REVISED JUNE 2018 V 8

**ENVIRONMENTAL MANAGEMENT STRATEGY (EMS)**

**CONVEYOR AND CHUTE**

**WASTE HANDLING PROCEDURES**

Former QUARRY SITE AT OLD WALLGROVE ROAD EASTERN CREEK
MATERIALS PROCESSING CENTRE (MPC)
WASTE TRANSFER FACILITY associated with an adjacent
PROPOSED SOLID WASTE LANDFILL
Document Control

For controlled copies of this EMS the copy number is shown below and initialled in Red by Dial A Dump Industries and The Quarry Unit Trust Project Manager.

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| Prepared by: DADI June 2011 | Authorised by: Christopher Biggs<br>Position: Group General Counsel |
| Issue 8: Revised June 2018 | |

References in this Document to "DADI" include the Landowner, the holder of the relevant EPLS and the commercial Site Operator of the site which is Dial A Dump Industries Pty Ltd.

**REQUIREMENT UNDER CONDITION 3A**

DADI shall ensure that at no time is asbestos waste (as defined in the POEO Act) permitted to be placed in the conveyor/chute system for conveyance to the base of the landfill.

**ACHIEVEMENT OF REQUIREMENTS UNDER CONDITION 3A**

DADI shall adopt and enforce by the use of Work Directions the following Waste Management procedures:

**Materials Receivable Process**

Waste material is delivered to the site by a combination of light, medium and heavy vehicles, with loads typically varying from approximately 1 to 40 tonnes (t) in weight.

The waste transporters are required to ensure that incoming loads are covered prior to entering the facility.

All waste carrying vehicles entering the Materials recycling and Waste Transfer site is weighed over the incoming weighbridge.

Incoming waste is classified generally prior to delivery in accordance with the NSW Waste Classification Guidelines. Where this is not applicable, waste is classified as a result of visual inspection at the weighbridge in accordance with the NSW Waste Classification Guidelines and with the DADI designation which determines the destination on site of the waste.

Classification is based on advice from the carrier, inspection of the carrier's documentation prepared in accordance with the EPA's 2014 Waste Classification Guidelines and verification of this information by visual inspection using the weighbridge camera ('Check Point 1').

Non-complying loads identified e.g. putrescible, liquid and chemical waste, is recorded as a rejected load and redirected off-site. Waste classified by the consignor as non ACM but which, upon visual inspection is found to contain ACM is classified as Special waste. In such case this material will not be accepted at the recycling centre and the transporter is offered the opportunity to dispose of the special waste at landfill.

Depending on its constituent material, incoming vehicles are directed to unload at the appropriate area as follows:

<u>External Area</u>

Segregated wastes are directed to go directly at the appropriate segregated stockpile either at the green/timber waste stockpiles or at the drop off zone (concrete, brick, ceramics, soils & sands). Loads of separated hardfill materials such as brick and concrete are sent to the respective segregated waste areas.

<u>Internal Area</u>

Mixed loads suitable to undergo the recovery process are directed to the MPC. Small mixed loads which can be unloaded by hand may be directed to the hand unload area at the western end of the MPC.

Material unable to be recycled at the site or separated (i.e. asbestos waste, loads that are so mixed they cannot be physically or economically separated) and loads of asbestos or potentially asbestos contaminated materials, are sent directly to landfill.

A spotter at the MPC will inspect all loads tipped to ascertain that the material conforms to the material classification and will identify any non-complying material missed at Check Point 1.

When the spotter identifies a non complying material before unloading the vehicle, that vehicle will be redirected and the weighbridge notified. The rejected loads register will also be completed.

When the spotter identifies a non complying material during unloading, the vehicle will be reloaded with the non complying material, which are recorded as a rejected load and are directed off-site or redirected to the landfill is appropriate.

After unloading, vehicles will then be reweighed at Weighbridge (outbound) to calculate the net vehicle weight and thereby recording the total weight of the load delivered, prior to exiting the site.

**Preliminary Sorting MPC**

Mixed loads delivered to the Materials Processing Centre (MPC) are segregated where appropriate by material type and placed in adequate, appropriately labeled bays and bins for transport to appropriate areas for recycling, to landfill or off-site (as required).

Any small loads unloaded at the hand unload area of the MPC are sorted and placed into the segregated bays and bins by hand. Larger loads tipped at the work floor and which, because of their size or the extent of the co-mingling, are incapable of separation are mechanically sorted by an automated screening and sorting mechanism.

Ferrous and non-ferrous metals recovered through the sorting process (generally by use of a magnet), as well as plastics and paper/cardboard are sorted, placed into bays and bins and stored until transferred offsite..

Initially a pre-sort takes place. Recoverable goods capable of resale e.g. furniture items, are directed to the recoverable goods bay for resale or re-use; other recoverable material are retrieved from receptacles and placed within the appropriate stockpile to be processed.

The remaining material are loaded into the shredder, and via conveyor for the automated sorting and screening process.

Any material remaining which is not segregable or recoverable are shredded.

The shredded residue following the automated recovery process will then be conveyed by covered conveyor from within the MPC building to the Weighing Assembly at the head of the downhill conveyor.

**"Special waste" Asbestos Waste and Asbestos Contaminated Materials**

Strict guidelines and procedures for the identification, storage, handling and disposal of asbestos waste and asbestos contaminated materials are documented in the Waste Monitoring Program (WMP) for the site.

Asbestos waste disposal will meet EPL conditions and Clause 80 of the Protection of the Environment Operations (Waste) Regulation 2014 NSW. During operation of the Project all staff are trained in accordance with the Industry Asbestos Awareness Course and will receive regular retraining.

Asbestos waste is identified by the classification and spotting process described in Section 3.4.1 of EAR060239. Complying waste containing asbestos removed from mixed loads are quarantined and sent for disposal to landfill.

Large waste loads containing only asbestos are sent directly to landfill from the weighbridge to minimise unnecessary handling of the waste.

Upon receipt, if asbestos is in small quantity (small sealed bags) capable of being handled, bagged asbestos waste are placed in designated clearly labelled, leak proof, sealed containers at the WTF for disposal at the landfill, and in accordance with procedures to be included in the Asbestos Management Plan (AMP). Where practicable, stabilised asbestos waste received at the site that is in bonded matrix form and soil contaminated waste is kept covered at all times.

Asbestos waste sent to landfill is placed to a depth of at least 0.5 m from the landfilled surface . It must be covered immediately upon receipt. Loads which have some loose fibres or are friable will require separate burial and accordingly is placed in pre-prepared trenches and immediately covered.

Loads are unloaded in such a manner as to avoid creation of dust. All asbestos waste processed at the site is in accordance with the NSW EPA asbestos waste requirements for a general solid waste (non putrescible) licensed landfill.

Asbestos waste will not be shredded and will not be handled in any way within the MPC, and any unexpected finds within incoming loads are dealt with in accordance with the waste management procedures outlined in the Spotter's Manual and the AMP.

The following Guidelines have been adopted by DADI for the receipt, processing management and disposal of waste at the Facility.

## ASSURING QUALITY OF INCOMING WASTE (BENCHMARK TABLE BM 21)

The Site Operator will intake a range of inert and solid wastes

A computerised system of recording waste entry is implemented whereby the weighbridge load cell is linked to the main computer such that accurate records of the weight of incoming wastes can be recorded on a vehicle by vehicle basis.

The system is capable of being operated by a single user within the gatehouse and data obtained from the site can be transferred directly from the gatehouse to NSW EPA's Head Office.

Waste categorisation is required to be made by the gate operative who designates the incoming waste into the appropriate category according toNSW EPA Waste Classification Guidelines . All wastes being received at the facility must be tested and classified prior to receipt for disposal or recovery.

The gatehouse staff shall inspect appropriate documentation such as VENM certificates and waste classifications prepared in accordance with the NSW NSW EPA *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non Liquid Wastes*, 1997.

## RECORDING INCOMING WASTES (BENCHMARK TABLES BM 21-23)

Quantification by weight and categorisation by type, which shall include a review of available documents, will enable DADI staff to clearly distinguish between waste materials which are capable of recycling and those materials which cannot be recycled and must be disposed of by landfilling.

The records maintained by the MPC weighbridge also provide an accurate assessment of the amount of waste levy (tax) to be paid under S88 of the Protection of the Environment Operations Act and provides the Landfill Site Operator with the means of making waste returns to the NSW EPA in the appropriate format.

Yearly calibration of the weighbridges is to be conducted to ensure that the weights recorded are accurate.

A valid calibration record issued by the appropriate certifying authority that the weighbridges have been properly calibrated are available for inspection at all times in the site office.

## WASTE DISPOSAL ARRANGEMENTS AND METHODS (BENCHMARK TABLE BM 21)

The waste management processes which are employed at the MPC include the following:

**Waste Reception and Preliminary Screening**

Preliminary waste reception and visual screening (including questioning the waste transporter/driver regarding load characteristics) is undertaken at the weighbridge facility.

All incoming vehicles and wastes are directed through the waste reception area and the loads inspected by the weighbridge (gatehouse) operator.

Unacceptable (excluded) wastes shall be rejected, the NSW EPA shall be informed of the waste details, carrier and origin, and the carrier told to deliver the waste to an alternative appropriate licensed facility. The alternative licensed Facility may be the Genesis Landfill.

Wastes shall be weighed at the weighbridge in gross tonnes, or in the case of the small vehicles the weight of waste shall be calculated using published weight factors in accordance with the NSW EPA method.

The vehicles will then proceed beyond the weighbridge area along the main haul road where they are directed by appropriate signage for unloading.

Suitably qualified and experienced persons are placed in traffic management positions to further determine the load contents and to assist in the determination of load contents

This person serves as an extra protective measure against the unloading of materials for which the MPC and landfill is not licensed or which the operator considers to be unacceptable.

## SMALL LOADS: UNSEGREGATED WASTE MATERIALS

DADI has set aside a designated area for self-sorting of materials at designated areas of the site into receptacles placed and signposted for this purpose.

Materials capable of further separation or processing by crushing or grinding, thereby making them suitable for sale or for use in operational purposes, may be stockpiled in this area prior to treatment or where the treatment will occur.

**LARGE QUANTITIES: BRICK, CONCRETE, DEMOLITION MATERIAL, VENM AND SOILS**

Commercial quantities and hardfill type materials which are segregated prior to their arrival on site and do not require further treatment are directed to the designated external area where these materials may be stockpiled.

**UNSEGREGATED SOLID WASTE**

General solid waste (mixed), after weighing on the inwards weighbridge is deposited within the MPC.

Once tipping or emptying of vehicles is complete the vehicles return to weighbridge and are reweighed in order to determine the delivered amount.

**Stage 1 of the mechanical processes of sorting unsegregated materials**

Stage 1 of the mechanical process is achieved by the preliminary sorting and segregation, which takes place in the following locations:

- primary sorting at the MPC in respect of the contents of small bins; and
- secondary sorting in respect of the contents of large bins and truck loads of excavation material.

Mechanical processes consist of sorting and segregating materials so as to remove valuable recoverable materials – principally metals.

The aim of this preliminary gross sorting is to remove metals, wire, cylinders, batteries and materials of this nature which may be removed for re-use or have valuable re-use function without the need for intervention. The majority of this material can be removed by the use of a magnet or grapple.

**Presence of Potential Asbestos Contaminated waste or waste containing Compressed fibre cement products. [CFCP]**

All tipping is to be carried out under the supervision and control of a designated Spotter.

If during the process of tipping Special Waste [Asbestos] is observed or CFCP is observed the material is to be inspected and tested before tipping is complete. The Microphazir testing device is to be used for the purpose.

If upon testing the observed material is CFCP tipping may be completed and the CFCP material may be pushed or otherwise removed to one side for later disposal. When this has occurred the mechanical separation and segregation process may be engaged.

If upon testing the observed material is special waste [PACM] tipping must cease immediately. The driver is given the opportunity to have the load re- classified and disposed of to landfill as ACM.

Other proscribed materials shall be removed and segregated at this stage; organic materials (including green waste) are removed to the green waste stockpile;

- Liquid and chemical wastes are unacceptable wastes and are dealt with under the provision for unacceptable wastes; and
- The remaining undifferentiated material is subjected to an automated process of preliminary shredding followed by screening and sorting [by automated mechanical means] with the result that materials are differentiated into different classes.

Plastics, paper, timber, metals (including steel), cardboard, are removed to designated areas for processing and recycling or sent to third party processors.

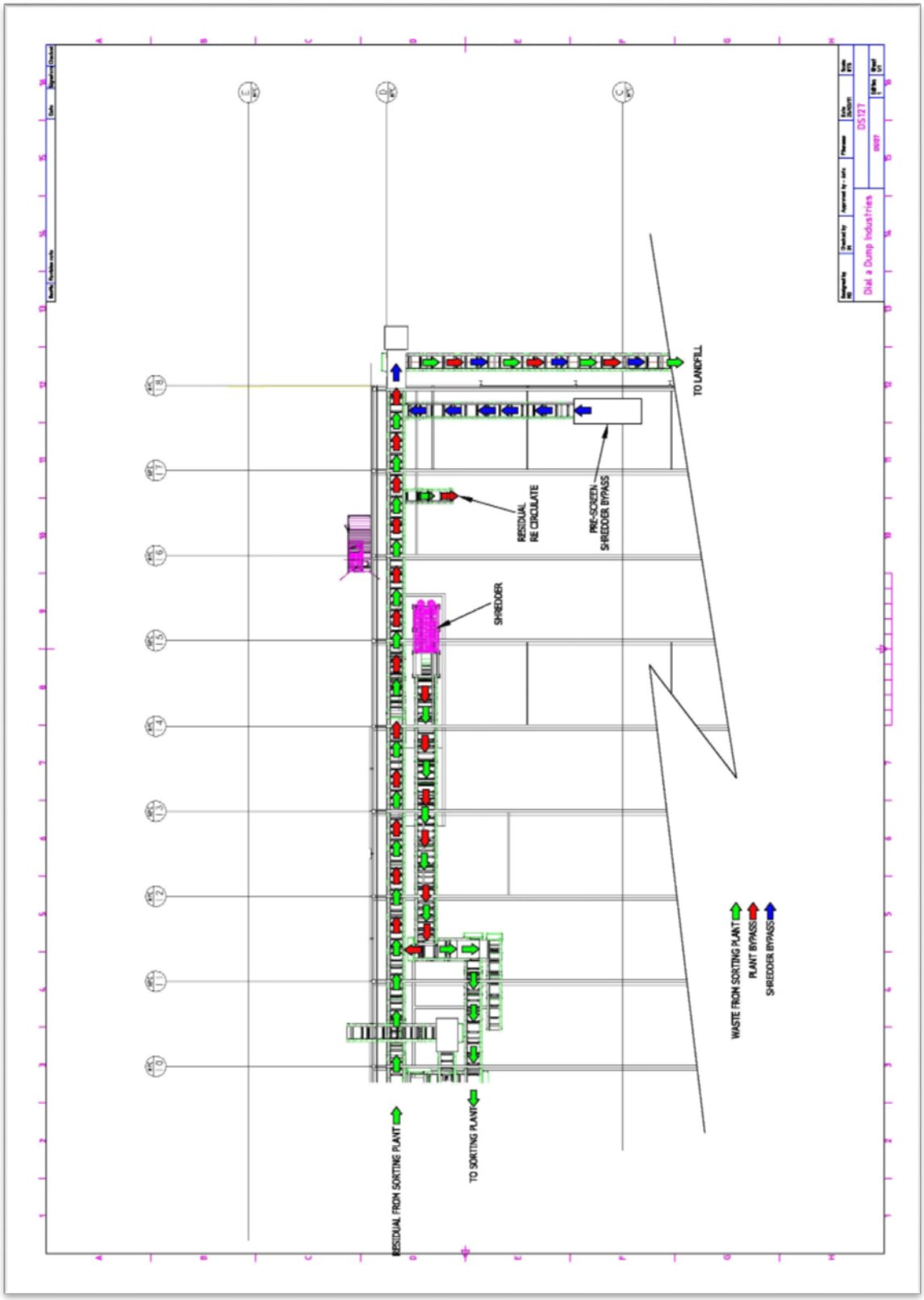
Metals (ferrous and non ferrous) are either removed to the steel processing area of the site for sorting, shredding and shearing or sent to third party processors.

**FINAL SORTING PROCESS FOR DISPOSAL**

Material which is residual following the automated sorting process are transferred by conveyor to the Weighing Assembly for weighing prior to disposal at Landfill.

The capability will exist to re-circulate material back within the process if it should be thought desirable.

Refer to Drawing DS127-2 overleaf.


TO LANDFILL
RESIDUAL RE CIRCULATE
PRE-SCREEN SHREDDER BYPASS
SHREDDER
WASTE FROM SORTING PLANT
PLANT BYPASS
SHREDDER BYPASS
RESIDUAL FROM SORTING PLANT
TO SORTING PLANT
Dial a Dump Industries
DS127

**ACCEPTABLE WASTE CATEGORIES (BENCHMARK TABLES BM 21, 22 & 23) LANDFILLING ONLY**

The MPC/WTF Operator/Site Manager will ensure that only *acceptable* wastes are transported on to the site for either landfilling or recycling purposes.

Should the load contain chemicals or hazardous material the NSW EPA will be informed of the nature of the load and the carrier's details including registration of the vehicle and the proposed destination (if known).

Acceptable wastes for Landfilling Only include:-

- Wastes, excluding putrescible wastes, that are assessed to be inert waste or solid waste following the assessment in accordance with the applicable Waste Classification Guidelines.

- Waste as specified as inert waste or solid waste as defined in Schedule 1 of the *POEO Act*; and

- Bonded (non-friable) asbestos, asbestos fibre and waste resulting from the removal of thermal or acoustic insulating materials or from processes involving asbestos material provided that such materials are delivered sealed in heavy duty polytarp or plastic.

Asbestos wastes: asbestos contaminated soils and solid waste will be transported directly to landfill and disposed of by landfilling.

**SYNTHETIC MINERAL FIBRE WASTES (BENCHMARK TABLES BM 21-23 & 34)**

These wastes may be delivered and disposed in sealed containers by prior arrangement.

**SLUDGES - PLIABLE AND SPADEABLE WASTES (BENCHMARK TABLES BM 3, 21-23 & 34)**

Spadeable moist wastes will be accepted for transfer and disposal only under the following conditions:-

should contain no free liquid;

- dry enough to be spadeable;
- slump free at 1 vertical on 2 horizontal;
- not contain materials above concentrations prescribed by NSW EPA as constituting 'restricted solid waste', 'hazardous wastes' under any applicable legislation;
- pass any prescribed leaching procedure; and
- other criteria established by NSW EPA in guidelines or statutes as may become applicable.

## SPECIAL WASTES (BENCHMARK TABLES BM 21-23)

Clinical and related wastes classified as special waste shall **not** be permitted into the MPC. Special wastes which may be accepted (to landfill) but require prior treatment or particular disposal procedures include:

- bonded or stabilised asbestos wastes (not including friable asbestos); and
- tyres.

## TYRES

Tyres will be received, handled and disposed according to the NSW EPA guidelines provisions set out in the site Environmental Protection License.

Not more than 50 tonnes of Tyres may be stockpiled on site at any one time, in accordance with Schedule 3 Condition 1(c) of Project Approval MP06_0139.

## SCHEDULED CHEMICAL WASTES

Scheduled chemical wastes are controlled by the *Scheduled Chemical Wastes Chemical Control Order,* 2004 under the *Environmentally Hazardous Chemicals Act,* 1985. Scheduled Chemical Wastes will not be allowed into the MPC or the adjacent Landfill site.

## DRUMMED WASTES (BENCHMARK TABLES BM 21-23)

Drummed wastes must be in solid form. Any drummed waste that arrives at the waste delivery area in liquid form will be rejected and returned to the gatehouse/weighbridge. Gatehouse staff will be informed of the carrier details and nature of the wastes, if known.

On no occasion will the drums be opened for inspection by operators or supervisory staff. Drummed liquid wastes will be quarantined pending disposal by the transporter, owner or originator. The Site Operator will inform NSW EPA and an Incident Report completed.

Drums containing authorised solid wastes will be accepted for transfer to an appropriately licensed landfill facility and disposed of there in accordance with their site licence conditions and EMS.

Drummed wastes shall not contain materials above concentrations prescribed by NSW EPA as constituting hazardous wastes or prescribed in the Scheduled Waste Chemical Control Order 1994, and should pass any prescribed leaching test. The wastes should satisfy other criteria as established in the *Environmental Guidelines: Assessment, Classification, & Management of Liquid & Non-Liquid Wastes.*

**EMPTY DRUMS (BENCHMARK TABLES BM 21-23)**

Empty drums must be observed to be pre-punctured to a sufficient state where no liquid contents could be reasonably present within the drum. Waste drums will be crushed by compactor. Where appropriate, the drums may be made available for recycling.

Drums which are not punctured or are insufficiently punctured will be classified as drummed wastes and disposal arrangements for drummed wastes will apply. Puncturing of drums onsite by transporters or owners of the wastes will not be allowed. Waste owners or transporters who attempt to puncture drums at the MPC will be reported to the gatehouse/weighbridge (Supervisor Waste Management Facility) and directed back to the weighbridge quarantine area of the MPC and an Incident Report completed.

**UNACCEPTABLE WASTES (BENCHMARK TABLES BM 21-23)**

Unacceptable wastes include any materials which do not fall into the above categories. These include but are not limited to:-

| | | |
|---|---|---|
| liquid wastes; | explosives; | poisons; |
| dangerous goods; | radioactive materials; | clinical, hospital and related wastes; |
| loose, uncovered (non-bonded) or friable asbestos; | scheduled pharmaceuticals; | hazardous waste, |
| restricted waste | scheduled wastes; and | putrescible wastes. |

Screening of wastes at the gatehouse/weighbridge would normally eliminate these wastes from entry to the site.

**PUTRESCIBLE WASTES**

Putrescible wastes include food or animal matter, and unstable or untreated biosolids. This material will **NOT** be allowed into the MPC or the adjacent landfill.

**REMOVAL OF UNACCEPTABLE WASTES (BENCHMARK TABLE BM 21)**

Vehicles attempting to leave unacceptable or excluded wastes at the MPC will be identified and directed to return to the weighbridge. The licensee (operator) will record details of the waste and carrier and communicate this information to the gatehouse and thence to the NSW EPA under the provisions of the *POEO Act*.

If tipping has occurred then the operator will (if safe to do so), segregate and isolate and/or remove any unacceptable wastes which have been deposited at the MPC and transport the wastes to a designated quarantine area or other suitable location, where the wastes will be securely stored until off-site disposal arrangements are made by the original carrier.

If the carrier or owner of the wastes does not make arrangements for the waste to be collected within 24 hours a fee will be charged for storage of the wastes, and if within 48 hours the wastes have not been collected then the operator will make arrangements for the waste to be tested and disposed at an appropriate licensed facility and the owner or carrier of the wastes will be billed for the costs involved.

NSW EPA will inform NSW EPA within 24 hours of the nature, origin, carrier, transporter and owner of the wastes and inform the NSW EPA of the ultimate fate (if known) of such wastes. Details will be reported in monthly reports and summarised in the annual report.

**BONDED OR STABILIZED ASBESTOS (CATEGORY 1) WASTES**

The Site Operator will typically deal with bonded asbestos from the Construction and Demolition waste stream and not with loose and friable asbestos which can pose risks of generating airborne fibres if disturbed.

Asbestos wastes will be dealt with at the site through a series of measures as follows:

- Staff training in accordance with the Industry Asbestos Awareness Course and follow up course by trained in house staff or by external trainers to be undertaken on a regular basis at least once a year;
- Checking and inspection of incoming materials prior to stockpiling or processing to minimise the risk of asbestos wastes as follows:
- First inspection will be conducted when the load arrives at the facility,
- Second inspection at the checkpoint for traffic management and further load inspection, and
- Third inspection when materials are unloaded.
- Independent auditing of this system which minimises the risk of the presence of asbestos and other contaminants;
- Recording of non-complying generators illegally disposing of asbestos wastes; and
- Redirecting of asbestos wastes to other appropriate facilities or landfilled at the site in accordance with strict regulatory guidelines as set out below.
- Wastes that contain asbestos will not be mixed with other wastes.
- All asbestos will be carefully unloaded under supervision by the operator.
- Disposal of asbestos will be required to meet the site license conditions and comply with Clause 80 of the *Protection of the Environment Operations (Waste) Regulation* 2014 NSW.
- The requirements to be implemented by the site operators regarding the collection, storage and landfilling of asbestos wastes are as follows:
    - Unbagged, uncovered or unsecured asbestos fibre and dust waste will be directed back to the quarantine and gatehouse area for redirection and the NSW EPA will be informed and an incident report completed. Waste that is classified as loose or fibrous will not be dealt with except in accordance with the following procedures:
    - the waste will be bagged, wet-downand/or covered in such a manner so as to prevent the emission of any dust;
    - the waste will be collected and stored in impermeable bags,

- each bag will be made of heavy duty low density polyethylene of at least 0.2 mm thickness, and have dimensions of no more than 1.2 m in height and 0.9 m in width,
- each bag must be sealed by a wire tie, and contain no more than 25 kg of waste, and
- each bag must be marked with the words "CAUTION ASBESTOS" in letters of not less than 40 mm and which comply with *AS 1319—1994, Safety signs for the occupational environment.*

- If asbestos waste in any form is stored in a bag, the following procedures will be followed;
  - the bag will be placed in a leak-proof container that is used only for the purposes of storing asbestos waste;
  - the container will be marked with the words "DANGER—ASBESTOS WASTE ONLY—AVOID CREATING DUST" in letters of not less than 50 mm and which comply with the Australian Standard, and
  - the container will have a close-fitting sealed cover so as to prevent any spillage or dispersal of the waste,
- If asbestos waste that is in the form of stabilised asbestos waste in bonded matrix is stored otherwise than in a bag, the following procedures will be followed:
  - the waste will be wetted so as to prevent the emission of any dust,
  - in wetting the asbestos waste, special care will be taken to ensure that the wetting process does not cause any emission of dust or lead to any discharge of polluted water, and
  - the waste will then be kept covered at all times.

