

# Hilti **HLV** Submission Folder

<b>Sample Submission and Approval Form</b>	<b>2 - 3</b>
<b>Technical Data</b>	<b>4 - 7</b>
<b>Method Statement</b>	<b>8</b>
<b>Test Reports according to BS5080</b>	<b>9 - &amp;</b>
<b>Government Letter</b>	<b>&amp;( - &amp;)</b>
<b>Country of Origin</b>	<b>&amp;*</b>

**Customer Hotline**

**Hong Kong 8228 8118**

**Macau (Toll free) 00800- 8228 8118**

## SAMPLE SUBMISSION AND APPROVAL FORM

Contract Title: _____	Ref. No.: _____
_____	Date: _____
_____	Ref. No. of Previous Submission: _____
Contract No: _____	(1) _____
File Reference: _____	(2) _____

### DETAILS OF SUBMISSION

To: Contract Manager's Representative      Attention: \_\_\_\_\_

From: \_\_\_\_\_

The enclosed sample and catalogue\* / certificate of origin\* / technical data\* / test report\* / job reference\* as described below have been checked for compliance with the Specifications and Drawings, and are submitted for approval.

#### 1. General Information

- a. Material Description ~~XXXXXXXXXXXX~~ SX sleeve anchor  
\_\_\_\_\_
- b. Location: \_\_\_\_\_  
\_\_\_\_\_
- c. Specification Ref. Page: \_\_\_\_\_ Item: \_\_\_\_\_  
\_\_\_\_\_
- d. Drawing Ref. No. \_\_\_\_\_  
\_\_\_\_\_
- e. B.Q. Ref.No.: \_\_\_\_\_  
\_\_\_\_\_
- f. Anticipated date of approval: \_\_\_\_\_

#### 2. Technical Information

The submitted sample has been checked against the specification and drawings as listed below:-

Specification Requirements	Submitted Sample (State details against each item)
a. <b>Brand</b> Not specified	Hilti
b. <b>Country of Origin</b> Not specified	Republic of China
c. <b>Manufacturer's Name &amp; Address</b> Not specified	Hilti Corporation, FL-9494 Principality of Liechtenstein
d. <b>Factory's Name &amp; Address(es)</b> Not specified	Hilti (China Zhangjiang) Co Ltd, Yongping Road South, Zhangjiang Development Zone, 524022 Zhangjiang, Guangdong Province, China
e. <b>Supplier (with Applicator, if any)</b>	

Not specified	Hilti (Hong Kong) Ltd
f. <b>Appearance</b> Not specified	According to the sample submitted
g. <b>Color +</b> Not specified	NIL
h. <b>Specification</b> Not specified	Attached
i. <b>Manufacturer's Catalogue</b> Not specified	Attached
j. <b>Test Report</b> (Original/Certificated True Copy) Not specified	Attached
k. <b>Previous Job Reference</b> Not specified	Attached
l. <b>Supplementary Information</b> Not specified	NIL

For and on behalf of the Contractor

\_\_\_\_\_  
(Quality Control Manager)


<b>CONTRACT MANAGER'S COMMENTS</b>	
To:	
From:	Contract Manager's Representative: _____
On the basis of the sample and information given, the above sample submitted is:	
(1) *	<b>Approved.</b>
(2) *	<b>Not approved</b> because _____
_____	
_____	
Remarks:	_____
_____	
_____	
Approval does not alter the requirements of the Contract	
Contract Manager's Representative: _____	
_____	
Date: _____	

cc. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(\* Delete if appropriate)

(+ For glass or vitreous mosaic tiles, the contractor is required to confirm the colour range(s) of the submitted sample, i.e. a) light and or medium; or b) dark)

### HLV Sleeve anchor (For E&M Fixing)

	Anchor version	Item number
	<b>For pre-setting</b>	
	• HLV 10x45/10	432964
	• HLV 12x48/10	432966
	• HLV 12x60/17	432967*
	• HLV 16x68/20	432969*
	<b>For through fastening</b>	
	• HLV 8x35/10	432963
	• HLV 10x40/5	432964
	• HLV 12x40/8	432966



Concrete

### Approvals / certificates

Description	Authority / Laboratory	No. / Date of issue
Tested according to BS5080 Part 1&2	HOKLAS accredited laboratory	28 September 2011

### Basic loading data (for a single anchor)

All data in this section applies to

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- Minimum base material thickness
- Concrete C20/25 – C50/60,  $f_{ck,cube} = 25 \text{ N/mm}^2 - 60 \text{ N/mm}^2$

### Characteristic resistance

	Pre-setting				Through fastening		
	10 x45/10	12 x48/10	12 x60/17	16 x68/20	8 x35/10	10 x40/5	12 x40/8
Anchor size							
Tensile $N_{RK}$ [kN]	11.80	15.90	21.90	28.30	5.60	8.30	10.50
Shear $V_{RK}$ [kN]	11.20	13.00	13.00	19.70	5.60	8.30	10.50

### Design resistance

Anchor size	Pre-setting				Through fastening		
	10 x45/10	12 x48/10	12 x60/17	16 x68/20	8 x35/10	10 x40/5	12 x40/8
Tensile $N_{Rd}$ [kN]	5.10	7.50	10.40	13.50	2.70	4.00	5.00
Shear $V_{Rd}$ [kN]	4.70	6.10	6.20	9.40	2.70	4.00	5.00

### Recommended loads

Anchor size	Pre-setting				Through fastening		
	10 x45/10	12 x48/10	12 x60/17	16 x68/20	8 x35/10	10 x40/5	12 x40/8
Tensile $N_{rec}^{(a)}$ [kN]	3.56	5.30	7.30	9.43	1.87	2.77	3.50
Shear $V_{rec}^{(a)}$ [kN]	3.33	4.33	4.33	6.57	1.87	2.77	3.50

a) With overall global safety factor for action  $\gamma = 3$ . The recommended loads vary according to the safety factor requirement from national regulations.

