IAPPI

IKATAN AHLI PRACETAK DAN PRATEGANG INDONESIA

INDONESIAN ASSOCIATION OF PRECAST AND PRESTRESSED ENGINEERS

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PLANNING & IMPLEMENTATION IN INTEGRATIVE BUILDING DESIGN & CONSTRUCTION BY USING BUILDING INFORMATION MODELING SYSTEM

Hari Nugraha Nurjaman – General Secretary

2016 ARCHITECTURE TRANSFORMATION

JAKARTA DESIGN CENTRE

27th JANUARI 2016

Content

1. Conventional Way of Design and Construction
2. Building Information Modeling
3. Automation
4. Next Future Way of Design and Construction

Conventional Way of Design and Construction

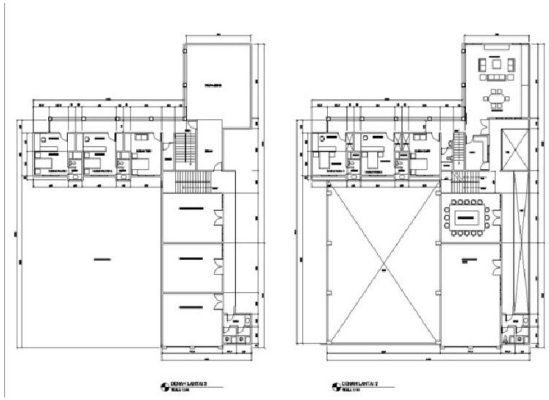
Conventional Way of Design and Construction

Architect

Civil Engineer

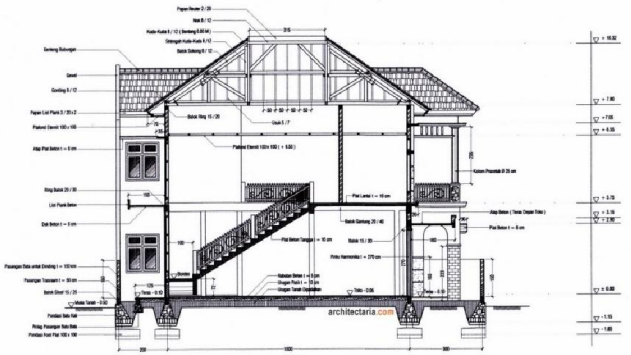
Mechanical Electrical and Plumbing Engineer

Let’s disscus our architectural design concept



Plan

View

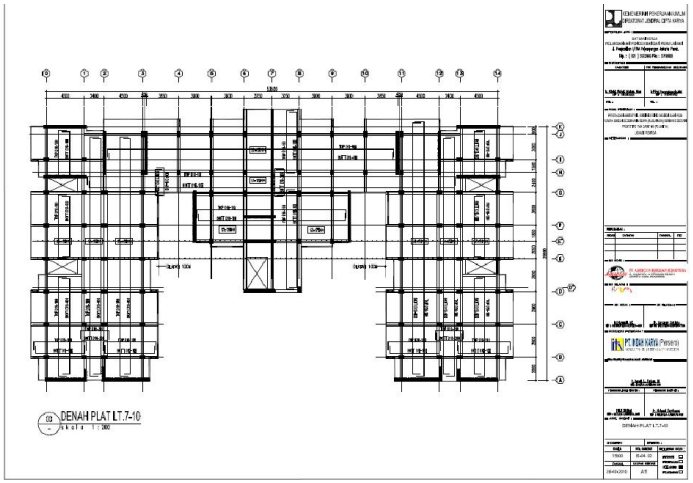


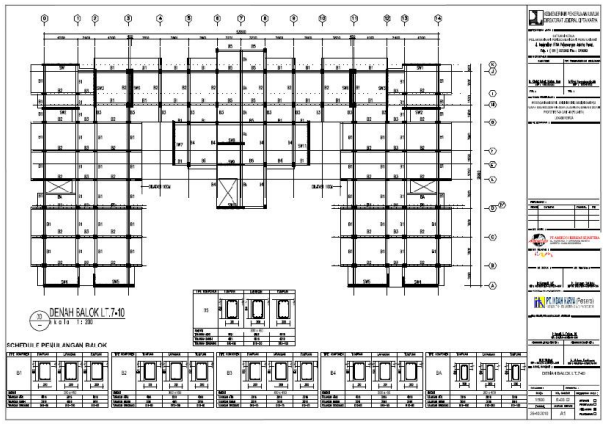
Section

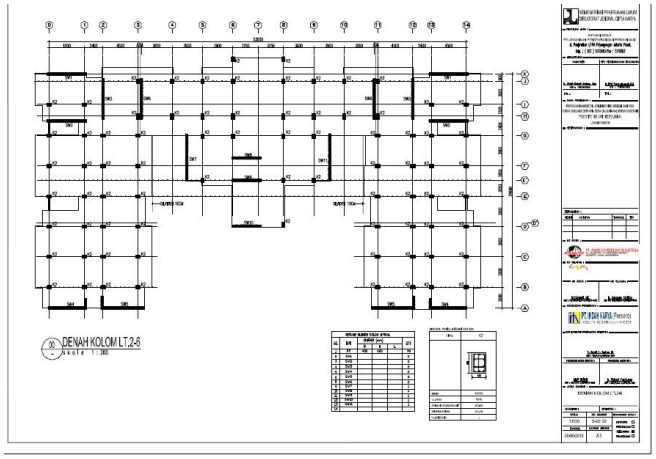
Works in 2D

3D Just an Image

Give to Civil & MEP Engineer





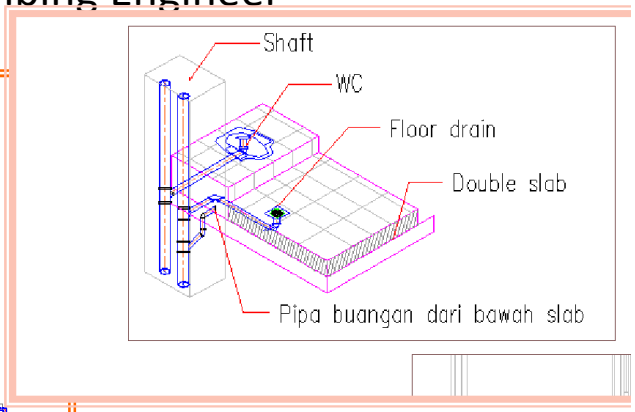


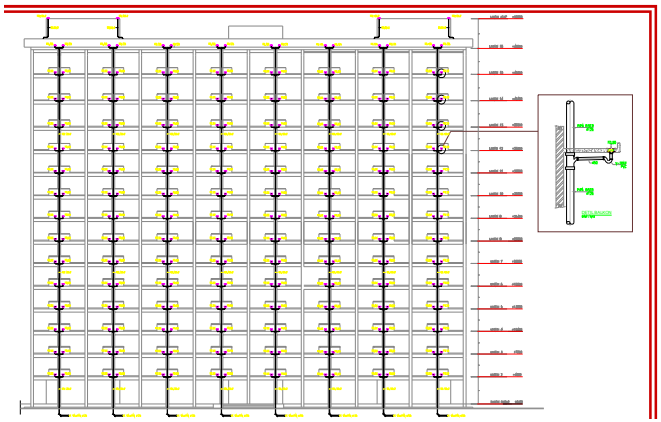
Work also in 2D

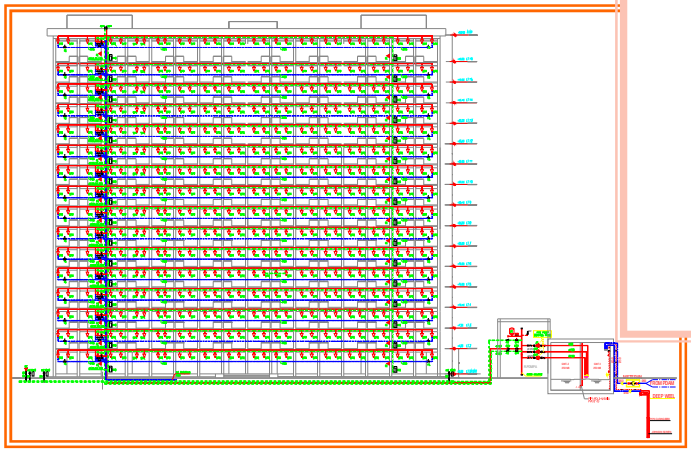
Civil Engineer

Give to Civil & MEP Engineer

Mechanical Electrical and Plumbing Engineer







Usually work in skematik

LET’S SUPERIMPOSE

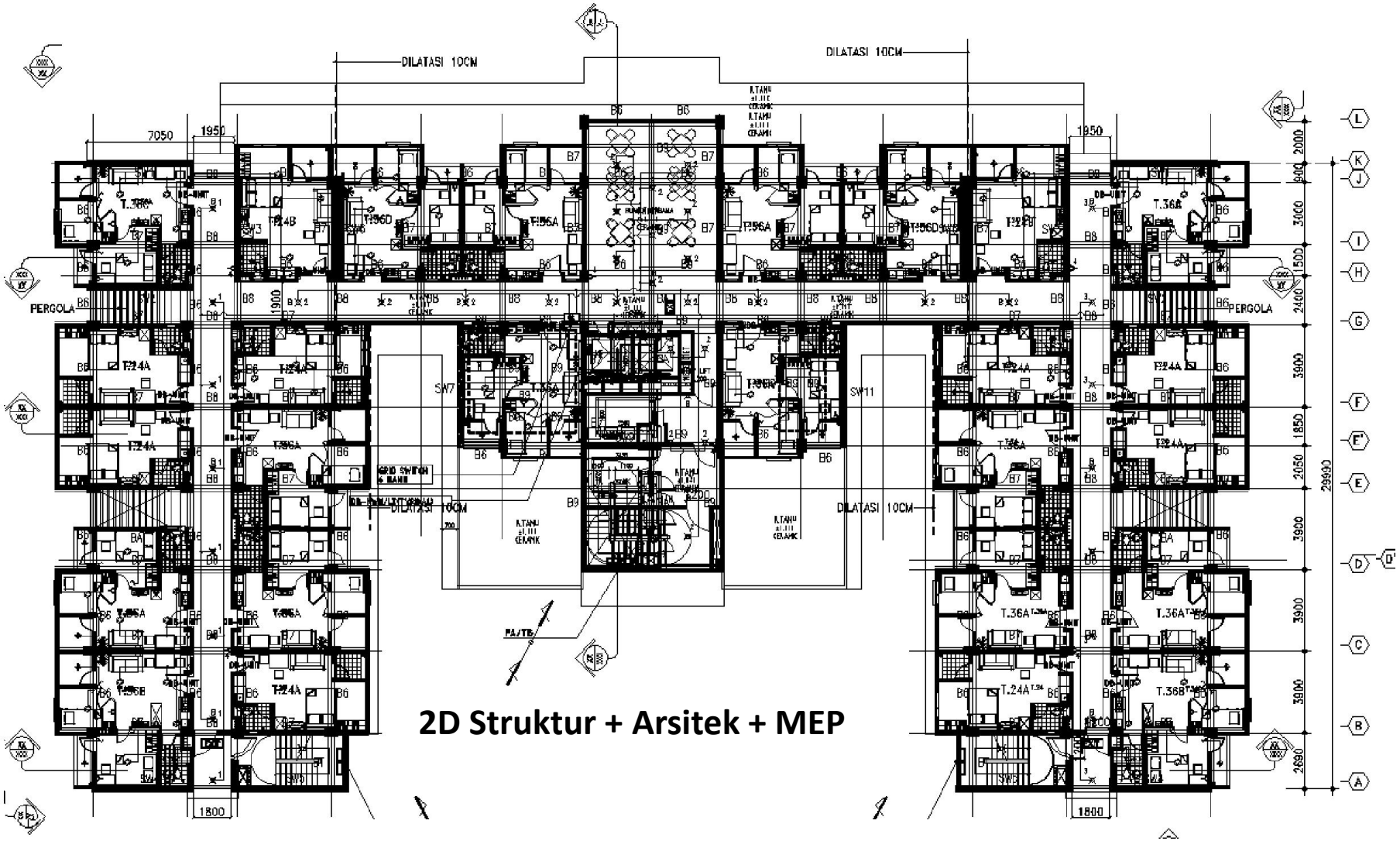
Superimpose Architec & Civil Engineer

Superimpose Architec & MEP ???

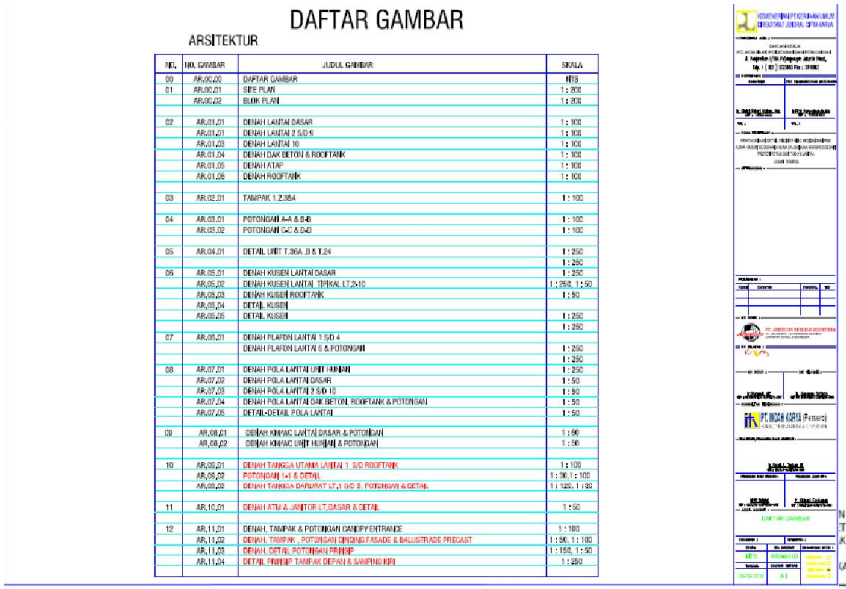
Superimpose Civil Engineer & MEP ???

BUILDING INFORMATION MODELLING

2D Superimpose handle design Revision



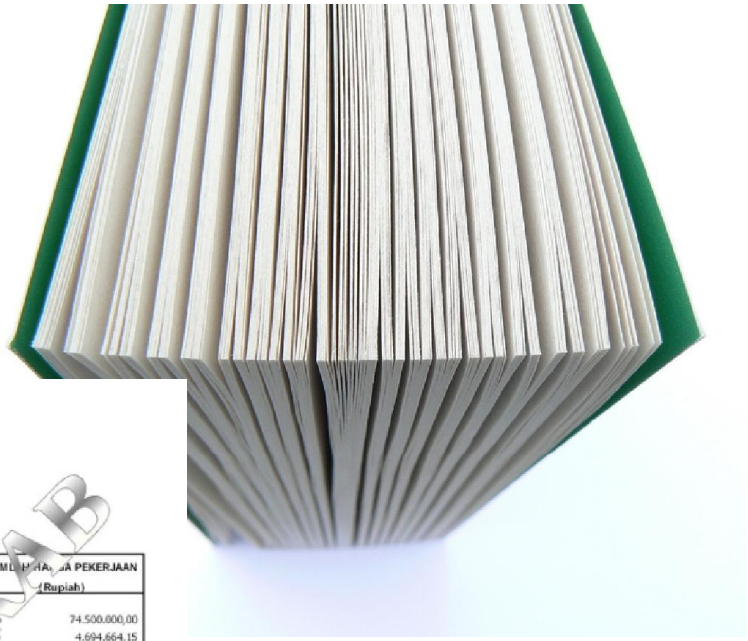
TENDER DOCUMENT



DAFTAR GAMBAR

ARSITEKTUR

NO.	NO. GAMBAR	JUDUL GAMBAR	SKALA
00	AR.00.00	DAFTAR GAMBAR	NTS
01	AR.00.01	SITE PLAN	1 : 200
	AR.00.02	BLOK PLAN	1 : 200
02	AR.01.01	DENAH LANTAI DASAR	1 : 100
	AR.01.01	DENAH LANTAI 2 S/D 9	1 : 100
	AR.01.03	DENAH LANTAI 10	1 : 100
	AR.01.04	DENAH DAK BETON & ROOFTANK	1 : 100
	AR.01.05	DENAH ATAP	1 : 100
	AR.01.06	DENAH ROOFTANK	1 : 100
03	AR.02.01	TAMPAK 1,2,3&4	1 : 100
04	AR.03.01	POTONGAN A-A & B-B	1 : 100
	AR.03.02	POTONGAN C-C & D-D	1 : 100
05	AR.04.01	DETAIL UNIT T.36A, B & T.24	1 : 250
			1 : 250
06	AR.05.01	DENAH KUSEN LANTAI DASAR	1 : 250
	AR.05.02	DENAH KUSEN LANTAI TIPikAL LT.2-10	1 : 250, 1 : 50
	AR.05.03	DENAH KUSEN ROOFTANK	1 : 50
	AR.05.04	DETAIL KUSEN	
	AR.05.05	DETAIL KUSEN	1 : 250
			1 : 250
07	AR.06.01	DENAH PLAFON LANTAI 1 S/D 4	
		DENAH PLAFON LANTAI 5 S.D POTONGAN	1 : 250
			1 : 250
08	AR.07.01	DENAH POLA LANTAI UNIT HUNIAN	1 : 250
	AR.07.02	DENAH POLA LANTAI DASAR	1 : 50
	AR.07.03	DENAH POLA LANTAI 2 S/D 10	1 : 50
	AR.07.04	DENAH POLA LANTAI DAK BETON, ROOFTANK & POTONGAN	1 : 50
	AR.07.05	DETAIL-DETAIL POLA LANTAI	1 : 50
09	AR.08.01	DENAH KHMAC LANTAI DASAR & POTONGAN	1 : 50
	AR.08.02	DENAH KHMAC UNIT HUNIAN & POTONGAN	1 : 50
10	AR.09.01	DENAH TANGGA UTAMA LANTAI 1 S/D ROOFTANK	1 : 100
	AR.09.02	POTONGAN 1-1 & DETAIL	1 : 50, 1 : 100
	AR.09.03	DENAH TANGGA DARURAT LT.1 S/D 5, POTONGAN & DETAIL	1 : 125, 1 : 50
11	AR.10.01	DENAH ATM & JANITOR LT.DASAR & DETAIL	1 : 50
12	AR.11.01	DENAH, TAMPAK & POTONGAN CANOPY ENTRANCE	1 : 100
	AR.11.02	DENAH, TAMPAK , POTONGAN CINDING FASADE & BALUSTRADE PRECAST	1 : 50, 1 : 100
	AR.11.03	DENAH, DETAIL POTONGAN PRINSIP	1 : 150, 1 : 50
	AR.11.04	DETAIL TRINDIP, TAMPAK DEPAN & SAMPING KIRI	1 : 250



REKAPITULASI

PERKIRAAN HARGA PEKERJAAN

N :

T :

KET :

(AB :

No. DIVISI	URAIAN	JUMLAH HARGA PEKERJAAN (Rupiah)	
1	Umum	Rp	74.500.000,00
2	Drainase	Rp	4.694.664,15
3	Pekerjaan Tanah	Rp	72.162.686,08
4	Pelebaran Perkerasan dan Bahu Jalan	Rp	-
5	Pekerasan Non aspal	Rp	1.556.727.264,58
6	Perkerasan Aspal	Rp	-
7	Struktur	Rp	319.794.822,98
8	Pengembalian Kondisi dan Pelaksanaan Minor	Rp	-
9	Pekerjaan Harian	Rp	-
10	Pekerjaan Pemeliharaan Rutin	Rp	-
(A)	Jumlah Harga Pekerjaan (Administrasi Biaya Umum dan Keuntungan)	Rp	2.027.879.437,78
(B)	Pajak Pertambahan Nilai (PPn) = 10% x (A)	Rp	202.787.943,78
(C)	JUMLAH TOTAL HARGA PEKERJAAN = (A) + (B)	Rp	2.230.667.381,55
(D)	DIBULATKAN	Rp	2.230.667.381,00

Terbilang : Dua Milyar Dua Ratus Tiga Puluh Juta Enam Ratus Enam Puluh Tujuh Ribu Tiga Ratus Delapan Puluh Satu Rupiah.

Pangkalan Kerinci, 13 Mei 2011

Dibuat Oleh,

PT. / CV. .....

.....

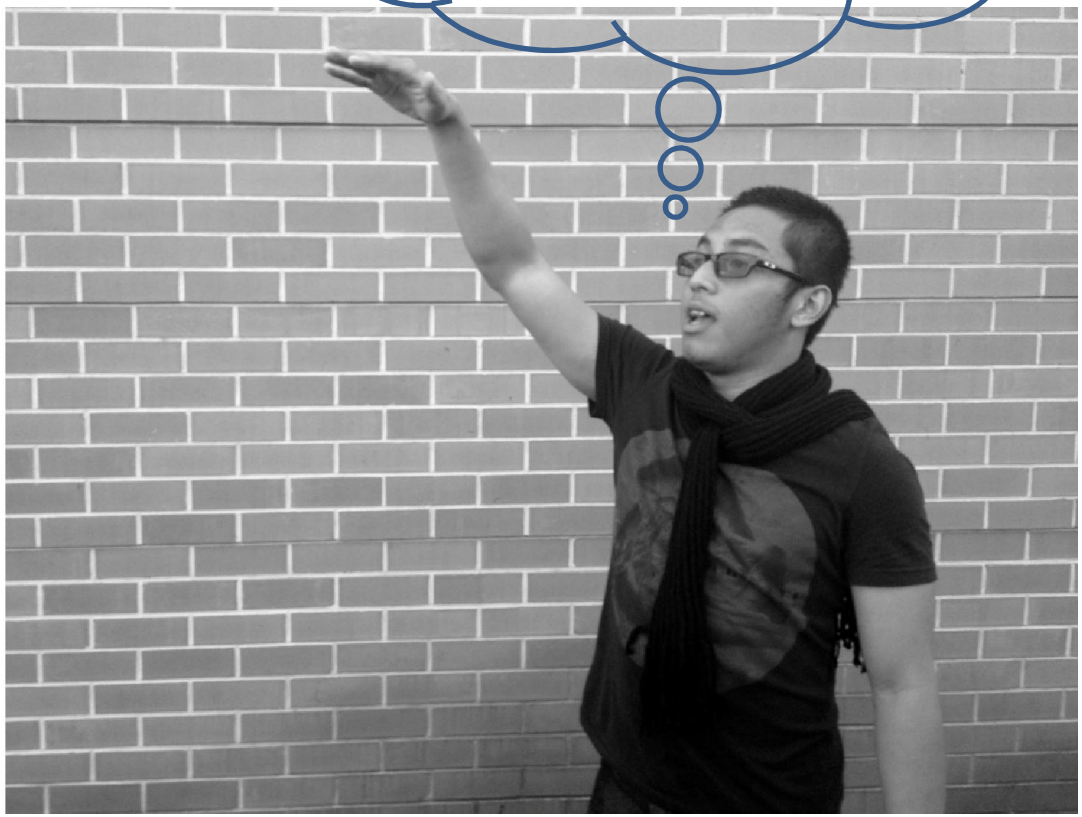
Direktur Utama

Drawing, Budget, Specificarion

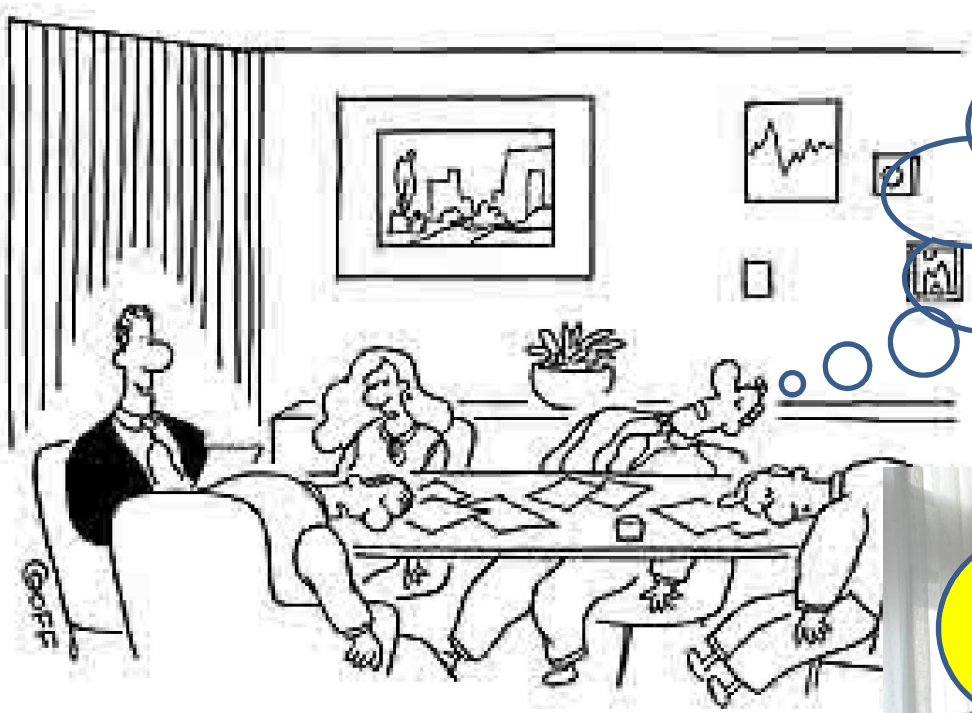
CALL CONTRACTORS

**OK, BOSS
I DO
ANYTHING
FOR YOU**

**PLEASE MAKE
BIDDING WITH
A REASONABLE
PRICE**



At Limited Time Contractor Make Bidding From 2D Drawing



The Most Importan things, we win the Contract

When the Contractors do Shop Drawing

Design Drawing Conflict each other, what we must do ???

