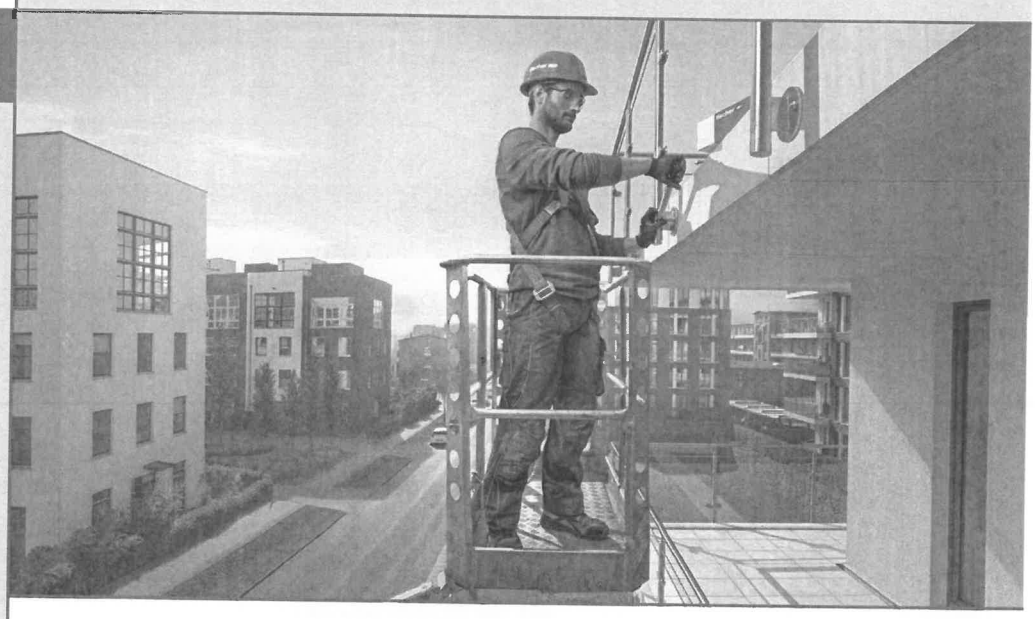
建築物混凝土結構設計規範(112年版)應用研討會
錨栓設計應用與查驗要領

富華成 江安家 總經理



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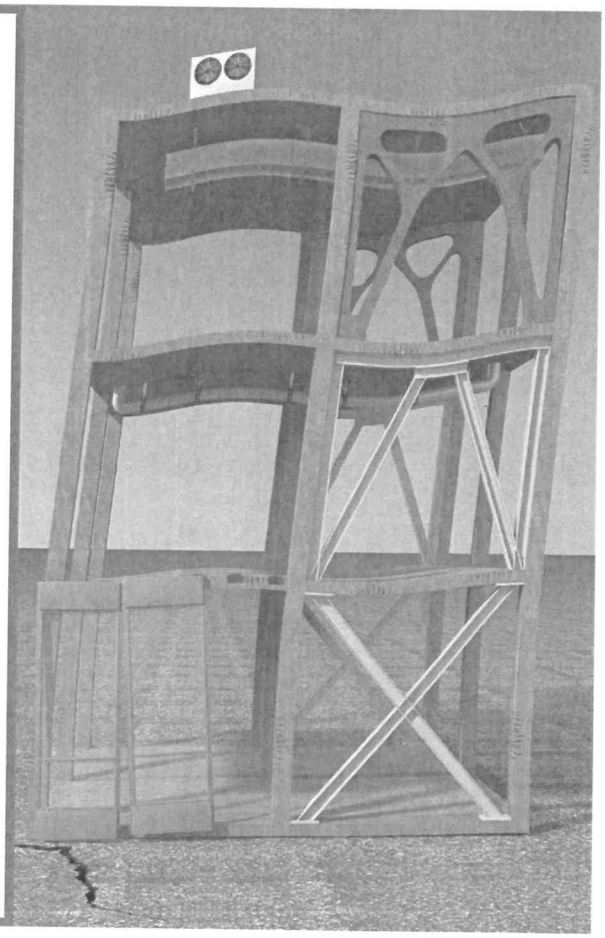
大綱

1. 混凝土結構用錨栓應用範圍
2. 錨栓錨固失敗相關案例
3. 新版規範及開裂混凝土探討
4. 錨栓工程品質管理程序



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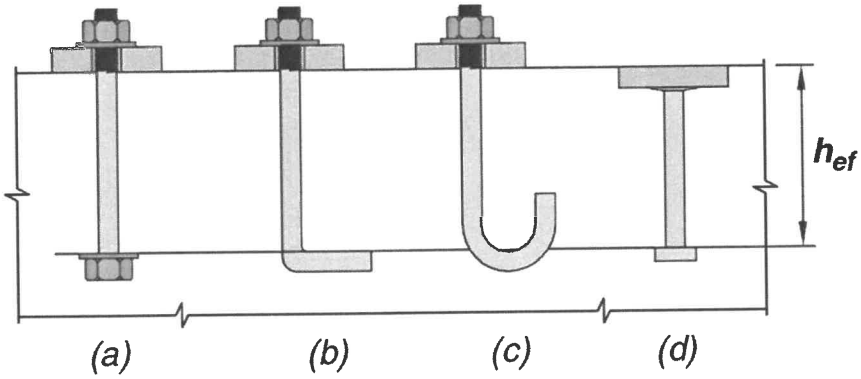
混凝土結構用錨栓的類型(預埋)

fischer innovative solutions

aci American Concrete Institute



a) 含墊圈之六角螺栓
b) L型螺栓
c) J型螺栓
d) 焊接擴頭剪力釘

混凝土結構用錨栓的類型(後置)

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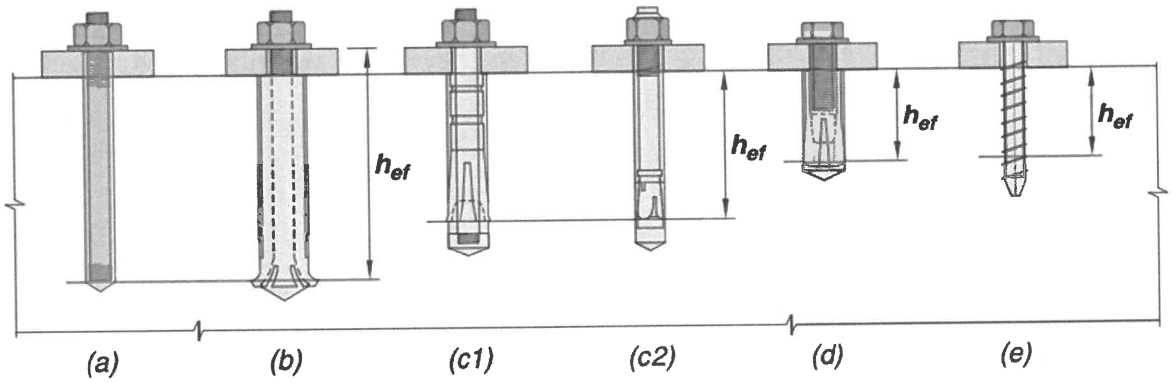

a) 黏結式(化學)錨栓	黏著力
b) 擴底、切底(削切)式錨栓	鎖鍵力，削切混凝土底部使之形同預埋
c) 扭力控制型之膨脹式錨栓	摩擦力，有後續膨脹性
d) 位移控制型之膨脹式錨栓	摩擦力，無後續膨脹性
e) 自攻切底式錨栓	鎖鍵力，削切混凝土孔壁使之形同預埋

混凝土結構用錨栓應用範圍

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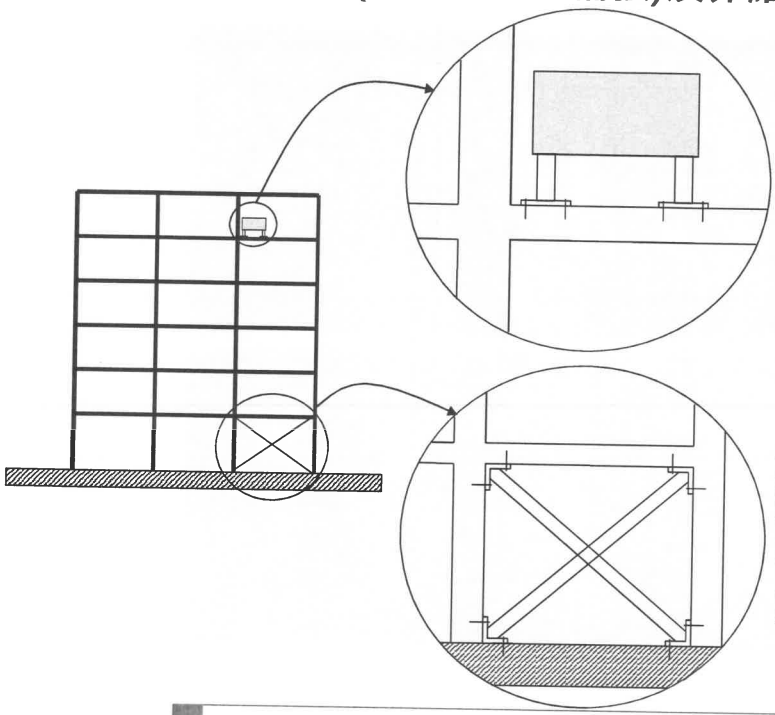
緊固件用於結構性(結構工程、補強)及非結構性(附屬構造)應用



Nonstructural

- Facades
- Suspended ceilings
- Heating & ventilation
- Pipelines
- Mechanical equip.
- Etc.

Structural

- Structural connections
- Strengthening

混凝土結構用錨栓應用範圍

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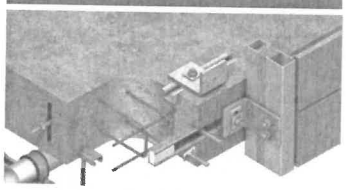
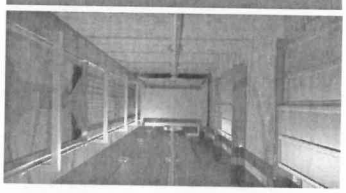
Facade



- Brackets for CW
- Brackets for Balustrade

Elevator



- Guiding rails
- Door support, counter weights

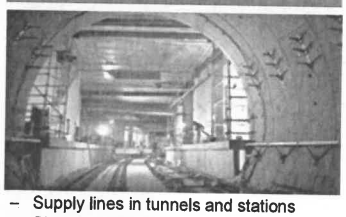
MEP & FF

- Piping
- HVAC
- FireFighting
- Cable trays

Plant and Power Plant

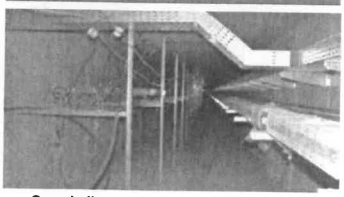
- Machine fixing
- Supply lines

Metro- and Rail



- Supply lines in tunnels and stations
- Signal system fixing
- Evacuation platform/Catwalk fixing

Utility tunnel



- Supply lines
- Cable trays
- Pipe trays

混凝土結構用錨栓應用範圍

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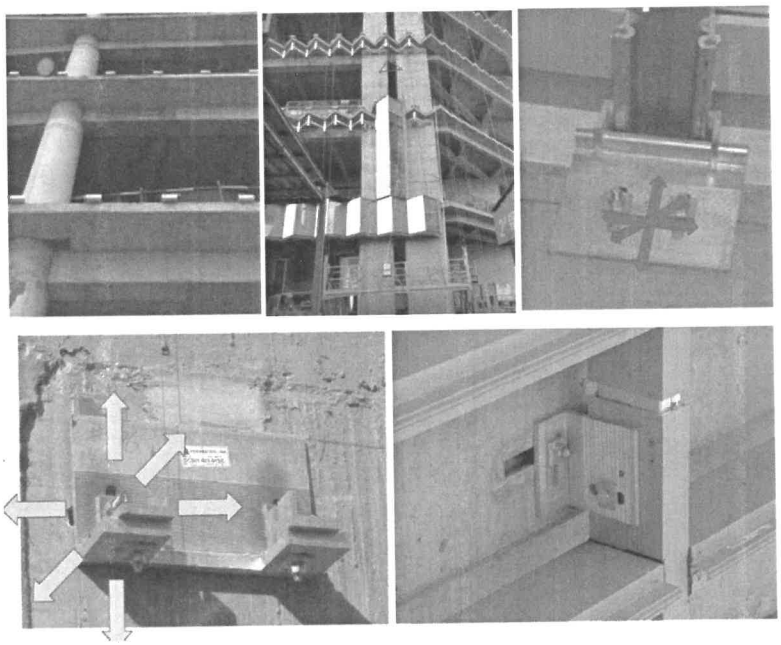
帷幕牆



混凝土結構用錨栓應用範圍

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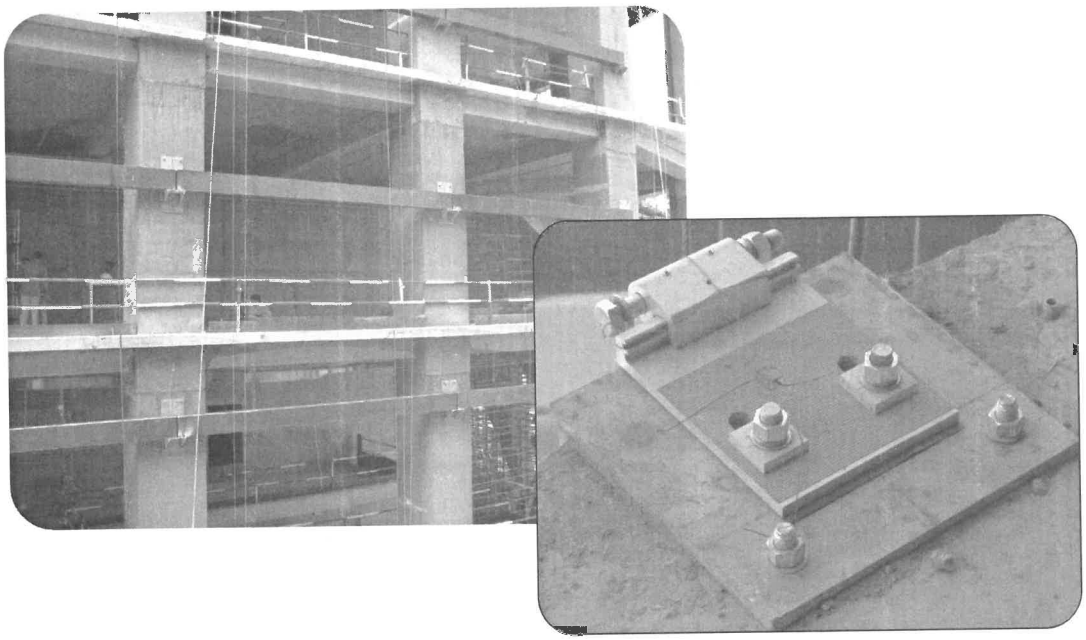

混凝土結構用錨栓應用範圍

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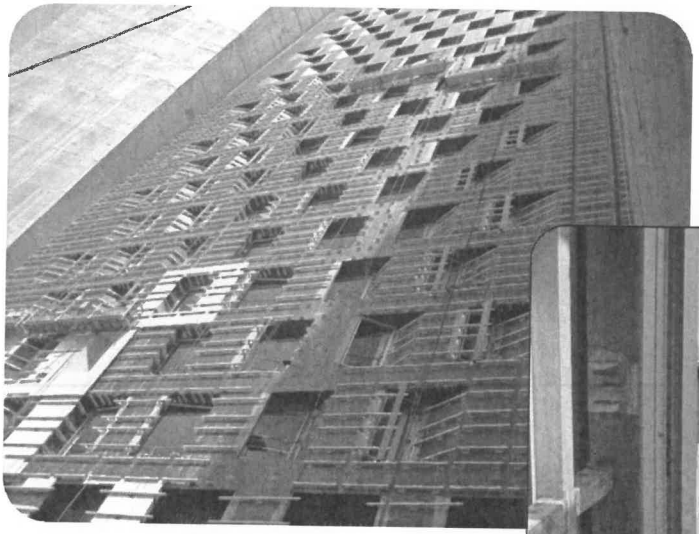
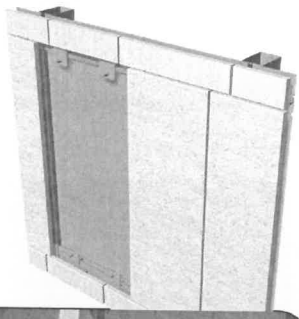
外牆乾掛石材





混凝土結構用錨栓應用範圍

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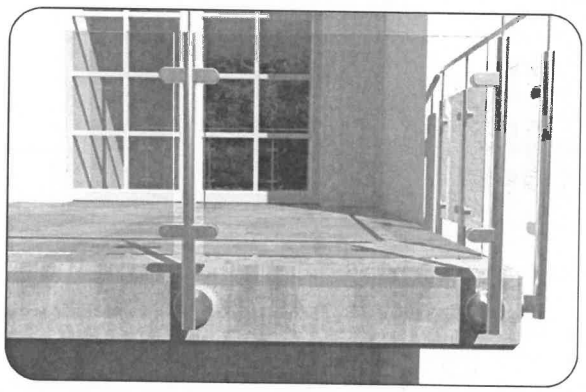
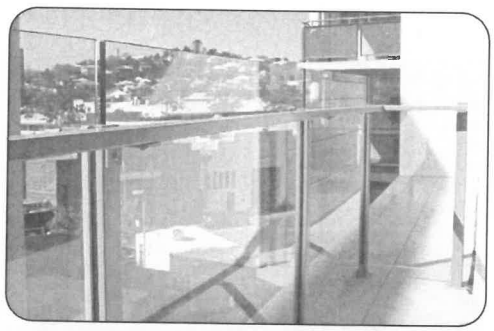
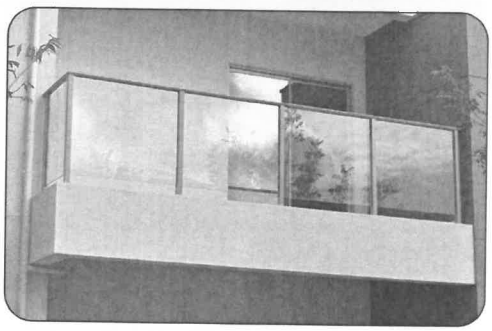
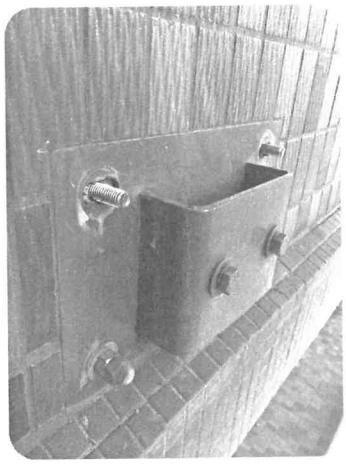
玻璃欄杆







