

# CSM Group

CIVIL | STRUCTURAL | MATERIALS HANDLING

"Complete Design and Engineering Solutions"



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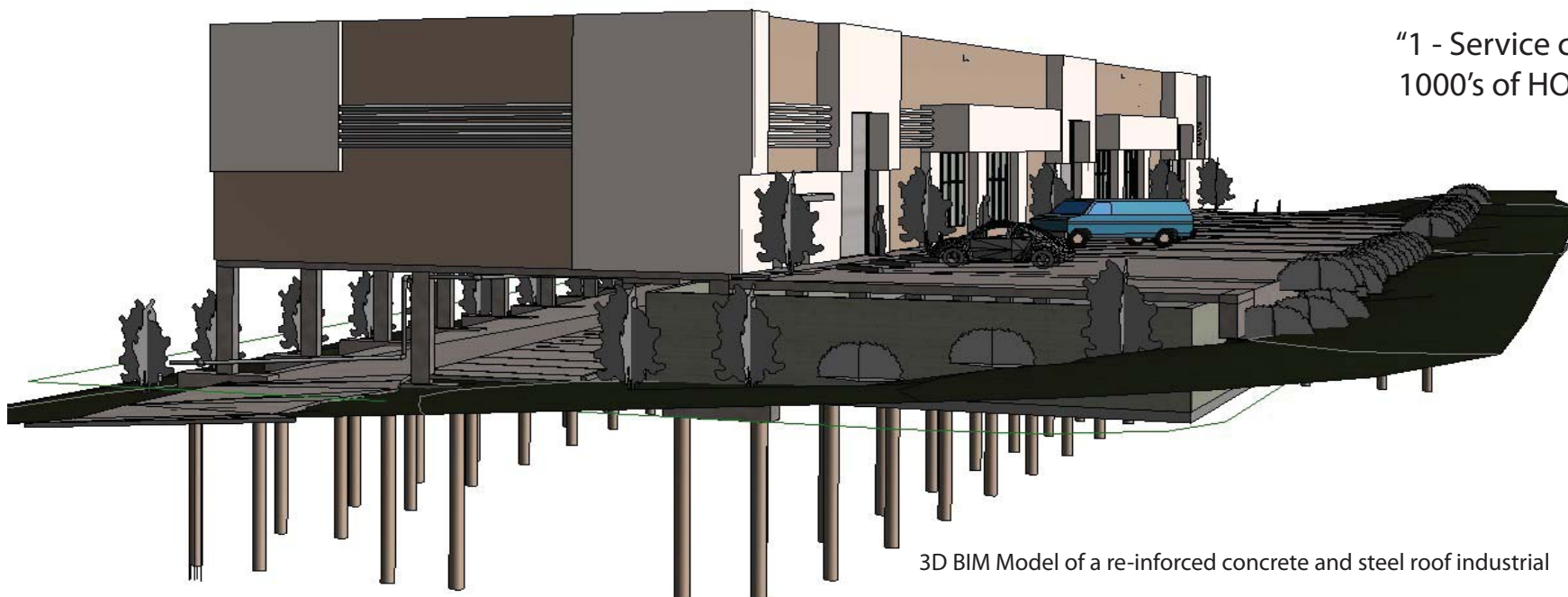
**3D BIM Modelling  
and Engineering Services**

CSM Group Pty Ltd  
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# 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

