CITY OF LOS ANGELES
CALIFORNIA

DEPARTMENT OF
BUILDING AND SAFETY
201 NORTH FIGUEROA STREET
LOS ANGELES, CA 90012

ANDREW A. ADELMAN, P.E.
GENERAL MANAGER

RAYMOND CHAN
EXECUTIVE OFFICER

Buildex Division,
Illinois Tool Works, Inc.
1349 West Bryn Mawr Avenue
Itasca, Illinois 60143

Attn: Dan Kenny
(630) 595-3500

RESEARCH REPORT: RR 24953
(CSI # 03150)

BASED UPON ICBO ES EVALUATION
REPORT NO. 3370

REEVALUATION DUE DATE:
July 1, 2007

GENERAL APPROVAL - Reevaluation - Tapcon Concrete Anchors

The above assemblies and/or products are approved when in compliance with the description, use, identification and findings of Report No. 3370, dated July 1, 2001, of the ICBO Evaluation Service, Incorporated. The report, in its entirety, is attached and made part of this general approval.

The parts of Report No. 3370 marked by the asterisks are deleted or revised by the Los Angeles Building Department from this approval.

DETAILS

The conditions of approval are as follows:

1. The anchors shall be installed per the manufacturer's instructions, except as otherwise stated in this report.

2. The concrete shall have attained it's minimum design strength prior to installation of the anchors.

DISCUSSION

The status of the referenced Evaluation Report No. 3370, dated July 1, 2001, which is currently beyond its re-examination date is still valid. The validity of the evaluation was verified with ICC.

Buildex Division
RE: Tapcon Concrete Anchors

Addressee to whom this Research Report is issued is responsible for providing copies of it, complete with any attachments indicated, to architects, engineers and builders using items approved herein in design or construction which must be approved by Department of Building and Safety Engineers and Inspectors.

This general approval of an equivalent alternate to the Code is only valid where an engineer and/or inspector of this Department has determined that all conditions of this approval have been met in the project in which it is to be used.

This general approval will remain effective provided the Evaluation Report is maintained valid and unrevised with the issuing organization. Any revisions to the report must be submitted to this Department, with appropriate fee, for review in order to continue the approval of the revised report.

YEUAN CHOU, Chief
Engineering Research Section
2319 Dorris Place
Los Angeles, CA 90031
(213) 485-2376

YC:elcm
RR24953/wp8.0
R06/22/05
5A1/1925

Attachment: ICBO ES Evaluation Report No. 3370 (2 Pages).

ES REPORT™

ER-3370

Reissued July 1, 2001

ICBO Evaluation Service, Inc. • 5360 Workman Mill Road, Whittier, California 90601 • www.icboes.org

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

TAPCON® CONCRETE ANCHORS

ILLINOIS TOOL WORKS, INC.,
BUILDEX DIVISION
1349 WEST BRYN MAWR AVENUE
ITASCA, ILLINOIS 60143

ILLINOIS TOOL WORKS, INC.,
BRANDS DIVISION
226 GERRY DRIVE
WOOD DALE, ILLINOIS 60191

ILLINOIS TOOL WORKS, INC.,
RAMSET/RED HEAD DIVISION
1300 NORTH MICHAEL AVENUE
WOOD DALE, ILLINOIS 60191

1.0 SUBJECT

Tapcon® Concrete Anchors.

2.0 DESCRIPTION

2.1 General:

The Tapcon concrete screw anchors are manufactured from AISI 1022 steel and are for installation in concrete substrates. They are heat-treated and have an alternating high-low thread form. The screw anchors are available in $^3/_{16}$- and $^1/_4$-inch-diameter (4.8 and 6.4 mm) sizes with various lengths. Four head styles are available for the Tapcon screw: slotted hex washer head, Phillips head, Maxi-set head or a Scots stainless steel hex washer head. See Figure 1 for head styles.

2.2 Installation:

A pilot hole is drilled using a carbide-tipped drill bit supplied with each box of Tapcon anchors. Pilot holes 0.17 inch (4.3 mm) in diameter for the $^3/_{16}$-inch (4.8 mm) anchor and 0.20 inch (5.1 mm) in diameter for the $^1/_4$-inch (6.4 mm) anchor are drilled $^1/_4$ inch (6.4 mm) longer than the necessary penetration.

After the pilot hole is drilled, the dust is removed and the Tapcon screw anchors are installed to the specified depth of embedment.

2.3 Design:

The allowable tension and shear loads are indicated in Table 1. The anchors are installed a minimum of 12 diameters on center with a minimum edge distance of 10 diameters for 100 percent anchor efficiency. Spacing and edge distance may be reduced to six-diameter spacing and five-diameter edge distance providing values are reduced 50 percent. Linear interpolation may be used for intermediate spacing and edge margins.

Allowable shear and tension loads are described in Table 1. Allowable loads for Tapcon screw anchors subjected to combined shear and tension loads are determined by the following equation:

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

where:

P_s = Applied tension load.

