

CITY OF SACRAMENTO
1231 I Street, Sacramento, CA 95814

Permit No: 0010151

Insp Area: 1

Site Address: 504 LOUISE ST SAC

Parcel No: 001-0090-003

504 LOUISE ST

Sub-Type: REM

Housing (Y/N): N

CONTRACTOR

OWNER

ARCHITECT
MGRT ARCHITECTS
1725 J ST
SACRAMENTO CA 95814

Nature of Work: REHAB:LBP& ASBESTOS ABATEMENT, REPLACE ELECTRICAL PANEL,
PLUMBING, HVAC.ROOF; REMODEL PORCHES, NEW WINDOWS

CONSTRUCTION LENDING AGENCY : I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C).

Lender's Name _____ Lender's Address _____

LICENSED CONTRACTORS DECLARATION: I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect.

License Class _____ License Number _____ Date _____ Contractor Signature _____

OWNER-BUILDER DECLARATION: I hereby affirm under penalty of perjury that I am exempt from the contractors License Law for the following reason (Sec. 7031.5, Business and Professions Code; any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 (commencing with Section 7000) of Division 8 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars (\$500.00):

I, as a owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professional Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his/her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he/she did not build or improve for the purpose of sale.)

I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law).

I am exempt under Sec. _____ B & PC for this reason: _____

Date 11/6/00 Owner Signature *[Signature]* NOV 12 2000 NEIGHBORHOODS PLANNING AND DEVELOPMENT SERVICES

IN ISSUING THIS BUILDING PERMIT, the applicant represents, and the city relies on the representation of the applicant, that the applicant verified all measurements and locations shown on the application or accompanying drawings and that the improvement to be constructed does not violate any law or private agreement relating to permissible or prohibited locations for such improvements. This building permit does not authorize any illegal location of any improvement or the violation of any private agreement relating to location of improvements.

I certify that I have read this application and state that all information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction and hereby authorize representative(s) of this city to enter upon the abovementioned property for inspection purposes.

Date 11/6/00 Applicant/Agent Signature *[Signature]*

WORKER'S COMPENSATION DECLARATION: I hereby affirm under penalty of perjury one of the following declarations:

I have and will maintain a certificate of consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of work for which the permit is issued.

I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier _____ Policy Number _____ Exp Date _____

(This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Date 11/6/00 Applicant Signature *[Signature]*

WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000) IN ADDITION TO THE COST OF COMPENSATION. DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S FEE.

THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.

APPLICATION FOR COMMERCIAL BUILDING PERMIT

CITY OF SACRAMENTO
DEVELOPMENT SERVICES DIVISION
PERMIT SERVICES SECTION

1231 I Street, Rm. 200
 Sacramento, CA 95814 (916) 264-7619 FAX 264-7046

ACTIVITY #

00 10151

Insp. Area

10

Applicant **MUST** complete ALL Unshaded areas

ADDRESS 504, Louise Street Suite _____
 PARCEL # 001-0090-003

<p style="text-align: center;">CONTACT</p> <p>Name <u>MIKE Miller</u></p> <p>Street Address <u>320 Commerce Circle</u></p> <p>City/State/Zip <u>SACRO, CA 95815</u></p> <p>Phone <u>566-1245</u> FAX <u>566-1275</u></p> <p>E-mail: _____</p>	<p style="text-align: center;">LICENSED CONTRACTOR Lic No. # _____</p> <p>Name <u>To Be Bld Out</u></p> <p>Address _____</p> <p>City/State/Zip _____</p> <p>Phone _____ FAX _____</p> <p>E-mail: _____</p>
<p style="text-align: center;">ARCHITECT/ENGINEER</p> <p>Name _____</p> <p>Address <u>320 Commerce Circle</u></p> <p>City/State/Zip <u>SACRO, CA 95815</u></p> <p>Phone <u>566-1245</u> FAX <u>566-1275</u></p> <p>E-mail: _____</p>	<p style="text-align: center;">OWNER <u>SHER</u></p> <p>Name <u>SACRO HOUSING & REDEVELOPMENT AGENCY</u></p> <p>Address <u>320 Commerce Circle</u></p> <p>City/State/Zip <u>SACRO CA</u></p> <p>Phone <u>SAME</u> FAX <u>SAME</u></p> <p>E-mail: _____</p>

→ Will permittee have any employees on the jobsite? No Yes → INSURANCE CO: _____
 → WORKER'S COMPENSATION POLICY # _____ EXPIRATION DATE: _____

NATURE OF WORK IN DETAIL: ~~Modernization~~ ^{CEHAS}: LBP Abatement & Asbestos Abatement, Replace existing electrical, plumbing, roof, water service, porches, paint & windows
(Additions)

OCCUPANT/TENANT: Public Housing Dos Rios Dev. VALUATION: \$ 153,889.00

FLOOD STATUS: <u>NR</u>		S.C.A.T. <u>X16</u>								
JOB DESCRIPTION		BLDG	SHELL	APT	TI()	REM(<input checked="" type="checkbox"/>)	SW	FIRE	ADD	OTH
INSPECTION DISCIPLINES		<u>BLDG</u>	<u>MECH</u>	<u>PLUMB</u>	<u>ELEC</u>	<u>SITE</u>	XXXX			
# Stories	1st flr Area	Total Area	Use Zone	Occp Group	Const type	Fire Req. Y <u>N</u>		Fed Code	Vio. File [H] [Quad]	
						SPR	ALARM			
<u>B</u>	<u>L</u>	<u>P</u>	<u>M</u>	<u>E</u>	<u>UN</u>	<u>S</u>	<u>D</u>	<u>PW</u>	<u>UTIL</u>	