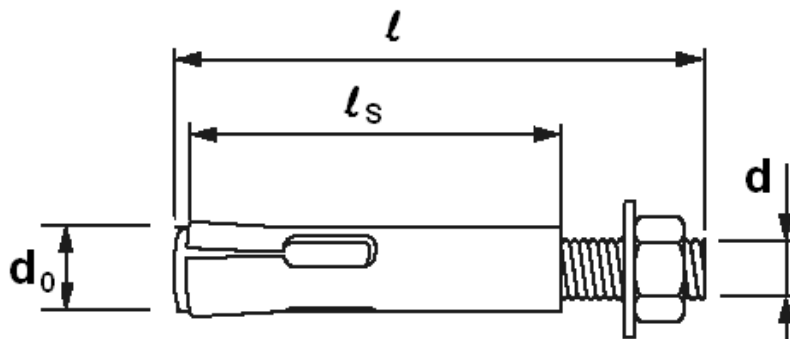
### Materials

#### Material quality

Part	Material
Anchor bolt	Carbon steel, $f_{uk} \geq 400 \text{ N/mm}^2$ , galvanized to min. $5 \mu\text{m}$

### Anchor dimensions

Anchor size	Pre-setting				Through fastening			
	10 x45/10	12 x48/10	12 x60/17	16 x68/20	8 x35/10	10 x40/5	12 x40/8	
Thread size	d [-]	M8	M10		M12	M6	M8	M10
Diameter of anchor	$d_o$ [mm]	10	12		16	8	10	12
Length of anchor bolt	$l$ [mm]	68	76	95	109	47	68	76
Length of sleeve	$l_s$ [mm]	45	48	60	68	35	45	48



### Setting

#### Installation equipment

Anchor size	8	10	12	16
Rotary hammer	TE 2 – TE 40			
Other tools	Hammer, torque wrench, blow out pump			

#### Setting instruction

Pre-setting	Through fastening

For detailed information on installation see instruction for use given with the package of the product.

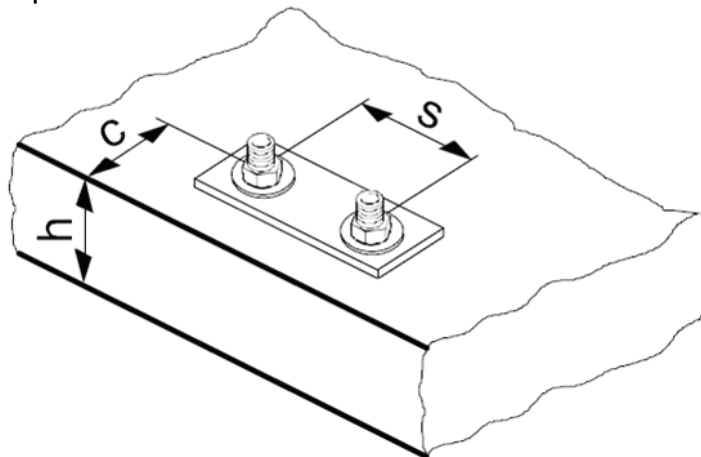
### Setting details HLV

			Pre-setting				Through fastening		
Anchor size			10 x45/10	12 x48/10	12 x60/17	16 x68/20	8 x35/10	10 x40/5	12 x40/8
Thread size	d	[-]	M8	M10		M12	M6	M8	M10
Thickness of fixture	t <sub>fix</sub> ≤	[mm]	10	10	17	20	10	5	8
Nominal diameter of drill bit	d <sub>o</sub>	[mm]	10	12		16	8	10	12
Cutting diameter of drill bit	d <sub>cut</sub> ≤	[mm]	10,45	12,5		16,5	8,45	10,45	12,5
Depth of drill hole	h <sub>1</sub> ≥	[mm]	65	70	80	100	40	60	60
Width across nut flats	SW	[mm]	13	17		19	10	13	17
Diameter of clearance hole in the fixture	d <sub>f</sub> ≤	[mm]	9	11	11	14	10	12	14
Effective anchorage depth	h <sub>ef</sub>	[mm]	45	48	60	68	25	40	40
Max. torque moment	T <sub>inst</sub>	[Nm]	25	40		50	4	25	40

### Base material thickness, anchor spacing and edge distance

			Pre-setting				Through fastening		
Anchor size			10 x45/10	12 x48/10	12 x60/17	16 x68/20	8 x35/10	10 x40/5	12 x40/8
Minimum base material thickness	h <sub>min</sub>	[mm]	90	100	120	140	100	100	100
Minimum spacing	s <sub>min</sub>	[mm]	200	200	240	280	200	200	200
Minimum edge distance	c <sub>min</sub>	[mm]	135	150	180	210	100	100	105

a) In case of deeper embedment than h<sub>ef</sub> : h<sub>min</sub> ≥ 2x embedment depth

