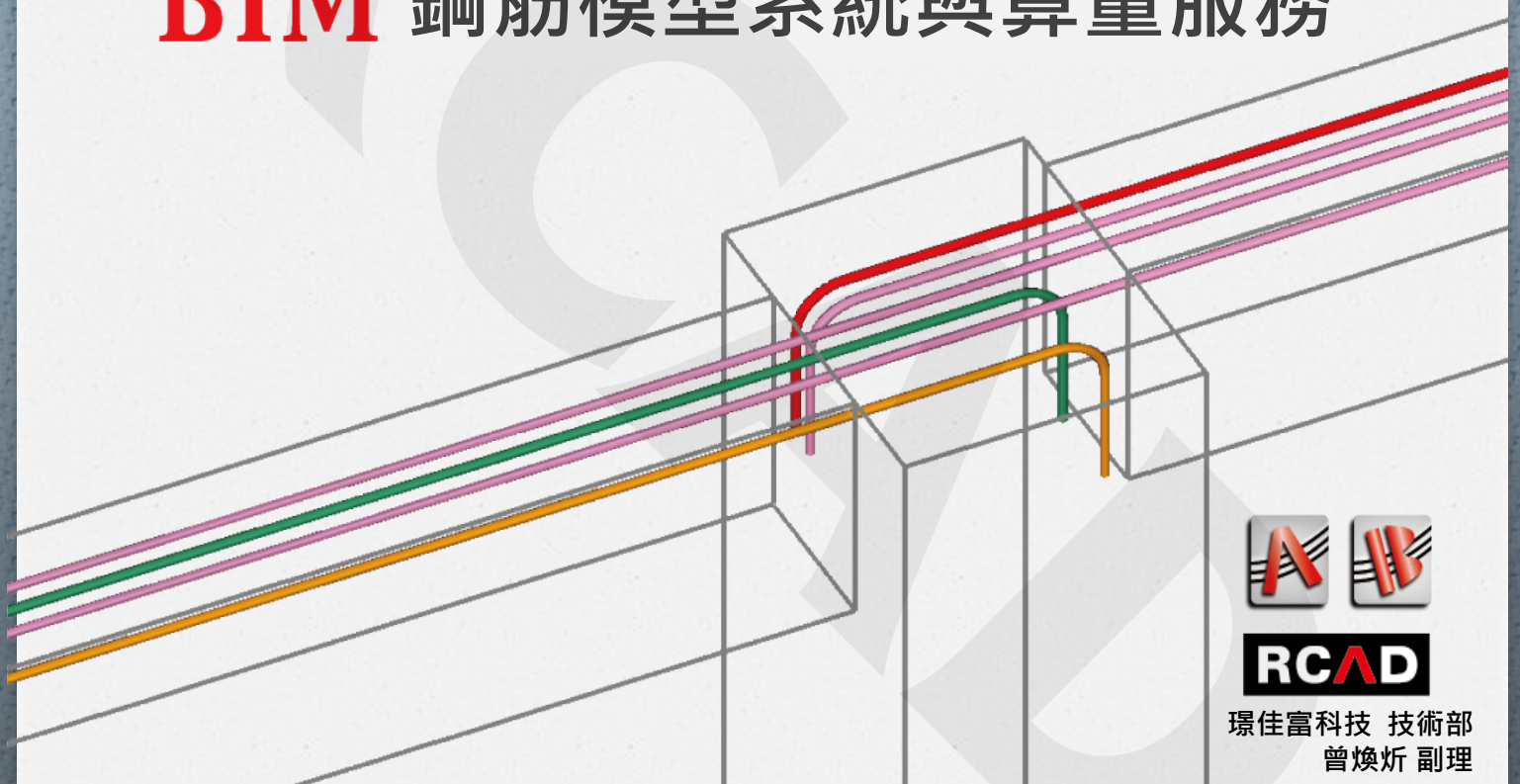


BIM 鋼筋模型系統與算量服務



璟佳富科技 技術部
曾煥炘 副理

RCAD 鋼筋模型系統

(程式軟體)