THE PROFESSIONAL CONTRACTORS WILL DO .....

Hey Boss, I think something wrong with Design, we must hold the works until it's clear. RFI#1.....1000

What's??
Consultant Check!!
RFI# 1.....1000

SHIT!!!
(my Retention only 5 %)

Architect

Civil Engineer

Mechanical Electrical and Plumbing Engineer

Architect

Boss,
we need
added CCO
To fix this
problem

Hey Who will pay this ?!!

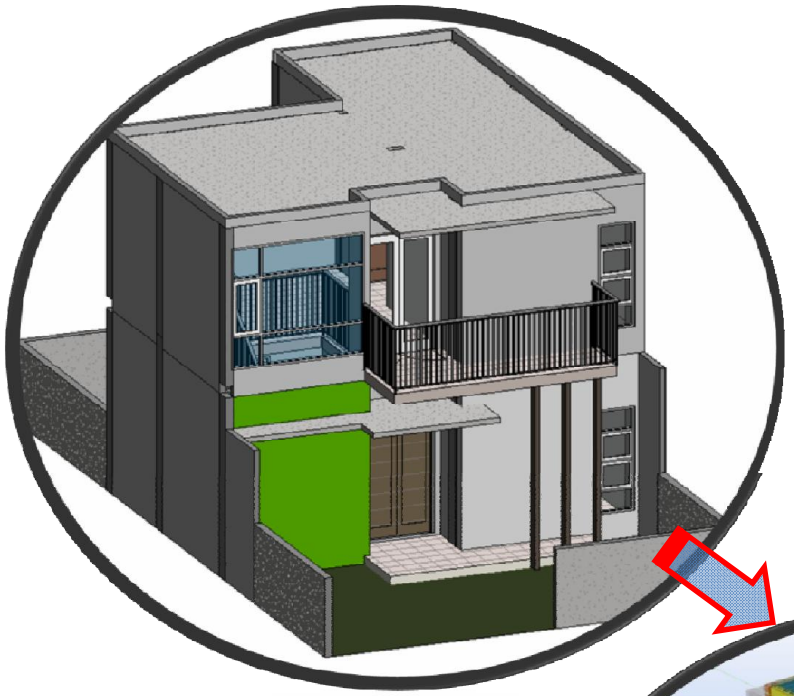
THE UNPROFESSIONAL CONTRACTORS WILL DO .....

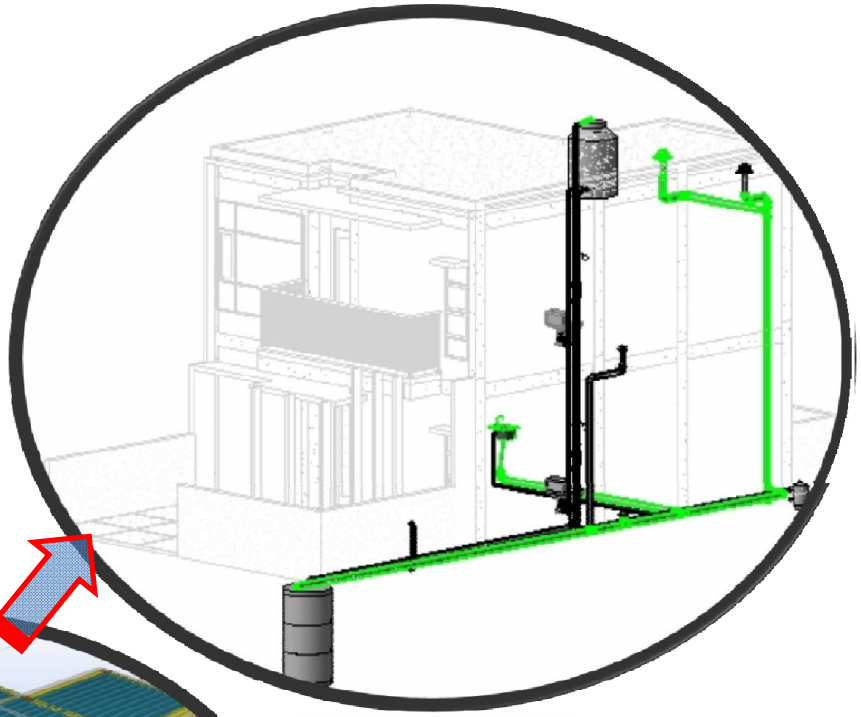
mmm....
The Consultan slow to Respons our RFI

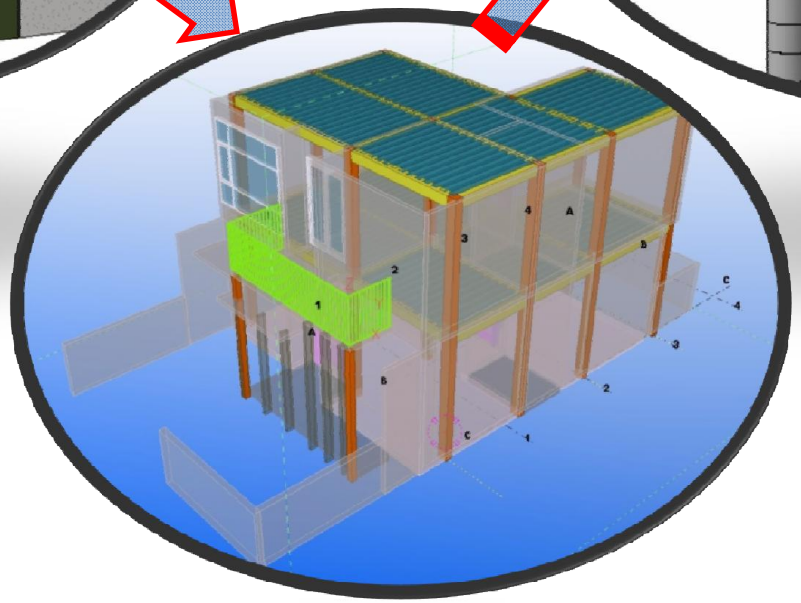
Lest Decide ourselves

OMG...My Investment?!

BUILDING INFORMATION MODELLING







•Revit Architec

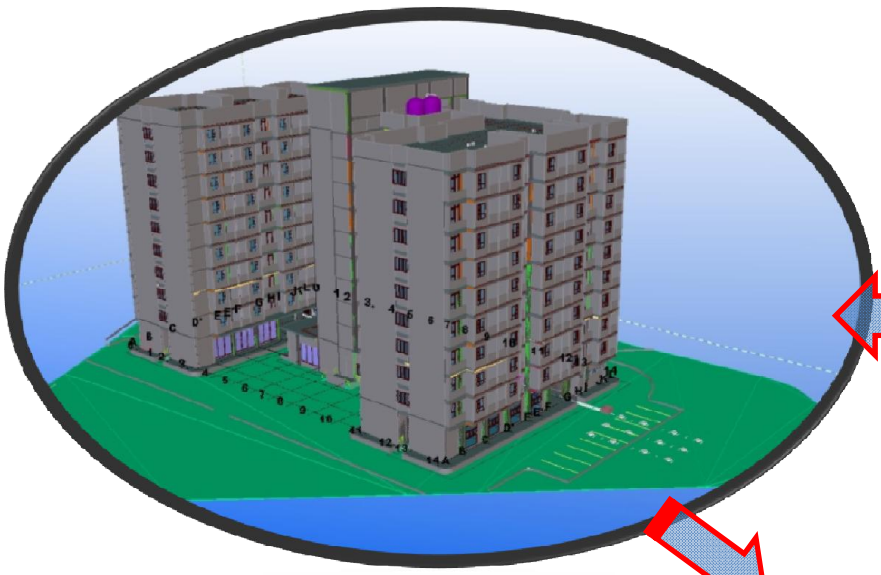
•Revit MEP

Several 3D software With data base and Can communicated each other

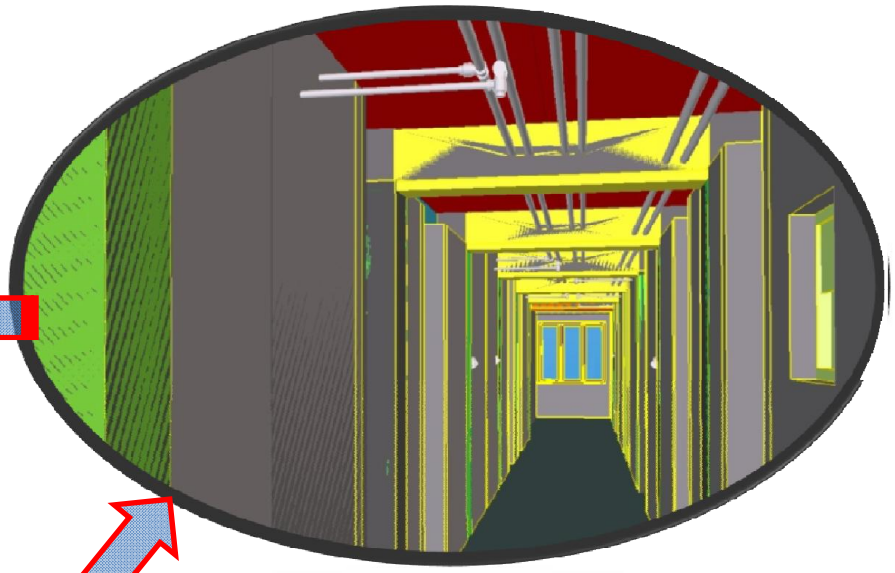
•Tekla Structure

HOUSE PROJECT

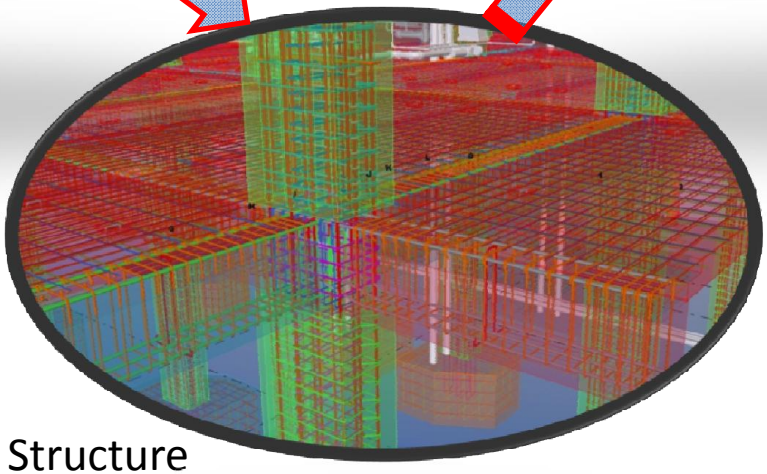
BUILDING INFORMATION MODELLING



•Revit Architec



•Revit MEP



•Tekla Structure

BUILDING INFORMATION MODELLING

Material Volume can taken directly from model

- Revit ARSITEK

<Wall Material Takeoff>

A	B	C
Type	Material: Volume	Material: Area
DDNG BATA 15CM		
DDNG BATA 15CM	0.80 m³	7 m²
DDNG BATA 15CM	0.20 m³	13 m²
DDNG BATA 15CM	1.41 m³	12 m²
DDNG BATA 15CM	0.35 m³	24 m²
DDNG BATA 15CM	0.23 m³	2 m²
DDNG BATA 15CM	0.06 m³	4 m²
DDNG BATA 15CM	0.76 m³	6 m²
DDNG BATA 15CM	0.19 m³	13 m²
DDNG BATA 15CM	0.75 m³	6 m²
DDNG BATA 15CM	0.19 m³	12 m²
DDNG BATA 15CM	0.67 m³	6 m²
DDNG BATA 15CM	0.17 m³	11 m²
DDNG BATA 15CM	0.14 m³	1 m²
DDNG BATA 15CM	0.03 m³	2 m²
DDNG BATA 15CM	0.06 m³	1 m²
DDNG BATA 15CM	0.02 m³	1 m²
DDNG BATA 15CM	0.02 m³	0 m²
DDNG BATA 15CM	0.00 m³	0 m²
DDNG BATA 15CM	0.04 m³	0 m²
DDNG BATA 15CM	0.01 m³	1 m²
DDNG BATA 15CM	0.02 m³	0 m²
DDNG BATA 15CM	0.01 m³	0 m²
DDNG BATA 15CM	0.08 m³	1 m²
DDNG BATA 15CM	0.02 m³	1 m²
DDNG BATA 15CM	0.22 m³	2 m²
DDNG BATA 15CM	0.05 m³	4 m²
DDNG BATA 15CM	0.08 m³	1 m²
DDNG BATA 15CM	0.02 m³	1 m²
DDNG BATA 15CM	0.07 m³	1 m²
DDNG BATA 15CM	0.02 m³	1 m²
DDNG BATA 15CM	0.10 m³	1 m²
DDNG BATA 15CM	0.03 m³	2 m²
DDNG BATA 15CM: 32	6.82 m³	136 m²
DDNG PANEL 8CM		

- Tekla Struktur

```
TEKLA STRUCTURES Cast unit Bill of Material                     Page: 1
Contract N:o: TS1000                                            Date: 16.10.2014
Title: Tekla Structures Project Name                            Time: 18:09:14
Phase:
================================================================================
  Cast unit          Qty.  Material           Volume [m³]  Weight [kg]
  ------------------------------------------------------------------------------
   B1Ax                 2  C40                 0.17         415.5
  ------------------------------------------------------------------------------
  Reinforcing bars:
     Mark            Size        Dimensions                    Weight [kg]
  Shape   Qty. Grade       L   a  b  c  d  e  u v D     Total kg
  ------------------------------------------------------------------------------
  99 38    34     D 10   1320                                  0.8      13.9
  99R/4     2     D 10   1070                                  0.7       0.7
  99R/1     6     D 16   6590                                 10.4      31.2
                                                          --------------------
                                                          Total:        45.8
  ------------------------------------------------------------------------------
                                               Cast unit Total:    461.3 kg
================================================================================
  Cast unit          Qty.  Material           Volume [m³]  Weight [kg]
  ------------------------------------------------------------------------------
   B5                  48  C40                 0.18         436.7
  ------------------------------------------------------------------------------
  Reinforcing bars:
     Mark            Size        Dimensions                    Weight [kg]
  Shape   Qty. Grade       L   a  b  c  d  e  u v D     Total kg
  ------------------------------------------------------------------------------
  00266   288     D 16    650  659                             1.0       6.2
  26R/1 1728      D 16    440  104   255   104   223           0.7      25.1
  99 38 1296      D 10   1320                                  0.8      22.0
  99163   144     D 16   2510                                  4.0      11.9
  99R/4    96     D 10   1070                                  0.7       1.3
                                                          --------------------
                                                          Total:        66.7
  ------------------------------------------------------------------------------
                                               Cast unit Total:    503.4 kg
================================================================================
  Cast unit          Qty.  Material           Volume [m³]  Weight [kg]
  ------------------------------------------------------------------------------
  B2 konv.             48  C40                 0.23         560.0
  ------------------------------------------------------------------------------
  Reinforcing bars:
     Mark            Size        Dimensions                    Weight [kg]
  Shape   Qty. Grade       L   a  b  c  d  e  u v D     Total kg
  ------------------------------------------------------------------------------
  00 46    24     D 25   2320  2324                            8.9      35.8
  00 47    12     D 12   2320  2324                            2.1       4.1
  00545    24     D 25   1640  1644                            6.3      25.4
  00546    12     D 12   1640  1644                            1.5       2.9
  31558   132     D  8   1230  248   397   247   398           0.5      10.7
  51282   132     D  8   1430  398   247   132                 0.6      12.5
                                                          --------------------
                                                          Total:        10.7
  ------------------------------------------------------------------------------
                                               Cast unit Total:    570.7 kg
================================================================================
  Cast unit          Qty.  Material           Volume [m³]  Weight [kg]
  ------------------------------------------------------------------------------
  BA                   55  C40                 0.32         792.9
  ------------------------------------------------------------------------------
  Reinforcing bars:
     Mark            Size        Dimensions                    Weight [kg]
  Shape   Qty. Grade       L   a  b  c  d  e  u v D     Total kg
  ------------------------------------------------------------------------------
  00 46    48     D 25   2320  2324                            8.9      35.8
  00 47    24     D 12   2320  2324                            2.1       4.1
  51283   264     D  8   1130  348   147   132                 0.4       9.9
                                                          --------------------
```

OK

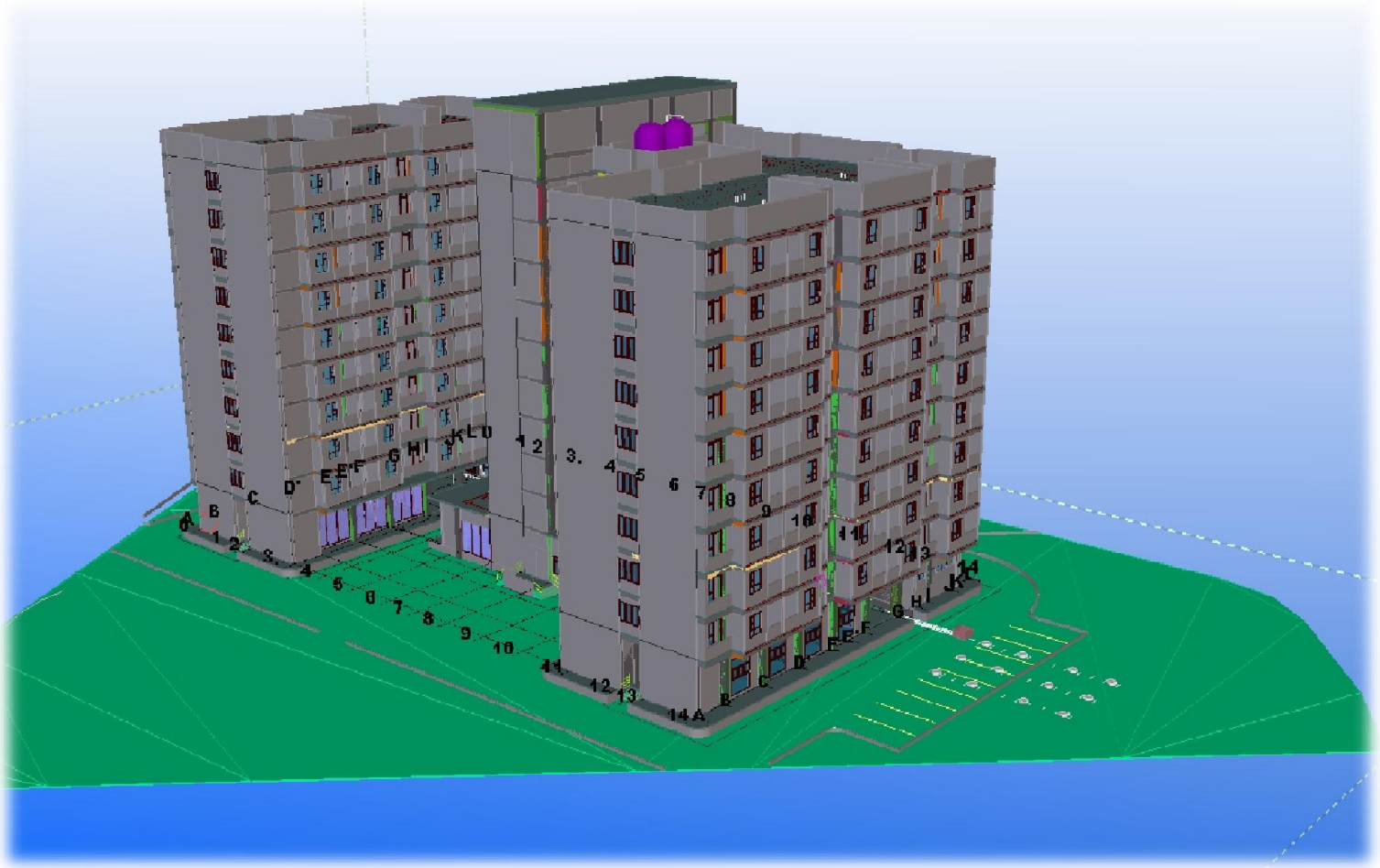
- Revit MEP

<Pipe Fitting Schedule>

A	B	C	D	E
vgvgvg	Type	Family and Type	Size	Volume
	Standard	M_Transition - Wel	32 mmø-15 mmø	0.00 m³
	Standard	M_Transition - Wel	32 mmø-15 mmø	0.00 m³
	Standard	M_Transition - Wel	100 mmø-51 mmø	0.00 m³
M_Transition - Welded - Generic: Standard: 3				0.00 m³
	Standard	M_Tee Sanitary -	32 mmø-32 mmø-3	0.00 m³
	Standard	M_Tee Sanitary -	32 mmø-32 mmø-3	0.00 m³
	Standard	M_Tee Sanitary -	100 mmø-100 mmø	0.00 m³
	Standard	M_Tee Sanitary -	100 mmø-100 mmø	0.00 m³
	Standard	M_Tee Sanitary -	32 mmø-32 mmø-3	0.00 m³
	Standard	M_Tee Sanitary -	32 mmø-32 mmø-3	0.00 m³
	Standard	M_Tee Sanitary -	100 mmø-100 mmø	0.00 m³
	Standard	M_Tee Sanitary -	100 mmø-100 mmø	0.00 m³
M_Tee Sanitary - PVC - Sch 40 - DWV: Standard: 8				0.02 m³
	Standard	M_Tee - Welded -	100 mmø-100 mmø	0.00 m³
M_Tee - Welded - Generic: Standard: 1				0.00 m³
	Standard	M_Reducer - PVC	100 mmø-51 mmø	0.00 m³
	Standard	M_Reducer - PVC	51 mmø-25 mmø	0.00 m³
	Standard	M_Reducer - PVC	50 mmø-32 mmø	0.00 m³
	Standard	M_Reducer - PVC	32 mmø-15 mmø	0.00 m³
	Standard	M_Reducer - PVC	50 mmø-32 mmø	0.00 m³
	Standard	M_Reducer - PVC	50 mmø-32 mmø	0.00 m³
	Standard	M_Reducer - PVC	50 mmø-32 mmø	0.00 m³
	Standard	M_Reducer - PVC	50 mmø-32 mmø	0.00 m³
	Standard	M_Reducer - PVC	32 mmø-15 mmø	0.00 m³
M_Reducer - PVC - Sch 40 - DWV: Standard: 9				0.00 m³
	Standard	M_Elbow - Welded	100 mmø-100 mmø	0.00 m³
	Standard	M_Elbow - Welded	100 mmø-100 mmø	0.00 m³
M_Elbow - Welded - Generic: Standard: 2				0.00 m³
	Standard	M_Coupling - PVC	32 mmø-32 mmø	0.00 m³
	Standard	M_Coupling - PVC	100 mmø-100 mmø	0.00 m³
M_Coupling - PVC - Sch 40 - DWV: Standard: 2				0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	100 mmø-100 mmø	0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	32 mmø-32 mmø	0.00 m³
	Standard	M_Bend - PVC - S	100 mmø-100 mmø	0.00 m³
	Standard	M_Bend - PVC - S	100 mmø-100 mmø	0.00 m³
	Standard	M_Bend - PVC - S	100 mmø-100 mmø	0.00 m³
M_Bend - PVC - Sch 40 - DWV: Standard: 26				0.02 m³
51				0.06 m³
51				0.06 m³