金屬隔柵



混凝土結構用錨栓應用範圍
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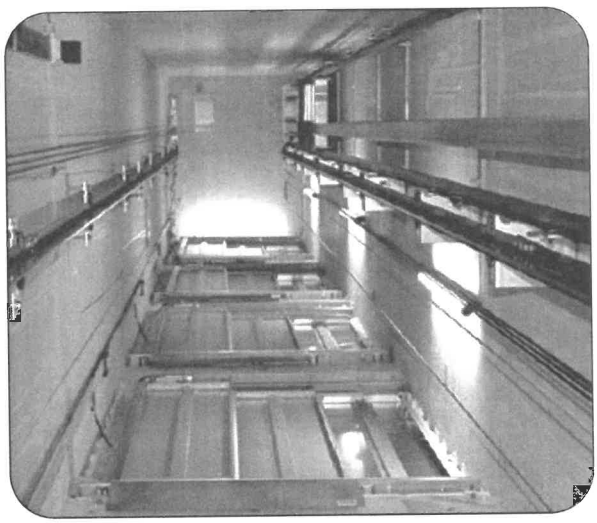
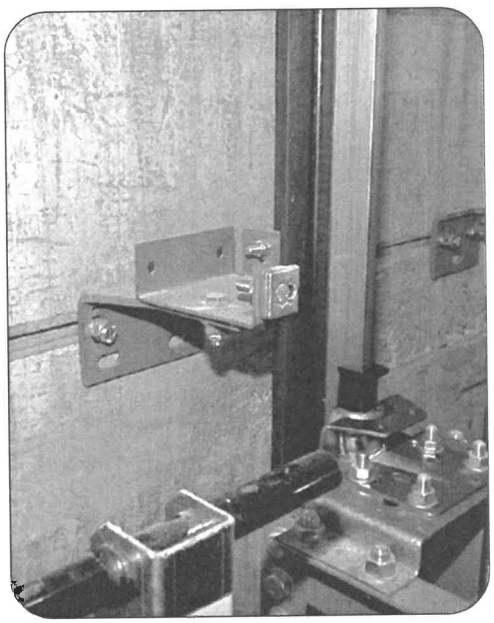
電梯





混凝土結構用錨栓應用範圍

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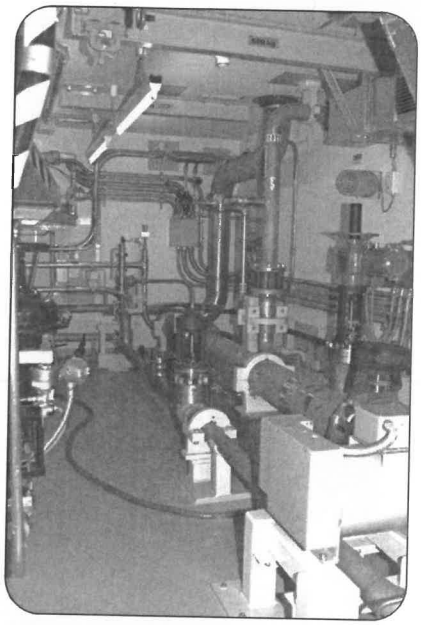
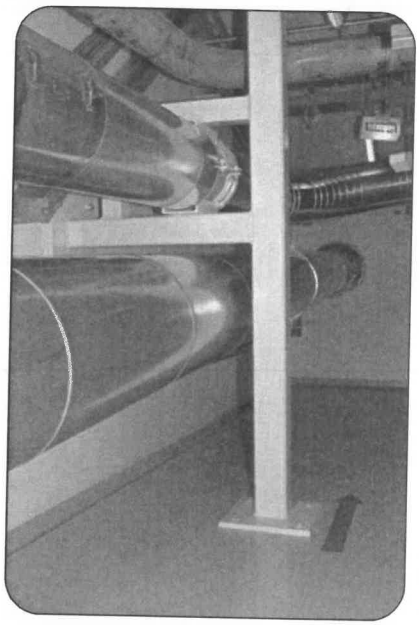
設備支架安裝





混凝土結構用錨栓應用範圍

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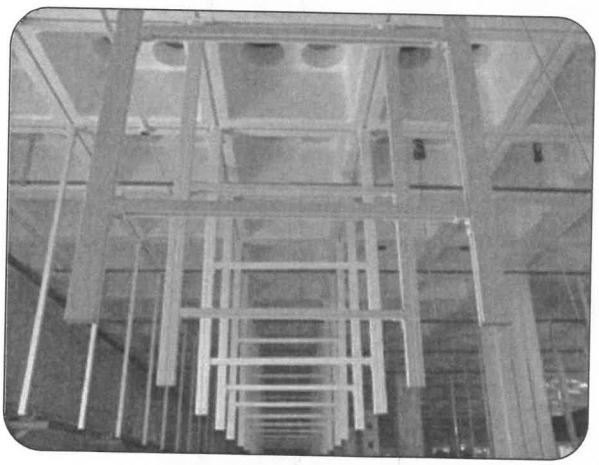
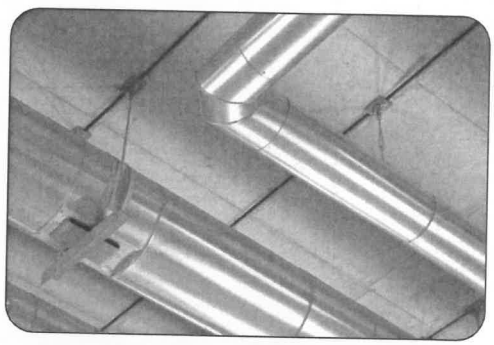
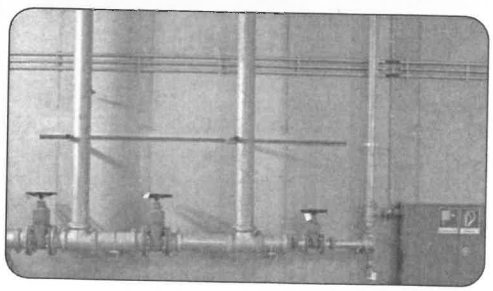
管架系統







混凝土結構用錨栓應用範圍

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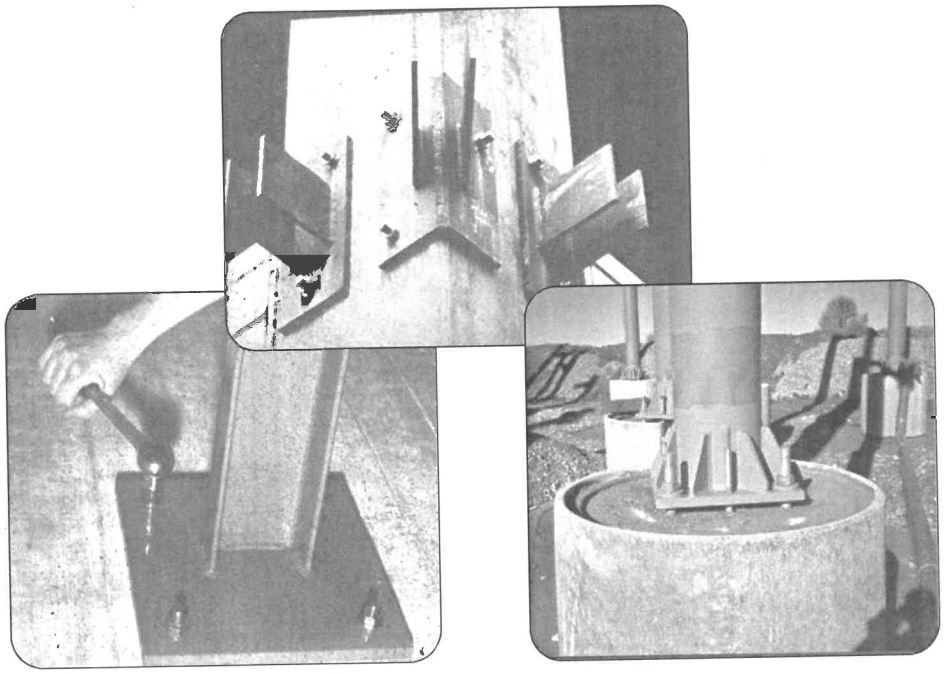
鋼柱、鋼梁至混凝土連接



混凝土結構用錨栓應用範圍

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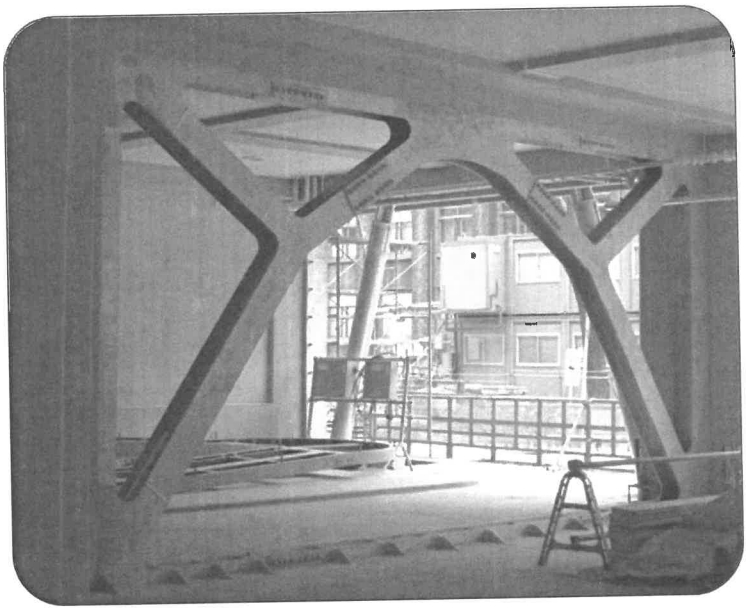
結構補強



混凝土結構用錨栓應用範圍

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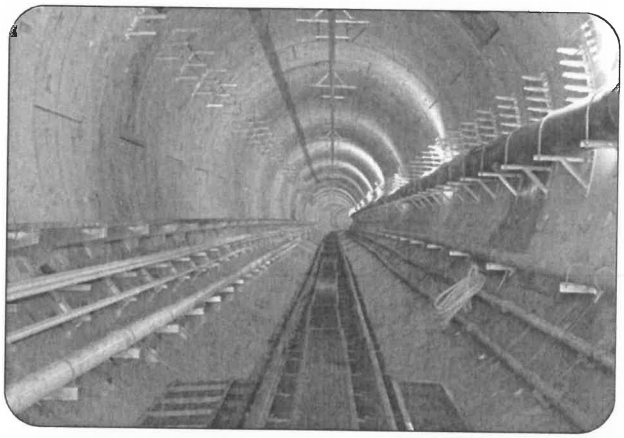
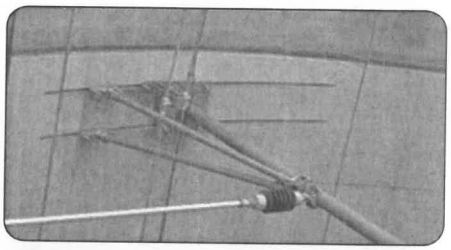
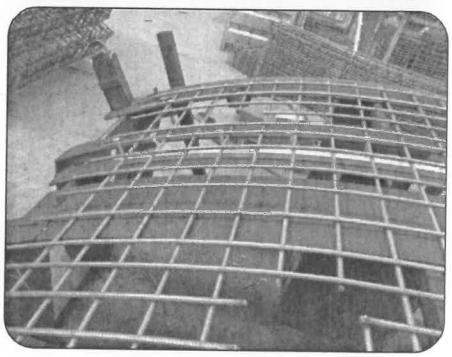
地鐵及隧道







混凝土結構用錨栓應用範圍

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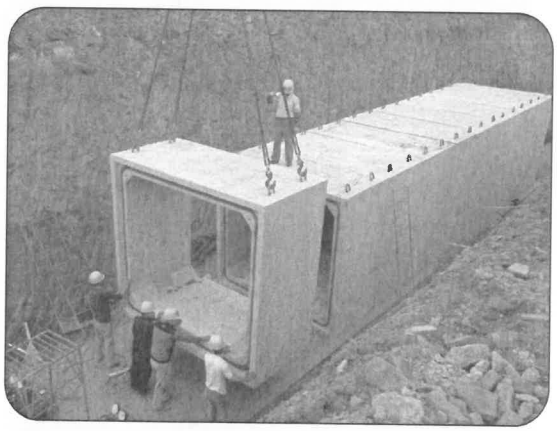
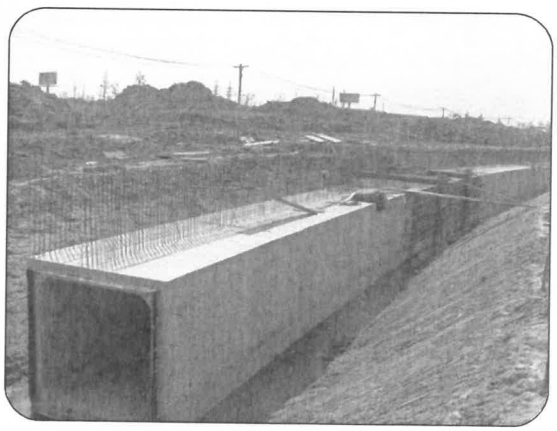
管涵





混凝土結構用錨栓應用範圍

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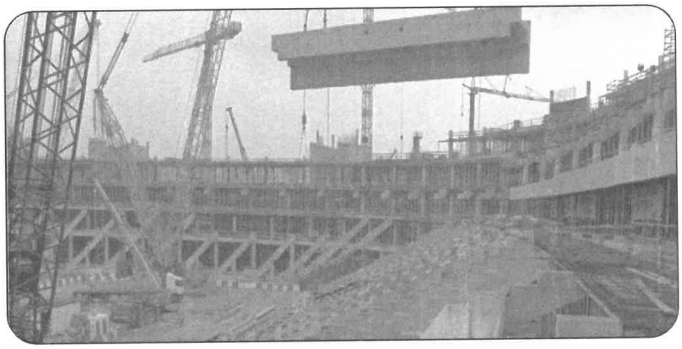
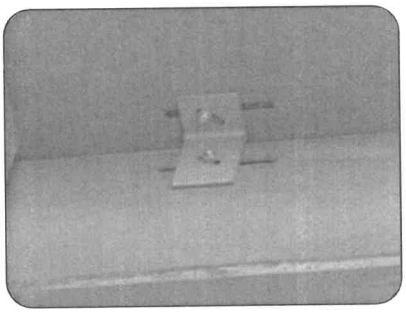
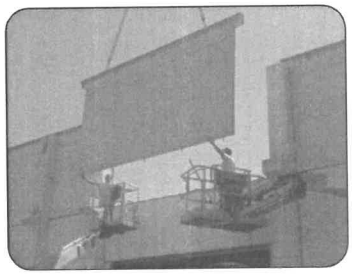
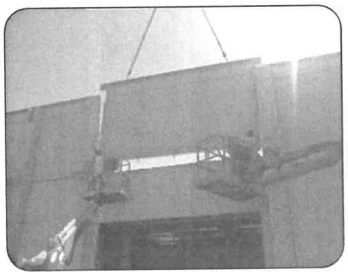
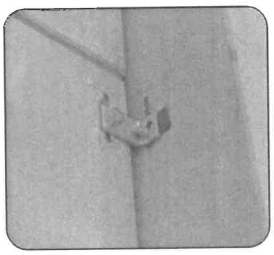
預鑄混凝土

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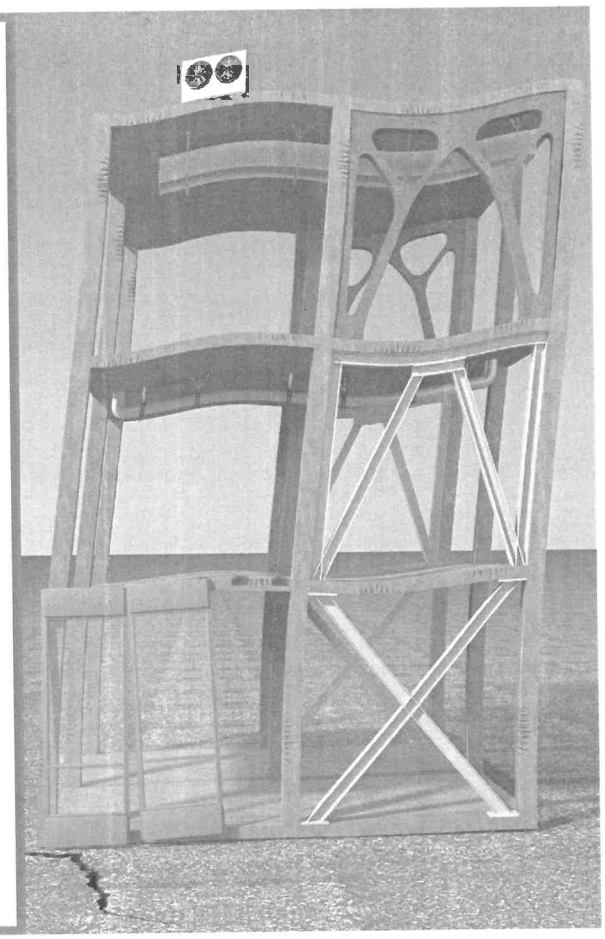

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錨栓錨固失敗案例

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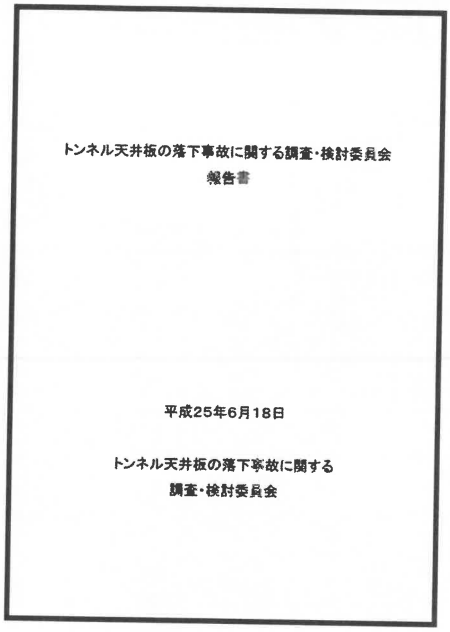
日本山梨縣笹子隧道天花板掉落事件