COMMENTS: Single family & multiple family dwellings
MARK DILLY DOES NOT WANT TO HAVE THIS ROSTER TO HIM 8-30-00

REGIONAL SANITATION FEES? Yes No HEALTH DEPARTMENT? Yes No
 WATER FLOW TEST FOR NEW BUILDINGS OR ADDITIONS? Provided Faxed

Date of Request: _____
By: _____

**CITY OF SACRAMENTO DEVELOPMENT SERVICES DIVISION
PLANNING AND ZONING INFORMATION REQUEST**

Project Address: 2007 J Street

Assessor's Parcel Number: 20-0410-003

Previous Use: residential

Description of Request/Proposed Use: replace placement,
addition (new roof, new roofing), repainting,

Is This a Change of Use? no

Zoning Designation: RMX

Prior Applications for Project Site(P#, Z#, DRPB#): DR 96-187, DR 97-126, DR 95-059,
DR 98-180, DR 98-180, DR 98-180

Comments: previous approval - approved
through DR 95-059, DR 98-180 and DR 98-180.

Are There Any Planning Issues?: (circle one) YES ~~NO~~ ^{addressed}

- * Staff Site Plan Check Required? (Circle one) YES NO
- * Field Inspection Required? (Circle one) YES NO
- * Design Review/Preservation Required?: (Circle one) YES NO

Planning Review by/Date: [Signature] 7/21/00

A list of items that must be reviewed by Planning is provided on the reverse side of this form.

MICROFILM AFTER FINAL

OWNER-BUILDER VERIFICATION

ATTENTION PROPERTY OWNERS

An owner-builder building permit has been applied for in your name and bearing your signature.

Please complete and return this information in the envelope provided at your earliest opportunity to avoid unnecessary delay in processing and issuing your building permit. No building permit will be issued until this verification is received.

1. I personally plan to provide the major labor and materials for construction of the proposed Improvement (yes or no) _____
2. I (have/have not) _____ signed an application for A building permit for the proposed work.

→ 3. I have contracted with the following person (firm) to provide the proposed construction:

Name PARROTTERS CONSTRUCTION Address 901 SUNRISE AVE, SANTA A-16
City ROSEVILLE, CA Telephone (916) 782-9059
Contractors License No. 712978

4. I plan to provide portions of the work, but I have hired the following person to coordinate, Supervise, and provide the major work.

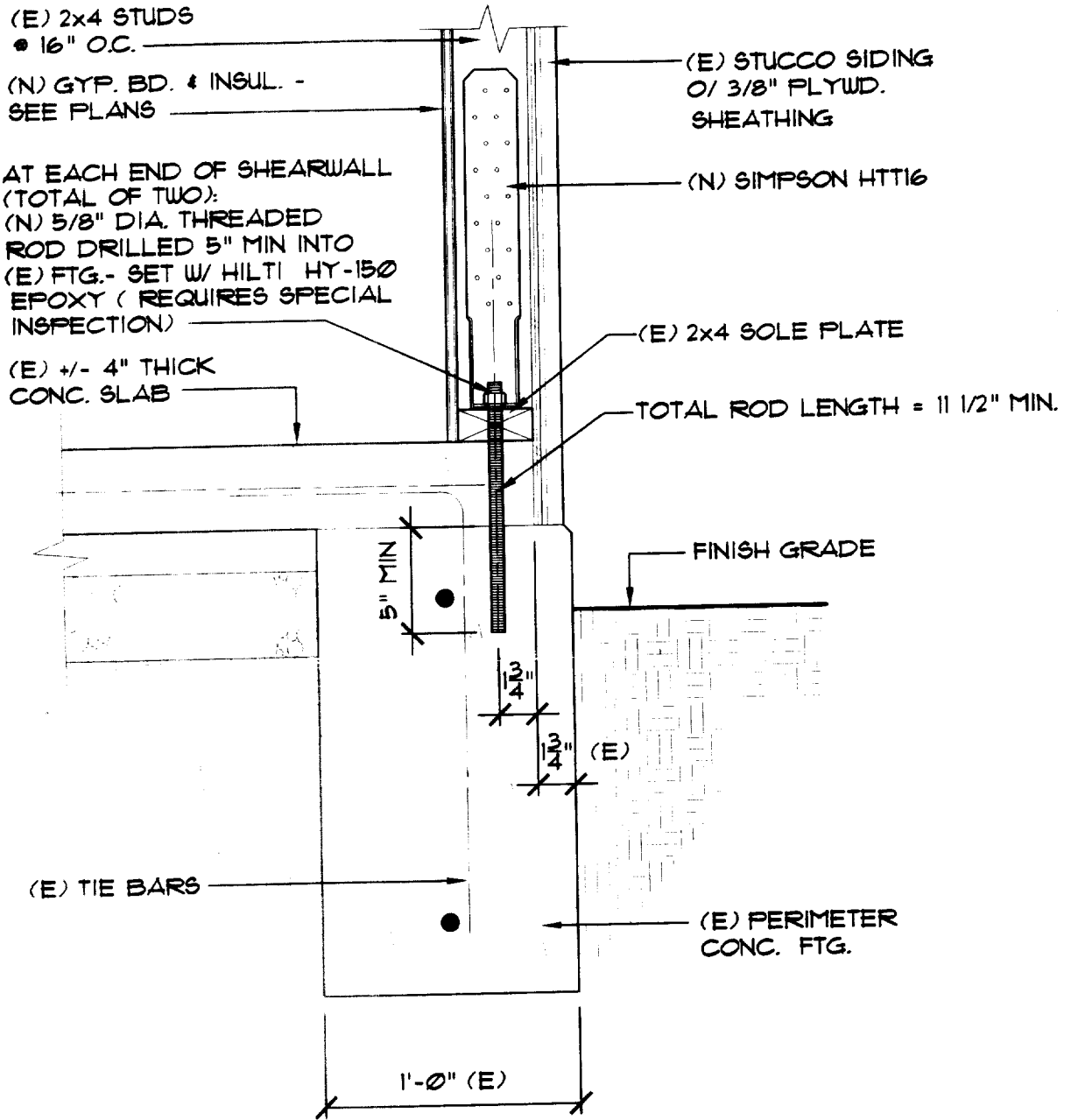
Name _____ Address _____
City NA Telephone _____
Contractors License No. _____

