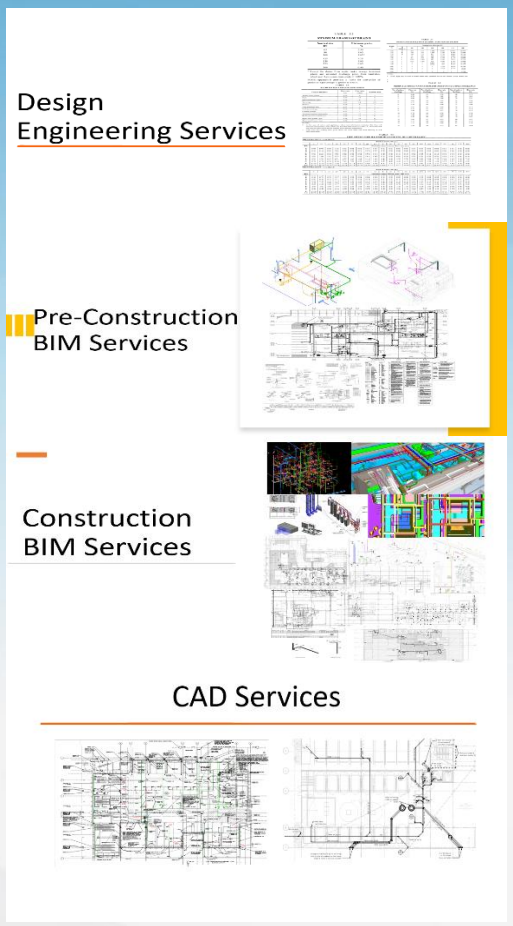
Year 2024-25

Design and Construction Services

For

HYDRAULIC SYSTEMS

(PLUMBING)



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About us

DESIGN AND DRAWING SOLUTION offers Construction documents for hydraulic systems. Our hydraulic team is having good knowledge of Australia & New Zealand hydraulic systems designs & construction document process & codes and guidelines.
| Hydraulic – AS/NZS -3500

We are familiar with Australia & New Zealand standard practice and requirement of hydraulic design for all type of buildings i,.e. from Interior Fit outs, single family apartment, high rise apartment, commercial office buildings, hotels, restaurant, hospitals, School, College including infrastructure construction like Airport, metro stains etc.

We are providing our services worldwide and specially in Australia, New Zealand with MEP consultants, hydraulic contractors, general contractors.

Using our BIM and 2D CAD outsourcing services, our clients have numerous advantages i.e. including time and cost savings which are realized during the design phase and more importantly, during the installation and build stages of construction projects. We are certified Autodesk users and started in Mumbai, India from early 2018 and having our representative in US as well as channel Partner.

DESIGN AND DRAWING SOLUTION
ONE STOP BIM | CAD | MEP ENGINEERING SOLUTIONS

6+ Years' Experience | **300+** Completed Projects | **150+** Customer world wide

Building Types includes

- Interior Fit out for Commercial / Residential
- Bungalows /Residential Apartments
- High Rise Residential building
- Commercial IT / Banks
- Hotels
- Institutional Buildings like school, Libraries, Auditoriums
- Hospital
- Entertainment Zones, Malls and Multiplexe
- Data Centre
- Industrial ware house

Design Engineering Services

- Drainage, Water & Vent
- Pump Head Calculation

Pre-Construction BIM Services

- Design 3D Model (LOD 300)
- Design drawing

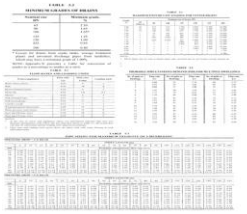
Construction BIM Services

- 3D Modelling – LOD 400
- BIM Co-ordination
- Shop Drawing
- Spool, Hanger & Insert Drawing
- As Built Model & Drawing (LOD 500)

CAD Services

- Shop Drawing
- As built

Design Engineering Services



Hydraulic Engineering -Drainage, Water & Vent

We use to do Plumbing hydraulic calculation based on the hydraulic fixture values as per code and equivalent water flow based on the hydraulic codes like ASPE and IPC.