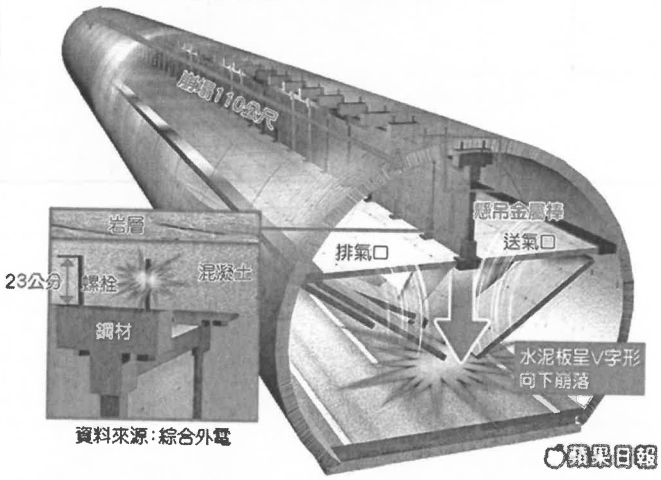

トンネル天井板の落下事故に関する調査・検討委員会
報告書

平成25年6月18日

トンネル天井板の落下事故に関する
調査・検討委員会

國土交通省的最終報告書

1.錨栓化學黏結劑施工攪拌不足以及化學黏結劑老化等其他複雜因素導致事故
2.對於錨栓長期耐久性的知識不足



資料來源：綜合外電

錨栓錨固失敗案例

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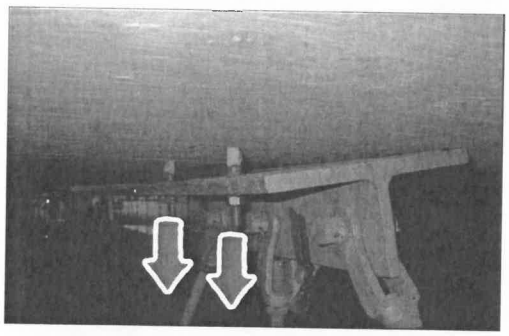
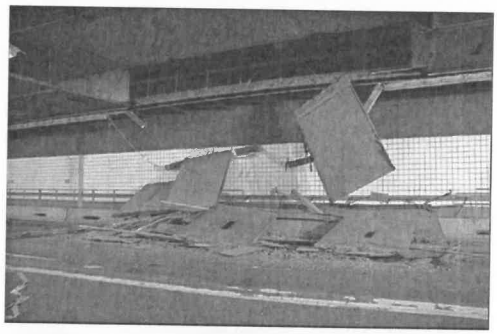
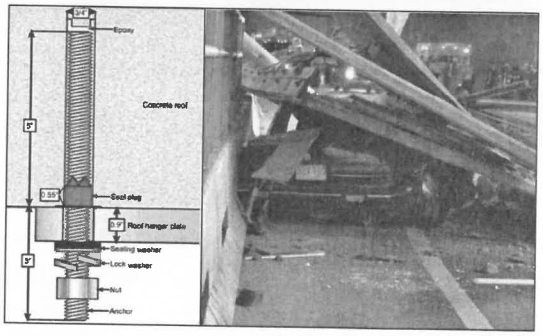
美國波士頓洲際公路九十號連接隧道工程災害事件

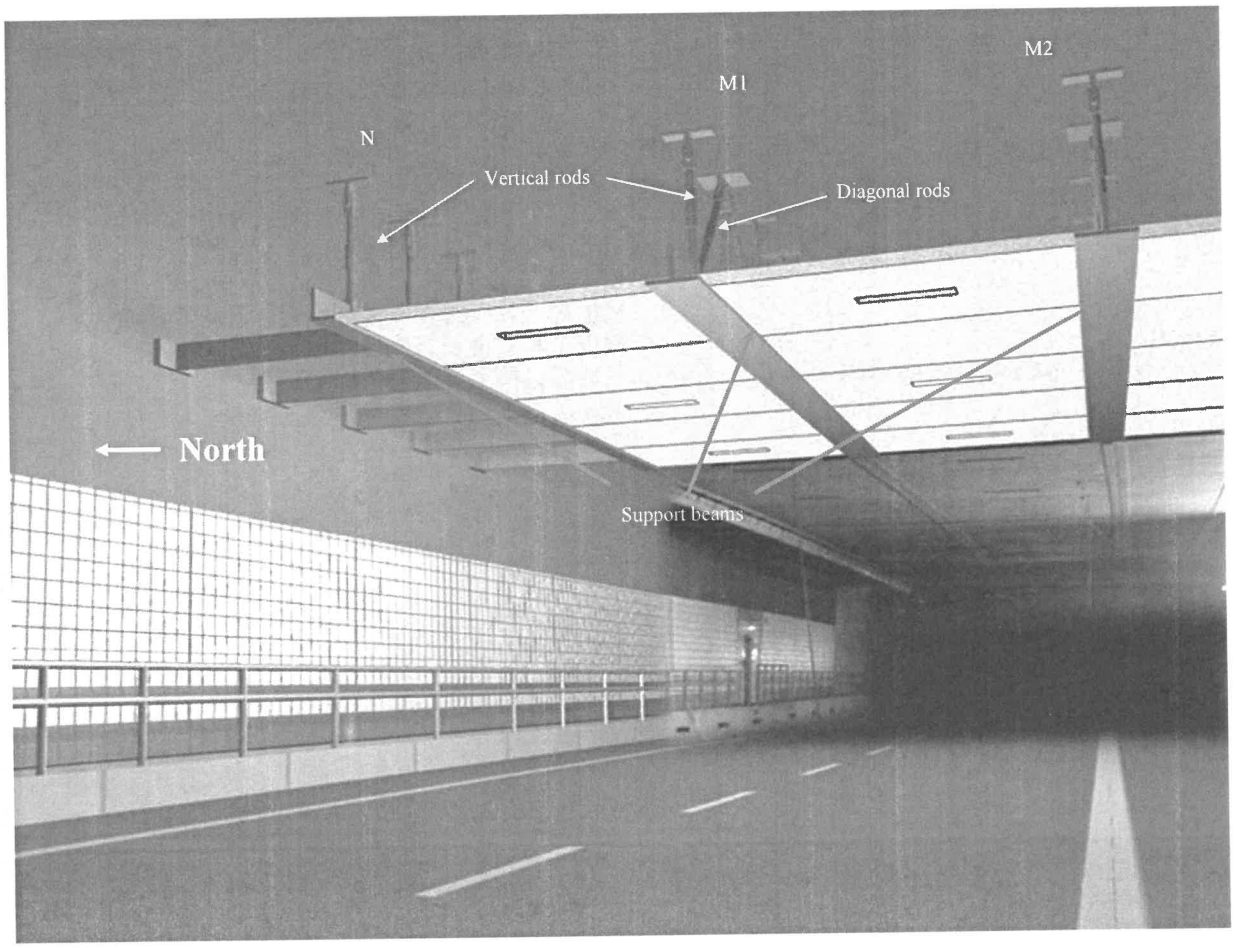


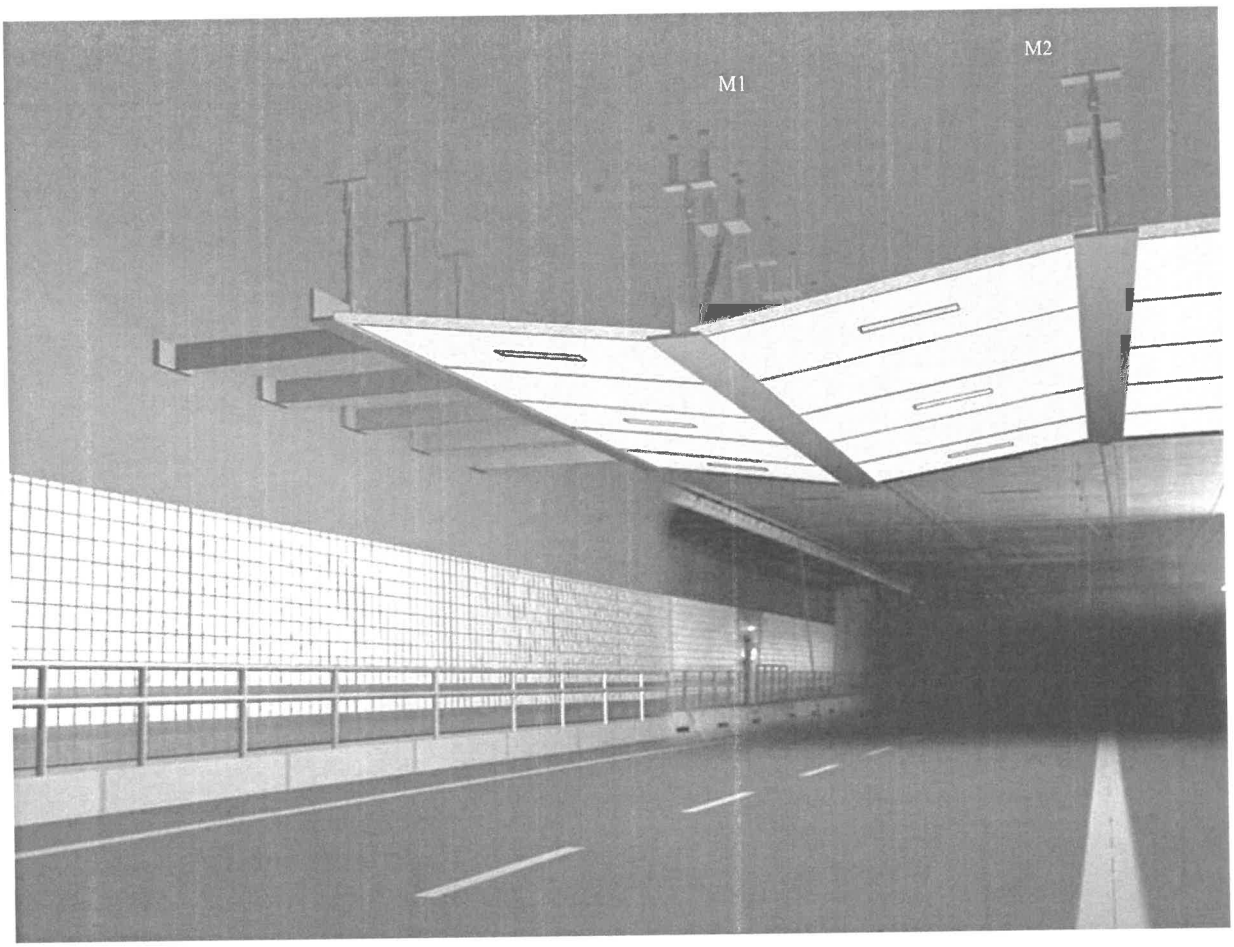


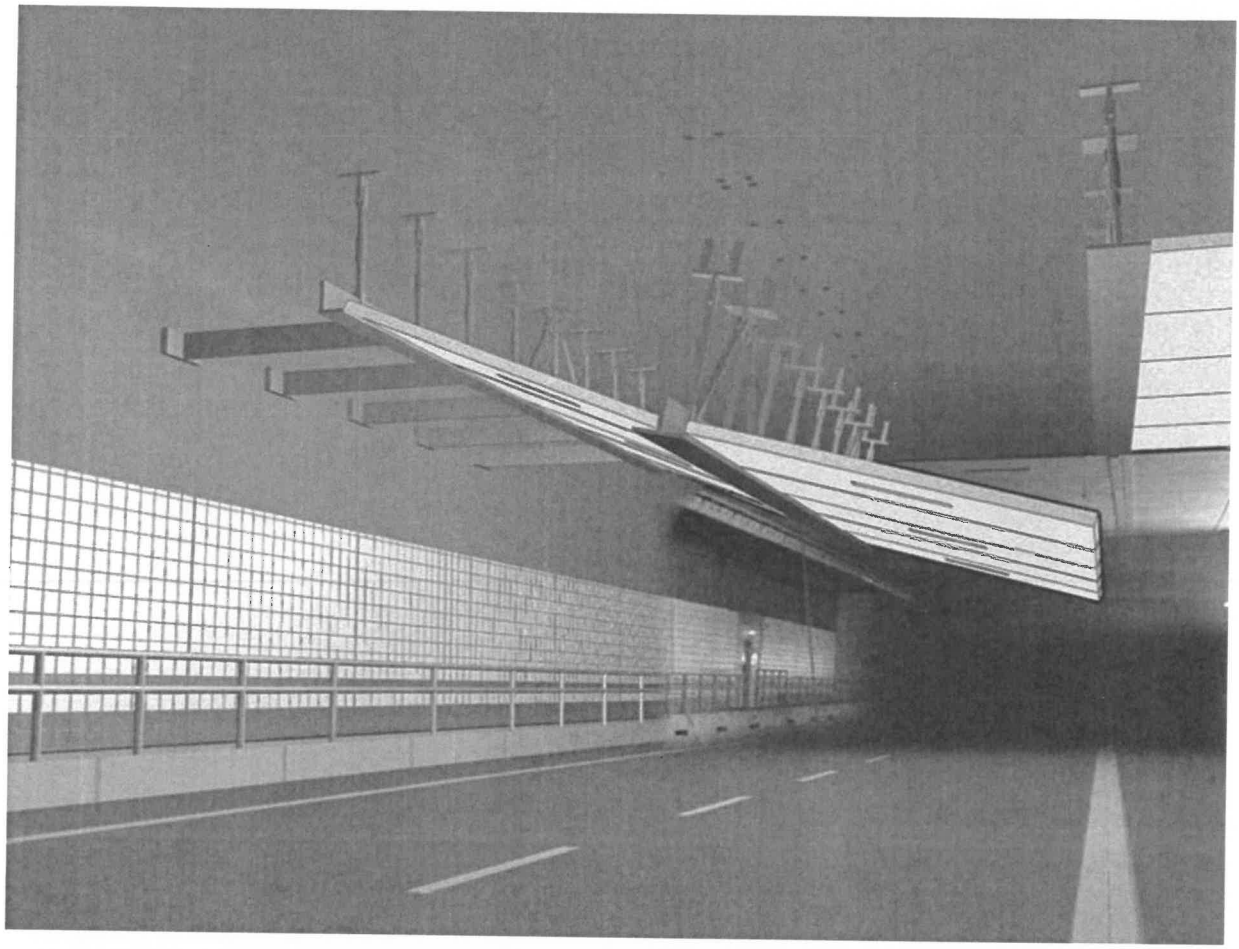
美國國家運輸安全委員會調查報告

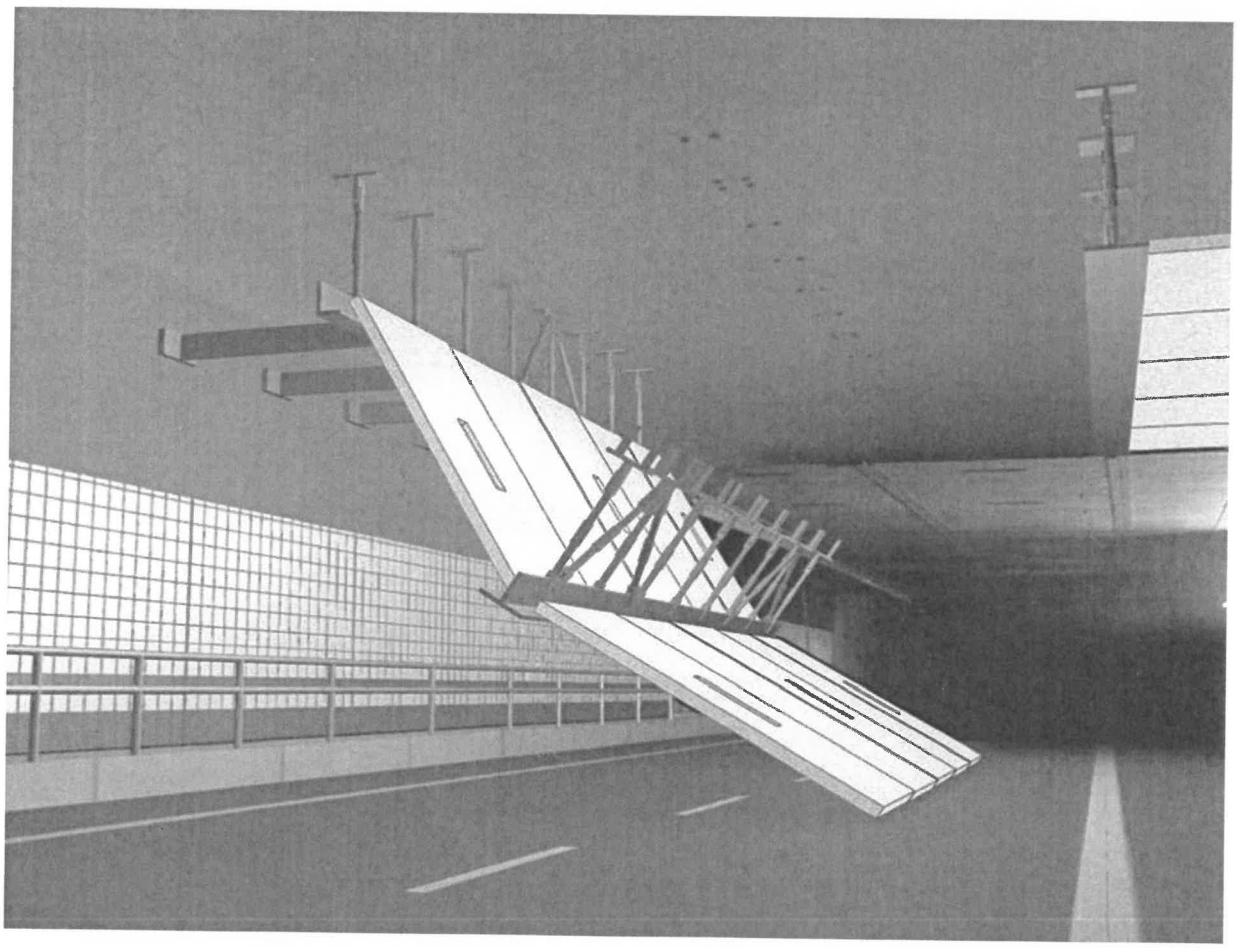
1.藥劑(速凝型黏著劑)在承受長期的拉力時有較大的淺變，因而錨栓產生較大的位移而失去握裹力。
2.藥劑使用錯誤
3.施工方式錯誤
4.未考慮藥劑長期耐久性問題
5.安全局禁止相關化學藥劑之使用