用**新**的技術
處理鋼筋

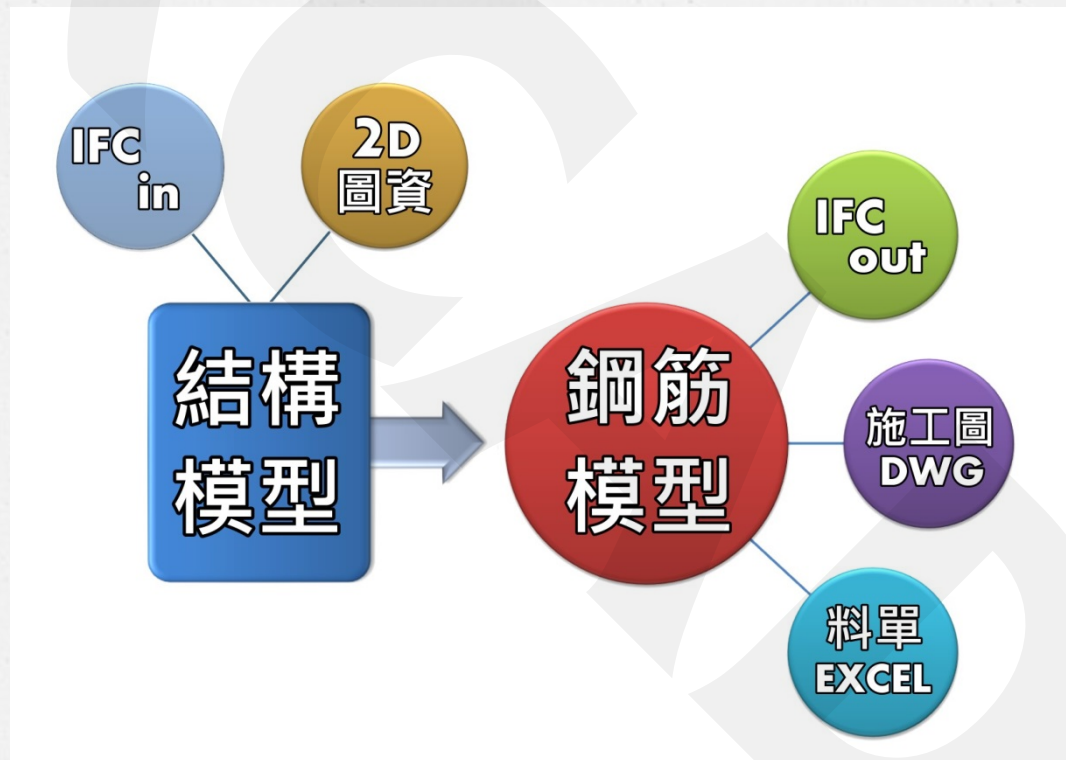
- o 自主開發
- o 堅持創新



整合的元素



軟體架構



結構建模：2D to 3D

設計圖
CAD檔案

RCAD_Acquire
萃取圖資

RCAD_Building
鋼筋模型

- 整合其他3D資料
- 透過 IFC import
- 已實測：
 - ✓ Revit
 - ✓ ArchiCAD
