

KWINANA FREEWAY WIDENING & UPGRADE

MAIN CONSTRUCTION COMPANY : Highway Construction
CLIENT : Main Roads WA
PROJECT END VALUE : \$58 Million
COMPLETION : December 2012
LENGTH : 4.5KM

KEEPING PERTH TRAFFIC FLOWING SMOOTHLY FROM NORTH TO SOUTH



As a city grows, so does the volume of vehicles on the road. With the rapid growth of Perth, the Federal Government and the Western Australian Government have ensured more efficient north-south road transport, through the \$58m Kwinana Freeway widening and upgrade project.

The Kwinana Freeway is the major freeway extending south from the Perth CBD, and with the Mitchell Freeway north of the city, it forms the north-south spine for road transport in the Perth Metropolitan area, and is an essential link with the Port of Fremantle. The new works involve widening the Kwinana Freeway to accommodate a third lane in each direction between the Leach Highway and Roe Highway, an overall upgrade of the existing freeway including improved alignment, and creating an intersection which will provide access to the soon-to-be-completed Fiona Stanley Hospital. The benefits will include improved safety, increased efficiency of movements for freight transport, and faster travel times for motorists due to reduced congestion.

Leading Western Australian civil engineering and construction firm, Highway Constructions, have undertaken the design and construct contract, with the specific scope of works including widening of 4.5km of freeway; construction of a new intersection at South Street and the newly constructed Fiona Wood Road; realignment of shared paths along the freeway; and construction of noise walls for traffic noise mitigation and screen walls to maintain residential amenity.

Additionally, the Freeway and also the on/off ramps are being resurfaced, and associated drainage, lighting, service relocations, signage and pavement marking being completed as part of the project. Revegetation and landscaping will also be undertaken once the new carriageways have been constructed.

Work began on the project in July 2011, with completion of the southbound carriageway expected in July 2012 and the northbound carriageway in December 2012 following the inclusion of the "optional" works package at the South Street off ramp interchange.

The optional works are to facilitate access to the new Fiona Stanley Hospital precinct and include reworking of the existing rail carpark facilities. Maintaining visual amenity and mitigating freeway traffic noise is a key element of the design for the project. Extensive lengths of noise walls are being constructed along the boundaries of properties with provision being built into the design to allow for future critical water supply infrastructure expansion planning. The minimum height of the walls is 2.4 metres, with both concrete and limestone walls constructed.

Design at each site was varied according to not only topography and existing features, but also the footings were tailored to accommodate both existing and proposed services. Highway Construction also undertook noise testing through the project area before commencing the design of the walls, and consulted with residents to determine whether they wished to maintain existing fences, or have them replaced by the noise wall on their specific property. To maintain visual amenity, screen walls have been installed where necessary.



The challenges of this project included managing complex traffic requirements in a high-volume area, structuring works hours and traffic management plans so as to minimise disruption to both local commuter and freight transport traffic. Also, extensive services in the project area required protection or relocation during the course of works.

Highway Constructions were founded in Perth in 1986, and specialise in the project management of road and bridge construction. Other services they provide include: road maintenance; major earthworks; clearing; drainage works; pavement construction; hydraulic installations and; traffic management services.

Highway Constructions operate to the highest standards, with Quality Management Systems certified by BVQI to AS/NZS ISO 9001:2000; third party certification through BVQI to Safety Standard AS/NZS ISO 4801:2001; and Environmental systems certified by BVQI to AS/NZS ISO 14001:2004. Highway Constructions are also accredited under the Australian Government Building and Construction OHS Accreditation Scheme, which green-lights the company to manage road and bridge construction projects which have substantial Federal funding, such as the Kwinana Freeway Upgrade.

In addition to undertaking projects across Western Australia, Highway Constructions in 2007 obtained pre-qualification by the Department of Main Roads Queensland to complete road and bridge projects up to \$40 million in value.

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EFFICIENTLY CLEARING THE WAY

To achieve the best possible levels of efficiency and safety, Arborman Tree Services are using a fully-automated system for their work as principle contractor for the clearing works associated with the Kwinana Freeway Widening and Upgrade Project. The scope of works has included clearing for 4.5km of widening along the freeway mainline, 5km of access roads, plus shoulder widening for the noisewall construction.