Drainage Pipe Sizing

Individual fixtures connections are available based on the type of fixture and list as follows.

And maximum no of fixture to be connected as per the standards.

In standard practice we use 2, 3 & 4 inch of pipe sizes to cover the sewer drainage systems in small buildings.

For Highrise buildings, we use to referrer maximum no of fixture to connected on each stack to be followed.

Slope

As per standard practice and guidelines slopes as follows

TABLE 3.2
MINIMUM GRADES OF DRAINS

Nominal size DN	Minimum grade, %
65	2.50
80	1.65
100	1.65*
125	1.25
150	1.00
225	0.65
300	0.40

* Except for drains from septic tanks, sewage treatment plants and unvented discharge pipes from tundishes, which may have a minimum grade of 1.00%.

NOTE: Appendix B provides a Table for conversion of grades as a percentage to grades as a ratio.

TABLE 3.1
MAXIMUM FIXTURE UNIT LOADING FOR VENTED DRAINS

Grade, %	Nominal size of drain, DN						
	65 (Note 1)	80	100	125	150	225	300
5.00	60	215	515	1 450	2 920	11 900	26 900
3.35	36	140	345	1 040	2 200	9 490	21 800
2.50	25	100	255	815	1 790	8 060	18 700
2.00	×	76	205	665	1 510	7 090	16 600
1.65	×	61	165	560	1 310	6 370	15 000
1.45	×	(50)	(140)	485	1 160	5 810	13 900
1.25	×	(42)	(120)	425	1 040	5 360	12 900
1.10	×	×	×	(380)	933	4 970	12 100
1.00	×	×	×	(340)	855	4 500	11 400
0.85	×	×	×	×	(725)	3 850	10 300
0.63	×	×	×	×	(593)	3 230	9 090
0.50	×	×	×	×	×	×	7 720
0.40	×	×	×	×	×	×	6 780

NOTES:
1 DN 65 drains may be used as branch drains only, provided that no soil fixtures (except urinals) are connected thereto.
2 "×" indicates that the combination of nominal size and grade is not permitted.
3 Figures in brackets are the maximum fixture unit loadings for drains laid at reduced grades as permitted by Clause 3.4.2.

Vent Pipe Sizing

Individual fixtures vent connection to be developed based on the available and on the type of fixture and list as required.

And header connections to be followed as per standard table.

Water Supply

To calculate water supply pipe sizing, we use to follow standard fixture consideration inline with code and guidelines and equivalent flow to work out sizes.

For individual circuit, we use to follow standard fixture sizes.

TABLE 3.1
FLOW RATES AND LOADING UNITS

Fixture/appliance	Flow rate, L/s	Flow rate, L/min	Loading units
Water closet cistern	0.10	6	2
Bath	0.30	18	8
Basin (standard outlet)	0.10	6	1
Spray tap	0.03	1.8	0.5
Shower	0.10	6	2
Sink (standard tap)	0.12	7	3
Sink (aerated tap)	0.10	6	2
Laundry trough	0.12	7	3
Washing/machine/dishwasher	0.20	12	3
Mains pressure water heater	0.20	12	8
Hose tap (20 nom. size)	0.30	18	8
Hose tap (15 nom. size)	0.20	12	4

NOTES:
1 In the case of valves and appliances where test information indicates that they will function satisfactorily with a flow rate less than that shown in Table 3.1, the tested flow rate may be substituted and the loading units adjusted accordingly.
2 Flow rates and loading units given above are taken with cold water flowing at each individual outlet.

To work out the sizes for branch and header piping networks as per standard piping length, head loss and the table provided below.

