

CSM Group

CIVIL | STRUCTURAL | MATERIALS HANDLING

"Complete Design and Engineering Solutions"



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3D BIM Modelling
and Engineering Services

CSM Group Pty Ltd
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ABOUT CSM GROUP

CSM Group is a premier design and engineering solutions business focusing on civil, structural, and materials handling across Australia. With a commitment to operate with honesty and integrity, and a multi-disciplinary approach to business, our clients can be assured they are being offered a full package of services at the right price.

CSM Group undertakes a vast range of design and engineering services, meaning clients only need to make one phone call for all their needs to be met. We offer detailed design solutions, project management services, and construction supervision, offering a collaborative approach utilising all our in-house engineering and design disciplines.

From start to finish, every project is handled in an innovative manner.

Utilising the latest technology and the depth of knowledge of our experienced staff results in cost-effective solutions along the way. Our commitment to you is simple – we will provide exceptional customer service and ethical business practices, resulting in quality and successful outcomes.

Our Commitment

The CSM Group team is committed to delivering innovative, cost-effective design and engineering solutions. CSM Group is also dedicated to exceptional customer service and ensuring its team always has access to the latest, state-of-the-art computer software to provide our clients with the highest quality designs, including 3D visualisation of land developments and BIM Modelling of Structures, Plants and Piping.

Refer our BIM Modelling projects within the brochure.



CSM GROUP AND YOU

CSM Group has the capabilities to ensure your project remains economical and sustainable throughout the entire works. From the very beginning we offer a full package of services that will complement your work, and innovative practices and designs that could save you time and money.

Philosophy

At CSM Group, our philosophy is simple – we aim not to be the biggest in the industry, but to be respected as an engineering and design consultancy of the highest calibre. We achieve this through experienced and qualified staff, coupled with our extensive in-house resources - including the latest in computer technology – with a focus on quality, and a multidisciplinary environment that fosters increased efficiency and accuracy.

We remain committed to the highest standards of customer service, tailoring our services to each individual client to ensure their needs and expectations are not only consistently met, but exceeded.

We value the relationships we are able to establish with our clients through offering clear, effective communication, best practice environmental management procedures, and optimal occupational health and safety procedures.

Accreditations and Affiliations

Being a team of highly qualified and experienced professionals, CSM is aware of the importance of being recognised as such by industry bodies. We strive to ensure that not only do we have the most stringent of quality management systems in place, but that these are third-party certified. CSM group is currently accredited to ISO 9001 for our quality management systems through International Management Marketing Systems.

In addition, we have earned our place as Members of the Institute of Engineers Australia, the Concrete Institute of Australia, the Steel Institute of Australia and are registered on the National Professional Engineers Australia register.





OUR SERVICES – CIVIL

One of CSM's key assets is its civil design capabilities. We are civil design specialists, providing our clients with exceptional design solutions, project management, and supervision for all civil developments.

These civil developments have included:

- Urban and rural property developments
- Industrial developments
- Commercial developments

Within the civil sector, we are able to offer a wide scope of services for a range of developments. From project management and civil design services, through to stormwater and hydrology advice and planning, and stormwater management and erosion control design, our civil expertise can be tailored to suit any project.

Our wide range of civil services includes:

Urban Design

All of the civil design and project management services nominated below are provided for when CSM Group designs your development.

- Feasibility studies and preliminary site examinations
- Preparation of D.A and operational works approvals
- Roads and pavement design
- Negotiation with councils
- Cost estimations
- Bulk earthworks and volumes
- Sewerage reticulation design
- Contract administration

- Sewage pump station design
- Water reticulation design
- 3D visualisation of your complete development
- As constructed drawings

Hydraulic

Our hydraulic services include:

- Overland flow reports and analysis
- Site-based stormwater management plans
- Flood inundation plans
- Flood studies
- Major flow ie, Q50 or Q100 assessments with building floor levels nominated
- Detention basin design and analysis
- Stormwater quantity and quality reports
- Music modelling for water quality reports to best practice
- Sediment basin design
- Bio-retention system design

Environmental

All of the environmental design services nominated below are provided for when CSM Group integrates its environmental solutions within the approval processes.

- Stormwater quality management plans
- Stormwater quality maintenance manuals

- Erosion and sediment control plans
- Stormwater treatment device design and selection
- Water quality modelling
- Sediment basin design
- Bio-retention swale design
- Vegetation management plans
- Erosion and sediment control plans
- Primary and secondary pollutant control solutions
- Park and sports field design
- Detention basin and wetland design

Landscape Architecture

Our designers offer design and documentation for the following as per Council requirements:

- Bio-retention basins
- Bio-retention swales
- Street planting
- Parkland design
- Streetscape Plans
- Planting in accordance with CTED principles
- Design in accordance with Council's landscape manuals.

