BUILT TODAY USING TOMORROW TECHNOLOGY

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BUILT TODAY USING TOMORROW TECHNOLOGY (Built Smart)

. Zakria Omron

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The Future of the Construction Industry

- The construction industry is always changing and the innovation, thinking out of the box is the key to success.
- Finding a new methodology to reduce cost and time is the main challenge of construct or success.
- Reduce the material wastage by using the new fabrication technology is the only solution.
- Reduce the manpower and supervision one of important factors to the construction success.

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THINKING
OUT OF THE BOX

Six keys ways to thrive amid disruptions of the market

Players along construction industry's – architects, designers, engineers. contractors, and operations and maintenance companies – need to prepare strategically and make the right moves.

SIX KEYS

BUILDING A VIRTUAL WORLD

Using BIM technology and virtual simulation.

FACTORIES RUN THE WORLD.

Advanced manufacturing processes to pre-fabricate modules that are later assembled on-site.

A GREEN REBOOT

The construction industry uses sustainable technologies.

SIX KEYS

ATTRACT NEW TALENT AND BUILD UP REQUIRED SKILLS

As any future scenario requires talent with substantially different skills.

INTEGRATE AND COLLABORATE ACROSS THE CONSTRUCTION INDUSTRY'S VALUE CHAIN

As the construction industry is characterized by a disintegrated and highly fragmented value chain

ADOPT ADVANCED TECHNOLOGIES AT SCALE

As the construction industry has been slow to adopt new technologies and still heavily relies on manual labor and mechanical technologies.

CONSTURACTION FUTURE

1- Modular Construction & prefabrication
The offsite fabrication of building components, save Money Time and improve the health and safety

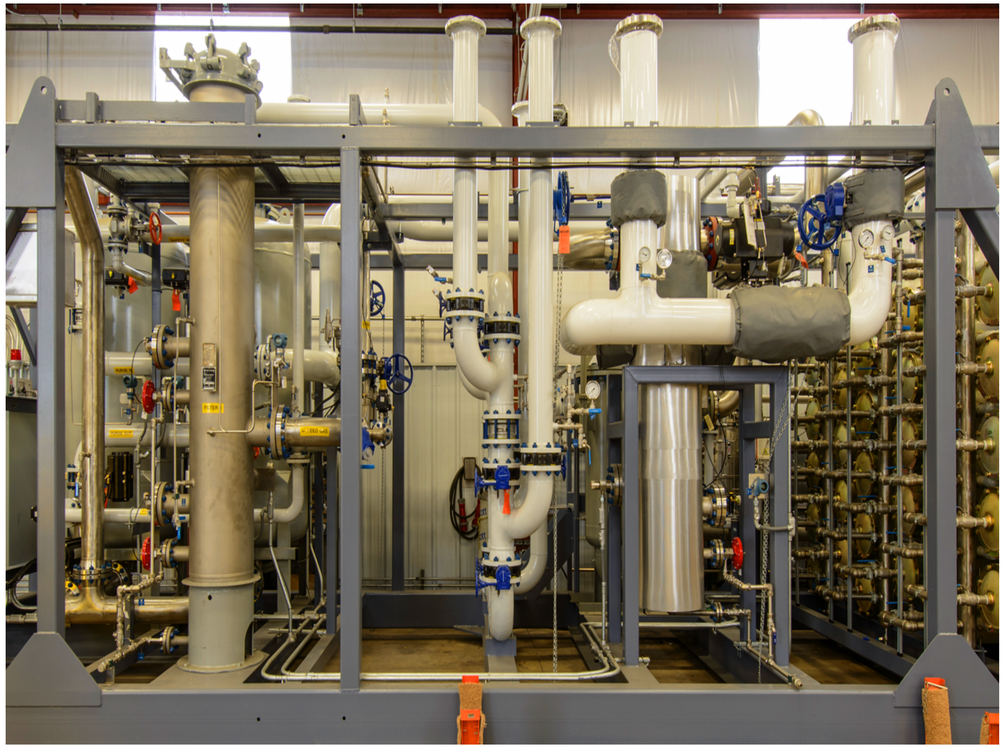
2- Using Advanced Material (Built Green)
Using Building Material to construct energy-efficient structures and reduce the Energy waste and carbon mitigation

3- 3D Printing and advanced technology
Using advanced manufacturing metrology in construction Building components Saving Time cost and quality

4- Reality Virtualization
Using advanced software and Virtualization reality simulation tools to avoid real modification after construction

CONSTURACTION FUTURE

5- the big Data & Analysis
long term studies are needed to provide data from which the positive and negative predictive values can be calculated.