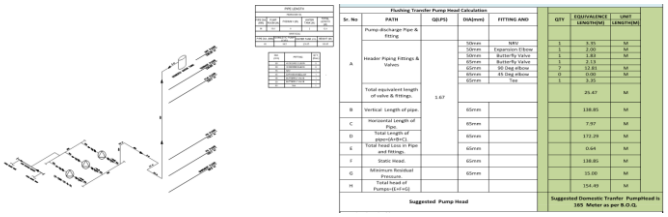
TABLE 3.2
PROBABLE SIMULTANEOUS DEMAND (PSD) FOR MULTIPLE DWELLINGS

No. of units or dwellings	Flow rate L/s	No. of units or dwellings	Flow rate L/s	No. of units or dwellings	Flow rate L/s
1	0.48	35	3.74	68	5.79
2	0.70	36	3.81	69	5.85
3	0.88	37	3.88	70	5.91
4	1.03	38	3.95	71	5.96
5	1.17	39	4.01	72	6.02
6	1.30	40	4.08	73	6.08
7	1.41	41	4.14	74	6.13
8	1.53	42	4.21	75	6.19
9	1.64	43	4.27	76	6.25
10	1.74	44	4.34	77	6.30
11	1.84	45	4.40	78	6.36
12	1.94	46	4.47	79	6.41
13	2.03	47	4.53	80	6.47
14	2.12	48	4.49	81	6.53
15	2.21	49	4.66	82	6.58
16	2.30	50	4.72	83	6.64

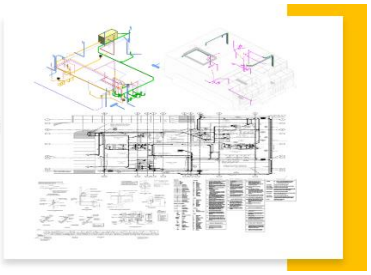
Pump Head Calculation

We do the pump head calculation through detail piping route to evaluate horizontal and vertical distance with all required fitting.

And as per the code, we do summarize piping and fitting losses to complete the pump head calculation.



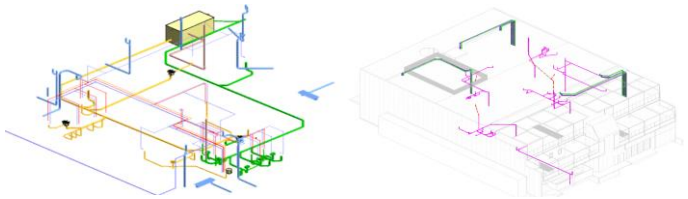
Pre-Construction BIM Services



Design 3D Model-LOD 300

We are specialize in the virtual construction of 3D models of hydraulic drainage, vent and water supply systems piping, fitting including all valves & accessories with all associated equipment and fixtures.

We produce 3D Models based on the design Mark-ups, reference design drawing , samples provided by the client.

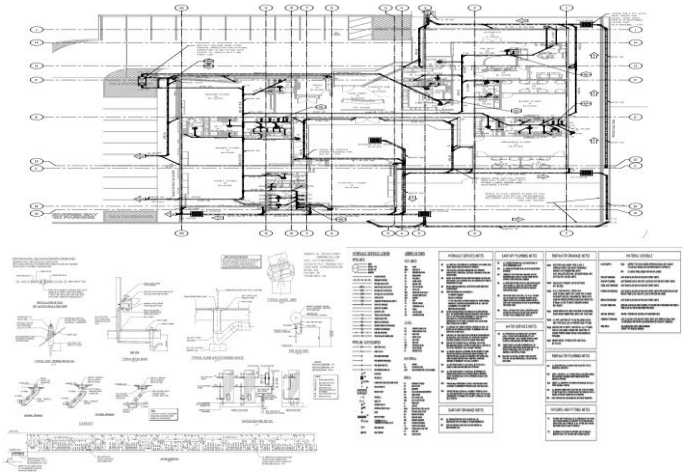


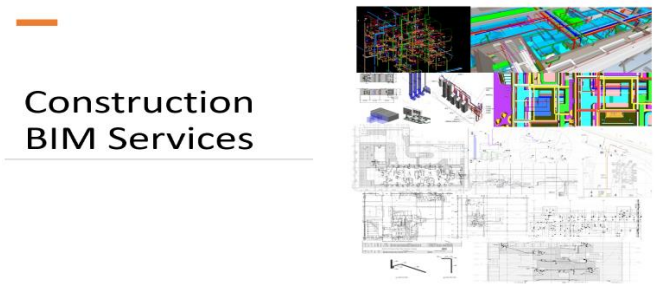
Design Drawing

Based on the mark-ups, reference drawing, we produce the design drawing for MEP system and work out the detail branch duct, pipe sizes as per the schematic and produce the complete design drawings /Tender Drawing or Construction drawing.