Asbestos waste will be stored in a secure area so as to prevent entry by unauthorised persons and to prevent the risk of environmental harm and where possible will be stored separately from other types of waste.

Covered containers carrying bagged waste will be transported to the Landfill base by truck **and not transported by chute**. There the containers will be unloaded in the manner described below.

For the disposal of asbestos waste at the Landfill, the waste will be by way of burial at least to a depth of 0.5m on the same day it is received. Loads requiring separate burial (i.e. which have some loose fibres or are friable in condition) will be placed in pre-prepared trenches and immediately covered by the operator.

For logistic reasons co-disposal of asbestos materials if accepted with general refuse, will be practiced in preference to separate (monofill)/segregated asbestos burial at one (single) location in the Site.

In disposing of asbestos waste in any form at the landfill, the waste will be unloaded in such a manner as to avoid the creation of dust. The waste will not be compacted before it is covered and will not come into contact with any earthmoving equipment at any time.

**REQUIREMENTS UNDER CONDITION 16A**

*DADI shall prepare detailed design plans for the conveyor/chute system. These plans shall:*

- *be prepared by a suitably qualified engineer in consultation with the NSW EPA;*

- *be submitted to the Director-General for approval prior to the commencement of construction;*
- *include the dimensions and gradients of the conveyor and chute;*
- *include a fully enclosed conveyor/chute system;*
- *include a waste drop height of no more than 3 metres between the end of the sock and the base of the quarry;*
- *incorporate fine mist sprays at the discharge end of the chute to minimise dust;and*
- *incorporate maintenance access points.*

## ACHIEVEMENT OF REQUIREMENTS

**Waste Transferred to Landfill**

All materials suitable for landfilling and incapable of being recovered, re-used or recycled will be directed from the MPC to the landfill premises.

Transfer to Landfill can occur in one of two ways:

1. By dump truck or road truck as described in the EAR, [this applies to all asbestos or asbestos contaminated waste]. This process has been fully described in the EAR.

or

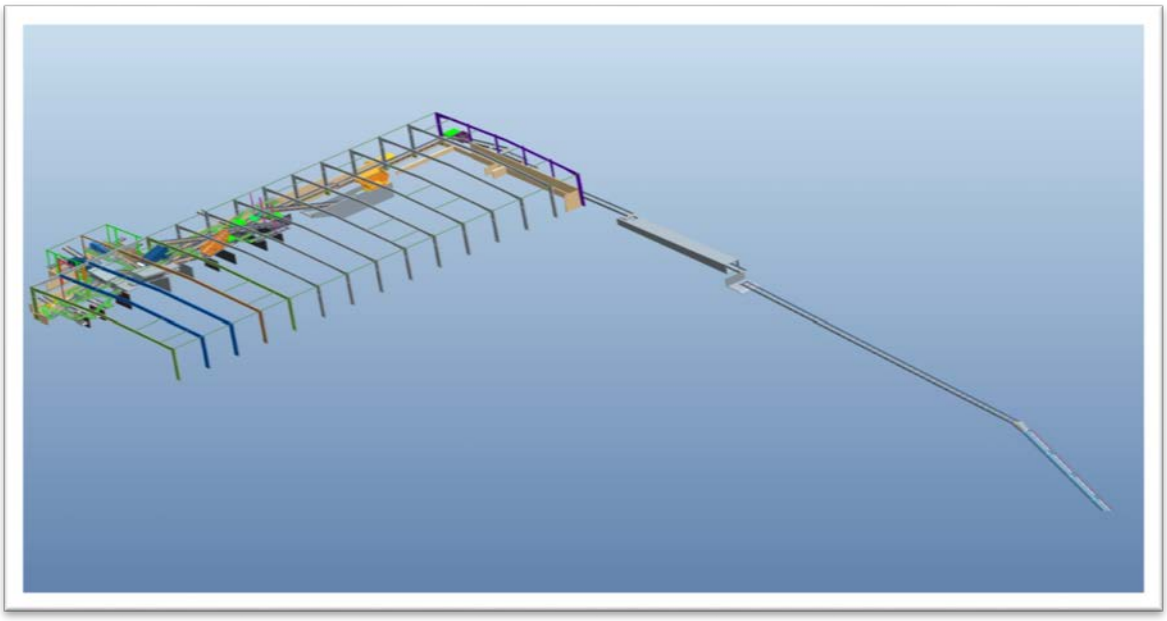
2. By conveyor and chute [this applies to all other non recyclable waste or residual waste transferred from the MPC]. This processed was outlined in the EAR lodged with the Department of Planning for the Project Modification [Chute Construction].

All unsegregated [mixed waste] material will be deposited within the MPC after the transporting truck has been weighed over the incoming weighbridge.

Preliminary sorting will take place within the MPC to recover salvageable materials.

A series of shredding and screening plants will be located within the MPC, each connected by conveyors.

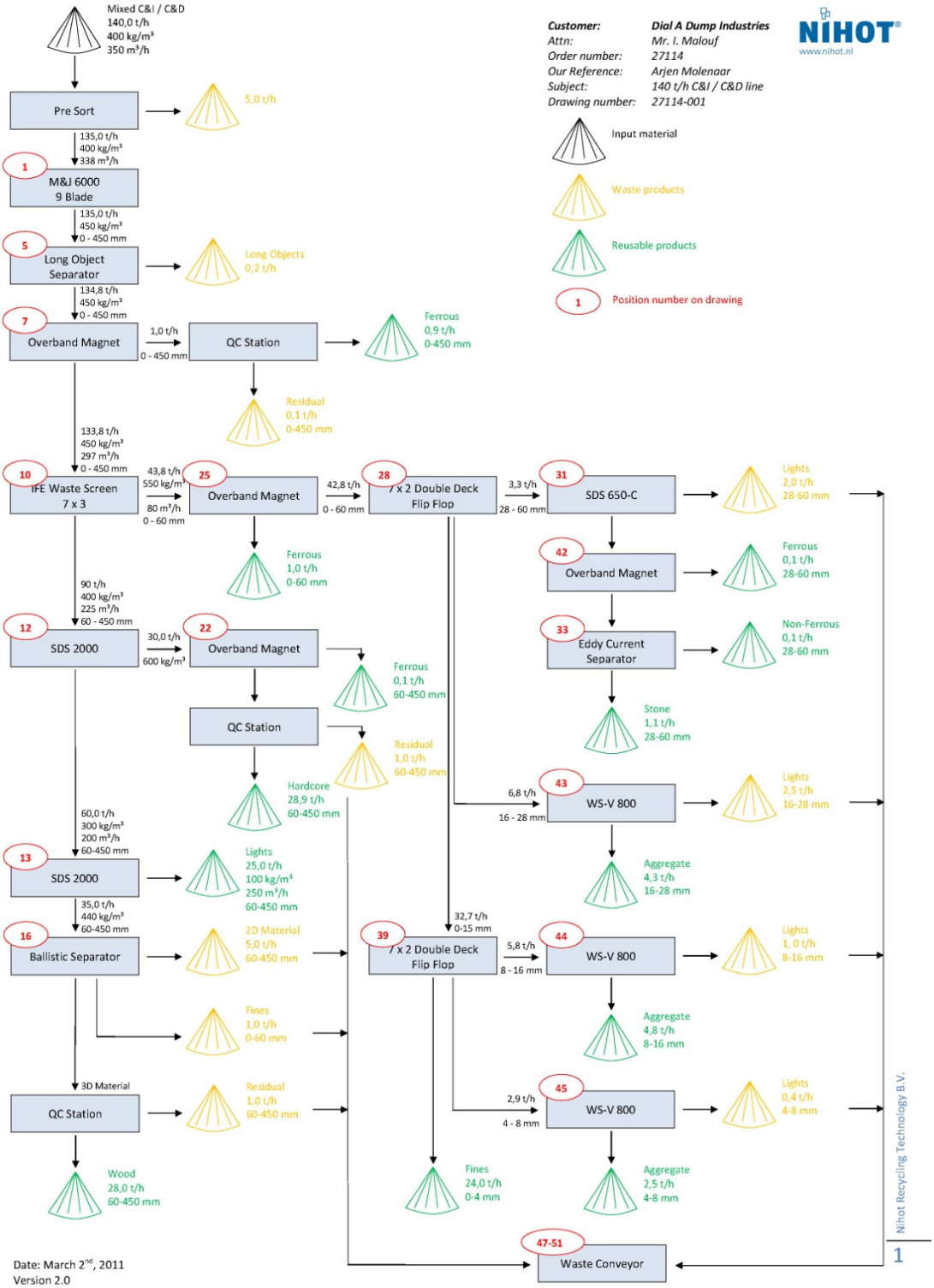
A visual representation of this shown below.



Each item of plant within the Dial A Dump Automated Sorting System (DASS) configuration performs a different automated function specifically designed to separate materials by material types.

The mixed waste material will be loaded by loader or excavator into the shredder which will reduce the particle size then permitting each subsequent screening process to occur.

The flow of materials is shown on the following diagram.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Attn: Mr. I. Malouf
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NIHOT
www.nihot.nl
Input material
Waste products
Reusable products
1 Position number on drawing
Mixed C&I / C&D
140,0 t/h
400 kg/m³
350 m³/h
Pre Sort
5,0 t/h
135,0 t/h
400 kg/m³
338 m³/h
1 M&J 6000 9 Blade
135,0 t/h
450 kg/m³
0 - 450 mm
5 Long Object Separator
Long Objects
0,2 t/h
134,8 t/h
450 kg/m³
0 - 450 mm
7 Overband Magnet
1,0 t/h
0 - 450 mm
QC Station
Ferrous
0,9 t/h
0-450 mm
Residual
0,1 t/h
0-450 mm
133,8 t/h
450 kg/m³
297 m³/h
0 - 450 mm
10 IFE Waste Screen 7 x 3
43,8 t/h
550 kg/m³
80 m³/h
0 - 60 mm
25 Overband Magnet
Ferrous
1,0 t/h
0-60 mm
42,8 t/h
0 - 60 mm
28 7 x 2 Double Deck Flip Flop
3,3 t/h
28 - 60 mm
31 SDS 650-C
Lights
2,0 t/h
28-60 mm
42 Overband Magnet
Ferrous
0,1 t/h
28-60 mm
33 Eddy Current Separator
Non-Ferrous
0,1 t/h
28-60 mm
Stone
1,1 t/h
28-60 mm
90 t/h
400 kg/m³
225 m³/h
60 - 450 mm
12 SDS 2000
30,0 t/h
600 kg/m³
22 Overband Magnet
Ferrous
0,1 t/h
60-450 mm
QC Station
Residual
1,0 t/h
60-450 mm
Hardcore
28,9 t/h
60-450 mm
6,8 t/h
16 - 28 mm
43 WS-V 800
Lights
2,5 t/h
16-28 mm
Aggregate
4,3 t/h
16-28 mm
60,0 t/h
300 kg/m³
200 m³/h
60-450 mm
13 SDS 2000
Lights
25,0 t/h
100 kg/m³
250 m³/h
60-450 mm
35,0 t/h
440 kg/m³
60-450 mm
16 Ballistic Separator
2D Material
5,0 t/h
60-450 mm
Fines
1,0 t/h
0-60 mm
3D Material
QC Station
Residual
1,0 t/h
60-450 mm
Wood
28,0 t/h
60-450 mm
32,7 t/h
0-15 mm
39 7 x 2 Double Deck Flip Flop
5,8 t/h
8 - 16 mm
44 WS-V 800
Lights
1, 0 t/h
8-16 mm
Aggregate
4,8 t/h
8-16 mm
2,9 t/h
4 - 8 mm
45 WS-V 800
Lights
0,4 t/h
4-8 mm
Fines
24,0 t/h
0-4 mm
Aggregate
2,5 t/h
4-8 mm
47-51 Waste Conveyor
Nihot Recycling Technology B.V.
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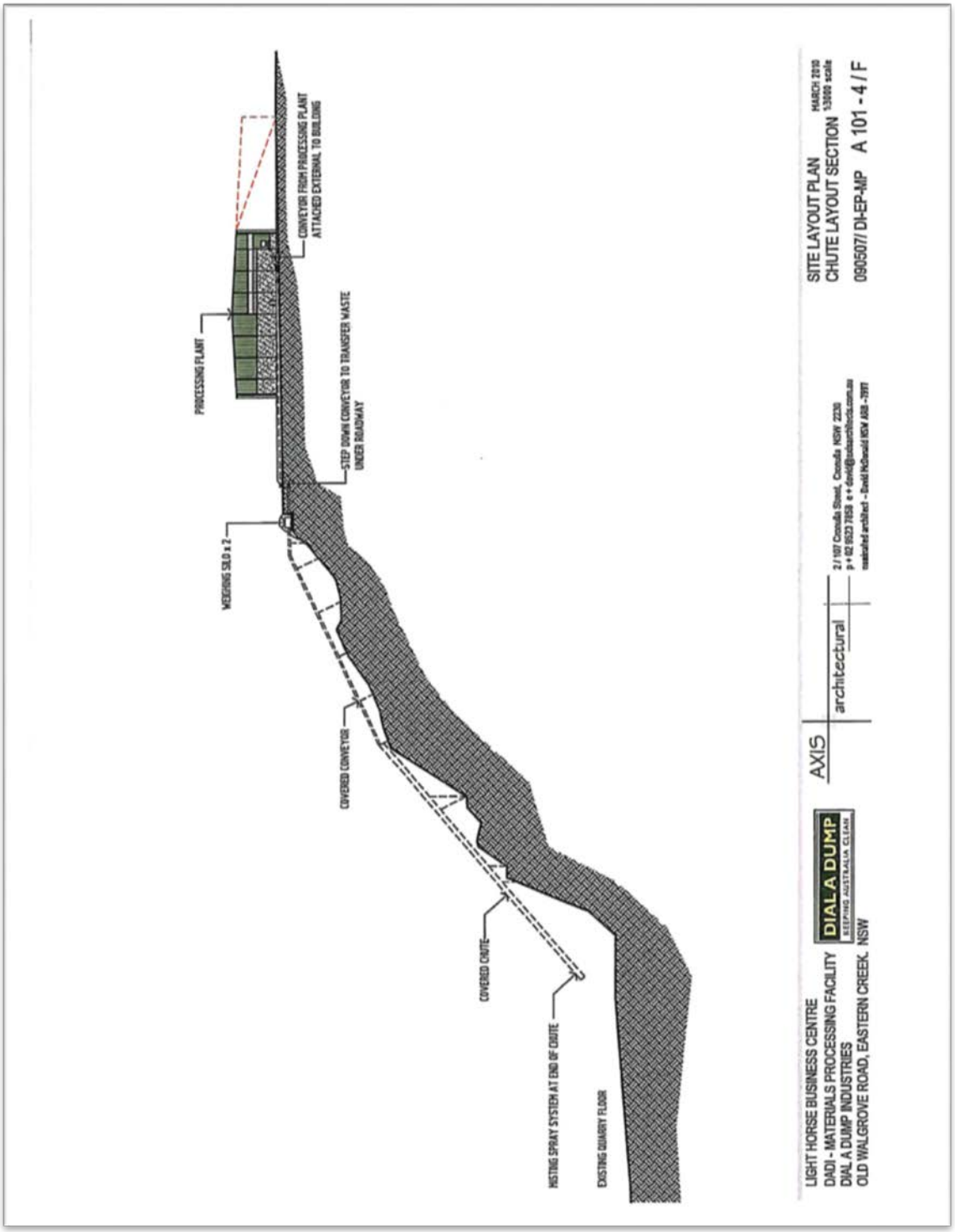
Date: March 2nd, 2011
Version 2.0

At the end of the screening process the output waste from the Dial A Dump Automated Sorting System (DASS) representing residual material from which the DASS has extracted all useful constituents will be rendered suitable for landfilling.

At the northern end of the MPC building at the location shown on plan Jones Nicholson Plan S02-B, a covered conveyor will exit the MPC building and thence to the Weighing Assembly (refer Appendix D).

It had been suggested that Weighing Silos would be located at the position shown near the Quarry edge as seen in Plan Ref A101-4/F.




Further developments undertaken by DADI's design engineers have produced a design whereby the Weighing Assembly may be more conveniently located immediately adjacent to the MPC building rather than at the Quarry edge, as was earlier proposed and shown in Axis Drawing A101-4/F.

By locating the Weighing Assembly closer to the MPC building, DADI has improved the opportunities for inspection, testing and maintenance of it.

The entire Weighing Assembly will be fitted with static measuring load cells of a kind approved by the NSW Department of Fair Trading and the entire assembly will be weighed as a weighbridge.

Alternating filling of Weighing Assembly is indicated on pp 14 of the DADI Eastern Creek Weighing Process and Waste Transfer Chute Report, attached at Appendix A.

Further drawings of the Weighing Assembly are attached in Appendix C.

**Transportation Capacity**

The capacity of the conveyor system to weigh, pause and discharge contents is shown in the Weighing Process and Waste Transfer Chute Report.

That report indicates a minimum throughput of 6 tonnes per hour and a maximum of 200 tonnes per hour.

**Weighing Process**

The Weighing Assembly consists of two separate conveyors operating and weighing alternately. When the conveyor reaches its established maximum weight that conveyor will automatically pause and the weight of the **entire assembly** will be automatically recorded for the purposes of NSW EPA records. From the gross weight of the assembly including the waste will be deducted the unloaded or tare weight of the assembly, leaving a record of the waste together with the time, date and waste classification.

During the pause period of the first conveyor and assembly (to enable weighing) a secondary conveyor will become operational and it too will begin to fill the second assembly to capacity. As the first assembly resumes movement (after weighing) the second assembly will pause in turn for its weight to be recorded in the same manner.

Each will operate alternately so that when one is filling the other is being weighed and emptied.

**Discharge and Conveyance of Material**

Following the recording of the weight of the waste the conveyor will once again resume operation, discharging its contents onto another conveyor which is enclosed and passes within a culvert located underneath the road and thence to the downhill conveyor.

The downhill conveyor is shown on the marked up Jones Nicholson Plan S13-B (refer Appendix D).

Material discharged from the hopper is carried by the fully covered downhill conveyor and in turn empty into a covered chute down which the waste travels the remainder of the distance to floor of the quarry.

Waste will then be pushed around the landfill by bulldozer and compactor.

**REQUIREMENT UNDER CONDITION 9A**

*Construction works associated with the weighing silos, [downhill] conveyor and chute system shall be:*

- *the subject of appropriate certification from qualified geotechnical and civil engineers; and*
- *in accordance with the relevant Australian Standards.*

**Geotechnical Considerations**

Jeffrey and Katauskas Consulting Geotechnical Engineers have certified geotechnical conditions to be appropriate for the construction of the conveyor and chute. Refer to Appendix B for letter from Jeffrey and Katauskas about the feasibility of the construction of the chute.

Jones Nicholson Consulting Engineers have prepared technical certifications and specifications (refer Appendix D).

**Chute design**

Dimensions

See drawings 080233-S04-Chute Sections-6 (see page 18 in Appendix A) for dimensional details on the chute and conveyor system.

The conveyor is approximately 87m long running at 20 degrees with an effective width of 1500mm which will feed material into the chute. The chute was originally 81m long running at 50 degrees with an internal diameter of 1.9m.

Gradient

The conveyor running at 20 degrees and the chute at 50 degrees as per 080233-S04-Chute Sections-6 (see page 19 in Appendix A).

Footings

Footings have been designed for an allowable bearing capacity as noted in the pad footing schedule this foundation material shall be uniform and be approved by the engineer for this pressure before placing reinforcement or concrete. For more details on the footings refer to 080233-S01-Notes Sheet-1 (refer overleaf and Appendix D).

## GENERAL

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATION AND WITH SUCH OTHER WRITTEN INSTRUCTION AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH THE WORK.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT AUSTRALIAN STANDARDS AND THE BUILDING CODE OF AUSTRALIA EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATION.
3. ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE. ENGINEERS' DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS.
4. DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. TEMPORARY BRACING SHALL BE PROVIDED BY THE BUILDER TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.
5. THE BUILDER SHALL GIVE 48 HOURS NOTICE FOR ALL ENGINEERING INSPECTIONS.
6. THE BUILDER SHALL LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF CONSTRUCTION. ENGINEER TO BE NOTIFIED.
7. UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES.
8. TEMPORARY SHORING IS THE RESPONSIBILITY OF THE CONTRACTOR AND MAY VARY ACCORDING TO CONSTRUCTION METHODS AND SEQUENCES. IF INSUFFICIENT DETAILS ARE SHOWN ON CONTRACT DRAWINGS TO STABILISE DEEP CUTS, ENGINEER TO BE NOTIFIED.
9. THE STRUCTURAL COMPONENTS DETAILED ON THESE DRAWINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND LOCAL GOVERNMENT ORDINANCES FOR THE FOLLOWING LOADINGS:

| WIND LOADS ARE IN ACCORDANCE WITH AS 1170 PART 2 AS FOLLOWS: | |
|---|---|
| ULTIMATE REGIONAL WIND SPEED V | R10001 =46m/s |
| TERRAIN CATEGORY = 3 | |
| TOPOGRAPHIC MULTIPLIER (Mt) = 1.0 | |

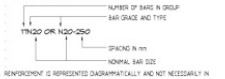
THE RELEVANT PROVISIONS OF AS 1170.4 HAVE BEEN APPLIED FOR AN EARTHQUAKE
ACCELERATION COEFFICIENT OF 0.08

## FOUNDATIONS

1. FOOTINGS HAVE BEEN DESIGNED FOR AN ALLOWABLE BEARING CAPACITY AS NOTED IN THE PAD FOOTING SCHEDULE. THIS FOUNDATION MATERIAL SHALL BE UNIFORM AND BE APPROVED BY THE ENGINEER FOR THIS PRESSURE BEFORE PLACING REINFORCEMENT OR CONCRETE. PIERS OR BLOCKWORK SHALL BE USED TO ACHIEVE UNIFORM BEARING WHERE NECESSARY.
2. THE SITE HAS BEEN CLASSIFIED AS CLASS ..... SITE IN ACCORDANCE WITH AS 2870. CONFIRMATION OF SITE CLASSIFICATION IS REQUIRED BY GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION COMMENCING ON SITE.
3. FOOTINGS SHALL BE CONCRETED ON THE DAY OF APPROVAL UNLESS PERMISSION IS GIVEN OTHERWISE.
4. FOOTINGS SHALL BE LOCATED CENTRALLY UNDER WALLS AND COLUMNS UNLESS NOTED OTHERWISE.
5. DO NOT BACKFILL RETAINING WALLS (OTHER THAN CANTILEVER WALLS) UNTIL FLOOR CONSTRUCTION AT TOP AND BOTTOM IS COMPLETED. BACKFILL SHALL BE COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ±2% (ENSURE FREE DRAINING BACKFILL AND DRAINAGE IS IN PLACE).
6. FOOTING LEVELS WHERE SHOWN ARE ESTIMATES ONLY AND WILL BE ESTABLISHED DURING SITE INSPECTION OF WORK IN PROGRESS.
7. UNLESS OTHERWISE APPROVED BY THE ENGINEER/SUPERINTENDENT, THE LIMITS OF EXCAVATION NEAR FOOTINGS SHALL BE AS SET OUT IN THE DETAIL SHOWING SUCH LIMITATIONS.
8. ALL FOOTING LOCATIONS, BEARING PRESSURE AND REQUIREMENTS OF ROCK BOLTING TO BE CONFIRMED ON SITE BY GEOTECHNICAL ENGINEER.
9. ANY EXCAVATION (i.e. SERVICES) ADJACENT TO FOOTINGS SHALL NOT EXTEND INTO A 2 : 1 INFLUENCE LINE FROM THE BEARING SURFACE OF THE FOOTING. REFER TO DETAILS ON THIS DRAWING.
10. FOR EARTHWORKS REFER TO CIVIL NOTES

## REINFORCEMENT

1. REINFORCEMENT SYMBOLS:
R DENOTES GRADE 250 R HOT ROLLED PLAIN BARS TO AS 1302 P DENOTES GRADE 450 P HARD-DRAWN WIRE REINFORCING FABRIC TO AS 1304.M DENOTES GRADE 450 W HARD-DRAWN PLAIN WIRE TO AS 1303
N DEFORMED BAR NORMAL DUCTILITY TO AS/NZS 4671 GRADE D500N
L DEFORMED BAR LOW DUCTILITY TO AS/NZS 4671 GRADE D500L
RN RECTANGULAR WIRE MESH NORMAL DUCTILITY TO AS/NZS 4671
RL RECTANGULAR WIRE MESH LOW DUCTILITY
SN SQUARE WIRE MESH NORMAL DUCTILITY
SL SQUARE WIRE MESH LOW DUCTILITY TO AS/NZS 4671




2. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.
3. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN OR OTHERWISE APPROVED IN WRITING BY THE ENGINEER. LAPS SHALL BE IN ACCORDANCE WITH AS 3600 AND NOT LESS THAN THE DEVELOPMENT LENGTH FOR EACH BAR.
4. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE ENGINEER.
5. FABRIC SHALL BE LAPPED 2 TRANSVERSE WIRES PLUS 50mm. WHERE FABRIC LAPS, SHEETS TO HAVE MAXIMUM 3 LAYERS AT ANY POINT. CUT BACK FABRIC AT CORNERS AS REQUIRED.
6. BUNDLED BARS SHALL BE TIED TOGETHER AT 30 BAR DIAMETER CENTRES WITH 3 WRAPS OF THE WIRE.
7. FIRE RATING MESH F41 SHALL BE GALVANISED, HAVE 20mm COVER AND BE TIED USING GALVANISED TIE WIRE.
8. WHERE TRANSVERSE TIE BARS ARE NOT SHOWN PROVIDE N12-400 SPLICED WHERE NECESSARY AND LAP WITH MAIN BARS 400mm UNLESS NOTED.
9. ZIGZLES TO BARS SHALL COMPRISE A LENGTH OF 12 BAR DIAMETERS BETWEEN BEGINNING AND END OF AN OFFSET OF 1 BAR DIAMETER.
10. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1 METRE CENTRES BOTH WAYS, AND 800 EACH WAY. FOR FABRIC WHEN POURED ON GROUND AS FORMWORK PROVIDE PLATES UNDER ALL BAR CHAIRS. PLASTIC TIPPED STEEL CHAIRS SHALL NOT BE USED ON EXPOSED FACES IN EXPOSURE CLASSIFICATION B1 AND B2.
11. REINFORCEMENT WITHIN FLOOR OR WALL ELEMENT OF A WET AREA SHALL BE BONDED TO THE EARTHING SYSTEM IF CONDUCTIVE PIPING EXISTS WITHIN THE ELEMENT. IT SHALL BE BONDED IN ACCORDANCE WITH AS 3000.
12. ALL REINFORCEMENT BAR LAPS SHALL BE AS FOLLOWS UNO.

| LAP LENGTH FOR DEFORMED BARS IN SLABS & WALLS: | | | | | | |
|---|---|---|---|---|---|---|
| N12 | N16 | N20 | N24 | N28 | N32 | N36 |
| 450 | 650 | 900 | - | - | - | - |

| LAP LENGTH FOR DEFORMED BARS IN BEAMS & COLUMNS: | | | | | | |
|---|---|---|---|---|---|---|
| N12 | N16 | N20 | N24 | N28 | N32 | N36 |
| 500 | 700 | 1050 | 1450 | 1850 | 2350 | 2800 |

## CONCRETE

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 AND AS 3610 'CURRENT EDITIONS WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS'.
CONCRETE QUALITY
2. ALL CEMENT TO BE TYPE GL (SHRINKAGE LIMITED CEMENT) IN ACCORDANCE WITH AS 3972, EXCEPT THAT THE MAXIMUM SHRINKAGE OF THE CEMENT IN THE MORTAR TEST SAMPLE IN ACCORDANCE WITH AS 2350 SHALL BE LESS THAN 650 MICROSTRAIN

| ELEMENT | STRENGTH GRADE (MPa) (50) | STRENGTH GRADE (MPa) (91) | SLUMP GRADE mm | MAX AGG SIZE mm | MIN CEMENT CONTENT kg/cu.m | COVER (mm) INT | EXT (50) | EXT (91) |
|---|---|---|---|---|---|---|---|---|
| FOOTINGS | 25 | 25 | 80 | 20 | - | - | 50 | 50 |

+ - FOR ONE SURFACE ONLY. PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS2603.