M2
M1
N
Vertical rods
Diagonal rods
North
Support beams


M2
M1





室內游泳池天花板坍塌(12死19傷)-瑞士
天花板固定之錨栓因應力腐蝕及點蝕而失效

錨栓錨固失敗案例
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台灣省土木技師公會 技師報 NO.674 –化錨潛變

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中華民國九十八年十一月七日 星期六
《社論》新聞焦點
台灣省土木技師公會 發行
技師報於85年11月18日土木日創刊
發行人：林永發
社務委員：王國華、黃仲銘、徐泰成、吳朝榮、蔡亞民、陳錦方、張民勝、劉新銅、張鑑峯、陳國強、蔡裕明、鄭明恩、歐良城、高原
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執行編輯：李華華
文字記者：許淑梅
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從「新生高架橋改善工程」談化學植筋黏著劑之「潛變」現象

陳正平技師

摘自[1] 台北市工務局新建工程處「新生高架橋改善及北端引道改建工程主題網」

結論

由「新生高架橋改善工程」化學植筋黏著劑事件的始末，工程界體認到植筋系統發生「潛變」現象的嚴重性。向上植入且承受長期軸向張力之植筋(栓)之設計與施工，除須注意植筋黏著劑之填充可行性外，亦須考慮到長期承受軸向直接張力時，發生潛變拔出之可能性。

摘至台灣省土木技師公會 技師報 NO.674

錨栓錨固失敗案例

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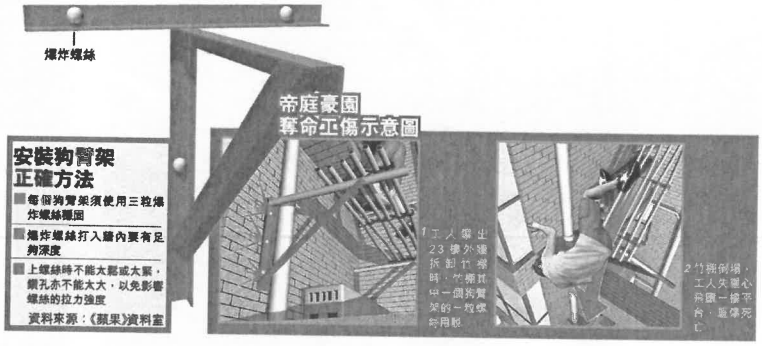
鑽孔錯誤及過度扭緊-香港懸臂施工架

塌狗臂架 勞處調查
一日兩宗奪命工業意外 一粒螺絲累死拆棚工人
2006年8月19日



【本報訊】一顆鬆脫螺絲釀成一宗奪命意外！一名工人昨午在土瓜灣帝庭豪園，拆卸一個位於23樓的外牆竹棚時，懷疑承托竹棚其中一個狗臂架的一粒螺絲鬆脫，導致竹棚無法負荷工人重量倒塌，懸垂半空，工人飛墮地面重傷死亡，勞工處正調查意外原因。

錨栓錨固失敗案例

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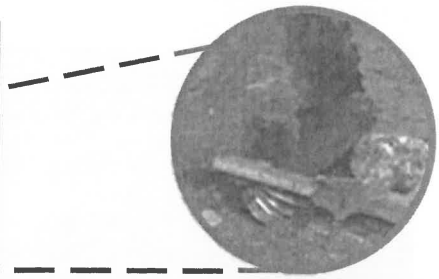
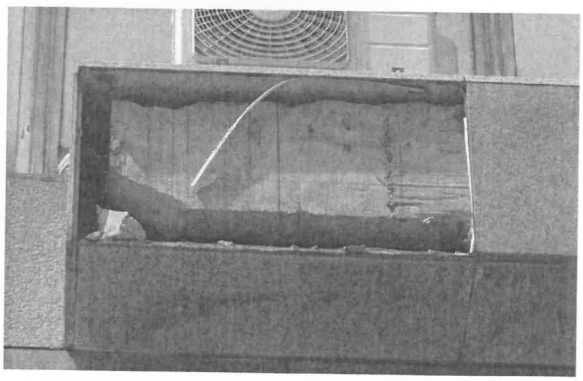
錯誤的類型與材質(內迫錨栓不適用混凝土開裂區且已鏽蝕)





錨栓錨固失敗案例

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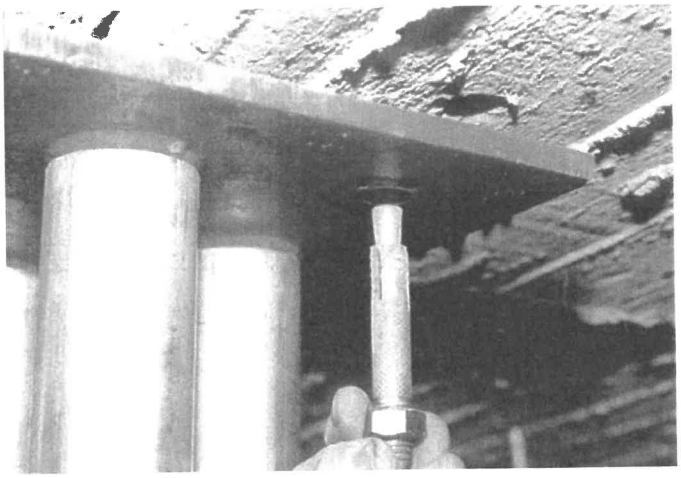
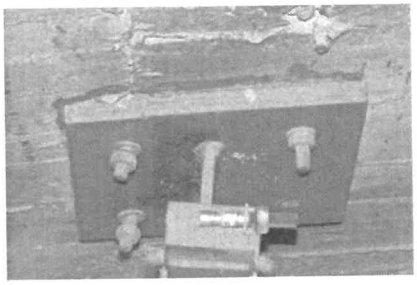
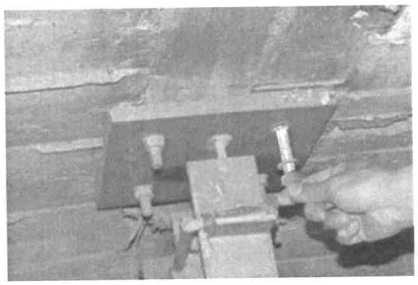
安裝方式不正確(孔洞過大, 未上扭矩)-國家兩廳院



水晶吊燈基座鋼鈑螺栓脫落情形



鋼構支撐錨栓安裝歪斜



鋼構支撐錨栓脫落

錨栓錨固失敗案例

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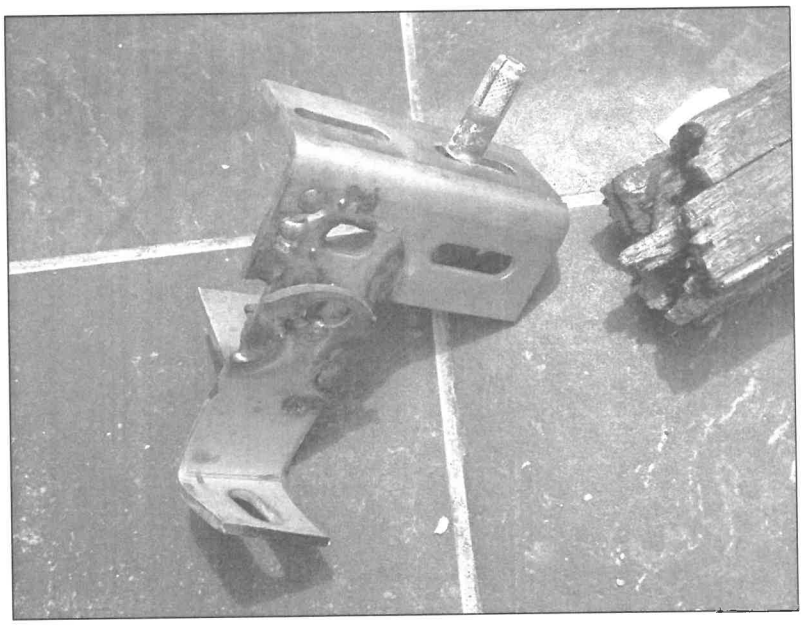
錯誤的安裝與材質(錨栓未張開且已鏽蝕)-台北市北投區



錨栓錨固失敗案例

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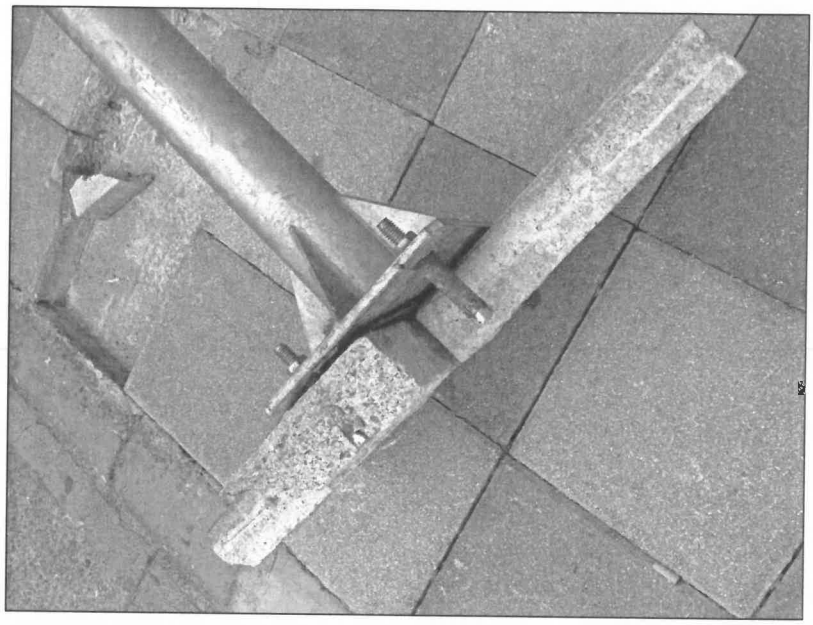
固定於錯誤的基材、埋深過淺及鏽蝕-北市路燈



錨栓錨固失敗案例

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洗窗機墩座固定失效-桃園

錨栓錨固失敗案例

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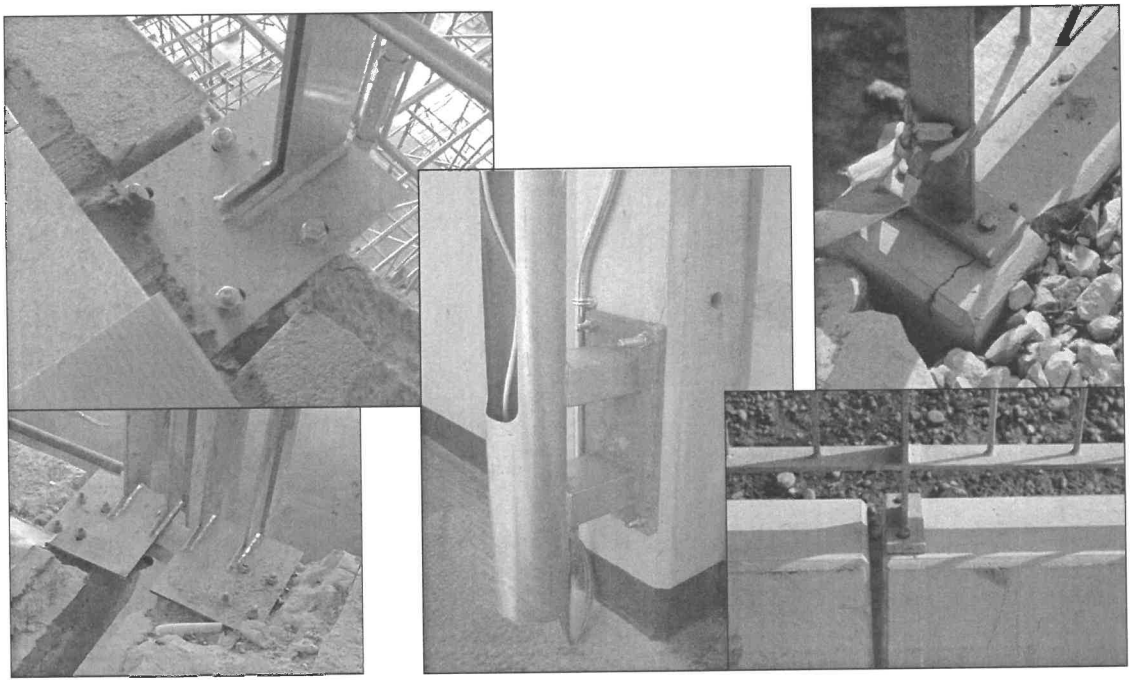
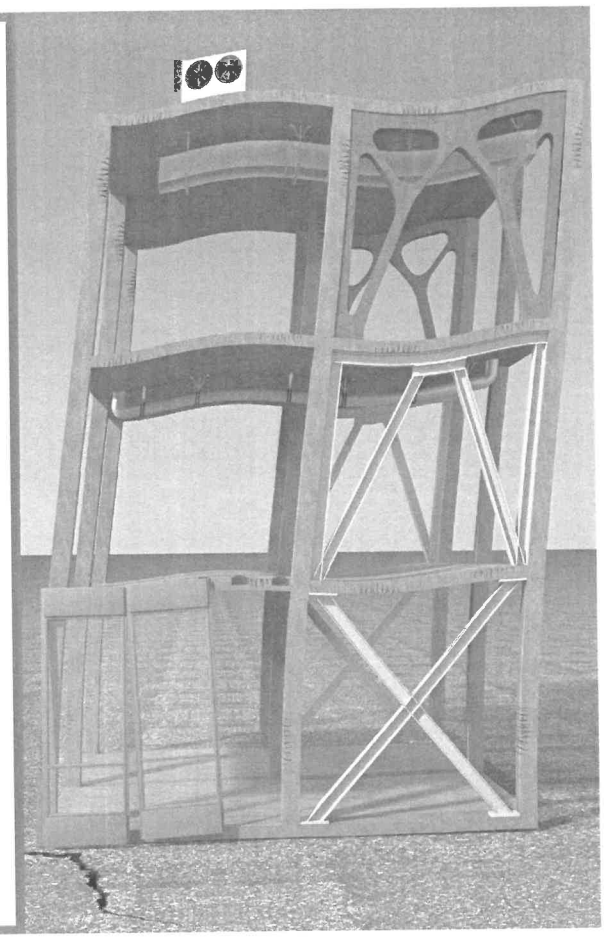
邊距過小導致混凝土邊緣破壞



大綱

1. 混凝土結構用錨栓應用範圍
2. 錨栓錨固失敗相關案例
3. 新版規範及開裂混凝土探討
4. 錨栓工程品質管理程序



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內政部令：修正「混凝土結構設計規範」為「建築物混凝土結構設計規範」，並修正全文。(113年1月1日起生效)

行政院公報　　第029卷　第149期　20230810　內政篇

內政部令　　中華民國112年8月10日
台內營字第1120809921號

修正「混凝土結構設計規範」，名稱並修正為「建築物混凝土結構設計規範」，並自中華民國一百十三年一月一日生效。

附修正「建築物混凝土結構設計規範」

部　長　林右昌

法規

內政部 函

地址：10484臺北市松山區八德路2段312號(營建署)
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受文者：中華民國全國建築師公會

發文日期：中華民國112年8月10日
發文字號：台內營字第1120809921號
速別：普通件
密等及解密條件或保密期限：
附件：

主旨：修正「混凝土結構設計規範」，名稱並修正為「建築物混凝土結構設計規範」，業經本部於112年8月10日以台內營字第1120809921號令修正發布，如需修正發布規定，請至行政院公報資訊網（網址https://gazette.nat.gov.tw/egFront）下載，請查照並轉知所屬。

說明：本部法規委員會、建築研究所、營建署(建築管理組)電話：[illegible]

第：第·頁1頁

相關法規變更期程整理

混凝土結構設計規範

單位	發布日期	內容	相關說明
內政部營建署	100.6.9	修正「結構混凝土設計規範」為「混凝土結構設計規範」，並修正全文	增加「附篇D 混凝土結構用錨栓」規範。
內政部營建署	106.5.31	修正部分規定	
內政部營建署	108.2.25	修正第1.3.8點規定	“得” 改 “應”
內政部營建署	110.3.2	修正附篇D第D.2點規定，自即日生效	增加可參考符合歐洲技術評估組織之相關規定
內政部營建署	112.8.10	修正「混凝土結構設計規範」為「建築物混凝土結構設計規範」，並修正全文	原附篇D混凝土結構用錨栓調整至正篇第十七章，並修正內容，混凝土結構用錨栓皆須考慮開裂混凝土計算

新建建築物外牆飾材施工管理制度

單位	生效日期	內容	相關說明
台北市都發局	105.7.1	本案符合建築物外牆錨栓混凝土結構設計規範修正規定1.3.8及 1.3.9 相關規範。	後置式錨栓和預埋式錨栓，依據ACI355.2之規定設置。外牆未能符合開裂混凝土 之使用限制時，僅可使用於未開裂混凝土之區域。
新北市工務局	109.1.1		

土木401-112與新版國家「建築物混凝土結構設計規範」內容一致，係以美國ACI318-19規範為基礎。

17.6.2.5 解說：

後置式錨栓未符合機械式錨栓評估準則或黏結式錨栓評估準則在開裂混凝土之使用要求時，宜使用於未開裂混凝土之範圍。決定開裂形成之分析宜包含束制收縮之效應 (參見第24.4.2節)。機械式錨栓評估準則或黏結式錨栓評估準則檢核錨栓適用性係要求錨栓在開裂混凝土區當裂縫寬度為0.03 cm時仍表現良好。當混凝土開裂比預期較大時，宜提供圍束鋼筋以控制裂縫寬度約為0.03 cm。更多的資料可參考ACI 224R。

17.10.3 解說：

不適用於開裂混凝土之錨栓不可用於抵抗地震載重。使用於開裂混凝土之後置式錨栓之品質控制，是機械式錨栓評估準則和黏結式錨栓評估準則中，抵抗地震載重品質控制中不可或缺的一部分。機械式錨栓評估準則和黏結式錨栓評估準則中，由模擬地震試驗獲得之設計值可預期小於使用靜力載重之值。

17.10.5.4 解說：

錨栓標稱拉力強度之折減與混凝土破壞模式相關，其係考量在地震力作用下混凝土所增加之開裂和剝落。因為耐震設計係假設結構體全部或部分已受力降伏，故於決定錨栓強度時，一般將混凝土視為已全部開裂。當某區域之混凝土可顯示並未開裂，則可假設未開裂混凝土之破壞模式以決定錨栓之強度。

