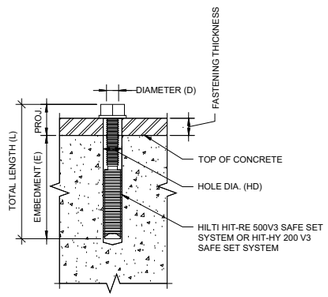
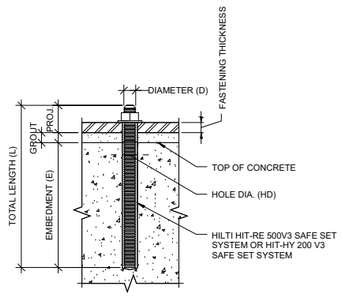


HILTI HIS-N

N.T.S.



HILTI HAS ROD

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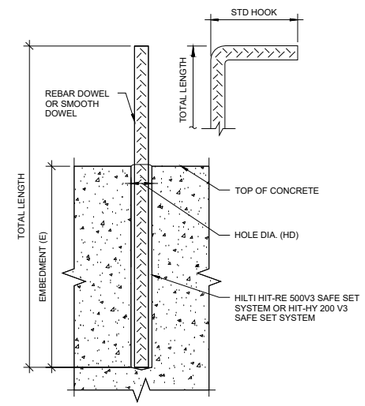

DOWEL BAR

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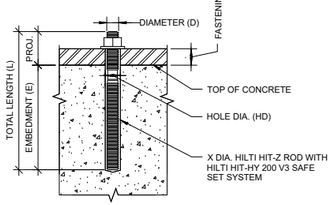

HILTI HIT-Z ROD

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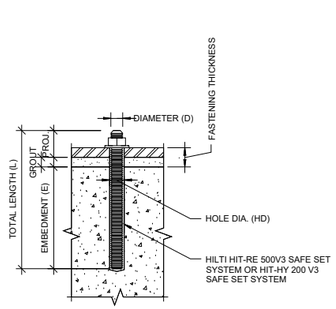

HILTI HIT-V ROD

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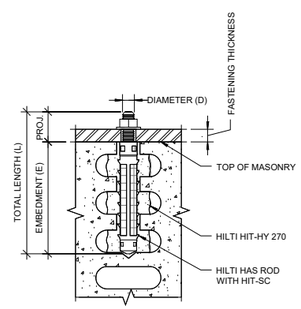
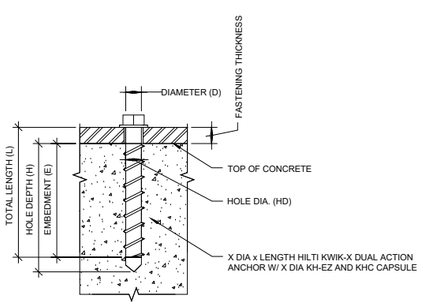


HILTI HAS ROD W/ HIT-SC

N.T.S.



KWIK-X DUAL ACTION ANCHOR

N.T.S.

GENERAL NOTES FOR POST-INSTALLED ANCHORS

1) EXCEPT WHERE INDICATED ON THE DRAWINGS, POST-INSTALLED ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES AS PROVIDED BY HILTI, INC. CONTACT HILTI AT (800) 879-8000 FOR PRODUCT RELATED QUESTIONS.

a) ANCHORAGE TO CONCRETE

i) ADHESIVE ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:
(1) ADHESIVES FOR USE:
(a) HILTI HIT-HY 200 V3 SAFE SET SYSTEM WITH HILTI HIT-Z ROD PER ICC-ES ESR-4868
(b) HILTI HIT-HY 200 V3 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND DUST EXTRACTOR WITH HAS THREADED ROD PER ICC-ES ESR-4868
(c) HILTI HIT-RE 500 V3 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND DUST EXTRACTOR WITH HAS THREADED ROD PER ICC-ES ESR-3814
(d) HILTI HIT-RE 500 V3 SAFE SET SYSTEM WITH HILTI ROUGHENING TOOL (TE-YRT) WITH HAS THREADED ROD PER ICC-ES ESR-3814 FOR DIAMOND CORED HOLES WITH APPROVAL FROM ENGINEER OF RECORD
(e) HILTI HIT-HY 200 V3 SAFE SET SYSTEM WITH HILTI ROUGHENING TOOL (TE-YRT) WITH HAS THREADED ROD PER ICC-ES ESR-4868 FOR DIAMOND CORED HOLES WITH APPROVAL FROM ENGINEER OF RECORD
(f) HILTI KWIK-X DUAL ACTION ANCHOR SAFESET SYSTEM WITH KHC CAPSULE ADHESIVE AND KWIK-HUS EZ PER ICC ESR-5065
(g) HILTI HVU2 ADHESIVE SYSTEM WITH HILTI HOLLOW DRILL BIT AND DUST EXTRACTOR WITH HAS THREADED ROD PER ICC ESR-4572