Design drawing set will have following list of drawing

1. Legend, Notes & Specification
2.Floor Plans
3.Schematic / Isometric
4.Detail Sheet
5.Schedule

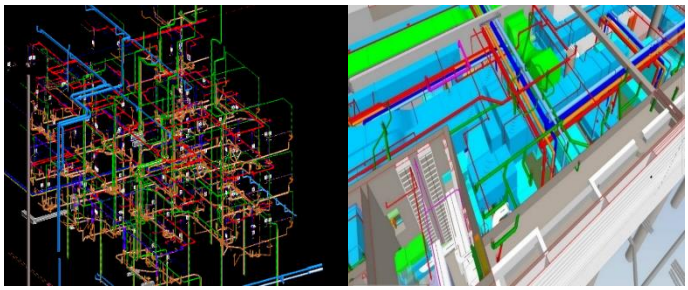




3D Modelling LOD 400

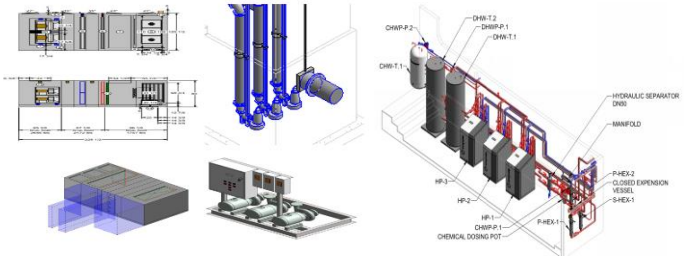
We are specialize in the virtual construction of 3D models @ LOD 400 of hydraulic systems i.e. drainage, water supply, gas, condensate drain piping with fitting including all valves & accessories with all associated equipment's and fixtures.

We produce 3D Models based on contract drawings, technical specifications, and manufacturer details to client standards.



Equipment Modeling

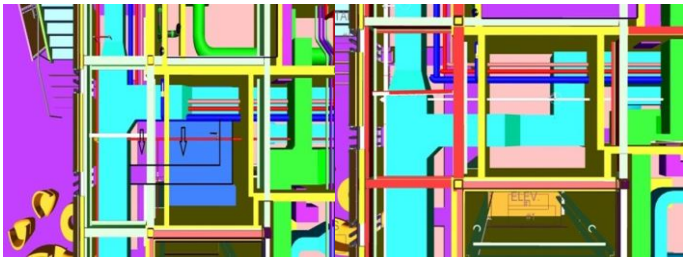
From the manufacturer's 2D drawings and inline with hydraulic schedules, we create a 3D model of all the hydraulic equipment such as PUMPS, Valves with all accessories for hydraulic systems.



BIM Co-ordination

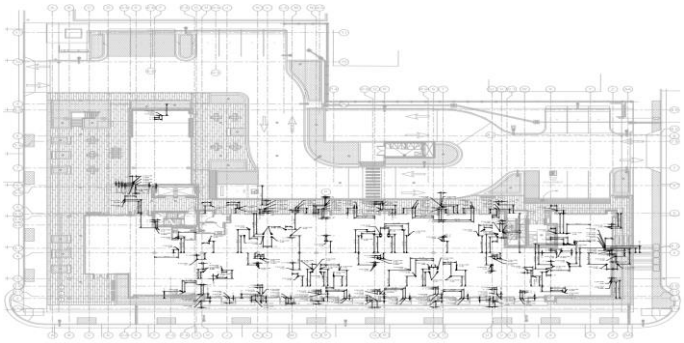
We generate a coordinated BIM model after resolving the clashes among all disciplines – Architectural, Structural, Concrete and hydraulic.