Building Hydraulics

- Sanitary Drainage
- Roofwater
- Hot and cold water services
- To AS 3500 Plumbing Codes

Electrical Engineering

Our electrical services provide for all aspects of electrical engineering, including:

- Electrical services for buildings and sites
- HV, LV overhead and underground reticulation
- Street lighting and arterial road lighting
- Subdivisions to Energex standards (SWP47.1 & 47.3)
- Intersection traffic signal and lighting design
- Specialised lighting for indoor and outdoor facilities

- Automatic fire detection and alarm systems
- Emergency warning and intercommunication systems
- Public address and MATV systems
- Communications - general, health and aged care
- Standby power generation
- Uninterruptible power supplies and line conditioning equipment
- Lightning and surge protection
- Security systems including CCTV, intruder alarm and duress alarm systems

Construction Project Management

Our construction project management services include:

- Bulk excavation
- Roadwork construction
- Flexible and rigid pavements
- Sewer and water reticulation
- Bio-retention basins
- Car parks
- Complete construction and project management of land developments.

STRUCTURAL

CSM Group is a specialist structural design business, providing our clients with exceptional design, project management, and supervision for all structural projects.

These skills extend across a range of projects, including urban developments (such as units and townhouses, shopping centres and resorts), commercial developments, industrial developments, and mining and materials handling projects.

The services we utilise in order to successfully complete these projects include:

- Project Management: negotiation with councils and other statutory bodies, site examinations, cost estimation, and tender preparation, evaluation and selection.
- Structural design: expertise in medium to high-rise residential apartments, commercial buildings, reinforced concrete structures and retaining walls, concrete slab and footing

design, steel portal-framed industrial buildings, buttress piling, bridge design, and tilt-up concrete structures.

CSM Group's expertise in structural engineering extends to the following projects:

Residential Developments

- Multi unit
- Residential / domestic
- High rise
- Aged care
- Underpinning
- Retaining walls

Commercial

Government buildings, schools, community facilities

- Shopping centre developments

- Office buildings,
- Small- to-medium retail facilities
- Medical centres

Industrial

- Warehouses
- Production facilities
- Manufacturing plants
- Batch plants
- Mining enclosures

Plant structures

- Conveyor trestles and trusses
- Footings for machinery and structures
- Pipe racks
- Batch plants
- Mining enclosures
- Landmark Structural Projects





MATERIALS HANDLING

Utilising CSM Group's experience and knowledge in the fields of civil and structural engineering has allowed the Company to offer services in the mining and materials handling sector.

The business has expanded into this area in a strategic manner, allowing its exceptional design, project management and supervision skills to be applied to projects for both greenfield and brownfield sites.

We provide civil, structural and mechanical design services for mineral processing plants, concrete batch plants, sand mining operations, and materials recycling plants within the mining industry.

CSM Group can provide civil, structural and mechanical design services within the following mining and materials handling industries;

Industries

- Mineral processing plants
- Concrete batch plants
- Sand mining operations
- Recycling plants

Civil Design

- Haul road and pavement design
- Earthworks design for large hardstand areas
- Tailings dams and containment ponds
- Potable and non potable water reticulation
- 3D visualisation of complete civil works
- Bulk earthworks and volumes
- Sewerage and pump station design
- Materials handling layouts
- Stormwater drainage and culvert design

Structural Design

- Steelwork and reinforced concrete structures
- Transfer buildings
- Building enclosures for materials

- Conveyor supports and concrete footings
- Walkways and platforms
- 3D BIM Modelling of structures

Mechanical Design

- Conveyors
- Feeds and chutes
- Drive calculations for conveyors
- Bearing, pulley, belt, sprocket, chain, motor and gearbox design
- Pneumatic and hydraulic schematics
- Pump design

3D BIM Modelling

- Complete 3D BIM Modelling of mining or industrial plant
- Detailing Services for steel works from the BIM Model
- Service clas checks between piping and structures
- Refer our Plant Modelling section within the brochure

NEW PRODUCTS

STRUCTURAL

Buttress Piling Retaining Wall System

This system was designed and patented by CSM Group's senior structural engineer Edgar Agda to overcome a situation when the adjacent neighbouring land owner does not consent to rock or soil nail anchoring systems being installed underneath their property. This system is used as the bulk excavation retaining wall where deep underground basements are required in a building.

Buttress piling is a system whereby a piered wall is restrained by inserting additional piers perpendicular to the wall (in towards the building). That is, away from the adjacent lot boundary in order to restrain the main wall from sliding, overturning and deflecting due to soil, pore pressure and other applied loads.

The retaining wall system relies on the bearing capacity of material and cohesion between the piers in order to enable three-dimensional restraining actions to occur.

This system has already been installed in 23 building sites. Developers could

proceed with their projects even though they didn't have the adjacent land owners' consent.