5. I will provide some of the work but I have contracted (hired) the following to provide the Work indicated:

Name	Address	Phone	Type of work
<u>NA</u>			

Signed [Signature]
Job Address 1228-31 RICHARDS + LOUISE ST

Permit No: 0010144 - 0010152



9R
S2.1

HOLDOWNS AT BW-2

SCALE: 1 1/2" = 1'-0"



ICBO Evaluation Service, Inc.

5360 WORKMAN MILL ROAD • WHITTIER, CALIFORNIA 90601-2299

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EVALUATION REPORT

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ER-5193

Reissued July 1, 1999

Filing Category: FASTENERS—Concrete and Masonry Anchors (066)

HILTI HIT HY-150 ADHESIVE ANCHOR SYSTEMS

HILTI, INC.
5400 SOUTH 122 EAST AVENUE
TULSA, OKLAHOMA 74146

1.0 SUBJECT

Hilti HIT HY-150 Adhesive Anchor Systems

2.0 DESCRIPTION

2.1 General:

The Hilti HIT HY-150 Adhesive Anchor System consists of HY-150 hybrid adhesive mortar used in conjunction with threaded steel rod or deformed steel reinforcement bars. This evaluation report recognizes the use of HIT HY-150 in normal-weight concrete, lightweight concrete and fully-grouted concrete masonry construction. Table 1 provides general application descriptions for use of the Hilti HY-150 adhesive.

2.2 Materials:

2.2.1 Hilti HIT HY-150 Adhesive: Hilti HIT HY-150 adhesive is a hybrid adhesive mortar combining urethane methacrylate resin, hardener, portland cement, and water. The resin and cement are kept separate from the hardener and water by means of a dual-cylinder foil cartridge that allows for multiple uses. An auger-style mixing nozzle is attached to the manifold and the adhesive components are dispensed through the mixing nozzle to ensure proper mixing of the separate adhesive components. The mixing nozzle may be replaced to permit multiple uses of the refill cartridges. The shelf life of the adhesive is at least nine months when stored in a dry, dark environment. Each cartridge is stamped with an adhesive expiration date. Temperatures during short-term (less than 48 hours) storage of the adhesive must be between 23°F and 95°F (-5°C and 35°C). Temperatures during long-term storage of the adhesive must be between 41°F and 70°F (5°C and 25°C). Hilti, Inc., should be contacted regarding suitability of adhesive for which the storage history is unknown.

2.2.2 Threaded Steel Rods: Threaded rods must be manufactured from steel in compliance with the mechanical property requirements of ASTM A 36, ASTM A 193, Grade B7, or AISI 304-SS Group 1 CW. Specification and installation parameters for threaded rods are noted in Table 2.

2.2.3 Reinforcement Bars: Deformed reinforcement bars range in size from No. 3 through No. 11. The bars are manufactured from steel conforming to ASTM A 615, A 616, A 617 or A 706 minimum Grade 60.

2.2.4 Normal-weight Concrete: Normal-weight concrete must be normal-weight, stone-aggregate concrete having a minimum-2,000-psi (13.78 MPa) compressive strength at the time of anchor installation.

2.2.5 Lightweight Concrete: Lightweight concrete must have a minimum-3,000-psi (19.17 MPa) compressive strength at the time of anchor installation.

2.2.6 Grouted Concrete Masonry Units: Concrete masonry construction must be fully grouted and have a minimum prism strength of 1,500 psi (9.58 MPa).

2.3 Design:

Allowable tension and shear loads for various combinations of base materials and anchor components are given in Tables 5 through 11. The allowable tension values in Tables 5 through 11 must be adjusted in accordance with Figure 1 for in-service base material temperatures in excess of 110°F (43°C). Allowable loads for anchors subjected to combined shear and tension forces are determined by the following formula:

$$(P_s/P_t) + (V_s/V_t) \leq 1$$

where:

P_s = Applied service tension load.

P_t = Service tension load.

V_s = Applied service shear load.

V_t = Service shear load.

For anchors installed at edge distances less than c_{cr} , or anchor spacing less than s_{cr} , or both, the allowable load of the anchor based on either bond or concrete strength must be reduced in accordance with reduction factors in this report. The appropriate steel strength provided in the load tables must also be considered when deriving the allowable load for the anchor.

2.4 Installation:

Installation of the Hilti HIT HY-150 System must conform to the manufacturer's published installation instructions and the requirements of this evaluation report. Holes for installation of the threaded rod or reinforcement bar must be drilled using a drill that is set in roto-hammer mode and that has a carbide-tipped drill bit that complies with ANSI B212.15-1994. Holes must be cleaned of dust and debris, using a wire brush and compressed air as required to remove particulate debris and to achieve a relatively dust-free surface. Holes are permitted to be damp but all standing water must be removed in accordance with Section 4.13 of this evaluation report.