社團法人中國土木水利工程學會
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混凝土開裂的因素

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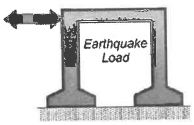
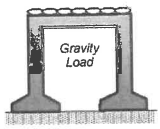
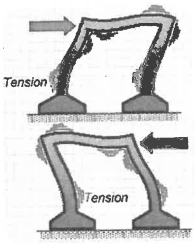
地震載重 | 靜載重

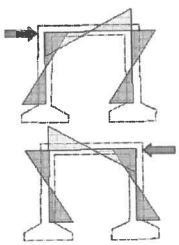


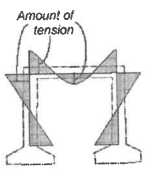


地震載重作用情況下，混凝土構建幾乎到處都會開裂。



靜載重作用情況下，僅張力區會發生裂縫。





混凝土裂縫寬度與循環

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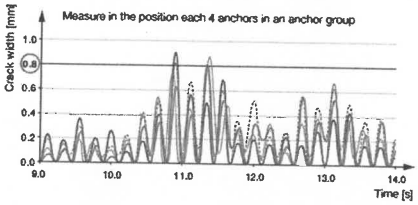
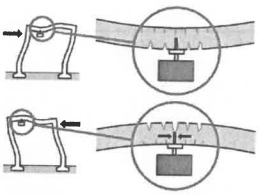
地震載重

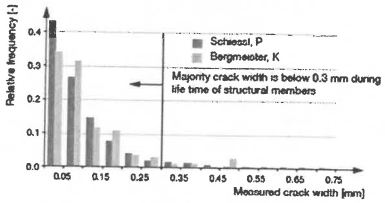


地震載重作用情況下，裂縫寬度可達0.8mm

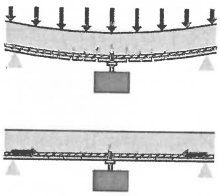


明顯的裂縫開合現象，錨栓傾向在裂縫開合循環過程中滑出

靜載重



使用條件設計限制裂縫寬度0.3mm



裂縫隨著載重變化而開合，錨栓不會滑出

地震測試對錨固性能的影響

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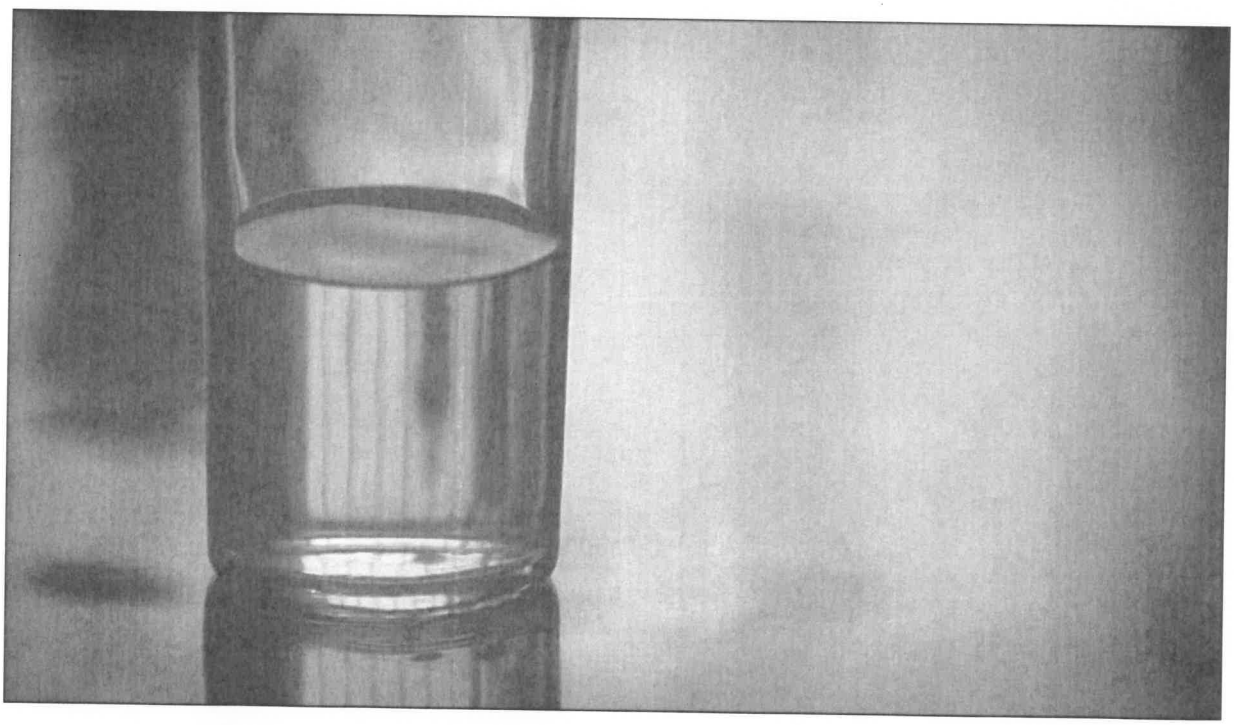

地震作用下錨栓的抗震行為

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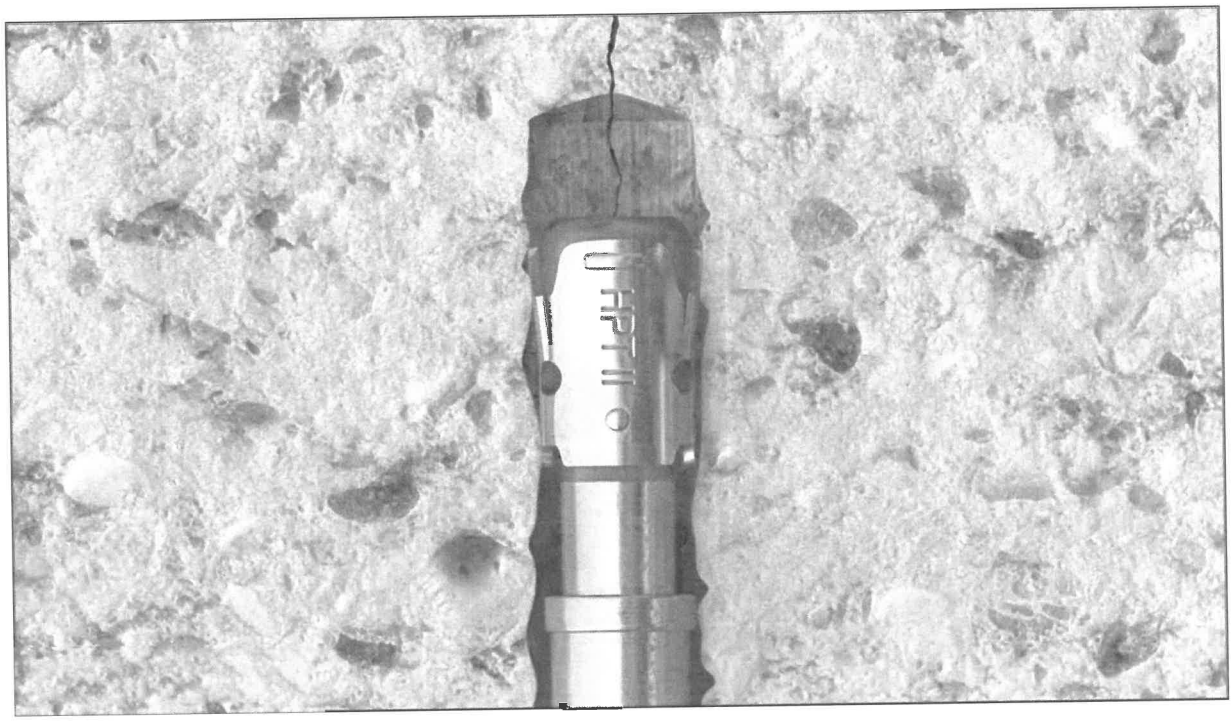

裂縫循環及地震測試

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安裝影片(抗震拉脹錨栓)

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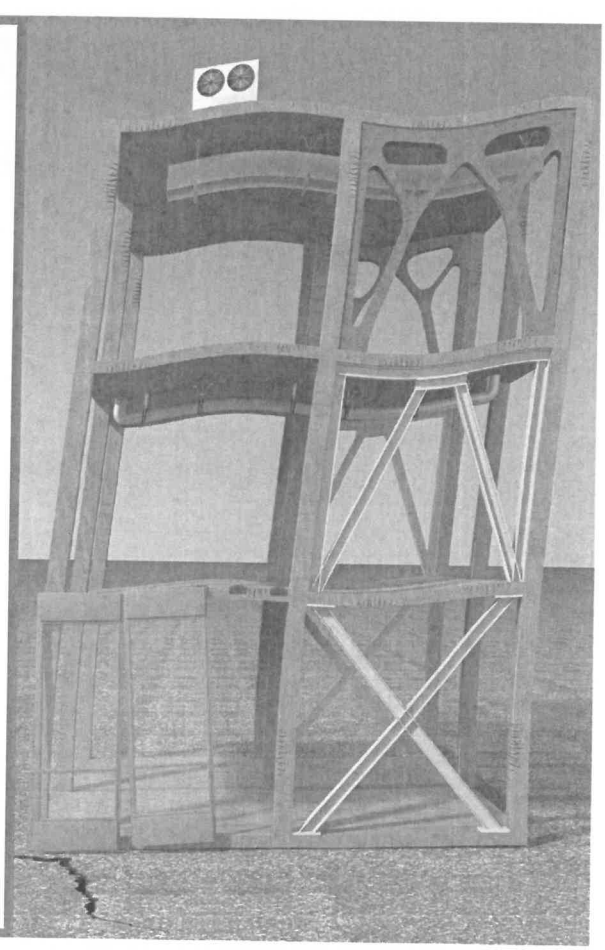
1. 混凝土結構用錨栓應用範圍
2. 錨栓錨固失敗相關案例
3. 新版規範及開裂混凝土探討
4. 錨栓工程品質管理程序



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後置混凝土錨栓品質試驗方法

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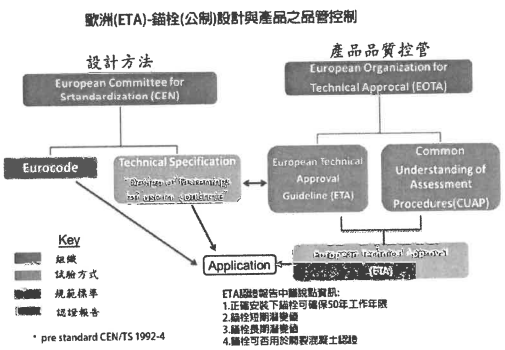
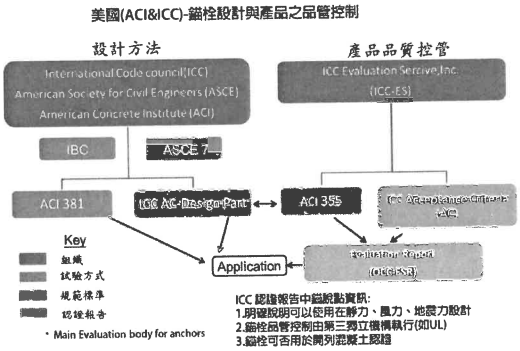
囿於國內CNS或相關學會尚無類似機械式錨栓評估準則和黏結式錨栓評估準則，為管理本章之混凝土結構用錨栓相關品質試驗方法和試驗成果合格標準，建議參考美國混凝土學會 (American Concrete Institute, ACI)之ACI 355.2 (Qualification of Post-Installed Mechanical Anchors in Concrete) 規定有關混凝土後置機械式錨栓品質管理之評估準則，和ACI 355.4 (Qualification of Post-Installed Adhesive Anchors in Concrete and Commentary) 規定有關混凝土後置黏結式錨栓品質管理之評估準則相關規定。另，歐洲技術評估組織 (European Organisation for Technical Assessment, EOTA) 之 (European Assessment Document, EAD) EAD-330232-00-0601 (Mechanical fasteners for use in concrete) 規定有關混凝土後置機械式錨栓品質管理之評估準則，和EAD-330499-00-0601 (Bonded fasteners for use in concrete) 規定有關混凝土後置黏結式錨栓品質管理之評估準則相關規定亦為本規範之建議參考評估準則。引用EOTA發表之評估準則時，建議評核其合格標準與ACI發表之評估準則具有等值性。





歐美錨栓設計與品質品質控制

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EOTA(ETA認證)與ACI(ICC認證)

EOTA European Organisation for Technical Assessment

CE
ETA-05/0069
ETAG 001
Option 1 for cracked concrete
seismic performance category C1, C2

ETA認證報告中錨栓特點資訊:

1.正確安裝下錨栓可確保50年工作年限
2.錨栓短期潛變值
3.錨栓長期潛變值
4.錨栓可否用於開裂混凝土認證
5.安裝資訊詳細記載

aci American Concrete Institute

INTERNATIONAL CODE COUNCIL ICC ES ICC EVALUATION SERVICE

ICC認證報告中錨栓特點資訊:

1.明確說明可以使用在靜力、風力、地震力設計
2.錨栓品管控制由第三獨立機構執行(如UL)
3.錨栓可否用於開裂混凝土認證
4.安裝資訊詳細記載

金屬錨栓產品識別

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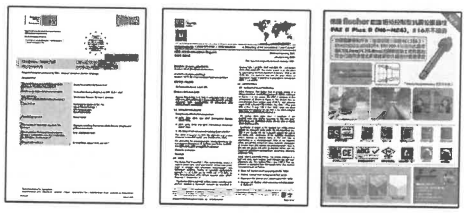
- 文件
  -原廠技術認證、材質證明、銷售證明、認證報告



- 盒裝
  -產品名稱、型號、尺寸、安裝方法

- 錨栓本體
  -端部標記、錨栓印記

FAZ II 10/10 K R

允收標準(美)

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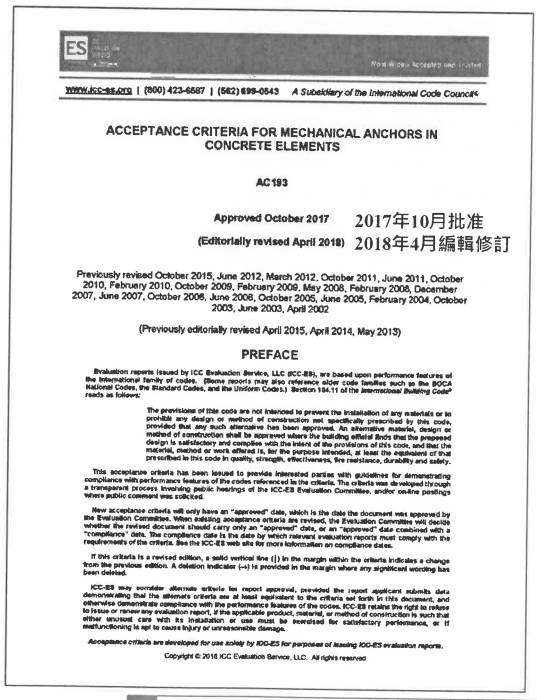
ICC AC193-後置式混凝土機械錨栓測試允收標準

INTERNATIONAL CODE COUNCIL ICC ES ICC EVALUATION SERVICE



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ACCEPTANCE CRITERIA FOR MECHANICAL ANCHORS IN CONCRETE ELEMENTS

AC193

Approved October 2017 2017年10月批准

(Editorially revised April 2018) 2018年4月編輯修訂

Previously revised October 2015, June 2012, March 2012, October 2011, June 2011, October 2010, February 2010, October 2009, February 2009, May 2008, February 2008, December 2007, June 2007, October 2006, June 2006, October 2005, June 2005, February 2004, October 2003, June 2003, April 2002

(Previously editorially revised April 2015, April 2014, May 2013)

PREFACE

Evaluation reports issued by ICC Evaluation Service, LLC (ICC-ES), are based upon performance features of the International family of codes. (Some reports may also reference older code families such as the BOCA National Codes, the Standard Codes, and the Uniform Codes.) Section 104.11 of the *International Building Code®* reads as follows:

> The provisions of this code are not intended to prevent the installation of any materials or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

This acceptance criteria has been issued to provide interested parties with guidelines for demonstrating compliance with performance features of the codes referenced in the criteria. The criteria was developed through a transparent process involving public hearings of the ICC-ES Evaluation Committee, and/or on-line postings where public comment was solicited.

New acceptance criteria will only have an "approved" date, which is the date the document was approved by the Evaluation Committee. When existing acceptance criteria are revised, the Evaluation Committee will decide whether the revised document should carry only an "approved" date, or an "approved" date combined with a "compliance" date. The compliance date is the date by which relevant evaluation reports must comply with the requirements of the criteria. See the ICC-ES web site for more information on compliance dates.

If this criteria is a revised edition, a solid vertical line (|) in the margin within the criteria indicates a change from the previous edition. A deletion indicator (–) is provided in the margin where any significant wording has been deleted.

ICC-ES may consider alternate criteria for report approval, provided the report applicant submits data demonstrating that the alternate criteria are at least equivalent to the criteria set forth in this document, and otherwise demonstrate compliance with the performance features of the codes. ICC-ES retains the right to refuse to issue or renew any evaluation report, if the applicable product, material, or method of construction is such that either unusual care with its installation or use must be exercised for satisfactory performance, or if malfunctioning is apt to cause injury or unreasonable damage.

Acceptance criteria are developed for use solely by ICC-ES for purposes of issuing ICC-ES evaluation reports.

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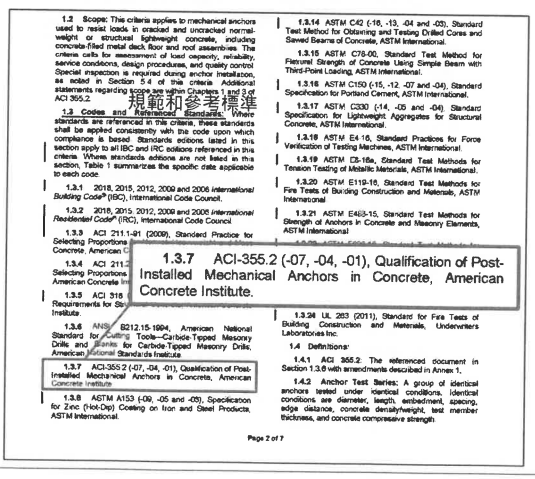
範圍：此標準的目的乃依據國際建築規範(IBC)，以及國際住宅規範(IRC)對混凝土與磚石裡的機械錨栓規定下，設立ICC評估服務公司評估報告的要求。在此標準下所認定的錨栓需受限於極限應力設計的應用於開裂或未開裂混凝土。



1.2 Scope: This criteria applies to mechanical anchors used to resist loads in cracked and uncracked normal-weight or structural lightweight concrete, including concrete-filled metal deck floor and roof assemblies. The criteria calls for assessment of load capacity, reliability, service conditions, design procedures, and quality control. Special inspection is required during anchor installation, as noted in Section 5.4 of this criteria. Additional statements regarding scope are within Chapters 1 and 3 of AC 355.2.