The advantages of this unique system include:

- Proprietary system concrete panel wall construction system that works via an internal propping system (ie, buttress piling, without external rock anchoring)
- No authorisations required from adjacent landowners
- Less risk involved in construction
- Shorter construction duration
- Cheaper construction costs

This particular buttress piling system is applicable for clay/sandy soil stratas, however where the site is mostly rock we utilise a system known as 'buttressframing'.

Buttress Framing System

Buttress framing is similar in principle to the buttress piling except that instead of extra concrete piles inside the perimeter wall, a steel framing system supports the external loads from the inside. This system is utilised in rock stratas, again negating the requirement for the land owners' consent.

ENVIRONMENTAL

At CSM Group, we know that civil, structural, and mining/materials handling projects go hand-in-hand with environmental management solutions. That's why we offer cost-effective, best practice environmental management services for all our clients for projects ranging from urban, commercial, and industrial developments, through to mining operations.

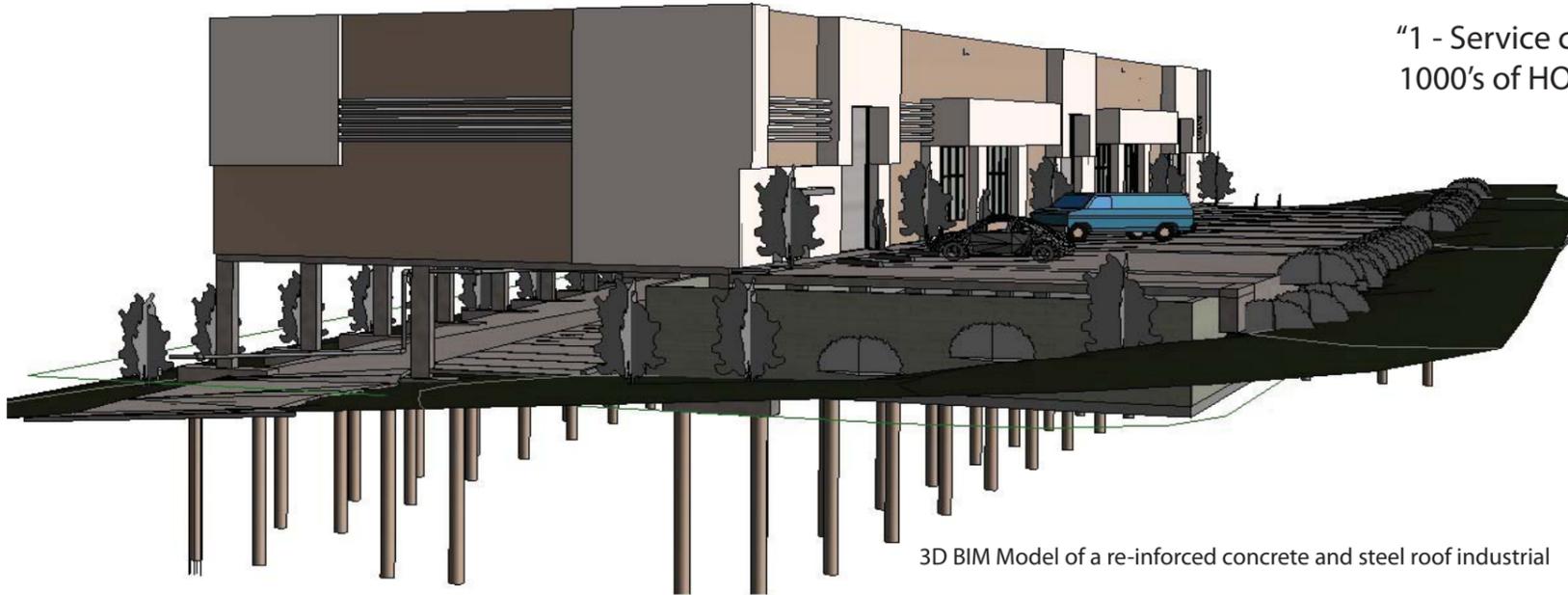


We can provide our clients with a range of environmental management services during the development stage, including the compilation of vegetation management, and erosion and sediment control plans, along with other services such as water quality monitoring, and design services.

Environmental solutions can also involve the use of a range of products. CSM Group is cognisant of the best and most innovative product solutions, such as silt fencing, turf reinforced mats, bio retention swale drains, hydromulching, versi-tank systems, rooftop gardening systems and many others that will be tailored to the requirements of each unique project.

BUILDING SOLUTIONS

With intelligent 3D technology, CSM Group can integrate design and detailing services into any project, at any stage of its development.