The dual-cylinder cartridge is self-opening, and the adhesive is dispensed through an auger-style nozzle that is attached to the cartridge manifold to ensure proper mixing of the components; material from the first two "trigger pulls" must be discarded to ensure that only properly mixed product is used. Holes are filled approximately two-thirds full with the mixed adhesive, and the threaded rod or deformed bar is twisted as it is inserted into the hole to the required embed-

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This report is based upon independent tests or other technical data submitted by the applicant. The ICBO Evaluation Service, Inc., technical staff has reviewed the test results and/or other data, but does not possess test facilities to make an independent verification. There is no warranty by ICBO Evaluation Service, Inc., express or implied, as to any "Finding" or other matter in the report or as to any product covered by the report. This disclaimer includes, but is not limited to, merchantability.

ment depth. The anchor may be adjusted only during the gel time shown in Table 4. Anchors are permitted to be loaded to the design load only after the cure time shown in Table 4 has passed. See Section 4.14 of this evaluation report for limitations on base material temperature during installation.

2.5 Special Inspection:

Adhesive anchor installations require special inspection in accordance with Section 1701 of the code. The special inspector must record product description (including product name), adhesive expiration date, concrete type and strength, anchor diameter and steel grade, compliance of drill bit with this report, hole diameter and location, cleanliness of hole and anchor, adhesive application, and anchor embedment. Additionally, the special inspector must state in the report supplied to the building department whether the anchor installation is in accordance with the manufacturer's published instructions and this evaluation report. The manufacturer's instructions are included in each unit package of adhesive.

2.6 Identification:

The Hilti HY-150 adhesive is identified by labels on or in the packaging indicating the manufacturer's name (Hilti), product name, lot number, expiration date, evaluation report number (ICBO ES ER-5193), and installation instructions.

3.0 EVIDENCE SUBMITTED

Data in accordance with the ICBO ES Acceptance Criteria for Adhesive Anchors in Concrete and Masonry Elements (AC508) dated January 1999.

4.0 FINDINGS

That the Hilti HY-150 Adhesive Anchor Systems described in this report comply with the 1997 *Uniform Building Code*[™], subject to the following conditions:

- 4.1 The HIT HY-150 Adhesive Anchor Systems are permitted to be used to resist dead loads, live loads and short-term loads, such as those resulting from wind or earthquake forces.
- 4.2 Loads in this report are permitted to be increased by $33\frac{1}{3}$ percent for short-term loads, such as those resulting from wind and earthquake forces.
- 4.3 When anchors resist short-term loads, allowable shear loads are limited to the tabulated steel values for A 36 threaded rods, regardless of the actual type of steel, or the tabulated bond strength, whichever is less. An increase of $33\frac{1}{3}$ percent is permitted.
- 4.4 The anchors are installed in accordance with the manufacturer's instructions and this report.
- 4.5 The HIT HY-150 Adhesive Anchor Systems are installed in holes predrilled using a carbide-tipped masonry drill bit manufactured within the range of the maximum and minimum dimensions of ANSI B212.15-1994.
- 4.6 Special inspection in accordance with Section 2.5 of this report is provided for all anchor installations.
- 4.7 Calculations and details demonstrating compliance with this report must be submitted to the local building official for approval.
- 4.8 The HIT HY-150 Adhesive Anchor Systems are permitted to be used within fire-resistive construction provided the anchors resist wind or seismic loads only. In this application, the anchors are not permitted to be used to resist gravity loads. Where special consideration has been given to fire conditions, use of the HIT HY-150 Adhesive Anchor Systems is permitted to resist gravity loads.
- 4.9 The HIT HY-150 Adhesive Anchor Systems are not permitted to resist tension forces in overhead or wall installations unless proper consideration is given to the fire exposure and elevated temperature conditions.
- 4.10 Due to the lack of an accepted test method and procedure for evaluating data to determine the performance of adhesive anchors subjected to fatigue and/or shock loading, the use of the HIT HY-150 Adhesive Anchor Systems to resist fatigue and/or shock loading, such as encountered by supports for reciprocating engines, crane loads and moving loads due to vehicles, is beyond the scope of this report.
- 4.11 Due to the lack of an accepted test method for evaluating the performance of anchors in cracked concrete, use of the HIT HY-150 Adhesive Anchor Systems in cracked concrete is beyond the scope of this report. Concrete is assumed to be cracked when the tensile stress induced by external loads or deformations exceeds 170 psi (1172 kPa).
- 4.12 Use of the HIT HY-150 Adhesive Anchor System in conjunction with unprotected carbon steel threaded rods and/or reinforcing bars shall be limited to interior exposure. Installations exposed to severe, moderate or negligible exterior weathering conditions, as defined in Figure 21-1-1 of UBC Standard 21-1, are permitted where stainless steel anchors are used.
- 4.13 Standing water must be removed from drilled holes. In applications where the concrete has been exposed to water for extended periods, drilled holes must be blown dry with oil-free compressed air for a minimum of one minute, or otherwise prepared to achieve an equivalent dry-surface condition prior to anchor installation.
- 4.14 HIT HY-150 may be used in base materials having interior temperatures between 23°F (-5°C) and 110°F (43°C) at the time of installation. Installation of HIT HY-150 in base materials having interior temperatures outside this range is beyond the scope of this report. The temperature of the HY-150 adhesive must be between 41°F (5°C) and 95°F (35°C) at the time of installation.
- 4.15 When anchors are located where the interior base material temperature may exceed 110°F (43°C), allowable tension loads in this report must be adjusted for in-service temperatures in accordance with Figure 1. The use of HIT HY-150 in base materials having interior temperatures exceeding 248°F (120°C) during their service life is beyond the scope of this report.
- 4.16 The HIT HY-150 adhesive is manufactured by Hilti GmbH at their facilities in Kaufering, Germany, with quality control inspections by Underwriters Laboratories Inc. (NER-QA403).