1.3 Codes and Referenced Standards: Where standards are referenced in this criteria, these standards shall be applied consistently with the code upon which compliance is based. Standards editions listed in this section apply to all IBC and IRC editions referenced in this criteria. Where standards editions are not listed in this section, Table 1 summarizes the specific date applicable to each code.

規範和參考標準

1.3.1 2018, 2015, 2012, 2009 and 2006 *International Building Code®* (IBC), International Code Council.

1.3.2 2018, 2015, 2012, 2009 and 2006 *International Residential Code®* (IRC), International Code Council.

1.3.3 ACI 211.1-91 (2009), Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete, American Concrete Institute.

1.3.4 ACI 211.2 Selecting Proportions American Concrete Institute.

1.3.5 ACI 318 Requirements for Structural Concrete, American Concrete Institute.

1.3.6 ANSI B212.15-1994, American National Standard for Cutting Tools—Carbide-Tipped Masonry Drills and Blanks for Carbide-Tipped Masonry Drills, American National Standards Institute.

1.3.7 ACI-355.2 (-07, -04, -01), Qualification of Post-Installed Mechanical Anchors in Concrete, American Concrete Institute.

1.3.8 ASTM A153 (-09, -05 and -03), Specification for Zinc (Hot-Dip) Coating on Iron and Steel Products, ASTM International.

1.3.14 ASTM C42 (-16, -13, -04 and -03), Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete, ASTM International.

1.3.15 ASTM C78-00, Standard Test Method for Flexural Strength of Concrete Using Simple Beam with Third-Point Loading, ASTM International.

1.3.16 ASTM C150 (-15, -12 -07 and -04), Standard Specification for Portland Cement, ASTM International.

1.3.17 ASTM C330 (-14, -05 and -04), Standard Specification for Lightweight Aggregates for Structural Concrete, ASTM International.

1.3.18 ASTM E4-16, Standard Practices for Force Verification of Testing Machines, ASTM International.

1.3.19 ASTM E8-16a, Standard Test Methods for Tension Testing of Metallic Materials, ASTM International.

1.3.20 ASTM E119-16, Standard Test Methods for Fire Tests of Building Construction and Materials, ASTM International.

1.3.21 ASTM E488-15, Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements, ASTM International.

1.3.24 UL 263 (2011), Standard for Fire Tests of Building Construction and Materials, Underwriters Laboratories Inc.

1.4 Definitions:

1.4.1 ACI 355.2: The referenced document in Section 1.3.6 with amendments described in Annex 1.

1.4.2 Anchor Test Series: A group of identical anchors tested under identical conditions. Identical conditions are diameter, length, embedment, spacing, edge distance, concrete density/weight, test member thickness, and concrete compressive strength.

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試驗合格證明

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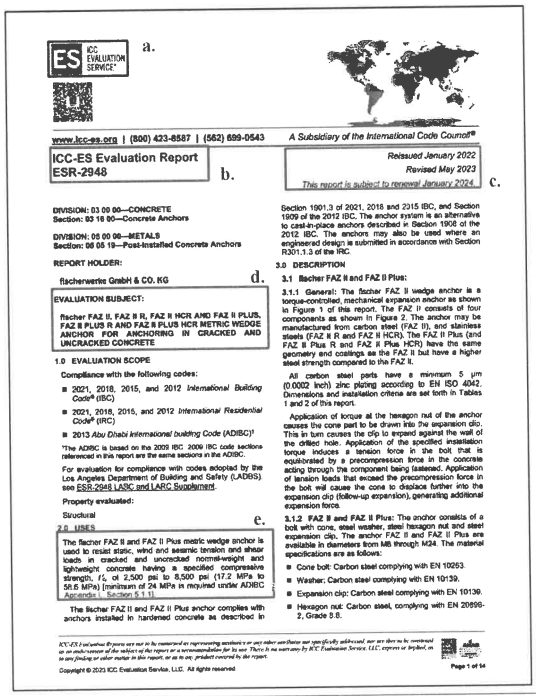
ICC AC193測試認證報告(fischer FAZ II為例)



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ICC-ES Evaluation Report
ESR-2948 b.

Reissued January 2022
Revised May 2023
This report is subject to renewal January 2024. c.

DIVISION: 03 00 00—CONCRETE
Section: 03 16 00—Concrete Anchors

DIVISION: 05 00 00—METALS
Section: 05 05 19—Post-Installed Concrete Anchors

REPORT HOLDER:

fischerwerke GmbH & CO. KG d.

EVALUATION SUBJECT:

fischer FAZ II, FAZ II R, FAZ II HCR AND FAZ II PLUS, FAZ II PLUS R AND FAZ II PLUS HCR METRIC WEDGE ANCHOR FOR ANCHORING IN CRACKED AND UNCRACKED CONCRETE

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, and 2012 *International Building Code*® (IBC)
- 2021, 2018, 2015, and 2012 *International Residential Code*® (IRC)
- 2013 *Abu Dhabi International building Code* (ADIBC)[1]

[1]The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

For evaluation for compliance with codes adopted by the Los Angeles Department of Building and Safety (LADBS), see ESR-2948 LABC and LARC Supplement.

Property evaluated:

Structural e.

2.0 USES

The fischer FAZ II and FAZ II Plus metric wedge anchor is used to resist static, wind and seismic tension and shear loads in cracked and uncracked normal-weight and lightweight concrete having a specified compressive strength, f'_c, of 2,500 psi to 8,500 psi (17.2 MPa to 58.6 MPa) [minimum of 24 MPa is required under ADIBC Appendix L, Section 5.1.1].

The fischer FAZ II and FAZ II Plus anchor complies with anchors installed in hardened concrete as described in Section 1901.3 of 2021, 2018 and 2015 IBC, and Section 1909 of the 2012 IBC. The anchor system is an alternative to cast-in-place anchors described in Section 1908 of the 2012 IBC. The anchors may also be used where an engineered design is submitted in accordance with Section R301.1.3 of the IRC.

3.0 DESCRIPTION

3.1 fischer FAZ II and FAZ II Plus:

3.1.1 General: The fischer FAZ II wedge anchor is a torque-controlled, mechanical expansion anchor as shown in Figure 1 of this report. The FAZ II consists of four components as shown in Figure 2. The anchor may be manufactured from carbon steel (FAZ II), and stainless steels (FAZ II R and FAZ II HCR). The FAZ II Plus (and FAZ II Plus R and FAZ II Plus HCR) have the same geometry and coatings as the FAZ II but have a higher steel strength compared to the FAZ II.

All carbon steel parts have a minimum 5 µm (0.0002 inch) zinc plating according to EN ISO 4042. Dimensions and installation criteria are set forth in Tables 1 and 2 of this report.

Application of torque at the hexagon nut of the anchor causes the cone part to be drawn into the expansion clip. This in turn causes the clip to expand against the wall of the drilled hole. Application of the specified installation torque induces a tension force in the bolt that is equilibrated by a precompression force in the concrete acting through the component being fastened. Application of tension loads that exceed the precompression force in the bolt will cause the cone to displace further into the expansion clip (follow-up expansion), generating additional expansion force.

3.1.2 FAZ II and FAZ II Plus: The anchor consists of a bolt with cone, steel washer, steel hexagon nut and steel expansion clip. The anchor FAZ II and FAZ II Plus are available in diameters from M8 through M24. The material specifications are as follows:

- Cone bolt: Carbon steel complying with EN 10263.
- Washer: Carbon steel complying with EN 10139.
- Expansion clip: Carbon steel complying with EN 10139.
- Hexagon nut: Carbon steel, complying with EN 20898-2, Grade 8.8.

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金屬錨栓通過ICC AC193測試，ICC將會發予正式測試核可報告，各產品會被賦予特定編號，這些資訊可從報告第一頁得知，審查內容需核對測試報告內之相關內文如以下所示：

a) 機構名稱
b) 報告認證編號(ESR-2948)
c) 報告有效期限
d) 產品名稱
e) 適用性：開裂混凝土、耐震等規定

注意：並非所有具ICC AC193試驗報告之金屬錨栓都有通過開裂混凝土與耐震測試。

試驗合格證明

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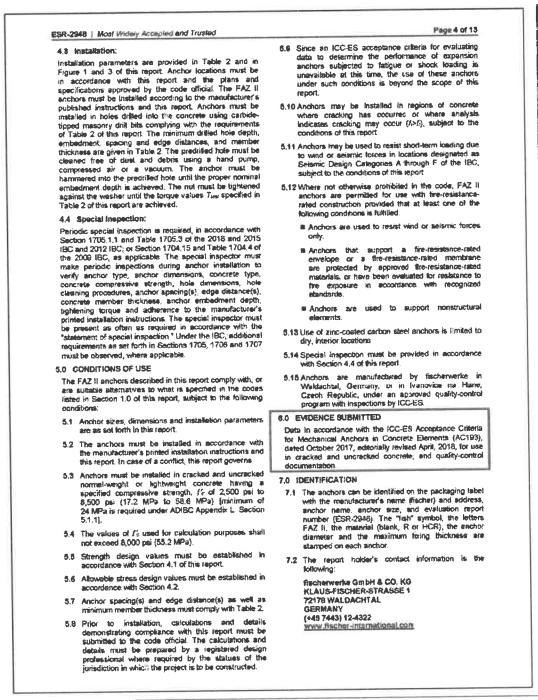
INTERNATIONAL CODE COUNCIL ICC ES ICC EVALUATION SERVICE

ICC AC193測試認證報告(fischer FAZ II為例)



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4.3 Installation:

Installation parameters are provided in Table 2 and in Figure 1 and 3 of this report. Anchor locations must be in accordance with this report and the plans and specifications approved by the code official. The FAZ II anchors must be installed according to the manufacturer's published instructions and this report. Anchors must be installed in holes drilled into the concrete using carbide-tipped masonry drill bits complying with the requirements of Table 2 of this report. The minimum drilled hole depth, embedment, spacing and edge distances, and member thickness are given in Table 2. The predrilled hole must be cleanec free of dust and debris using a hand pump, compressed air or a vacuum. The anchor must be hammered into the predrilled hole until the proper nominal embedment depth is achieved. The nut must be tightened against the washer until the torque values T_{inst} specified in Table 2 of this report are achieved.

4.4 Special Inspection:

Periodic special inspection is required, in accordance with Section 1705.1.1 and Table 1705.3 of the 2016 and 2015 IBC and 2012 IBC; or Section 1704.15 and Table 1704.4 of the 2009 IBC, as applicable. The special inspector must make periodic inspections during anchor installation to verify anchor type, anchor dimensions, concrete type, concrete compressive strength, hole dimensions, hole cleaning procedures, anchor spacing(s), edge distance(s), concrete member thickness, anchor embedment depth, tightening torque and adherence to the manufacturer's printed installation instructions. The special inspector must be present as often as required in accordance with the "statement of special inspection." Under the IBC, additional requirements as set forth in Sections 1705, 1706 and 1707 must be observed, where applicable.

5.0 CONDITIONS OF USE

The FAZ II anchors described in this report comply with, or are suitable alternatives to what is specified in the codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Anchor sizes, dimensions and installation parameters are as set forth in this report.

5.2 The anchors must be installed in accordance with the manufacturer's printed installation instructions and this report. In case of a conflict, this report governs.

5.3 Anchors must be installed in cracked and uncracked normal-weight or lightweight concrete having a specified compressive strength, f'_c of 2,500 psi to 8,500 psi (17.2 MPa to 58.6 MPa) [minimum of 24 MPa is required under ADIBC Appendix L, Section 5.1.1].

5.4 The values of f'_c used for calculation purposes shall not exceed 8,000 psi (55.2 MPa).

5.5 Strength design values must be established in accordance with Section 4.1 of this report.

5.6 Allowable stress design values must be established in accordance with Section 4.2.

5.7 Anchor spacing(s) and edge distance(s) as well as minimum member thickness must comply with Table 2.

5.8 Prior to installation, calculations and details demonstrating compliance with this report must be submitted to the code official. The calculations and details must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

5.9 Since an ICC-ES acceptance criteria for evaluating data to determine the performance of expansion anchors subjected to fatigue or shock loading is unavailable at this time, the use of these anchors under such conditions is beyond the scope of this report.

5.10 Anchors may be installed in regions of concrete where cracking has occurred, or where analysis indicates cracking may occur (fct>f'c), subject to the conditions of this report.

5.11 Anchors may be used to resist short-term loading due to wind or seismic forces in locations designated as Seismic Design Categories A through F of the IBC, subject to the conditions of this report.

5.12 Where not otherwise prohibited in the code, FAZ II anchors are permitted for use with fire-resistance-rated construction provided that at least one of the following conditions is fulfilled:

- Anchors are used to resist wind or seismic forces only.
- Anchors that support a fire-resistance-rated envelope or a fire-resistance-rated membrane are protected by approved fire-resistance-rated materials, or have been evaluated for resistance to fire exposure in accordance with recognized standards.
- Anchors are used to support nonstructural elements.

5.13 Use of zinc-coated carbon steel anchors is limited to dry, interior locations.

5.14 Special inspection must be provided in accordance with Section 4.4 of this report.

5.15 Anchors are manufactured by fischerwerke in Waldachtal, Germany, or in Ivanovice na Hane, Czech Republic, under an approved quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Mechanical Anchors in Concrete Elements (AC193), dated October 2017, editorially revised April, 2018, for use in cracked and uncracked concrete, and quality-control documentation.

7.0 IDENTIFICATION

7.1 The anchors can be identified on the packaging label with the manufacturer's name (fischer) and address, anchor name, anchor size, and evaluation report number (ESR-2948). The "fish" symbol, the letters FAZ II, the material (blank, R or HCR), the anchor diameter and the maximum fixing thickness are stamped on each anchor.

7.2 The report holder's contact information is the following:

fischerwerke GmbH & CO. KG
KLAUS-FISCHER-STRASSE 1
72178 WALDACHTAL
GERMANY
(+49 7443) 12-4322
www.fischer-international.com

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Mechanical Anchors in Concrete Elements (AC193), dated October 2017, editorially revised April, 2018, for use in cracked and uncracked concrete; and quality-control documentation.

數據符合ICC-ES混凝土構件中機械錨栓的驗收標準(AC193)，2017年10月核准，2018年4月編輯修訂，文件供使用於開裂和非開裂混凝土及品量控制。

P.S.
AC193參考及納入ACI 355.2-07/ACI 355.2-04中的要求。

試驗合格證明

fischer innovative solutions

認證報告安裝說明及限制-安裝時皆須達認證要求

ICC EVALUATION SERVICE

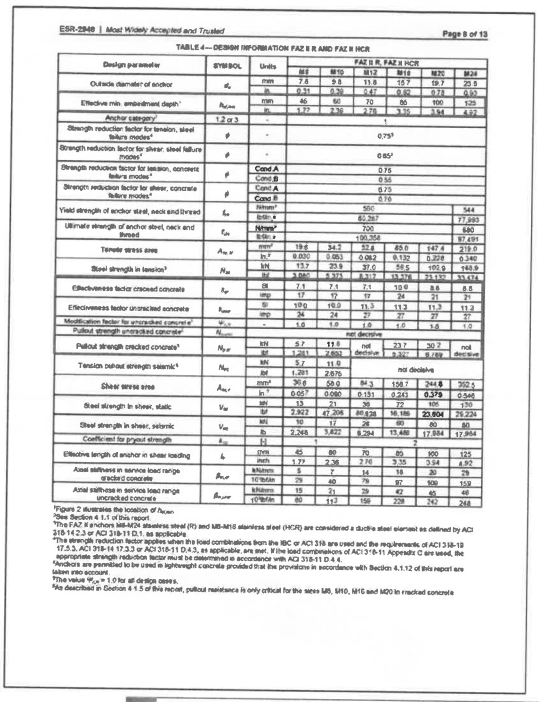

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TABLE 4—DESIGN INFORMATION FAZ II R AND FAZ II HCR

Design parameter	SYMBOL	Units	FAZ II R, FAZ II HCR					
			M8	M10	M12	M16	M20	M24
Outside diameter of anchor	d_a	mm	7.8	9.8	11.8	15.7	19.7	23.6
		in.	0.31	0.39	0.47	0.62	0.78	0.93
Effective min. embedment depth[1]	$h_{ef,min}$	mm	46	60	70	80	100	125
		in.	1.77	2.36	2.76	3.15	3.94	4.92
Anchor category[1]	1,2 or 3	-	1					
Strength reduction factor for tension, steel failure modes[4]	ϕ	-	0.75[3]					
Strength reduction factor for shear, steel failure modes[4]	ϕ	-	0.65[3]					
Strength reduction factor for tension, concrete failure modes[4]	ϕ	Cond.A	0.75					
		Cond.B	0.65					
Strength reduction factor for shear, concrete failure modes[4]	ϕ	Cond.A	0.75					
		Cond.B	0.70					
Yield strength of anchor steel, neck and thread	f_{ya}	N/mm²	560				544	
		lb/in.²	82,267				77,993	
Ultimate strength of anchor steel, neck and thread	f_{ua}	N/mm²	700				680	
		lb/in.²	100,358				97,491	
Tensile stress area	$A_{se,N}$	mm²	19.6	34.2	52.8	85.0	147.4	219.0
		in.²	0.030	0.053	0.082	0.132	0.228	0.340
Steel strength in tension[3]	N_{sa}	kN	13.7	23.9	37.0	59.5	100.3	148.9
		lbf	3,080	5,371	8,317	13,376	22,532	33,474
Effectiveness factor cracked concrete	k_{cr}	SI	7.1	7.1	7.1	7.1	8.8	8.8
		imp	17	17	17	17	21	21
Effectiveness factor uncracked concrete	k_{uncr}	SI	10.0	10.0	11.3	11.3	11.3	11.3
		imp	24	24	27	27	27	27
Modification factor for uncracked concrete[5]	$\psi_{c,N}$	-	1.0	1.0	1.0	1.0	1.0	1.0
Pullout strength uncracked concrete[6]	$N_{p,uncr}$	-	not decisive					
Pullout strength cracked concrete[6]	$N_{p,cr}$	kN	5.7	11.5	not decisive	23.7	30.7	not decisive
		lbf	1,281	2,583		5,327	6,899	
Tension pullout strength seismic[4]	N_{pn}	kN	5.7	11.5	not decisive			
		lbf	1,281	2,575				
Shear stress area	$A_{se,V}$	mm²	30.6	58.0	84.3	156.7	244.8	352.5
		in.²	0.047	0.090	0.131	0.243	0.379	0.546
Steel strength in shear, static	V_{sa}	kN	13	21	36	72	105	130
		lbf	2,922	4,724	8,038	16,186	23,604	29,224
Steel strength in shear, seismic	$V_{sa,eq}$	kN	10	17	26	60	80	80
		lb	2,248	3,822	5,294	13,488	17,984	17,984
Coefficient for pryout strength	k_{cp}	SI	1			2		
		imp						
Effective length of anchor in shear loading	l_e	mm	45	60	70	80	100	125
		inch	1.77	2.36	2.76	3.15	3.94	4.92
Axial stiffness in service load range uncracked concrete	$\beta_{N,uncr}$	kN/mm	5	7	14	18	20	29
		10³lb/in	29	40	79	97	109	159
Axial stiffness in service load range cracked concrete	$\beta_{N,cr}$	kN/mm	15	21	29	42	46	46
		10³lb/in	80	113	159	228	242	248