3D BIM Model of a re-inforced concrete and steel roof industrial

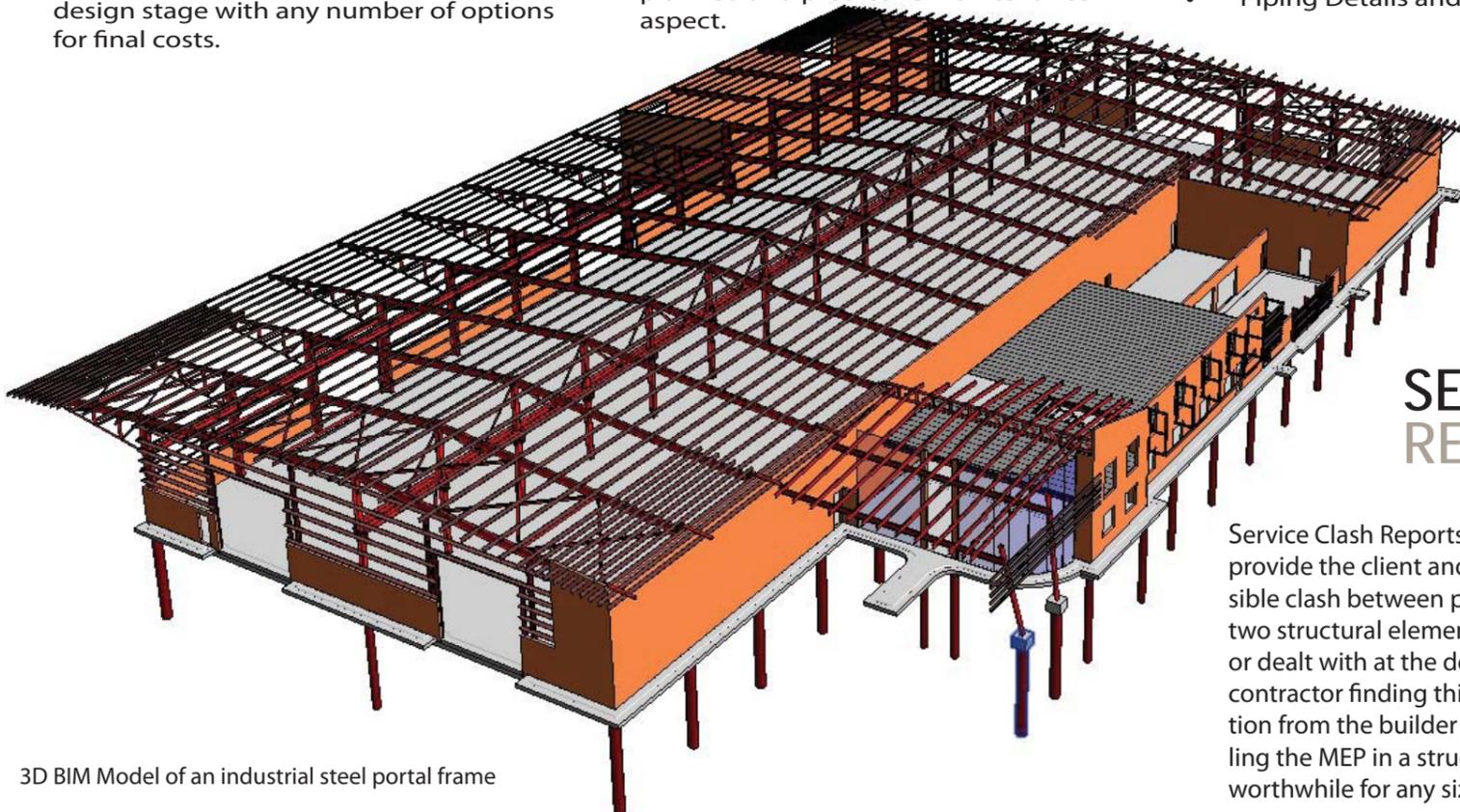
3D Deliverables:

- 3D Bim Model (Revit Arch, Struct, Mep, Plant)
- 4D Bim Model (3d + time, ie, construct. schedule) Construction sequence videos played in time with your construction programme.
- 5D Bim Model (4d + costings) Knowing the cost of your project at design stage with any number of options for final costs.

- 6D Bim Model (Sustainability optimisation) Add sustainability options like energy performance analysis.
- 7D Bim Model (Facilities and Asset Management) Your lifecycle data from concept stage will be harnessed to manage the remainder of the asset's life in a visual and timed planned and predictive maintenance aspect.