Clashes are resolved through video conference discussion with all stakeholders regarding the 3D clash snapshot and multiple fix options such as rerouting utilities, changing elevations, and resizing. Value engineering is also utilized to improve system efficiency, reduce costs, and provide for more efficient construction and maintenance.



Penetration Sleeve Drawing & Shop Drawing

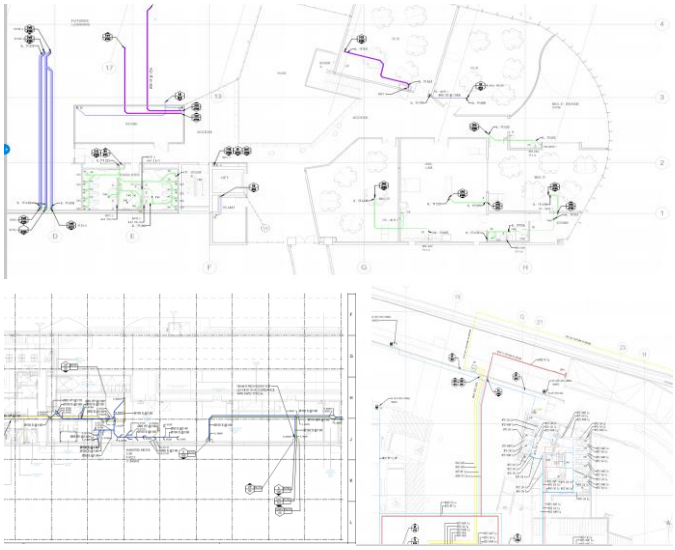
Penetration, Sleeve Drawings are required before a contractor can start pouring concrete on the site. Penetration Drawings are created from the coordinated BIM model after alignment with the architectural grids. Our experienced team keeps the necessary clearances for the penetration as per the contract documents and Specification.



Shop Drawing

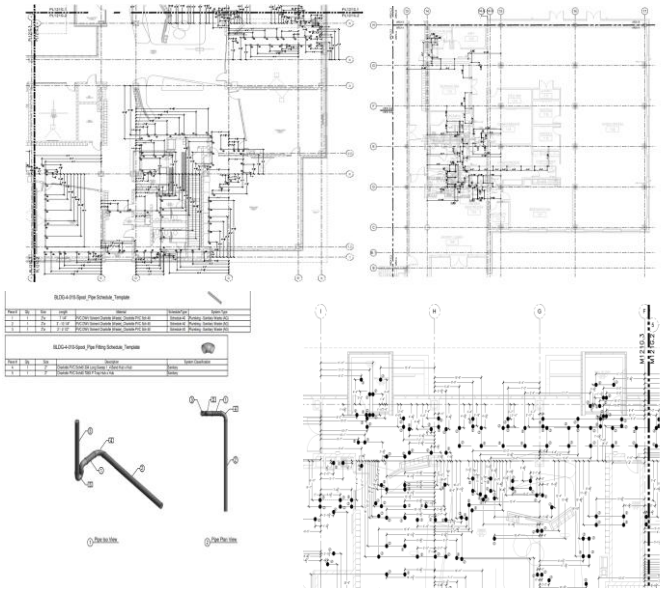
We produce Shop drawing after Co-ordination with utilizing coordinated BIM model or coordinated CAD drawings which are detailed enough for workshop fabrication and incorporated with sleeves and penetrations.

We provide the dimensions, BOD, COP & BOP, annotations inline with client standard & requirement as per standard practice.