“The initial clearing works were carried out by a posi-track with a hydraulic claw attachment, allowing for larger loads to be moved in a shorter amount of time and to penetrate into the thick bush. The cleared trees and bushes are then put through our 21 inch chipper, which is the largest of its kind in WA,” explained Arborman Director, Sam Giuffre

“This system also allows us to minimise exposure our employees have to manual handling hazards and interface with the chipper as this is fully automated and controlled via the posi-track. “We have developed the most efficient system in the industry. To achieve this we purchased the first mobile whole tree chipper in Australia that can be fed with an excavator or loader via remote control, and has the capacity to pull whole trees through without de-limbing them.”

The project required Arborman to operate in both residential areas and areas of high public interface, and had challenges including working in a narrow access strip. There were also a number of environmentally sensitive

areas which required careful management during operations, including protected fauna and nesting sites, classified weeds and acid sulphate soils.

A team of several specialist Arborman personnel have been on site since August 2011, with plant including an 8 tonne truck, 20 cubic metre chipper bin, 21 inch whole tree chipper, Posi Track with rake grapple, plus climbing and rigging equipment and elevated work platform when required.

“Our employees undergo a number of training competencies to ensure they are adequately trained for the tasks they are required to undertake. This includes machine specific plant competencies, working at heights training, first aid training, company and client inductions,” said Sam.

“We service a large variety of civil, construction and earthmoving companies, do storm damage clean-up work for insurance companies, and property maintenance for real estate agencies. We are certified to clear vegetation interfering with powerlines, and have the contract for Department of Environment and Conservation (DEC) regional parks for Perth.”

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PROVEN EXPERTISE IN EARTHWORKS

When the going gets tough and complex, CGH Civil put earthworks back on track, with advanced skills in civil construction and drainage and the men and machines to complete the job. On the Kwinana Freeway upgrade, CGH Civil have been on site since the early stages, completing initial earthworks, constructing batters and drains, and boxing out new lanes.

Two of their highly experienced operators, two excavators and a 930G loader have been used completing the scope of works. The challenges of the job included the complexity of the design of the swales, batters and drains and a significant number of curves.

CGH Civil have been in operation for eight years, providing civil construction and earthworks on major construction projects across Western Australia. Their specialities include both complex and difficult earthworks tasks, as well as trimming batters, constructing swale drains, stormwater installation and general drainage.

Their 12 employees are all highly skilled final trim operators and drainers, with many years of experience in the civil construction field. They undertake jobs with a commitment to achieve accuracy, reliability and a high level of safety. The company's fleet of plant includes seven

excavators five units with GPS, and one Sandvik hammer, ranging from 5-36 tonne, one 930G Loader, Flat Top Truck and Hiab, plus all drainage equipment.

“We are a small company who employs highly skilled staff for specialist jobs. CGH Civil is often hired to get the project back on track when companies are falling behind on projects,” said CHG Civil Spokesperson, Glenn Hooton.

With such a high level of expertise, CGH Civil have been in demand to construct earthworks and drainage for projects across road and rail transport, civil infrastructure; ports; and major dam works. Recent projects have included Churchman Brook Dam Refurbishment; Rail A Mandurah Rail; Millstream Link; Cape Lambert Expansion; Mesa A Rail; Karara Rail; Stirling Dam Refurbishment; Blowering Dam Refurbishment; Perth to Bunbury Highway; Mandurah Entrance Road; Ord Irrigation Expansion in Kununurra; Midwest Rail Expansion; FMG Rail; FMG Port; and City East Alliance Belmont.

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SUBSURFACE EXPERTISE PROTECTS ASSETS

Cable Locates & Consulting is a 100% dedicated Subsurface Utility Engineering company operating in Western Australia since 1999.

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Services include: electromagnetic locating; ground penetrating radar and concrete scanning; utility verification using non-destructive vacuum potholing; survey co-ordination; and high profile project management.

Cable Locates & Consulting are recognised experts in the industry and have an experienced team to operate the latest detection equipment to ensure a quality outcome for projects of any scale.

The Cable Locates & Consulting team are proud to have contributed their services to the Kwinana Freeway Upgrade project.



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Highway Construction's The Kwinana Freeway Widening & Upgrade, WA



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