P_t = Allowable tension load in Table 1.

V_s = Applied shear load.

V_t = Allowable shear load in Table 1.

Anchors are not permitted to be subjected to vibratory loads such as reciprocating engines, crane loads and moving loads due to vehicles. Anchors are limited to static load applications. Use of anchors in resisting earthquake or wind loads is beyond the scope of this report.

2.4 Special Inspection:

Where special inspection under Section 1701 of the code is required in Table 1, the special inspector must be on the jobsite continuously during screw installation to verify screw type, screw dimensions, concrete type, concrete compressive strength, hole dimensions, screw spacing, edge distances, slab thickness, screw embedment and tightening torque.

2.5 Identification:

The Tapcon screw anchors are packaged in containers indicating the Illinois Tool Works, Inc., Buildex Division's address, diameter, length and fastener type.

3.0 EVIDENCE SUBMITTED

Reports of load tests and installation instructions.

4.0 FINDINGS

That the Tapcon® Concrete Anchors described in this report comply with the 1997 *Uniform Building Code*™, subject to the following conditions:

4.1 Anchor size, installation and dimensions are as set forth in this report.

4.2 Allowable shear and tension loads are as set forth in Table 1.

4.3 Calculations demonstrating that the applied loads comply with this report must be submitted to the building official for approval.

4.4 Anchors are limited to nonfire-resistive construction unless appropriate data is submitted to demonstrate that screw performance is maintained in fire-resistive situations.

4.5 Special inspection, when required by Table 1, is provided according to Section 2.4 of this report.

4.6 When the anchors are placed without special inspection, the installer must certify to the building official that screws were installed in accordance with the manufacturer's instructions and this report.

4.7 Use of screws to resist wind or earthquake loads is beyond the scope of this report.

4.8 Screws are not subjected to vibratory or shock loads, such as those encountered by supports for reciprocating engines or crane rails, unless adequacy is determined to the building official's satisfaction.

This report is subject to re-examination in two years.

TABLE 1—ALLOWABLE SHEAR AND TENSION VALUES FOR TAPCON CONCRETE ANCHORS (pounds)[1]

ANCHOR DIAMETER (inch)	MINIMUM DEPTH OF EMBEDMENT (inches)	f'_c = 2,000 psi *			f'_c = 3,000 psi			f'_c = 4,000 psi			f'_c = 5,000 psi		
		Tension			Tension			Tension			Tension		
		With Sp. Insp.[2]	Without Sp. Insp.[3]	Shear	With Sp. Insp.[2]	Without Sp. Insp.[3]	Shear	With Sp. Insp.[2]	Without Sp. Insp.[3]	Shear	With Sp. Insp.[2]	Without Sp. Insp.[3]	Shear
3/16	1	60	30	185	80	40	210	100	50	210	110	55	215
	1 1/4	110	55	195	140	70	210	150	75	210	160	80	215
	1 1/2	160	80	205	210	105	215	220	110	220	230	115	225
	1 3/4	190	95	230	260	130	255	280	140	255	310	155	255
1/4	1	130	65	280	180	90	365	200	100	390	230	115	415
	1 1/4	210	105	320	280	140	400	310	155	415	350	175	435
	1 1/2	280	140	320	380	190	405	400	200	420	420	210	440
	1 3/4	330	165	375	460	230	535	510	255	540	560	280	550

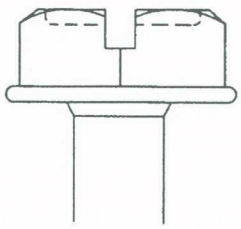
For **SI:** 1 inch = 25.4 mm, 1 psi = 6.895 kPa, 1 pound = 4.45 N.

[1]The tabulated shear and tensile values are for anchors installed in stone-aggregate concrete having the designated ultimate compressive strength at the time of installation.

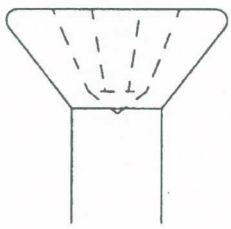
[2]These tension values are applicable only when the anchors are installed with special inspection as set forth in Section 1701 of the code.

[3]These tension values are applicable when the anchors are installed without special inspection as set forth in Section 1701 of the code.

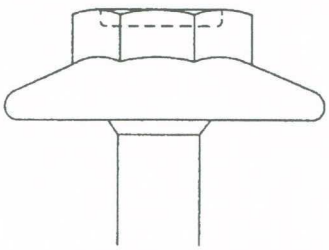
SLOTTED HEX WASHER HEAD



PHILLIPS HEAD



MAXI-SET HEAD



SCOTS STAINLESS STEEL HEAD

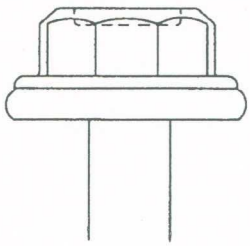


FIGURE 1—TAPCON HEAD STYLES

* Deleted by City of Los Angeles