2D Deliverables:

- Mechanical Arrangements
- Mechanical Details
- Structural Steel Marking Plan G/A's
- Structural Steel Fabrication Details
- Structural Concrete Arrangements
- Structural Concrete Details & Rebar Detail Scheduling
- Piping Arrangements
- Piping Details and & Isometrics



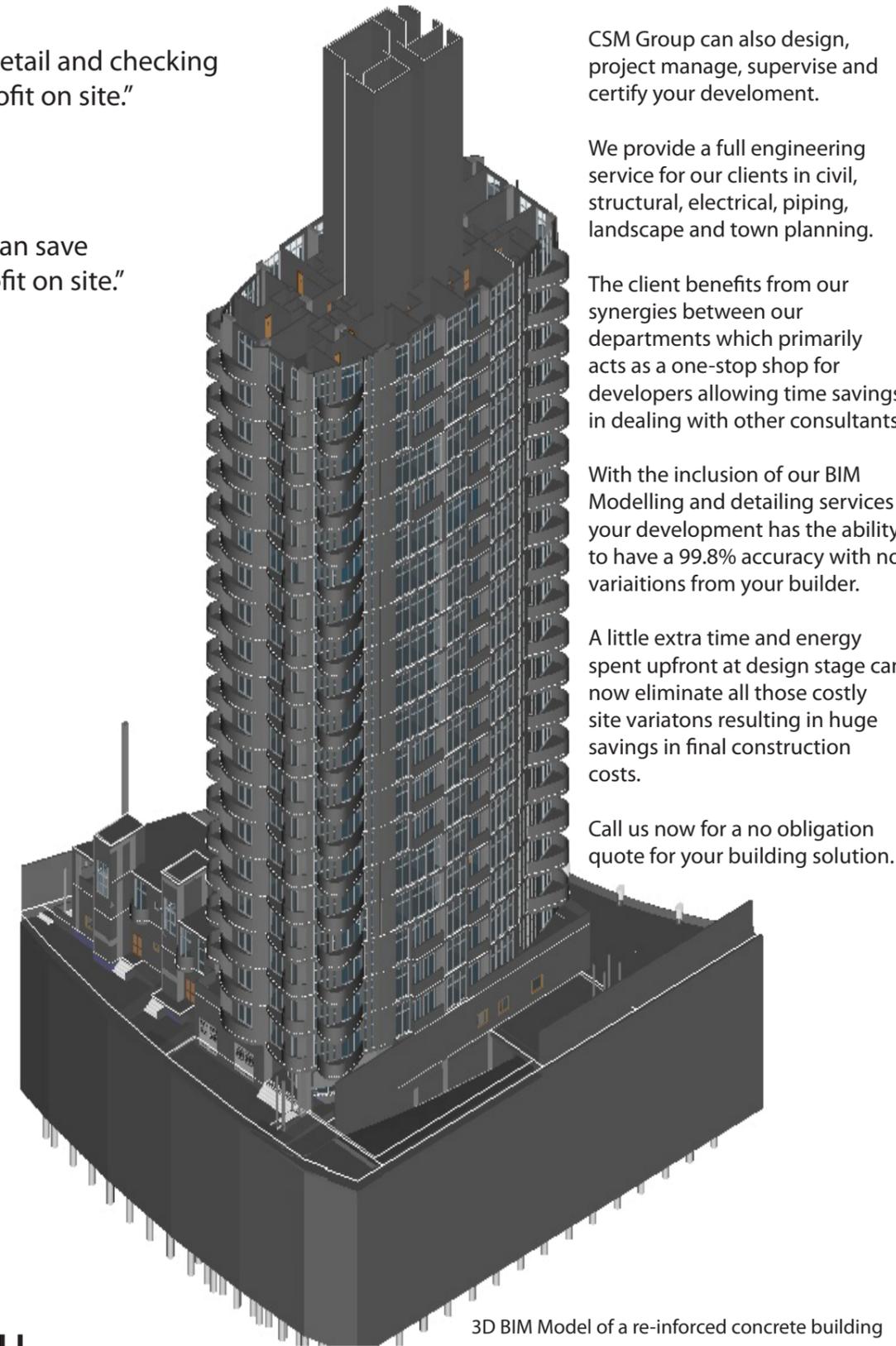
3D BIM Model of an industrial steel portal frame

"1 HOUR extra design, detail and checking saves 10 HOURS of Retrofit on site."

"1 - Service clash Check can save 1000's of HOURS of Retrofit on site."

SERVICE CLASH REPORTS

Service Clash Reports are a must for any development as they provide the client and or designer with a clear insight into a possible clash between piping or another structural element or even two structural elements. These clashes can then be re-routed or dealt with at the design stage by the designer instead of the contractor finding this error on site and thus resulting in a variation from the builder to the client. The extra investment in modelling the MEP in a structure eliminates these costly variations and is worthwhile for any size development.



3D BIM Model of a re-inforced concrete building

CSM Group can also design, project manage, supervise and certify your development.