 - ✓ 廣聯達TAS

- 結構體精算
- 鋼筋料單
- 鋼筋施工圖
- IFC export

新的流程：整合RC結構設計

ETABS
結構分析

RCAD_ASCO
結構後處理

RCAD_Building
鋼筋模型

3D配筋資訊

- 設計圖資
- 梁柱配筋圖

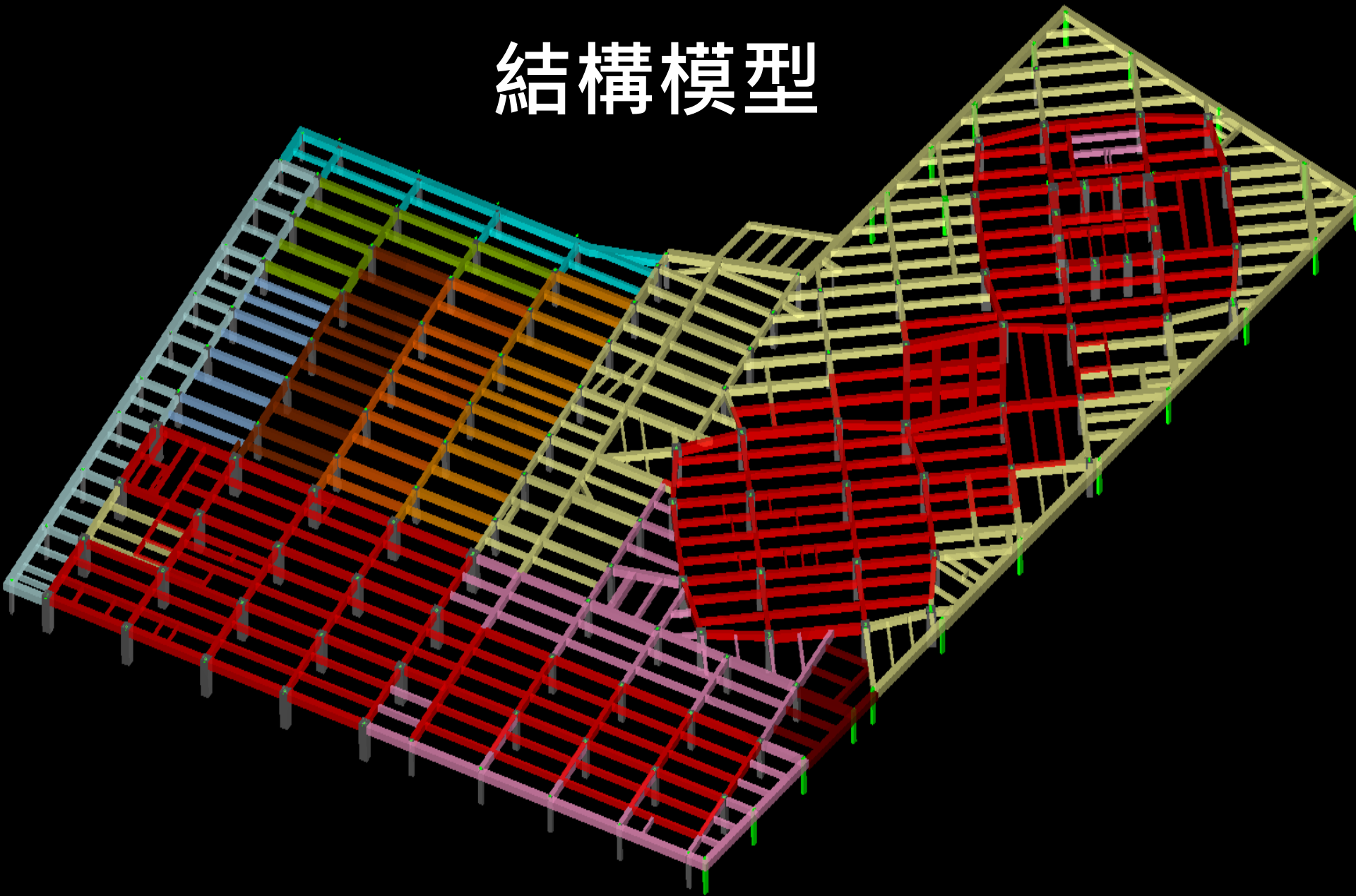
- 結構體精算
- 鋼筋料單
- 鋼筋施工圖
- IFC out