(2) STEEL ELEMENTS FOR USE WITH ADHESIVE:
(a) HILTI HAS-V-36 GRADE 36 CARBON STEEL ROD
(b) HILTI HAS-E-55 GRADE 55 CARBON STEEL ROD
(c) HILTI HAS-B-105 GRADE 105 CARBON STEEL ROD
(d) HILTI HAS-R-304 STAINLESS STEEL ROD
(e) HILTI HAS-R-316 STAINLESS STEEL ROD
(f) HILTI HIT-Z OR HIT-Z-R ROD (WITH HY 200 V3 ONLY)
(g) HILTI KWIK-HUS EZ CARBON STEEL (WITH KHC ONLY)
(h) HILTI KWIK-HUS EZ CRC (WITH KHC ONLY)
(i) HILTI KWIK-HUS EZ SS316 (WITH KHC ONLY)

ii) BASIS OF DESIGN INCLUDES THE FOLLOWING DESIGN PARAMETERS:
(1) CRACKED CONCRETE
(2) WATER-SATURATED CONCRETE
(3) WATER-FILLED HOLES
(4) BASE MATERIAL TEMPERATURE OF 23 TO 104 DEGREES FAHRENHEIT (-5 TO 40 DEGREES CELSIUS)
(5) ALLOWABLE WITH HAMMER-DRILL, HOLLOW DRILL BIT SYSTEM, AND CORE DRILLING METHODS

iii) MEDIUM DUTY MECHANICAL ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:
(1) HILTI KWIK HUS-EZ (KH-EZ), KH-EZ CRC, KH-EZ SS316, KH-EZ C, KH-EZ E, KH-EZ I, AND KH-EZ P SCREW ANCHOR SAFE SET SYSTEM WITH HOLLOW DRILL BIT AND DUST EXTRACTOR PER ICC-ES ESR-3027
(2) HILTI KWIK BOLT-TZ2 EXPANSION ANCHOR SAFE SET SYSTEM WITH HOLLOW DRILL BIT AND DUST EXTRACTOR AND SI-AT-A22 TOOL WITH ADAPTIVE TORQUE FOR APPLICABLE SIZES PER ICC-ES ESR-4266
(3) HILTI KWIK BOLT 1 EXPANSION ANCHOR SAFE SET SYSTEM WITH HOLLOW DRILL BIT AND DUST EXTRACTOR AND SI-AT-22 TOOL WITH ADAPTIVE TORQUE FOR APPLICABLE SIZES PER IAPMO UES ER-678

iv) HEAVY DUTY MECHANICAL ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:
(1) HILTI HDA UNDERCUT ANCHORS PER ICC-ES ESR 1546
(2) HILTI HSL-4 EXPANSION ANCHORS PER ICC-ES ESR 4386
(3) HILTI HSL-3-R EXPANSION ANCHORS PER ICC-ES ESR 1545

v) COLD-WEATHER ADHESIVE ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:
(1) HILTI KWIK-X DUAL ACTION ANCHOR SAFESET SYSTEM WITH KHC CAPSULE ADHESIVE AND KWIK-HUS EZ PER ICC ESR-5065

b) REBAR DOWELING INTO CONCRETE

i) ADHESIVE ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:
(1) HILTI HIT-HY 200 V3 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND DUST EXTRACTOR WITH REBAR PER ICC-ES ESR-4868
(2) HILTI HIT-RE 500 V3 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND DUST EXTRACTOR WITH REBAR PER ICC-ES ESR-3814
(3) HILTI HIT-RE 500 V3 SAFE SET SYSTEM WITH HILTI ROUGHENING TOOL (TE-YRT) WITH REBAR PER ICC-ES ESR-3814 IN DIAMOND CORED HOLES WITH APPROVAL FROM ENGINEER OF RECORD
(4) HILTI HIT-HY 200 V3 SAFE SET SYSTEM WITH HILTI ROUGHENING TOOL (TE-YRT) WITH REBAR PER ICC-ES ESR-4868 FOR DIAMOND CORED HOLES WITH APPROVAL FROM ENGINEER OF RECORD
(5) HILTI HIT-FP700R SAFESET SYSTEM WITH HILTI HOLLOW DRILL BIT (TE-CD OR TE-YD), AND HILTI VC 150/300 DUST EXTRACTOR OR OTHER APPROVED DRILLING METHOD WITH POST-INSTALLED STEEL REBARS

ii) BASIS OF DESIGN INCLUDES THE FOLLOWING DESIGN PARAMETERS:
(1) CRACKED CONCRETE
(2) WATER-SATURATED CONCRETE
(3) WATER-FILLED HOLES
(4) BASE MATERIAL TEMPERATURE OF 23 TO 104 DEGREES FAHRENHEIT (-5 TO 40 DEGREES CELSIUS)
(5) ALLOWABLE WITH HAMMER-DRILL, HOLLOW DRILL BIT SYSTEM, AND CORE DRILLING METHODS
(6) CURRENT ICC-ES REPORT WITH APPROVAL FOR DEVELOPMENT OF BAR USING ACI PROVISIONS FOR EMBEDMENT DEPTHS GREATER THAN 20 BAR DIAMETERS