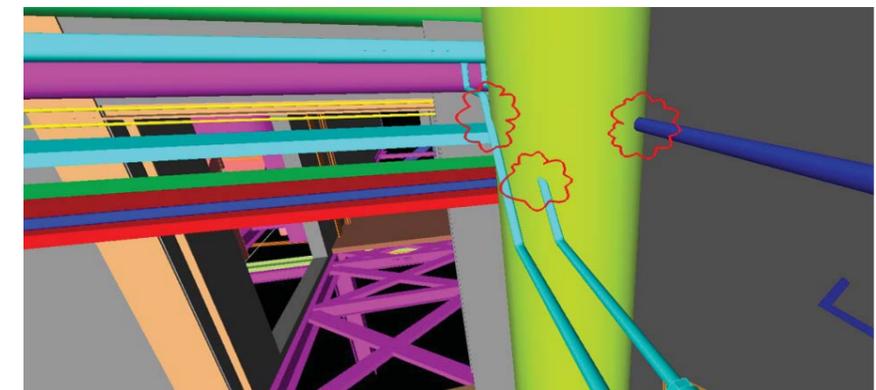
We provide a full engineering service for our clients in civil, structural, electrical, piping, landscape and town planning.

The client benefits from our synergies between our departments which primarily acts as a one-stop shop for developers allowing time savings in dealing with other consultants.

With the inclusion of our BIM Modelling and detailing services your development has the ability to have a 99.8% accuracy with no variations from your builder.

A little extra time and energy spent upfront at design stage can now eliminate all those costly site variations resulting in huge savings in final construction costs.

Call us now for a no obligation quote for your building solution.



3D BIM Model of a service clash within a building

PLANT MODELLING

With intelligent 3D technology, CSM GROUP can integrate design and/or detailing services into any project, at any stage of its development.

Intelligent 3D Technology

CSM Group include the added benefit of including detailed information during the 3D modeling phase, within the model database. This is then utilised to produce 2D drawing deliverables automatically and efficiently, together with BOM's and other client requested documentation.

Design Scope

Scoping and study layouts in 2Dimensional mode:

- 2D mode is the most efficient and cost effective when starting a new project.
- Utilize the smarter tools available in basic AutoCAD such as Xref (External Referencing)

Customized management file procedures (CSM Group WorkSheets)

Design Phase

Development of the 2D layouts and then 3D intelligent model files.

Detail Phase

Production of the 2D deliverables, utilizing the 3D model File Databases for automated detailing information and annotation.

3D Model Clash Checking

CSM Group's procedures include a full set of check lists, for each engineering discipline, that are processed on the 3D Models to eliminate any clashes or design errors. These procedures and service clash checks guarantee that the 2D deliverables will be produced efficiently and accurately.

Spreadsheets can then be generated from the 3D model to aid in Bill of materials, costing and Facilities/Asset Management.



3D BIM Model of a steam plant enclosure, piping and maintenance

3D Deliverables:

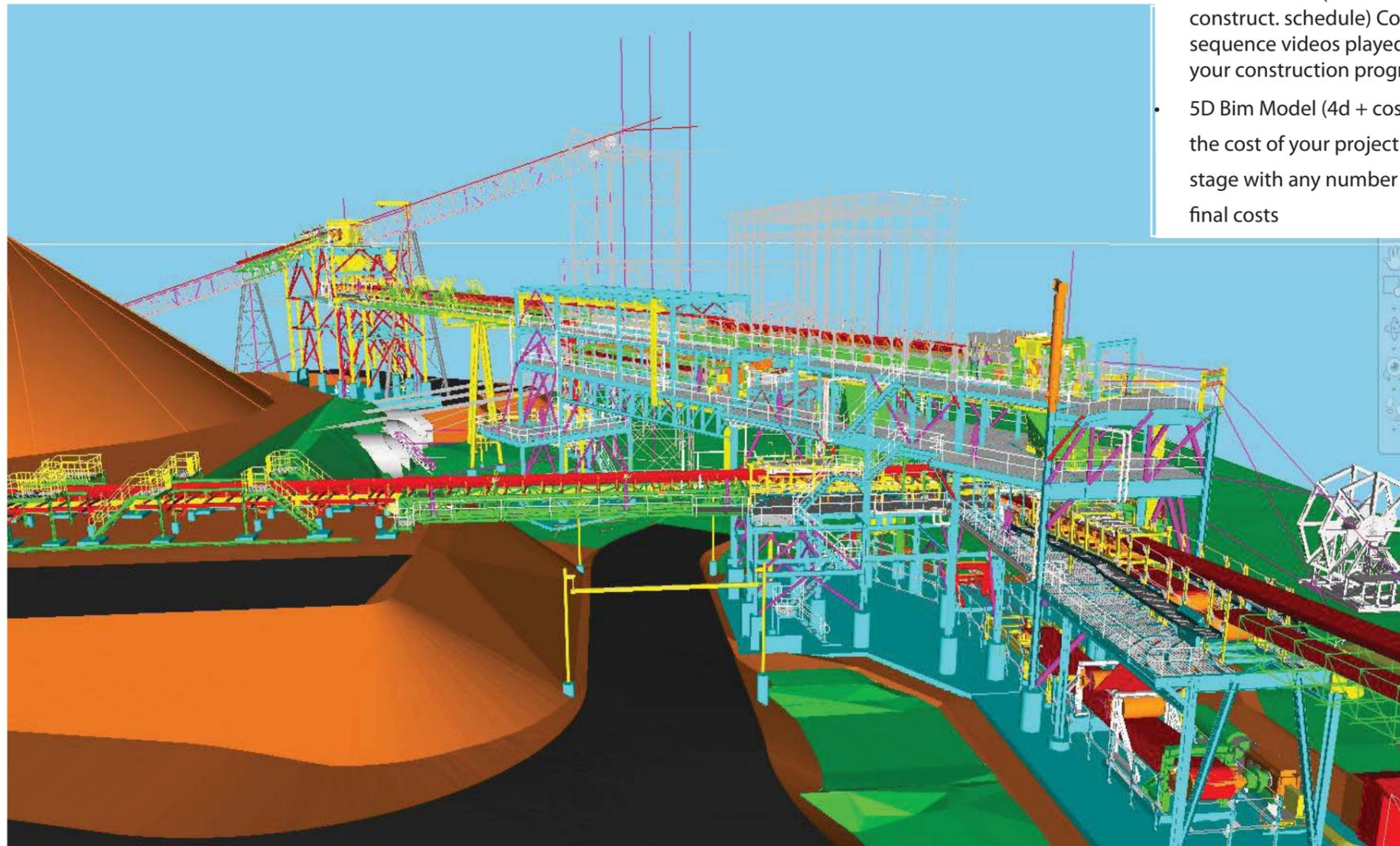
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- 6D Bim Model (Sustainability optimisation) Add sustainability options like energy performance analysis.
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Your lifecycle data from concept stage will be harnessed to manage the remainder of the asset's life in a visual and timed planned and predictive maintenance aspect.