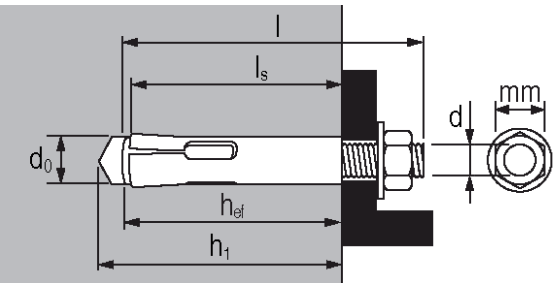
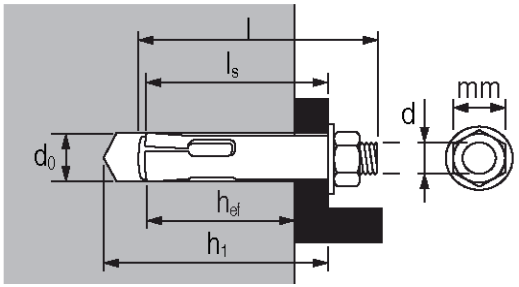
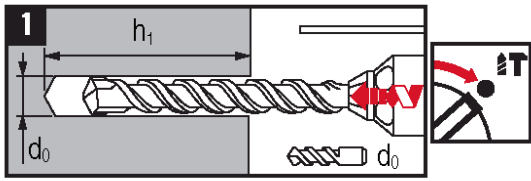
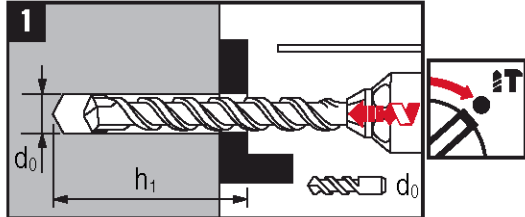
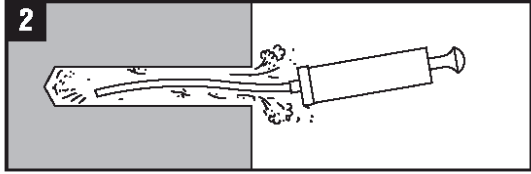
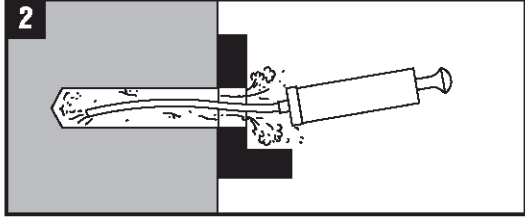
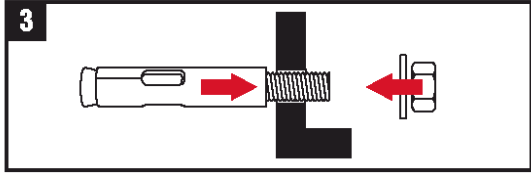
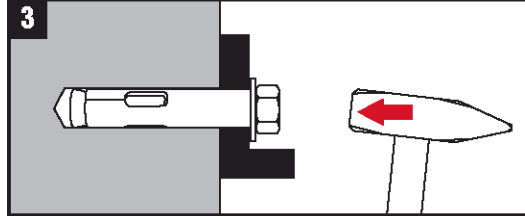
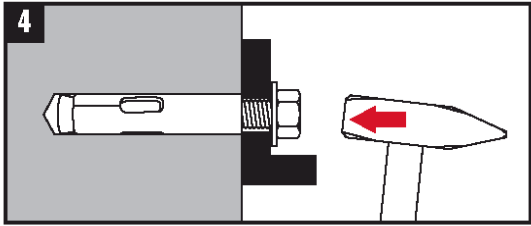
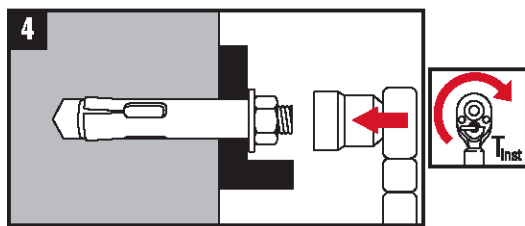
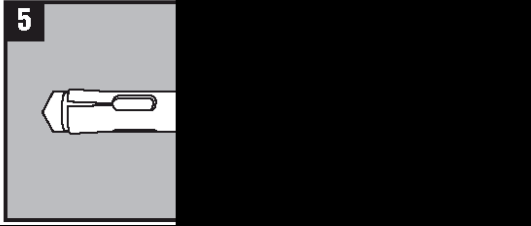



### SETTING OPERATION

#### Installation equipment

Anchor size	6,5	8	10	12	16
Rotary hammer	TE 2 – TE 16				
Other tools	hammer, torque wrench, blow out pump				

#### Setting instruction

Pre-setting	Through fastening
	
	
	
	
	
	

For detailed information on installation see instruction for use given with the package of the product.



## Summary of test results of HLV Sleeve Anchor

*Sample Description : [Supplied by Hilti (Hong Kong) Limited]*

Product : HLV  
 Size : 8 – 16 (M6 – M12)  
 Material : Galvanized Carbon Steel  
 Coating : Galvanized to min. 5 µm

*Concrete Description : [Supplied and tested by ETS – Testconsult Limited]*

Concrete Strength :  $30 \pm 3$  Mpa

*Laboratory Information :*

Name of Laboratory : ETS – Testconsult Limited  
 Test Method : BS5080: Part 1: 1993  
 BS5080: Part 2: 1986  
 Date Tested : September 2011

### **Test Results :**

Size	Type	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Avg. Value	Std. Dev.	Charact. Load
HLV 8x35/10	Tensile [kN]	7.2	7.3	7.2	7.4	7.3	7.3	0.08	7.03
	Shear [kN]	9.3	9.5	9.4	9.2	9.2	9.3	0.13	8.86
HLV 10x40/5	Tensile [kN]	12	12.2	12	12.1	12.3	12.1	0.13	11.66
	Shear [kN]	16.4	16.3	16.3	16.2	16.4	16.3	0.08	16.03
HLV 10x45/10	Tensile [kN]	12.5	12.2	12.3	12.2	12.4	12.32	0.13	11.88
	Shear [kN]	11.5	11.9	11.7	11.9	11.8	11.8	0.17	11.22
HLV 12x40/8	Tensile [kN]	17.7	17.5	17.6	17.6	17.4	17.6	0.11	17.22
	Shear [kN]	22.9	22.8	23.1	23	22.6	22.9	0.19	22.25
HLV 12x48/10	Tensile [kN]	19.9	20.2	19.7	20.1	20.2	20.02	0.22	19.27
	Shear [kN]	17.4	17.6	17.8	17.5	17.4	17.5	0.17	16.92
HLV 12x60/17	Tensile [kN]	23.4	23.2	23.5	23.4	23.2	23.34	0.13	22.90
	Shear [kN]	18	17.9	17.6	17.7	17.9	17.8	0.16	17.25



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 Fax : 2695 3944  
 E-mail : etl@ets-testconsult.com  
 Web site : www.ets-testconsult.com



**TEST REPORT**

**Hilti (Hong Kong) Ltd**  
 701-704, 7/F, Tower A, Manulife Financial Centre,  
 223 Wai Yip Street, Kwun Tong, Kowloon

**Tensile Load Test on Anchor Bolt**

**Anchor Type:**  
**HLV 8x35/10**

**Ref: BS 5080 : Part 1 : 1993 : Cl.7.1**

**Date Tested: 23-Sep-2011**

**ETL Ref. No.: 1560/2011**

Reported By: PANG, Ting Pong / LIN, Meng Yang

Approved Signatory: MONG, Seng Ming

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation. This report shall not be reproduced unless with prior written approval from this laboratory.