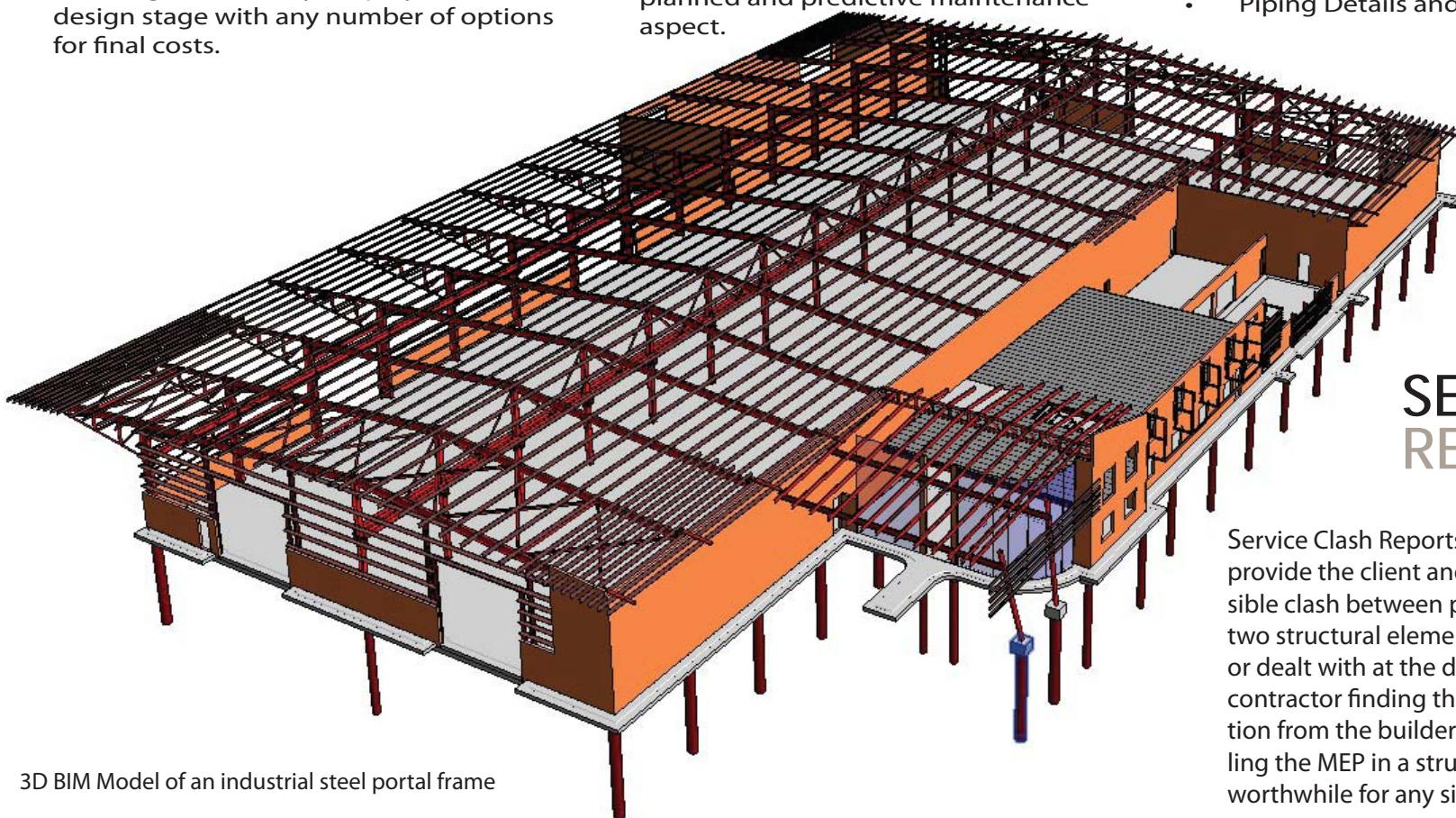
## 3D Deliverables:

- 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



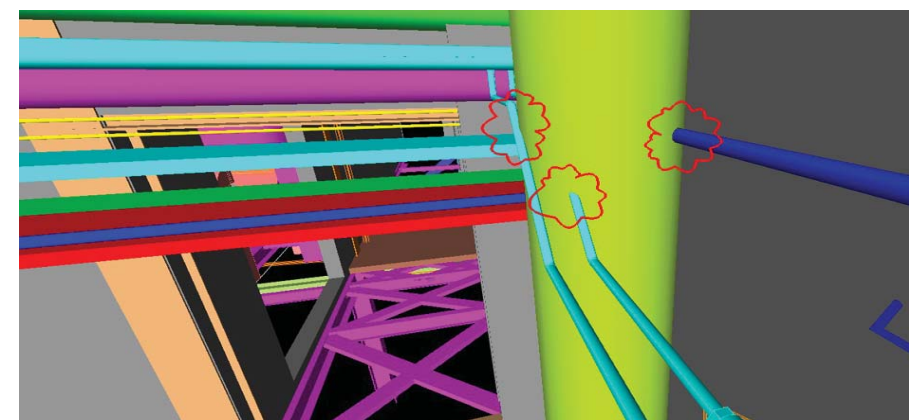
3D BIM Model of an industrial steel portal frame

"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 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 service clash within a building



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.