新的概念

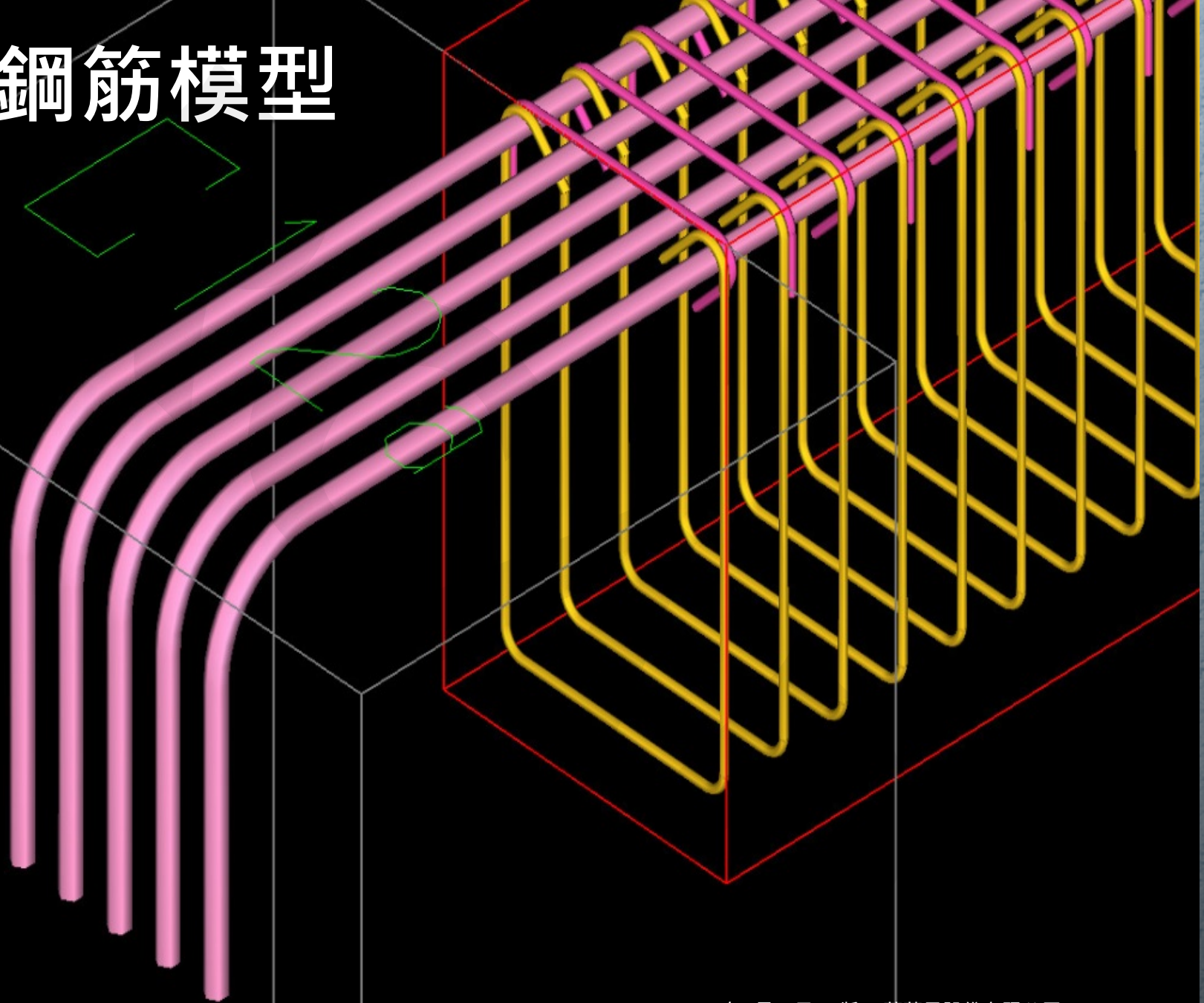
- 在設計階段即 掌控 施工量



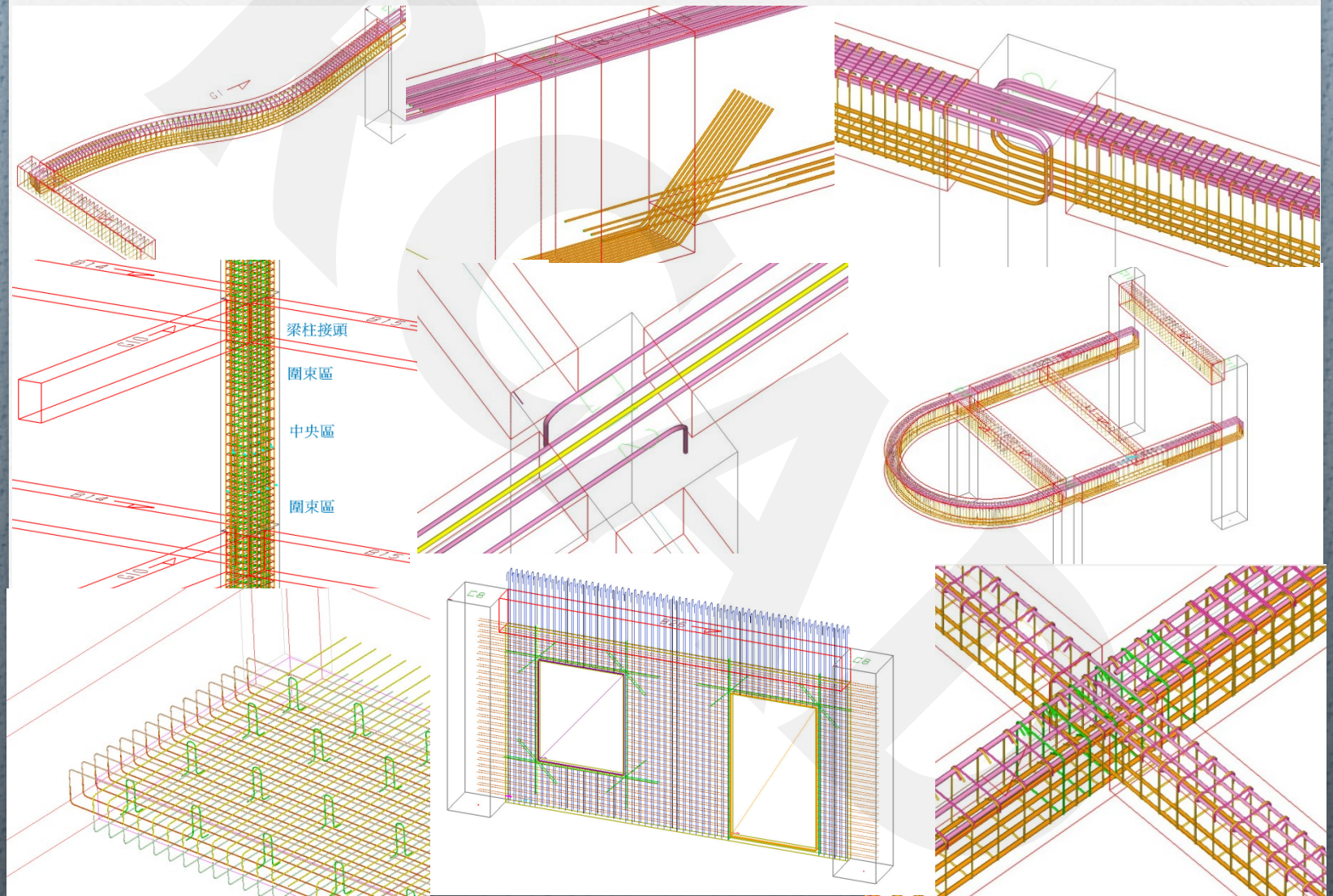
結構模型

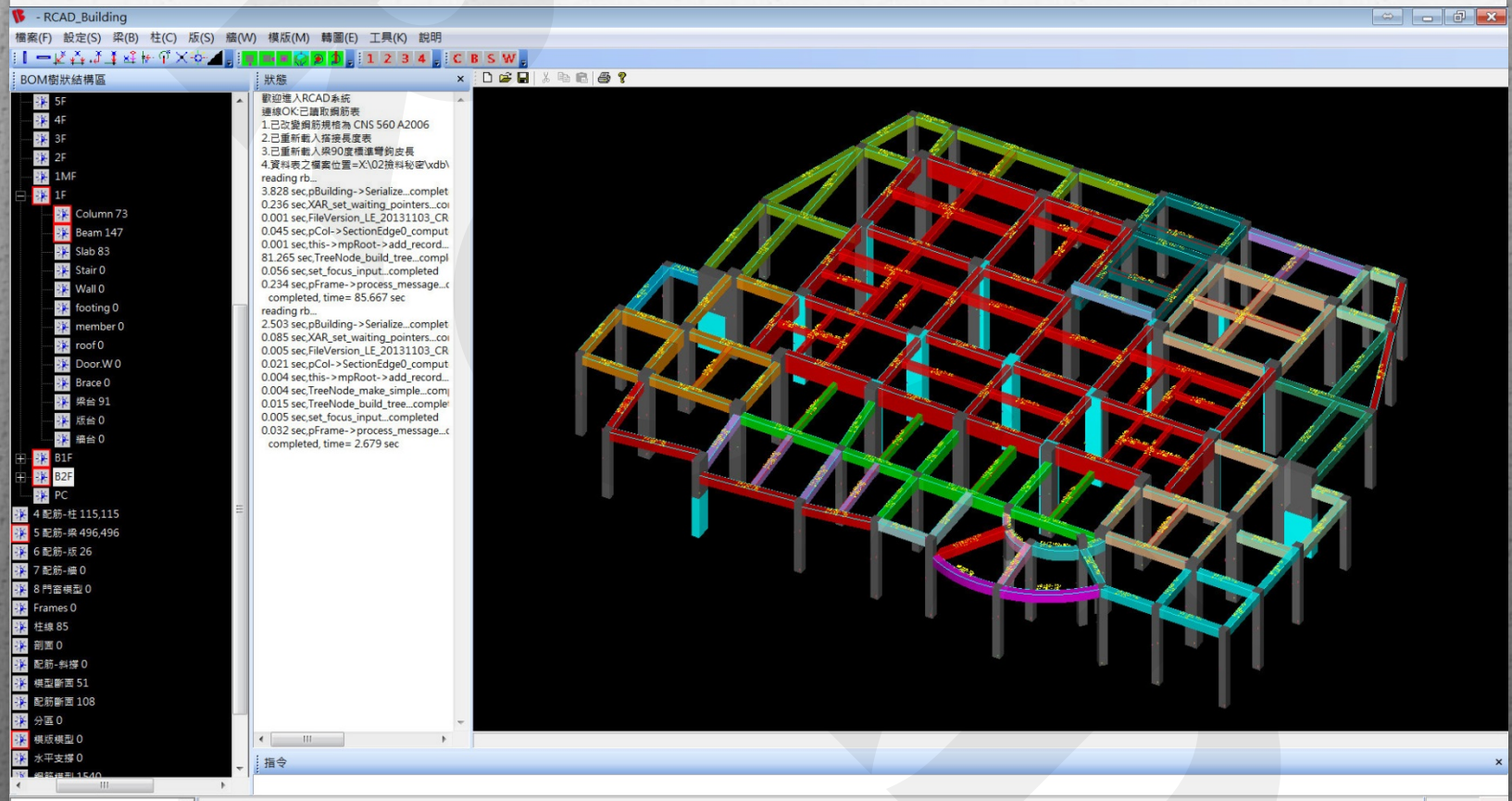


鋼筋模型

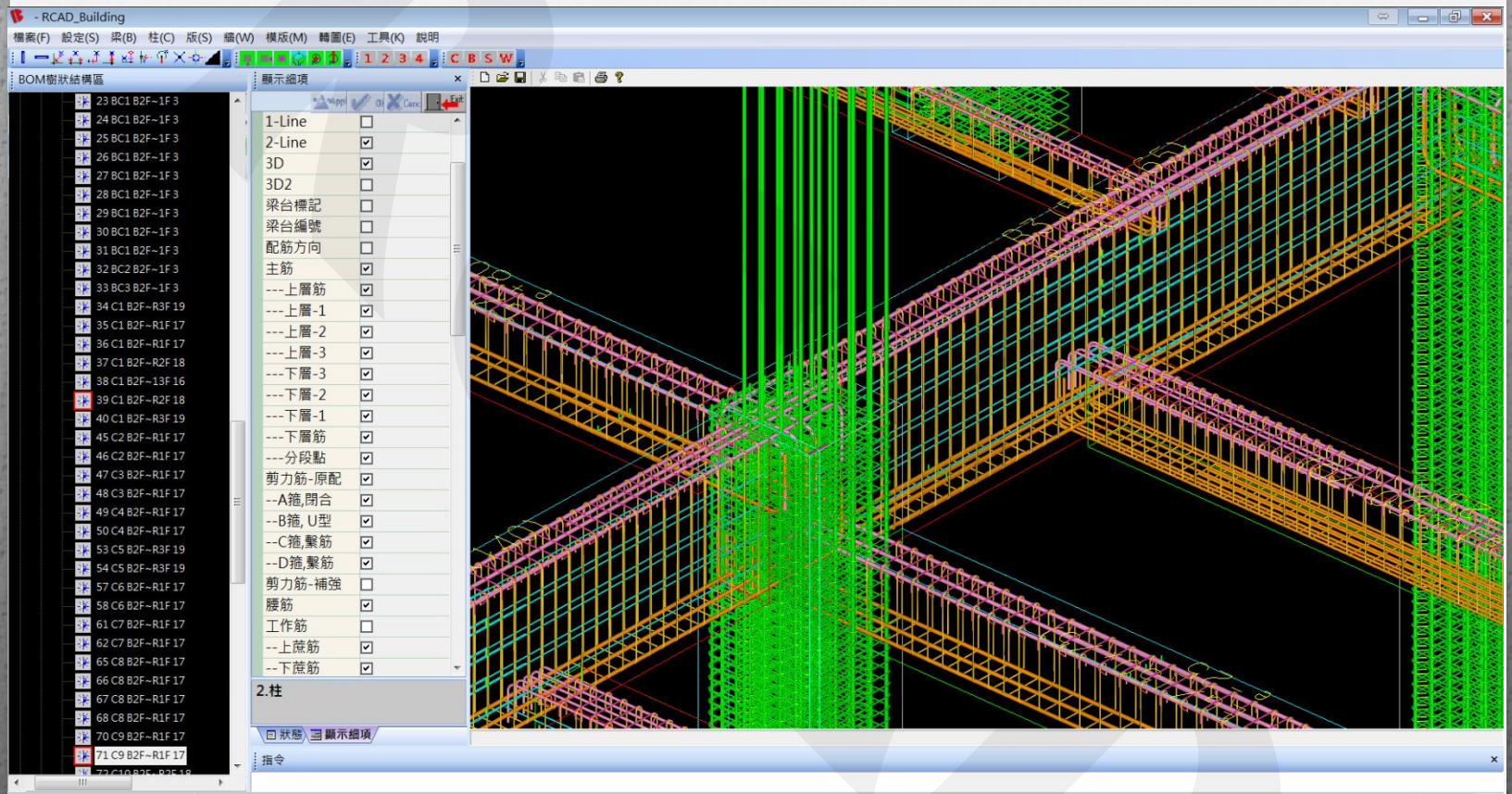


計算細節