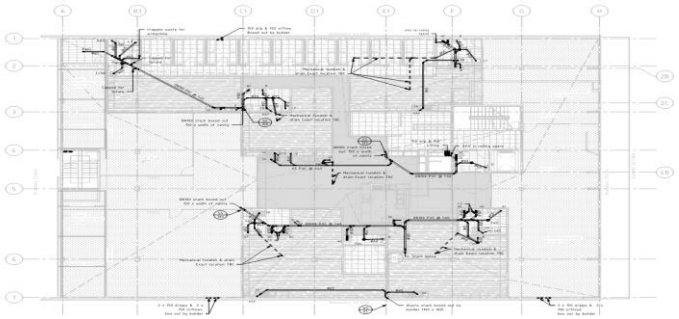
Spool, Hanger & Insert Drawing

D & D produce the Spool drawings, Hanger & insert drawing with proper co-ordination of model and placing the hangers in line with specification. Hanger drawings shows the actual location of hangers with proper dimension from wall or grid. Insert are position of hangers insert points and D & D produce the proper insert drawing coordinating with actual hanger location in the model.

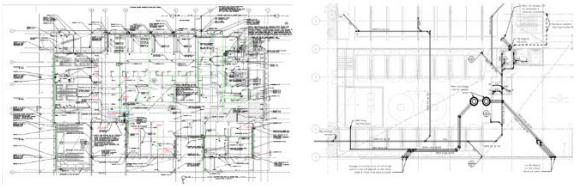


As Built Model & Drawing (LOD – 500)

Based on the site mark-ups, we create as built 3D model & Drawing and prepare the as built set for project hand over and record.



CAD Services



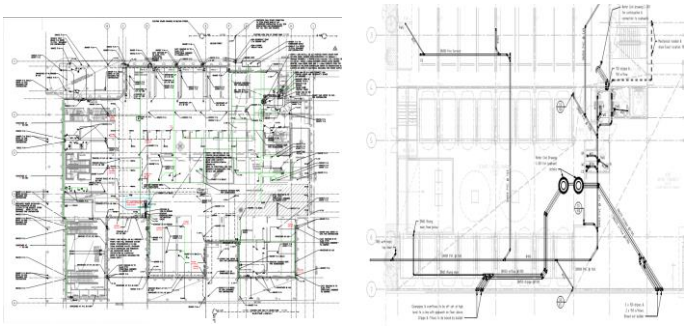
CAD Shop Drawing

Our cad team produce the shop drawing from CAD design drawing to incorporate the details of all fitting, accessories, details including as follows.

Drawings shall be indicative of actual equipment purchased and shall show all offsets, transitions, fittings, dampers, valves, hanger locations

Co-ordination:- Co-ordination with architectural , structural along with other services to fix the BOP , BOD with proper dimension and annotation .

Dimension and Annotation:- Providing proper dimensions and annotation inline with client standard or as per general standard shop drawing.



CAD As built Drawing

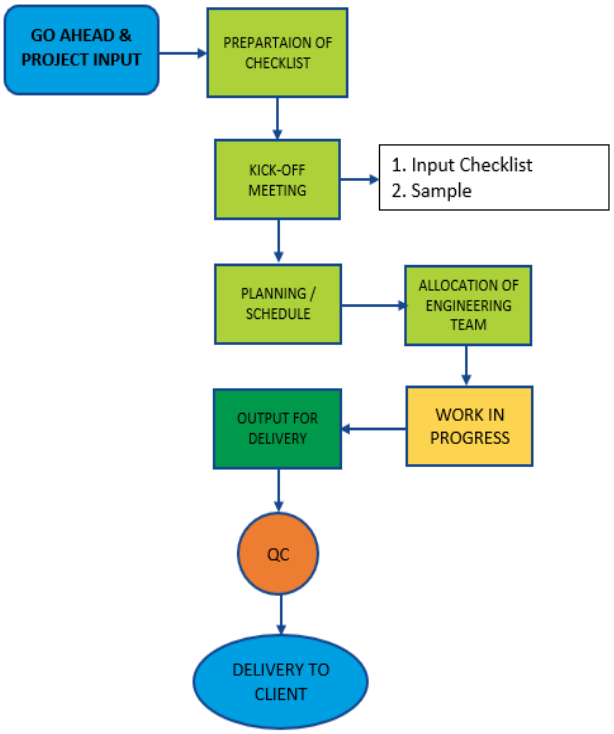
Our cad team draft the CAD drawing from redline mar-ups and Our As-built/Redline Markup Service is ideal for creating your as-builts drawings or design modifications in AutoCAD.