This report is subject to re-examination in one year.

TABLE 1—APPLICATION DESCRIPTIONS

BASE MATERIAL	ADHESIVE ANCHOR PRODUCT	INSERT	SPECIFICATION DATA	LOAD DATA
Normal-weight Concrete	HIT HY-150	Threaded Rod	Tables 2, 3, 4	Tables 5, 6, 7, 8
		Reinforcing Bar	Tables 2, 3, 4	Table 9
Lightweight Concrete	HIT HY-150	Threaded Rod	Tables 2, 3, 4	Table 7
Grouted Block Masonry	HIT HY-150	Threaded Rod	Tables 2 and 4	Tables 8 and 11

TABLE 2—SPECIFICATIONS FOR INSTALLATION OF THREADED RODS IN CONCRETE USING HILTI HIT HY-150 ADHESIVE

PROPERTY	THREADED ROD DIAMETER							
	3/8 inch	1/2 inch	5/8 inch	3/4 inch	7/8 inch	1 inch	1 1/4 inches	
A_{nom} = Nominal area of threaded rod (inch ²)	0.1105	0.1963	0.3068	0.4418	0.6013	0.7854	1.2272	
BD = Nominal bit diameter (inches)	7/16	9/16	11/16	13/16	15/16	1 1/16	1 1/2	
T = Maximum torque (ft-lbf)	Embedment \leq Standard	15	20	50	105	125	165	280
	Embedment $>$ Standard	18	30	75	150	175	235	400
Standard embedment depth (inches)	3 1/2	4 1/4	5	6 5/8	7 1/2	8 1/4	12	

For SI: 1 inch = 25.4 mm; 1 ft-lb = 1.4 N-m; 1 inch² = 645 mm²

TABLE 3—REDUCTION FACTORS FOR REDUCED SPACING AND EDGE DISTANCE IN NORMAL-WEIGHT AND LIGHTWEIGHT CONCRETE

SPACING (s) AND EDGE DISTANCE (c)	TENSION CAPACITY		SHEAR CAPACITY	
	Tension Reduction Factor (f_d)	Direction of Load	Shear Reduction Factor (f_v)	
$s_{min} = 0.25c$	0.7	Toward Edge	0.7	—
		Not Toward Edge	—	1.0
$c_{min} = 0.33c$	0.6	Toward Edge	0.2	—
		Not Toward Edge	—	0.6

TABLE 4—MANUFACTURER'S RECOMMENDED CURE TIME FOR HILTI HY-150 ADHESIVE

MINIMUM BASE MATERIAL TEMPERATURE	GEL TIME	CURE TIME
23°F	25 Minutes	6 Hours
32°F	18 Minutes	3 Hours
41°F	13 Minutes	90 Minutes
68°F	5 Minutes	50 Minutes
86°F	4 Minutes	40 Minutes
104°F	2 Minutes	30 Minutes

For SI: °C = (°F - 32) / 1.8

TABLE 5—ALLOWABLE TENSION LOADS FOR THREADED RODS INSTALLED IN 2,000-PSI AND 4,000-PSI NORMAL-WEIGHT CONCRETE USING HILTI HY-150 ADHESIVE^{1,2,3,4}

ANCHOR DIAMETER (inches)	EMBEDMENT DEPTH ⁴ (inches)	EDGE DISTANCE, c (inches)	SPACING, s (inches)	ALLOWABLE TENSION LOAD BASED ON BOND OR CONCRETE CAPACITY (pounds)		ALLOWABLE TENSION LOAD BASED ON STEEL STRENGTH (pounds)		
				f _c = 2,000 psi	f _c = 4,000 psi	ASTM A 36	ASTM A 193 Grade B7	AISI 304 SS
3/8	1 3/4	2 3/4	3 1/2	675	1,185	2,115	4,555	3,645
	3 1/2	5 1/4	7	1,780	2,540			
	5 1/4	8	10 1/2	2,470	2,625			
1/2	2 1/8	3 1/4	4 1/2	1,145	1,475	3,755	8,100	6,480
	4 1/4	6 1/2	8 1/2	2,555	3,690			
	6 3/8	9 1/2	12 3/4	4,035	4,965			
5/8	2 1/2	3 3/4	5	1,520	1,865	5,870	12,655	10,125
	5	7 1/2	10	4,120	4,920			
	7 1/2	11 1/4	15	5,645	7,715			
	3 3/8	5	6 3/4	2,215	3,680			
	6 5/8	10	13 1/4	4,365	8,330			
3/4	10	15	20	8,920	11,380	8,455	18,225	12,390
	3 3/4	5 3/4	7 1/2	2,890	4,560			
	7 1/2	11 1/4	15	7,355	10,250			
7/8	11 1/4	17	22 1/2	12,495	15,605	11,510	24,805	16,865
	4 1/8	6 1/4	8 1/4	3,230	4,560			
	8 1/4	12 1/2	16 1/2	7,810	10,910			
1	12 3/8	18 1/2	24 3/4	14,570	18,305	15,030	32,400	22,030
	6	9	12	4,355	6,565			
	12	18	24	14,520	19,475			
1 1/4	15	22 1/2	30	18,010	25,140	23,490	50,620	34,425

For SI: 1 inch = 25.4 mm, 1 lbf = 4.48 N, 1 psi = 6.89 kPa

¹ Allowable load shall be the lesser of tabulated bond and steel values. Load-reduction factors given in Table 3 for reduced edge distance (c) and anchor spacing (s) shall be applied to values in the bond or concrete capacity column. Linear interpolation may be used for intermediate spacings, edge distances, embedments and concrete strengths. Load-reduction factors are cumulative for anchors with multiple anchor spacings or base material edge distances.