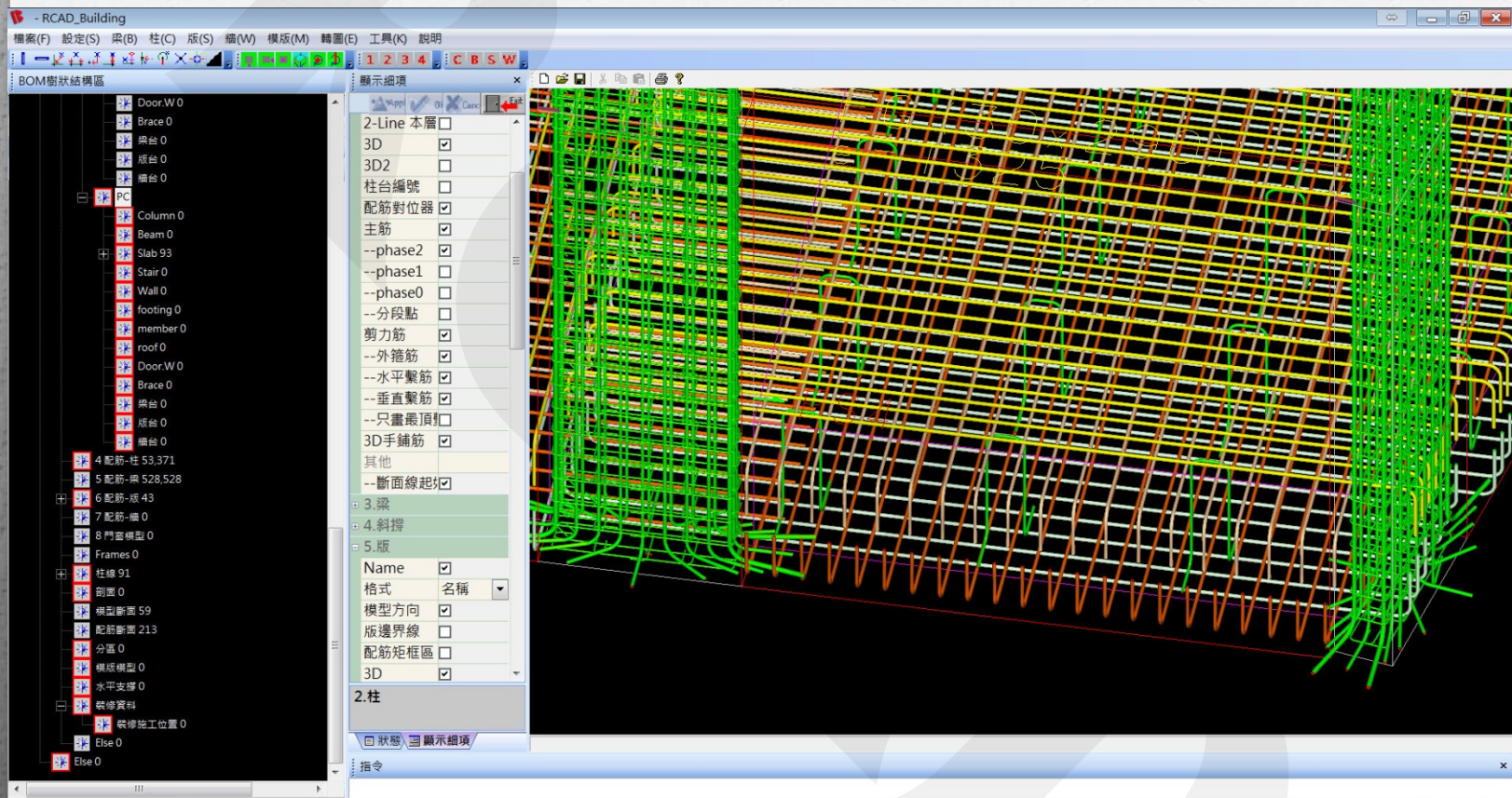




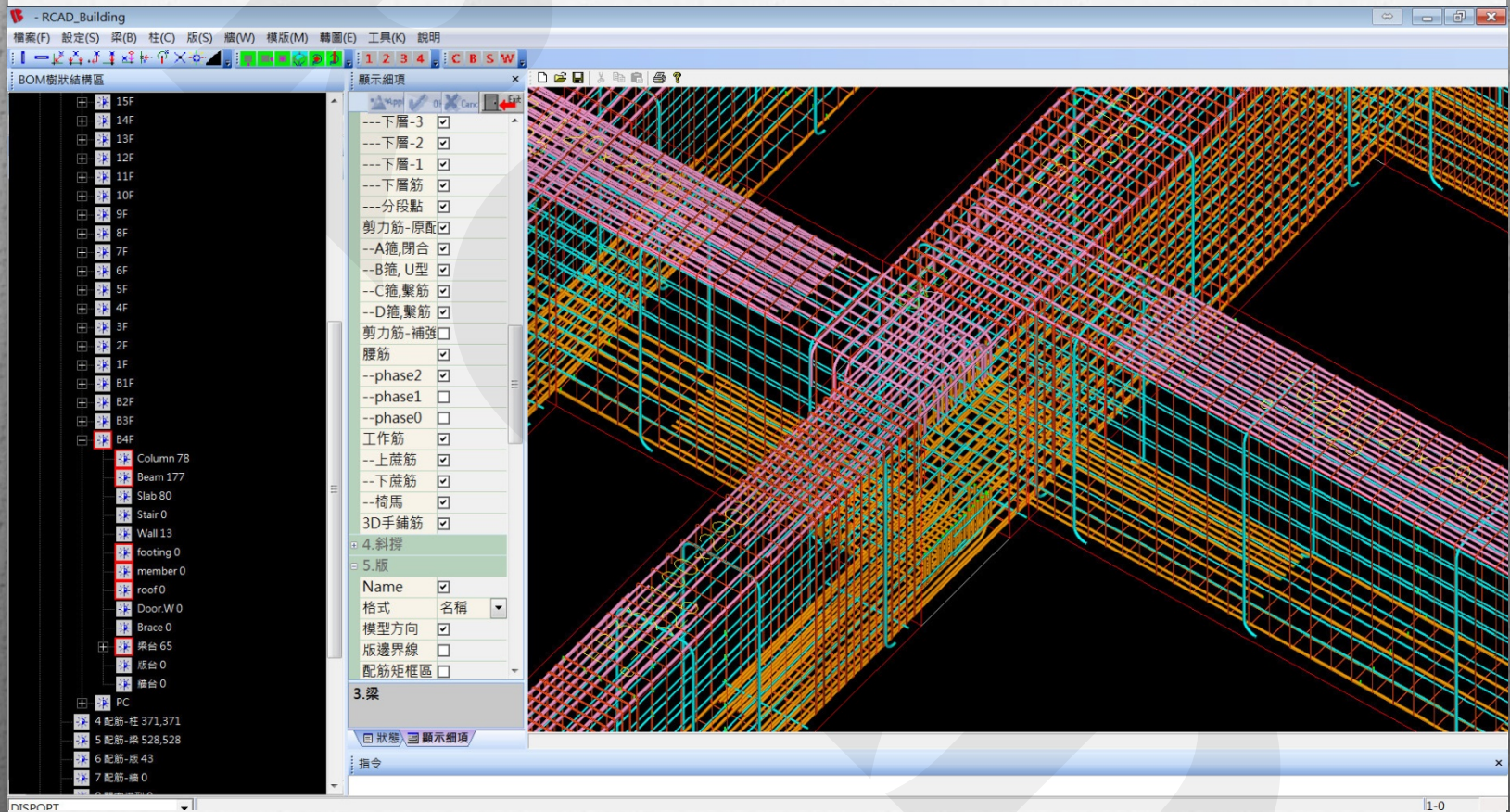
實機畫面



實機畫面

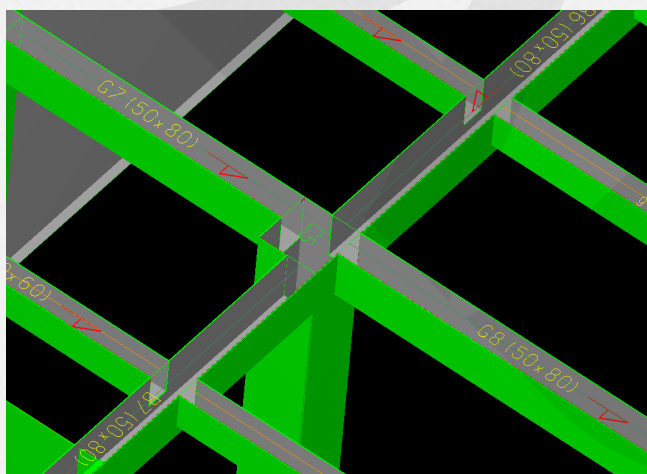
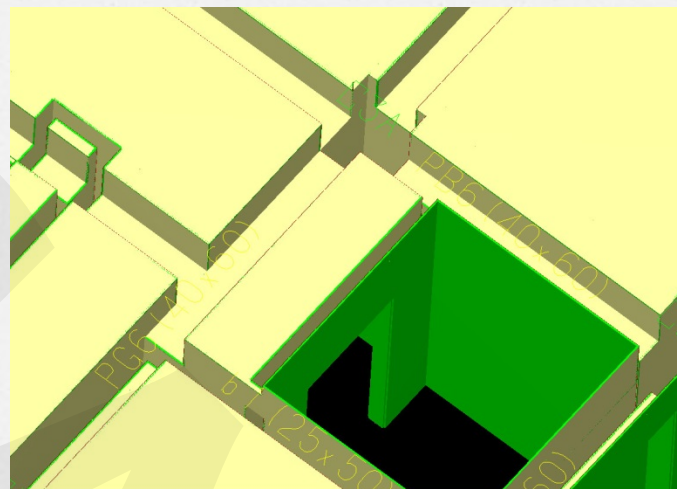
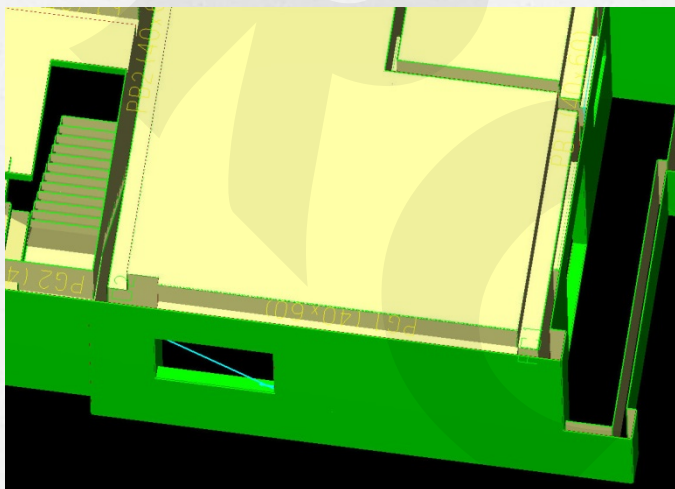