3. (i) ALL CONCRETE IN SLABS AND BEAMS TO BE PROPORTIONED TO LIMIT DRYING SHRINKAGE TO 650 MICROSTRAIN AT 56 DAYS.
(ii) DETAILS OF THE PROPOSED MIX TO BE SUBMITTED & APPROVAL OBTAINED PRIOR TO POURING ANY CONCRETE. (iii) SHRINKAGE TEST SHALL BE CARRIED OUT BY AN APPROVED NATA REGISTERED LABORATORY IN ACCORDANCE WITH AS 1012 PART 13. TESTS SHALL BE CONDUCTED ON THE FIRST BATCH OF CONCRETE USED IN SUSPENDED SLABS AND SUBSEQUENTLY AT THE RATE OF ONE TEST EVERY ADDITIONAL 100 CUBIC METRES OF CONCRETE SUPPLIED. THREE SPECIMENS SHALL BE TAKEN FOR EACH TEST AND THE SHRINKAGE SHALL BE THE AVERAGE OF THE THREE RESULTS. THE COST OF TESTING SHALL BE BORNE BY THE CONTRACTOR AS SHALL ANY ADDITIONAL TESTS REQUIRED IF THE CONCRETE FAILS TO MEET THE SPECIFIED SHRINKAGE LIMITS.
4. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING.
5. CLEAR CONCRETE COVER TO ALL REINFORCEMENT SHALL BE AS NOTED ABOVE UNLESS SHOWN OTHERWISE.
NOTE: WHERE CONCRETE IS POURED ON A VAPOUR PROOF MEMBRANE 0.2mm MINIMUM THICKNESS, THE COVER TO CONCRETE CAST AGAINST GROUND MAY BE REDUCED BY 10mm.
6. CONCRETE SIZES SHOWN DO NOT INCLUDE THICKNESS OF APPLIED FINISHES. NO FINISH WHICH DECREASES COVER IS ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
7. DEPTHS OF BEAMS ARE GIVEN FIRST AND INCLUDE SLAB THICKNESS.
8. FOR CHAMFERS GRIP GROOVES, REBATES, ETC. REFER TO ARCHITECT'S DETAILS. MAINTAIN COVER TO REINFORCEMENT AT THESE DETAILS.
9. NO HOLES, CHASES, BLOCKOUTS, DUCTS OR EMBEDMENT OF PIPES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE ENGINEER.
10. CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO THE APPROVAL OF THE ENGINEER.
11. ALL CONCRETE COLUMNS GREATER THAN 12 METRES IN HEIGHT SHALL BE POURED A MINIMUM OF 4 HOURS PRIOR TO SLAB OR BEAM OVER.
12. THE FINISH CONCRETE SHALL BE MECHANICALLY VIBRATED TO ACHIEVE A DENSE HOMOGENEOUS MASS COMPLETELY FILLING THE FORMWORK THOROUGHLY, EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED WITH MECHANICAL VIBRATORS.
13. DURING OF ALL CONCRETE IS TO BE ACHIEVED BY KEEPING SURFACES CONTINUOUSLY WET FOR A PERIOD OF THREE DAYS, AND THE PREVENTION OF LOSS OF MOISTURE FOR A TOTAL OF 7 DAYS FOLLOWED BY A GRADUAL DRYING OUT. APPROVED SPRAYED ON CURING COMPOUNDS MAY BE USED WHERE NO FLOOR FINISHES ARE PROPOSED. POLYTHENE SHEETING OR WET HESSIAN MAY BE USED IF PROTECTED FROM WIND AND TRAFFIC.
14. CONSTRUCTION SUPPORT PROPPING IS TO BE LEFT IN PLACE WHERE NEEDED TO AVOID OVERSTRESSING THE STRUCTURE DUE TO CONSTRUCTION LOADING. NO BRICKWORK OR PARTITION WALLS ARE TO BE CONSTRUCTED ON SUSPENDED LEVELS UNTIL SEVEN DAYS AFTER PROPPING HAS BEEN REMOVED AND THE SLAB PRE-LOADED WITH THE BRICKS OR UNITS TO BE USED IN THE WALL.
15. REPAIRS TO CONCRETE SHALL NOT BE ATTEMPTED WITHOUT THE PERMISSION OF THE ENGINEER.
16. CAST-IN FIXINGS, BOLTS ETC. SHALL NOT BE ALTERED WITHOUT THE PERMISSION OF THE ENGINEER.
17. THE CONCRETE SHALL BE PLACED IN SUCH A MANNER AS TO AVOID SEGREGATION OR LOSS OF MATERIALS. MAXIMUM FALL OF CONCRETE = 1500mm OR USE ENCLOSED CHUTES OR SIMILAR.
18. SULPHATE RESISTANT CONCRETE TO BE USED IN ALL FOOTINGS, PILES AND PILE CAPS.

## EXCAVATION IN ROCK

1. A LARGE VOLUME OF THE BULK AND DETAILED EXCAVATION IS EXPECTED TO BE IN MEDIUM AND HIGH STRENGTH ROCK.
2. THE CONTRACTOR SHALL SUBMIT HIS PROPOSAL FOR EXCAVATION TO THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF WORK.
3. THE METHOD SHALL COMPLY WITH ALL THE REQUIREMENTS OF THE DA CONDITIONS, PARTICULARLY IN RELATION TO NOISE LEVELS, VIBRATION AND WORK HOURS.
4. VIBRATIONS SHALL NOT EXCEED 5mm/sec AND ALARMS SHALL BE INSTALLED TO MONITOR THESE VIBRATIONS.
5. ALL THE REQUIREMENTS OF THE GEOTECHNICAL REPORT FOR THE SITE SHALL BE OBSERVED AND MET.

## STRUCTURAL STEEL

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 4100 AND AS 1554 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. ALL STEEL SHALL BE IN ACCORDANCE WITH AS 3678 AND AS 3679 TO GRADE 250 UNLESS NOTED.
3. THREE(3) COPIES OF WORKSHOP FABRICATION DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AT LEAST 14 DAYS PRIOR TO COMMENCEMENT OF FABRICATION AND PERMISSION TO USE OBTAINED PRIOR TO FABRICATION. PERMISSION TO USE DOES NOT RELIEVE THE BUILDER OF THE FULL RESPONSIBILITY FOR DIMENSIONS, FIT AND COMPLIANCE WITH ARCHITECTURAL AND ENGINEERING DRAWINGS.
4. BOLTS:-
- 4.6/S: COMMERCIAL BOLTS OF GRADE 4.6 TO AS 1111, SNUG TIGHTENED.
- 8.8/S: HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS 1252,SNUG TIGHTENED
- 8.8/TB :HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252 FULLY TENSIONED TO AS 4100 AS A BEARING JOINT.
- 8.8/TF: HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252 FULL TENSIONED AS A FRICTION JOINT WITH FACING SURFACES LEFT UNCOATED.
- ALL BOLTS SHALL BE M20 GRADE 8.8/TC UNLESS NOTED.
- NO CONNECTION SHALL HAVE LESS THAN 2 BOLTS.
- ALL BOLTS, NUTS AND WASHERS TO BE GALVANISED (HEAVY) TO AS 468 TABLES 1 & 2.
- TB AND TF BOLTS TO BE INSTALLED USING APPROVED LOAD INDICATING WASHERS, OR BY TURN OF NUT CONTROL OF TENSIONING.
5. ALL WELDS SHALL BE 6mm CONTINUOUS FILLET TYPE GP (GENERAL PURPOSE) UNLESS NOTED OTHERWISE. BUTT WELDS SHALL BE COMPLETE PENETRATION WELDS TO AS 1554.
6. ALL PLATES SHALL BE 10mm THICK UNLESS NOTED OTHERWISE.
7. STEELWORK TO BE CONCRETE ENCASED SHALL BE WRAPPED WITH F41 STEELWIRE FABRIC AND SHALL BE 50mm MINIMUM CONCRETE COVER TO THE STRUCTURAL STEEL.
8. PROVIDE SEAL PLATES TO ALL HOLLOW SECTIONS. PROVIDE VENT HOLES TO HOLLOW MEMBERS AND DRAIN HOLES TO ALL MEMBERS TO BE HOT DIP GALVANISED.
9. IT IS THE BUILDER'S RESPONSIBILITY TO ENSURE THAT STEELWORK IS SECURELY TEMPORARILY BRACED AS NECESSARY TO STABILISE THE STRUCTURE DURING ERECTION.
10. STRUCTURAL STEELWORK SHALL HAVE THE FOLLOWING SURFACE TREATMENT IN ACCORDANCE WITH THE SPECIFICATION AND AS 2312 : 2002

| ELEMENT | SURFACE CLEANING | PROPOSED DEAD LOAD kPa |
|---|---|---|
| INTERNAL | WIRE BRUSH CLEAN | 2 COATS ZINC PHOSPHATE (AL42) |
| EXTERNAL | ALL STEELWORK TO BE PREPARED & PAINTED WITH A PROPRIETARY PAINT SYSTEM SYSTEM SUITABLE FOR THE DEGREE OF EXPOSURE AS SUPPLIED AS SPECIFIED BY MANUFACTURER. FINISH TO BE GUARANTEED FOR A MINIMUM OF 10 YEARS BY SUPPLIER | |
| INTERNAL | WIRE BRUSH CLEAN | 2 COATS ZINC PHOSPHATE (AL42) |
| EXTERNAL | BLAST CLEAN TO CLASS 2.5 | INORGANIC ZINC SILICATE PAINT TO AS 3750.1 (5) MICROMETRES THICK (DFT) (ICES IF SEVERE) |
| ALL | HOT DIP GALVANISED (HEAVY) TO AS4680 TABLES 1 & 2 AND AS2312: 2002 TABLE 5.3 H35 600 (H55 900 IF SEVERE) | |

11. THE BUILDER SHALL PROVIDE ALL CLEATS AND DRILL ALL HOLES NECESSARY FOR FIXING STEEL TO STEEL AND TIMBER TO STEEL WHETHER OR NOT DETAILED ON THE DRAWINGS.
12. ALL STRUCTURAL STEELWORK BUILT INTO INTERNAL BRICKWORK TO BE HOT DIPPED GALVANISED (HEAVY) TO AS 4680 TABLES 1 & 2.
13. ALL STRUCTURAL STEELWORK BUILT INTO EXTERNALLY EXPOSED BRICKWORK TO BE DURABILITY GRADE 4A (OR APPROVED EQUIVALENT SYSTEM) UNLESS NOTED OTHERWISE.
14. ALL STRUCTURAL STEEL MEMBERS TO BE PROVIDED WITH THE FIRE RATING TO BCA REQUIREMENTS. FOA (BY ARCHITECT) TO CONFIRM.

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

| AMDT | DATE | BY | DESCRIPTION |
|---|---|---|---|
| 1 | 21.05.11 | DWS | ISSUED FOR FINAL CO-ORDINATION |



CIVIL STRUCTURAL BUILDING SERVICES

JONES NICHOLSON CONSULTING ENGINEERS PTY. LTD.
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SUTHERLAND · WOLLONGONG · GOLD COAST · GOULBURN · PICTON

DESIGN : MM
DRAWN : DWS
DATE : 2010
DRG SIZE : A1
SCALE :
PROJECT MGR : MM

NOTES SHEET

**LIGHT HORSE BUSINESS CENTRE**
OLD WALGROVE ROAD
EASTERN CREEK, NSW
**DIAL A DUMP**

080233
S01 1

Access and walkways

The conveyor is serviced via two platforms running parallel to the conveyor over its entire length. Entry to these platforms are via the culvert. From the platforms all maintenance for the conveyor can be carried out. Access to the chute is via an Abseil Access Corridor which is mounted centrally on the top surface of the chute. Entry to the Abseil Access Corridor is via the conveyor access platforms. From this corridor all aspects of maintenance and inspection for the chute can be carried out.

In the event that additional access is required to the conveyor or chute this is obtained via mobile access platforms.

Safety

All aspects of the system are adequately guarded as per the relevant Australian Standard:

*Conveyors*:

- AS 1755-2000 safety requirements.
- AS 1755-1986 Design, construction, installation and operation safety requirements.

*Access*:

- AS 1657-1992 Fixed platforms, walkways, stairways and ladders. Design Construction and installation.
- AS 4488 Industrial rope access systems specifications.
- AS 1891-1983 Industrial safety belts and harnesses.
- Access to the conveyor is via a locked gate in the culvert. Access to the conveyor and chute will only be granted to skilled and trained personal while the plant is shutdown.

This is in addition to all required safety features i.e. emergency stops, lockouts etc.

Blockages

Should the conveyor become blocked the plant is immediately shutdown and personal will unblock the conveyor manually via the two access platforms running alongside the conveyor.

Should the chute become blocked the plant is immediately shutdown and personal will unblock the conveyor manually via the Abseil Access Corridor located on the chute. Direct access to the blockage would be through one of the three maintenance hatches located in the top surface of each 9M section of the pipe. The blockage would be removed via high powered water cutting lances operated by skilled and trained personnel. Each 9M section of pipe will have three 1250mm x 300mm maintenance hatches and one centrally located connection point for a water lance.

Water Supply

The water supply for the misting system and water lances will come from the on-site irrigation system.

Sprays and Sprinklers

In addition to the on-site misting system, the exit point of the chute will have a misting system fitted via the pipe flange. The water supply for the misting system will come from the on-site irrigation system. Pipework for the misting system will run alongside the Abseil Access Corridor and conveyor access platforms.

**APPENDIX A**

Commercial in Confidence

# DADI EASTERN CREEK

# WEIGHING PROCESS AND WASTE TRANSFER CHUTE

**Dial A Dump Industries Pty Ltd ABN 75 131 565 583**

**PO Box 1040**

**MASCOT NSW 1460**

**T: 9519 9999 / F: 9516 5999**

**Email: cs@dadi.com.au**

# Contents

## Introduction

Input waste from conveyor one is diverted to one of two conveyors, conveyor two or three, material is allowed to build up on the conveyor until the weight of the material reaches 500kg. Once the target weight is reached the input waste from conveyor one is diverted to the second weighing conveyor. Once the material is diverted and no more material is being fed onto the first weighing conveyor the material is weighed. Once weighed the material is ejected onto conveyor four which transfers the material to conveyor five, then conveyor six which is a downhill conveyor and finally into the chute system.

## Design criteria

Handle maximum of 200TPH at 1600kg/$m^3$. Handle

minimum of 6TPH at 200kg/$m^3$.

Handle maximum material lump size of 450mm. Include

a fully enclosed conveyor/chute system.

Include a waste drop height of no more than 3 metres between the end of the sock and the base of the quarry.

Include a waste drop height of no more than 3 metres between the end of the sock and the base of the quarry

Incorporate maintenance access points.

## Material flows and hopper sizing for weighing conveyors

Target weight of 500kg on each the conveyor before material is weighed.

**200TPH at 1600kg/$m^3$**

Feed rate of 55.55kg/s therefore 9.0 seconds to deliver 500kg.

Volume of 500kg of material at 1600kg/$m^3$: 0.3125$m^3$ Therefore

minimum volume of hopper is 0.3125$m^3$

**6TPH at 200kg/$m^3$**

Feed rate of 1.66kg/s therefore 301 seconds to deliver 500kg. Volume

of 500kg of material at 200kg/$m^3$: 2.5$m^3$

Therefore minimum volume of hopper is 2.5$m^3$

Due to the volume required of the lighter material to achieve the minimum 500kg weight the minimum size of hopper is 2.5$m^3$. To allow for coning and rolling of the material a minimum of 5$m^3$ has been selected.

Minimum weight on the conveyor at any time is 500kg.

## Material flows and sizing for conveyors leading to the chute

**200TPH at 1600kg/m$^3$**

Feed rate of 55.55kg/s

Volume of 0.0347m$^3$/s

Conveyors running at 1.25m/s

Burden depth of material 0.0347/ (1.25*1.3) = 0.02135m

Burden depth of material is 0.02135m; this assumes that the material is of a uniform density and is a free flowing material that demonstrates liquid like properties during settling on the belt. In practice the material will not be of a uniform density and will not display liquid like properties during settling on the belt and will have large amounts of vacant space in the material flow therefore we can assume that the burden depth of the material is 250% greater than the theoretical valve.

Adjusted burden depth of the material 0.02135*2.5 = 0.053m

**6TPH at 200kg/m$^3$** Feed

rate of 1.66kg/s Volume

of 0.008m$^3$/s

Conveyors running at 1.25m/s

Burden depth of material 0.0347/ (1.25*1.3) = 0.0049m

Burden depth of material is 0.0049m; this assumes that the material is of a uniform density and is a free flowing material that demonstrates liquid like properties during settling on the belt. In practice the material will not be of a uniform density and will not display liquid like properties during settling on the belt and will have large amounts of vacant space in the material flow therefore we can assume that the burden depth of the material is 250% greater than the theoretical valve.

Adjusted burden depth of the material 0.0049*2.5 = 0.0123m

## Conveyor sizing

As the in feed conveyor to the weighing system has been previously selected as a 1500mm wide belt conveyor, the conveyors in the weighing system and leading to the chute will also be 1500mm wide.

Useable width of a 1500mm wide belt conveyor is to be taken as 1300mm.  Weigh

conveyor lengths:

Both conveyors must be capable of holding a minimum of 5m3 of material in a hopper mounted on  the conveyor. Based on a conveyor width of 1.3m and a hopper height of 1.2m the minimum length  of the hopper would be 3.2m

The overall length of the conveyor is to be kept to a standard length that allows for ease of  installation and maintenance. A length of approx. 6.6m was selected.

## Power required for conveyors

| | |
|---|---|
| **Conveyor name** | conveyors 2&3 |
| | |
| **G (acceleration due to Gravity)** | 9.807 |
| **Belt Width** | 1.5m |
| **Drum Centres** | 6.6m |
| **Drum Diameter** | 0.4m |
| **200 tonnes per hour** | 55.55Kg/s |
| **Tonnes/metre cubed** | 1600Kg/m3 |
| **Weight of belt** | 11Kg.m |
| **Coefficient of friction (static)** | 0.6 |
| **Coefficient of friction (moving)** | 0.6 |
| **Acceleration time** | 2s |
| **Depth of material** | 1.2m |
| **Volume delivered per second** | 0.0347m3/s |
| **Linear velocity** | 1.25m/s |
| **Angular speed** | 6.25rad/s |
| **RPM** | 60.27000964 |
| **Gearbox Ratio** | 24.4732:1 |
| **Efficiency of gearbox** | 0.97 |
| **Load** | 645.2kg |
| **Force** | 4199.74N |
| **Torque required accelerate** | 839.947168Nm |
| **Angle** | 0 degrees |
| **Sin of angle** | 0 |
| **Force at angle** | 4199.73584N |
| **Torque required to accelerate at angle** | 839.947Nm |
| **Power required** | 5.46KW |

Both weigh conveyors are identical.

| | |
|---|---|
| **Conveyor name** | Conveyor 4 |
| | |
| **G (acceleration due to Gravity)** | 9.807 |
| **Belt Width** | 1.5m |
| **Drum Centres** | 25m |
| **Drum Diameter** | 0.4m |
| **200 tonnes per hour** | 55.55Kg/s |
| **Tonnes/metre cubed** | 1600Kg/m3 |
| **Weight of belt** | 11Kg.m |
| **Coefficient of friction (static)** | 0.6 |
| **Coefficient of friction (moving)** | 0.6 |
| **Acceleration time** | 2s |
| **Depth of material** | 0.053m |
| **Volume delivered per second** | 0.0347m3/s |
| **Linear velocity** | 1.25m/s |
| **Angular speed** | 6.25rad/s |
| **RPM** | 60.27000964 |
| **Gearbox Ratio** | 24.4732:1 |
| **Efficiency of gearbox** | 0.97 |
| **Load** | 3306kg |
| **Force** | 21519.42N |
| **Torque required accelerate** | 4303.88304Nm |
| **Angle** | 0 degrees |
| **Sin of angle** | 0 |
| **Force at angle** | 21519.42N |
| **Torque required to accelerate at angle** | 4303.88304Nm |
| **Power required** | 28.00KW |

| | |
|---|---|
| **Conveyor name** | Conveyor 5 |
| | |
| **G (acceleration due to Gravity)** | 9.807 |
| **Belt Width** | 1.5m |
| **Drum Centres** | 28m |
| **Drum Diameter** | 0.4m |
| **200 tonnes per hour** | 55.55Kg/s |
| **Tonnes/metre cubed** | 1600Kg/m3 |
| **Weight of belt** | 11Kg.m |
| **Coefficient of friction (static)** | 0.6 |
| **Coefficient of friction (moving)** | 0.6 |
| **Acceleration time** | 2s |
| **Depth of material** | 0.053m |
| **Volume delivered per second** | 0.0347m3/s |
| **Linear velocity** | 1.25m/s |
| **Angular speed** | 6.25rad/s |
| **RPM** | 60.27000964 |
| **Gearbox Ratio** | 24.4732:1 |
| **Efficiency of gearbox** | 0.97 |
| **Load** | 3702.72kg |
| **Force** | 24101.75N |
| **Torque required accelerate** | 4820.349Nm |
| **Angle** | 0 degrees |
| **Sin of angle** | 0 |
| **Force at angle** | 24101.75N |
| **Torque required to accelerate at angle** | 4820.349Nm |
| **Power required** | 31.36KW |

| | |
|---|---|
| **Conveyor name** | Conveyor 6 |
| | |
| **G (acceleration due to Gravity)** | 9.807 |
| **Belt Width** | 1.5m |
| **Drum Centres** | 88m |
| **Drum Diameter** | 0.4m |
| **200 tonnes per hour** | 55.55Kg/s |
| **Tonnes/metre cubed** | 1600Kg/m3 |
| **Weight of belt** | 11Kg.m |
| **Coefficient of friction (static)** | 0.6 |
| **Coefficient of friction (moving)** | 0.6 |
| **Acceleration time** | 2s |
| **Depth of material** | 0.053m |
| **Volume delivered per second** | 0.0347m3/s |
| **Linear velocity** | 1.25m/s |
| **Angular speed** | 6.25rad/s |
| **RPM** | 60.27000964 |
| **Gearbox Ratio** | 24.4732:1 |
| **Efficiency of gearbox** | 0.97 |
| **Load** | 11637.12kg |
| **Force** | 75748.34N |
| **Torque required accelerate** | 15149.6683Nm |
| **Angle** | 20 degrees |
| **Sin of angle** | 0.342020143 |
| **Force at angle** | 85213.82776N |
| **Torque required to accelerate at angle** | 17042.766Nm |
| **Power required** | 110.88KW |

## Notes on conveyor 6

Conveyor 6 is a downhill conveyor feeding the chute.
Due to the conveyor running at a negative angle the conveyor is fitted with a mechanical brake so that if the power to the motor fails or is turned off the brake will stop the conveyor from running away.

## Chute design

The chute is to be designed to transfer material to the base of the quarry.
The chute must be able to handle the expected tonnages and volumes of waste that is fed into it
Handle maximum of 200TPH at 1600kg/$m^3$. Handle
minimum of 6TPH at 200kg/$m^3$.
Handle maximum material lump size of 450mm. Include
a fully enclosed conveyor/chute system.
Include a waste drop height of no more than 3 metres between the end of the sock and the base of the quarry.
Include a waste drop height of no more than 3 metres between the end of the sock and the base of the quarry
Incorporate maintenance access points.

Taking one particle of the waste stream entering the chute and assuming that the object starting speed is 1.25m/s, the coefficient of friction between the chute and the object is 0.4, the object starts from the top of the chute giving a sliding length of 81 metres and it does not roll we can calculate the following for the objects acceleration and final velocity.