# 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 Facilites/Asset Management.



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

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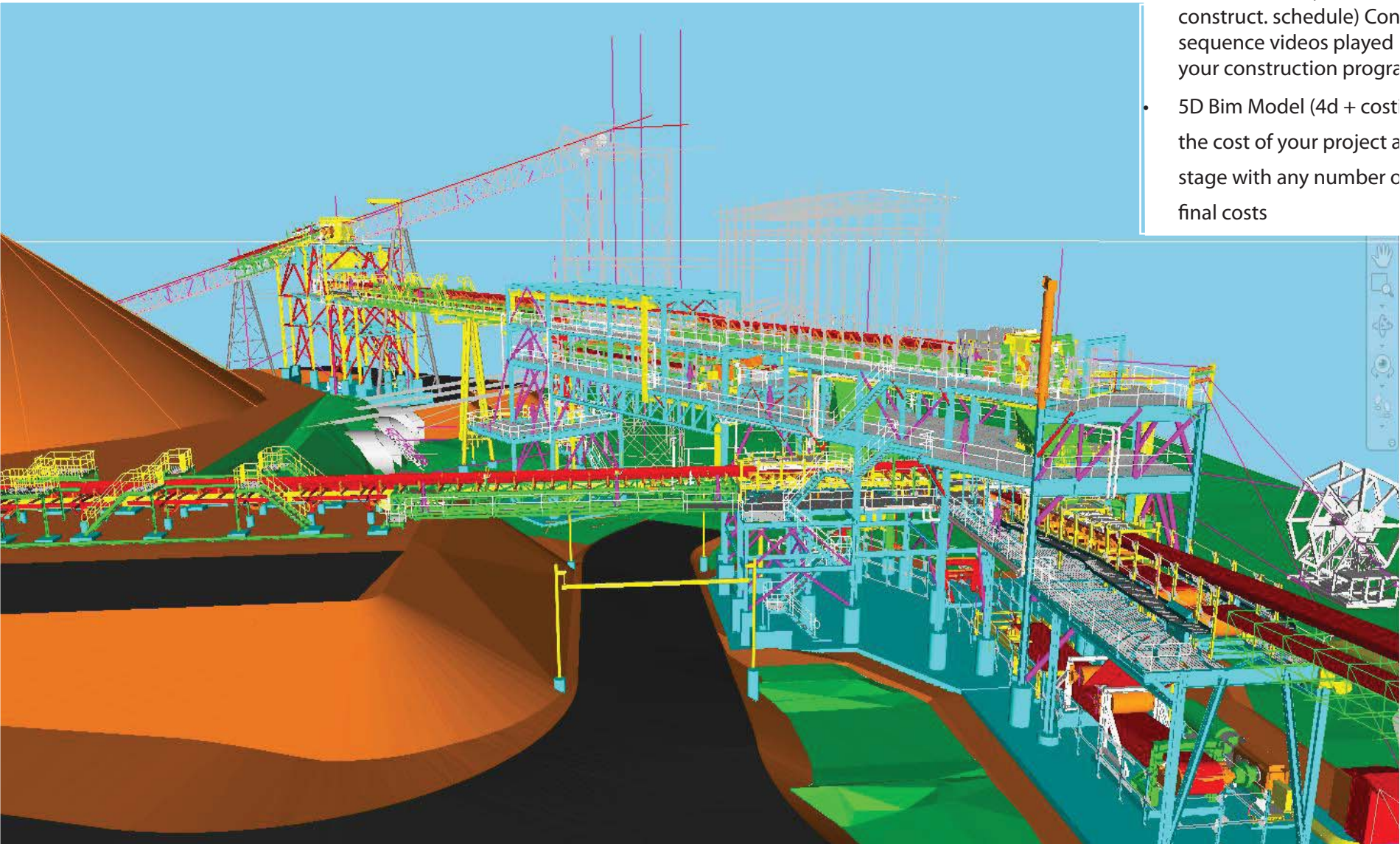
- 6D Bim Model (Sustainability optimisation) Add sustainability options like energy performance analysis.

- 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:

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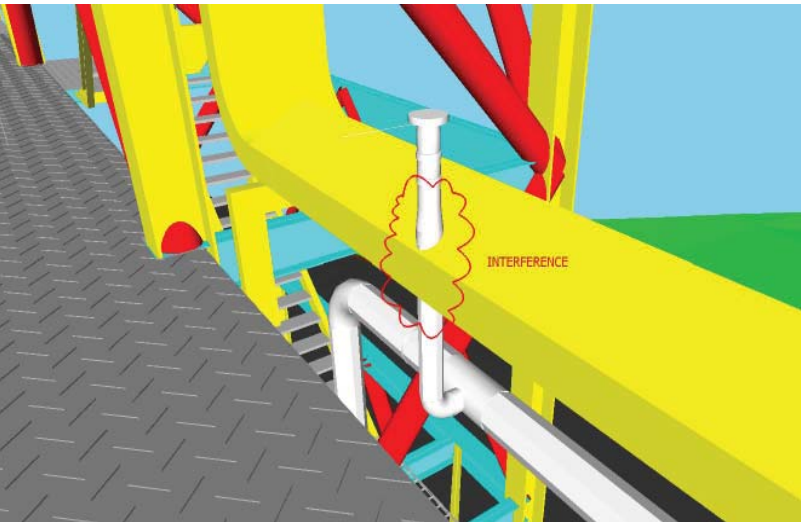


3D BIM Model of mining plant and conveyor systems

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 infrastucture 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 pedestrains 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 aslo 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 re-inforcement 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 sustaniable solutions - view from roadway



Elevated Roadway with sustainable and landscaped solutions - view from overhead

CSM Group have designed these infrastucture solutions and are developing these solutions for placement in your capital city to ease the conjestion and incre- as the level of serive provided by your state roads department.

We are also currently working on other infrastructure slutions 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 prod- uct can be built with environ- mentally sustainable solutions included.



Elevated Roadway - view from underneath

CSM Group can design, project manage, super- vise 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.m

With the inclusion of our BIM Modelling and de- tailing services your infrastructure solutions have the ability to have a 99.8% accuracy with no variaitions from your contrac- tor.

Remember 1 extra hour in design via BIM Moe- delling nd 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;

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E [info@csmgroup.net.au](mailto:info@csmgroup.net.au)

[www.csmgroup.net.au](http://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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