BUILDING INFORMATION MODELLING

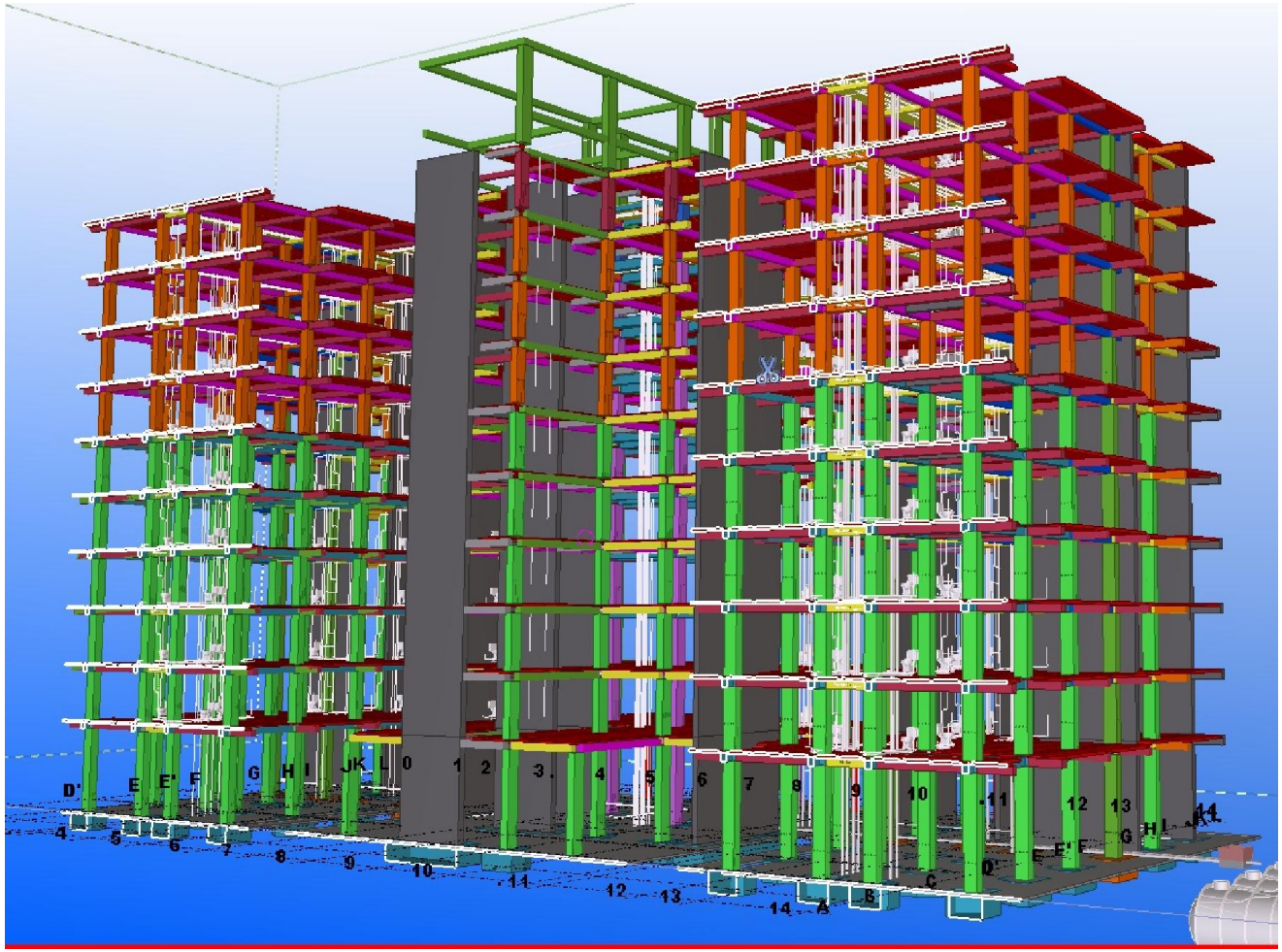
Can prevent clash in and between 3 dicipline



•Revit Architec

BUILDING INFORMATION MODELLING

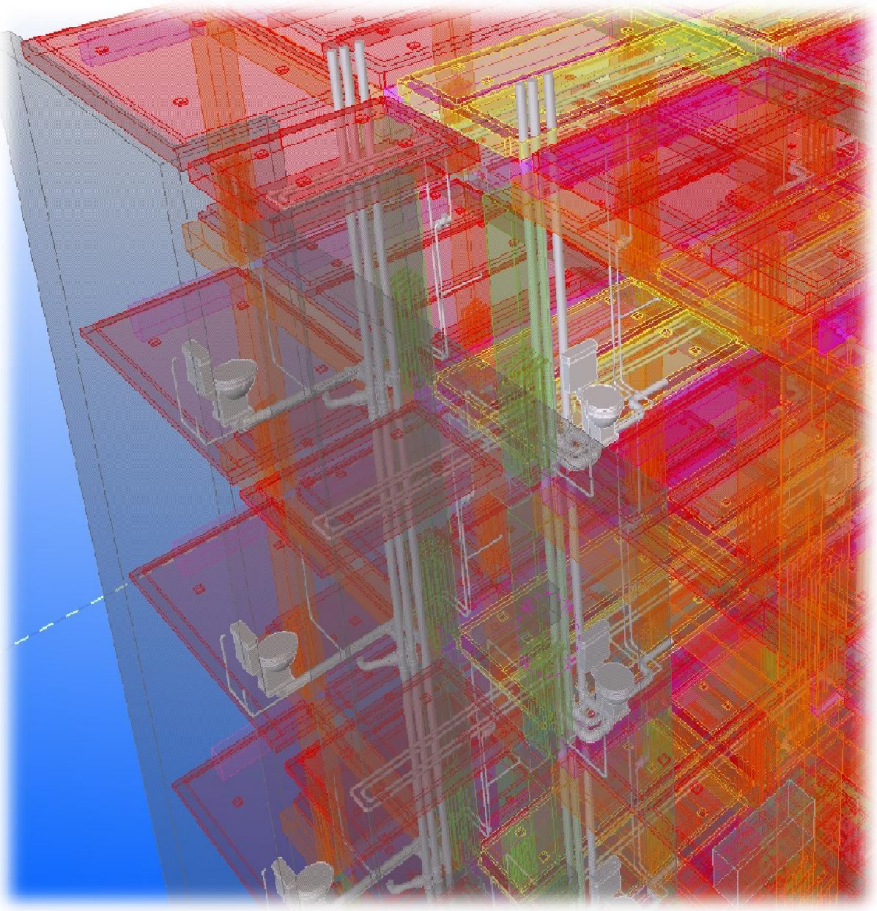
Can prevent clash in and between 3 dicipline

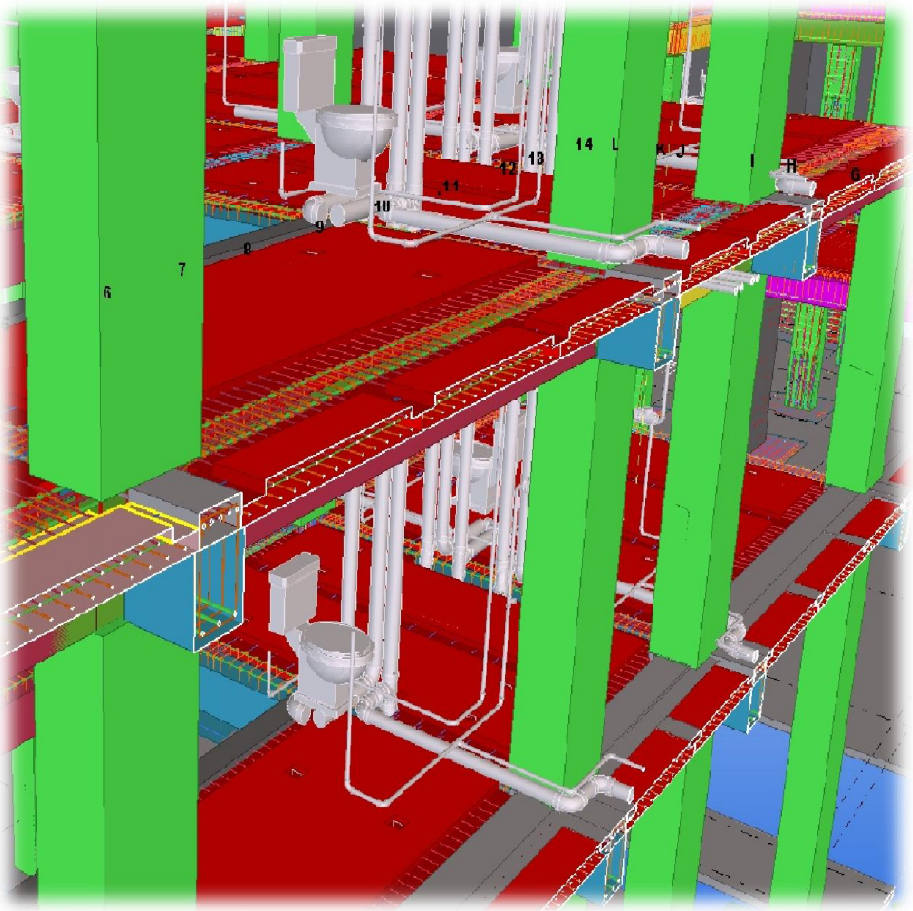


•Tekla Struktur

BUILDING INFORMATION MODELLING

Can prevent clash in and between 3 dicipline

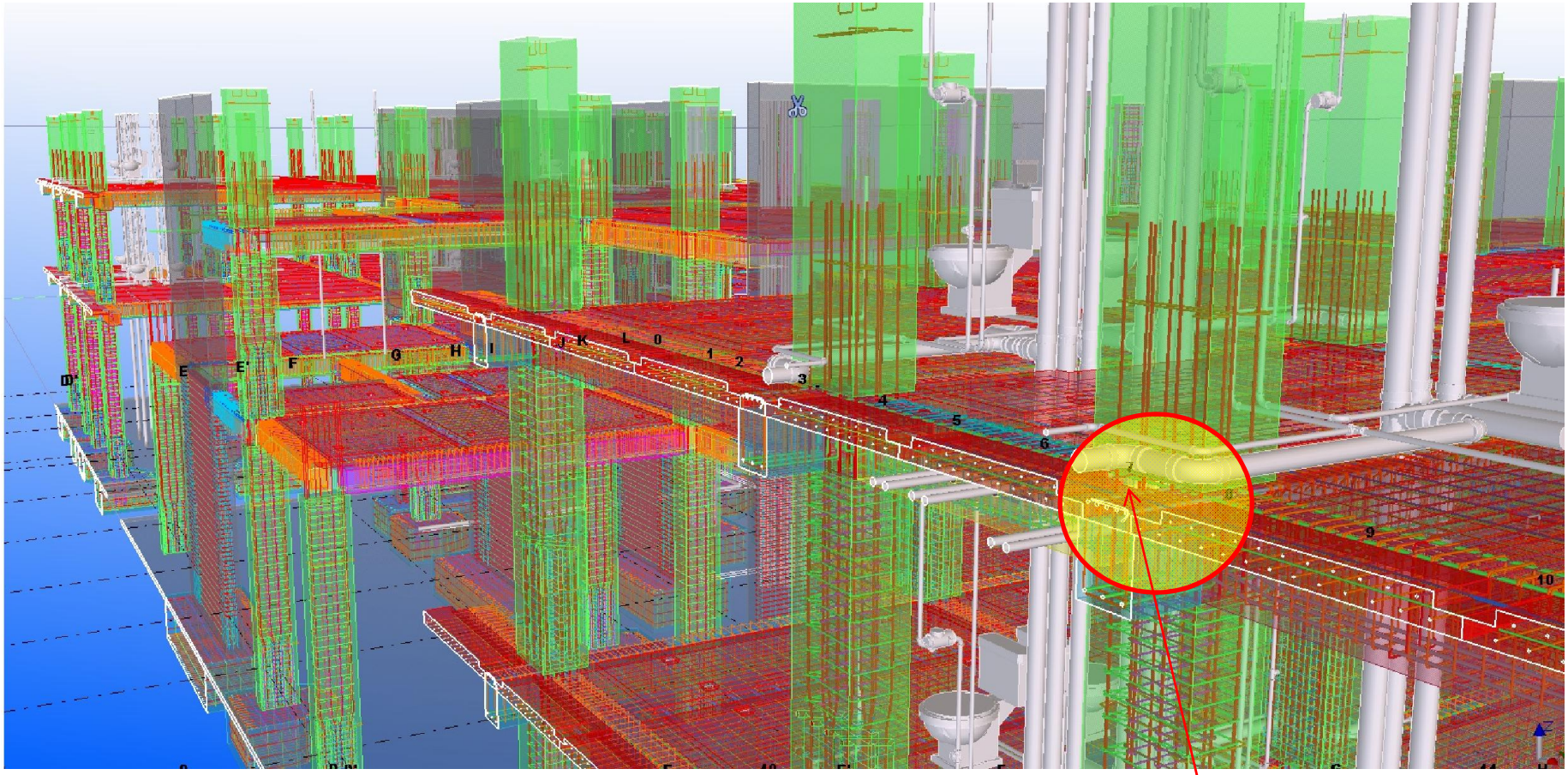




•Revit MEP

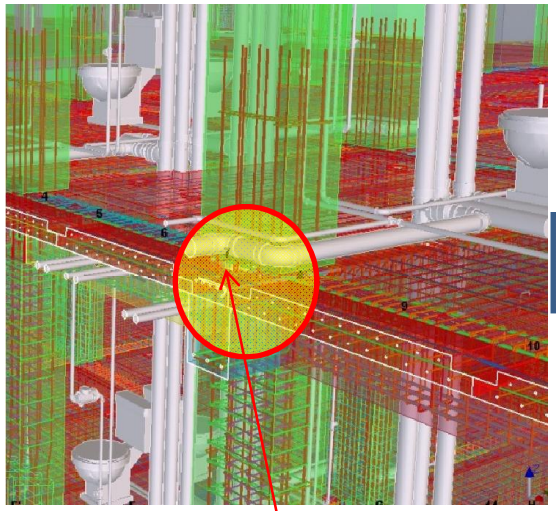
BUILDING INFORMATION MODELLING

Can prevent clash in and between 3 dicipline

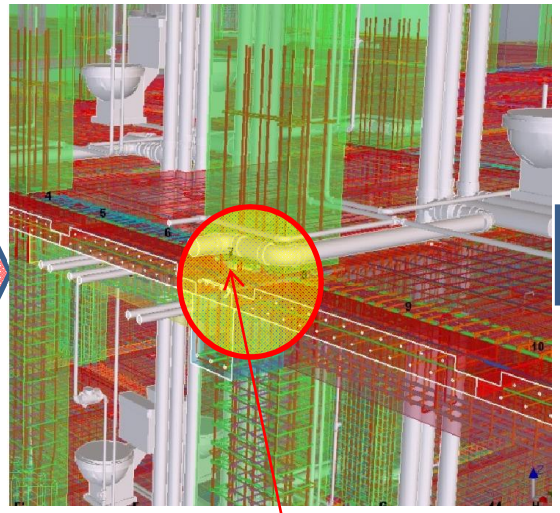


BUILDING INFORMATION MODELLING

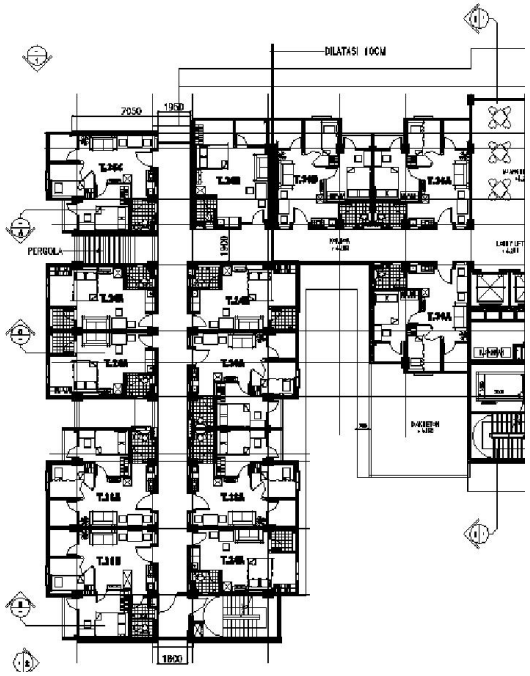
Easy to handle design Revision



CLASH
Warning



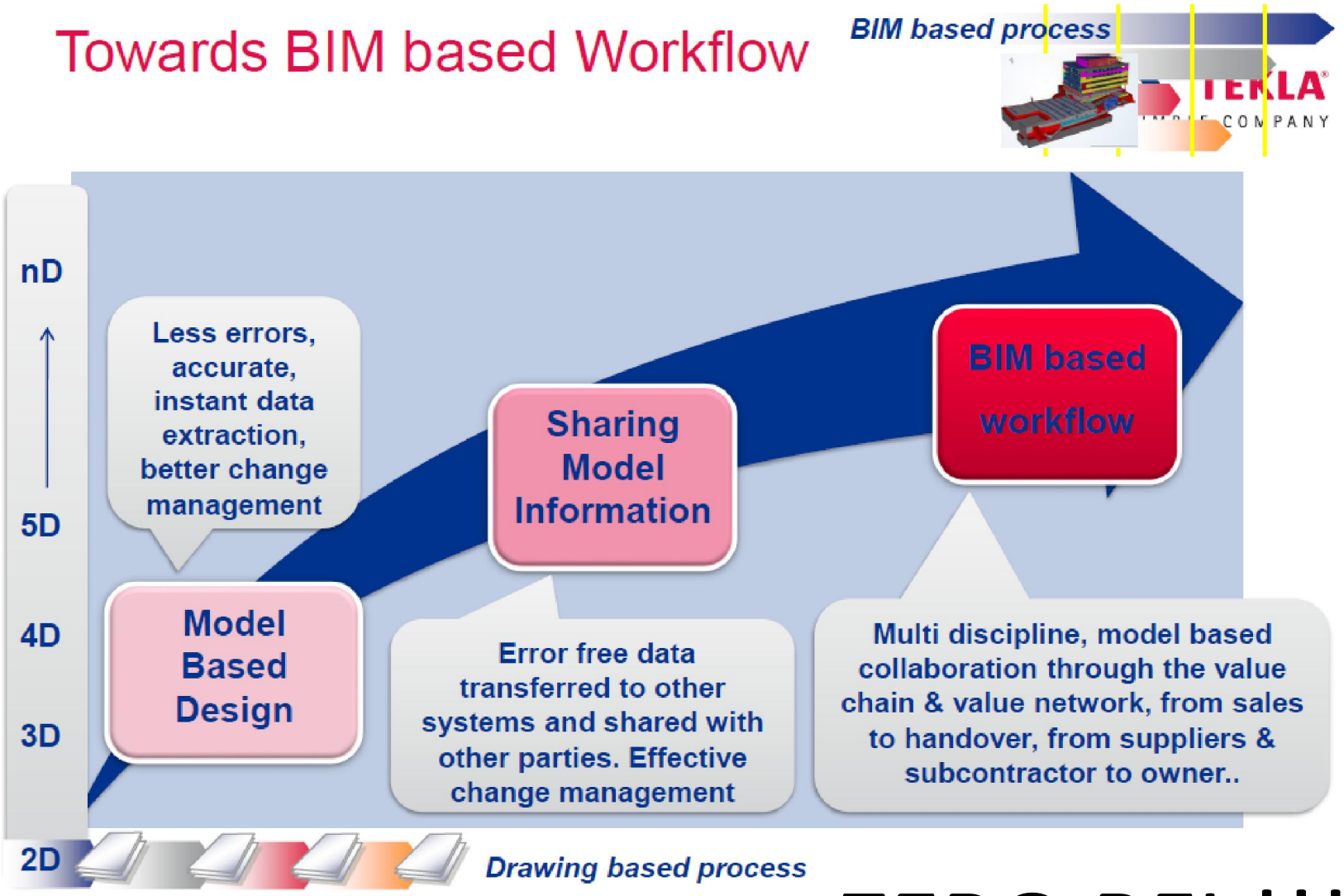
Tekla
Editing In
the
model



Automaticaly 2D dwaring
Was change

BUILDING INFORMATION MODELLING

Towards BIM based Workflow



ZERO RFI !!!!