² The tabulated values are for anchors installed in concrete having the designated compressive strength (f_c) or higher at the time of installation.

³ Allowable loads based on bond strength have been calculated using a safety factor of 4.0

⁴ Concrete thickness must be equal to or greater than 1.5 times the anchor embedment depth.

TABLE 6—ALLOWABLE SHEAR LOADS FOR THREADED RODS INSTALLED IN NORMAL-WEIGHT CONCRETE USING HILTI HIT HY-150 ADHESIVE (pounds)^{1,2,3,4,5}

ANCHOR DIAMETER (inches)	EMBEDMENT DEPTH (inches)	EDGE DISTANCE, c (inches)	SPACING, s (inches)	ALLOWABLE SHEAR LOAD BASED ON CONCRETE CAPACITY (pounds)		ALLOWABLE SHEAR LOAD BASED ON STEEL STRENGTH (pounds)		
				f _c = 2,000 psi	f _c = 4,000 psi	ASTM A 36	ASTM A 193 Grade B7	AISI 304 SS
3/8	1 3/4	2 3/4	3 1/2	510	725	1,090	2,345	1,875
	3 1/2	5 1/4	7	1,550	2,190			
	5 1/4	8	10 1/2	3,160	4,470			
1/2	2 1/8	3 1/4	4 1/2	745	1,055	1,935	4,170	3,335
	4 1/4	6 1/2	8 1/2	2,420	3,420			
	6 3/8	9 1/2	12 3/4	4,635	6,560			
5/8	2 1/2	3 3/4	5	1,020	1,440	3,025	6,520	5,215
	5	7 1/2	10	3,315	4,685			
	7 1/2	11 1/4	15	6,600	9,335			
3/4	3 3/8	5	6 3/4	1,760	2,490	4,355	9,390	6,385
	6 5/8	10	13 1/4	5,700	8,060			
	10	15	20	11,370	16,080			
7/8	3 3/4	5 3/4	7 1/2	2,320	3,285	5,930	12,780	8,690
	7 1/2	11 1/4	15	7,300	10,325			
	11 1/4	17	22 1/2	14,710	20,805			
1	4 1/8	6 1/4	8 1/4	2,790	3,950	7,745	16,690	11,350
	8 1/4	12 1/2	16 1/2	9,075	12,835			
	12 3/8	18 1/2	24 3/4	17,720	25,060			
1 1/4	6	9	12	5,560	7,865	12,100	26,080	17,735
	12	18	24	18,070	25,555			
	15	22 1/2	30	26,405	37,345			

For SI: 1 inch = 25.4 mm, 1 lbf = 4.48 N, 1 psi = 6.89 kPa

¹ Allowable load shall be the lesser of tabulated bond and steel values. Load-reduction factors given in Table 3 for reduced edge distance (c) and anchor spacing (s) shall be applied to values in the concrete capacity column. Linear interpolation may be used for intermediate spacings, edge distances, embedments and concrete strengths. Load-reduction factors are cumulative for anchors with multiple anchor spacings or base material edge distances.

TABLE 6—ALLOWABLE SHEAR LOADS FOR THREADED RODS INSTALLED IN NORMAL-WEIGHT CONCRETE USING HILTI HIT HY-150 ADHESIVE (pounds)^{1,2,3,4}—(Continued)

¹The tabulated values are for anchors installed in concrete having the designated compressive strength (f'_c) or higher at the time of installation

²Allowable loads based on concrete strength have been calculated using a safety factor of 4.0.

³Concrete thickness must be equal to or greater than 1.5 times the anchor embedment depth.

⁴When anchors resist short-term loads, allowable shear loads are limited to the tabulated steel values for A 36 threaded rods, regardless of the actual type of steel used, or the bond strength, whichever is less. An increase of 33 $\frac{1}{3}$ percent is permitted.

TABLE 7—ALLOWABLE TENSION AND SHEAR VALUES FOR THREADED ROD INSTALLED USING HILTI HIT HY-150 ADHESIVE IN 3,000-PSI LIGHTWEIGHT CONCRETE (pounds)^{1,2}

ANCHOR DIAMETER (inch)	EMBEDMENT DEPTH (inches)	EDGE DISTANCE, c (inches)	ANCHOR SPACING, s (inches)	TENSION	SHEAR		
					ASTM A 36	ASTM A 193 Grade B7	AISI 304 SS Group 1 CW
3/8	1 $\frac{3}{4}$	4	3 $\frac{1}{2}$	745	1,090	1,285	1,285
	3 $\frac{1}{2}$	8	7	1,000	1,090	1,580	1,580
1/2	2 $\frac{1}{8}$	4 $\frac{1}{4}$	4 $\frac{1}{4}$	975	1,935	2,130	2,130
	4 $\frac{1}{4}$	8 $\frac{1}{2}$	8 $\frac{1}{2}$	1,210	1,935	2,910	2,910
5/8	2 $\frac{1}{2}$	5 $\frac{1}{2}$	5	1,200	2,480	2,480	2,480
	3 $\frac{3}{8}$	7 $\frac{1}{2}$	6 $\frac{3}{4}$	1,760	3,025	3,995	3,995

For SI: 1 inch = 25.4 mm, 1 lbf = 4.48 N, 1 psi = 6.89 kPa

¹Tabulated values are for anchors installed at the critical spacing (s) and edge distance (c). Anchors may be installed at the minimum spacing and edge distances as tabulated in Table 3, provided the proper reduction factors are used. Linear interpolation may be used for distances between critical and minimum.