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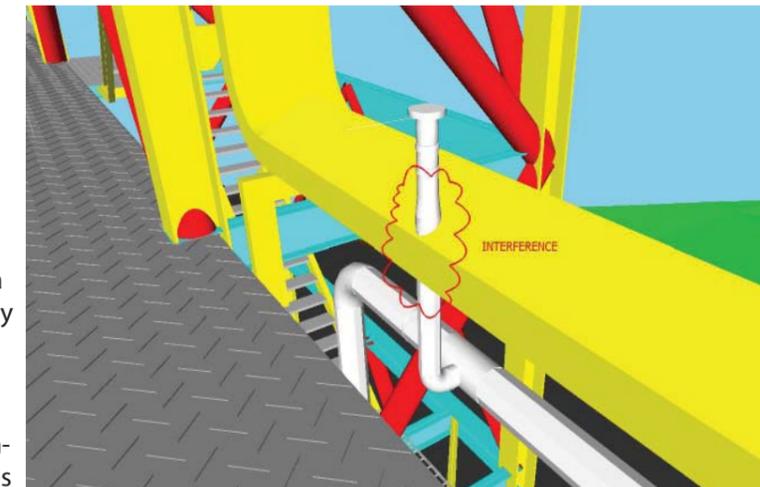


3D BIM Model of mining plant and conveyor systems

Service Clash Reports are a must for any mining or industrial plant as they provide the client and or designer with a clear insight into a possible clash between piping or another structural element or even two structural elements. These clashes can then be re-routed or dealt with at the design stage by the designer instead of the contractor finding this error on site and thus resulting in a variation from the builder to the client. The extra investment in modelling the MEP in a structure eliminates these costly variations and is worthwhile for any plant. A worthwhile investment resulting in savings of many thousands of dollars, generally 1 hours extra design saves 10 hours retrofit on site.

SERVICE CLASHES

"1 - Service clash Check can save 1000's of HOURS of Retrofit on site."



3D BIM Model showing a service clash These are now fixed at design stage rather than retro-fitting on site

INFRASTRUCTURE SOLUTIONS

Elevated Roadway Transport Solutions

BIM Modelling for infrastructure allows the client to not only have a clear and concise view of where the budget is being spent it can provide animations of the new highway being utilised with flowing traffic and pedestrians walking in a real life 3D scenario.

The engineers are able to clearly check and monitor sight distances and grades required to the relevant main roads standards and note any changes in grades that are not acceptable.

Underground services can also be modelled and a check of the minimum clearance to these services may also be performed ensuring no clashes on site between other services or structures .

Material quantities can easily be extracted from the 3D model with a cost component added for easy costings by the contractor.

Construction sequence videos enable all construction staff to increase their work speed after viewing the complexity and intricacies of the project in 3D prior to construction such as the detailed reinforcement cages in the piers and pile caps.

Asset management spreadsheets can be exported for facilities management purposes, this enables easy use for maintenance scheduling and costs.