BIM IN CONSTRUCTION

Fig. 2: Iconic and complex building which was elaborated by BIM Technology (Heino,2012)

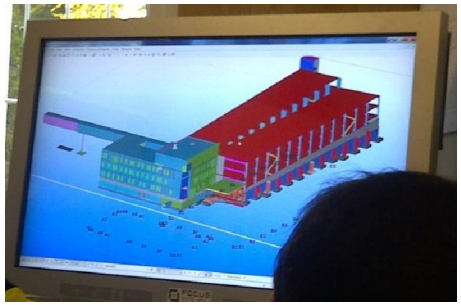
BIM IN CONSTRUCTION

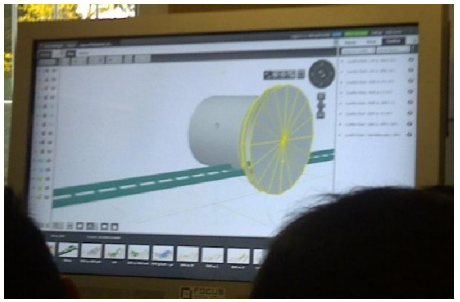
Fig. 3: Precast/Prestressed Building using BIM Techmology (Heino,2012)

Comparative Study

- A Group of Precaster visit Finland HQ 2 – 4 October 2012 to learn directly from the source, see the real application,and hear some testimony from customer
- Set programe to introduce BIM Technology in Indonesia -→ 3 month trial licence
- Give recommendation other software to complete BIM : Architect and MEP

Comparative Study





Comparative Study

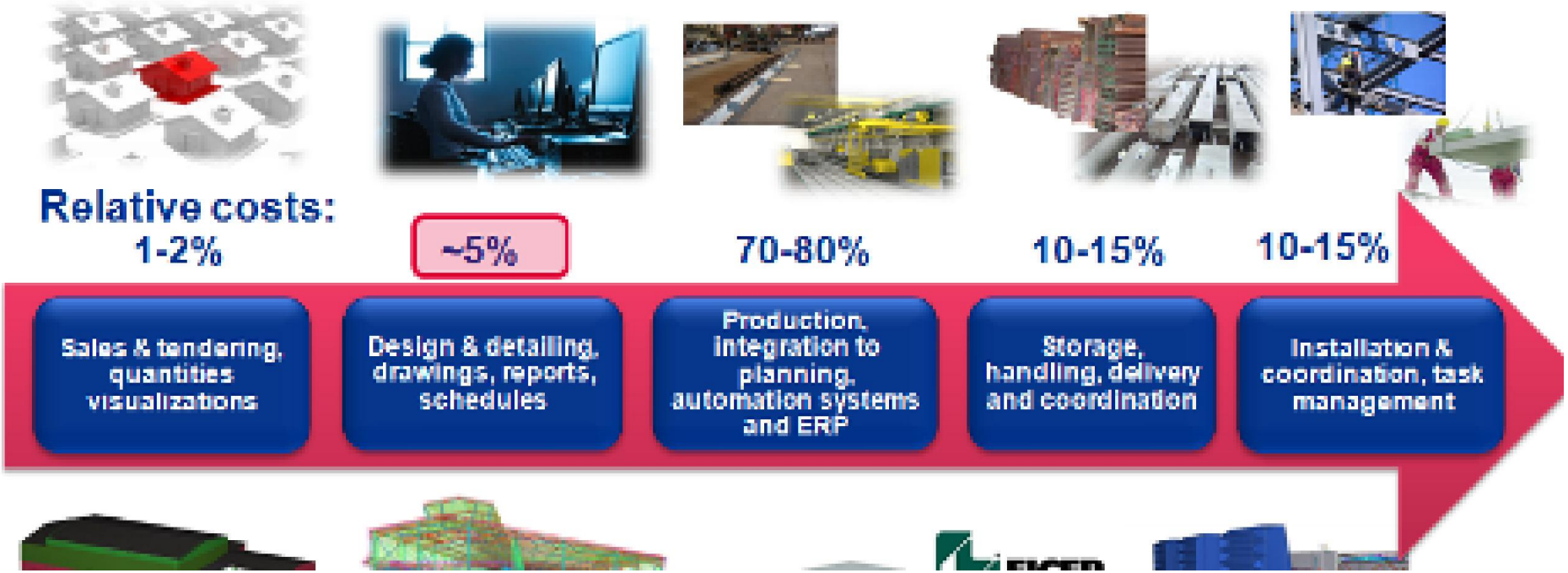


Fig. 4: Eficiencies of BIM Technology in each Stage of Construction (Heino,2012)

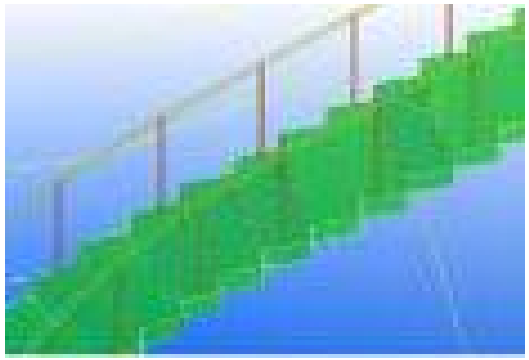
PROMISE BY BIM !

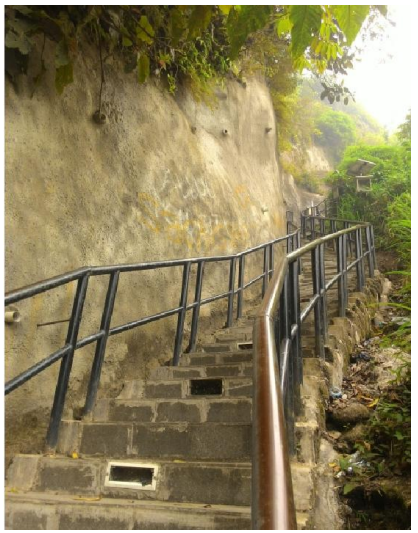
Trial Licence Period

- Intermediate Training ( ) for 12 participant
- Application in some projects





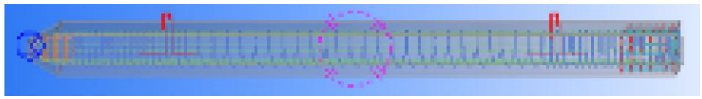


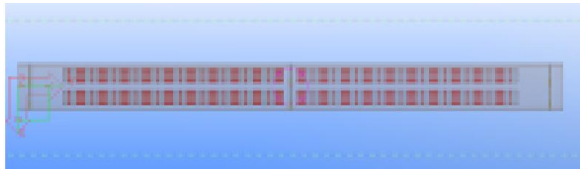
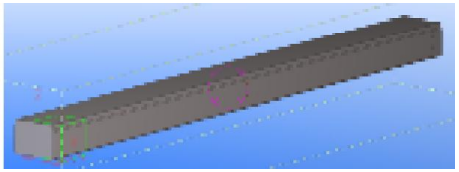
Stairs in extreme contour condition

Trial Licence Period

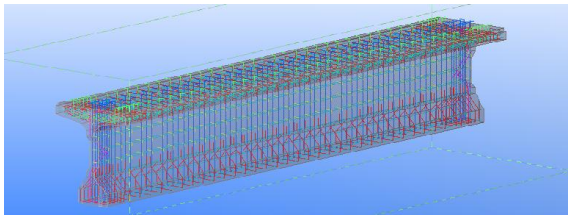
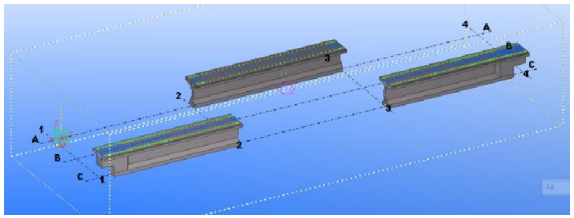
- Prefabrication Product


PC Pile

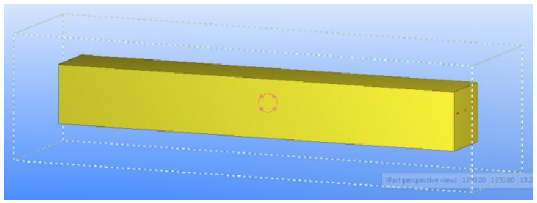
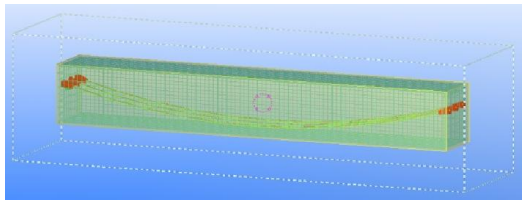

Hollow Core Slab

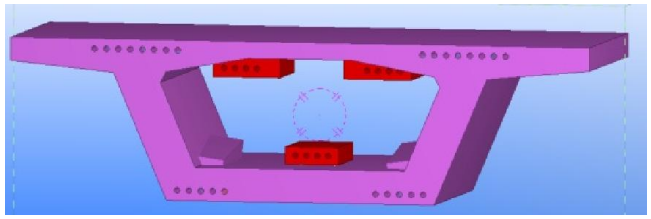

PC Segmental Girder

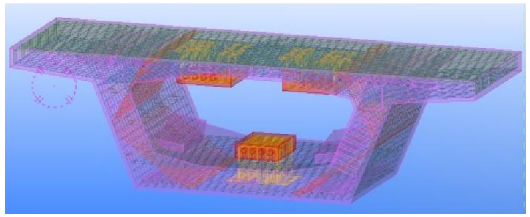
Trial Licence Period

- Prefabrication Product


PC Post Tension Girder

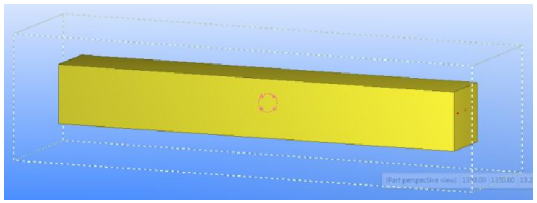
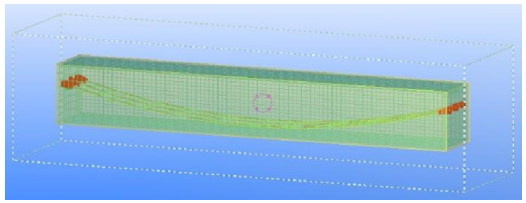


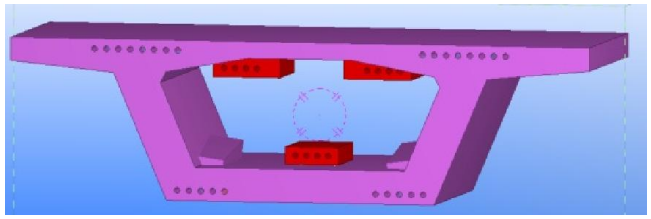
PC Post Segmental Box Girder

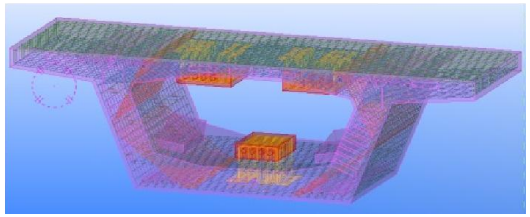
Trial Licence Period

- Prefabrication Product


PC Post Tension Girder

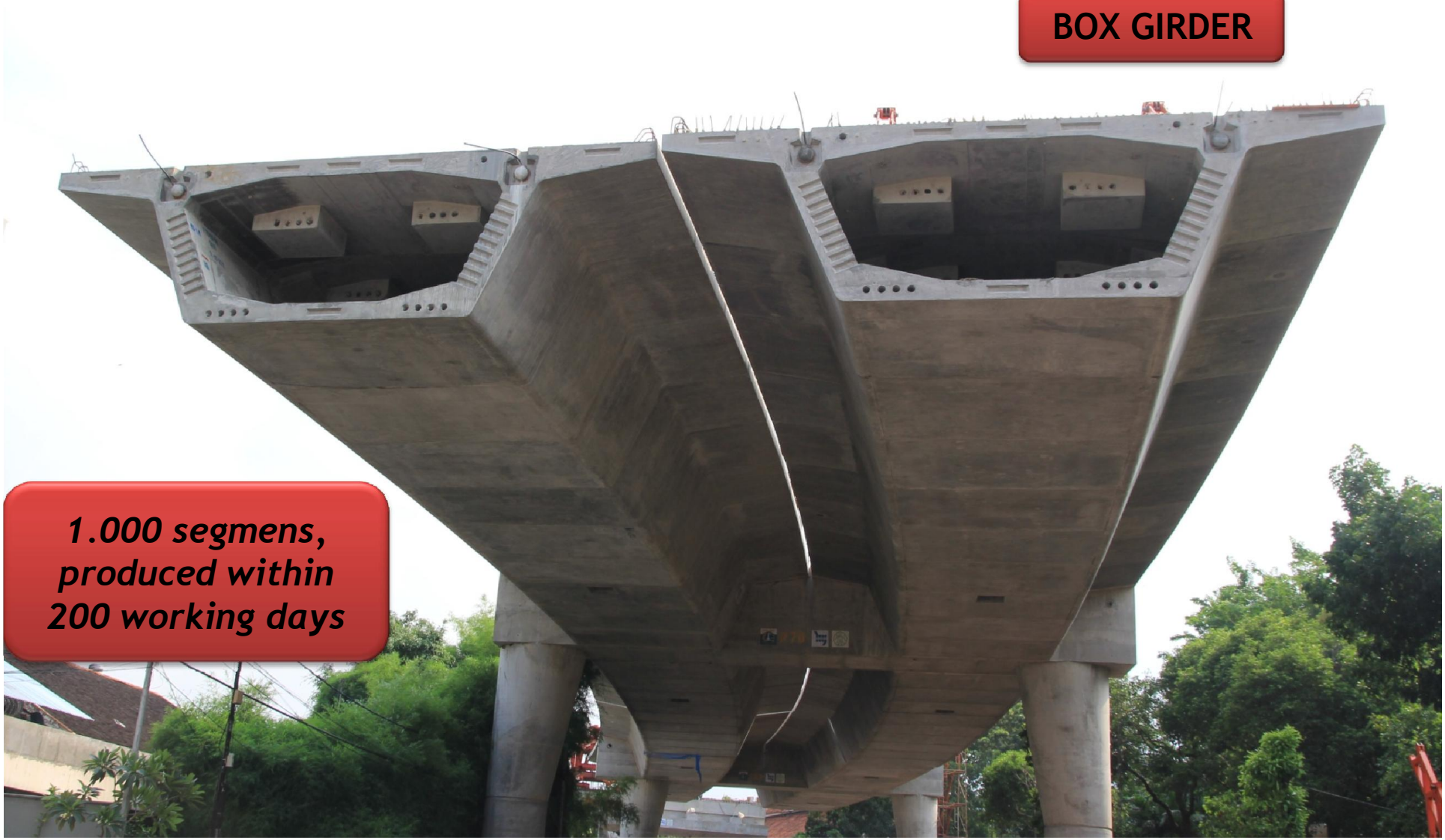


PC Post Segmental Box Girder

➢PRODUCT SERIES *PRECAST for BRIDGE & FLYOVER*

BOX GIRDER



1.000 segmens, produced within 200 working days

Trial Licence Period

- New Innovative Precast Structure

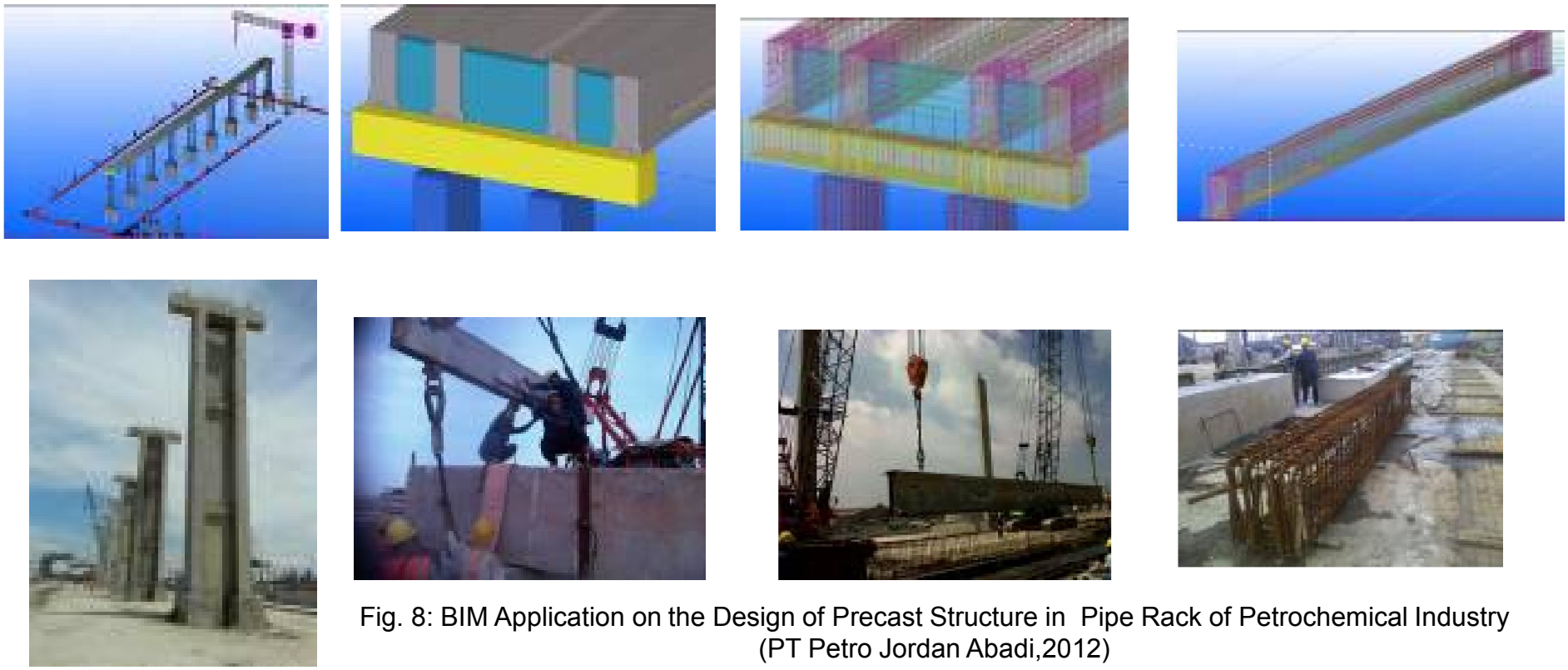


Fig. 8: BIM Application on the Design of Precast Structure in Pipe Rack of Petrochemical Industry (PT Petro Jordan Abadi,2012)

Trial Licence Period

- Precast Structure Building

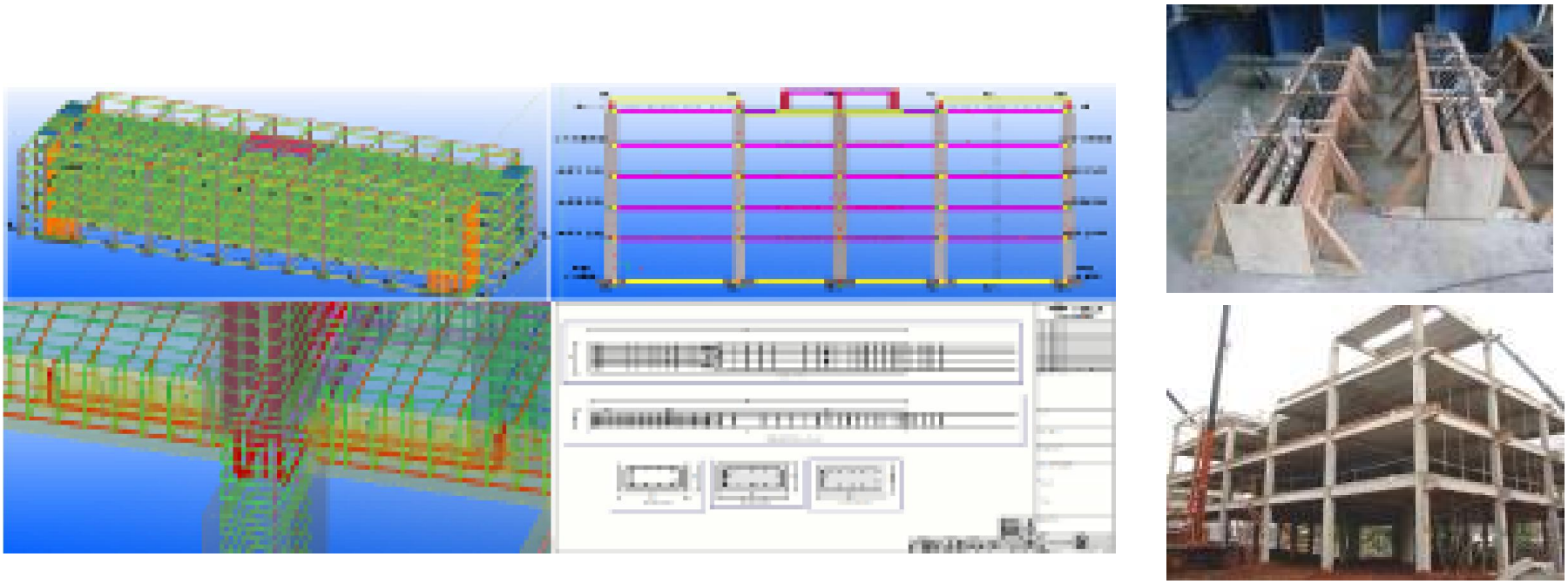


Fig. 9: BIM Application in Precast Concrete Detailer in Low Cost Housing of Ministry of Public Works 1 (Putra,2012)

Trial Licence Period

- Precast Structure Building

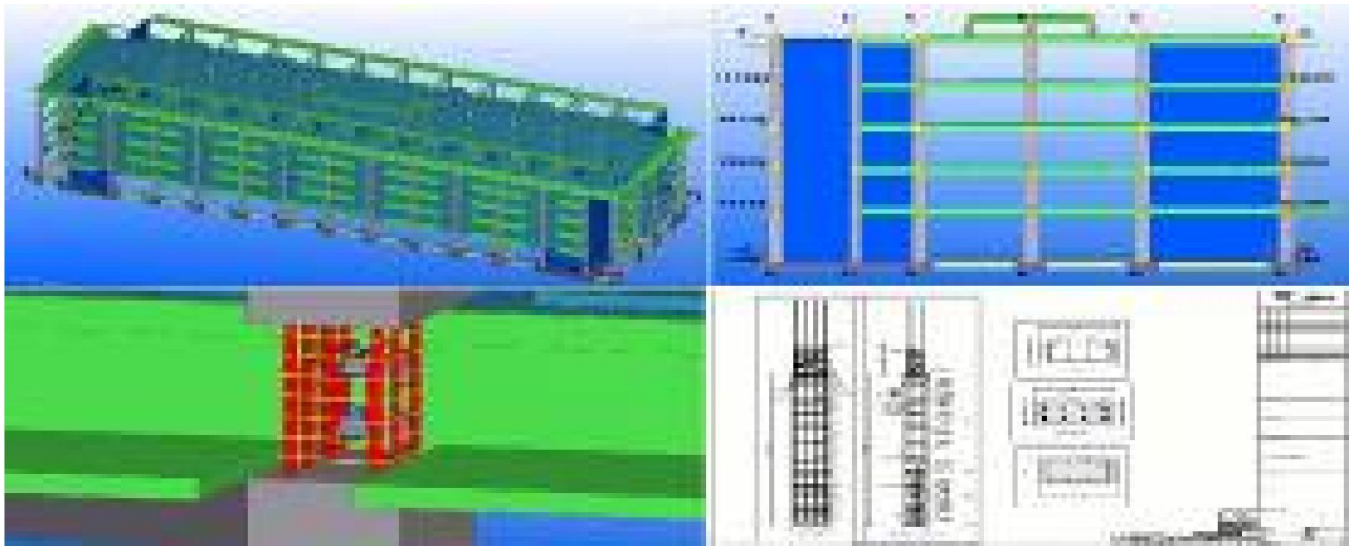


Fig. 10: Application in Precast Concrete Detailer in Low Cost Housing of Ministry of Public Works 2 (Prijasambada,2012)