²Anchors affected by more than one reduction factor must have the reduction factors multiplied to determine the allowable load.

TABLE 8—ALLOWABLE TENSION AND SHEAR VALUES FOR THREADED ROD INSTALLED USING HILTI HIT HY-150 ADHESIVE IN GROUT-FILLED CONCRETE MASONRY CONSTRUCTION (pounds)^{1,2,3}

ANCHOR DIAMETER (inches)	3/8		1/2		5/8		3/4	
EMBEDMENT (inches) ⁴	3 $\frac{1}{2}$		4 $\frac{1}{4}$		5		6 $\frac{5}{8}$	
MINIMUM ANCHOR SPACING (inches)	7		8 $\frac{1}{2}$		10		13 $\frac{1}{4}$	
LOADS	Tension	Shear ⁶	Tension	Shear ⁶	Tension	Shear ⁶	Tension	Shear ⁶
4-INCH EDGE DISTANCE ⁵	1,550	2,015	1,785	2,015	2,265	2,015	3,740	2,015
EDGE DISTANCE \geq 12 INCHES ⁵		2,345		4,170		5,620		5,620

For SI: 1 inch = 25.4 mm, 1 lbf = 4.48 N

¹Anchors are limited to one per masonry cell.

²Anchors may be installed in any location (cell, web, joint, etc.).

³Allowable load values are for use in any masonry construction complying with the code.

⁴Embedment depth is measured from the outside face of the masonry.

⁵Edge distances of less than 4 inches are not permitted. Linear interpolation for edge distances between 4 inches and 12 inches is allowed.

⁶Values are for ASTM A 193 Grade B7 threaded rod.

TABLE 9—ALLOWABLE TENSION LOADS FOR GRADE 60 REINFORCING BAR INSTALLED USING HILTI HIT HY-150 ADHESIVE IN NORMAL-WEIGHT CONCRETE (pounds)^{1,2,3}

REBAR SIZE	DRILL BIT DIAMETER (inches)	EMBEDMENT DEPTH (inches)	CRITICAL EDGE DISTANCE, c (inches)	CRITICAL SPACING, s (inches)	$f'_c = 2,000 \text{ psi}$	
					$f'_c = 2,000 \text{ psi}$	$f'_c = 4,000 \text{ psi}$
No. 3	1/2	1 1/2	2 1/4	3	625	960
		3 1/2	5 1/4	7	1,735	2,040
		7	10 1/2	14	3,900	3,860
No. 4	3/8	2	3	4	1,070	1,500
		4	6	8	2,375	3,950
		8	12	16	4,510	4,810
No. 5	3/4	2 1/2	3 3/4	5	1,405	1,735
		5	7 1/2	10	3,115	5,210
		10	15	20	8,085	9,770
No. 6	7/8	3 1/2	5 1/4	7	2,550	3,200
		7	10 1/2	14	5,305	9,120
		14	21	28	12,575	13,515
No. 7	1	3 3/4	5 3/4	7 1/2	2,690	3,955
		7 1/2	11 1/4	15	6,610	8,570
		13 1/4	20	26 1/2	17,655	16,955
No. 8	1 1/8	4	6	8	3,520	4,525
		8	12	16	8,885	11,330
		16	24	32	15,440	22,000
No. 9	1 1/4	5	7 1/2	10	4,190	6,565
		10	15	20	12,180	15,880
		18	27	36	25,315	21,345
No. 10	1 1/2	6	9	12	5,820	8,105
		12	18	24	13,180	20,375
		20	30	40	29,290	31,540
No. 11	1 5/8	7	10 1/2	14	8,010	10,335
		14	21	28	22,910	24,660
		20	30	40	29,290	35,260

For SI: 1 inch = 25.4 mm, 1 lbf = 4.48 N, 1 psi = 6.89 kPa.

¹Tabulated values are for anchors installed at the critical spacing (s) and edge distance (c). Anchors may be installed at the minimum spacing and edge distances as tabulated in Table 5, provided the proper reduction factors are used. Linear interpolation may be used for distances between critical and minimum.

²Anchors affected by more than one reduction factor must have the reduction factors multiplied to determine the allowable load.

³The allowable tension load must be the lesser of the tabulated bond strength and the allowable steel strength obtained by multiplying the nominal cross sectional area of the rebar and the tensile stresses listed in Section 1926.3.2 of the code.

TABLE 10—ALLOWABLE LOADS FOR SILL PLATE AND OTHER ATTACHMENTS TO MINIMUM 2,000-PSI NORMAL-WEIGHT CONCRETE AT MINIMUM EDGE DISTANCES AND USING HILTI HIT HY-150 ADHESIVE (pounds)^{1,2}

ANCHOR DIAMETER (inch)	EMBEDMENT DEPTH (inches)	EDGE DISTANCE (inches)	TENSION	SHEAR	
				Load Applied Perpendicular to Edge	Load Applied Parallel to Edge
2	4	1 1/4	1,200	400	1,445
		2 3/4	1,890	775	2,130
4	8	1 3/4	1,610	400	1,445
		2 3/4	2,550	1,010	2,445
8	10	1 3/4	4,680	—	—
	15	1 3/4	8,190	—	—

For SI: 1 inch = 25.4 mm, 1 lbf = 4.48 N, 1 psi = 6.89 kPa.