實機畫面



實機畫面

視覺化模版模型



分樓層、分號數、分梁柱版牆 鋼筋總報表

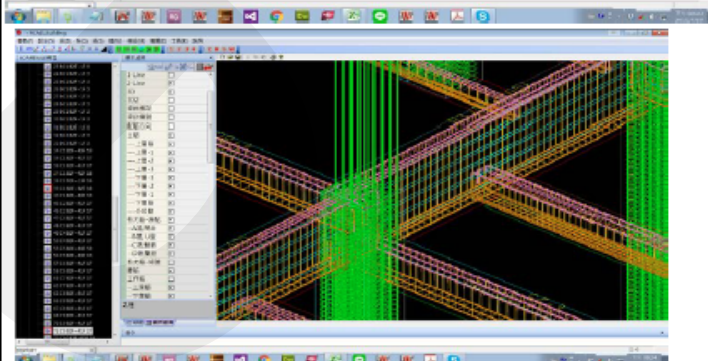
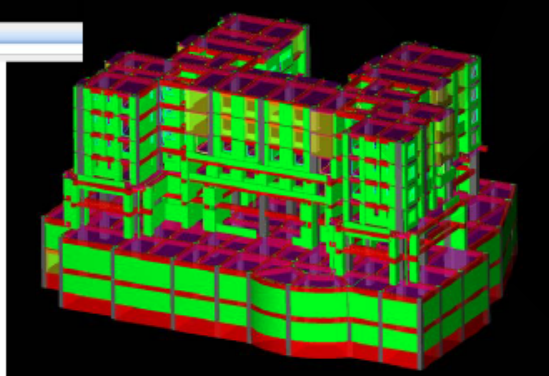
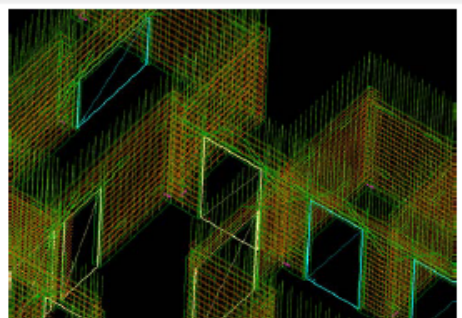
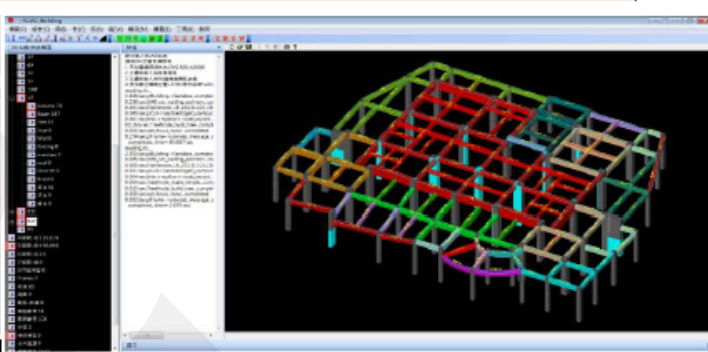
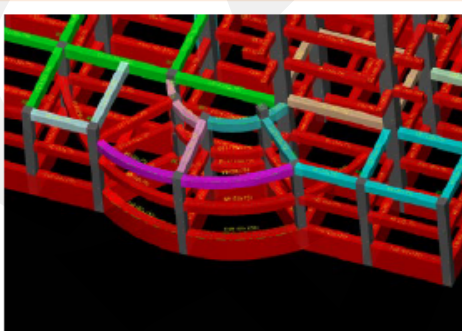
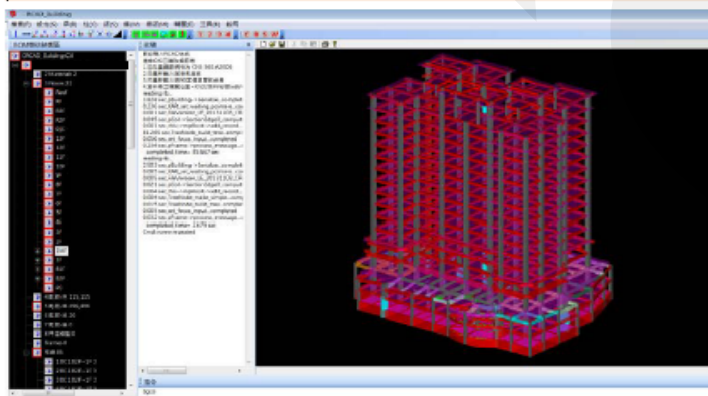
案名：永龍應用