**1.0 Test Result**

**1.1 Installation Details**

Supplier Name: Hilti (Hong Kong) Ltd  
 Anchor Type: HLV 8x35/10  
 Fixture thickness: 10mm  
 Minimum distance between the reaction frame and center of fixing: 70mm  
 Minimum distance between the centre of fixing and free edge: 105mm  
 Embedment Depth: 35mm  
 Concrete Grade: 30 ± 3 MPa  
 Test Method: BS 5080 Part 1: 1993 clauses 7.1

Mode	Type	Test No	Maximum Test Load (kN)	Failure Mode
Tensile Load Test	HLV 8x35/10	Sample 1	7.2	F4
		Sample 2	7.3	F4
		Sample 3	7.2	F4
		Sample 4	7.4	F4
		Sample 5	7.3	F4
Mean (kN)			7.3	
Standard Deviation (kN)			0.08	

Failure Modes : P = No sign of failure in anchor and/or structural member  
 F1 = Failure of anchor or its accessories  
 F2 = Failure in structural member  
 F3 = Pull out of anchor  
 F4 = Failure of structural member in a shear cone  
 F5 = Failure by continuous displacement or decreasing applied force  
 F6 = Failure in structural member with crack radiates outward from anchor  
 F7 = Other failure mode(s): anchor breaking



東業德勤测试顾问有限公司  
 ETS-TESTCONSULT LIMITED



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E-mail : etl@ets-testconsult.com  
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**TEST REPORT**

**Hilti (Hong Kong) Ltd**  
701-704, 7/F, Tower A, Manulife Financial Centre,  
223 Wai Yip Street, Kwun Tong, Kowloon

**Shear Load Test on Anchor Bolt**

**Anchor Type:**  
**HLV 8x35/10**

**Ref: BS 5080 : Part 2: 1986 : Cl.7.2**

**Date Tested: 23-Sep-2011**

**ETL Ref. No.: 1560/2011**

Reported By:   
PANG, Ting Pong /  
LIN, Meng Yang

Approved Signatory:   
MONG, Seng Ming

Report Issue Date : 28-Sep-2011

Page 1 of 9

Report No.: FDA11772

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**1.0 Test Result**

**1.1 Installation Details**

Supplier Name: Hilti (Hong Kong) Ltd  
Anchor Type: HLV 8x35/10  
Fixture thickness: 10mm  
Minimum distance between the reaction frame and center of fixing: 70mm  
Minimum distance between the centre of fixing and free edge: 70mm  
Embedment Depth: 35mm  
Concrete Grade: 30 ± 3 MPa  
Test Method: BS 5080 Part 2: 1986 clauses 7.2

Mode	Type	Test No	Maximum Test Load (kN)	Failure Mode
Shear Load Test	HLV 8x35/10	Sample 1	9.3	F7
		Sample 2	9.5	F7
		Sample 3	9.4	F7
		Sample 4	9.2	F7
		Sample 5	9.2	F7
Mean (kN)			9.3	
Standard Deviation (kN)			0.13	

Failure Modes : P = No sign of failure in anchor and/or structural member  
F1 = Failure of anchor or its accessories  
F2 = Failure in structural member  
F3 = Pull out of anchor  
F4 = Failure of structural member in a shear cone  
F5 = Failure by continuous displacement or decreasing applied force  
F6 = Failure in structural member with crack radiates outward from anchor  
F7 = Other failure mode(s); anchor breaking

Report Issue Date: 28-Sep-11

Page 3 of 9

Report No. FDA11772



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**TEST REPORT**

**Hilti (Hong Kong) Ltd**  
701-704, 7/F, Tower A, Manulife Financial Centre,  
223 Wai Yip Street, Kwun Tong, Kowloon

**Tensile Load Test on Anchor Bolt**

**Anchor Type:**  
**HLV 10x40/5**

**Ref: BS 5080 : Part 1 : 1993 : Cl.7.1**

**Date Tested: 23-Sep-2011**

**ETL Ref. No.: 1560/2011**

Reported By: PANG, Ting Pong / LIN, Meng Yang

Approved Signatory: MONG, Seng Ming

Report Issue Date : 28-Sep-2011

Page 1 of 9

Report No.: FDA11776

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**1.0 Test Result**

1.1 Installation Details

Supplier Name: Hilti (Hong Kong) Ltd  
Anchor Type: HLV 10x40/5  
Fixture thickness: 5mm  
Minimum distance between the reaction frame and center of fixing: 80mm  
Minimum distance between the centre of fixing and free edge: 120mm  
Embedment Depth: 40mm  
Concrete Grade: 30 ± 3 MPa  
Test Method: BS 5080 Part 1: 1993 clauses 7.1

Mode	Type	Test No	Maximum Test Load (kN)	Failure Mode
Tensile Load Test	HLV 10x40/5	Sample 1	12.0	F4
		Sample 2	12.2	F4
		Sample 3	12.0	F4
		Sample 4	12.1	F4
		Sample 5	12.3	F4
Mean (kN)			12.1	
Standard Deviation (kN)			0.13	

Failure Modes : P = No sign of failure in anchor and/or structural member  
F1 = Failure of anchor or its accessories  
F2 = Failure in structural member  
F3 = Pull out of anchor  
F4 = Failure of structural member in a shear cone  
F5 = Failure by continuous displacement or decreasing applied force  
F6 = Failure in structural member with crack radiates outward from anchor  
F7 = Other failure mode(s); anchor breaking

Report Issue Date: 28-Sep-11

Page 3 of 9

Report No. FDA11776



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**TEST REPORT**

**Hilki (Hong Kong) Ltd**  
701-704, 7/F, Tower A, Manulife Financial Centre,  
223 Wal Yip Street, Kwun Tong, Kowloon

**Shear Load Test on Anchor Bolt**

**Anchor Type:**  
**HLV 10x40/5**

**Ref: BS 5080 : Part 2: 1986 : Cl.7.2**

**Date Tested: 23-Sep-2011**

**ETL Ref. No.: 1560/2011**

Reported By: PANG, Ting-Pong / LIN, Meng Yang

Approved Signatory: MONG, Seng Ming

Report Issue Date : 28-Sep-2011

Page 1 of 9

Report No.: FDA11773

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**1.0 Test Result**

**1.1 Installation Details**

Supplier Name: Hilki (Hong Kong) Ltd  
Anchor Type: HLV 10x40/5  
Fixture thickness: 5mm  
Minimum distance between the reaction frame and center of fixing: 80mm  
Minimum distance between the centre of fixing and free edge: 80mm  
Embedment Depth: 40mm  
Concrete Grade: 30 ± 3 MPa  
Test Method: BS 5080 Part 2: 1986 clauses 7.2