**Acceleration:**
$F=\mu N=\mu mg\cos 50$
$Ma=mg\sin 50-\mu mg\cos 50$
So $a=g\sin 50-\mu g\cos 50$
A = 4.99m/s

**Final velocity:**
$Vf^2=Vi^2+2ad$
$Vf^2 = 1.25^2+2*4.99*81$
VF = 28.45m/s

This equation does not account for air resistance as the drag coefficient for the waste stream is undeterminable. Based on the above calculations the material will rapidly accelerate upon entering the chute and the material stream will thin before exiting the chute.

**Chute capacity**

Based on a maximum material volume entering the chute of 0.0347$m^3$/s at the start of the pipe the cross sectional area of the material can be given by:

CSA=Effective conveyor width*burden depth
CSA=1.3*0.053
CSA = 0.0689$m^2$

The smallest section of the chute is 2.28m, giving a CSA of 5.544$m^{2.}$ This is 80.46 times larger than the material CSA. Based on the above calculations the chute is large enough at its smallest location to handle the waste stream as well as any miscellaneous items that manage to enter the system up to 1950mm long. The presence of items greater than 450mm long in the system is highly unlikely as the shredder will size material to 450mm.

## Maintenance access

Access to the weigh conveyors is via a series of stairways and access platforms that will provide uninhibited access to all parts of the conveyors. The weighing conveyor system is fully sealed and access doors are fitted to all transfer chutes for maintenance access.

Access to the chute and downhill conveyor is via a series of access platforms and stairways that will run alongside the chute and conveyor. The motor/gearbox and braking system for the downhill conveyor is located at the base of the culvert for ease of maintenance. Access to the platforms and stairways for the chute and downhill conveyor will also be from the base of the culvert. The covers on the conveyors and weighing system will have removable sections for maintenance.

The chute will have regular inspection points throughout its length.

## Material drop height

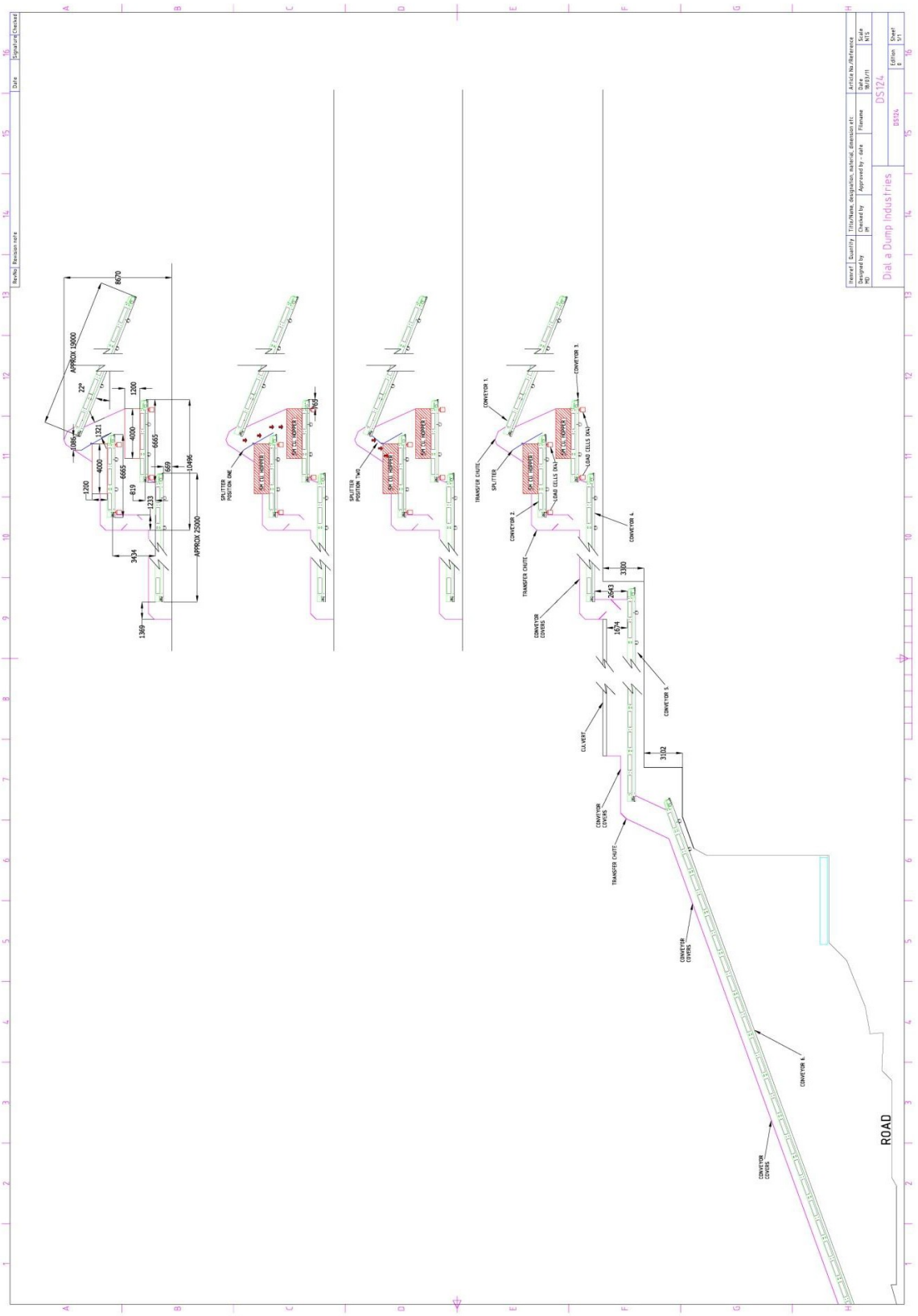
The maximum material drop height in the weighing system is currently 1.9m.

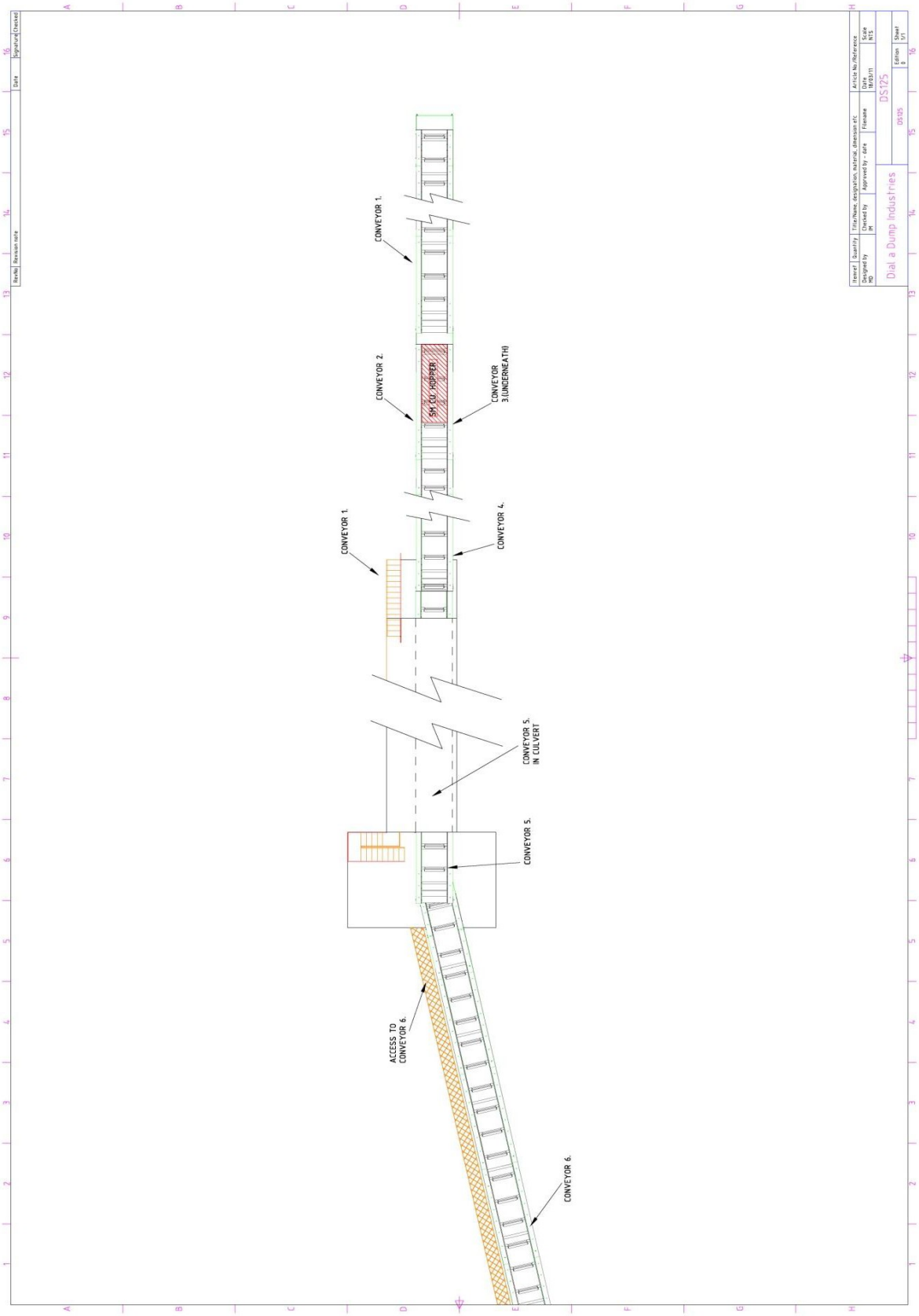
Once the material exits the chute it is guided through a material sock that will then drop the material from a height of no greater than three metres.

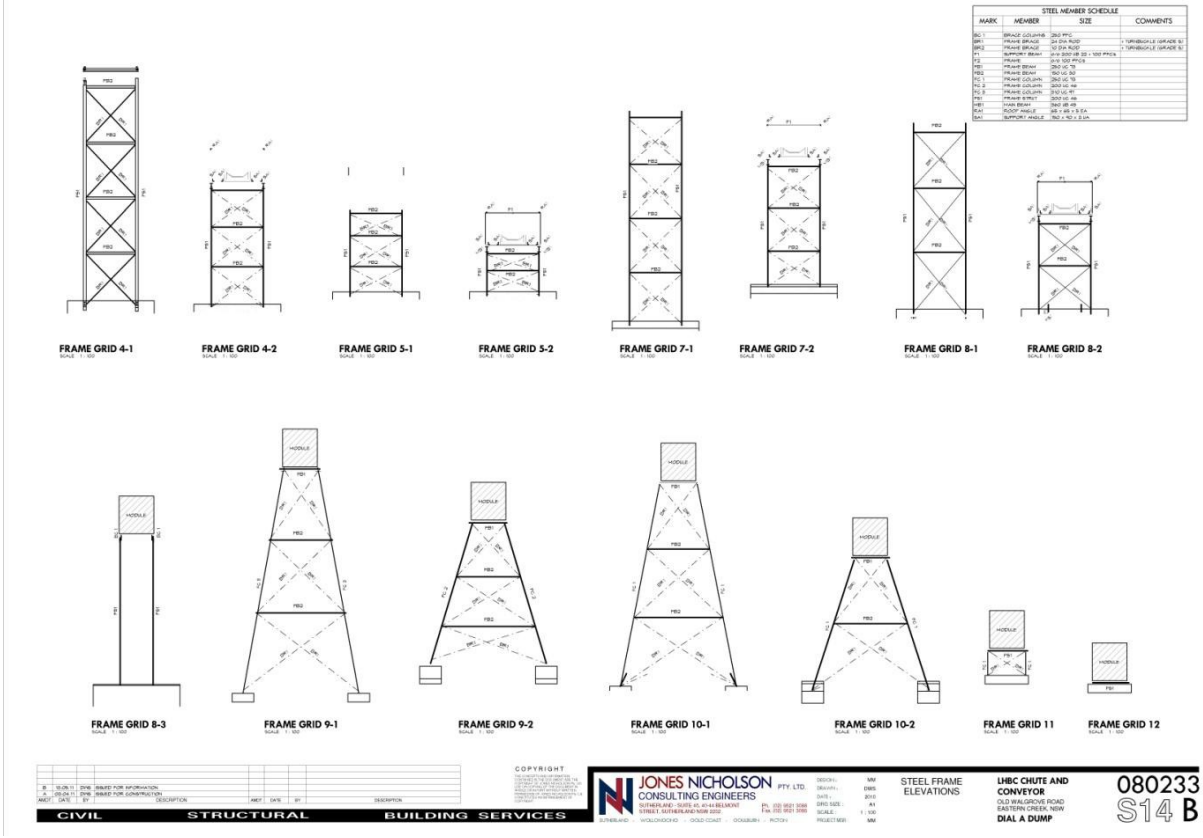
## Dust suppression

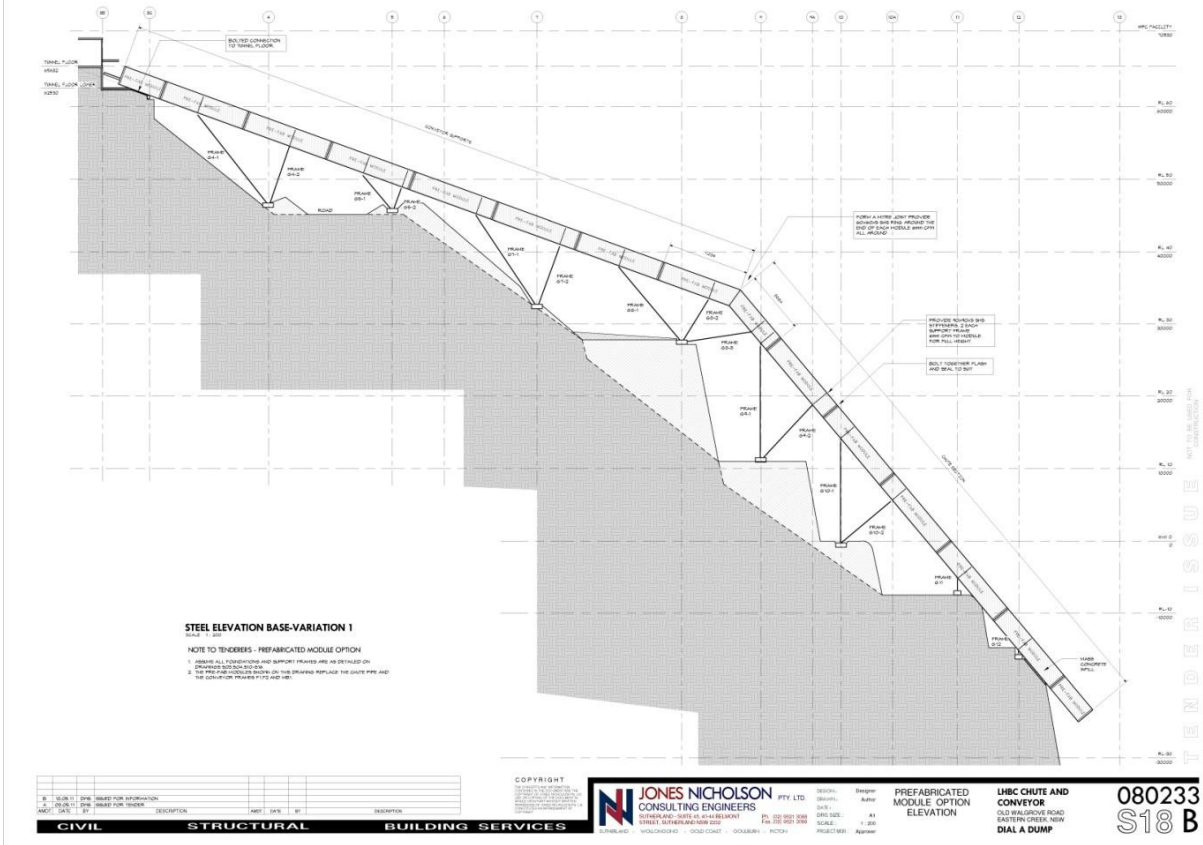
The entire conveyor system including the weighing system is fully sealed once it leaves the MPC building. The chute is a fully enclosed system. Once the material exits the sock that will guide material to the ground it will past through a misting system to eliminate dust.

# Appendix


APPROX 19000
8670
22°
1200
1086
1321
4000
6665
669
10496
APPROX 25000
3434
1369
SPLITTER POSITION ONE
SPLITTER POSITION TWO
TRANSFER CHUTE
SPLITTER
CONVEYOR 1
CONVEYOR 2
CONVEYOR 3
CONVEYOR 4
LOAD CELLS 5KG
3300
2643
1674
3102
CONVEYOR 5
CULVERT
CONVEYOR COVERS
CONVEYOR 6
ROAD
Dal a Dump Industries
DS124


CONVEYOR 1.
CONVEYOR 2.
55t CU. HOPPER
CONVEYOR 3 (UNDERNEATH)
CONVEYOR 1.
CONVEYOR 4.
CONVEYOR 5. IN CULVERT
CONVEYOR 5.
ACCESS TO CONVEYOR 6.
CONVEYOR 6.
Dial a Dump Industries
DS125


STEEL MEMBER SCHEDULE
MARK
MEMBER
SIZE
COMMENTS
FRAME GRID 4-1
FRAME GRID 4-2
FRAME GRID 5-1
FRAME GRID 5-2
FRAME GRID 7-1
FRAME GRID 7-2
FRAME GRID 8-1
FRAME GRID 8-2
FRAME GRID 8-3
FRAME GRID 9-1
FRAME GRID 9-2
FRAME GRID 10-1
FRAME GRID 10-2
FRAME GRID 11
FRAME GRID 12
COPYRIGHT
JONES NICHOLSON CONSULTING ENGINEERS PTY. LTD.
STEEL FRAME ELEVATIONS
LHBC CHUTE AND CONVEYOR
OLD WALGROVE ROAD
EASTERN CREEK, NSW
DIAL A DUMP
080233
S14 B
CIVIL
STRUCTURAL
BUILDING SERVICES


STEEL ELEVATION BASE-VARIATION 1
NOTE TO TENDERERS - PREFABRICATED MODULE OPTION
COPYRIGHT
JONES NICHOLSON CONSULTING ENGINEERS PTY. LTD.
PREFABRICATED MODULE OPTION ELEVATION
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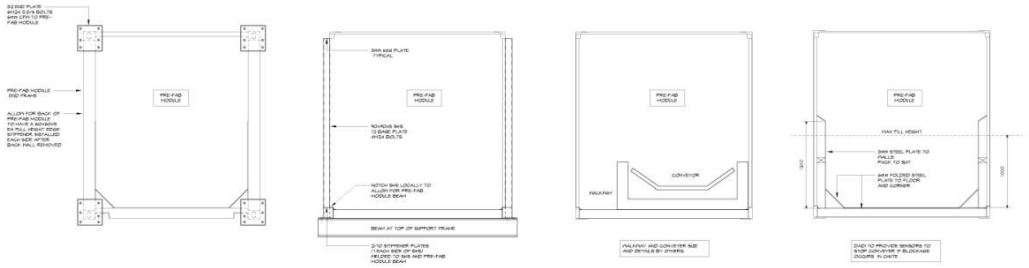
BUILDING SERVICES




TYPICAL MODULE TO MODULE CONNECTION DETAIL | TYPICAL SECTION AT SUPPORT FRAMES | TYPICAL CONVEYOR MODULE SECTION | TYPICAL CHUTE MODULE SECTION

**TYPICAL PRE-FABRICATED MODULE OPTION SECTIONS**

SCALE 1 : 20

THIS DESIGN ASSUMES THE USE OF STANDARD 150? AO AND 20? PRE-FAB MODULES IN GOOD CONDITION. JN TO INSPECT MODULE PRIOR TO FABRICATION TO CONFIRM AND ADVISE OF ANY REMEDIAL WORK.

PRELIMINARY - NOT TO BE USED FOR CONSTRUCTION

| | | | |
|---|---|---|---|
| B | 10.06.11 | DHB | ISSUED FOR INFORMATION |
| A | 09.06.11 | DHB | ISSUED FOR TENDER |
| AMDT | DATE | BY | DESCRIPTION |

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SUTHERLAND - WOLLONGONG - GOLD COAST - GOULBURN - PICTON

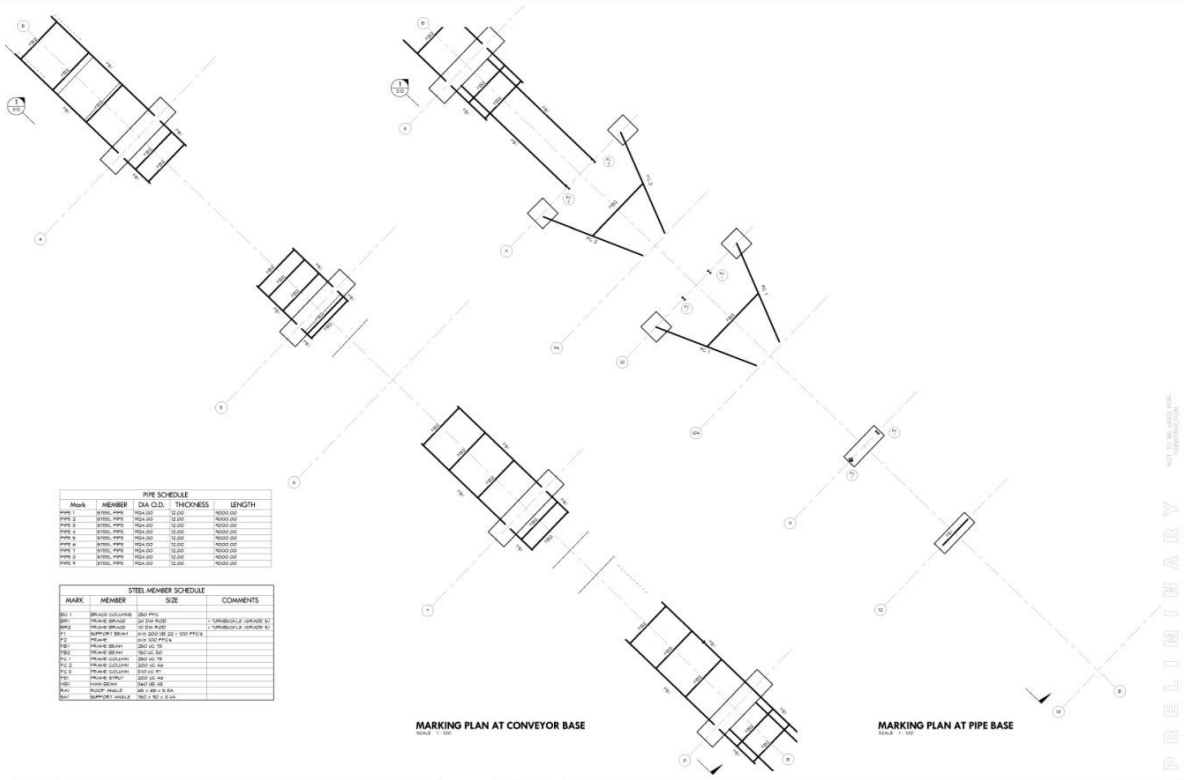
DESIGN: Designer
DRAWN: Author
DATE: -
DRG SIZE: A1
SCALE: 1 : 20
PROJECT MGR: Approver

PREFABRICATED MODULE OPTION DETAILS

LHBC CHUTE AND CONVEYOR
OLD WALGROVE ROAD
EASTERN CREEK, NSW
DIAL A DUMP

080233
S19 B

CIVIL | STRUCTURAL | BUILDING SERVICES



PIPE SCHEDULE

| Mark | MEMBER | DIA O.D. | THICKNESS | LENGTH |
|---|---|---|---|---|
| PIPE 1 | STEEL PIPE | 1524.00 | 12.00 | 10000.00 |
| PIPE 2 | STEEL PIPE | 1524.00 | 12.00 | 10000.00 |
| PIPE 3 | STEEL PIPE | 1524.00 | 12.00 | 10000.00 |
| PIPE 4 | STEEL PIPE | 1524.00 | 12.00 | 10000.00 |
| PIPE 5 | STEEL PIPE | 1524.00 | 12.00 | 10000.00 |
| PIPE 6 | STEEL PIPE | 1524.00 | 12.00 | 10000.00 |
| PIPE 7 | STEEL PIPE | 1524.00 | 12.00 | 10000.00 |
| PIPE 8 | STEEL PIPE | 1524.00 | 12.00 | 10000.00 |
| PIPE 9 | STEEL PIPE | 1524.00 | 12.00 | 10000.00 |

STEEL MEMBER SCHEDULE

| MARK | MEMBER | SIZE | COMMENTS |
|---|---|---|---|
| BC 1 | BRACE COLUMNS | 250 PFC | |
| BR1 | FRAME BRACE | 24 DIA ROD | + TURNBUCKLE (GRADE 8) |
| BR2 | FRAME BRACE | 12.5 DIA ROD | + TURNBUCKLE (GRADE 8) |
| C1 | SUPPORT BEAM | 310 UC 96 @ 22 - 100 PFC'S | |
| F2 | FRAME | 310 UC 96 TYP. | |
| FB1 | FRAME BEAM | 250 UC 73 | |
| FB2 | FRAME BEAM | 150 UC 30 | |
| FC 1 | FRAME COLUMN | 250 UC 73 | |
| FC 2 | FRAME COLUMN | 200 UC 46 | |
| FC 3 | FRAME COLUMN | 310 UC 97 | |
| FS1 | FRAME STRUT | 200 UC 46 | |
| HB1 | MAIN BEAM | 360 UB 56 | |
| RA1 | ROOF ANGLE | 65 x 65 x 6 EA | |
| SA1 | SUPPORT ANGLE | 150 x 90 x 8 EA | |

**MARKING PLAN AT CONVEYOR BASE**

SCALE 1 : 100

**MARKING PLAN AT PIPE BASE**

SCALE 1 : 100

PRELIMINARY - NOT TO BE USED FOR CONSTRUCTION

| | | | |
|---|---|---|---|
| 2 | 29.09.11 | DHB | REVISED TO SUIT END CONNECTIONS |
| 1 | 21.09.11 | DHB | ISSUED FOR FINAL CO-ORDINATION |
| AMDT | DATE | BY | DESCRIPTION |