Trial Licence Period

- Conventional Concrete Building

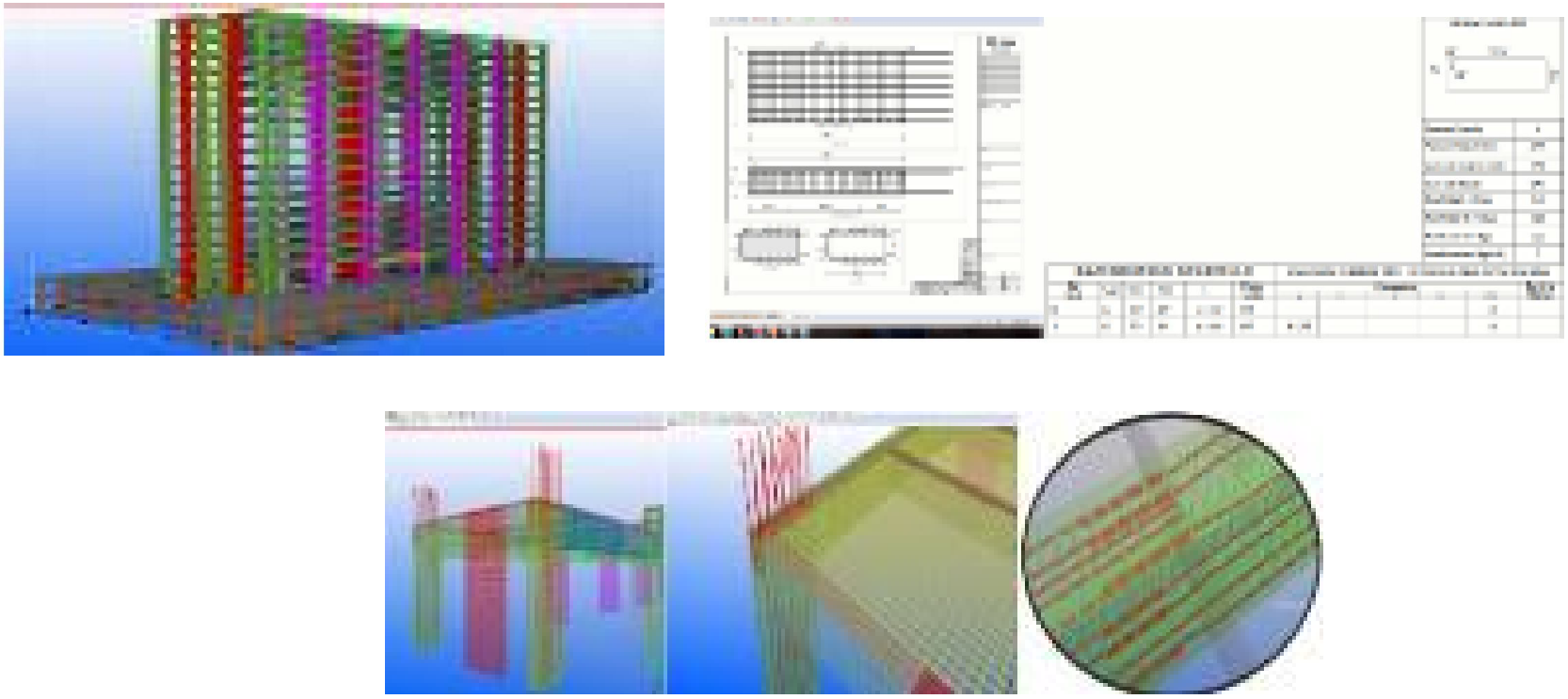
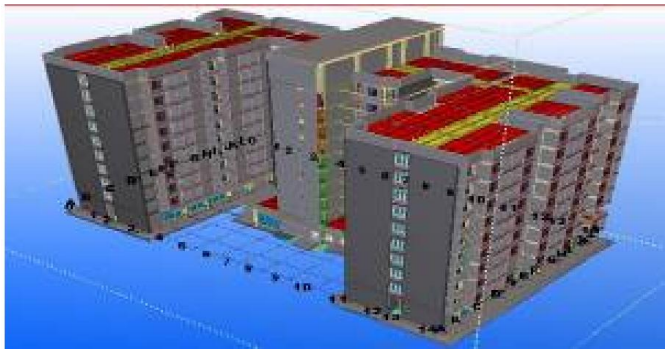


Fig. 11: BIM Application in Convetional Concrete Structure (PT Banua Anugerah Sejahtera,2013)

Trial Licence Period

- Integrated Building Design and Construction



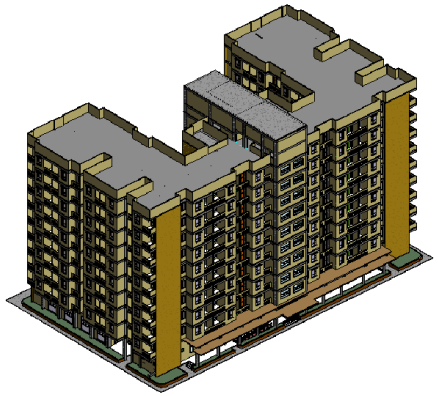


Fig. 12: Design of 10-storey Low-cost Housing with Full Precast System (Ministry of Public Works,2013)

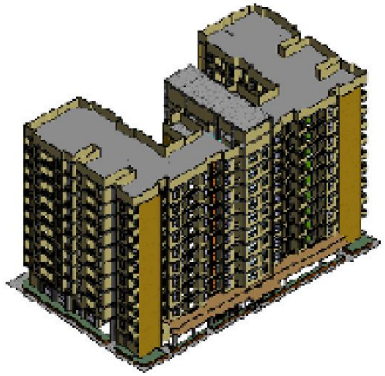
Trial Licence Period

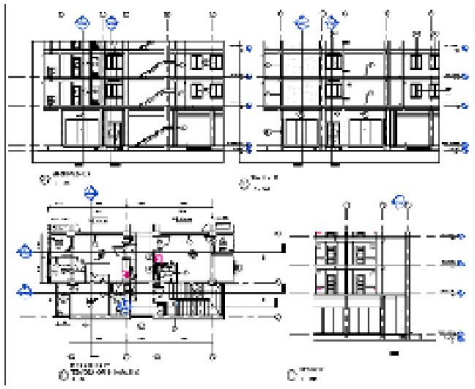
- Integrated Building Design and Construction

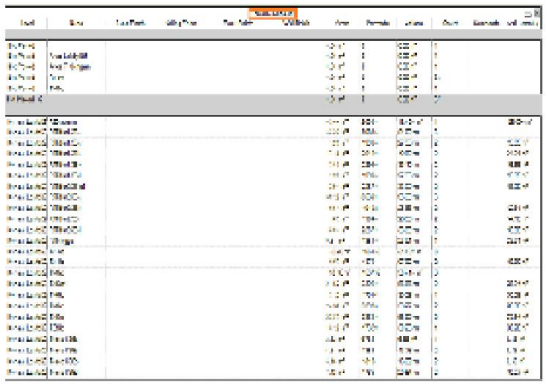
Precast Structure

Trial Licence Period

- Integrated Building Design and Construction



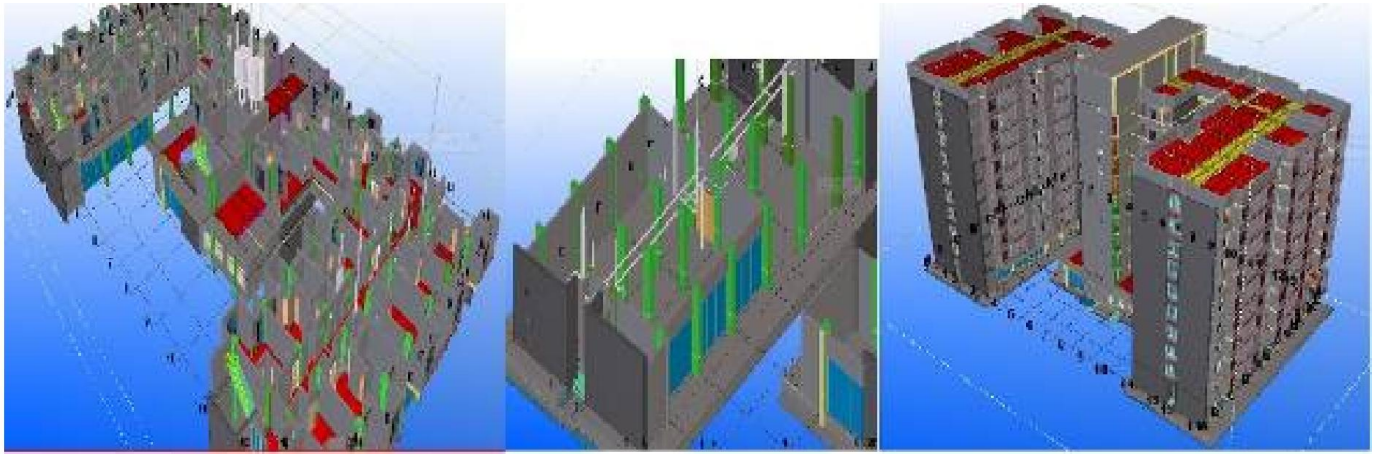




Architectural

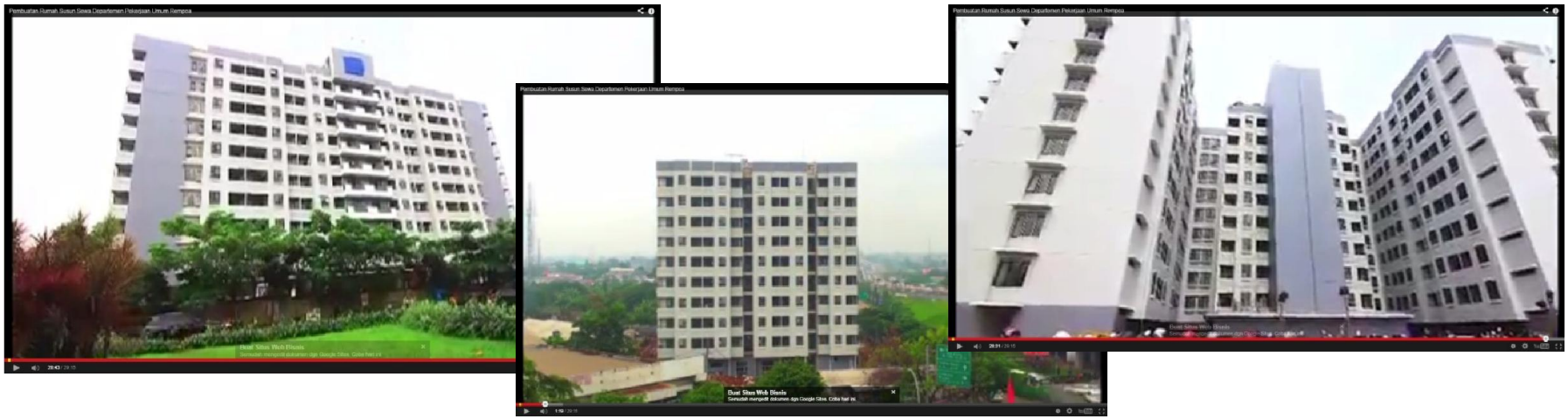
Trial Licence Period

- Integrated Building Design and Construction



Trial Licence Period

- Integrated Building Design and Construction



Open by Minster of Public Works at 9 October 2014

Trial Licence Period

- Comment after 3 month trial licence
  - Indonesia expert can work with BIM, with some ‘exhaustic’ effort
  - Can prevent clash
  - Good tool for marketing
  - Need more time to build a model rather 2 D conventional
  - Need advance training to speed working time
- Extent Trial Licence : 1 month

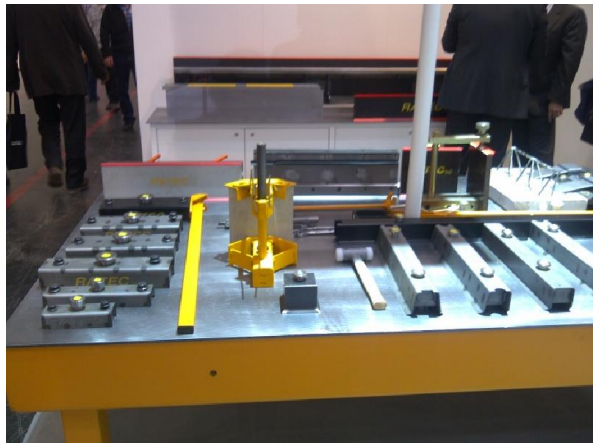
APPLICATION

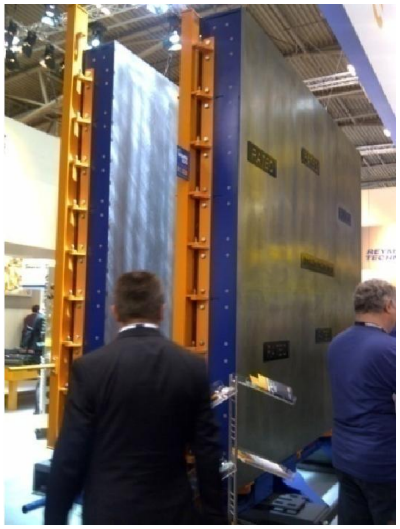
- After trial licence period, 3 Precaster company buy BIM Precast License (2013)
- The 3 company will present a testimony, either good or ‘bad’ experience to give feed back to arrange next step in BIM dissemination

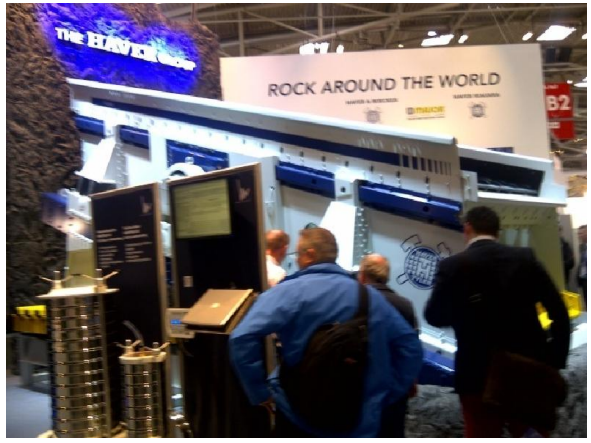
BAUMA 2013

Indonesia as 'Partner Country' of Germany in International Exhibition
BAUMA 15 -21 April 2013
IAPPI invited by Ministry of Public Work as Indonesian Delegation

BAUMA 2013

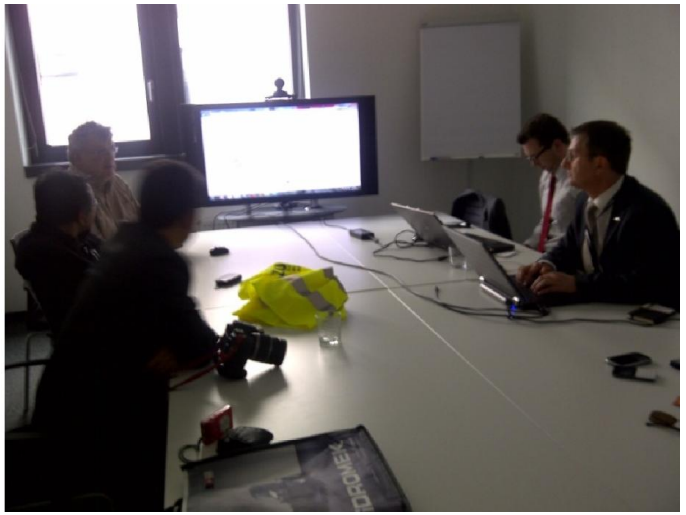






Learn and matchmaking with the latest of precast technology provider in the world

BAUMA 2013



Matchmaking with Tekla Germany

German manufacture industry supply precast machinery production to all over the world

Ready to aid Indonesia to implement BIM in precast industry

COMPETENCY CENTRE

- Problems in dissemination
  - Company must recognize ‘in real’ the advantage of using BIM rather than conventional way
  - Need legal trial licence in longer time
  - Need training and mentoring in real project
  - Price ?
- To cope the problem IAPPI – TEKLA make MOU
  - 30 legal licence for pilot project for other precaster member
  - Advance training for trainee ---intelegence component
  - MOU witnesses to Ministry of Public Work
  - Hope can start sistematic step to dissiminated BIM ways in construction in Indonesia

PROJECT APPLICATION

- Low Cost Housing of Ministry of Public Works (2015 -2019)

- BIM model is upload in e-procurement tender and can be down load to the bidder as complementary of conventional 2D Drawing
- Competency centre give pilot project license to the bidder (precaster) and training to operate
- Mentoring and monitoring during construction
- Hope after pilot project, the company can recognize the benefit of using BIM 3D

PROJECT APPLICATION

- Precast Structure Building

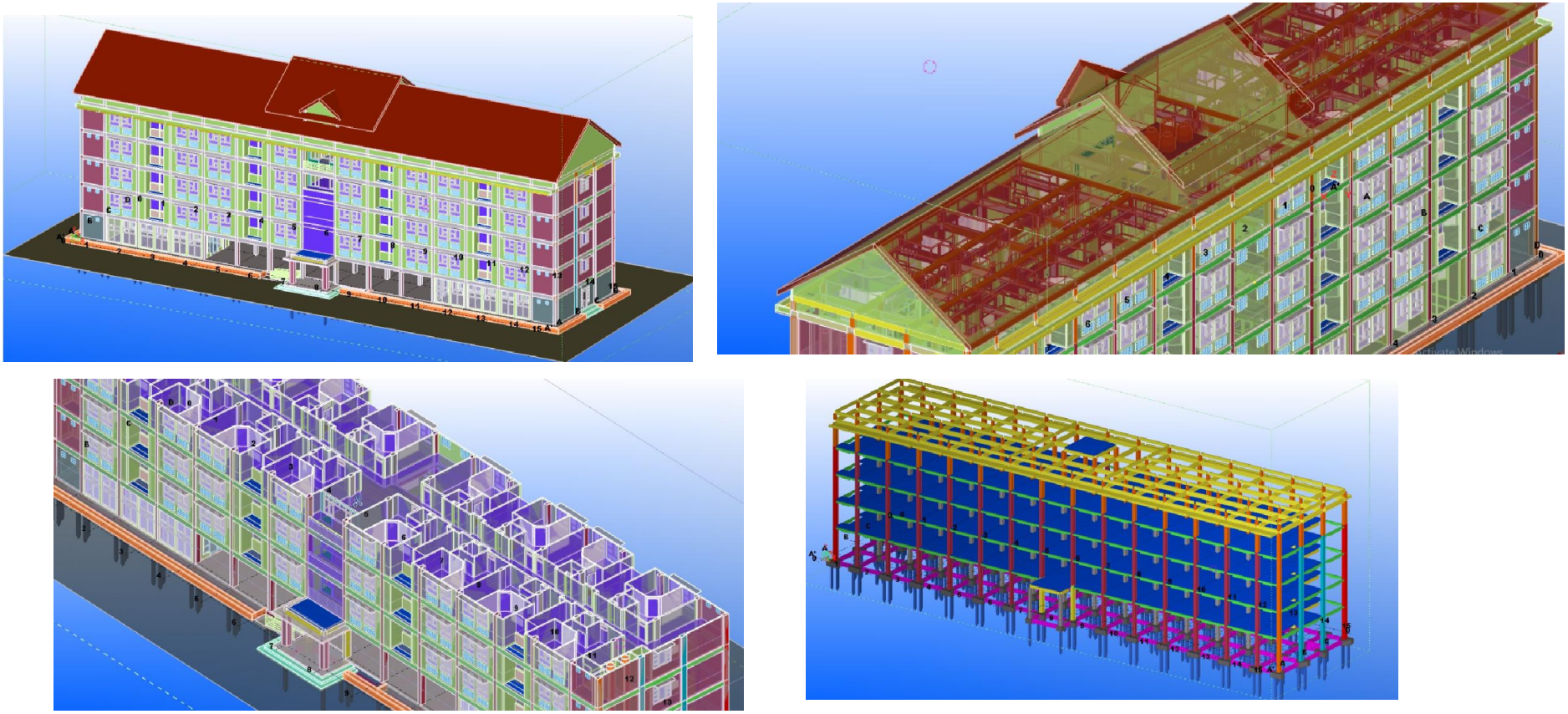
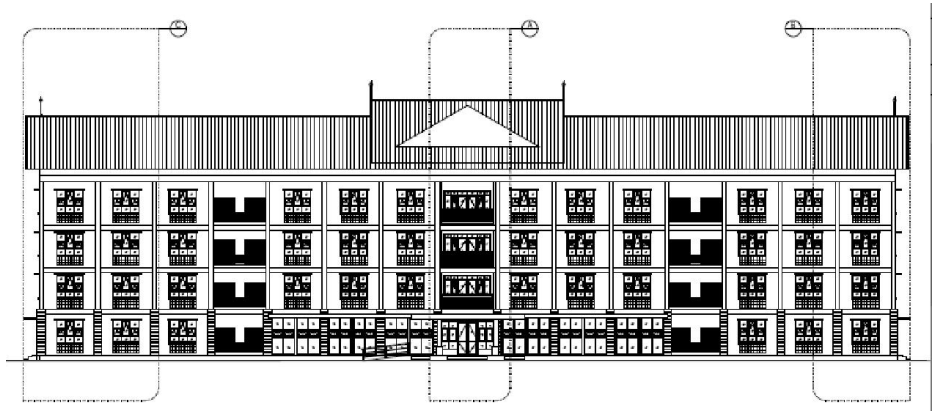


Fig. 9: BIM Application in Precast Concrete Detailer in Low Cost Housing of Ministry of Public Works 1