Markups:

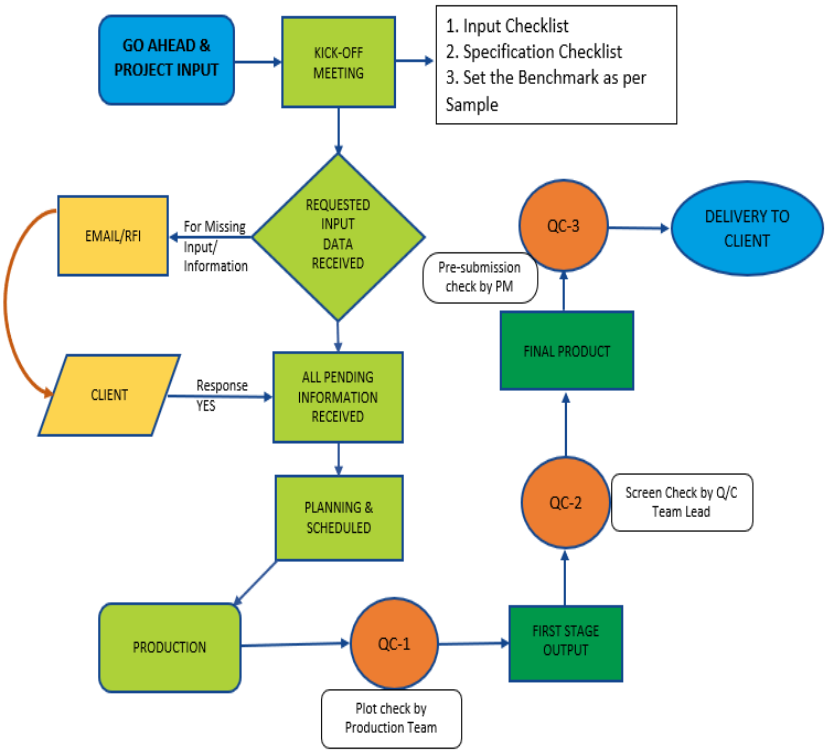
RED ink for drawing changes

D & D Project Execution Process

DESIGN ENGINEERING



BIM / CAD



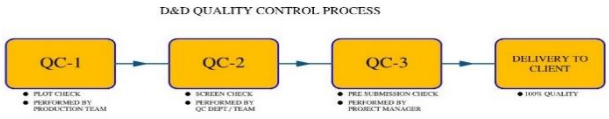
We use to implement our standard BIM/CAD execution process to deliver each and every project.

Stage 1: - We do kickoff meeting with our client for better understanding of the project to start.

Stage2: - We do project review, planning and prepare project specification checklist and delivery schedule and share with client.

Stage3: - We allocate our dedicated Team lead with team member inline with the services to start the production activities as per delivery schedule.

Final Stage: - We follow QC process in the execution process before delivered to the client.
With the above process, we deliver the high-quality product to client.



Quality Check – 1
The model check is done comparing it with the original contract documents through Team Member.

Quality Check – 2
Team performs a more detailed comparison with specific checklist and project checklist the deliverables and main objective check the following Clashes (Old/New), Elevation, Routing, Fittings, etc. Construction point of view.

Quality Check – 3
The Project manager conducts the pre- shipment check before sending them to client .

Core Team

Irshad Ali Shaikh
CE0 – Co-Founder

Mr. Irshad Ali is the co-owner & founder of DESIGN AND DRAWING SOLUTION. He is having more than 15 years of experience in Building services in construction Industry throughout AEC project execution process from Pre-construction, construction processes like MEP engineering consulting, Designing, installation and handover process of the project.