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SUTHERLAND - WOLLONGONG - GOLD COAST - GOULBURN - PICTON

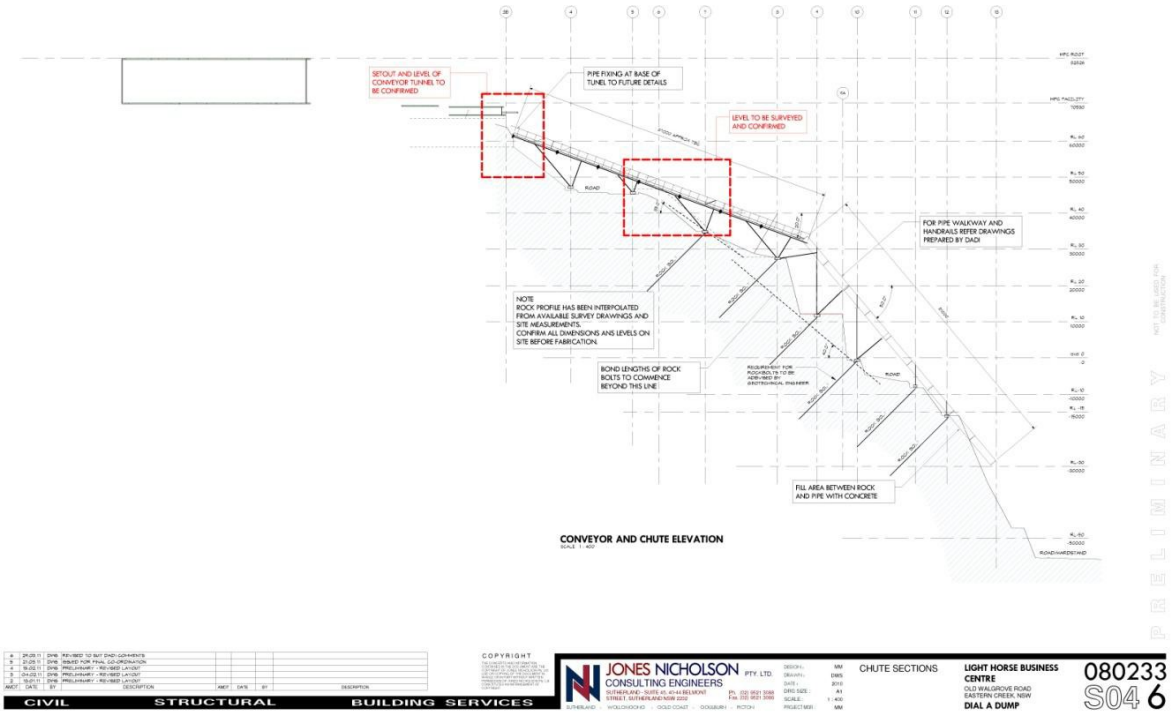
DESIGN: MM
DRAWN: DWS
DATE: 2010
DRG SIZE: A1
SCALE: 1 : 100
PROJECT MGR: MM

STEEL MARKING PLAN AT BASE OF CONVEYOR AND PIPE FRAMES

LIGHT HORSE BUSINESS CENTRE
OLD WALGROVE ROAD
EASTERN CREEK, NSW
DIAL A DUMP

080233
S10 2

CIVIL | STRUCTURAL | BUILDING SERVICES


SETOUT AND LEVEL OF CONVEYOR TUNNEL TO BE CONFIRMED
PIPE FIXING AT BASE OF TUNNEL TO FUTURE DETAILS
LEVEL TO BE SURVEYED AND CONFIRMED
FOR PIPE WALKWAY AND HANDRAILS REFER DRAWINGS PREPARED BY DADI
NOTE
ROCK PROFILE HAS BEEN INTERPOLATED FROM AVAILABLE SURVEY DRAWINGS AND SITE MEASUREMENTS. CONFIRM ALL DIMENSIONS ANS LEVELS ON SITE BEFORE FABRICATION.
BOND LENGTHS OF ROCK BOLTS TO COMMENCE BEYOND THIS LINE
FILL AREA BETWEEN ROCK AND PIPE WITH CONCRETE
CONVEYOR AND CHUTE ELEVATION
PRELIMINARY
CIVIL
STRUCTURAL
BUILDING SERVICES
JONES NICHOLSON CONSULTING ENGINEERS PTY. LTD.
CHUTE SECTIONS
LIGHT HORSE BUSINESS CENTRE
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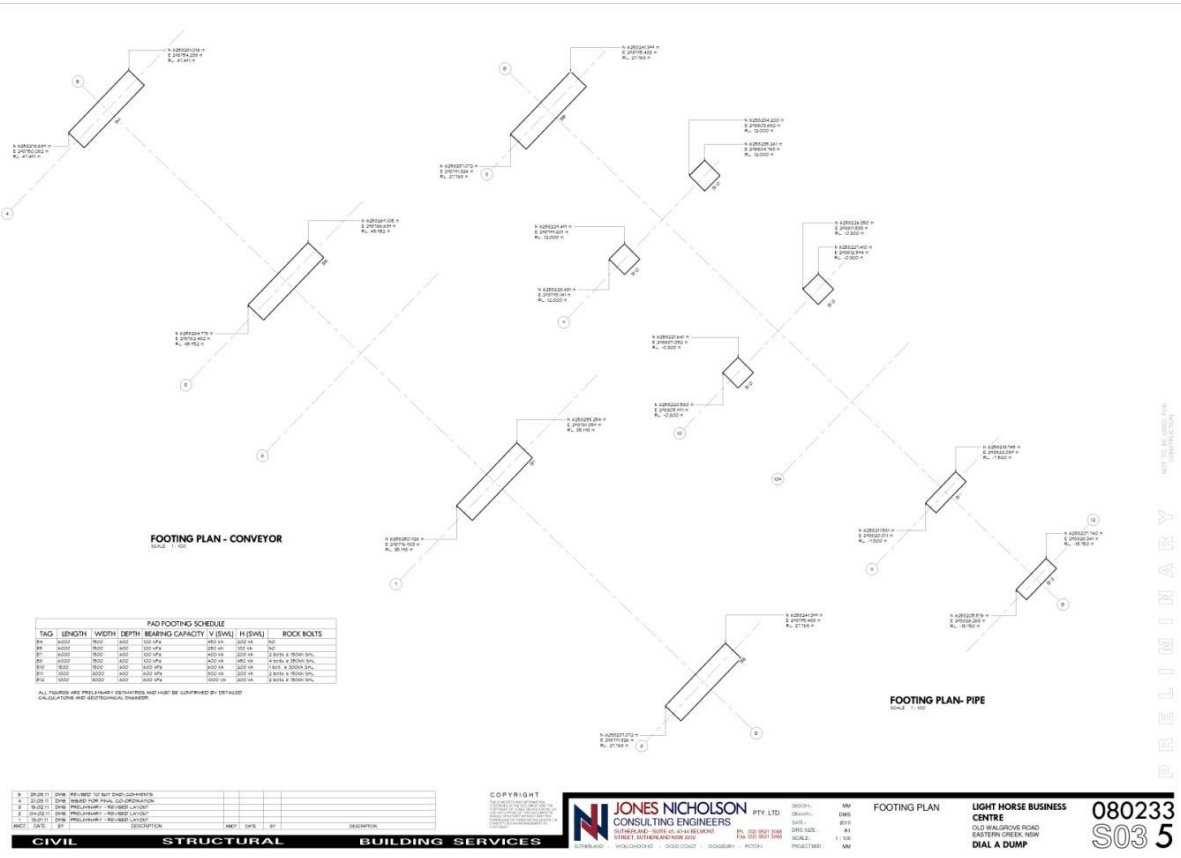
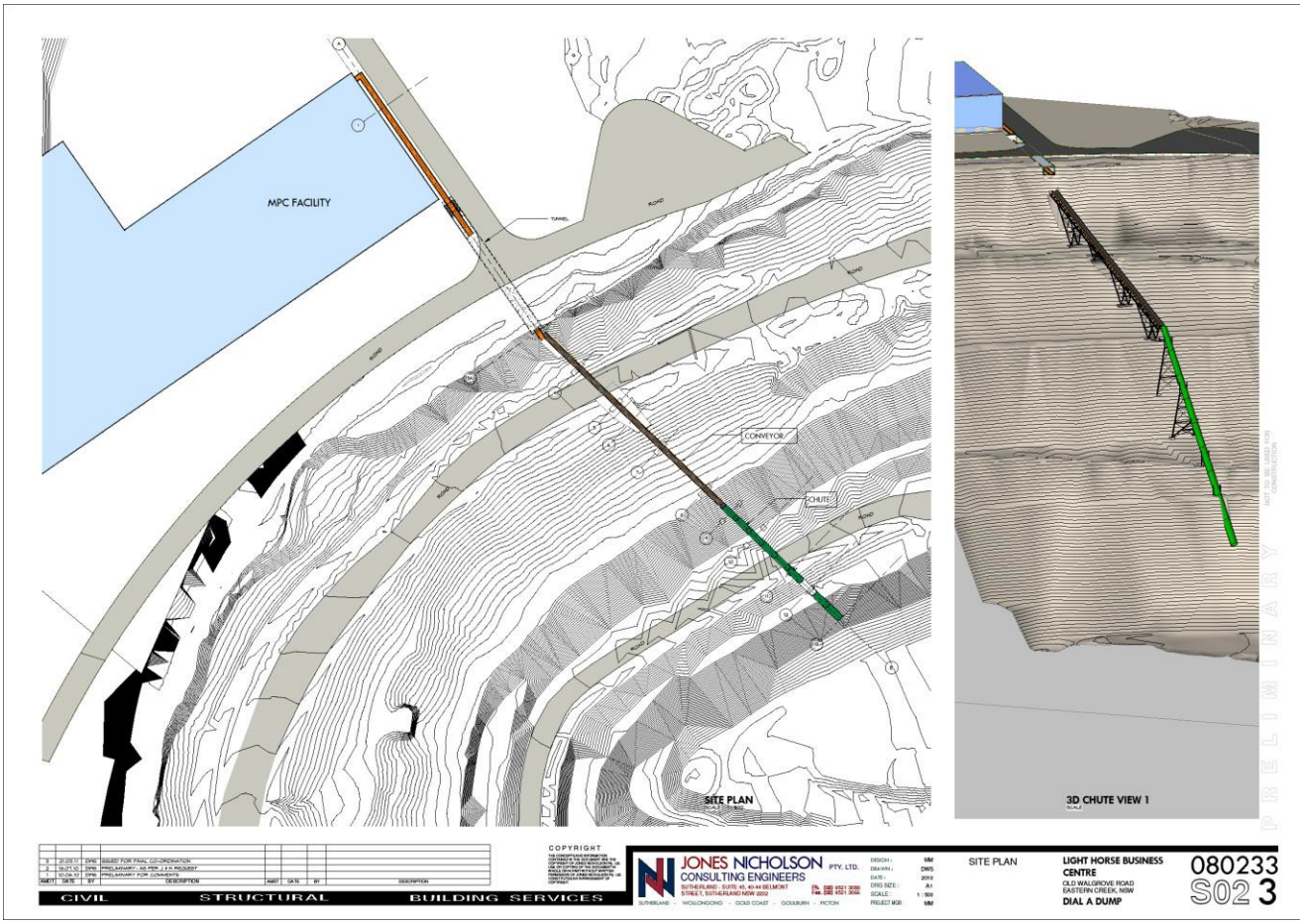
EASTERN CREEK, NSW
DIAL A DUMP
080233
S04 6


FOOTING PLAN - CONVEYOR
PAD FOOTING SCHEDULE
TAG
LENGTH
WIDTH
DEPTH
BEARING CAPACITY
V (SWL)
H (SWL)
ROCK BOLTS
FOOTING PLAN- PIPE
PRELIMINARY
CIVIL
STRUCTURAL
BUILDING SERVICES
JONES NICHOLSON CONSULTING ENGINEERS PTY. LTD.
FOOTING PLAN
LIGHT HORSE BUSINESS CENTRE
OLD WALGROVE ROAD
EASTERN CREEK, NSW
DIAL A DUMP
080233
S03 5


MPC FACILITY
TUNNEL
ROAD
CONVEYOR
CHUTE
SITE PLAN
3D CHUTE VIEW 1
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION
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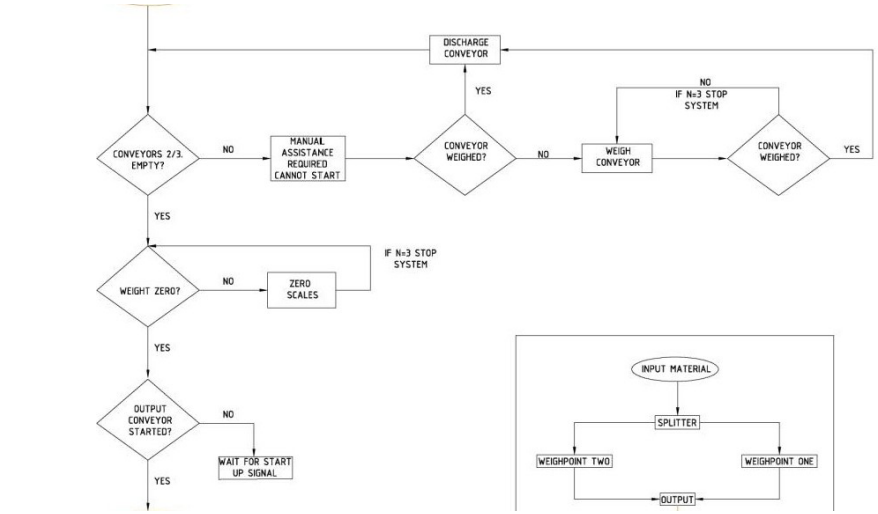
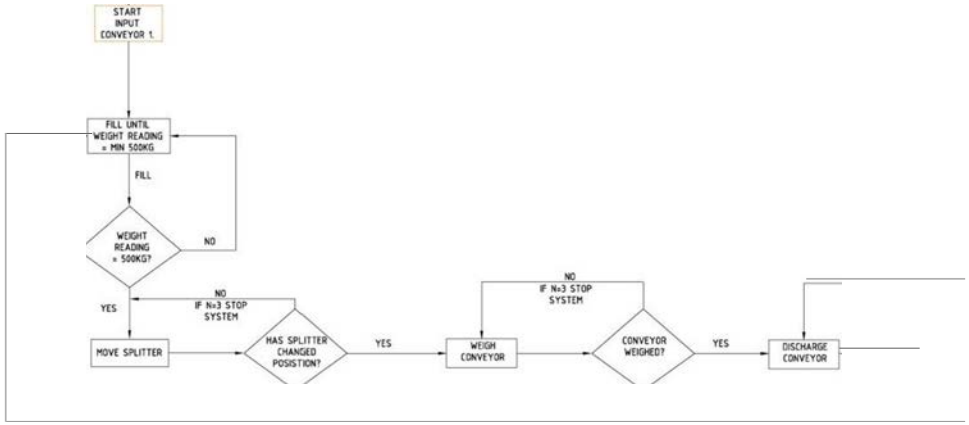
SITE PLAN
LIGHT HORSE BUSINESS CENTRE
OLD WALGROVE ROAD
EASTERN CREEK, NSW
DIAL A DUMP
080233
S02 3
CIVIL
STRUCTURAL
BUILDING SERVICES










| Itemref | Quantity | Title/Name, designation, material, dimension etc | | | Article No./Reference |
|---|---|---|---|---|---|
| Designed by MD | | Checked by JM | Approved by - date | Filename | Date 18/03/11 | Scale NTS |
| Dial a Dump Industries | | | DS123 | | |
| | | | DS123 | Edition 0 | Sheet 1/1 |

**APPENDIX B**

# Jeffery and Katauskas Pty Ltd

CONSULTING GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
ABN 17 003 550 801

AS/NZS ISO 9001 Certified
Davis Langdon Certification Services

PO BOX 976, NORTH RYDE BC NSW 1670
Tel: 02 9888 5000 • Fax: 02 9888 5003
Email: engineers@jkgroup.net.au


30 June, 2010
Ref:18724ZR6let


Alexandria Landfill Pty Ltd
PO BOX 1040
MASCOT NSW 1460

ATTENTION: Mr Christopher Biggs

Dear Sir

**PROPOSED DOWNHILL CONVEYOR AND SHUTE**
**LIGHT HORSE BUSINESS CENTRE, OLD WALGROVE ROAD, EASTERN CREEK, NSW**

We confirm that we have prepared the following geotechnical reports with regard to the future re-development of the existing quarry at the above site:

- Geotechnical Report (Ref. 18724ZRrpt1) dated 18 May 2007
- Geotechnical Quarry Slope Stability Assessment (Ref. 18724ZR2let) dated 20 March 2008
- Geotechnical Quarry Slope Stability Assessment (Ref. 18724ZR3let) dated 23 March 2009
- Mapping of Existing Fractures Within the Quarry (Ref. 18724ZR4let) dated 27 April 2009.

The preparation of the above reports has required numerous site visits since 2007 and as such we are very familiar with the subsurface conditions at the site and the associated geotechnical issues.

We have reviewed the provided structural drawings (Drawing Numbers S00, S02 and S04 Issue 1 dated 10 June 2010) prepared by Jones Nicholson Pty Ltd.

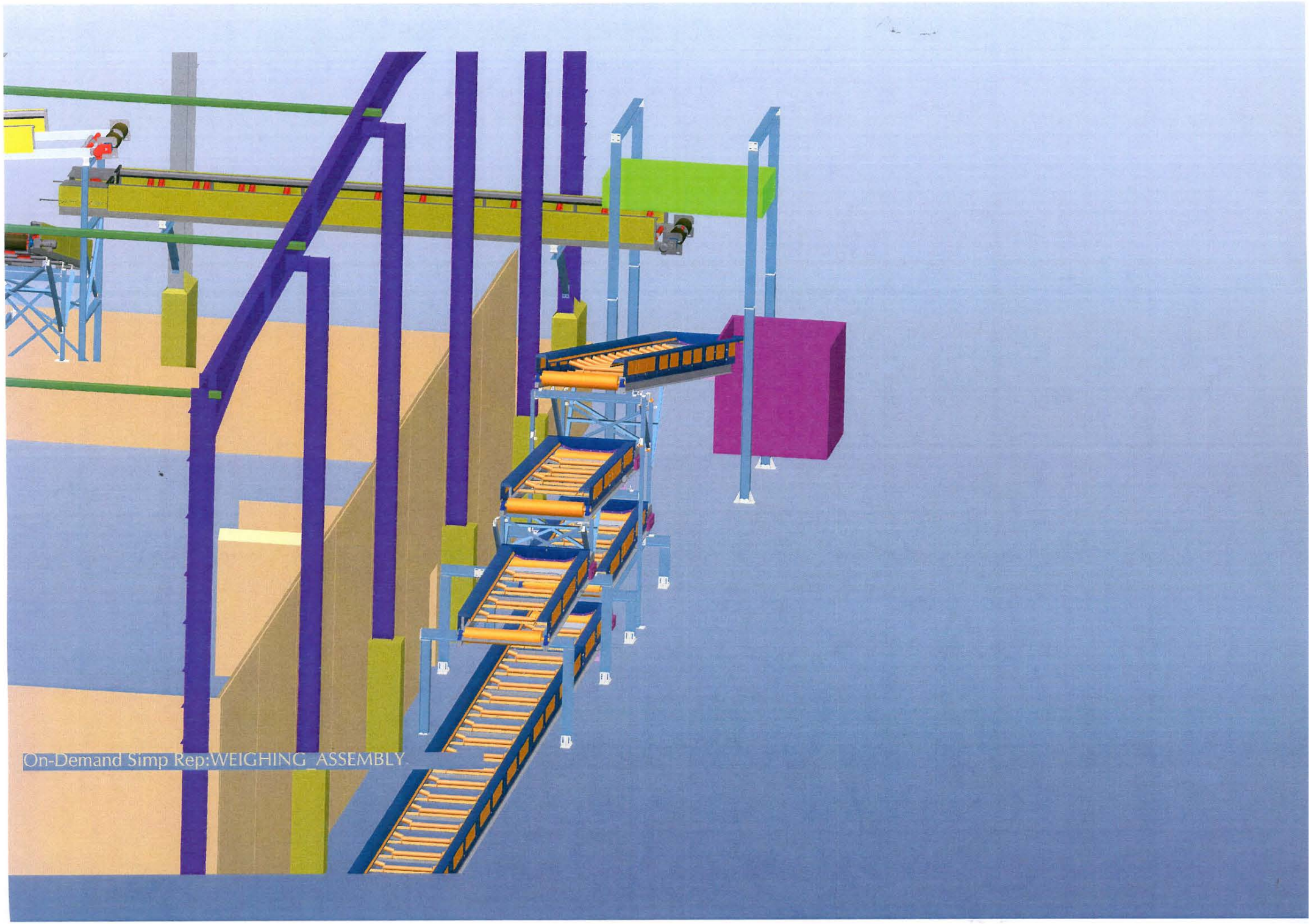
On the basis of our past experience at the site and review of the provided structural drawings we consider that the geotechnical conditions at the site are suitable to support the proposed downhill conveyor and shute. However, this is on condition that the design and construction of the proposed downhill conveyor and shute is completed in accordance with our geotechnical detailed design advice. This geotechnical detailed design advice will be based on the contents of our previous reports and additional geotechnical assessment of the proposed downhill conveyor and shute.

Should you require any further information regarding the above please do not hesitate to contact the undersigned.