6- wireless technology in monitoring and control
Using wireless to monitoring/control the construction and connect the equipment's for remote sites

7- collaborations , integration & cloud technology
Proper coordination and communication data access and sharing with all stack holders

8- 3D scanner and advanced land survey technology
Accuracy and time saving

9- Building Information Modeling,
Proper coordination, scheduling 4D &5D

Improvement in Health & Safety Pre-Engineered Solution Right the First Time

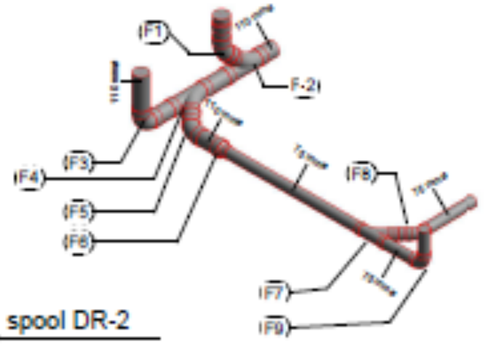
Prefabricated MEP Systems

1- MEP Prefabrication Components (30%)

Preparing the prefab components like:
Pipe cut , fitting assembly , pipe spooling
(made ready to assembled onsite

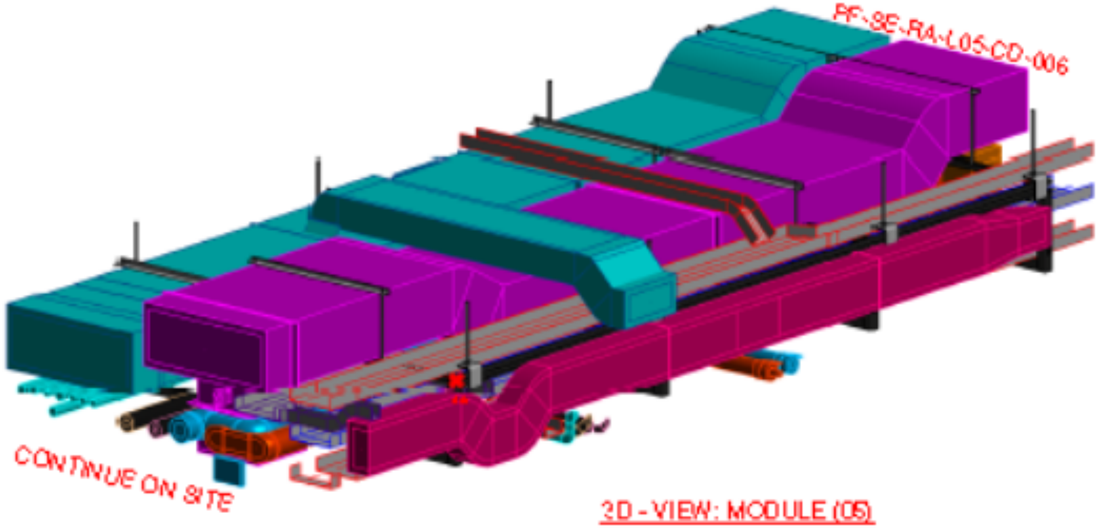
2- MEP Prefabrication modular Frame (45%)

MEP services to be assembled inside steel frame.
All MEP Services in one Frame modular



Pipe Fitting Schedule			
Mark	Family and Type	Size	Count
F9	ME_M_ESBC_Bend - PVC: Standard	75 mmø-75 mmø	1
F7	Tee Reducing Sanitary - PVC - DWV: Standard	75 mmø-75 mmø-75 mmø	1
	Reducer - PVC - DWV: Standard	75 mmø-75 mmø	1
	Reducer - PVC - DWV: Standard	110 mmø-100 mmø	1
F1	ME_M_ESBC_Bend - PVC: Standard	110 mmø-110 mmø	1
F-2	Tee Reducing Sanitary - PVC - DWV: Standard	110 mmø-110 mmø-110 mmø	1
F3	ME_M_ESBC_Bend - PVC: Standard	110 mmø-110 mmø	1
F4	Tee Reducing Sanitary - PVC - DWV: Standard	110 mmø-110 mmø-110 mmø	1
F8	ME_M_ESBC_Bend - PVC: Standard	75 mmø-75 mmø	1
F6	Reducer - PVC - DWV: Standard	110 mmø-75 mmø	1
F5	ME_M_ESBC_Bend - PVC: Standard	110 mmø-110 mmø	1