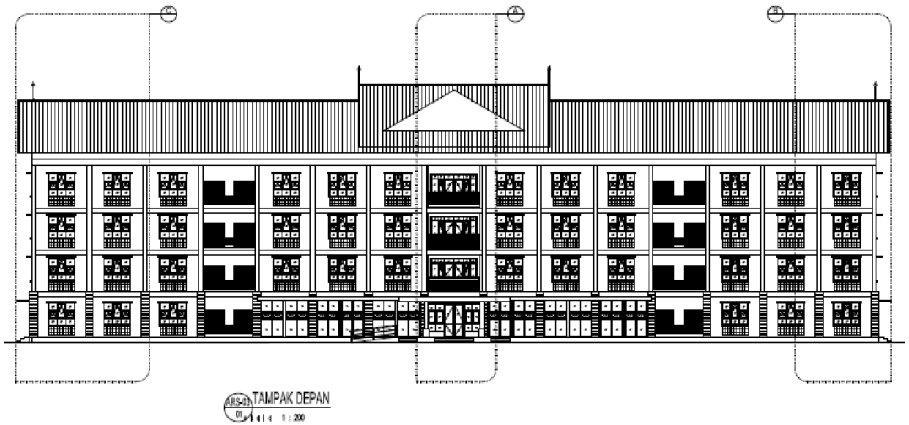
PROJECT APPLICATION

- Desain prototype berdasarkan modul yang efisien dan target grup



Ponpes

Mahasiswa



Pekerja

TNI Polri

PROJECT APPLICATION

Contoh Implementasi di Pembangunan Rusun Sewa Pekerja Semarang 2015

Minggu 1

Minggu 2

Minggu 3

Minggu 7

Minggu 8

Minggu 9

PROJECT APPLICATION

Contoh Implementasi di Pembangunan Rusun Sewa Pekerja Semarang 2015

Minggu 10

Minggu 11

Minggu 12

Minggu 14

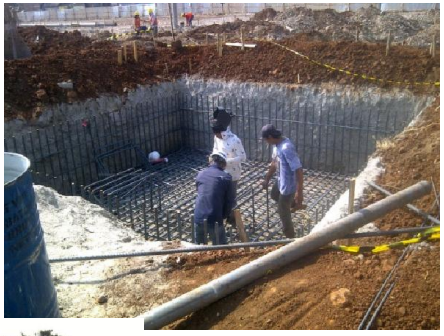
Minggu 18

Minggu 22

PROJECT APPLICATION

Contoh Implementasi di Pembangunan Rusun Sewa TNI Cililitan 2015




Kegiatan di lapangan

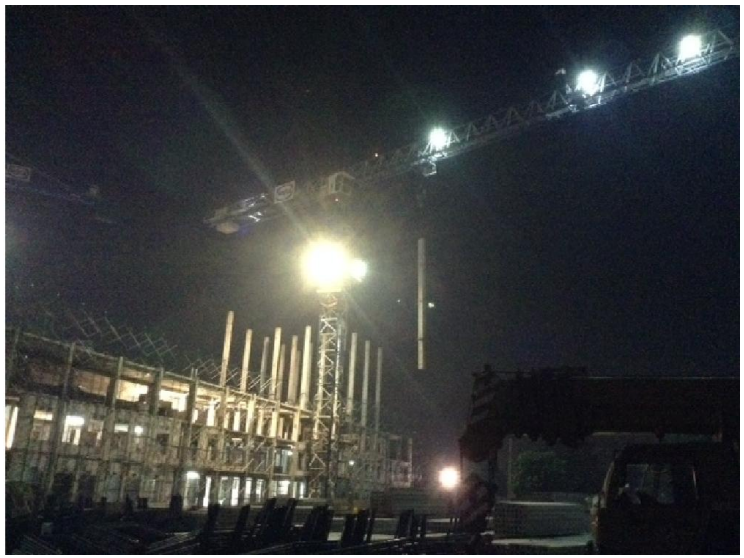

Kegiatan di pabrik :
produksi selama pekerjaan
struktur bawah di lapangan

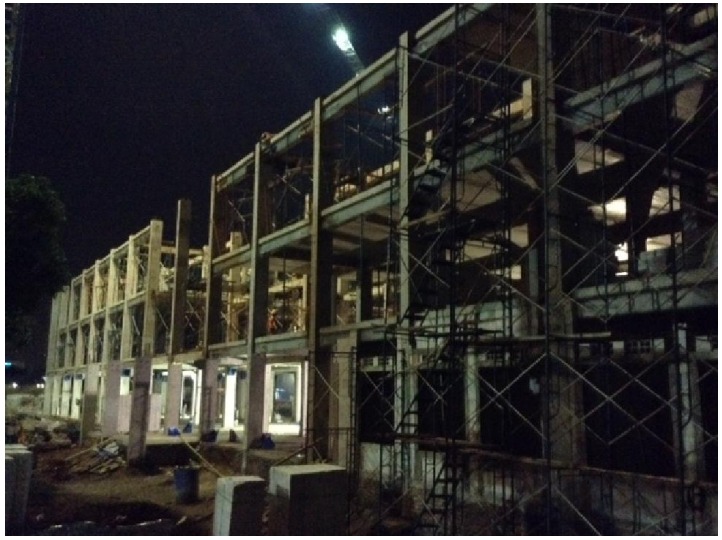
PROJECT APPLICATION

Penerapan pada bangunan rusun sewa dalam waktu pelaksanaan terbatas

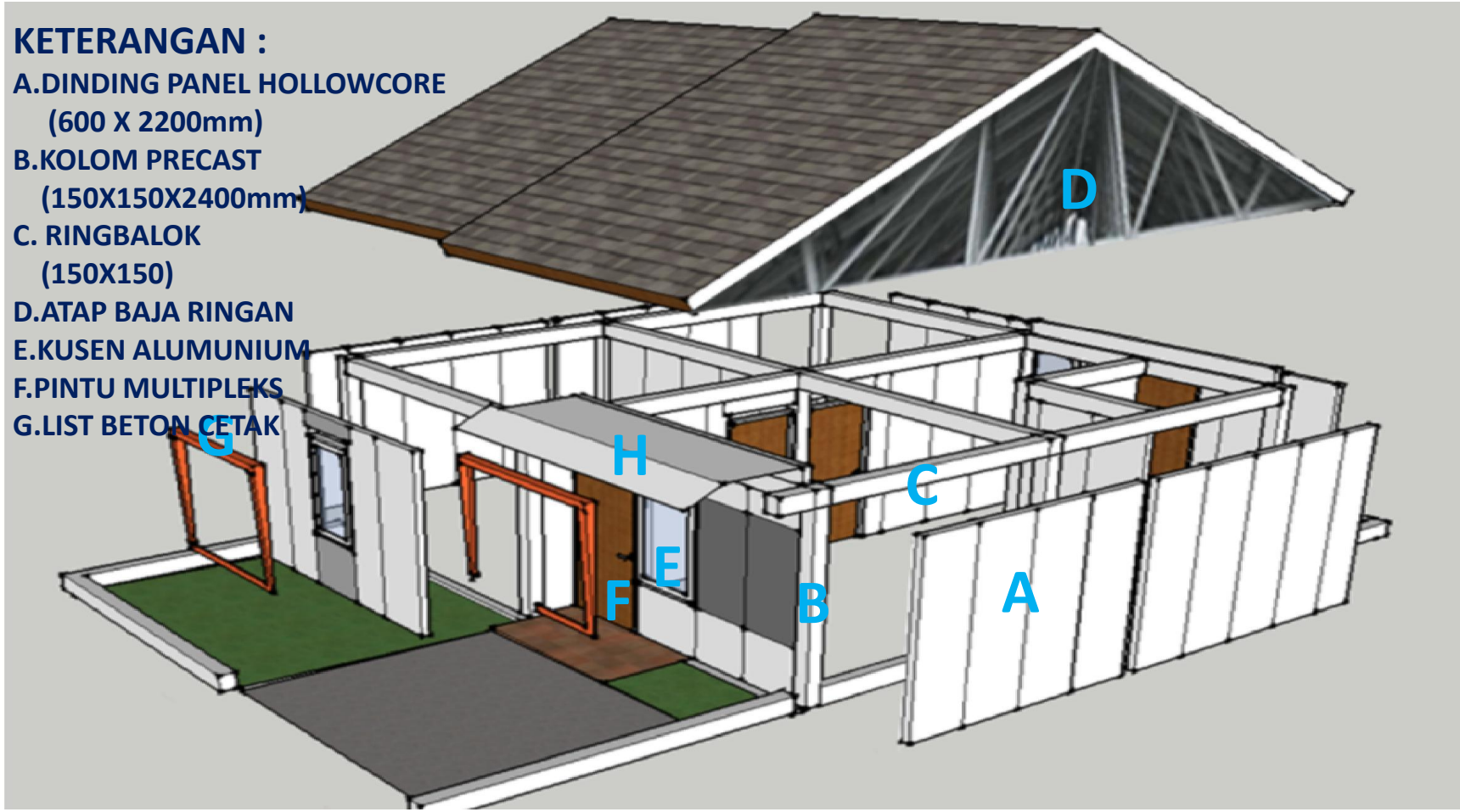
PROJECT APPLICATION

PROJECT APPLICATION



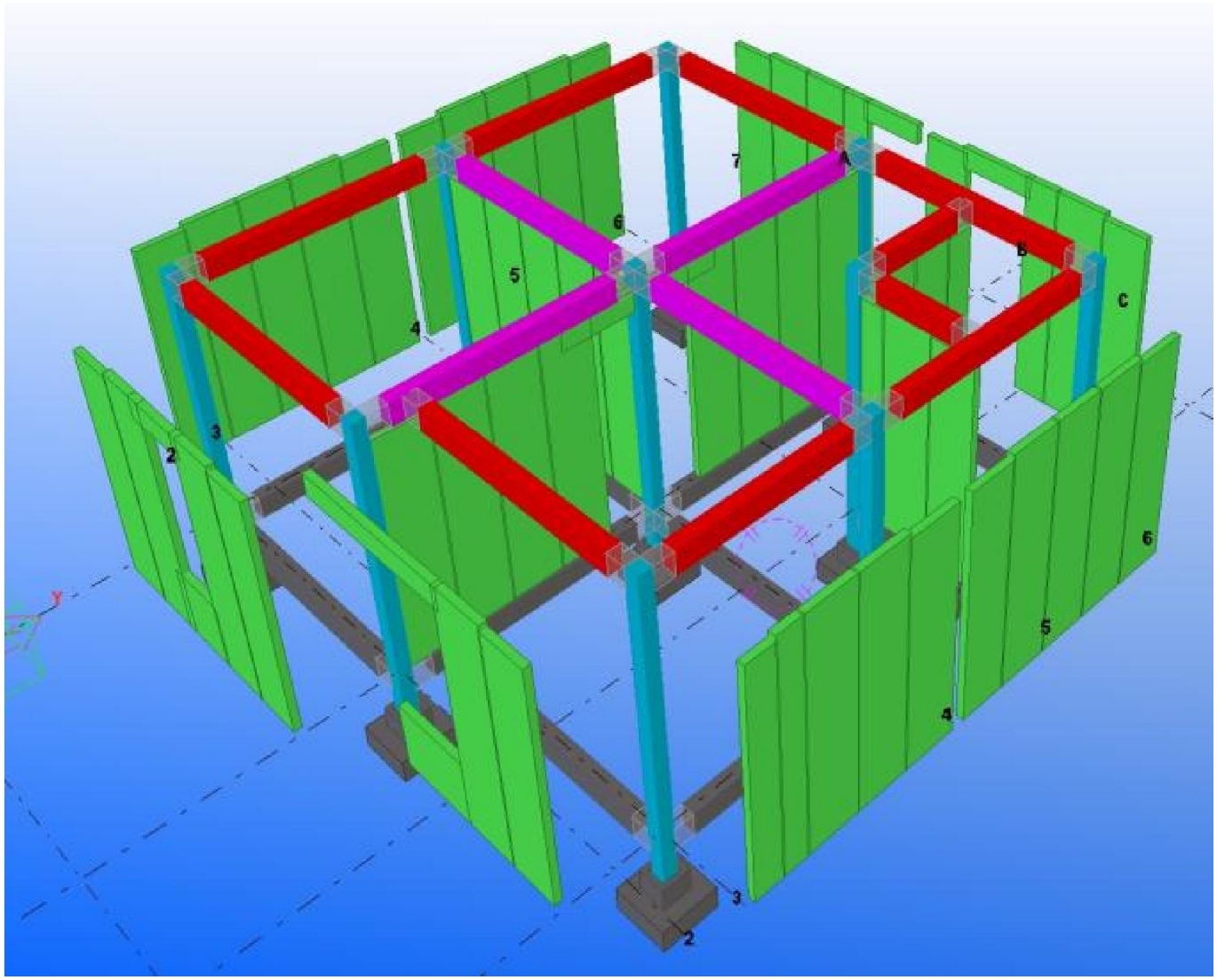


PROJECT APPLICATION



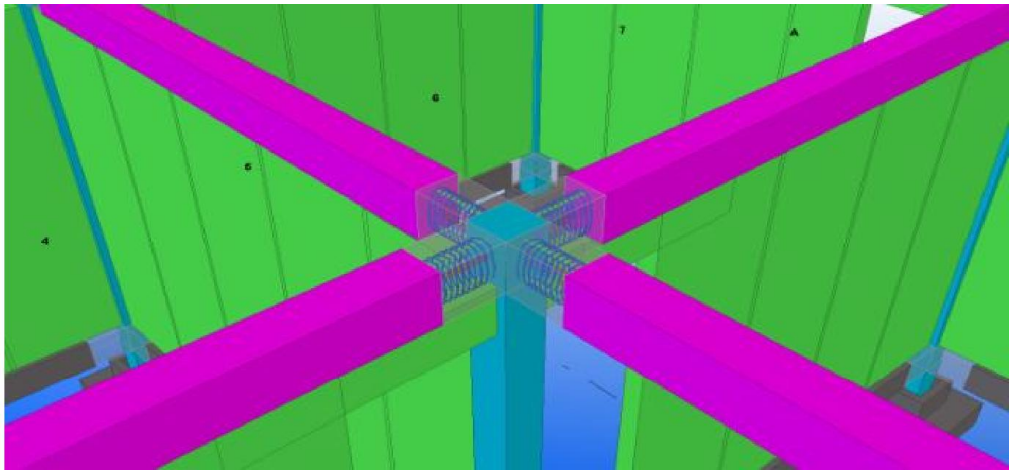
RUMAH INSTANT

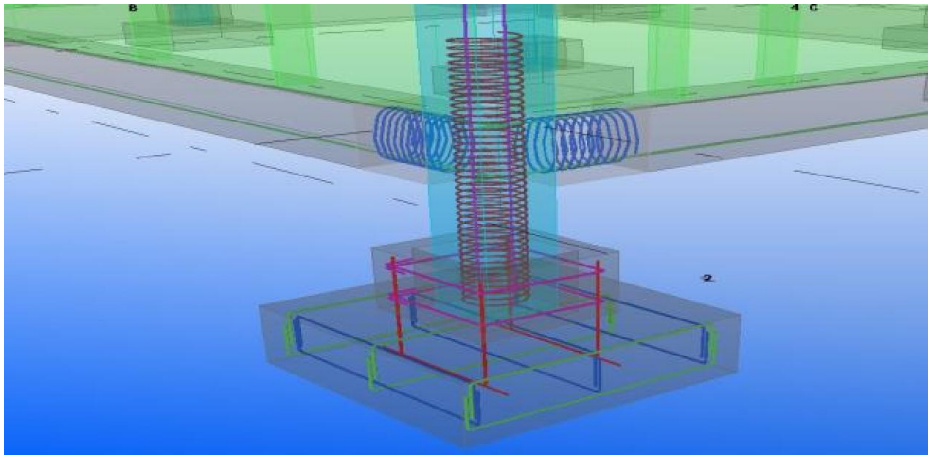
PROJECT APPLICATION



RUMAH INSTANT

PROJECT APPLICATION





RUMAH INSTANT

PROJECT APPLICATION



Launching produk rumah instant 1 hari industri pracetak dan prategang Indonesia di Concrete Show of South East Asia 2015, Kementerian PU PR,IAPPI,AP3I



Pemasangan kolom pertama oleh Sekjen Kemen PU PR, erection kolom dan sloof

PROJECT APPLICATION

Pengarahan oleh Dirjen Penyediaan Perumahan Kemen PU PR, komponen dinding ringan, erection ring balok, atap baja ringan, dan panel dinding ringan

Rumah instan tipe 36, peresmian oleh Dirjen Bina Marga Kemen PU PR

PROJECT APPLICATION

Pengarahan oleh Dirjen Penyediaan Perumahan Kemen PU PR, komponen dinding ringan, erection ring balok, atap baja ringan, dan panel dinding ringan

Rumah instan tipe 36, peresmian oleh Dirjen Bina Marga Kemen PU PR

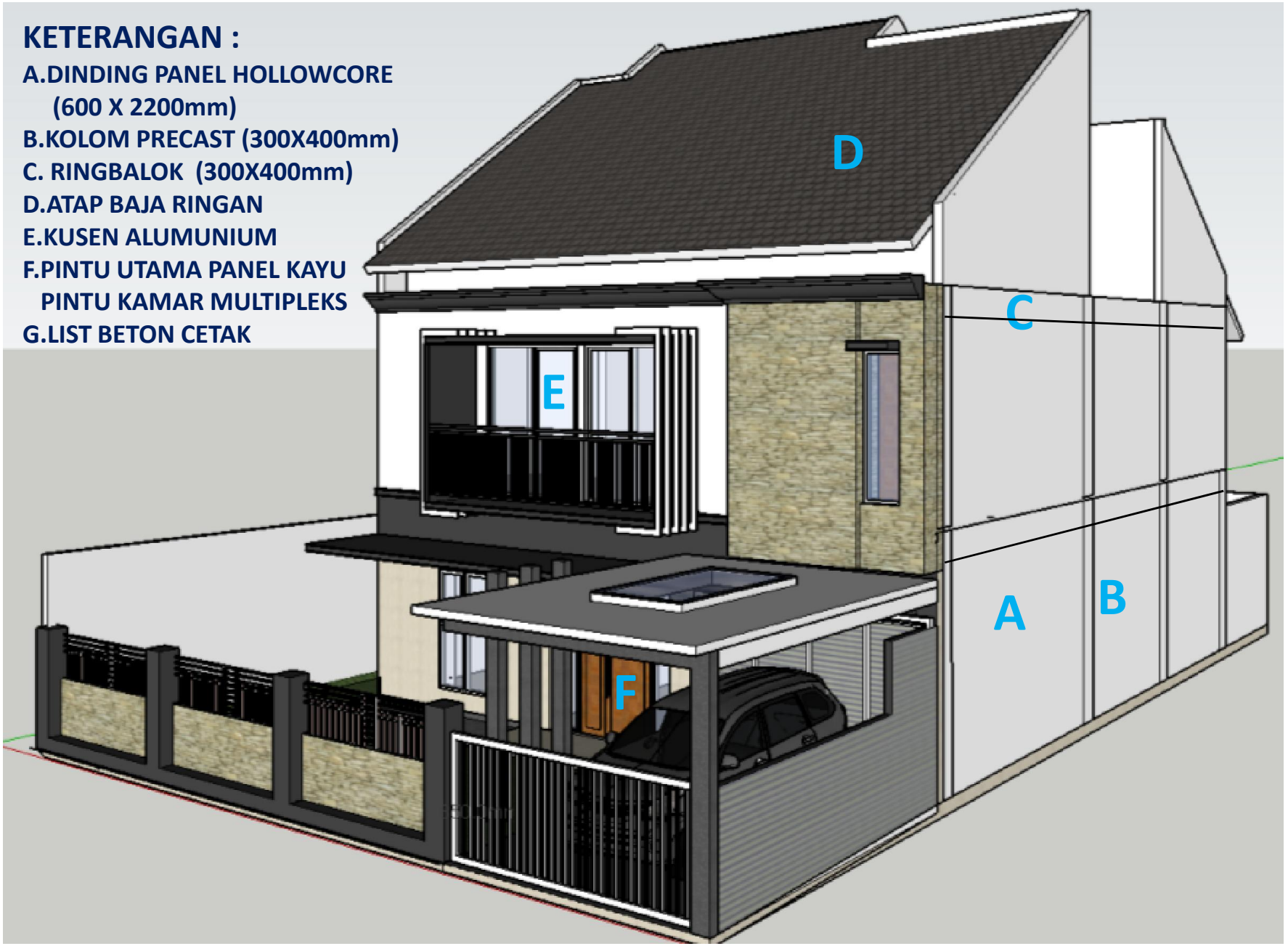
PROJECT APPLICATION

Industri pracetak dan prategang Indonesia siap mensupport program sejuta rumah

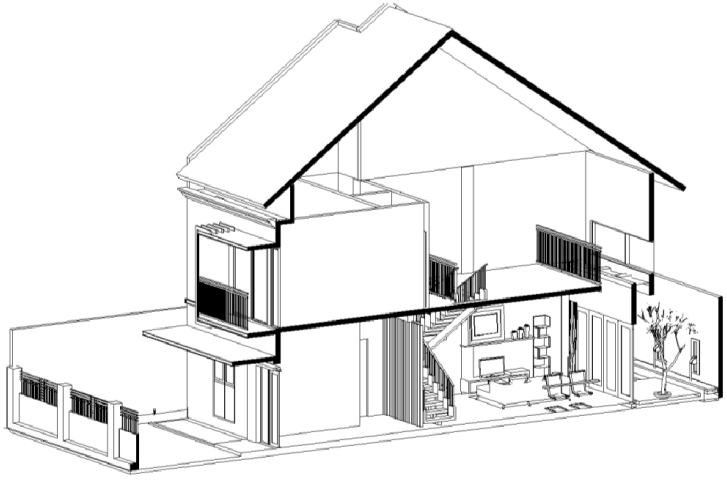
Apresiasi Menteri PU PR terhadap rumah instant pada Konstruksi Indonesia 2015, diminta juga untuk mendukung Badan Nasional Penanggulangan Bencana (BNPB)

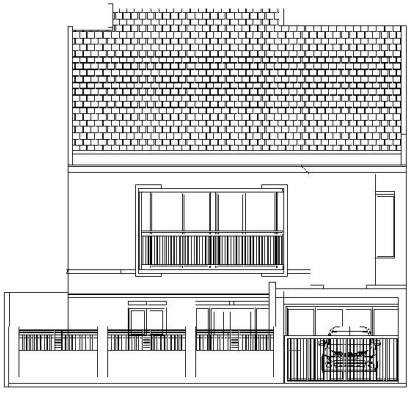
KETERANGAN :

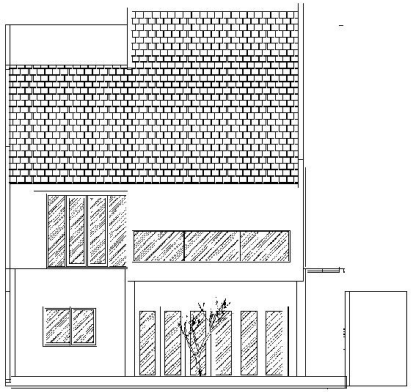
A.DINDING PANEL HOLLOWCORE
(600 X 2200mm)
B.KOLOM PRECAST (300X400mm)
C. RINGBALOK (300X400mm)
D.ATAP BAJA RINGAN
E.KUSEN ALUMUNIUM
F.PINTU UTAMA PANEL KAYU
PINTU KAMAR MULTIPLEKS
G.LIST BETON CETAK