Yours faithfully
For and on behalf of
JEFFERY AND KATAUSKAS PTY LTD

Paul Roberts
Associate

**APPENDIX C**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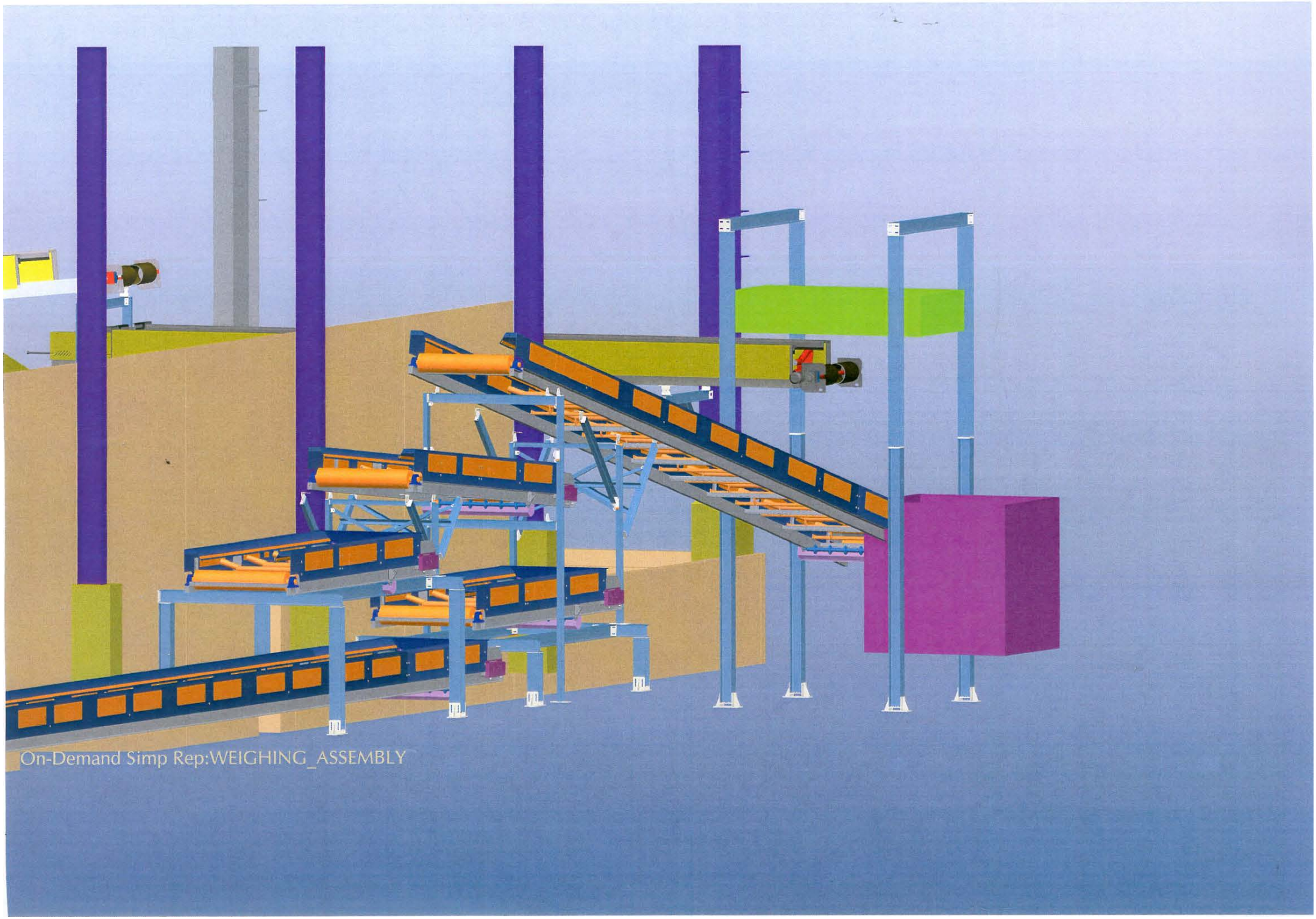
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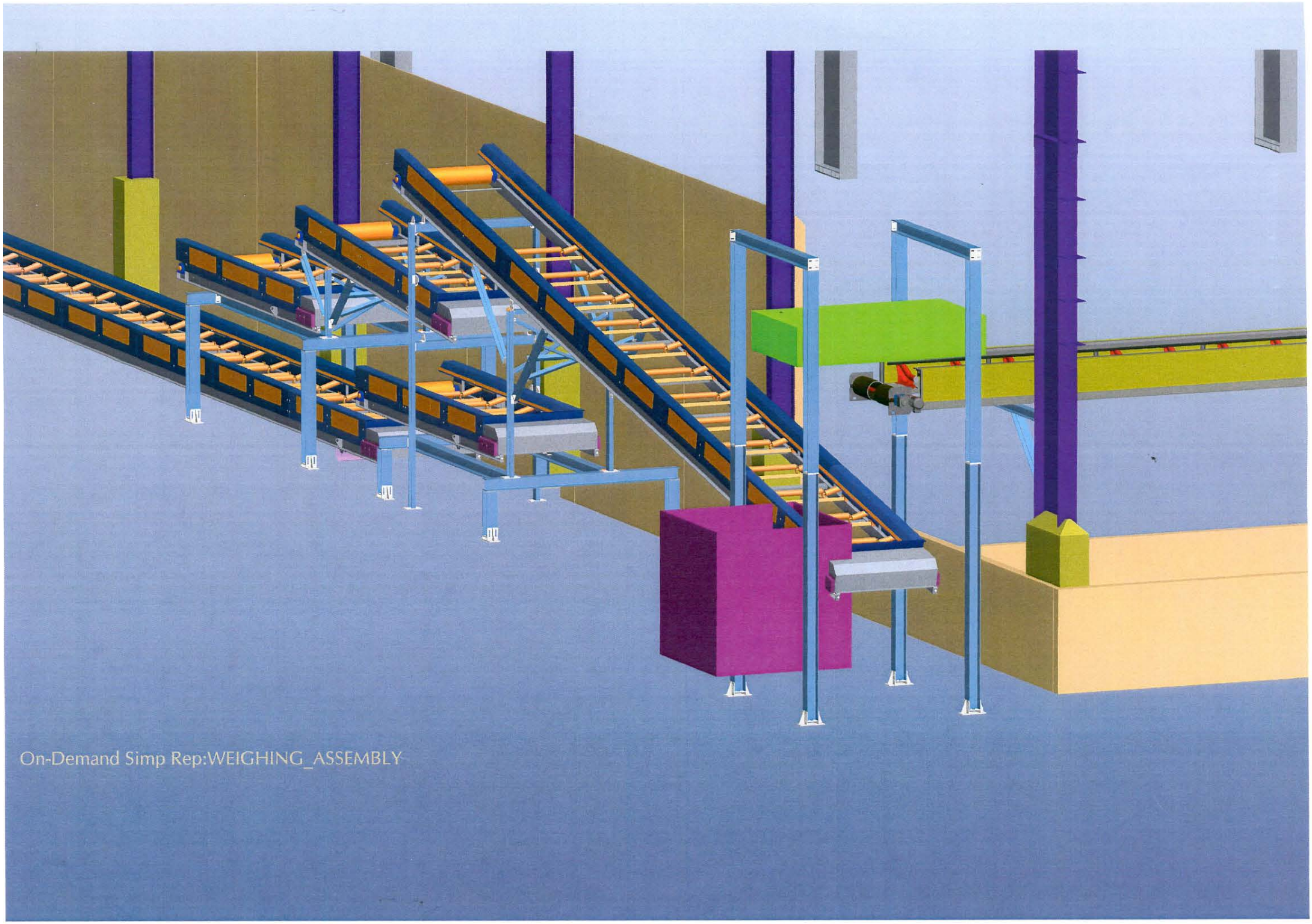
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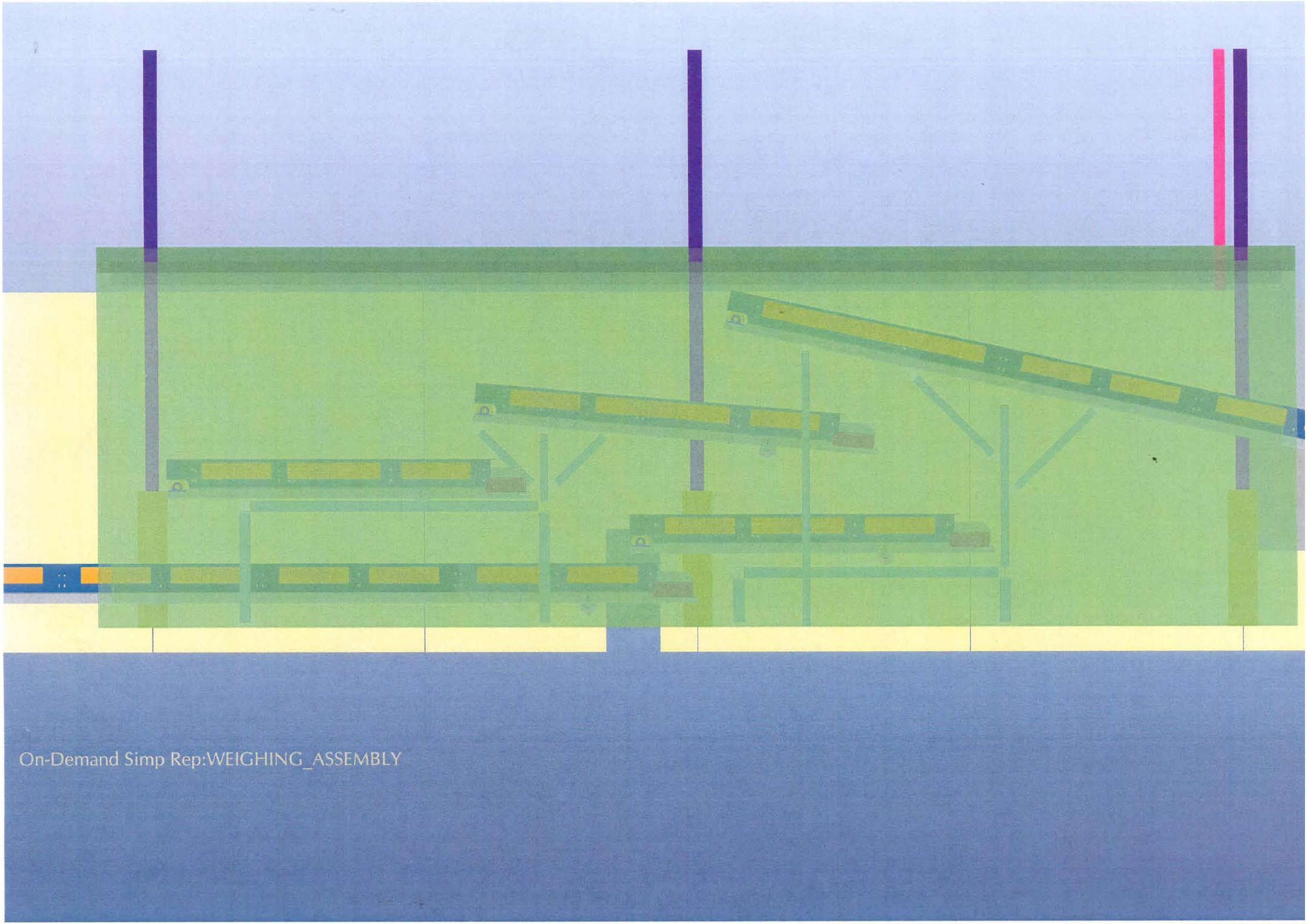

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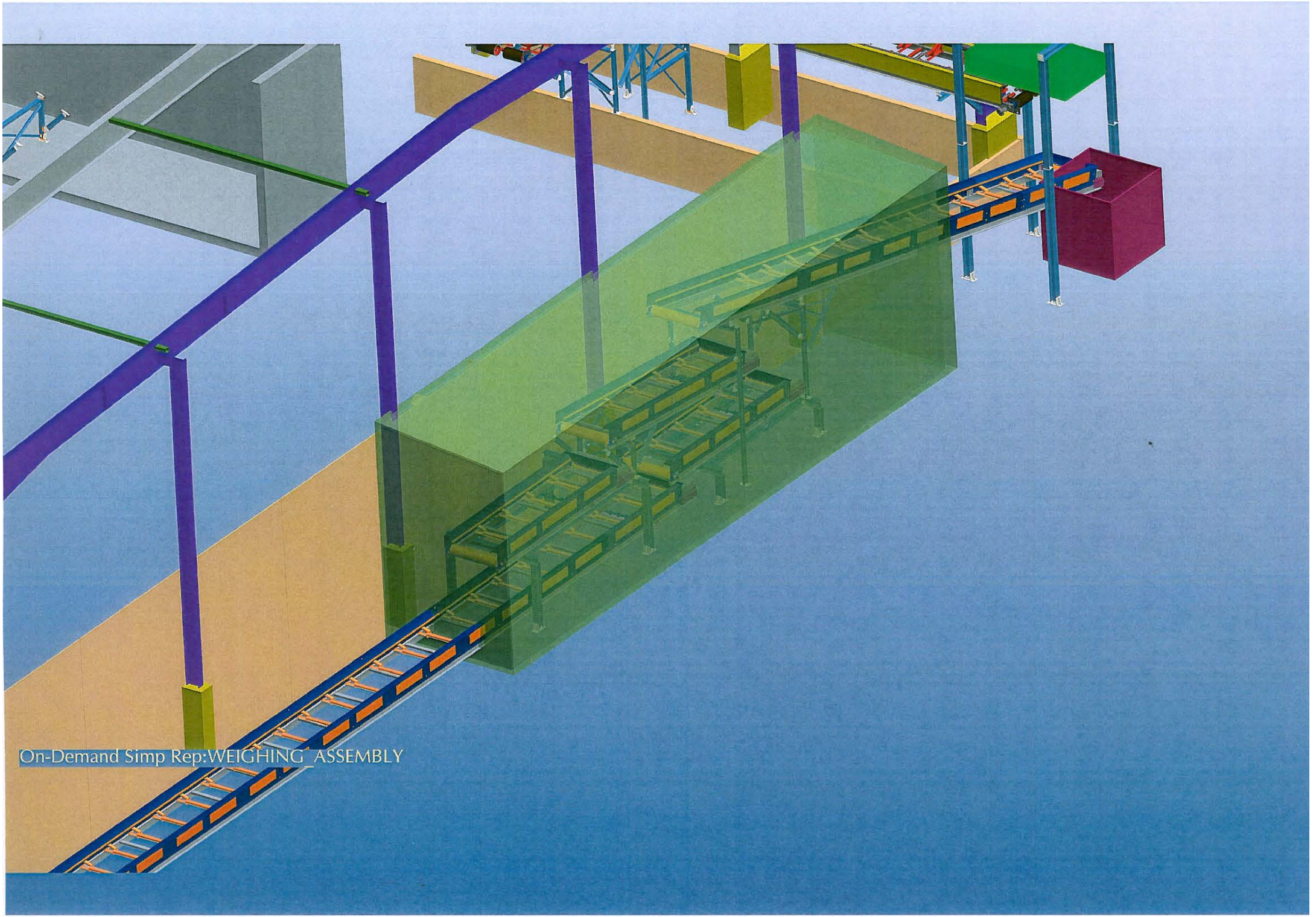
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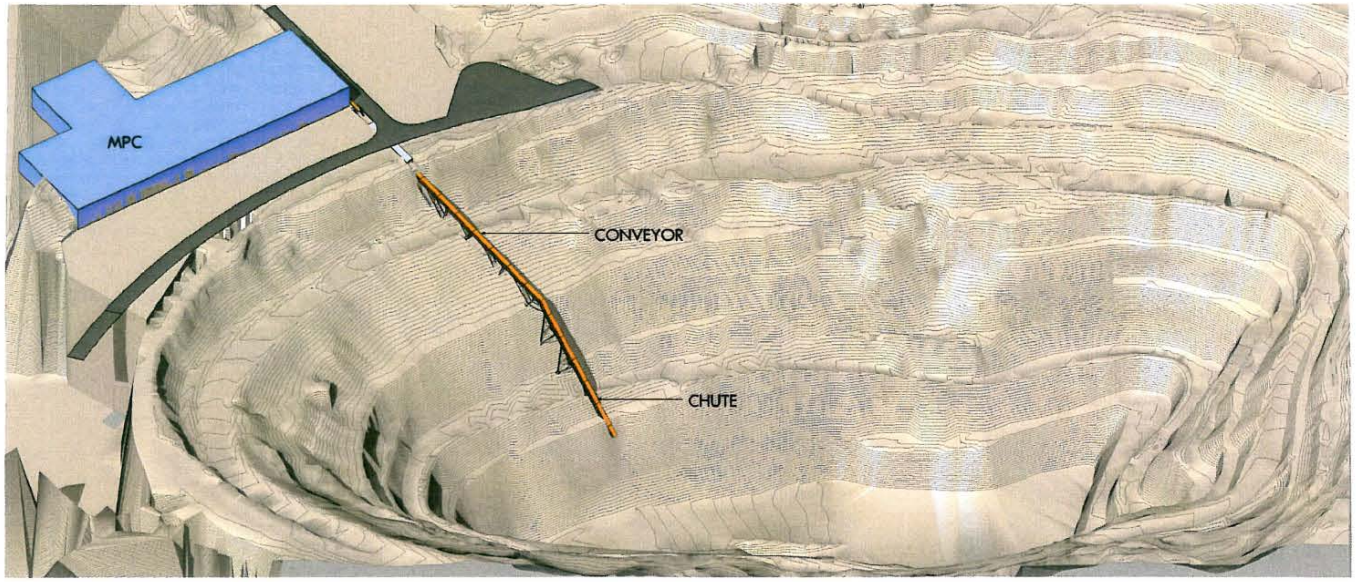
**APPENDIX D**

# LHBC CHUTE AND CONVEYOR

OLD WALGROVE ROAD EASTERN CREEK, NSW

Job No. **080233**

| DRAWING LIST | |
|---|---|
| SHEET | DRAWING TITLE |
| S00 | COVER SHEET |
| S01 | NOTES SHEET |
| S02 | SITE PLAN |
| S03 | FOOTING PLAN |
| S04 | CHUTE SECTIONS |
| S10 | STEEL MARKING PLAN AT BASE OF CONVEYOR AND PIPE FRAMES |
| S13 | STEELWORK ELEVATION AMD DETAILS |
| S14 | STEEL FRAME ELEVATIONS |
| S15 | STEELWORK DETAILS SHEET 1 |
| S16 | STEELWORK DETAILS SHEET 2 |




| AMDT | DATE | BY | DESCRIPTION |
|---|---|---|---|
| C | 08.06.11 | DWS | MODULE OPTION ISSUED FOR CONSTRUCTION |
| B | 18.05.11 | DWS | ISSUED FOR INFORMATION |
| A | 08.04.11 | DWS | ISSUED FOR CONSTRUCTION |



CIVIL STRUCTURAL BUILDING SERVICES

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SUTHERLAND - WOLLONGONG - GOLD COAST - GOULBURN - PICTON

| | |
|---|---|
| DESIGN : | MM |
| DRAWN : | DWS |
| DATE : | 2010 |
| DRG SIZE | A1 |
| SCALE | |
| PROJECT MGR | MM |

COVER SHEET

**LHBC CHUTE AND CONVEYOR**
OLD WALGROVE ROAD
EASTERN CREEK, NSW
**DIAL A DUMP**

080233
S00 C

# LHBC CHUTE AND CONVEYOR

OLD WALGROVE ROAD EASTERN CREEK, NSW

Job No. **080233**

## GENERAL

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATION AND WITH SUCH OTHER WRITTEN INSTRUCTION AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH THE WORK.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT AUSTRALIAN STANDARDS AND THE BUILDING CODE OF AUSTRALIA EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATION.
3. ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE. ENGINEERS' DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS.
4. DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. TEMPORARY BRACING SHALL BE PROVIDED BY THE BUILDER TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.
5. THE BUILDER SHALL GIVE 48 HOURS NOTICE FOR ALL ENGINEERING INSPECTIONS.
6. THE BUILDER SHALL LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF CONSTRUCTION. ENGINEER TO BE NOTIFIED.
7. UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES.
8. TEMPORARY SHORING IS THE RESPONSIBILITY OF THE CONTRACTOR AND MAY VARY ACCORDING TO CONSTRUCTION METHODS AND SEQUENCES. IF INSUFFICIENT DETAILS ARE SHOWN ON CONTRACT DRAWINGS TO STABILISE DEEP CUTS, ENGINEER TO BE NOTIFIED.
9. THE STRUCTURAL COMPONENTS DETAILED ON THESE DRAWINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS AND LOCAL GOVERNMENT ORDINANCES FOR THE FOLLOWING LOADINGS:

| WIND LOADS ARE IN ACCORDANCE WITH AS 1170 PART 2 AS FOLLOWS: | |
|---|---|
| ULTIMATE REGIONAL WIND SPEED V | R[1000] =46m/s |
| TERRAIN CATEGORY | = 3 |
| TOPOGRAPHIC MULTIPLIER (M1) | = 1.0 |

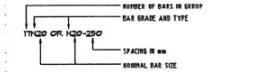
THE RELEVANT PROVISIONS OF AS 1170.4 HAVE BEEN APPLIED FOR AN EARTHQUAKE ACCELERATION COEFFICIENT OF 0.09.

## FOUNDATIONS

1. FOOTINGS HAVE BEEN DESIGNED FOR AN ALLOWABLE BEARING CAPACITY AS NOTED IN THE PAD FOOTING SCHEDULE THIS FOUNDATION MATERIAL SHALL BE UNIFORM AND BE APPROVED BY THE ENGINEER PRIOR THIS PRESSURE BEFORE PLACING REINFORCEMENT OR CONCRETE. PADS OR BLOCKOUTS SHALL BE USED TO ACHIEVE UNIFORM BEARING WHERE NECESSARY.
2. FOOTINGS SHALL BE CONCRETED ON THE DAY OF APPROVAL UNLESS PERMISSION IS GIVEN OTHERWISE.
3. FOOTINGS SHALL BE LOCATED CENTRALLY UNDER WALLS AND COLUMNS UNLESS NOTED OTHERWISE.
4. DO NOT BACKFILL RETAINING WALLS (OTHER THAN CANTILEVER WALLS) UNTIL FLOOR CONSTRUCTION AT TOP AND BOTTOM IS COMPLETED. BACKFILL SHALL BE COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ±2% (ENSURE FREE DRAINING BACKFILL AND DRAINAGE IS IN PLACE)
5. FOOTING LEVELS WHERE SHOWN ARE ESTIMATES ONLY AND WILL BE ESTABLISHED DURING SITE INSPECTION OF WORK IN PROGRESS.
6. UNLESS OTHERWISE APPROVED BY THE ENGINEER/SUPERINTENDENT, THE LIMITS OF EXCAVATION NEAR FOOTINGS SHALL BE AS SET OUT IN THE DETAIL SHOWING SUCH LIMITATIONS.
7. ALL FOOTING LOCATIONS, BEARING PRESSURE AND REQUIREMENTS OF ROCK BOLTING TO BE CONFIRMED ON SITE BY GEOTECHNICAL ENGINEER.
8. ANY EXCAVATION (i.e. SERVICES) ADJACENT TO FOOTINGS SHALL NOT EXTEND INTO A 2:1 INFLUENCE LINE FROM THE BEARING SURFACE OF THE FOOTING. REFER TO DETAILS ON THIS DRAWING.

## REINFORCEMENT

1. REINFORCEMENT SYMBOLS
   R DENOTES GRADE 250 R HOT ROLLED PLAIN BARS TO AS 1302 F DENOTES GRADE 450 F HARD-DRAWN WIRE REINFORCING FABRIC TO AS 1304.W DENOTES GRADE 450 W HARD-DRAWN PLAIN WIRE TO AS 1303
   H DEFORMED BAR NORMAL DUCTILITY TO AS/NZS 4671 GRADE D500N
   L DEFORMED BAR LOW DUCTILITY TO AS/NZS 4671 GRADE D500L
   RH RECTANGULAR WIRE MESH NORMAL DUCTILITY TO AS/NZS 4671
   RL RECTANGULAR WIRE MESH LOW DUCTILITY
   SH SQUARE WIRE MESH NORMAL DUCTILITY
   SL SQUARE WIRE MESH LOW DUCTILITY TO AS/NZS 4671




2. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.
3. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN OR OTHERWISE APPROVED IN WRITING BY THE ENGINEER. LAPS SHALL BE IN ACCORDANCE WITH AS 3600 AND NOT LESS THAN THE DEVELOPMENT LENGTH FOR EACH BAR.
4. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE ENGINEER.
5. FABRIC SHALL BE LAPPED 2 TRANSVERSE WIRES PLUS 50mm WHERE FABRIC LAPS, SHEETS TO HAVE MAXIMUM 2 LAYERS AT ANY POINT, CUT BACK FABRIC AT CORNERS AS REQUIRED.
6. BUNDLED BARS SHALL BE TIED TOGETHER AT 30 BAR DIAMETER CENTRES WITH 3 WRAPS OF THE WIRE.
7. PIER PATHS MESH F41 SHALL BE GALVANISED, HAVE 20mm COVER AND BE TIED USING GALVANISED TIE WIRE.
8. WHERE TRANSVERSE TIE BARS ARE NOT SHOWN PROVIDE R12-400 SPLICED WHERE NECESSARY AND LAP WITH MAIN BARS 480mm UNLESS NOTED.
9. HOOKS TO BARS SHALL COMPRISE A LENGTH OF 12 BAR DIAMETERS BETWEEN BEGINNING AND END OF AN OFFSET OF 1 BAR DIAMETER.
10. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1 METRE CENTRES BOTH WAYS, AND AND EACH WAY FOR FABRIC. WHEN POURED ON GROUND AS FORMWORK PROVIDE PLATES UNDER ALL BAR CHAIRS. PLASTIC TIPPED STEEL CHAIRS SHALL NOT BE USED ON EXPOSED FACES IN EXPOSURE CLASSIFICATION B1 AND B2.
11. REINFORCEMENT WITHIN FLOOR OR WALL ELEMENT OF A WET AREA SHALL BE BONDED TO THE EARTHING SYSTEM W CONDUCTIVE PIPING EXISTS WITHIN THE ELEMENT. IT SHALL BE BONDED IN ACCORDANCE WITH AS 3000
12. ALL REINFORCEMENT BAR LAPS SHALL BE AS FOLLOWS U.N.O.

| LAP LENGTH FOR DEFORMED BARS IN SLABS & WALLS | | | | | | |
|---|---|---|---|---|---|---|
| N12 | N16 | N20 | N24 | N28 | N32 | N36 |
| 480 | 650 | 900 | - | - | - | - |

| LAP LENGTH FOR DEFORMED BARS IN BEAMS & COLUMNS | | | | | | |
|---|---|---|---|---|---|---|
| N12 | N16 | N20 | N24 | N28 | N32 | N36 |
| 500 | 700 | 1050 | 1650 | 1950 | 2300 | 2900 |

## CONCRETE

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 AND AS 3610 CURRENT EDITIONS WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
   CONCRETE QUALITY
2. ALL CEMENT TO BE TYPE SL. SHRINKAGE LIMITED CEMENT IN ACCORDANCE WITH AS 3972. EXCEPT THAT THE MAXIMUM SHRINKAGE OF THE CEMENT IN THE MORTAR TEST SAMPLE IN ACCORDANCE WITH AS 2350 SHALL BE LESS THAN 650 MICROSTRAIN.

| ELEMENT | STRENGTH GRADE (MPa) (N) | STRENGTH GRADE (MPa) (N) | SLUMP GRADE mm | MAX AGG SIZE mm | MIN CEMENT CONTENT (kg/cu.m) | COVER (mm) INT | EXT (B2) | EXT (B1) |
|---|---|---|---|---|---|---|---|---|
| FOOTINGS | - | 32 | 80 | 20 | - | - | - | 50 |

* - FOR ONE SURFACE ONLY. PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS3666

3. (a) ALL CONCRETE IN SLABS AND BEAMS TO BE PROPORTIONED TO LIMIT DRYING SHRINKAGE TO 650 MICROSTRAIN AT 56 DAYS.
   (b) DETAILS OF THE PROPOSED MIX TO BE SUBMITTED & APPROVAL OBTAINED PRIOR TO POURING ANY CONCRETE. (c)
   SHRINKAGE TEST SHALL BE CARRIED OUT BY AN APPROVED NATA REGISTERED LABORATORY IN ACCORDANCE WITH AS 1012 PART 13. TESTS SHALL BE CONDUCTED ON THE FIRST BATCH OF CONCRETE USED IN SUSPENDED SLABS AND SUBSEQUENTLY AT THE RATE OF ONE TEST EVERY ADDITIONAL 100 CUBIC METRES OF CONCRETE SUPPLIED. THREE SPECIMENS SHALL BE TAKEN FOR EACH TEST AND THE SHRINKAGE SHALL BE THE AVERAGE OF THE THREE RESULTS. THE COST OF TESTING SHALL BE BORNE BY THE CONTRACTOR AS SHALL ANY ADDITIONAL TESTS REQUIRED IF THE CONCRETE FAILS TO MEET THE SPECIFIED SHRINKAGE LIMITS.
4. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING.
5. CLEAR CONCRETE COVER TO ALL REINFORCEMENT SHALL BE AS NOTED ABOVE UNLESS SHOWN OTHERWISE.
   NOTE: WHERE CONCRETE IS POURED ON A VAPOUR PROOF MEMBRANE 0.2mm MINIMUM THICKNESS, THE COVER TO CONCRETE CAST AGAINST GROUND MAY BE REDUCED BY 10mm.
6. CONCRETE SIZES SHOWN DO NOT INCLUDE THICKNESS OF APPLIED FINISHES, OR FINISH WHICH DECREASES COVER IS ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
7. DEPTHS OF BEAMS ARE GIVEN FIRST AND INCLUDE SLAB THICKNESS.
8. FOR CHAMFERS DRIP GROOVES, REBATES, ETC. REFER TO ARCHITECT'S DETAILS. MAINTAIN COVER TO REINFORCEMENT AT THESE DETAILS.
9. NO HOLES, CHASES, BLOCKOUTS, DUCTS OR EMBEDMENT OF PIPES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE ENGINEER.
10. CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO THE APPROVAL OF THE ENGINEER.
11. ALL CONCRETE COLUMNS GREATER THAN 12 METRES IN HEIGHT SHALL BE POURED A MINIMUM OF 4 HOURS PRIOR TO SLAB OR BEAM OVER.
12. THE FINISH CONCRETE SHALL BE MECHANICALLY VIBRATED TO ACHIEVE A DENSE HOMOGENEOUS MASS COMPLETELY FILLING THE FORMWORK THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED WITH MECHANICAL VIBRATORS.
13. CURING OF ALL CONCRETE IS TO BE ACHIEVED BY KEEPING SURFACES CONTINUOUSLY WET FOR A PERIOD OF THREE DAYS, AND THE PREVENTION OF LOSS OF MOISTURE FOR A TOTAL OF 7 DAYS FOLLOWED BY A GRADUAL DRYING OUT. APPROVED SPRAYED ON CURING COMPOUNDS MAY BE USED WHERE NO FLOOR FINISHES ARE PROPOSED. POLYTHENE SHEETING OR WET HESSIAN MAY BE USED IF PROTECTED FROM WIND AND TRAFFIC.
14. CONSTRUCTION SUPPORT PROPPING IS TO BE LEFT IN PLACE WHERE NEEDED TO AVOID OVERSTRESSING THE STRUCTURE DUE TO CONSTRUCTION LOADING. NO BRICKWORK OR PARTITION WALLS ARE TO BE CONSTRUCTED ON SUSPENDED LEVELS UNTIL SEVEN DAYS AFTER PROPPING HAS BEEN REMOVED AND THE SLAB PRE-LOADED WITH THE BRICKS OR UNITS TO BE USED IN THE WALL.
15. REPAIRS TO CONCRETE SHALL NOT BE ATTEMPTED WITHOUT THE PERMISSION OF THE ENGINEER.
16. CAST-IN PIGGINGS, BOLTS ETC. SHALL NOT BE ALTERED WITHOUT THE PERMISSION OF THE ENGINEER.
17. THE CONCRETE SHALL BE PLACED IN SUCH A MANNER AS TO AVOID SEGREGATION OR LOSS OF MATERIALS. MAXIMUM FALL OF CONCRETE = 1500mm OR USE ENCLOSED CHUTES OR SIMILAR.
18. SULPHATE RESISTANT CONCRETE TO BE USED IN ALL FOOTINGS, PILES AND PILE CAPS.