Pipe Schedule			
Family and Type	Size	Length	Count
Pipe Types: PVC	75 mmø	454	1
Pipe Types: PVC	75 mmø	1275	1
Pipe Types: PVC	75 mmø	197	1
Pipe Types: PVC	75 mmø	15	1
Pipe Types: PVC	75 mmø	268	1
Pipe Types: PVC	110 mmø	292	1
Pipe Types: PVC	110 mmø	80	1
Pipe Types: PVC	110 mmø	10	1
Pipe Types: PVC	110 mmø	123	1
Pipe Types: PVC	110 mmø	110	1
Pipe Types: PVC	110 mmø	139	1
Pipe Types: PVC	110 mmø	81	1
Pipe Types: PVC	110 mmø	166	1



Prefabricated MEP Systems

3- MEP Services integrated with Arch. And Strc. Members (60%)

MEP services assembled are assembled with Architectural like full ceiling and steel members in one frame

4- MEP Sked (pump Rooms)

MEP services assembled are assembled with Architectural like full ceiling and steel members in one frame

Traditional Methods VS Prefabrication

 Vs 	
WHAT ARE THE ISSUES?	WHAT ARE THE BENEFITS?
Clash of services and trades	**Improved** logistical coordination
Design freeze	Manufactured under factory controlled conditions to an agreed design
High risk of project slippage	Aligns to **tighter** project timescales
Inconsistent Quality of materials and installation	**Reduce** onsite material waste
Increase number of labour on site (multi trades)	**Reduction** of on-site personnel
Increase risk of incidents	**Improvements** in health and safety and predictability
Large material footprint for storage and WIP	**Reduced** environmental footprint during installation
Requires increased supervision.	Significant cost **reduction** of on-site labour reducing supervision costs
Surprise costs due to unforeseen issue	**Reduced** waste and improved installation efficiency
Unreliable Cost estimates and time control	More **accurate** cost and delivery estimates
Waste Management Control	**Reduced** waste and improved installation efficiency

The benefits of Offsite Engineering for Health & safety benefits

- ✓ Less Work on site v’s factory time .
- ✓ Better controlled environment
- ✓ Reduce the site Noise.. Pollution.. Movement.. Hazards)
- ✓ Reduced waste generation and waste management
- ✓ Less security risks like Theft .. Fire.. R
- ✓ Better controlled Environmental Impact (Built Green)
- ✓ Using High efficient Machines and Reduced manual handling
- ✓ Work at factory to avoid Working at Height
- ✓ Risk Mitigation

“Take care of your own safety, welfare and wellbeing and that of your colleagues”
“Make yourself aware of the inherent risks in everything you do and ensure they are adequately mitigated”
“Never take shortcuts”
“Stop the job if you deem it unsafe”

Design Workflow Prefabrication

Input From Project Team(Client)

Project Documents Review

Prepare Fully coordinated Drawings (Zero Clash)