鋼筋檢核精算總表 範例

總量 2,047 噸

單位: Kg

| | #3 | | | | #4 | | | | #5 | | | | #6 | | | | #7 | | | | #8 | | | | #10 | | | | 總量 | 總計 | | | | | |
|-------|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---|---|--------|--------|--------|---------|---------|--------|--------|---------|--------|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|---------|-----------|---------|
| | 柱 | 梁 | 版 | 牆 | 柱 | 梁 | 版 | 牆 | 柱 | 梁 | 版 | 牆 | 柱 | 梁 | 版 | 牆 | 柱 | 梁 | 版 | 牆 | 柱 | 梁 | 版 | 牆 | 柱 | 梁 | 版 | 牆 | | | 柱 | 梁 | 版 | 牆 | |
| 基礎 | | | 1,448 | 1,448 | 13,004 | | | | 12 | 13,016 | | | | 70,265 | 58,732 | 2,887 | 131,884 | | | | 65,127 | 31 | 65,158 | 2,220 | | 2,220 | 23,589 | | 23,589 | 19,303 | 55,794 | | 75,097 | | 312,412 |
| B1F | | | 7,235 | 7,235 | 19,078 | | | 96,431 | 9,152 | 124,651 | | | | 13,084 | 13,084 | | 13,084 | | | | 9,021 | 9,021 | 2,090 | | 2,090 | 16,987 | | 16,987 | | | | | 16,987 | | 173,068 |
| B1F | 190 | 23,405 | 9,891 | 39,486 | 20,726 | 12,738 | 8,478 | 13,183 | 55,125 | | | | 7,767 | 7,767 | | 6,115 | 10,376 | 16,491 | 2,688 | 4,831 | | | | 7,519 | 10,358 | | 10,358 | 21,281 | 27,313 | | 48,594 | 1,000 | 179,340 | | |
| 1F | 52 | 8,233 | 14,920 | 23,205 | 10,794 | 22,123 | 35,800 | 4,925 | 79,642 | | | | 1,279 | 1,279 | | 211 | | | | 8,270 | | | | 8,270 | 9,448 | | 9,448 | 14,472 | 35,163 | | 49,635 | 3,500 | 165,690 | | |
| 1MF | 108 | 2,083 | 13,590 | 15,781 | 8,565 | 6,468 | 616 | 3,057 | 18,706 | | | | 1,048 | 1,048 | | 575 | | | | 2,543 | | | | 2,543 | 143 | 603 | | 746 | 9,135 | 19,766 | | 28,901 | 2,000 | 68,300 | |
| 2F | 108 | 12,007 | 15,082 | 27,197 | 6,235 | 10,557 | 3,347 | 4,614 | 26,753 | | | | 3,729 | 3,729 | | 1,147 | | | | 6,825 | | | | 6,825 | 1,087 | | 1,087 | 8,899 | 26,729 | | 35,628 | 2,000 | 102,366 | | |
| 3F | 147 | 9,621 | 14,597 | 24,365 | 8,235 | 8,224 | 3,043 | 5,555 | 25,057 | | | | 3,768 | 3,768 | | 1,180 | | | | 4,562 | | | | 4,562 | 815 | | 815 | 8,899 | 22,356 | | 31,255 | 2,000 | 91,002 | | |
| 4F | 147 | 9,275 | 14,031 | 23,453 | 8,235 | 7,919 | 3,043 | 5,124 | 24,321 | | | | 3,702 | 3,702 | | 1,180 | | | | 3,814 | 5,543 | 772 | | 6,315 | | 22,534 | | 6,315 | 22,534 | | 22,534 | 2,000 | 85,319 | | |
| 5F | 147 | 9,377 | 14,280 | 23,804 | 8,235 | 7,919 | 3,040 | 5,467 | 24,661 | | | | 3,783 | 3,783 | | 1,180 | | | | 3,823 | 5,543 | 772 | | 6,315 | | 22,533 | | 6,315 | 22,533 | | 22,533 | 2,000 | 86,099 | | |
| 6F | 147 | 9,275 | 14,031 | 23,453 | 8,235 | 7,965 | 3,043 | 5,124 | 24,367 | | | | 3,702 | 3,702 | | 1,175 | | | | 3,373 | 5,543 | 734 | | 6,267 | | 22,029 | | 6,267 | 22,029 | | 22,029 | 2,000 | 84,364 | | |
| 7F | 147 | 9,378 | 14,280 | 23,805 | 8,235 | 7,765 | 3,064 | 5,467 | 24,531 | | | | 3,783 | 3,783 | | 1,180 | | | | 3,430 | 5,543 | 18,828 | | 24,371 | | | | 24,371 | | | 2,000 | 81,100 | | | |
| 8F | 147 | 9,275 | 14,031 | 23,453 | 8,235 | 7,765 | 3,067 | 5,124 | 24,191 | | | | 3,702 | 3,702 | | 1,209 | | | | 3,430 | 5,543 | 18,850 | | 24,393 | | | | 24,393 | | | 2,000 | 80,378 | | | |
| 9F | 147 | 9,378 | 14,280 | 23,805 | 8,235 | 7,422 | 3,064 | 5,467 | 24,188 | | | | 3,783 | 3,783 | | 1,209 | | | | 3,430 | 5,543 | 17,129 | | 22,672 | | | | 22,672 | | | 2,000 | 79,087 | | | |
| 10F | 147 | 9,275 | 14,031 | 23,453 | 8,235 | 7,422 | 3,067 | 5,124 | 23,848 | | | | 3,702 | 3,702 | | 1,209 | | | | 3,430 | 5,543 | 17,129 | | 22,672 | | | | 22,672 | | | 2,000 | 78,314 | | | |
| 11F | 147 | 9,378 | 14,280 | 23,805 | 8,235 | 7,160 | 3,064 | 5,467 | 23,926 | | | | 3,783 | 3,783 | | 1,209 | | | | 3,868 | 5,543 | 14,695 | | 20,238 | | | | 20,238 | | | 2,000 | 76,829 | | | |
| 12F | 147 | 9,275 | 14,031 | 23,453 | 8,235 | 7,160 | 3,067 | 5,124 | 23,579 | | | | 3,702 | 3,702 | | 1,209 | | | | 3,868 | 5,704 | 14,695 | | 20,399 | | | | 20,399 | | | 2,000 | 76,210 | | | |
| 13F | 147 | 10,886 | 17,211 | 28,244 | 8,752 | 7,160 | 3,106 | 4,513 | 23,531 | | | | 4,315 | 4,315 | | 1,209 | | | | 3,868 | 7,881 | 14,695 | | 22,576 | | | | 22,576 | | | 2,000 | 83,743 | | | |
| R1F | 225 | 8,759 | 8,965 | 17,949 | 3,113 | 6,320 | 4,621 | 1,607 | 15,661 | | | | 811 | 811 | | 878 | | | | 3,063 | 7,599 | 7,860 | | 15,459 | | 7,219 | | 7,219 | 2,000 | 61,040 | | | | | |
| R2F | 23 | 205 | 4,797 | 5,025 | 1,169 | 2,477 | 4,250 | 1,528 | 9,424 | | | | 988 | 988 | | 96 | 70 | 166 | | 5,761 | 2,162 | 1,241 | | 3,403 | | | | 3,403 | | | | 24,767 | | | |
| R3F | | | 182 | 182 | | 1,913 | 6,121 | 8,259 | 16,293 | | | | 723 | 723 | | | | | | 3,741 | | 1,461 | | 1,461 | | | | 1,461 | | | | 22,400 | | | |
| RF | | | 1,259 | 1,259 | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1,259 | | | |
| TOTAL | 2,323 | 160,344 | 233,193 | 397,860 | 175,779 | 146,477 | 193,322 | 103,893 | 619,471 | | | | 70,265 | 58,732 | 74,041 | 203,038 | 22,171 | 65,127 | 19,498 | 106,796 | 6,998 | 75,930 | | 82,928 | 67,833 | 174,751 | | 242,584 | 98,976 | 261,436 | | 360,412 | 33,500 | 2,046,589 | |