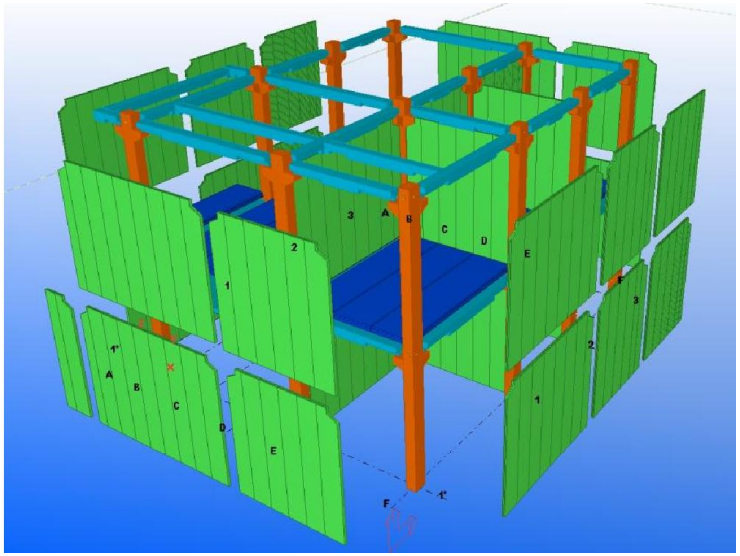
PROJECT APPLICATION

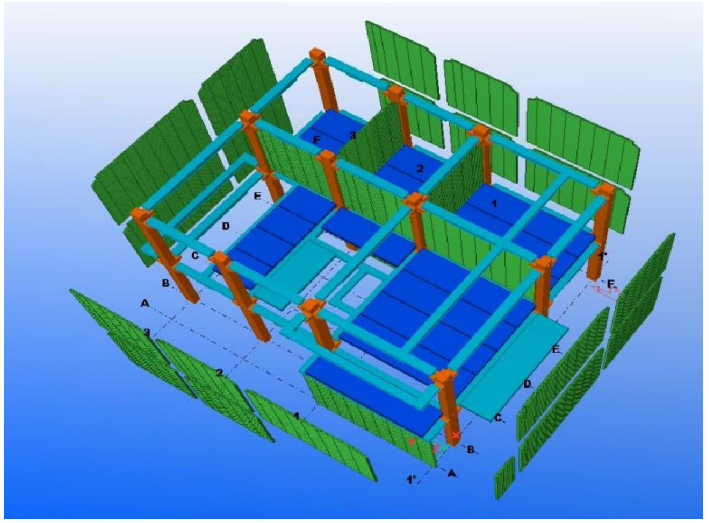


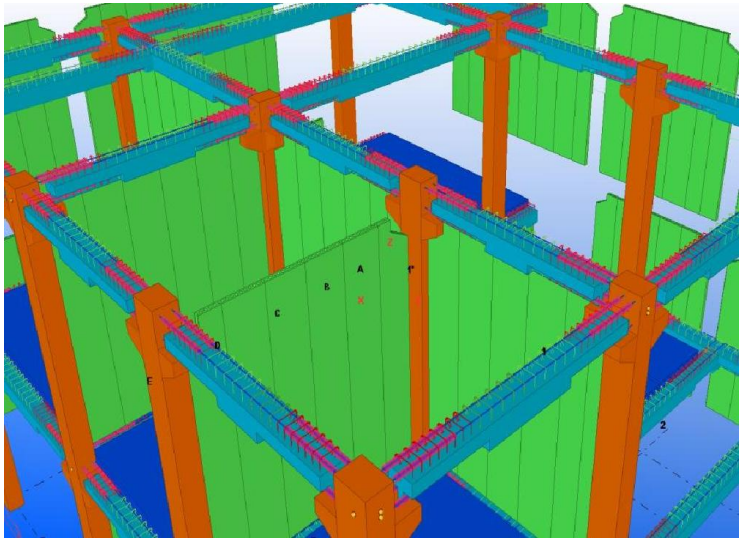


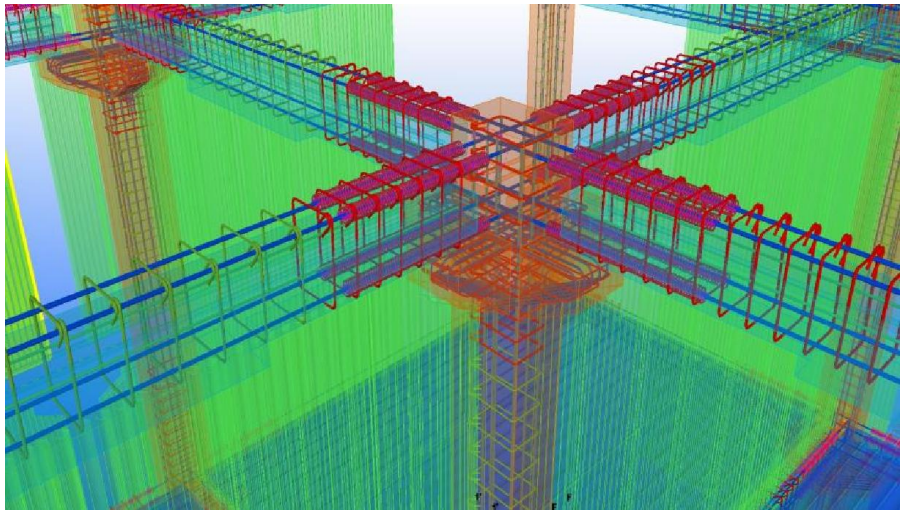


PROJECT APPLICATION









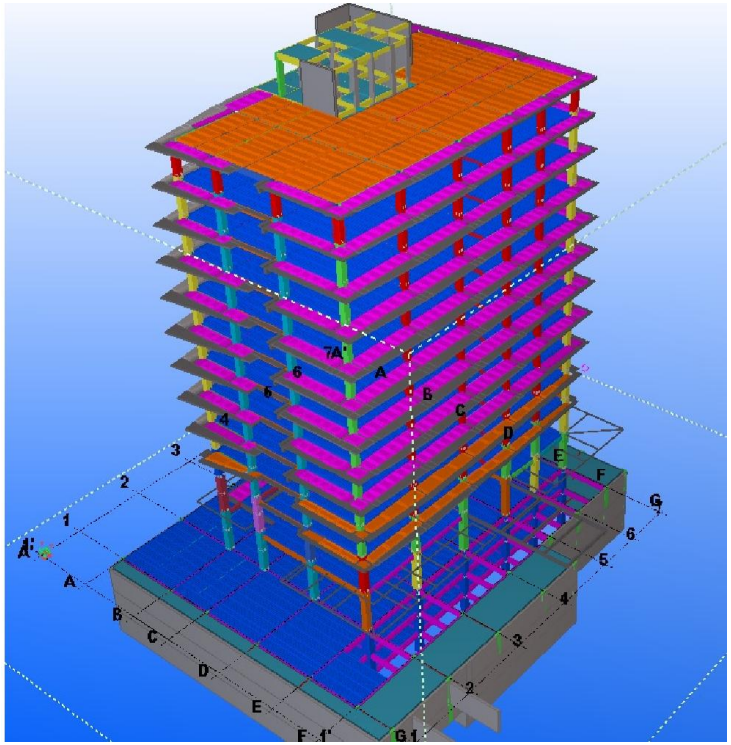
PROYEK PEMBANGUNAN TAMAN SARI HIVE OFFICE PARK

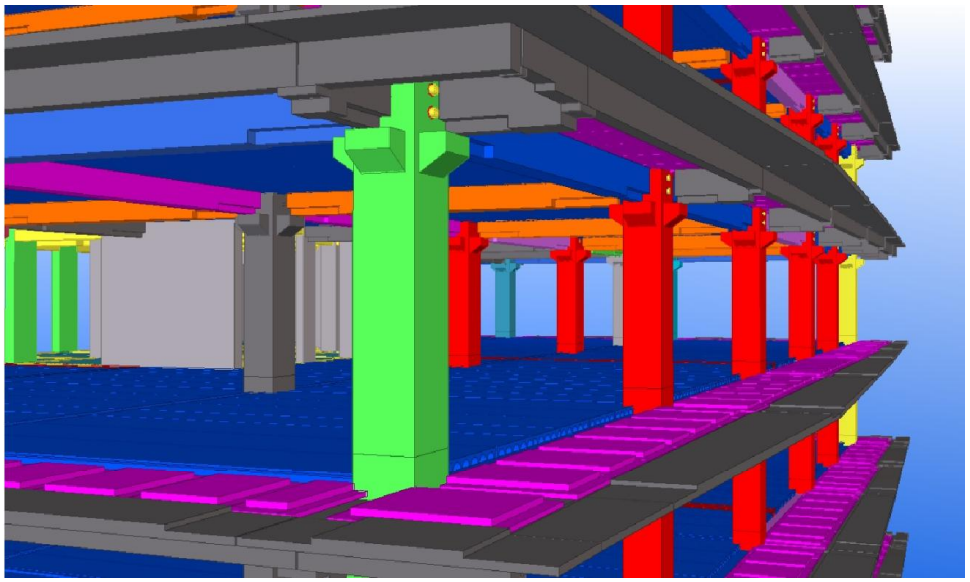
KAVLING 2

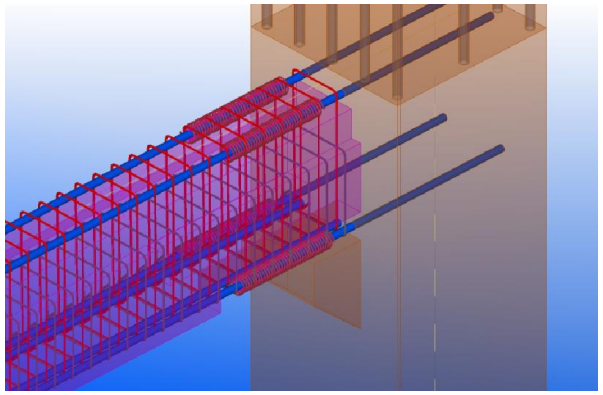
WIKA BETON

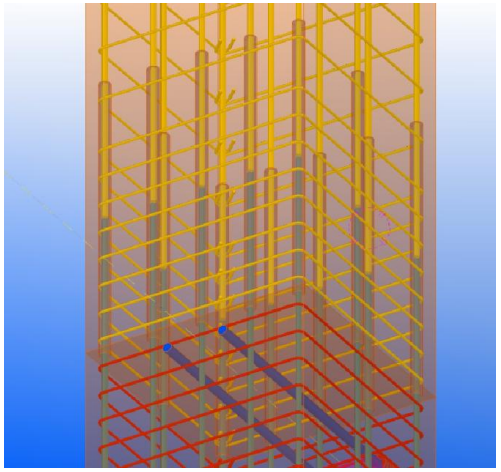
Innovation and Trust

PROJECT APPLICATION









1.1 ERECTION KOLOM

1.2 ERECTION BALOK


Pemasangan Balok


Las stek pada balok

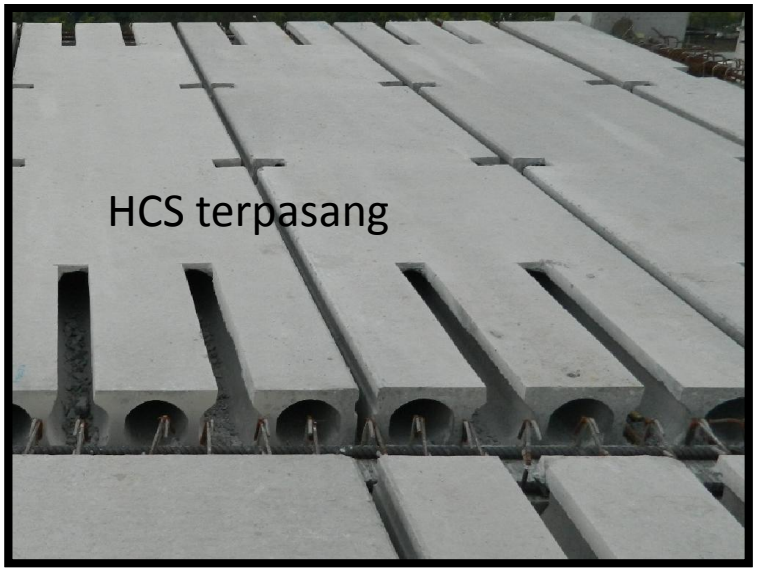

Balok terpasang


Bekisting Balok

Video

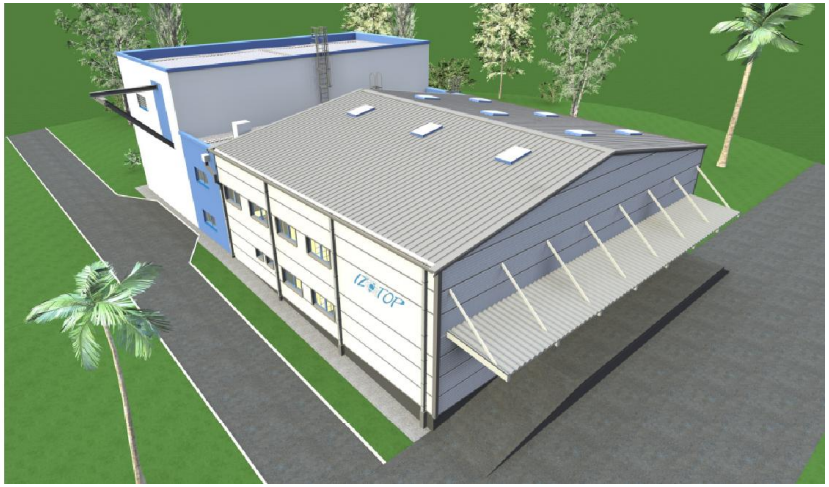
1.3 ERECTION HCS

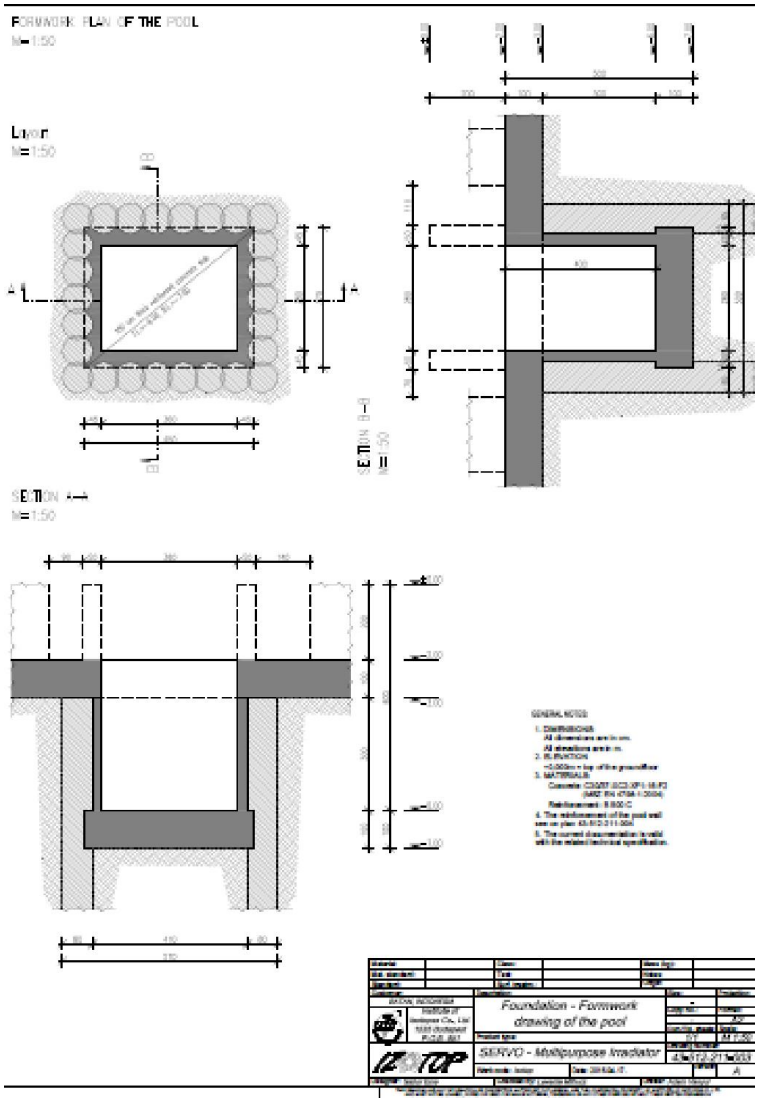

Pemasangan HCS

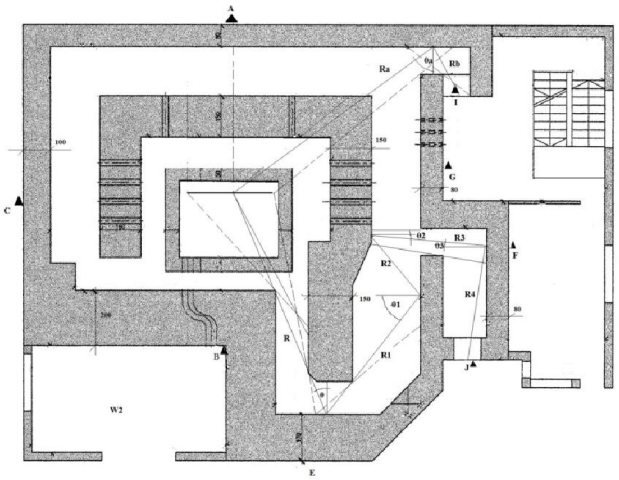

HCS terpasang

WiKA BETON
Innovation and Trust

PROJECT APPLICATION







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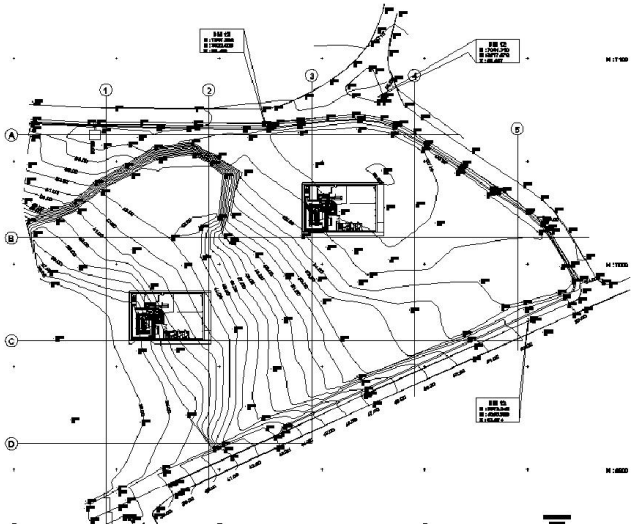

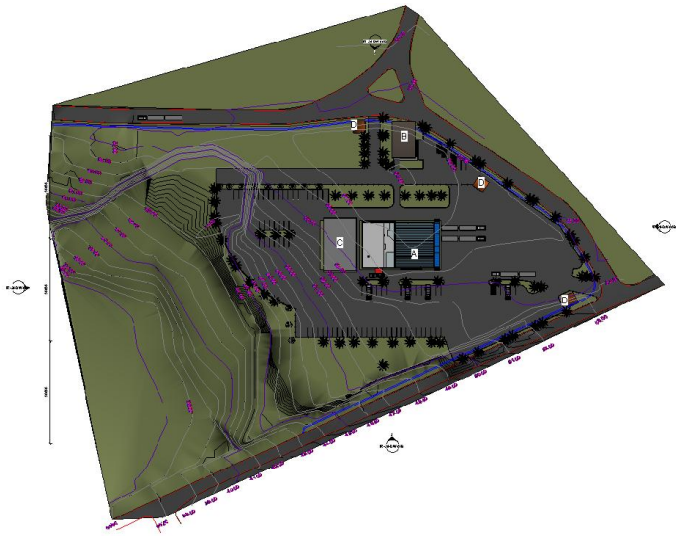

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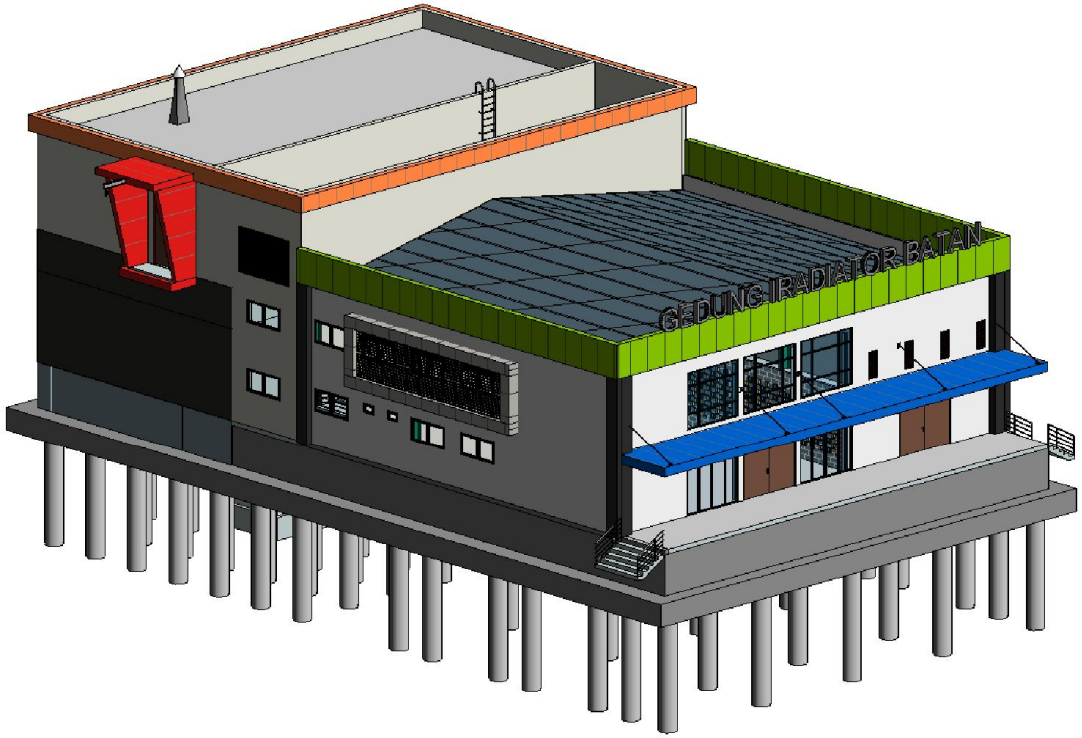
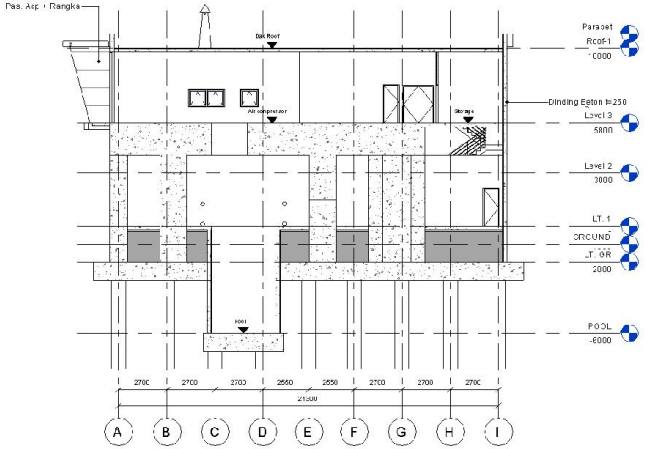
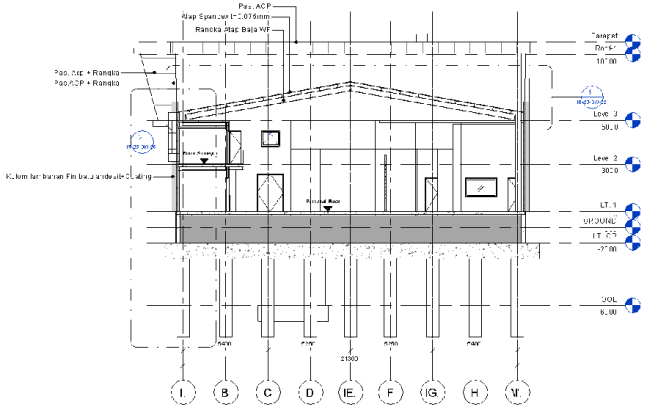
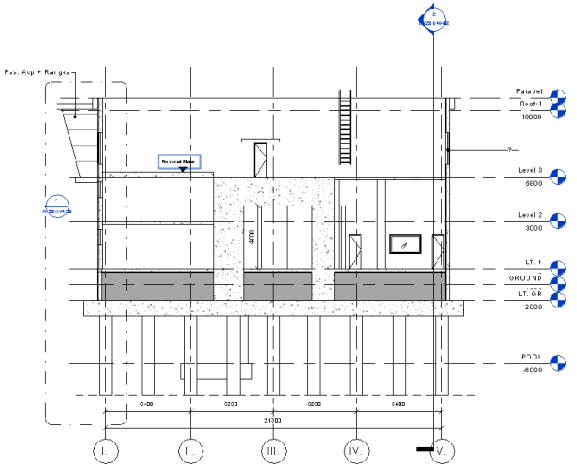
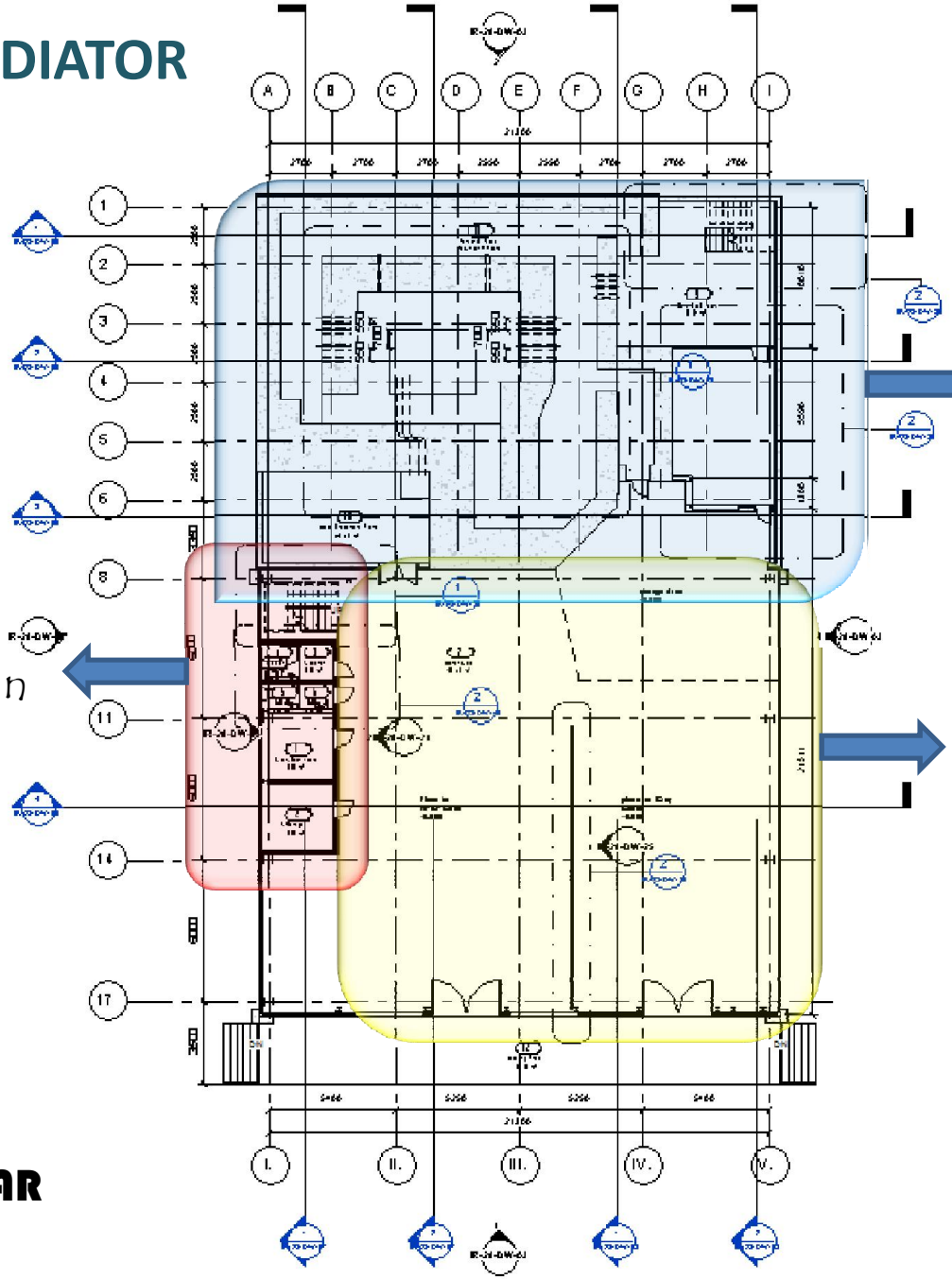