He has completed BE in Mechanical Engineering from Pune University with Post Graduation in Project Management (PGPPM) from NICMAR Pune, India. In his small journey, he has successfully delivered the more than hundred BIM/CAD project for his satisfied client with the best quality and unique team effort.

He has experienced in all kinds of projects i.e., starting from Residential township, Commercial IT buildings and parks, Malls, High rise building, Hotel, Hospital & Institutional building. Including building Infrastructure projects like metro, airports, globally i.e. USA, Australia, New Zealand & India.

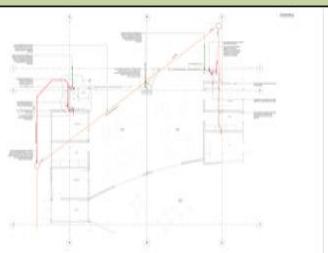
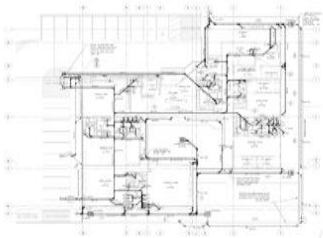
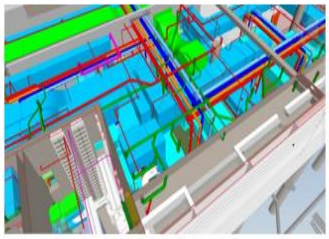
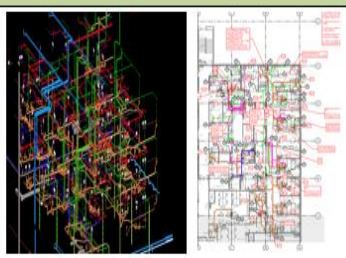
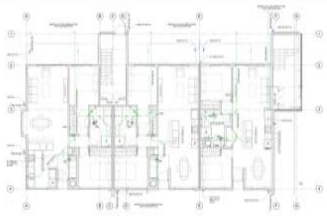
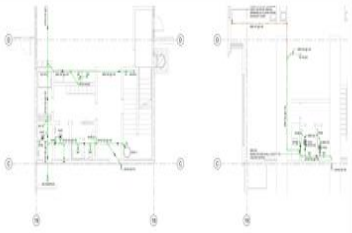
Karishma Bibi
Sales Head

She is the co-owner of DESIGN AND DRAWING SOLUTION and well experienced in offshore sales development initiatives. She is having a good knowledge of result-oriented sales development processes and customer retention. She is leading the complete sales team for B2B sales within the company and managing and monitoring the effectiveness of the entire sales cycle. She has implemented her interior design expertise to improve the technical expertise for client communication for offshore sales which helps her build a long-term relationship with new and existing clientele.

Rupam Mondal
Production Manager

He holds a Mechanical Engineering diploma form WBSCTE, India and having more than 7 years' experience in Building construction Industry for MEP engineering, Drafting, of 3D , 4D , 5D & 6D BIM service .
He is having expertise in MEP engineering calculation, with all Autodesk BIM/CAD tools like Revit , Fabrication, AutoCAD MEP ,Navis works and AutoCAD and has complete knowledge of engineering and drafting services for all stages (Pre/post) of construction process .
He is working in DESIGNING AND DRAWING SOLUTION since from starting period of the company. With a short period of time , He has gained the managing process of the company , client communication, project management process and assisting with innovative (R & D) solution of new process , tools for new requirement of clients.

Project References

Hydraulic Design		Hydraulic Construction	
			
St Mary's Hamilton	Jimboomba childcare	Western sydney airport	Logan Hospital
49 Hiller Lane, Hamilton	River street	New South Wales	Queensland
Australia	Australia	Australia	Australia
School	School building	Air port	Health care
			
Kokowai	Favona	Stanley College	The Abbotsford Stage 2
Auckland	Favona	Perth	Queensland
New Zealand	New Zealand	Australia	Australia
Appartment	Warehouse	College	

Contact US

DESIGN AND DRAWING SOLUTION
ONE STOP BIM | CAD | MEP ENGINEERING SOLUTIONS

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