Mode	Type	Test No	Maximum Test Load (kN)	Failure Mode
Shear Load Test	HLV 10x40/5	Sample 1	16.4	F7
		Sample 2	16.3	F7
		Sample 3	16.3	F7
		Sample 4	16.2	F7
		Sample 5	16.4	F7
Mean (kN)			16.3	
Standard Deviation (kN)			0.08	

Failure Modes : P = No sign of failure in anchor and/or structural member  
F1 = Failure of anchor or its accessories  
F2 = Failure in structural member  
F3 = Pull out of anchor  
F4 = Failure of structural member in a shear cone  
F5 = Failure by continuous displacement or outward from anchor  
F6 = Failure in structural member with crack/radial outward from anchor  
F7 = Other failure mode(s); anchor breaking

Report Issue Date: 28-Sep-11

Page 3 of 9

Report No.: FDA11773



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**TEST REPORT**

**Hilti (Hong Kong) Ltd**  
 701-704, 7/F, Tower A, Manulife Financial Centre,  
 223 Wai Yip Street, Kwun Tong, Kowloon

**Tensile Load Test on Anchor Bolt**

**Anchor Type:**  
**HLV 10x45/10**

**Ref: BS 5080 : Part 1 : 1993 : Cl.7.1**

**Date Tested: 09-Sep-2011**

**ETL Ref. No.: 1481/2011**

Reported By: PANG, Ting-Pong / LIN, Meng Yang

Approved Signatory: MONG, Seng Ming

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**1.0 Test Result**

**1.1 Installation Details**

Supplier Name: Hilti (Hong Kong) Ltd  
 Anchor Type: HLV 10x45/10  
 Fixture thickness: 10mm  
 Minimum distance between the reaction frame and center of fixing: 90mm  
 Minimum distance between the centre of fixing and free edge: 135mm  
 Embedment Depth: 45mm  
 Concrete Grade: 30 ± 3 MPa  
 Test Method: BS 5080 Part 1 : 1993 clauses 7.1

Mode	Type	Test No	Maximum Test Load (kN)	Failure Mode
Tensile Load Test	HLV 10x45/10	Sample 1	12.5	F4
		Sample 2	12.2	F4
		Sample 3	12.3	F4
		Sample 4	12.2	F4
		Sample 5	12.4	F4
Mean (kN)			12.32	
Standard Deviation (kN)			0.13	

Failure Modes : P = No sign of failure in anchor and/or structural member. F1 = Failure of anchor or its accessories  
 F2 = Failure in structural member. F3 = Pull out of anchor  
 F4 = Failure of structural member in a shear cone. F5 = Failure by continuous displacement or decreasing applied force  
 F6 = Failure in structural member with crack radiates outward from anchor. F7 = Other failure mode(s): anchor breaking





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**TEST REPORT**

**Hilti (Hong Kong) Ltd**  
701-704, 7/F, Tower A, Manulife Financial Centre,  
223 Wai Yip Street, Kwun Tong, Kowloon

**Shear Load Test on Anchor Bolt**

**Anchor Type:**  
**HLV 10x45/10**

**Ref: BS 5080 : Part 2: 1986 : Cl.7.2**

**Date Tested: 22-Sep-2011**

**ETL Ref. No.: 1560/2011**

Reported By: PANG, Ting Pong / LIN, Meng Yang

Approved Signatory: MONG, Seng Ming

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**1.0 Test Result**

**1.1 Installation Details**

Supplier Name: Hilti (Hong Kong) Ltd  
Anchor Type: HLV 10x45/10  
Fixture thickness: 10mm  
Minimum distance between the reaction frame and center of fixing: 90mm  
Minimum distance between the centre of fixing and free edge: 90mm  
Embedment Depth: 45mm  
Concrete Grade: 30 ± 3 MPa  
Test Method: BS 5080 Part 2: 1986 clauses 7.2

Mode	Type	Test No	Maximum Test Load (kN)	Failure Mode
Shear Load Test	HLV 10x45/10	Sample 1	11.5	F7
		Sample 2	11.9	F7
		Sample 3	11.7	F7
		Sample 4	11.9	F7
		Sample 5	11.8	F7
Mean (kN)			11.8	
Standard Deviation (kN)			0.17	

Failure Modes : P = No sign of failure in anchor and/or structural member  
F2 = Failure in structural member  
F4 = Failure of structural member in a shear cone  
F6 = Failure in structural member with crack radiates outward from anchor  
F1 = Failure of anchor or its accessories  
F3 = Pull out of anchor  
F5 = Failure by continuous displacement or decreasing applied force  
F7= Other failure mode(s); anchor breaking



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**TEST REPORT**

**Hiiti (Hong Kong) Ltd**  
 701-704, 7/F, Tower A, Manulife Financial Centre,  
 223 Wai Yip Street, Kwun Tong, Kowloon

**Tensile Load Test on Anchor Bolt**

**Anchor Type:**  
 HLV 12x40/8

**Ref: BS 5080 : Part 1 : 1993 : Cl.7.1**

**Date Tested: 23-Sep-2011**

**ETL Ref. No.: 1560/2011**

Reported By:   
 PANG, Ting Pong /  
 LIN, Meng Yang

Approved Signatory:   
 MONG, Seng Ming

Report Issue Date : 28-Sep-2011

Page 1 of 9

Report No.: FDA11777

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation. This report shall not be reproduced unless with prior written approval from this laboratory.