[1]Figure 2 illustrates the location of $h_{ef,min}$.
[2]See Section 4.1.1 of this report.
[3]The FAZ II anchors M8-M24 stainless steel (R) and M8-M16 stainless steel (HCR) are considered a ductile steel element as defined by ACI 318-14 2.3 or ACI 318-11 D.1, as applicable.
[4]The strength reduction factor applies when the load combinations from the IBC or ACI 318 are used and the requirements of ACI 318-19 17.3.3, ACI 318-14 17.3.3 or ACI 318-11 D.4.3, as applicable, are met. If the load combinations of ACI 318-11 Appendix C are used, the appropriate strength reduction factor must be determined in accordance with ACI 318-11 D.4.4.
[5]Anchors are permitted to be used in lightweight concrete provided that the provisions in accordance with Section 4.1.12 of this report are taken into account.
[6]The value $\psi_{c,N}$ = 1.0 for all design cases.
[7]As described in Section 4.1.5 of this report, pullout resistance is only critical for the sizes M8, M10, M16 and M20 in cracked concrete

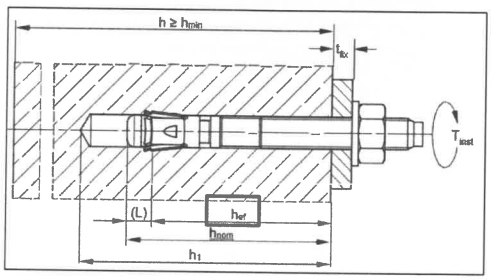
認證報告內也會提供包含深度(有效埋深)、間距、邊距、安全係數、錨栓於開裂及非開裂混凝土之強度等數據。

最小有效孔深

Effective min. embedment depth[1]	$h_{ef,min}$

錨栓拉力強度-開裂及非開裂混凝土

Pullout strength uncracked concrete[6]	$N_{p,uncr}$
Pullout strength cracked concrete[6]	$N_{p,cr}$



允收標準(歐)

fischer innovative solutions

EAD 330232-00-0601-混凝土機械錨栓測試評估文件

CE

歐洲技術評估European technical assessments簡稱 "ETA"，歐洲技術評估的主要內容是關於產品預期用途和性能與基本特徵的資訊。技術評估機構（TAB）根據歐洲技術評估組織（EOTA）通過的歐洲評估文件（EAD）發佈歐洲技術評估。

EAD 330232-00-0601-混凝土機械錨栓測試評估文件內容包含開裂或未開裂混凝土及裂縫循環等測試。

試驗合格證明

fischer
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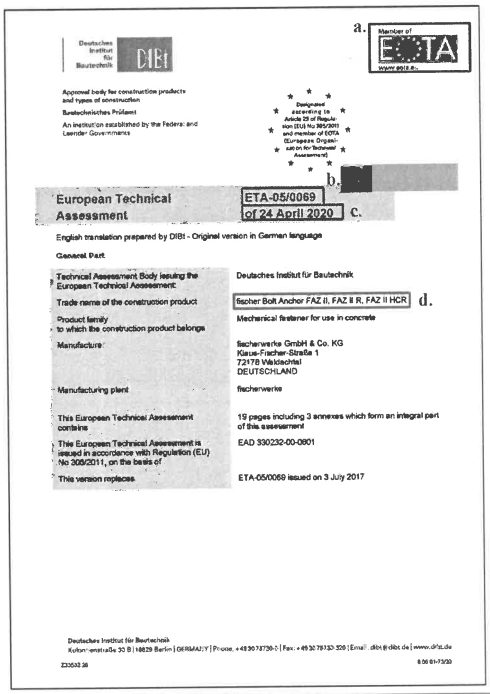
EAD 330232-00-0601測試認證報告(fischer FAZ II為例)

CE



Deutsches Institut für Bautechnik DIBt

Approved body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

a. Member of EOTA www.eota.eu

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

b. [redacted]

European Technical Assessment | ETA-05/0069 of 24 April 2020 c.

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment	Deutsches Institut für Bautechnik
Trade name of the construction product	fischer Bolt Anchor FAZ II, FAZ II R, FAZ II HCR d.
Product family to which the construction product belongs	Mechanical fastener for use in concrete
Manufacturer	fischerwerke GmbH & Co. KG Klaus-Fischer-Straße 1 72178 Waldachtal DEUTSCHLAND
Manufacturing plant	fischerwerke
This European Technical Assessment contains	19 pages including 3 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 330232-00-0601
This version replaces	ETA-05/0069 issued on 3 July 2017

Deutsches Institut für Bautechnik
Kolonnenstraße 30 B | 10829 Berlin | GERMANY | Phone. +49 30 78730-0 | Fax: +49 30 78730-320 | Email: dibt@dibt.de | www.dibt.de

E20532.20 8.06.01-73/20

金屬錨栓通過EAD 330232-00-0601測試，EOTA將會發予正式測試核可報告，各產品會被賦予特定編號，這些資訊可從報告第一頁得知，審查內容需核對測試報告內之相關內文如以下所示：

a) 機構名稱
b) 報告認證編號(ETA-05/0069)
c) 報告發佈日期
d) 產品名稱

注意：並非所有具EAD 330232-00-0601試驗報告之金屬錨栓都有通過開裂混凝土與耐震測試。

試驗合格證明

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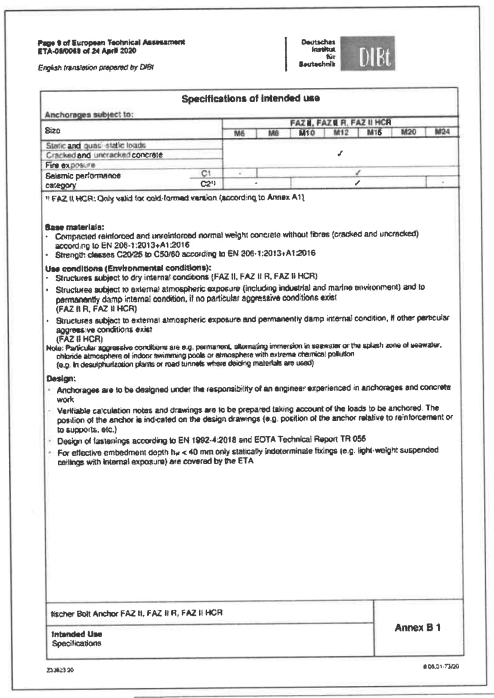
適用性：開裂混凝土、耐震等規定



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ETA-05/0069 of 24 April 2020

English translation prepared by DIBt

Deutsches Institut für Bautechnik DIBt

Specifications of intended use

Anchorages subject to:

Size		FAZ II, FAZ II R, FAZ II HCR						
		M6	M8	M10	M12	M16	M20	M24
Static and quasi-static loads								
Cracked and uncracked concrete					✓			
Fire exposure								
Seismic performance category	C1	-			✓			
	C2[1)]	-			✓			-

[1)] FAZ II HCR: Only valid for cold-formed version (according to Annex A1)

Base materials:
- Compacted reinforced and unreinforced normal weight concrete without fibres (cracked and uncracked) according to EN 206-1:2013+A1:2016
- Strength classes C20/25 to C50/60 according to EN 206-1:2013+A1:2016

Use conditions (Environmental conditions):
- Structures subject to dry internal conditions (FAZ II, FAZ II R, FAZ II HCR)
- Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition, if no particular aggressive conditions exist (FAZ II R, FAZ II HCR)
- Structures subject to external atmospheric exposure and permanently damp internal condition, if other particular aggressive conditions exist (FAZ II HCR)

Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where deicing materials are used)

Design:
- Anchorages are to be designed under the responsibility of an engineer experienced in anchorages and concrete work
- Verifiable calculation notes and drawings are to be prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.)
- Design of fastenings according to EN 1992-4:2018 and EOTA Technical Report TR 055
- For effective embedment depth h_{ef} < 40 mm only statically indeterminate fixings (e.g. light-weight suspended ceilings with internal exposure) are covered by the ETA

fischer Bolt Anchor FAZ II, FAZ II R, FAZ II HCR	Annex B 1
Intended Use Specifications	

E20532.20 8.06.01-73/20

適用性：開裂混凝土、耐震等規定

認證報告內會提供各尺寸錨栓適用範圍，以標準埋深及淺埋深來區分，是否可用於開裂混凝土及耐震性能等級。

注意：同一產品並非所有尺寸或埋深都有相同的抗震性能等級。

Specifications of intended use

Anchorages subject to:

Size		FAZ II, FAZ II R, FAZ II HCR						
		M6	M8	M10	M12	M16	M20	M24
Static and quasi-static loads								
Cracked and uncracked concrete					✓			
Fire exposure								
Seismic performance category	C1	-			✓			
	C2[1)]	-			✓			-

[1)] FAZ II HCR: Only valid for cold-formed version (according to Annex A1)

Base materials:
- Compacted reinforced and unreinforced normal weight concrete without fibres (cracked and uncracked) according to EN 206-1:2013+A1:2016
- Strength classes C20/25 to C50/60 according to EN 206-1:2013+A1:2016

Fischer扭矩控制型抗震拉膨錨栓FAZ II

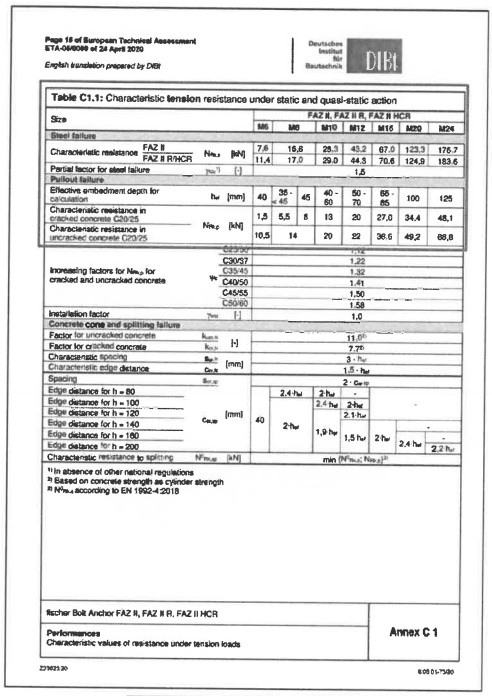
	錨栓規格	裂縫寬度	單位	M8	M10	M12	M16	M20	M24
標準埋深	錨栓有效埋深		[mm]	45	60	70	85	100	125
		0.3	[mm]	v	v	v	v	v	v
	C1	0.5	[mm]	v	v	v	v	v	v
	C2	0.8	[mm]	-	v	v	v	v	-
淺埋深	錨栓有效埋深		[mm]	35	40	50	65	-	-
		0.3	[mm]	v	v	v	v	-	-
	C1	0.5	[mm]	-	v	v	v	-	-
	C2	0.8	[mm]	-	v	v	v	-	-

試驗合格證明

fischer innovative solutions

認證報告安裝說明及限制-安裝時皆須達認證要求

CE



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ETA-06/0080 of 24 April 2020

English translation prepared by DIBt

Deutsches Institut für Bautechnik DIBt

Table C1.1: Characteristic **tension** resistance under static and quasi-static action

Size				FAZ II, FAZ II R, FAZ II HCR						
				M6	M8	M10	M12	M16	M20	M24
Steel failure										
Characteristic resistance	FAZ II	$N_{Rk,s}$	[kN]	7,6	16,6	28,3	43,2	67,0	123,3	176,7
	FAZ II R/HCR			11,4	17,0	29,0	44,3	70,6	124,9	183,6
Partial factor for steel failure		γ_{Ms} [1]	[-]	1,5						
Pullout failure										
Effective embedment depth for calculation		h_{ef}	[mm]	40	35 - < 45	45	40 - 60	50 - 70	65 - 85	100	125
Characteristic resistance in cracked concrete C20/25		$N_{Rk,p}$	[kN]	1,5	5,5	8	13	20	27,0	34,4	48,1
Characteristic resistance in uncracked concrete C20/25				10,5	14	20	22	38,6	49,2	68,8
Increasing factors for $N_{Rk,p}$ for cracked and uncracked concrete	ψ_c	C25/30		1,12						
		C30/37		1,22						
		C35/45		1,32						
		C40/50		1,41						
		C45/55		1,50						
		C50/60		1,58						
Installation factor		γ_{inst}	[-]	1,0						
Concrete cone and splitting failure										
Factor for uncracked concrete		$k_{ucr,N}$	[-]	11,0[2]						
Factor for cracked concrete		$k_{cr,N}$		7,7[2]						
Characteristic spacing		$s_{cr,N}$	[mm]	$3 \cdot h_{ef}$						
Characteristic edge distance		$c_{cr,N}$		$1,5 \cdot h_{ef}$						
Spacing		$s_{cr,sp}$	[mm]	$2 \cdot c_{cr,sp}$						
Edge distance for h = 80		$c_{cr,sp}$		40	$2,4 \cdot h_{ef}$	$2 \cdot h_{ef}$	-			
Edge distance for h = 100					$2 \cdot h_{ef}$	$2,4 \cdot h_{ef}$	$2 \cdot h_{ef}$	-		
Edge distance for h = 120						$1,9 \cdot h_{ef}$	$2,1 \cdot h_{ef}$			
Edge distance for h = 140							$1,5 \cdot h_{ef}$	$2 \cdot h_{ef}$	-	
Edge distance for h = 160									$2,4 \cdot h_{ef}$	-
Edge distance for h = 200										$2,2 \cdot h_{ef}$
Characteristic resistance to splitting		$N^0_{Rk,sp}$	[kN]	min ($N^0_{Rk,c}$; $N_{Rk,p}$)[3]						

[1] In absence of other national regulations
[2] Based on concrete strength as cylinder strength
[3] $N^0_{Rk,s}$ according to EN 1992-4:2018

fischer Bolt Anchor FAZ II, FAZ II R, FAZ II HCR

Performances
Characteristic values of resistance under tension loads

Annex C 1

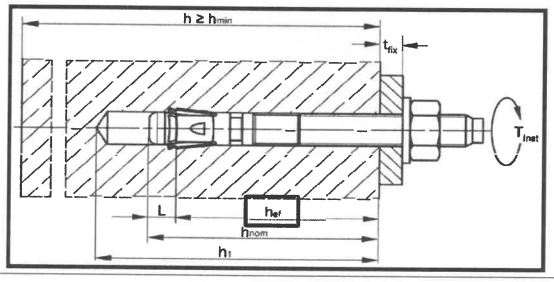
2316025.20 8.06.01-7580

認證報告內也會提供包含深度(有效埋深)、間距、邊距、安全係數、錨栓於開裂及非開裂混凝土之強度等數據。

Table C1.1: Characteristic **tension** resistance under static and quasi-static action

Size				FAZ II, FAZ II R, FAZ II HCR						
				M6	M8	M10	M12	M16	M20	M24
Steel failure										
Characteristic resistance	FAZ II	$N_{Rk,s}$	[kN]	7,6	16,6	28,3	43,2	67,0	123,3	176,7
	FAZ II R/HCR			11,4	17,0	29,0	44,3	70,6	124,9	183,6
Partial factor for steel failure		γ_{Ms} [1]	[-]	1,5						
Pullout failure										
Effective embedment depth for calculation		h_{ef}	[mm]	40	35 - < 45	45	40 - 60	50 - 70	65 - 85	100	125
Characteristic resistance in cracked concrete C20/25		$N_{Rk,p}$	[kN]	1,5	5,5	8	13	20	27,0	34,4	48,1
Characteristic resistance in uncracked concrete C20/25				10,5	14	20	22	38,6	49,2	68,8

a) 有效埋深
b) 錨栓拉力強度-開裂及非開裂混凝土



盒裝標示

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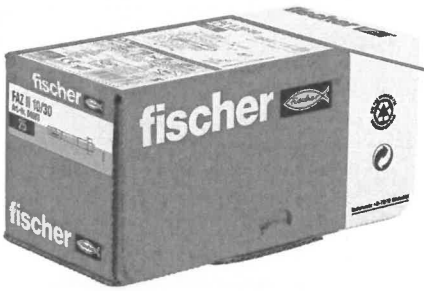
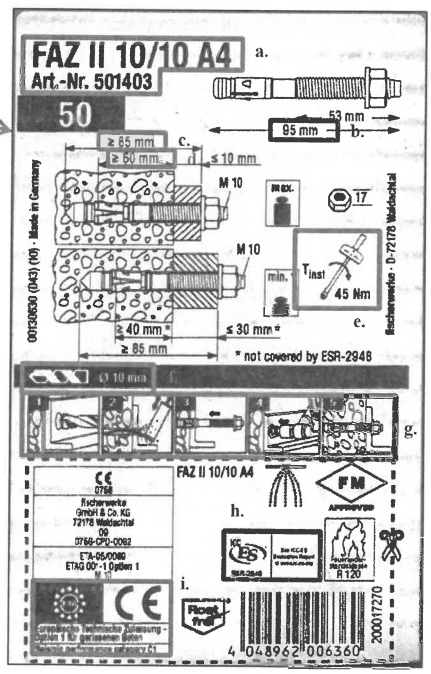
盒裝標示(fischer FAZ II為例)





盒裝標示內容如下所示：
a) 產品名稱及型號
b) 產品總長
c) 鑽孔深度(包含繫件)
d) 有效深度
e) 鎖固扭力值
f) 鑽頭尺寸
g) 施作流程
h) ICC-ESR認證
i) ETA認證

錨栓本體

簡易辨識錨栓廠牌(fischer FAZ II為例)