BIM鋼筋算量流程

清圖

辨識2D-CAD建築與結構圖

辨識2D-CAD結構配筋

建3D結構體模型

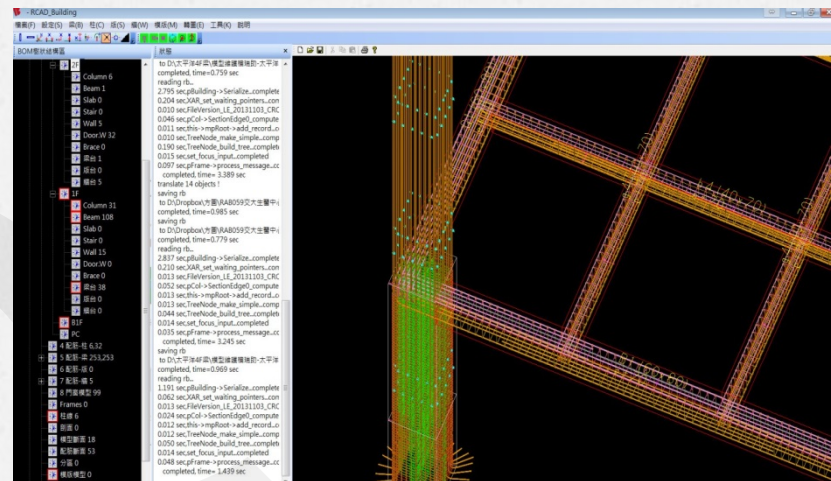
佈設3D鋼筋模型

調整鋼筋細節

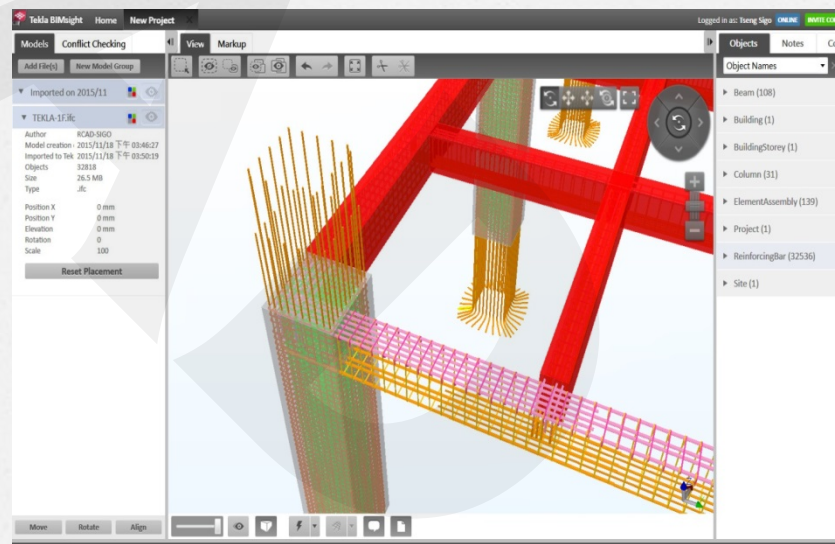
輸出報表

匯出IFC鋼筋模型

以下為本公司獨立開發之3D鋼筋建模檢料軟體RCAD_Building



此模型為RCAD產生製作之鋼筋IFC Model導入TeklaBIMsight (free download)

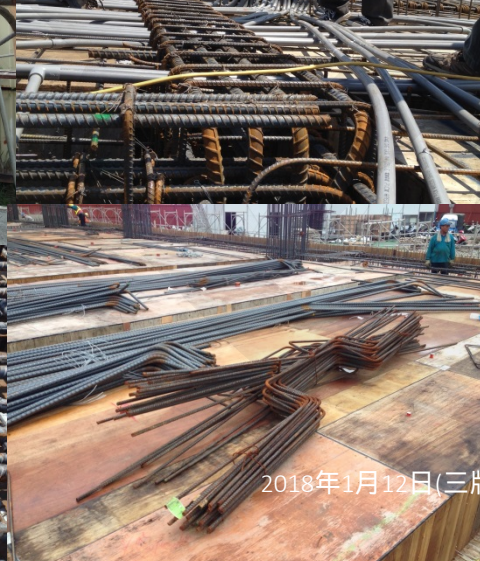
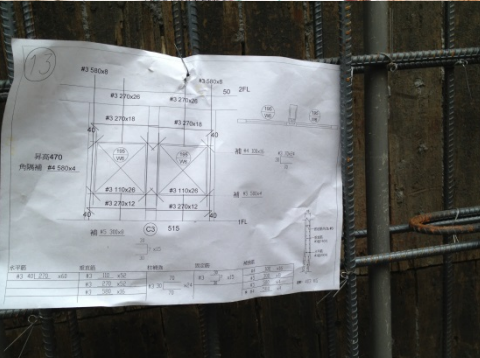


程式發展與技術整合

1. 工程的需求
2. 老師傅的傳承
3. 組成服務團隊
4. 充實工地實務經驗



截至2017年底 服務案例 超過100件



服務模式

○ 提供軟體

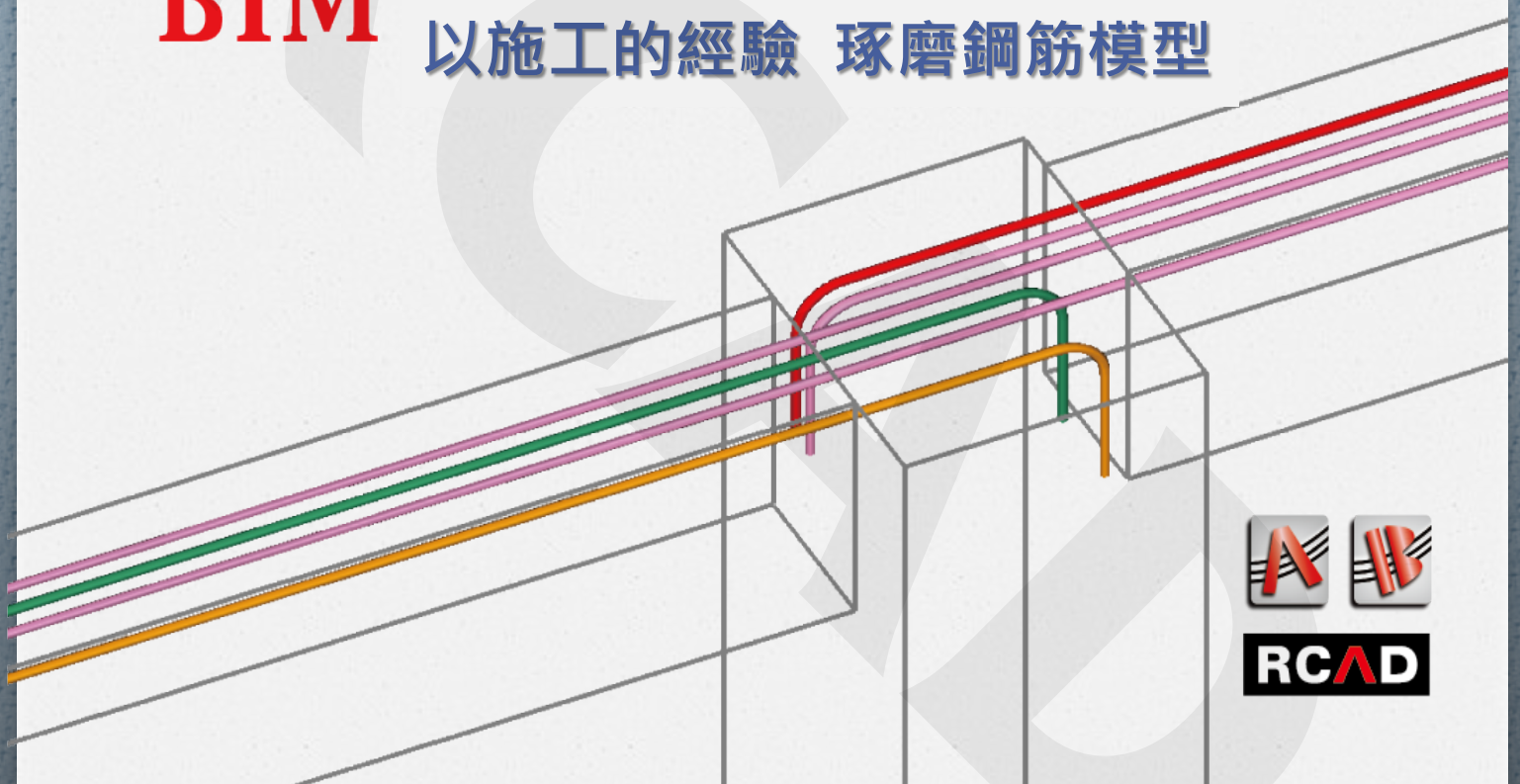
- ✓ 取得建模能力，強化鋼筋主導權

○ 提供服務

- ✓ 設計階段：
與結構技師合作，**建模計算鋼筋設計量**，控制成本
- ✓ 營造階段：
延續單一模型，**精算結構、裝修數量、預算標單**
- ✓ 施工階段：
長期投入**鋼筋撿料服務**，整合現場施工觀念

BIM

用撿料的態度 精算鋼筋數量
以施工的經驗 琢磨鋼筋模型





環佳富科技

土木技師 吳杰彥

BIM建模算量 曾煥炘