**1.0 Test Result**

**1.1 Installation Details**

Supplier Name: Hiiti (Hong Kong) Ltd  
 Anchor Type: HLV 12x40/8  
 Fixture thickness: 8mm  
 Minimum distance between the reaction frame and center of fixing: 96mm  
 Minimum distance between the centre of fixing and free edge: 144mm  
 Embedment Depth: 40mm  
 Concrete Grade: 30 ± 3 MPa  
 Test Method: BS 5080 Part 1 : 1993 clauses 7.1

Mode	Type	Test No	Maximum Test Load (kN)	Failure Mode
Tensile Load Test	HLV 12x40/8	Sample 1	17.7	F4
		Sample 2	17.5	F4
		Sample 3	17.6	F4
		Sample 4	17.6	F4
		Sample 5	17.4	F4
Mean (kN)			17.6	
Standard Deviation (kN)			0.11	

Failure Modes : P = No sign of failure in anchor and/or structural member  
 F1 = Failure of anchor or its accessories  
 F2 = Failure in structural member  
 F3 = Pull out of anchor  
 F4 = Failure of structural member in a shear cone  
 F5 = Failure by continuous displacement or decreasing applied force  
 F6 = Failure in structural member with crack radiates outward from anchor  
 F7 = Other failure mode(s): anchor breaking

Report Issue Date : 28-Sep-11

Page 3 of 9

Report No. FDA11777





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**TEST REPORT**

**Hilki (Hong Kong) Ltd**  
 701-704, 7/F, Tower A, Manulife Financial Centre,  
 223 Wai Yip Street, Kwun Tong, Kowloon

**Shear Load Test on Anchor Bolt**

**Anchor Type:**  
**HLV 12x40/8**

**Ref: BS 5080 : Part 2: 1986 : Cl.7.2**

**Date Tested: 23-Sep-2011**

**ETL Ref. No.: 1560/2011**

Reported By: PANG, Ting Pong / LIN, Meng Yang

Approved Signatory: MONG, Seng Ming

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation. This report shall not be reproduced unless with prior written approval from this laboratory.

**1.0 Test Result**

**1.1 Installation Details**

Supplier Name: Hilki (Hong Kong) Ltd  
 Anchor Type: HLV 12x40/8  
 Fixture thickness: 8mm  
 Minimum distance between the reaction frame and center of fixing: 96mm  
 Minimum distance between the centre of fixing and free edge: 96mm  
 Embedment Depth: 40mm  
 Concrete Grade: 30 ± 3 MPa  
 Test Method: BS 5080 Part 2: 1986 clauses 7.2

Mode	Type	Test No	Maximum Test Load (kN)	Failure Mode
Shear Load Test	HLV 12x40/8	Sample 1	22.9	F7
		Sample 2	22.8	F7
		Sample 3	23.1	F7
		Sample 4	23.0	F7
		Sample 5	22.6	F7
Mean (kN)			22.9	
Standard Deviation (kN)			0.19	

Failure Modes : P = No sign of failure in anchor and/or structural member  
 F1 = Failure of anchor or its accessories  
 F2 = Failure in structural member  
 F3 = Pull out of anchor  
 F4 = Failure of structural member in a shear cone  
 F5 = Failure by continuous displacement or decreasing applied force  
 F6 = Failure in structural member with crack radiates outward from anchor  
 F7 = Other failure mode(s): anchor breaking





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 Web site : [www.ets-testconsult.com](http://www.ets-testconsult.com)



**TEST REPORT**

**Hilti (Hong Kong) Ltd**  
 701-704, 7/F, Tower A, Manulife Financial Centre,  
 223 Wai Yip Street, Kwun Tong, Kowloon

**Tensile Load Test on Anchor Bolt**

**Anchor Type:**  
**HLV 12x48/10**

**Ref: BS 5080 : Part 1 : 1993 : Cl.7.1**

**Date Tested: 09-Sep-2011**

**ETL Ref. No.: 1481/2011**

Reported By: PANG Ting-Pong / LIN, Meng Yang

Approved Signatory: MONG, Seng Ming

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS Directory of Accredited Laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation. This report shall not be reproduced unless with prior written approval from this laboratory.

**1.0 Test Result**

**1.1 Installation Details**

Supplier Name: Hilti (Hong Kong) Ltd  
 Anchor Type: HLV 12x48/10  
 Fixture thickness: 10mm  
 Minimum distance between the reaction frame and center of fixing: 96mm  
 Minimum distance between the centre of fixing and free edge: 144mm  
 Embedment Depth: 48mm  
 Concrete Grade: 30 ± 3 MPa  
 Test Method: BS 5080 Part 1: 1993 clauses 7.1

Mode	Type	Test No	Maximum Test Load (kN)	Failure Mode
Tensile Load Test	HLV 12x48/10	Sample 1	19.9	F4
		Sample 2	20.2	F4
		Sample 3	19.7	F4
		Sample 4	20.1	F4
		Sample 5	20.2	F4
Mean (kN)			20.02	
Standard Deviation (kN)			0.22	

Failure Modes : P = No sign of failure in anchor and/or structural member  
 F2 = Failure in structural member  
 F4 = Failure of structural member in a shear cone  
 F6 = Failure in structural member with crack radiates outward from anchor  
 F1 = Failure of anchor or its accessories  
 F3 = Pull out of anchor  
 F5 = Failure by continuous displacement or decreasing applied force  
 F7 = Other failure mode(s): anchor breaking



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TEST REPORT



**Hilti (Hong Kong) Ltd**  
701-704, 7/F, Tower A, Manulife Financial Centre,  
223 Wai Yip Street, Kwun Tong, Kowloon

**Shear Load Test on Anchor Bolt**

**Anchor Type:**  
**HLV 12x48/10**

**Ref: BS 5080 : Part 2: 1986 : Cl.7.2**

**Date Tested: 22-Sep-2011**

**ETL Ref. No.: 1560/2011**

Reported By: PANG, Ting Pong / LIN, Meng Yang

Approved Signatory: MONG, Seng Ming

**1.0 Test Result**

**1.1 Installation Details**

Supplier Name	Hilti (Hong Kong) Ltd
Anchor Type	HLV 12x48/10
Fixture thickness	10mm
Minimum distance between the reaction frame and center of fixing	96mm
Minimum distance between the centre of fixing and free edge	96mm
Embedment Depth	48mm
Concrete Grade	30 ± 3 MPa
Test Method	BS 5080 Part 2: 1986 clauses 7.2