端部標記：

a) 品牌LOGO
b) 產品名稱：FAZ II
c) 產品型號：10/10 K R

端部標記：

產品標籤及字母代碼：
fischer FAZ II 10/10K R為例，英文字母印記為“b“。

辨識方法：
可直接觀察是否有原廠錨栓對應之英文字母印記。

北市-外牆飾材施工管理制度

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檢附資料(北市外牆飾材竣工報告書為例)

TAIPEI 臺北

乾掛式

建築物乾掛式貼著飾面材外牆飾材竣工報告書

（申報竣工勘驗檢附）

一.檢附文件(請依序檢視勾選):

☐已檢附　建築物外牆飾材材料出廠證明、品質證明、保固及驗收文件

☐已檢附　建築物外牆飾材繫件出廠證明、品質證明、保固及驗收文件

(上開證明均需符合CNS等國家標準規範、產品測試報告、物理性能報告、化學性能報告、廠商型錄、廠商實績、購買數量及照片)

☐已檢附　施工前、中、後記錄照片

☐已檢附　建築物外牆飾材基本資料併於公寓大廈草約中(含竣工圖說、維護材料廠商)

☐已檢附　建築物外牆抽測檢查結果報告書，內容如下:

1. 均依現場抽測執行計畫書執行(含品管紀錄)
2. 建築物基本資料
3. 委託檢查者資料
4. 檢查單位資料
5. 位置標示圖
6. 檢查結果分析

二.本案現場施工過程均符合工程會訂定之施工規範。

三.本案符合內政部營建署建築工程施工規範第09751章金屬構架花崗石牆面之錨栓。

四.本案符合建築物外牆錨栓混凝土結構設計規範修正規定1.3.8及1.3.9相關規範。後置式錨栓和預埋式錨栓，依據ACI355.2之規定設置。外牆未能符合開裂混凝土之使用限制時，僅可使用於未開裂混凝土之區域。

此　致

臺北市政府都市發展局

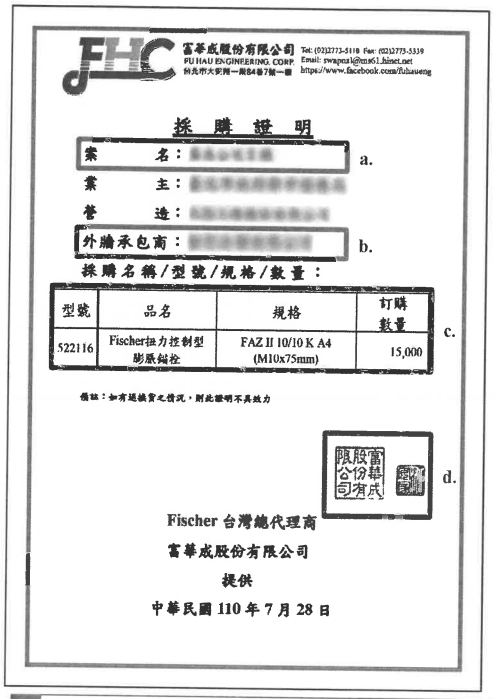
承造人：

專任工程人員：

監造人檢核簽章：

中華民國　　年　　月　　日

採購證明



富華成股份有限公司
FU HAU ENGINEERING CORP.
台北市大安區一段84巷7號一樓
Tel: (02)2773-5110 Fax: (02)2773-5310
Email: ewapual@ms61.hinet.net
https://www.facebook.com/fuhaueng

採 購 證 明

案　　名：[redacted] a.

業　　主：[redacted]

營　　造：[redacted]

外購承包商：[redacted] b.

採購名稱/型號/規格/數量：

型號	品名	規格	訂購數量
522116	Fischer拉力控制型膨脹錨栓	FAZ II 10/10 K A4 (M10x75mm)	15,000

c.

備註：如有超換貨之情況，則此證明不具效力

d.

Fischer 台灣總代理商

富華成股份有限公司

提供

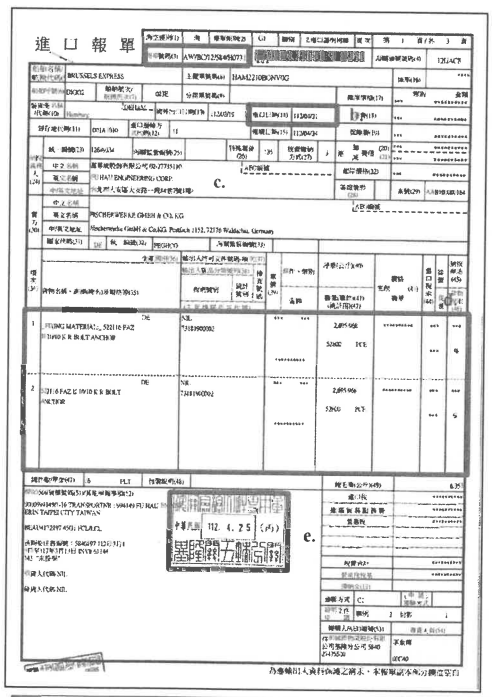
中華民國 110 年 7 月 28 日

a) 工程名稱
b) 銷售對象
c) 品名及數量
d) 原廠用印

檢附資料

fischer innovative solutions

進口報單



進 口 報 單

a.

b.

c.

d.

e.

a) 報單號碼
b) 進口日期
c) 進口對象
d) 銷售品名及數量
e) 海關用印

公司資料及變更登記函

2020/11/5 商工登記公示資料查詢服務

經濟部商業司
商工登記公示資料查詢服務

Language

您知道嗎？

公司基本資料 董監事資料 經理人資料 分公司資料 跨境資料 歷史資料 查行業管事項

法人董監經歷兼任情形

列印此頁

公司基本資料

統一編號	12689334 訂閱
公司狀況	核准設立 「您知道新冠肺炎防疫基金 財政部稅務入口網」
公司名稱	富華成股份有限公司 Google搜尋（出進口廠商英文名稱：FU HAU ENGINEERING CORP.）「國貿局廠商英文名稱查詢(輸入出進口廠商關鍵字)」
華僑所訂外文公司名稱	
資本總額(元)	6,500,000
實收資本額(元)	6,500,000
每股金額(元)	10
已發行股份總數(股)	650,000
代表人姓名	江安家
公司所在地	臺北市大安區大安路1段84巷7號1樓 電子地圖
登記機關	臺北市政府
核准設立日期	090年02月23日
最後核准變更日期	107年06月08日
所營事項資料	E801020 門窗安裝工程業 F401010 國際貿易業 F205010 家具零售業 F105010 零售批發業

(回上頁)

https://findbiz.nat.gov.tw/fts/query/QueryCmpyDetail/queryCmpyDetail.do 1/2

自領
五本 2

臺北市政府 函

檢送地址：110臺北市市府路1號北區1樓
承辦人：楊小姐（604）
電 話：02-27208400/1930轉6517
傳 真：02-27203418

106
臺北市大安區大安路1段84巷7號1樓
受文者：富華成股份有限公司

發文日期：中華民國107年06月08日
發文字號：府產業商字第10750127300號
速別：普通件
密等及解密條件：普通
附件：規費收據暨變更登記表1份

主旨：貴公司（統一編號：12689334）申請改選董事、監事人、董事長變更登記，准予登記。並請詳閱說明欄和關事項，以保障公司權益，請查照。

說明：
一、依公司法辦理兼復貴公司107年06月08日申請書。
二、處分相對人名稱：富華成股份有限公司（代表人姓名：江安家、身分證照號碼：A11085****）、公司所在地：臺北市大安區大安路1段84巷7號1樓。
三、檢附規費收據暨變更登記表1份，請查收。
四、依「臺北市消費者保護自治條例」規定，設址本市之公司、分公司其營業場所若屬「臺北市消費場所強制投保公共意外責任保險實施辦法」規範應投保公共意外責任保險範疇，應即依規定投保。
五、為強調企業經營者榮譽，惠請貴公司於生產、製造、進口或販賣商品時落實商品標示，若欲瞭解商品標示法及相關標示基準詳盡規定，請上臺北市商業處網站（http://www.tcooc.taipel.gov.tw/）查詢。
六、臺灣地區位於環太平洋地震帶，為預防因大規模災害導致交通運輸停擺，衍生之混亂，意外事故及影響救災等情形，請貴公司依業務需要與保險商、物流業者等簽訂開口契約或協議，於災時可供應足夠之生活必需品（如飲用水及食物），以因應緊急需求。另處購置經認證之消防機具器材或所災產品，以維權益。
七、對本行政處分如有不服，請依訴願法第14條及第58條規定，自行政處分書送到之次日起30日內，檢具訴願書，向本府遞送（以實際收受訴願書之日期為準，而非投郵日），並將副本抄送經濟部（地址：臺北市中正區福州街15號）。

正本：富華成股份有限公司
副本：富華成股份有限公司 負責人：江安家

統一編號：12689334
第1頁 2頁

總代理證明

Certificate

Herewith the fischer group has appointed

FU HAU Engineering Corp.

as exclusive

fischer AICIT agent.

FU HAU Engineering Corp.
is engaged with the import and sale of
fischer AICIT (Advanced Curtain wall Technique) System.
This Certificate is valid until 31st of December 2023.

fischer
fischerwerke GmbH & Co. KG
Klaus-Fischer-Straße 1 | Fischerstr. 12-34
72178 Waldachtal | 72178 Waldachtal
Deutschland | Deutschland

fischerwerke GmbH & Co. KG, ST-ACT
Waldachtal (Germany), 18th January 2022

A C T
Advanced Curtain wall Technique
fischer

材質及生產證明

材質證明

Page 9 of European Technical Assessment
ETA-19/0820 of 24 May 2023

English translation prepared by DIBt

Deutsches Institut für Bautechnik DIBt

Table A4.1: Materials FAZ II Plus

Part	Designation	Material		
		FAZ II Plus	FAZ II Plus R	FAZ II Plus HCR
	Steel grade	Steel	Stainless steel R	High corrosion resistant steel HCR
		Zinc plated ≥ 5 µm, ISO 4042:2018	according to EN 10088:2014 Corrosion resistance class CRC III according to EN 1993-1-4:2006+A1:2015	according to EN 10088:2014 Corrosion resistance class CRC V according to EN 1993-1-4: 2006+A1:2015
1	Expansion sleeve	Cold strip, EN 10139:2016 or stainless steel EN 10088:2014	Stainless steel EN 10088:2014	
2	Cone bolt	Cold form steel or free cutting steel	Stainless steel EN 10088:2014	High corrosion resistant steel EN 10088:2014
3	Washer	Cold strip, EN 10139:2016		
4 / 5	Hexagon nut / fischer FAZ II Plus dome nut	Steel, property class min. 8, EN ISO 898-2:2012	Stainless steel EN 10088:2014; ISO 3506-2:2020, property class – min. 70	High corrosion resistant steel EN 10088:2014; ISO 3506-2:2020; property class – min. 70
6	fischer filing conical washer FFD	Cold form steel or free cutting steel	Stainless steel EN 10088:2014	High corrosion resistant steel EN 10088:2014

fischer Bolt Anchor FAZ II Plus, FAZ II Plus R, FAZ II Plus HCR	
Product description Materials	Annex A4

品管系統認證

CERTIFICATE

This is to certify that

fischer SYSTEMTEC

fischer SystemTec GmbH
Klaus-Fischer-Straße 1
72178 Waldachtal
Germany

has implemented and maintains a **Quality Management System.**

Scope:
Development and sales of metal and plastic fixing systems for building facades and installations as well as passive fire protection systems.

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

ISO 9001 : 2015

Certificate registration no.	523586 QM15
Excerpt from certificate registration no.	393802 QM15
Valid from	2018-06-06
Valid until	2021-06-05
Date of certification	2018-06-06

DQS GmbH

Stefan Heinzch
Managing Director

Accredited Body: DQS GmbH, August-Schanz-Straße 21, 60433 Frankfurt am Main, Germany

SGS試驗報告-物性及化性

SGS 材料及工藝實驗室-台北

TAF Testing Laboratory 2795

試驗報告

報告編號：HK-16-05952Z-1
頁　數：1 OF 1
報告日期：106 年 01 月 12 日

工 程 名 稱：高石港集合住宅新建工程
業　　主：弘經建設股份有限公司
監 造 單 位：蕭家機聯合建築師事務所
承 包 商：華熙-晴嘉聯合承攬
委 託 單 位：華熙-晴嘉聯合承攬
供 料 廠 商：富華成股份有限公司
樣 品 名 稱：Fischer 拉力控制型膨脹錨栓x1 組
樣 品 來 源：外牆石材 2F~29F
加 註 項 目：型號：522116，規格:FAZ II 10/10K，適用於開裂及非開裂混凝土
取 樣 人 員：華熙-晴嘉聯合承攬(淇建圖)，富華成股份有限公司(呂福琴)
送 驗 人 員：華熙-晴嘉聯合承攬(淇建圖、李俊明)
會 驗 人 員：華熙-晴嘉聯合承攬(淇建圖)
取 樣 日 期：105 年 12 月 21 日
收 件 日 期：105 年 12 月 22 日
試 驗 日 期：106 年 01 月 03 日
會 驗 日 期：106 年 01 月 03 日
產 品 規 範：依客戶提供試驗項目及要求實施之
試 驗 方 法：CNS 2111(1997),CNS 10006(1984),ASTM A394-08(2015)
備　　註：1.以上資料由顧客提供(收件及試驗日期除外)
2.除非另有說明，此報告結果僅對測試之樣品負責
未經本公司事先書面同意，此報告不可部分複製

試驗結果：

樣品名稱	降伏強度	抗拉強度	伸長率	斷面縮率	實斷荷重
	N/mm²	N/mm²	%	%	kgf
拉脫螺栓(M10x75L)	870	951	32.8	66.2	3773

化學成份(%)	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	N
拉脫螺栓(M10x75L)	0.03	0.51	0.92	0.028	0.001	4.4	22.7	0.35	0.31	0.10
要求值	0.03 以下	1.00 以下	2.00 以下	0.035 以下	0.015 以下	3.5 ~5.5	22.0 ~24.0	0.10 ~0.60	0.10 ~0.60	0.05 ~0.20

*本試驗報告之試片拉伸試驗、化學成份(C,Si,Mn,P,Ni,Cr,Mo,Cu)為 TAF 認可項目。
*本試驗報告取代 HK-16-05952Z，原試驗報告作廢，報告修改日期：106 年 05 月 24 日。

---- oOo ----

報告簽署人

規範要求值僅供參考，合格之判定以委託單位實際要求為準。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms_and_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/terms_and_conditions/Terms_and_Conditions_for_Electronic_Documents.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon represents the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

台灣檢測技術股份有限公司 35, Wu Chuan Road, New Taipei Industrial Park, Wu Ku District, New Taipei City, Taiwan (新北市五股區新北產業園區五權路35號) t (886-2) 2298 3211 f (886-2) 2298 7611 www.sgs.tw
Member of SGS Group

1686703

產品保險

ZURICH

Versicherungsbestätigung/ *Certificate of insurance*

Die Zurich Insurance plc Niederlassung für Deutschland bestätigt, dass sie dem nach genannten Versicherungsnehmer im Rahmen der in der Police vereinbarten Bestimmungen Versicherungsschutz gewährt. Dies bedeutet keine Änderung, Erweiterung oder Berichtigung der Deckung, die durch die aufgeführte Police gewährt wird.

This is to certify, that Zurich Insurance plc Niederlassung für Deutschland insures the following companies subject to the following terms and conditions:

This certificate of insurance has been issued for information purposes only and does not extend or alter the above mentioned insurance contract in respect to either its limitations and scope or to any potential additional insured or jointly insured parties.

Versicherungsnehmer/ *Policyholder*	fischer holding GmbH & Co. KG Klaus-Fischer-Str. 1 72178 Waldachtal
Mitversichertes Unternehmen/ *Additional named insured*	Versichert sind nur solche Unternehmen, an denen fischer holding GmbH & Co. KG, Deutschland, eine Beteiligung von mehr als 50% hält. Mitversichert ist ebenso die fischerwerke GmbH & Co. KG. *Insured are only companies fischer holding GmbH & Co. KG, Germany, holds a major share (i.e. more than 50%) in.* *Co-insured is also fischerwerke GmbH & Co. KG.*
Policen-Nr./ *Policy number*	801.380.006.424
Versicherer/ *Insurer*	Zurich Insurance plc Niederlassung für Deutschland Platz der Einheit 2 60327 Frankfurt am Main Germany
Versicherungsart/ *Type of insurance*	Betriebs- und Produkt-Haftpflichtversicherung/ *General and Product Liability*
Deckungsumfang/ *Scope of Cover*	Der Versicherungsschutz umfasst nach Maßgabe der Summen und Bedingungen des oben genannten Vertrages die gesetzliche Haftpflicht des Versicherungsnehmers wegen Personen- und Sachschaden, die durch von ihm - ausgeführte Arbeiten, - hergestellte oder gelieferte Produkte während oder nach Abschluss der Arbeiten oder nach Lieferung der Produkte eingetreten sind. *The insurance covers, subject to the limits and conditions of the above named insurance contract the legal*

Policennummer 801 380 006 424
Versicherungsnehmer fischer holding GmbH & Co. KG

1 / 1

ZURICH

liability of the policyholder in cases of bodily injury and property damage caused by

- *operations carried out by the insured,*
- *products manufactured or supplied by the insured*

occurring during such operations or after such operations have been completed or after such products have been supplied.

Geltungsbereich/ *Territorial Scope*	Diese Police hat weltweit Gültigkeit/ *This policy provides coverage worldwide.*	
Versicherungssummen/ *Limits of indemnity*		
Betriebs- und Produkt-Haftpflichtversicherung/ *Combined limit for General and Product Liability Insurance*	EUR 50.000.000,00 EUR 100.000.000,00	je Schadensereignis/ *any insured event* je Versicherungsjahr/ *in the annual aggregate*
	für Personen- und Sachschäden zusammen/ *combined for bodily injury and property damage*	
Versicherungsdauer/ *Period of Issuance*	From 01.01.2023 until 01.01.2024	
Rechts- und Gerichtsstand/ *Governing Law and Jurisdiction*	Hinsichtlich der Auslegung dieser Versicherungsbestätigung und des betreffenden Versicherungsvertrages findet ausschließlich deutsches Recht Anwendung. Für die aus diesem Versicherungsverhältnis entstehenden Rechtsstreitigkeiten ist Gerichtsstand ausschließlich der Sitz des in der Bundesrepublik Deutschland ansässigen Versicherungsnehmers. *German law shall apply exclusively to the interpretation of this certificate and the policy which it refers to. Exclusive venue for any disputes arising out of this certificate and the policy it refers to will be the domicile of the German policy holder.*	

Policennummer 801 380 006 424
Versicherungsnehmer fischer holding GmbH & Co. KG

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