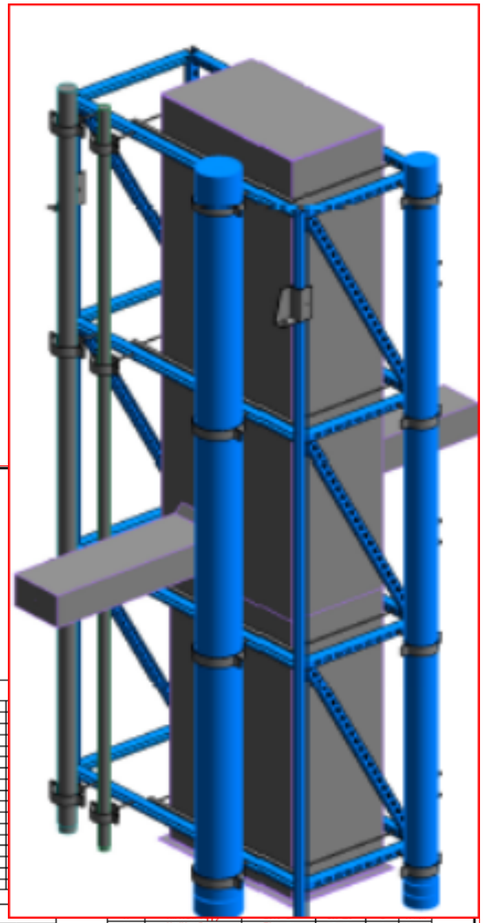
Issue Drawings for Approval

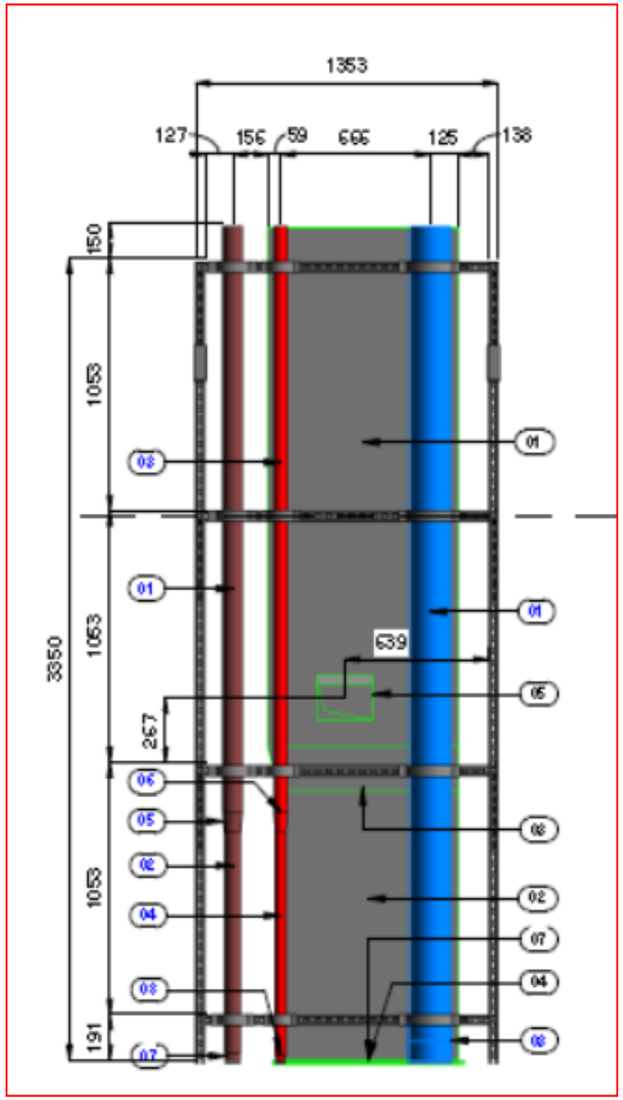
Customers Approval

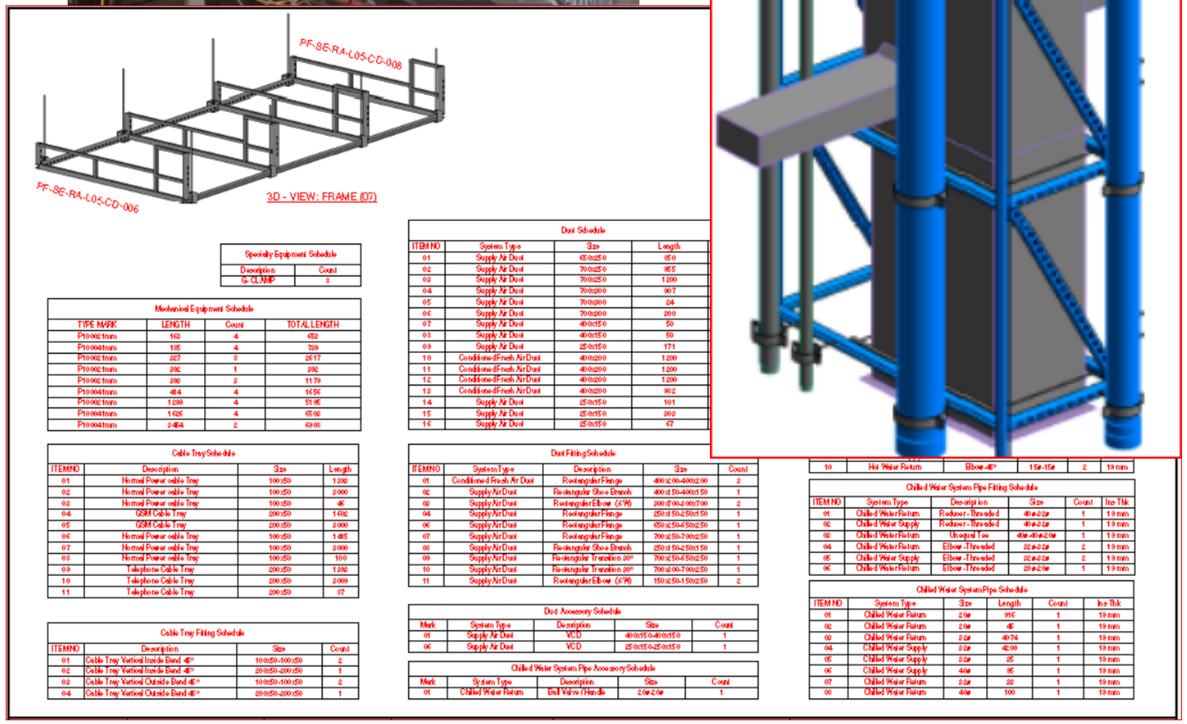
Prepare Manufacturing Drawings

Issue Job Pack

Proceed with Manufacture







INSTALLATION EQUIPMENT

1 – USING FORKLIFT TO MOVE MODULES/SPOOLS TO THE ERACTION AREA

2 – MODULE LIFTING EQUIPMENT TO BE USED LEFT AND HOLD TO THE REQUIRED INSTALLATION LEVEL.