## EXCAVATION IN ROCK

1. A LARGE VOLUME OF THE BULK AND DETAILED EXCAVATION IS EXPECTED TO BE IN MEDIUM AND HIGH STRENGTH ROCK.
2. THE CONTRACTOR SHALL SUBMIT HIS PROPOSAL FOR EXCAVATION TO THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF WORK.
3. THE METHOD SHALL COMPLY WITH ALL THE REQUIREMENTS OF THE DA CONDITIONS, PARTICULARLY IN RELATION TO NOISE LEVELS, VIBRATION AND WORK HOURS.
4. VIBRATIONS SHALL NOT EXCEED 6mm/sec AND ALARMS SHALL BE INSTALLED TO MONITOR THESE VIBRATIONS.
5. ALL THE REQUIREMENTS OF THE GEOTECHNICAL REPORT FOR THE SITE SHALL BE OBSERVED AND MEET.

## STRUCTURAL STEEL

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 4100 AND AS 1554 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. ALL STEEL SHALL BE IN ACCORDANCE WITH AS 3678 AND AS 3679 TO GRADE 250 UNLESS NOTED.
3. THREE(3) COPIES OF WORKSHOP FABRICATION DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AT LEAST 14 DAYS PRIOR TO COMMENCEMENT OF FABRICATION AND PERMISSION TO USE OBTAINED PRIOR TO FABRICATION. PERMISSION TO USE DOES NOT RELIEVE THE BUILDER OF THE FULL RESPONSIBILITY FOR DIMENSIONS, FIT AND COMPLIANCE WITH ARCHITECTURAL AND ENGINEERING DRAWINGS.
4. BOLTS:-
   4.6/S: COMMERCIAL BOLTS OF GRADE 4.6 TO AS 1111, SNUG TIGHTENED.
   8.8/S: HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS 1252,SNUG TIGHTENED.
   8.8/TB: HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252 FULLY TENSIONED TO AS 4100 AS A BEARING JOINT.
   8.8/TF: HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252 FULL TENSIONED AS A FRICTION JOINT WITH FACING SURFACES LEFT UNCOATED.
   - ALL BOLTS SHALL BE M20 GRADE 8.8/S UNLESS NOTED.
   NO CONNECTION SHALL HAVE LESS THAN 2 BOLTS.
   ALL BOLTS, NUTS AND WASHERS TO BE GALVANISED (HEAVY) TO AS 468 TABLES 1 & 2
   TB AND TF BOLTS TO BE INSTALLED USING APPROVED LOAD INDICATING WASHERS. OR BY TURN OF NUT CRITERIA OF TENSIONING.
5. ALL WELDS SHALL BE 6mm CONTINUOUS FILLET TYPE GP (GENERAL PURPOSE) UNLESS NOTED OTHERWISE. BUTT WELDS SHALL BE COMPLETE PENETRATION WELDS TO AS 1554.
6. ALL PLATES SHALL BE 10mm THICK UNLESS NOTED OTHERWISE.
7. STEELWORK TO BE CONCRETE ENCASED SHALL BE WRAPPED WITH F41 STEEL WIRE FABRIC AND SHALL BE 50mm MINIMUM CONCRETE COVER TO THE STRUCTURAL STEEL.
8. PROVIDE SEAL PLATES TO ALL HOLLOW SECTIONS. PROVIDE VENT HOLES TO HOLLOW MEMBERS AND DRAIN HOLES TO ALL MEMBERS TO BE HOT DIP GALVANISED.
9. IT IS THE BUILDER'S RESPONSIBILITY TO ENSURE THAT STEELWORK IS SECURELY TEMPORARILY BRACED AS NECESSARY TO STABILISE THE STRUCTURE DURING ERECTION.

STRUCTURAL STEELWORK SHALL HAVE THE FOLLOWING SURFACE TREATMENT IN ACCORDANCE WITH THE SPECIFICATION AND AS 2312 - 2002

| ELEMENT | SURFACE CLEANING | TREATMENT |
|---|---|---|
| EXTERNAL | BLAST CLEAN TO KLASS 2.5 | INORGANIC ZINC SILICATE PAINT TO AS 3750 | 75 MICROMETERS THICK NZS2 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| B | 08.06.11 | DWS | MODULE OPTION ISSUED FOR CONSTRUCTION | | | | |
| A | 08.04.11 | DWS | ISSUED FOR CONSTRUCTION | | | | |
| AMDT | DATE | BY | DESCRIPTION | AMDT | DATE | BY | DESCRIPTION |

CIVIL STRUCTURAL BUILDING SERVICES



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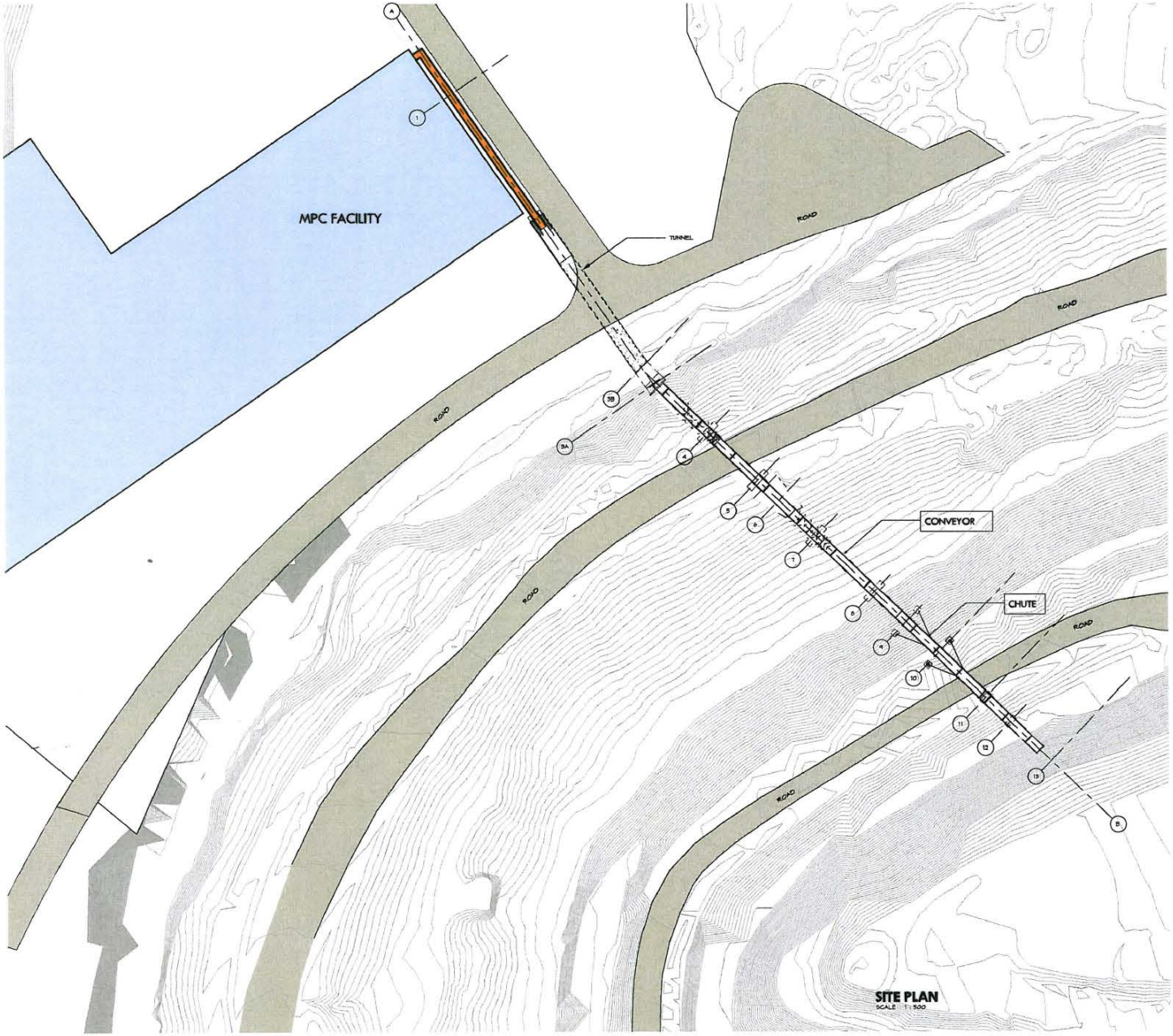
SUTHERLAND - WOLLONGONG - GOLD COAST - GOULBURN - PICTON

| | |
|---|---|
| DESIGN : | MM |
| DRAWN : | DWS |
| DATE : | 2010 |
| DRG SIZE | A1 |
| SCALE | |
| PROJECT MGR : | MM |

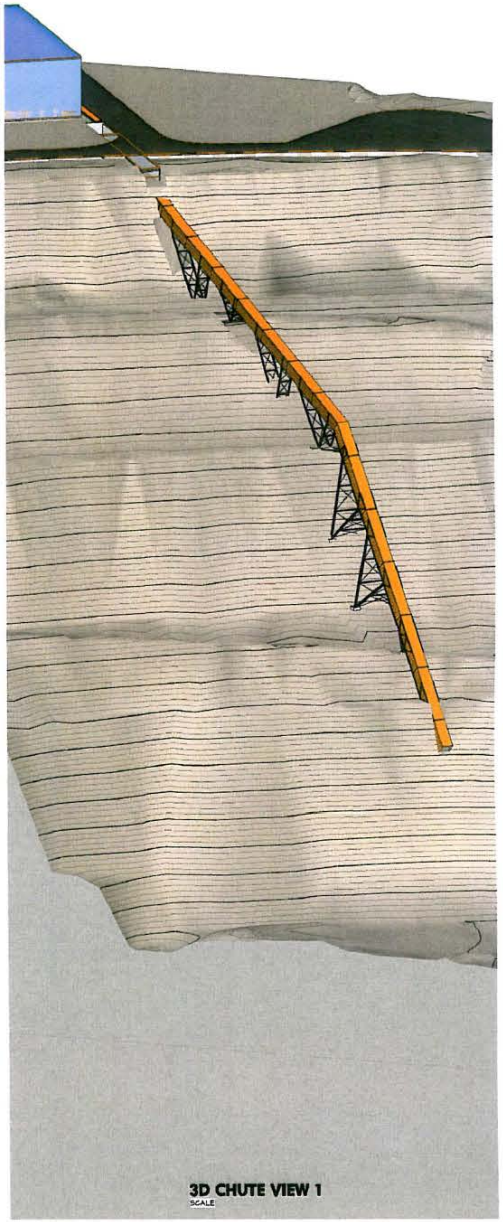
NOTES SHEET

**LHBC CHUTE AND CONVEYOR**
OLD WALGROVE ROAD
EASTERN CREEK, NSW
**DIAL A DUMP**

080233
S01 B




SITE PLAN
SCALE 1:500



3D CHUTE VIEW 1
SCALE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| B | 08.06.11 | DMB | MODULE OPTION ISSUED FOR CONSTRUCTION | | | | |
| A | 08.04.11 | DMB | ISSUED FOR CONSTRUCTION | | | | |
| AMDT | DATE | BY | DESCRIPTION | AMDT | DATE | BY | DESCRIPTION |

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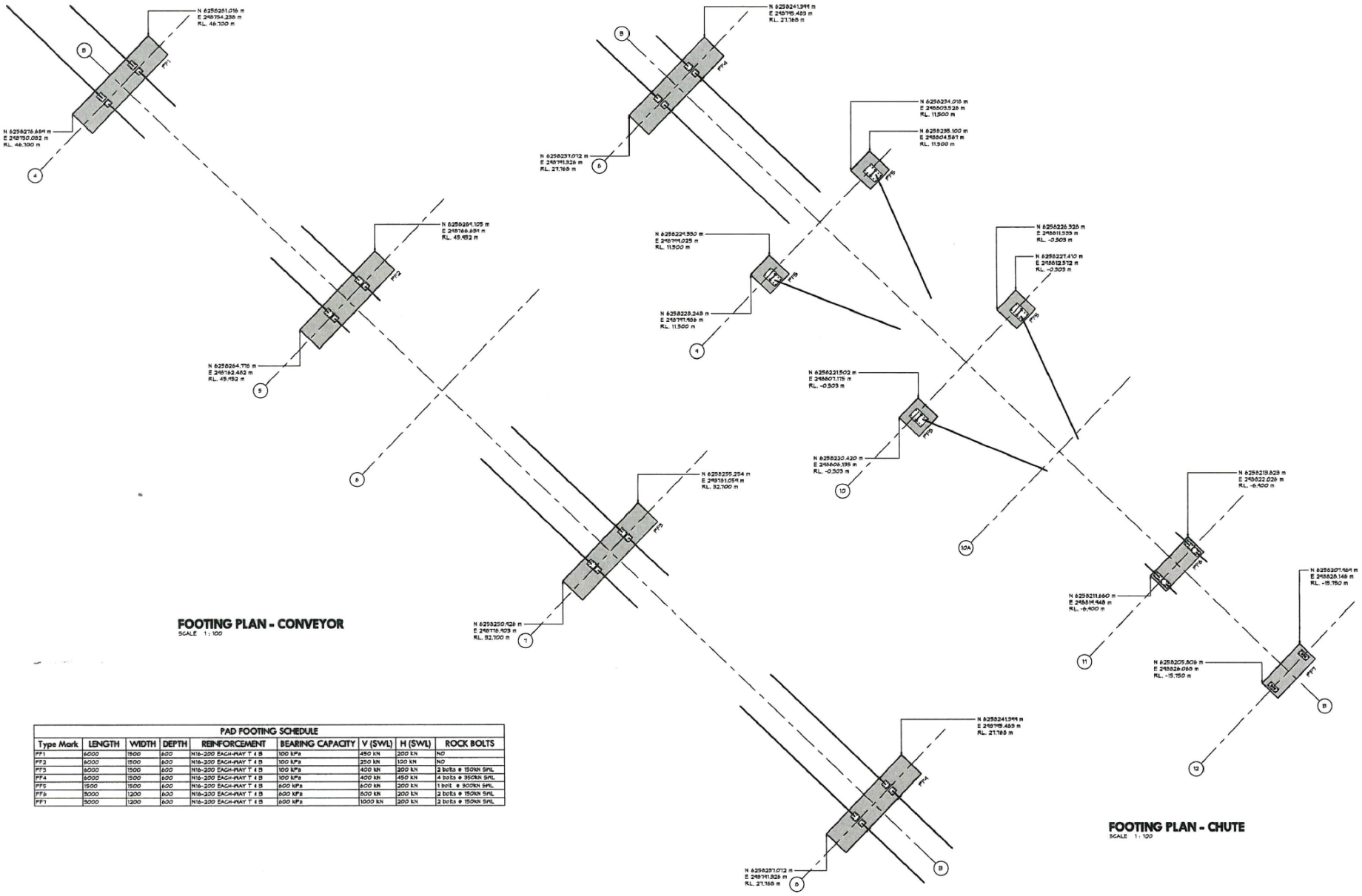
| | |
|---|---|
| DESIGN : | MM |
| DRAWN : | DWS |
| DATE : | 2010 |
| DRG SIZE | A1 |
| SCALE | 1 : 500 |
| PROJECT MGR | MM |

SITE PLAN

**LHBC CHUTE AND CONVEYOR**
OLD WALGROVE ROAD
EASTERN CREEK, NSW
**DIAL A DUMP**

080233
S02 B




## FOOTING PLAN - CONVEYOR

SCALE 1 : 100

## FOOTING PLAN - CHUTE

SCALE 1 : 100

| PAD FOOTING SCHEDULE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Type Mark | LENGTH | WIDTH | DEPTH | REINFORCEMENT | BEARING CAPACITY | V (SWL) | H (SWL) | ROCK BOLTS |
| PF1 | 6000 | 1500 | 600 | N16-200 EACH-WAY T & B | 100 kPa | 450 kN | 200 kN | NO |
| PF2 | 6000 | 1500 | 600 | N16-200 EACH-WAY T & B | 100 kPa | 250 kN | 100 kN | NO |
| PF3 | 6000 | 1500 | 600 | N16-200 EACH-WAY T & B | 100 kPa | 400 kN | 200 kN | 2 bolts @ 150kN SWL |
| PF4 | 6000 | 1500 | 600 | N16-200 EACH-WAY T & B | 100 kPa | 400 kN | 450 kN | 4 bolts @ 350kN SWL |
| PF5 | 1500 | 1500 | 600 | N16-200 EACH-WAY T & B | 600 kPa | 600 kN | 200 kN | 1 bolt @ 300kN SWL |
| PF6 | 3000 | 1200 | 600 | N16-200 EACH-WAY T & B | 600 kPa | 600 kN | 200 kN | 2 bolts @ 150kN SWL |
| PF7 | 3000 | 1200 | 600 | N16-200 EACH-WAY T & B | 600 kPa | 1000 kN | 200 kN | 2 bolts @ 150kN SWL |

| AMDT | DATE | BY | DESCRIPTION |
|---|---|---|---|
| B | 08.06.11 | DWS | MODULE OPTION ISSUED FOR CONSTRUCTION |
| A | 08.04.11 | DWS | ISSUED FOR CONSTRUCTION |
| 1 | 18.01.11 | DWS | PRELIMINARY - REVISED LAYOUT |

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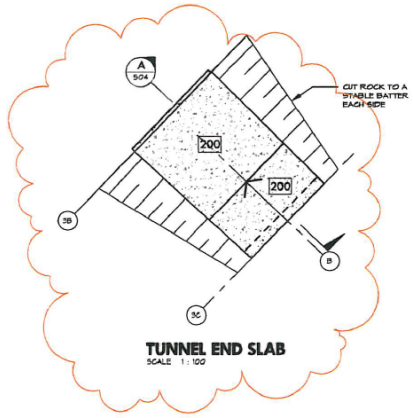
| | |
|---|---|
| DESIGN : | MM |
| DRAWN : | DWS |
| DATE : | 2010 |
| DRG SIZE : | A1 |
| SCALE | 1 : 100 |
| PROJECT MGR : | MM |

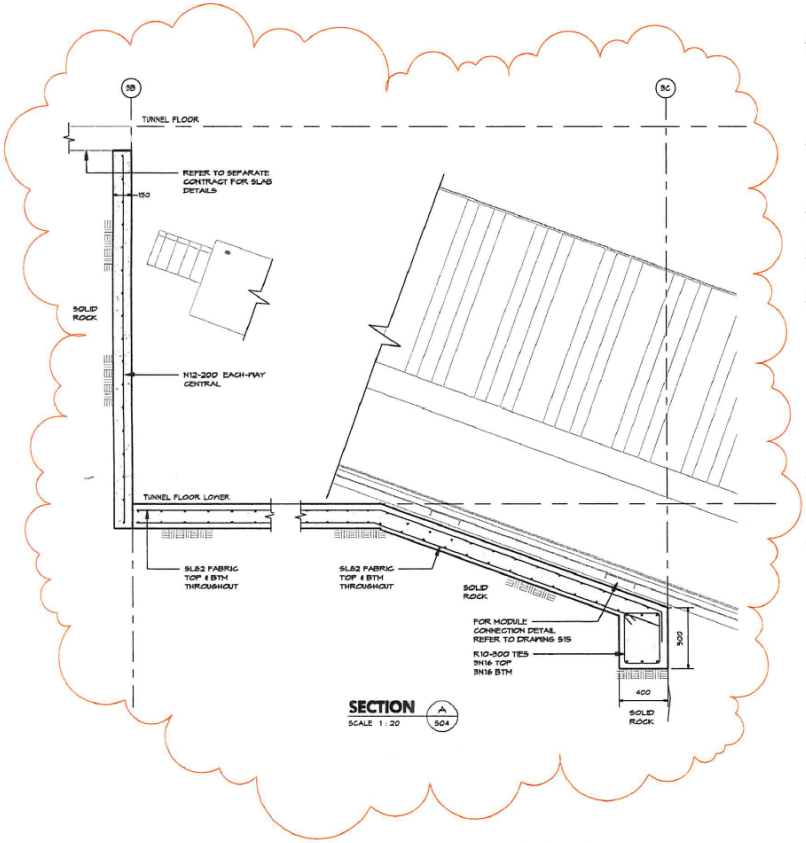
FOOTING PLAN

**LHBC CHUTE AND CONVEYOR**
OLD WALGROVE ROAD
EASTERN CREEK, NSW
**DIAL A DUMP**

080233
S03 B




**TUNNEL END SLAB**
SCALE 1 : 100




**SECTION** A S04
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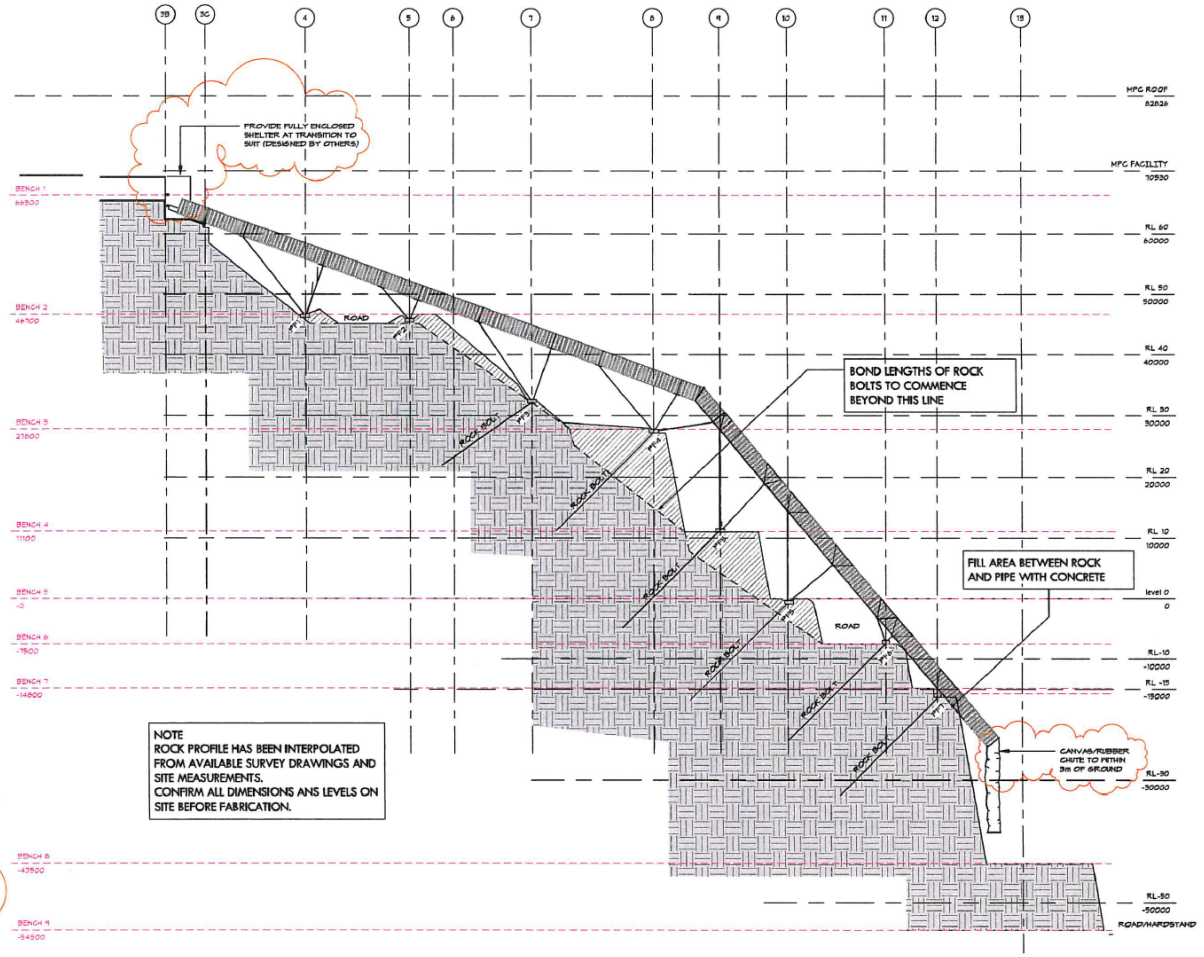


**CONVEYOR AND CHUTE ELEVATION**
SCALE 1 : 400

| AMDT | DATE | BY | DESCRIPTION | AMDT | DATE | BY | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| C | 15.06.11 | DWS | REVISED AS NOTED | | | | |
| B | 09.06.11 | DWS | MODULE OPTION ISSUED FOR CONSTRUCTION | | | | |
| A | 09.04.11 | DWS | ISSUED FOR CONSTRUCTION | | | | |