“Viewing 1 Construction sequence video can save 100’s of MANHOURS ”



Elevated Roadway with sustainable and landscaped solutions - view from overhead



Elevated Roadway with sustainable solutions - view from roadway

CSM Group have designed these infrastructure solutions and are developing these solutions for placement in your capital city to ease the congestion and increase the level of service provided by your state roads department.

We are also currently working on other infrastructure solutions that will be available soon.

These type of solutions save the state governments \$millions of dollars due to not having to resume local properties.

The construction methods is relatively quick and the product can be built with environmentally sustainable solutions included.



Elevated Roadway - view from underneath

CSM Group can design, project manage, supervise and certify your infrastructure solutions.

We provide a full engineering service for our clients in civil, structural, electrical, underground services, landscape architecture and town planning.

The client benefits from our synergies between our departments which allows the company to act as a one-stop shop for developers.

With the inclusion of our BIM Modelling and detailing services your infrastructure solutions have the ability to have a 99.8% accuracy with no variations from your contractor.

Remember 1 extra hour in design via BIM Modelling and service clash reporting and corrections saves 10 hours retrofit on site.

Main Advantages for Elevated Roadways:

- Huge \$ savings due to no land resumption costs attributed to the project
- A sustainable design with water quality improvement features incorporated into the design
- Concrete piers and beams can be coloured with a with an oxide allowing for the infrastructure to blend into the natural environment
- Quick construction methods and work flows.
- Elevated roadways can be electronically controlled with reverse direction of flow for morning and afternoon peak hour demands
- Level of service improvements to A or B Levels

OUR TEAM

CSM Group comprises a team of talented individuals, each one of them an expert in the fields of civil, structural and hydraulic engineering, as well as mining and materials handling. It is the synergies of the combined expertise that contributes to the overall success of a project.

With such extensive experience between them, these senior members of CSM Group also have an enviable list of contacts around Australia that provides the Company with the ability to offer services to clients throughout the country.

Bruce Delahunty, Engineering Manager/Director BEng(Civil), Cert. Mech Eng. Proj. Managem't) CPEng, NPER, RPEQ, MIE Aust. [Civil/Struct/Mech],

Bruce has over 30 years experience around Australia in the civil, structural, and materials handling/mining sectors. During this time he has developed unparalleled experience that has ultimately lead to his professional success, and that of CSM Group. Some of the projects Bruce has been involved in include over 75 Land Developments, 25 mining projects, numerous reinforced concrete and steel portal framed buildings, packaging materials handling systems and plant design, among many others.

Edgar Agda, Senior Structural Engineer (BEng [Civil/Structural], MEngSt [Geotechnical], MEngSc [Structural/Foundation])

Edgar has over 25 years experience within the civil and structural engineering industry. Having worked on a variety of complex projects both in Australia and abroad, Edgar has extensive knowledge of a range of techniques and legislative requirements. His strengths lie in the pursuit of innovative design concepts that result in economical and sustainable outcomes for clients.

Michael Steer, Senior Civil Engineer (MIE Aust., BEng [Civil/Env])

Michael has over 30 years experience within the civil and structural engineering fields. His strengths include planning, feasibility analysis, design, coordination, contract documentation, supervision, project management, and contracts administration. Michael is a Member of the Urban Development Industry of Australia, and a qualified Internal Auditor to ISO 9001.

To find out more about how CSM Group can assist with your building, mining, industrial plant or development project, and or to obtain a quote, please contact us as follows;

T +61 (0)7 3700 9791
E info@csmgroup.net.au

www.csmgroup.net.au

WHAT OUR CLIENTS SAY

"CSM Group have provided us with a service second to none; their project updates kept us in the picture at all times."

Brad Smith- General Manager - BAP Developments

"CSM Group's innovative civil design solutions created an extra lot for our development worth \$280k and their redesign saved us \$200k in construction costs, thus saving us \$480k! Well done CSM Group. I have no hesitation in recommending their services to any developer, civil or structural."

Peter Peeters – Managing Director - BAP Developments

"CSM Group's structural team have overcome all the challenges we presented them with and scored highly in their innovative structural solutions. Their documentation was all class."

Cai Xue- Director - Horizon Growth Pty Ltd

"CSM Group overcame court challenges and a difficult local council to get our development back on track and with a \$100k saving by redesigning other civil consultants' DA conceptual plans."

Dr Stewart Hunter- Director - Hunter Constructions

"CSM Group provided me a solution to my development when other consultants couldn't. Thanks CSM Group."

Ernie Kostadis - Director - Intercare Property Group

"CSM Group got me out of trouble after our other civil consultant went AWOL. A speedy resolution"

Chris Walters - Director - ARI Finance

"CSM Group have honesty and integrity and remarkable solutions. They got my developments back on track and saved us on construction costs."

Vinh Truong - Director – Tiviity Gifts

"CSM Group's BIM Modelling Solutions have saved our clients thousands of dollars on construction variation costs."

Andrew Freeman – Director - Aqualogical

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