c) ANCHORAGE TO SOLID GROUTED MASONRY

i) ADHESIVE ANCHORS USE:
(1) HILTI HIT-HY 270 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND DUST EXTRACTOR PER ICC-ES ESR-4143
(2) HILTI HIT-HY 200 V3 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND DUST EXTRACTOR PER ICC ESR-4878
(3) STEEL ANCHOR ELEMENT SHALL BE HILTI HAS-B, HAS-E, HAS-R, HAS-V, HIS-N, HIS-RN CONTINUOUSLY THREADED ROD OR CONTINUOUSLY DEFORMED STEEL REBAR

ii) MECHANICAL ANCHORS USE:
(1) HILTI KWIK BOLT-1 EXPANSION ANCHOR PER IAPMO UES ER-677
(2) HILTI KWIK BOLT-TZ2 EXPANSION ANCHOR PER ICC-ES ESR-4561
(3) HILTI KH-EZ, KH-EZ CRC, KH-EZ SS316, KH-EZ C, AND KH-EZ P SCREW ANCHORS PER ICC-ES ESR-3056

d) ANCHORAGE TO HOLLOW / MULTI-WYTHE MASONRY

i) ADHESIVE ANCHORS USE:
(1) HILTI HIT-HY 270 SAFE SET SYSTEM WITH HILTI HOLLOW DRILL BIT AND DUST EXTRACTOR PER ICC-ES ESR-4143.
(2) STEEL ANCHOR ELEMENT SHALL BE HILTI HAS CONTINUOUSLY THREADED ROD OR CONTINUOUSLY DEFORMED STEEL REBAR
(3) THE APPROPRIATE SIZE SCREEN TUBE SHALL BE USED PER ADHESIVE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS

2) ANCHOR CAPACITY USED IN DESIGN SHALL BE BASED ON THE TECHNICAL DATA PUBLISHED BY HILTI OR OTHER SUCH METHOD AS APPROVED BY THE STRUCTURAL ENGINEER OF RECORD. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS THAT HAVE BEEN SEALED BY ANOTHER LICENSED ENGINEER DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF MEETING THE PERFORMANCE OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC-ES ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE, INSTALLATION TEMPERATURE, MOISTURE CONDITION OF CONCRETE, AND DRILLING METHODS.

3) USE OF DIAMOND CORE BIT WITH ROUGHENING TOOL FOR ANCHOR HOLES REQUIRES APPROVAL FROM ENGINEER OF RECORD PRIOR TO DRILLING. UNLESS OTHERWISE SHOWN IN THE DRAWINGS, ALL HOLES SHALL BE DRILLED PERPENDICULAR TO THE CONCRETE SURFACE.

4) INSTALL ANCHORS PER THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING.

5) ADHESIVE ANCHORS INSTALLED IN AN UPWARDLY VERTICALLY INCLINED ORIENTATION, OR AN EMBEDMENT WHERE THE ADHESIVE MIXING NOZZLE (HIT-RE-M) FAILS TO REACH THE BOTTOM OF THE HOLE (TYPICALLY 10" DEEP), MUST BE INSTALLED USING THE HILTI HIT-SZ PISTON PLUG SYSTEM WITH THE HIT-VL EXTENSION HOSE. THE HIT-OHW WOODEN WEDGES AND HIT-OHC DRIP GUARD ARE REQUIRED FOR OVERHEAD INSTALLATIONS.

6) ANCHOR INSTALLER CERTIFICATION IS REQUIRED FOR ALL INSTALLERS OF ADHESIVE ANCHORS IN HORIZONTAL OR UPWARDLY INCLINED ORIENTATION. THE HILTI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM (HAAICP) SHALL BE CONSIDERED AN ACCEPTABLE TRAINING TO MEET THIS REQUIREMENT. FOR ALTERNATE TRAINING PROCEDURES, THE CONTRACTOR SHALL SUBMIT THE TRAINING CONTENT AND TRAINER QUALIFICATION TO THE STRUCTURAL ENGINEER OF RECORD FOR APPROVAL PRIOR TO COMMENCEMENT WITH THE ADHESIVE ANCHOR INSTALLER TRAINING.

7) THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL ANCHOR PRODUCTS SPECIFIED. THE STRUCTURAL ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF ANCHOR INSTALLATION.

8) ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.

9) EXISTING REBARS IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS. UNLESS NOTED ON THE DRAWINGS THAT THE BARS CAN BE CUT, THE CONTRACTOR SHALL REVIEW THE EXISTING STRUCTURAL DRAWINGS AND SHALL UNDERTAKE TO LOCATE THE POSITION OF THE REBARS AT THE LOCATIONS OF THE CONCRETE ANCHORS BY HILTI PS 1000 OR OTHER GPR, X-RAY, CHIPPING OR OTHER APPROVED MEANS.

CONTRACT NO	DWG NO	REV.	SCALE:

REFERENCE DRAWINGS

DWG NO	TITLE	DWG NO	TITLE

NO	REVISION	BY	CHK	APP	DATE	NO	REVISION	BY	CHK	APP	DATE

DRAWN: DATE:
CHECKED:
APPROVED:
APPROVED:

SEAL:

DWG TITLE