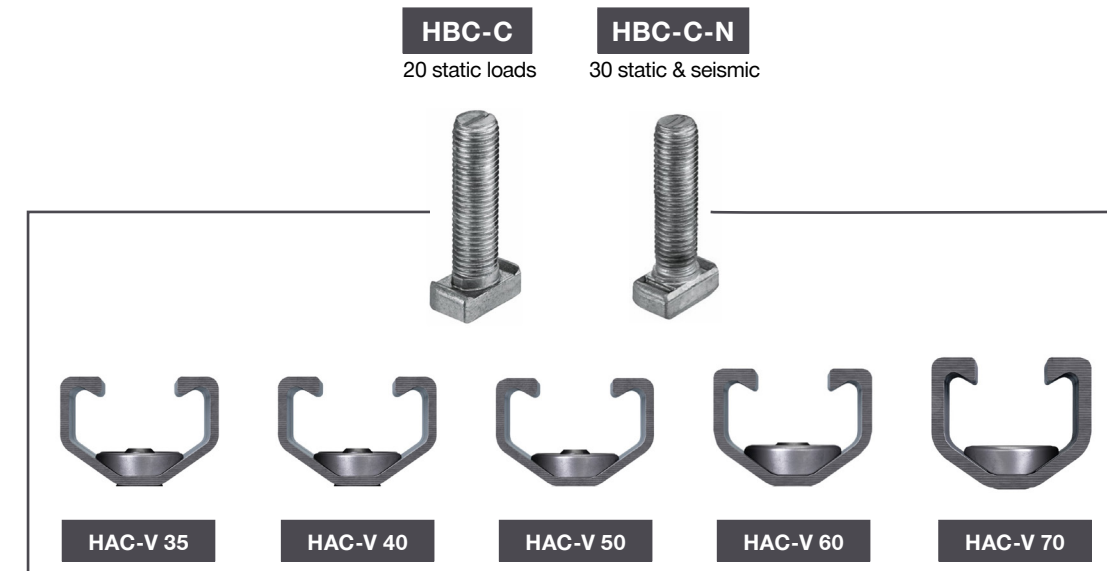
Graphic based on a concrete performance comparison. Steel performance comparison of HAC-V may be up to 30% higher than its predecessor size.

## SIMPLIFIED LOGISTICS AND INSTALLATION VIA ONE T-BOLT SIZE THAT FITS ALL

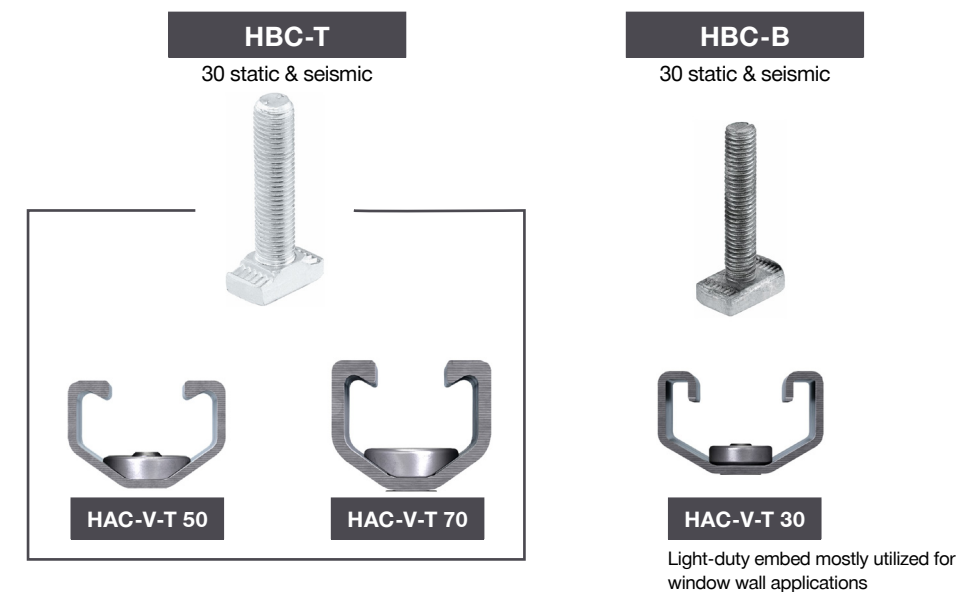
One T-bolt size brings the following benefits

- Helps avoid installation mistakes and field fixes by utilizing the same installation torque for all the T-bolts.
- Less components on-site helps simplify operations and installation.
- Economies of scales optimizes the production cost of the T-bolt, helping to bring additional project savings.

### Smooth anchor channel portfolio



### Serrated anchor channel portfolio



# AN EVOLVING EMBED PORTFOLIO

## Helping with ever increasing façade challenges

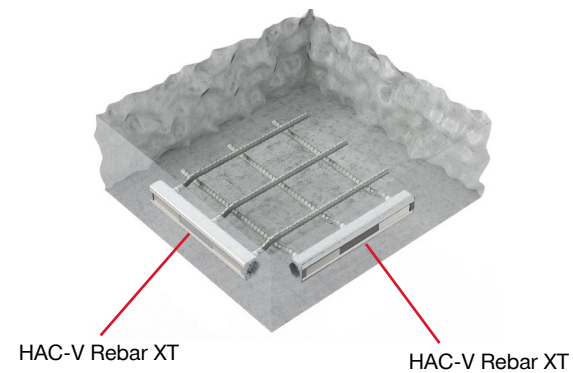
As architects and structural engineers take buildings and façade to new boundaries, additional challenges are also created for the curtain wall attachment. Hilti's façade team has actively worked on keeping up with market trends to help bring solutions for the not-so standard conditions.