2 – UNITES WILL BE USED TO INSTALL THE MODULE

MODULE INSTALLATION

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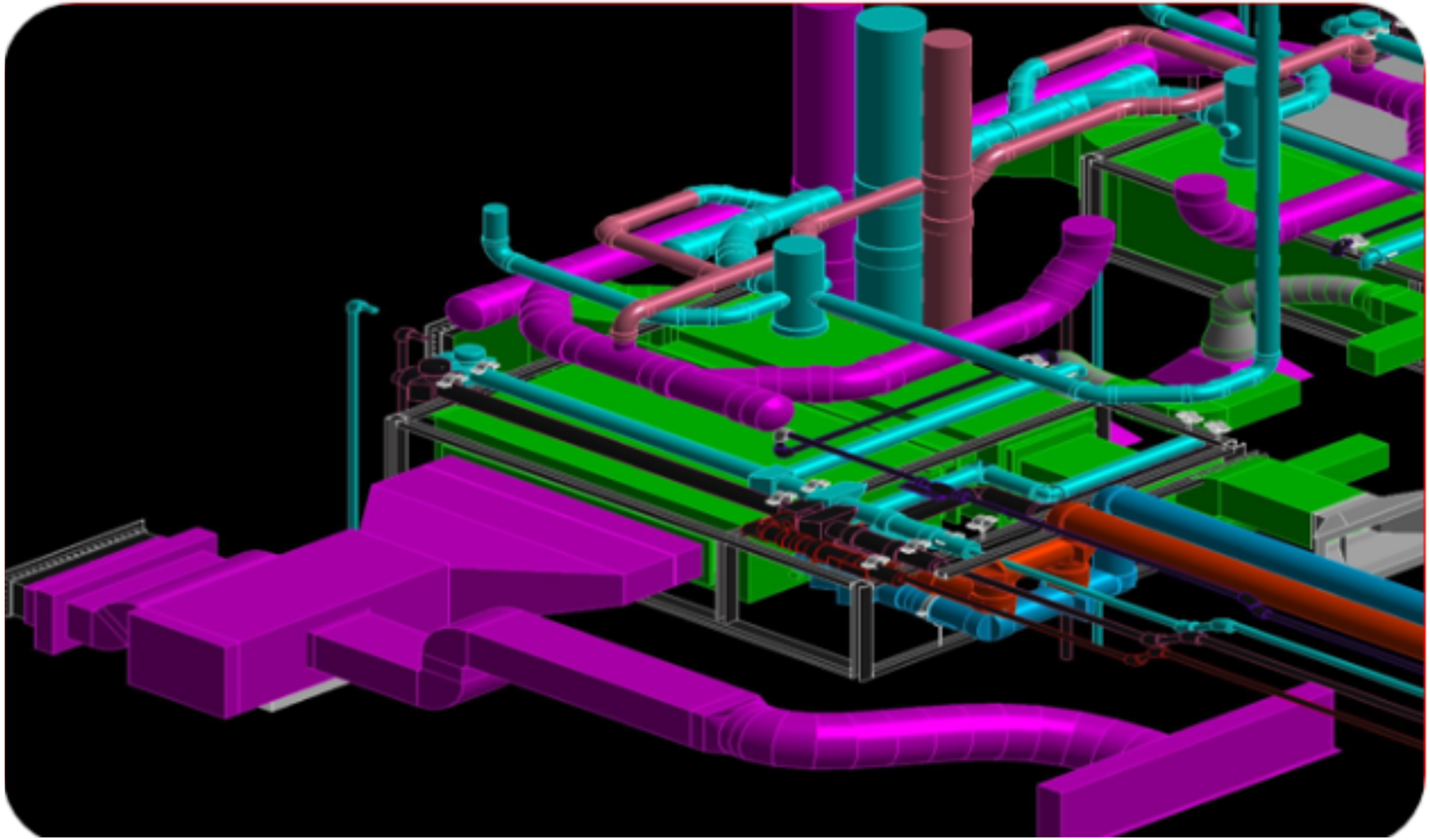
Typical Guest Room Toilet MEP Services



Easy Handing to Avoid Civil work delay

SITE INSTALLATION