Mode	Type	Test No	Maximum Test Load (kN)	Failure Mode
Shear Load Test	HLV 12x48/10	Sample 1	17.4	F7
		Sample 2	17.6	F7
		Sample 3	17.8	F7
		Sample 4	17.5	F7
		Sample 5	17.4	F7
Mean (kN)			17.5	
Standard Deviation (kN)			0.17	

Failure Modes : P = No sign of failure in anchor and/or structural member  
 F1 = Failure of anchor or its accessories  
 F2 = Failure in structural member  
 F3 = Pull out of anchor  
 F4 = Failure of structural member in a shear cone  
 F5 = Failure by continuous displacement or decreasing applied force  
 F6 = Failure in structural member with crack radiates outward from anchor  
 F7 = Other failure mode(s); anchor breaking





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**TEST REPORT**

**Hilti (Hong Kong) Ltd**  
701-704, 7/F, Tower A, Manulife Financial Centre,  
223 Wai Yip Street, Kwun Tong, Kowloon

**Tensile Load Test on Anchor Bolt**

**Anchor Type:**  
**HLV 12x60/17**

**Ref: BS 5080 : Part 1 : 1993 : Cl.7.1**

**Date Tested: 09-Sep-2011**

**ETL Ref. No.: 1481/2011**

Reported By: PANG-Ting Pong  
LIN, Meng Yang

Approved Signatory: MONG, Seng Ming

Report Issue Date : 14-Sep-2011

Page 1 of 9

Report No.: FDA11664

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**1.0 Test Result**

**1.1 Installation Details**

Supplier Name: Hilti (Hong Kong) Ltd  
Anchor Type: HLV 12x60/17  
Fixture thickness: 17mm  
Minimum distance between the reaction frame and center of fixing: 120mm  
Minimum distance between the centre of fixing and free edge: 180mm  
Embedment Depth: 60mm  
Concrete Grade: 30 ± 3 MPa  
Test Method: BS 5080 Part 1: 1993 clauses 7.1

Mode	Type	Test No	Maximum Test Load (kN)	Failure Mode
Tensile Load Test	HLV 12x60/17	Sample 1	23.4	F4
		Sample 2	23.2	F4
		Sample 3	23.5	F4
		Sample 4	23.4	F4
		Sample 5	23.2	F4
Mean (kN)			23.34	
Standard Deviation (kN)			0.13	

Failure Modes : P = No sign of failure in anchor and/or structural member  
F2 = Failure in structural member  
F3 = Pull out of anchor  
F4 = Failure of structural member in a shear cone  
F5 = Failure by continuous displacement or decreasing applied force  
F6 = Failure in structural member with crack radiates outward from anchor  
F7 = Other failure mode(s): anchor breaking

Report Issue Date: 14-Sep-11

Page 3 of 9

Report No. FDA11664



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**TEST REPORT**



**Hilti (Hong Kong) Ltd**  
 701-704, 7/F, Tower A, Manulife Financial Centre,  
 223 Wai Yip Street, Kwun Tong, Kowloon

**Shear Load Test on Anchor Bolt**

**Anchor Type:**  
**HLV 12x60/17**

**Ref: BS 5080 : Part 2: 1986 : Cl.7.2**

**Date Tested: 22-Sep-2011**

**ETL Ref. No.: 1560/2011**

Reported By: PANG, Ting Pong / LIN, Meng Yang

Approved Signatory: MONG, Seng Ming

Report Issue Date : 28-Sep-2011

Page 1 of 9

Report No.: FDA11770

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**1.0 Test Result**

**1.1 Installation Details**

Supplier Name: Hilti (Hong Kong) Ltd  
 Anchor Type: HLV 12x60/17  
 Fixture thickness: 17mm  
 Minimum distance between the reaction frame and center of fixing: 120mm  
 Minimum distance between the centre of fixing and free edge: 120mm  
 Embedment Depth: 60mm  
 Concrete Grade: 30 ± 3 MPa  
 Test Method: BS 5080 Part 2: 1986 clauses 7.2

Mode	Type	Test No	Maximum Test Load (kN)	Failure Mode
Shear Load Test	HLV 12x60/17	Sample 1	18.0	F7
		Sample 2	17.9	F7
		Sample 3	17.6	F7
		Sample 4	17.7	F7
		Sample 5	17.9	F7
Mean (kN)			17.8	
Standard Deviation (kN)			0.16	

Failure Modes : P = No sign of failure in anchor and/or structural member  
 F1 = Failure of anchor or its accessories  
 F2 = Failure in structural member  
 F3 = Pull out of anchor  
 F4 = Failure of structural member in a shear cone  
 F5 = Failure by continuous displacement or decreasing applied force  
 F6 = Failure in structural member with crack radiates outward from anchor  
 F7 = Other (failure mode(s)); anchor breaking

Report Issue Date: 28-Sep-11

Page 3 of 9

Report No. FDA11770



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**TEST REPORT**

**Hilti (Hong Kong) Ltd**  
 701-704, 7/F, Tower A, Manulife Financial Centre,  
 223 Wai Yip Street, Kwun Tong, Kowloon

**Tensile Load Test on Anchor Bolt**

**Anchor Type:**  
 HLV 16x68/20

**Ref: BS 5080 : Part 1 : 1993 : Cl.7.1**

**Date Tested: 09-Sep-2011**

**ETL Ref. No.: 1481/2011**

Reported By: PANG, Ting Pong / LIN, Meng Yang

Approved Signatory: MONG, Seng Ming

Report Issue Date : 14-Sep-2011

Page 1 of 9

Report No.: FDA11665

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**1.0 Test Result**

**1.1 Installation Details**

Supplier Name: Hilti (Hong Kong) Ltd  
 Anchor Type: HLV 16x68/20  
 Fixture thickness: 20mm  
 Minimum distance between the reaction frame and center of fixing: 136mm  
 Minimum distance between the centre of fixing and free edge: 204mm  
 Embedment Depth: 68mm  
 Concrete Grade: 30 ± 3 MPa  
 Test Method: BS 5080 Part 1 : 1993 clauses 7.1

Mode	Type	Test No	Maximum Test Load (kN)	Failure Mode
Tensile Load Test	HLV 16x68/20	Sample 1	33.7	F4
		Sample 2	33.1	F4
		Sample 3	33.3	F4
		Sample 4	33.5	F4
		Sample 5	33.6	F4
Mean (kN)			33.44	
Standard Deviation (kN)			0.24	