¹Loads in this table are for anchors installed in the concrete at the edge distance listed in this table. No reductions for edge distance are required when anchors are installed with the minimum edge distance specified in the table. Capacity of attached sill plate or other material to resist loads in this table must comply with the code.

²Edge distances are given in this table. Anchor spacing shall conform to the dimensions given in Tables 5 and 6.

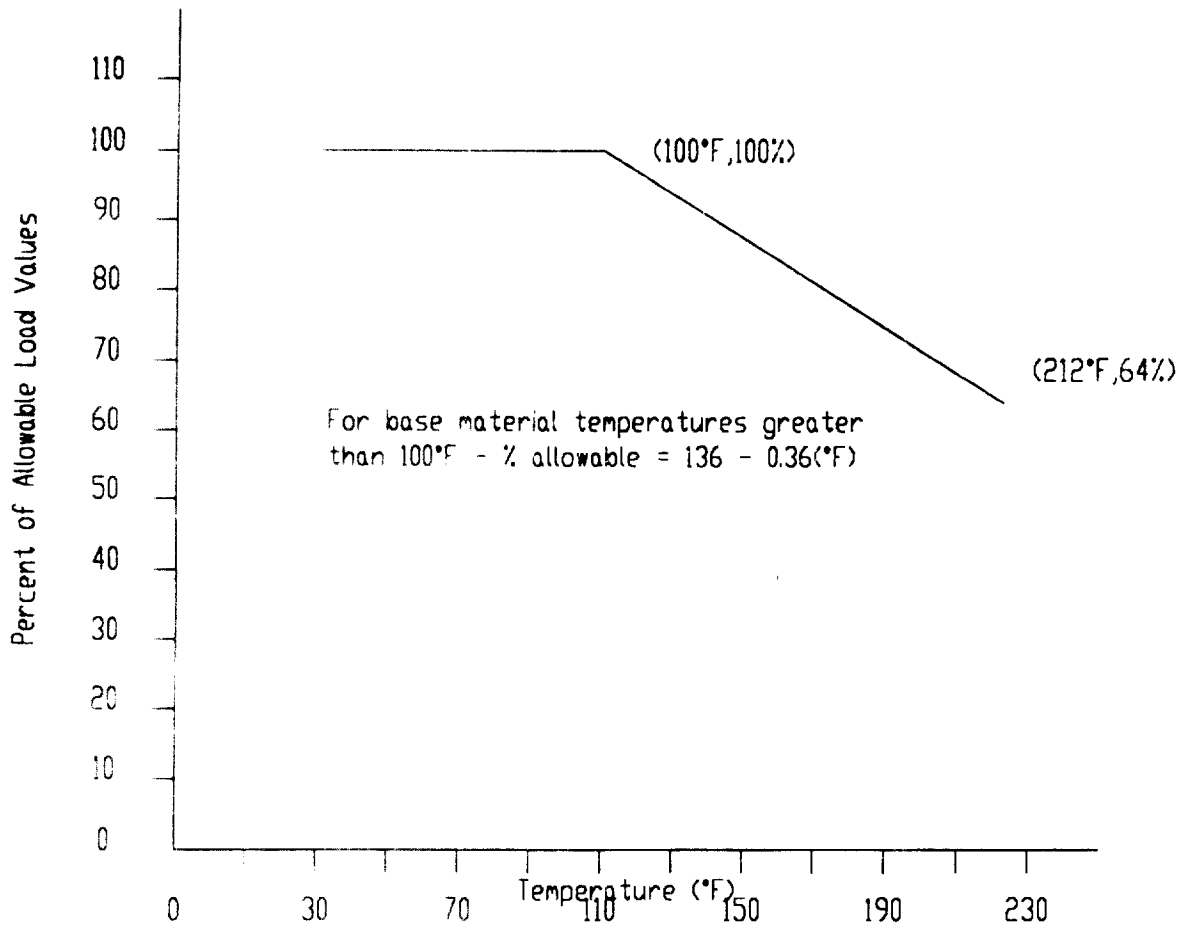
TABLE 11—ALLOWABLE LOADS FOR SILL PLATE AND OTHER ATTACHMENTS TO TOPS OF GROUT-FILLED MASONRY WALLS AT MINIMUM EDGE DISTANCES AND USING HILTI HIT HY-150 ADHESIVE (pounds)^{1,2}

ANCHOR DIAMETER (inch)	EMBEDMENT DEPTH (inches)	EDGE DISTANCE (inches)	TENSION	SHEAR	
				Load Applied Perpendicular to Edge	Load Applied Parallel to Edge
1/2	4 1/4	1 3/4	1,395	560	1,425
		2 3/4	1,795	1,110	2,085
5/8	-	1 3/4	1,840	705	1,800
		2 3/4	2,035	1,110	3,070

For SI: 1 inch = 25.4 mm, 1 lbf = 4.48 N, 1 psi = 6.89 kPa

1. Loads in this table are for anchors installed in the masonry at the edge distance listed in this table. No reductions for edge distance are required when anchors are installed with the minimum edge distance specified in the table. Capacity of attached sill plate or other material to resist loads in this table must comply with the code.

2. Edge distances are given in this table. Anchor spacing shall conform to the dimensions given in Table 8.



INFLUENCE OF BASE MATERIAL TEMPERATURE ON THE TENSION BOND CAPACITY OF THE HILTI HIT HY-150 ADHESIVE ANCHOR FOR INSTALLATIONS IN BASE MATERIAL AT 23°F OR GREATER

For SI: 1°C = 1.8°F - 32

FIGURE 1