GEDUNG IRADIATOR



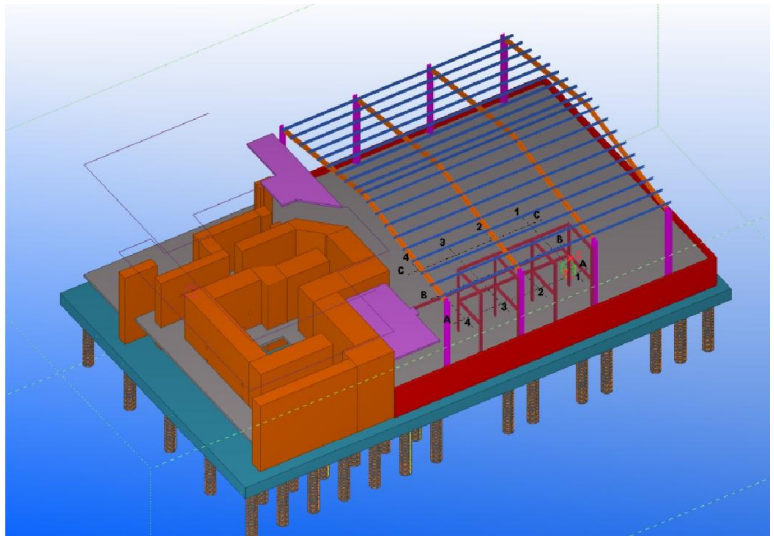
R. IRADIATOR

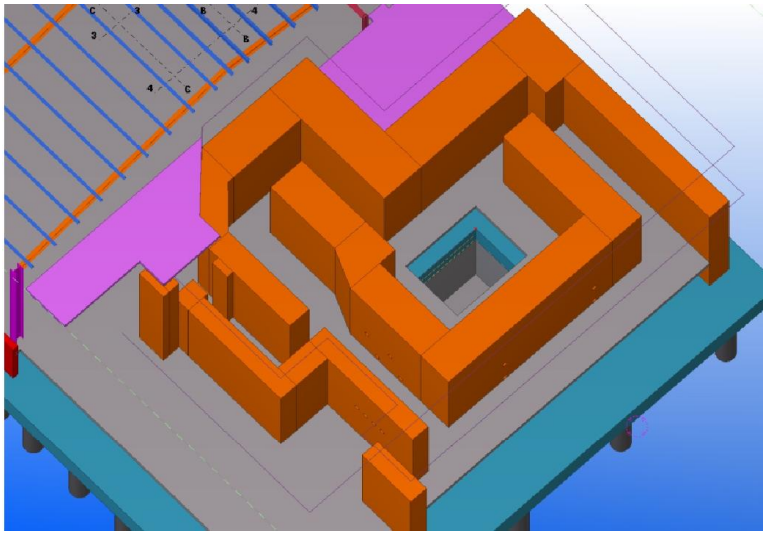
R. Staff/Karyawan

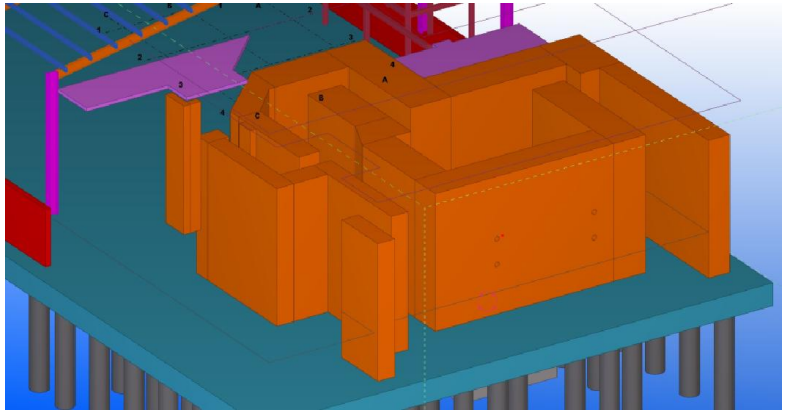
AREA PUBLIK/HALL

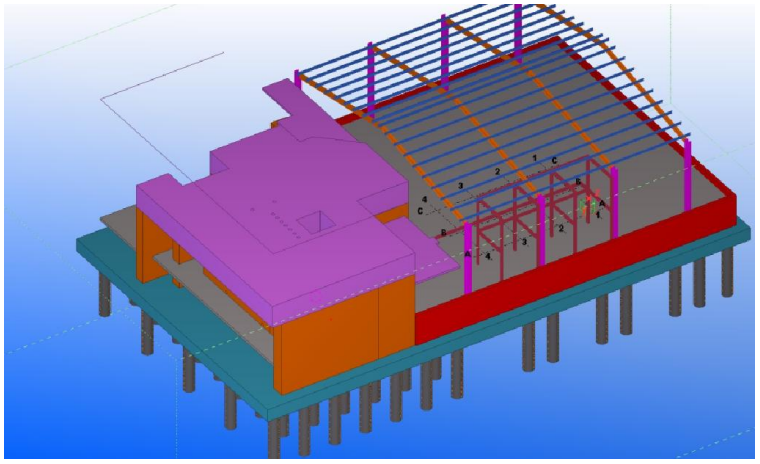
DENAH LT.DASAR

PROJECT APPLICATION









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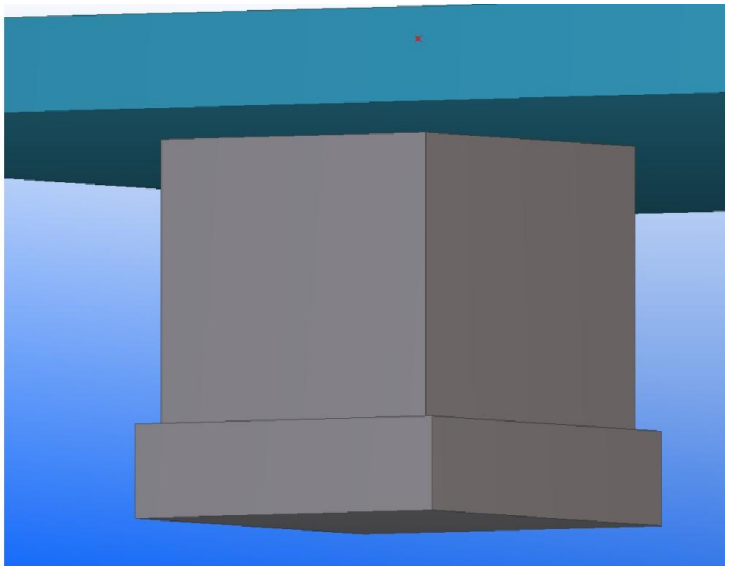

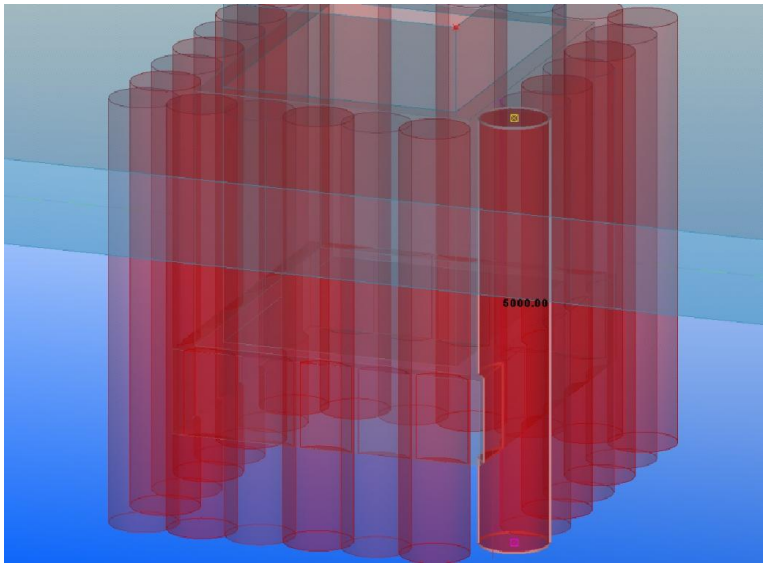

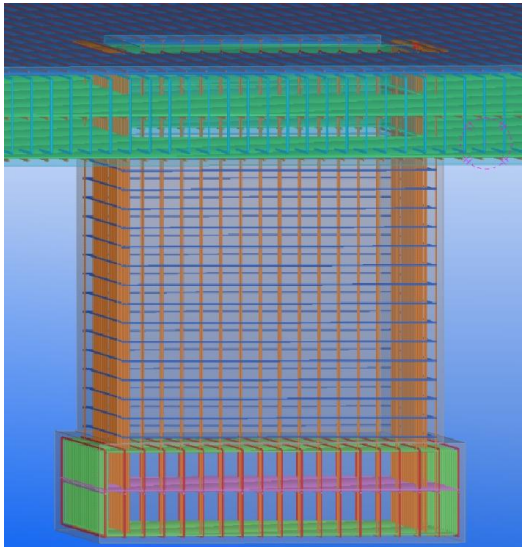

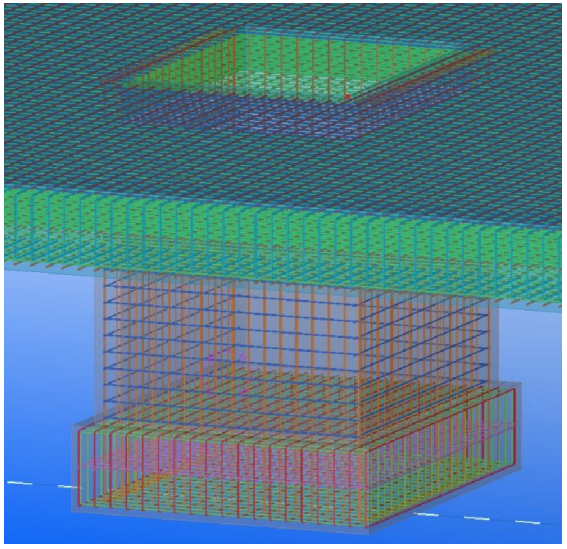

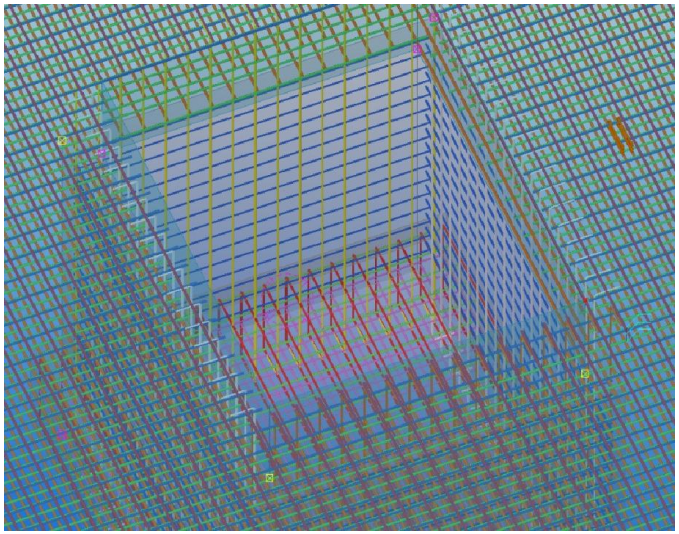

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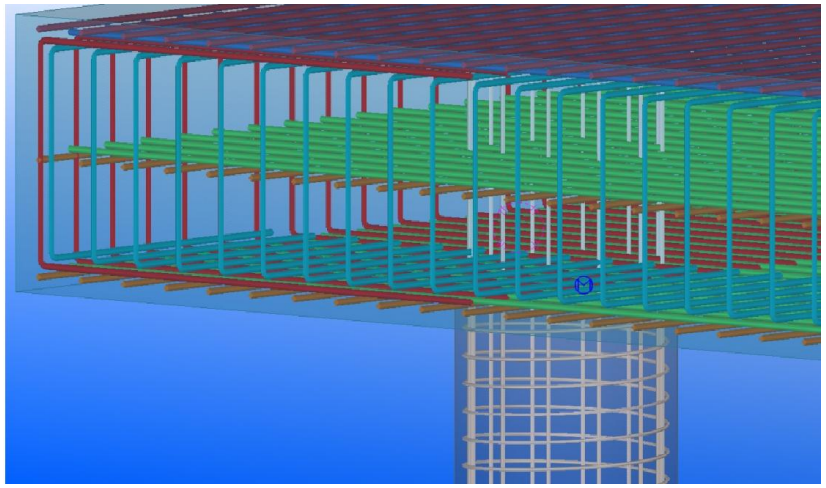
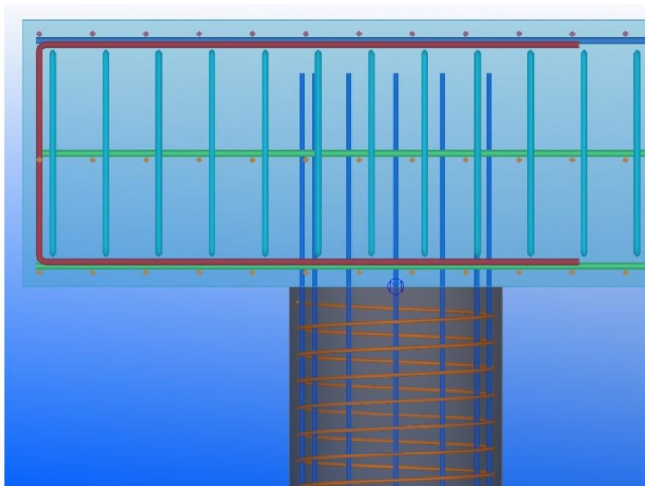
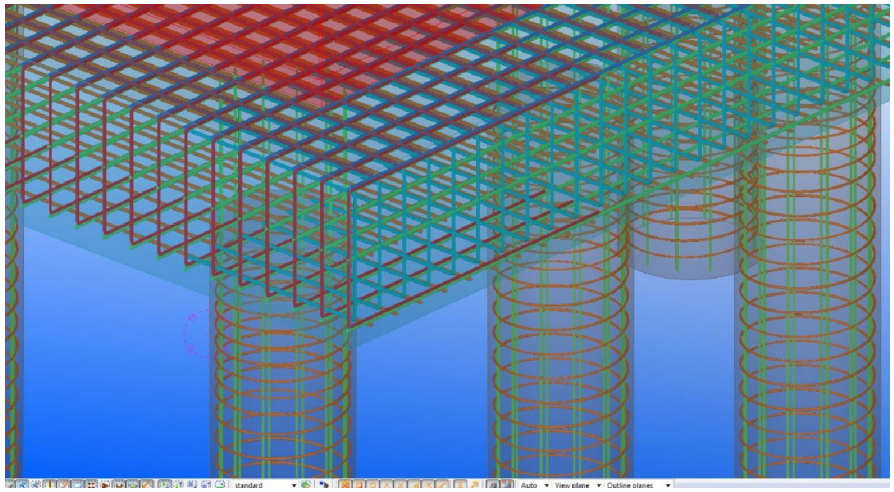
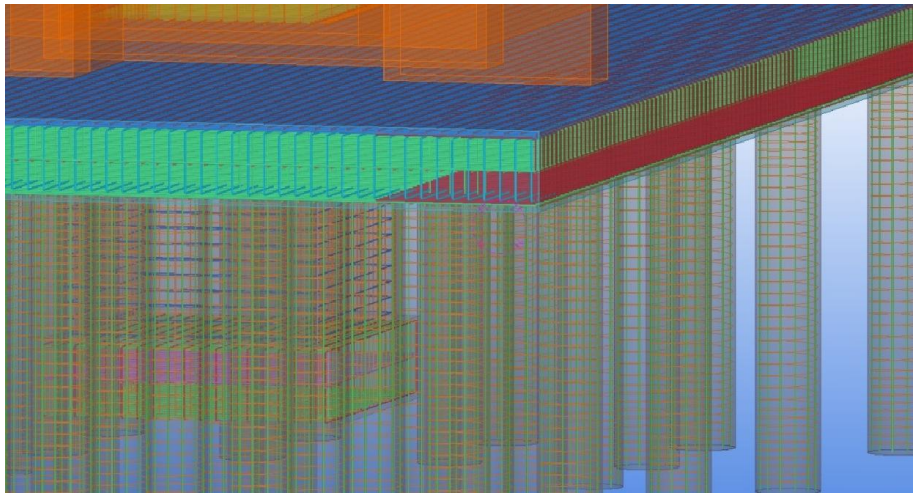








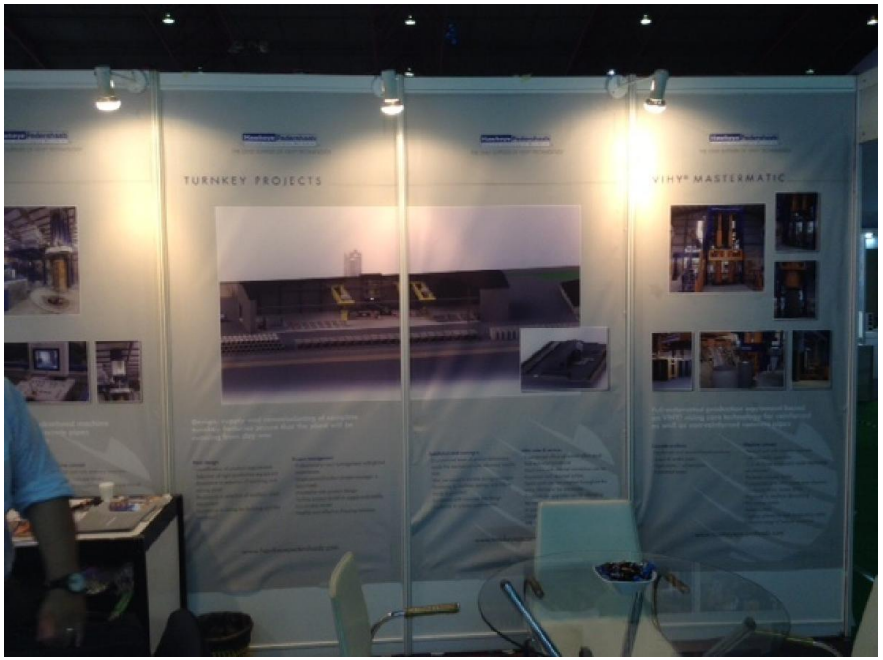
AUTOMATION IN CSSEA 2014

Automatic bar bending machine

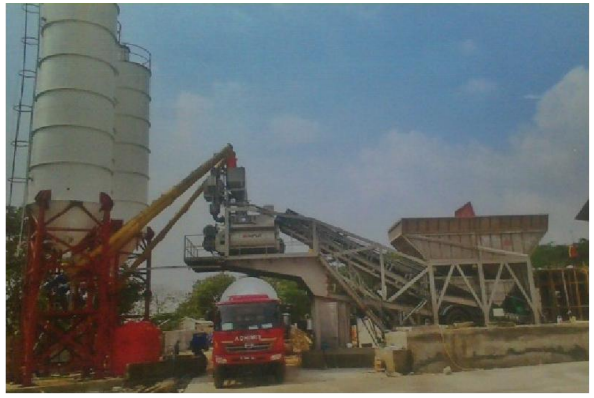
Slab renforcement and stirrups with tie

AUTOMATION IN CSSEA 2014

Machine to produce precast pipe and sewerage



AUTOMATION IN CSSEA 2014



Several automation precast production machine in CSSEA 2014

NEXT FUTURE WAY OF DESIGN AND CONSTRUCTION

In next 5 Years the infrastructure and Housing market is US $ 430 billion , we need The Ultimate Solutions

We Are Precaster can provide fast and precise design with aid of BIM

TEKLA

COMPATIBLE
AUTODESK
REVIT
MEP
2014
AUTODESK.

Revit
Architecture

If design approve then we just push the button…

Precast Automation

> Elematic integration schema

ELiPLAN

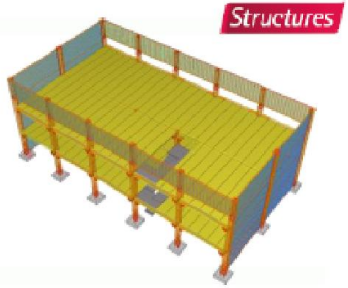
- Fabrication status
- Planned fabrication date

- Project data
- Piece data
- Embedded materials
- Reinforcement
- Erection section

- Estimating
- Production Management
- Storage Yard Management
- Material Management
- Machinery Maintenance Management
- Costing
- Quality Control

DB

TEKLA Structures



- Parametric 3D Building Modeling
- Accurate detailing
- Adaptive reinforcement & connections
- 4D Visualization

DB

And Then…

Solution to manage and optimize fabricators whole value creating process

TEKLA
A TRIMBLE COMPANY





Conceptual Design Sales & tendering

- Accurate tendering quantities and BOM
- Study alternative solutions for optimal precast concept
- Review constructability
- Sales model and powerful visualizations to clearly present your concept

Design & detailing, output data for production and site

- Interoperability and collaboration
- Accurate, multi-material detailing tools
- Error free, up to date data and documents
- Customizable to company and project specific needs
- Change management
- RFI & Issue control

Production planning & Management

- Data for production planning
- Accurate, organized purchase quantities
- Data for production machinery
- Integration to planning & manufacturing software
- Status management
- RFI & visualizations

Storage handling, delivery and coordination

- Geometry data for stockyard planning
- Accurate and organized data for lotting and delivery planning
- Status management and co-ordination with manufacturing and site

Installation planning, management and coordination

- Data and visualization for Installation planning
- Quantity and element data for scheduling
- Status management and co-ordination with stockyard and factory
- Progress documentation
- Visualizations & RFI

DESIGN **FABRICATE** **BUILD**

From Building Information Modelling to Automation Production, The Next Future For Indonesia Precast/Prestressed Construction Industry to The Ultimate Solutions for Infrastructure and Housing