Failure Modes : P = No sign of failure in anchor and/or structural member  
 F1 = Failure of anchor or its accessories  
 F2 = Failure in structural member  
 F3 = Pull out of anchor  
 F4 = Failure of structural member in a shear cone  
 F5 = Failure by continuous displacement or decreasing applied force  
 F6 = Failure in structural member with crack radiates outward from anchor  
 F7 = Other failure mode(s): anchor breaking

Report Issue Date: 14-Sep-11

Page 3 of 9

Report No. FDA11665



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**TEST REPORT**

**Hilki (Hong Kong) Ltd**  
 701-704, 7/F, Tower A, Manulife Financial Centre,  
 223 Wai Yip Street, Kwun Tong, Kowloon

**Shear Load Test on Anchor Bolt**

**Anchor Type:**  
**HLV 16x68/20**

**Ref: BS 5080 : Part 2: 1986 : Cl.7.2**

**Date Tested: 22-Sep-2011**

**ETL Ref. No.: 1560/2011**

Reported By:   
**PANG, Ting-Pang /**  
 LIN, Meng Yang

Approved Signatory:   
**MONG, Seng Ming**

**1.0 Test Result**

**1.1 Installation Details**

Supplier Name: Hilki (Hong Kong) Ltd  
 Anchor Type: HLV 16x68/20  
 Fixture thickness: 20mm  
 Minimum distance between the reaction frame and center of fixing: 136mm  
 Minimum distance between the centre of fixing and free edge: 136mm  
 Embedment Depth: 68mm  
 Concrete Grade: 30 ± 3 MPa  
 Test Method: BS 5080 Part 2: 1986 clauses 7.2

Mode	Type	Test No	Maximum Test Load (kN)	Failure Mode
Shear Load Test	HLV 16x68/20	Sample 1	27.5	F7
		Sample 2	27.8	F7
		Sample 3	27.7	F7
		Sample 4	27.9	F7
		Sample 5	27.4	F7
Mean (kN)		27.7		
Standard Deviation (kN)		0.21		

Failure Modes : P = No sign of failure in anchor and/or structural member  
 F2 = Failure in structural member  
 F4 = Failure of structural member in a shear cone  
 F6 = Failure in structural member with crack radiales outward from anchor  
 F1 = Failure of anchor or its accessories  
 F3 = Pull out of anchor  
 F5 = Failure by continuous displacement or decreasing applied force  
 F7= Other failure mode(s); anchor breaking



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Hilti (Hong Kong) Limited  
17/F, Tower 6,  
China Hong Kong City,  
33 Canton Road,  
Tsimshatsui,  
Kowloon.

4 June, 1997

Attention: Mr. Denny Wu

Dear Sir,

**Procedures for building materials submission**

I refer to your letter dated 19 May, 1997 concerning the above.

2. Please be advised that there is no provision under the Buildings Ordinance for the Building Authority to approve any proprietary building products. Under the Buildings Ordinance, authorized persons and/or registered structural engineers are required to supervise building works including the selection and installation of proprietary building products and to certify compliance with the Buildings Ordinance upon completion of works. They are therefore responsible for ensuring the health and structural safety requirements, inter alia, of these building products in the building projects which they have been appointed by the developer to co-ordinate and supervise. It is also their responsibility to ensure these products have been installed in accordance with the manufacturers' specifications and complied with the Buildings Ordinance and Regulations.

3. In establishing the acceptability of the proprietary products in building works, reference may be made to the performance standards laid down in Building (Construction) Regulations 1990 and the current Practice Note for Authorized Persons and Registered Structural Engineers 140 in which performance requirements for compliance are given. Reliance may also be placed on the test/assessment report prepared by a recognized laboratory or an equivalent establishment.

4. Before the proprietary products are installed in a building project, the authorized person and/or registered structural engineer appointed for the project should be approached by the manufacturers or their agents for advice and guidance. **Prior approval/acceptance from the Buildings Department is not required.**

5. Generally, all relevant information supporting the use of the proprietary products in building works under the Buildings Ordinance should be submitted associated with the prescribed plans for approval on project basis.

/ Notwithstanding....



- 2 -

6. Notwithstanding the above, the proprietary building products to which 'No objection' letters have been given are still recognized as accepted constructional materials to be used in building works under the Buildings Ordinance provided that all conditions specified in the letters are satisfied. You are informed that the procedures currently adopted by the Building Authority for processing statutory approval of plans which involve the use of these proprietary building products remain unchanged.

7. It is a fact that the 'No objection' letter giving general acceptance to a proprietary building product is based on the technical information submitted to this Department at the time of its application. Should there be any significant modification to these technical information, the product will certainly be considered as 'new' product. The acceptability of such proprietary product in building works should be evaluated by the authorized person and/or registered structural engineer appointed for the project as mentioned above.

8. Should you have any further queries to the above, please feel free to contact the undersigned or Mr. T.C. Kan of this office at phone no. 2626 1583.

Yours faithfully,



(K.S. Chang)

Technical Secretary/Structural  
for Building Authority

tck/

Attn. : To whom it may concern

Date : 11 October 2011

Subject : Hilti HLV Sleeve Anchor

Dear Sirs / Madams,

Enclosed please find the information of Hilti HLV Sleeve Anchor.

Brand Name	: Hilti
Model Name	: Hilti HLV
Manufacturer	: Hilti Corporation
Address of Manufacturer	: FL-9494, Principality of Liechtenstein
Supplier	: Hilti (Hong Kong) Limited
Address of Supplier	: 701-704, 7/F, Tower A, Manulife Financial Centre, 223 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong
Country of Origin	: China
Name of Factory	: Hilti (China Zhangjiang) Co. Ltd.
Address of Factory	: Yongping Road South, Zhangjiang Development Zone, 524002 Zhangjiang, Guangdong Province, China

Should you have further questions, please do not hesitate to contact our Technical Representatives or Customer Service Hotline at 8228-8118.

Yours sincerely,  
Hilti (Hong Kong) Limited



Alan Lee  
Marketing Manager