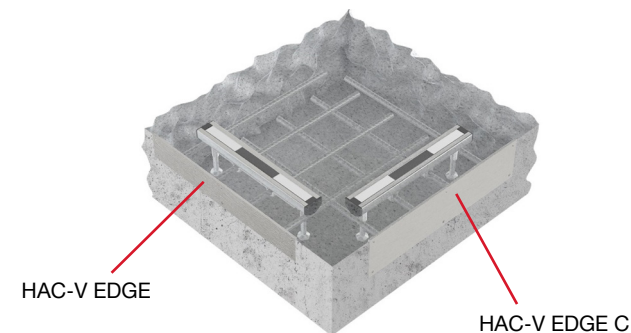
### Outside corner designs with state-of-the-art testing and design models

Corner conditions can more easily be designed in PROFIS Anchor Channel

Face of Slab Corners

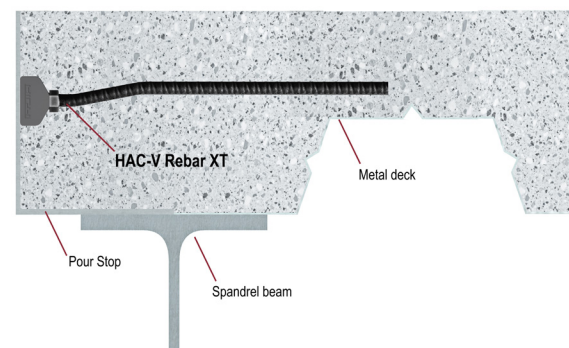


Top of Slab Corners



### Test data for cast-in anchor in post-tensioned and metal deck slabs

HAC-V Rebar XT in metal deck slabs.



Technical data for cast-in anchors near end and live ends of PT Cables (picture from the experimental testing program).



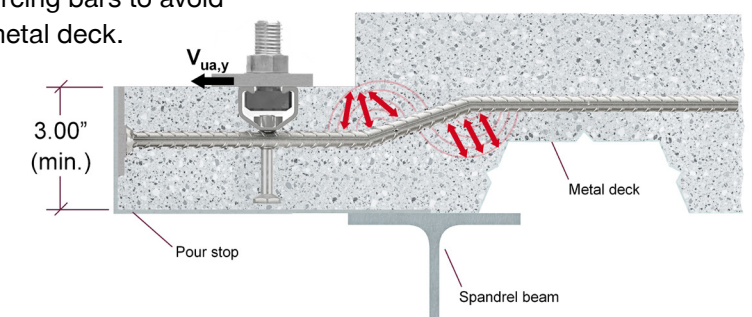
### Bringing tested solutions to keep up with industry trends

Design models and tested solutions for complex conditions such as thin slabs, bent reinforcing bars based on applicable model code provisions

HAC-V Rebar XT with 2X EDGE Plates brings superior concrete edge breakout performance for face of slab applications.



HAC-V EDGE Thin in a 3 in. slab and bent reinforcing bars to avoid clashing with metal deck.





# SET YOUR TEAM UP FOR SUCCESS

## Leverage the optimal blend of hardware, software, and services

Hilti's integrated solutions combine software, services, and hardware. Simplifying standard practices, helping improve efficiency and safety while documenting your work are some of the ways such solutions are helping to increase your bottom line.

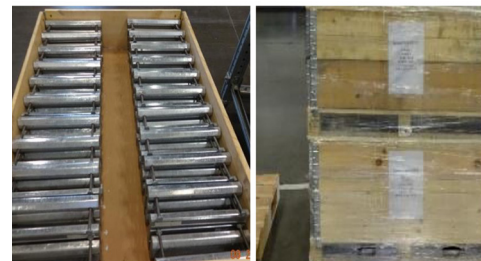


### Engineering services



- Value Engineering submittals with up to 30% savings
- Proactive Edge of Slab Firestop engineering judgments
- US+CA.HAC@Hilti.com

### Project management services



- Project Management Services to help ensure embeds are delivered on time
- Helps minimize on-site errors via custom kitting, labeling, and color coding
- Helps reduce on-site complexity by getting embeds packaged by-floor

Click here to learn more



### Layout for embeds & set control lines



- BIM embed files available
- Helps ensure embeds are positioned at the correct location with Hilti's POS 180 Robotic Total Station
- Documented execution

### Set bracket location



- Hilti lasers help ensure brackets are positioned correctly
- The fastest way to align control points over long distances
- Can be used for leveling, aligning, squaring and grading

### Bracket installation



- Hilti's SIW 6 AT cordless impact wrench allows the consistent setting of T-bolts
- The SIW 6 AT automatically stops when the T-bolt has been set to the required ICC ESR-3520 pre-tension forces T-bolt level

### Documentation (quality assurance)



- AT (Adaptive Torque) helps provide a more robust method to establish a quality control and assurance for the T-bolt installation
- AT Module Generates reports on T-bolt installation adequacy
- Helps save valuable management, verification, testing, and remedial time in field





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The data contained in this literature was current as of the date of publication. Updates and changes may be made based on later testing. If verification is needed that the data is still current, please contact the Hilti Technical Support Specialists at 1-800-879-8000. All published load values contained in this literature represent the results of testing by Hilti or test organizations. Local base materials were used. Because of variations in materials, on-site testing is necessary to determine performance at any specific site. Laser beams represented by red lines in this publication. Printed in the United States.