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Fax. (02) 9521 3066
SUTHERLAND - WOLLONGONG - GOLD COAST - GOULBURN - PICTON

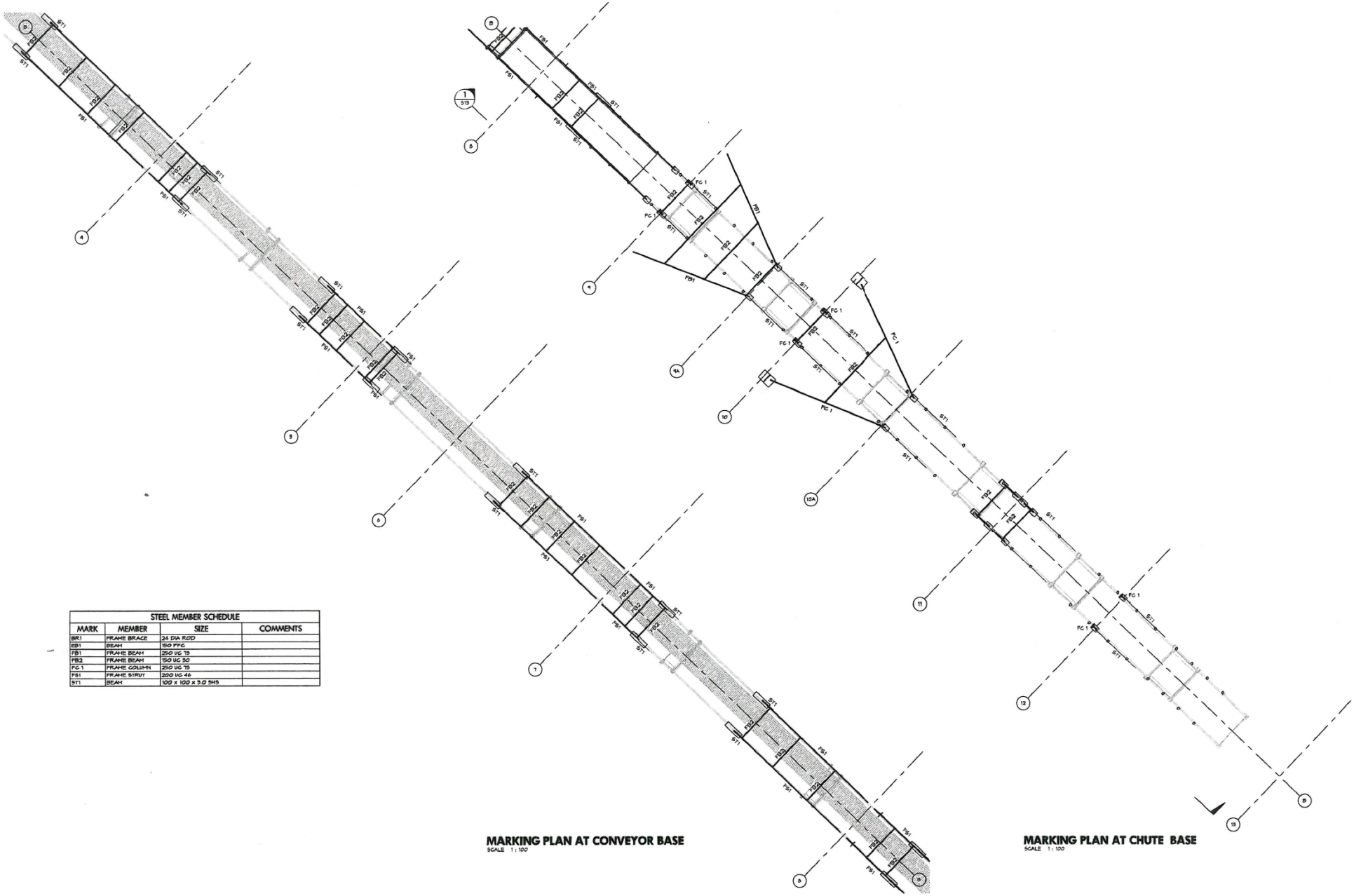
| | |
|---|---|
| DESIGN : | MM |
| DRAWN : | DWS |
| DATE : | 2010 |
| DRG SIZE : | A1 |
| SCALE : | As indicated |
| PROJECT MGR : | MM |

CHUTE SECTIONS

**LHBC CHUTE AND CONVEYOR**
OLD WALGROVE ROAD
EASTERN CREEK, NSW
**DIAL A DUMP**

080233
S04 C

CIVIL STRUCTURAL BUILDING SERVICES



| STEEL MEMBER SCHEDULE | | | |
|---|---|---|---|
| MARK | MEMBER | SIZE | COMMENTS |
| BR1 | FRAME BRACE | 24 DIA ROD | |
| EB1 | BEAM | 150 PFC | |
| FB1 | FRAME BEAM | 250 UC 73 | |
| FB2 | FRAME BEAM | 150 UC 30 | |
| FC 1 | FRAME COLUMN | 250 UC 73 | |
| FS1 | FRAME STRUT | 200 UC 46 | |
| ST1 | BEAM | 100 x 100 x 3.0 SHS | |

**MARKING PLAN AT CONVEYOR BASE**
SCALE 1 : 100

**MARKING PLAN AT CHUTE BASE**
SCALE 1 : 100

| AMDT | DATE | BY | DESCRIPTION |
|---|---|---|---|
| B | 08.06.11 | DHS | MODULE OPTION ISSUED FOR CONSTRUCTION |
| A | 08.04.11 | DHS | ISSUED FOR CONSTRUCTION |



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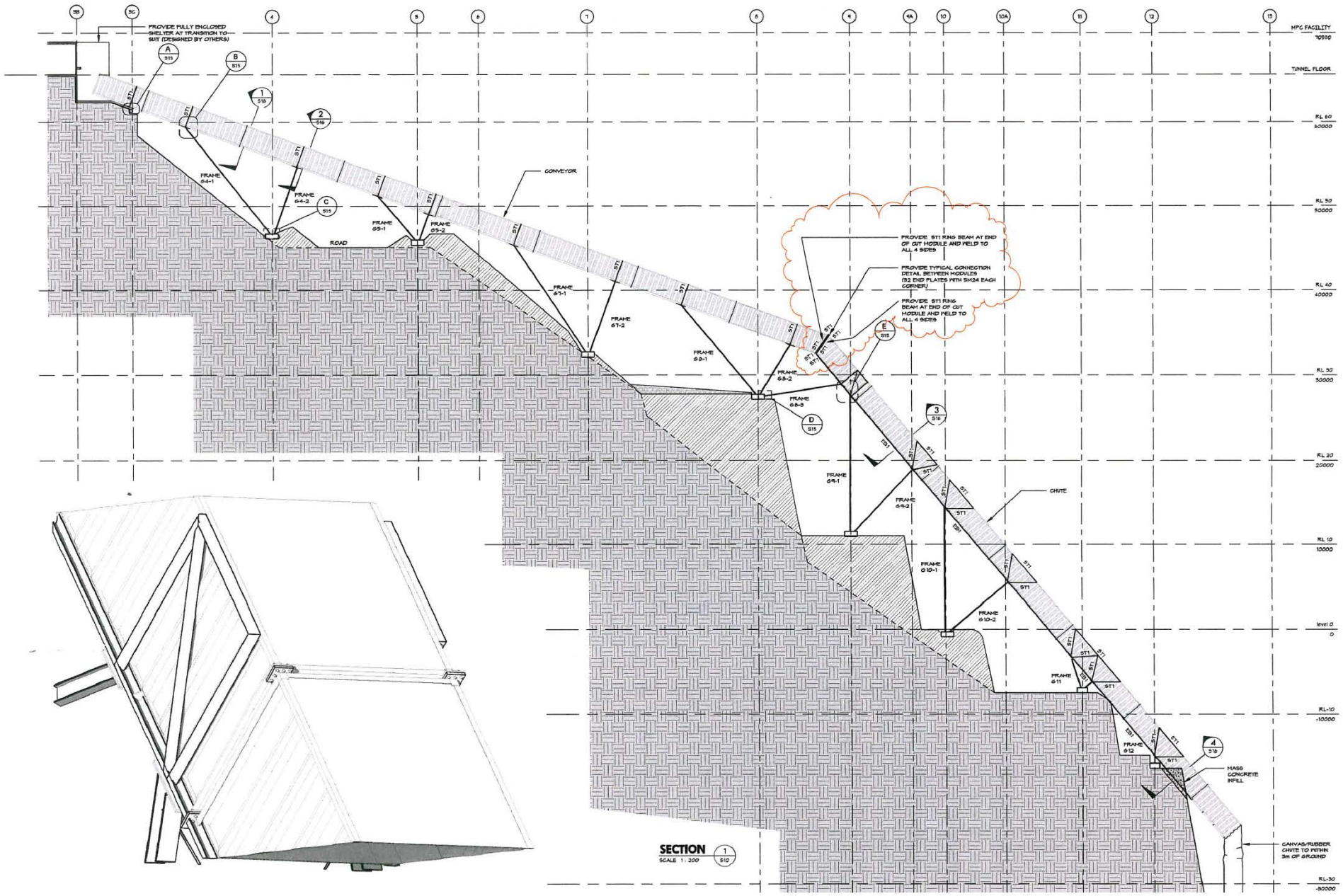
| | |
|---|---|
| DESIGN : | MM |
| DRAWN : | DWS |
| DATE : | 2010 |
| DRG SIZE | A1 |
| SCALE : | 1 : 100 |
| PROJECT MGR | MM |

**STEEL MARKING PLAN AT BASE OF CONVEYOR AND PIPE FRAMES**

**LHBC CHUTE AND CONVEYOR**
OLD WALGROVE ROAD
EASTERN CREEK, NSW
**DIAL A DUMP**

**080233 S10 B**




| AMDT | DATE | BY | DESCRIPTION |
|---|---|---|---|
| C | 15.06.11 | DWS | REVISED AS NOTED |
| B | 08.06.11 | DWS | MODULE OPTION ISSUED FOR CONSTRUCTION |
| A | 09.04.11 | DWS | ISSUED FOR CONSTRUCTION |

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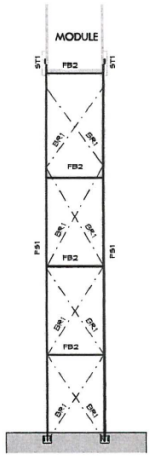
| | |
|---|---|
| DESIGN : | MM |
| DRAWN : | DWS |
| DATE : | 2010 |
| DRG SIZE | A1 |
| SCALE | 1 : 200 |
| PROJECT MGR | MM |

STEELWORK ELEVATION AND DETAILS

**LHBC CHUTE AND CONVEYOR**
OLD WALGROVE ROAD
EASTERN CREEK, NSW
**DIAL A DUMP**

080233
S13C

| STEEL MEMBER SCHEDULE | | | |
|---|---|---|---|
| MARK | MEMBER | SIZE | COMMENTS |
| BR1 | FRAME BRACE | 24 DIA ROD | |
| FB1 | BEAM | 150 PFC | |
| FB1 | FRAME BEAM | 250 UC 73 | |
| FB2 | FRAME BEAM | 150 UC 30 | |
| FC 1 | FRAME COLUMN | 250 UC 73 | |
| FS1 | FRAME STRUT | 200 UC 46 | |
| ST1 | BEAM | 100 x 100 x 3.0 SHS | |

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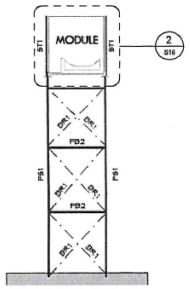
SCALE 1 : 100

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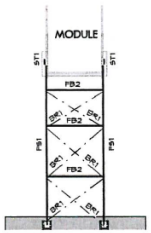


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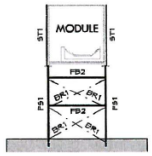


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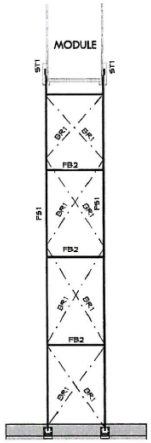


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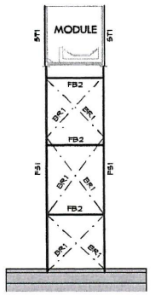


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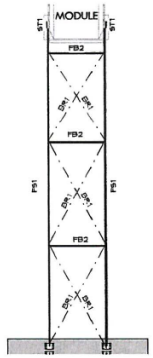


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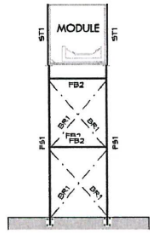


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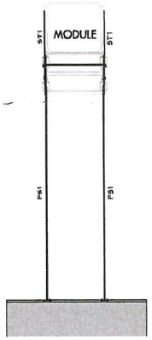


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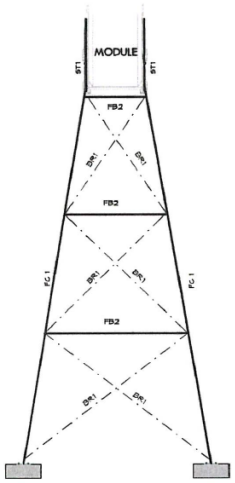


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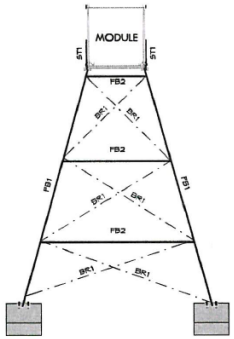


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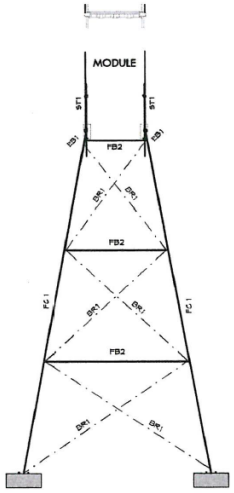


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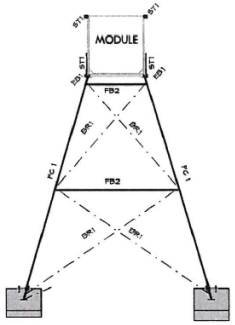


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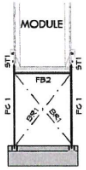


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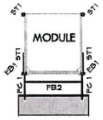


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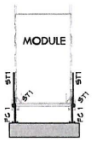


**FRAME GRID 12**
SCALE 1 : 100

| | | | | | | |
|---|---|---|---|---|---|---|
| C | 08.06.11 | DWS | MODULE OPTION ISSUED FOR CONSTRUCTION | | | |
| B | 18.05.11 | DWS | ISSUED FOR INFORMATION | | | |
| A | 08.04.11 | DWS | ISSUED FOR CONSTRUCTION | | | |
| AMDT | DATE | BY | DESCRIPTION | AMDT | DATE | BY | DESCRIPTION |

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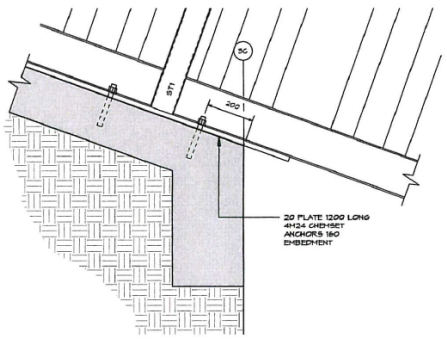
| | |
|---|---|
| DESIGN : | MM |
| DRAWN : | DWS |
| DATE : | 2010 |
| DRG SIZE : | A1 |
| SCALE : | 1 : 100 |
| PROJECT MGR : | MM |

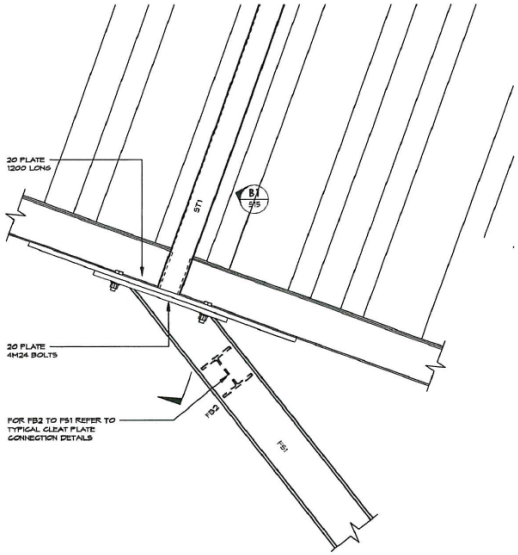
STEEL FRAME ELEVATIONS

**LHBC CHUTE AND CONVEYOR**
OLD WALGROVE ROAD
EASTERN CREEK, NSW
**DIAL A DUMP**

080233
S14 C



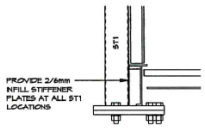

DETAIL A
SCALE 1 : 10 S13



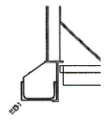

TYPICAL COLUMN/STRUT TO CONVEYOR MODULE CONNECTION

DETAIL B
SCALE 1 : 10 S13

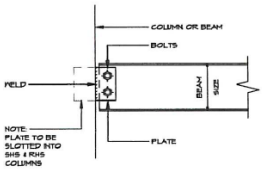
| STEEL MEMBER SCHEDULE | | | |
|---|---|---|---|
| MARK | MEMBER | SIZE | COMMENTS |
| BR1 | FRAME BRACE | 24 DIA ROD | |
| EB1 | BEAM | 150 PFC | |
| FB1 | FRAME BEAM | 250 UC 73 | |
| FB2 | FRAME BEAM | 150 UC 30 | |
| FC 1 | FRAME COLUMN | 250 UC 73 | |
| FS1 | FRAME STRUT | 200 UC 46 | |
| ST1 | BEAM | 100 x 100 x 5.0 SHS | |




SECTION B1
SCALE 1 : 10 S15




SECTION E1
SCALE 1 : 10 S15

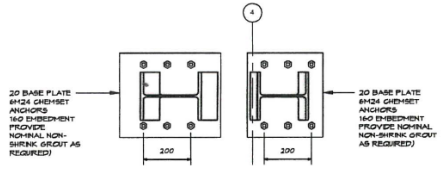



SECTION VIEW

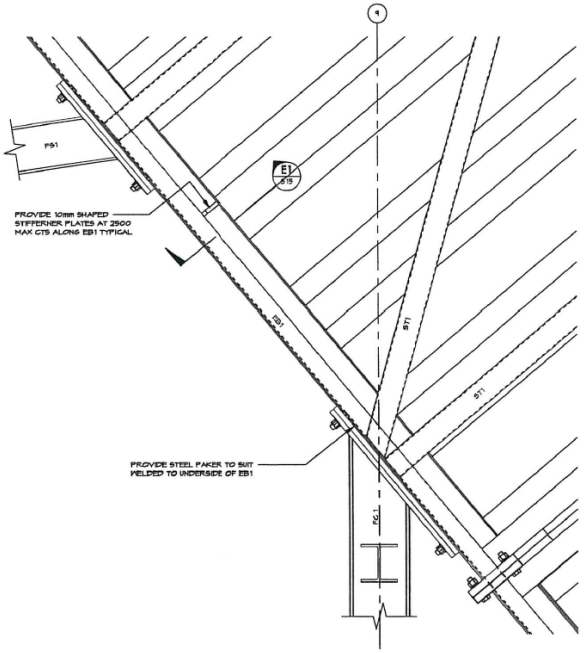
| TYPICAL CONNECTION SCHEDULE<br>FOR UB, UC & PFC BEAM TO FIN PLATE CONECTIONS | | | |
|---|---|---|---|
| BEAM SIZE | PLATE | BOLTS | WELD |
| 100-125 | 10mm | 2-M10 | 6mm |
| 150 | 10mm | 2-M16 | 6mm |
| 180-250 | 10mm | 2-M20 | 6mm |
| 250-310 | 10mm | 3-M20 | 6mm |
| 360 | 10mm | 4-M20 | 6mm |
| 410-460 | 10mm | 5-M20 | 6mm |

NOTE:
- ALL WELDS TO BE CONTINUOUS FILLET WELD ALONG ONE SIDE OF THE PLATE
- M10-M12 BOLTS TO BE COMMERCIAL BOLTS PROPERTY CLASS 4.6 U.N.O.
- M16-M36 BOLTS TO BE STRUCTURAL BOLTS PROPERTY CLASS 8.8 U.N.O.
- ALL BOLTS TO BE SNUG-TIGHT (4.6/S & 8.8/S) U.N.O.

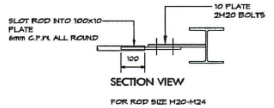
TYPICAL CLEAT PLATE DETAIL
SCALE 1 : 10



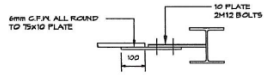

TYPICAL BASE PLATE DETAIL



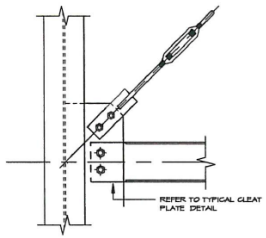

DETAIL E
SCALE 1 : 10 S13




SECTION VIEW
FOR ROD SIZE M20-M24



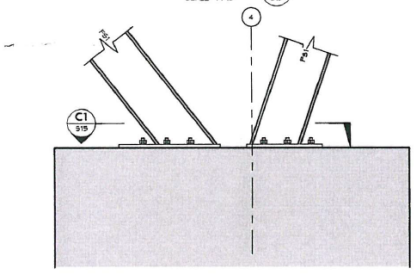

SECTION VIEW
FOR ROD SIZE M10-M16



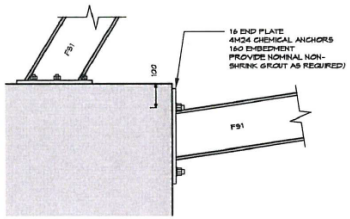

ELEVATION VIEW

TYPICAL ROD BRACING DETAILS
SCALE 1 : 10

SECTION C1
SCALE 1 : 10 S15




DETAIL C
SCALE 1 : 10 S13




DETAIL D
SCALE 1 : 10 S13

| AMDT | DATE | BY | DESCRIPTION |
|---|---|---|---|
| B | 08.06.11 | DWS | MODULE OPTION ISSUED FOR CONSTRUCTION |
| A | 08.04.11 | DWS | ISSUED FOR CONSTRUCTION |



CIVIL STRUCTURAL BUILDING SERVICES

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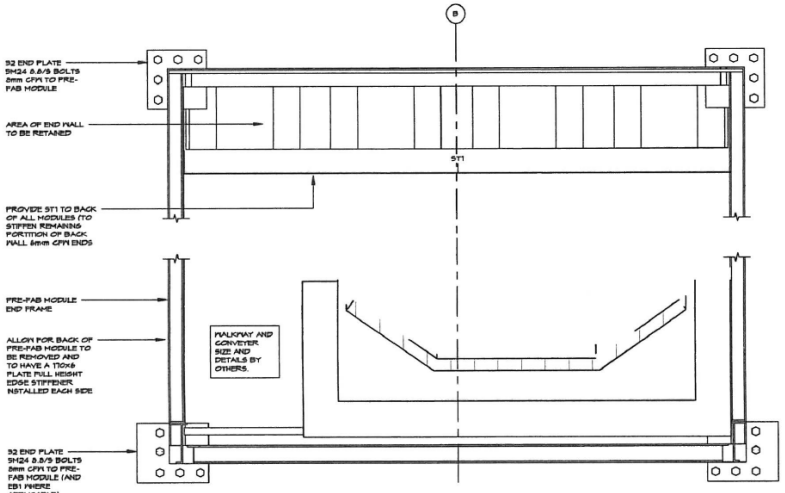
| | |
|---|---|
| DESIGN : | MM |
| DRAWN : | DWS |
| DATE : | 2010 |
| DRG SIZE : | A1 |
| SCALE : | 1 : 10 |
| PROJECT MGR : | MM |

STEELWORK DETAILS
SHEET 1

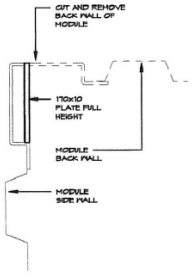
LHBC CHUTE AND CONVEYOR
OLD WALGROVE ROAD
EASTERN CREEK, NSW
DIAL A DUMP

080233
S15 B

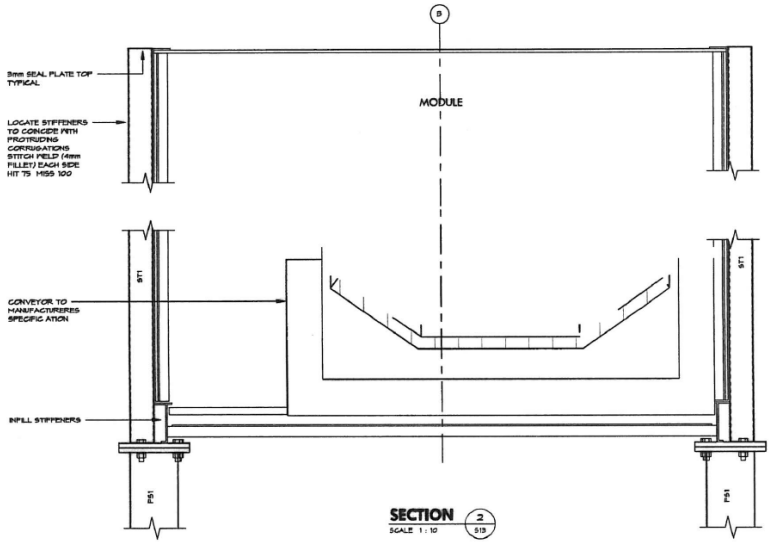



TYPICAL MODULE TO MODULE CONNECTION DETAIL

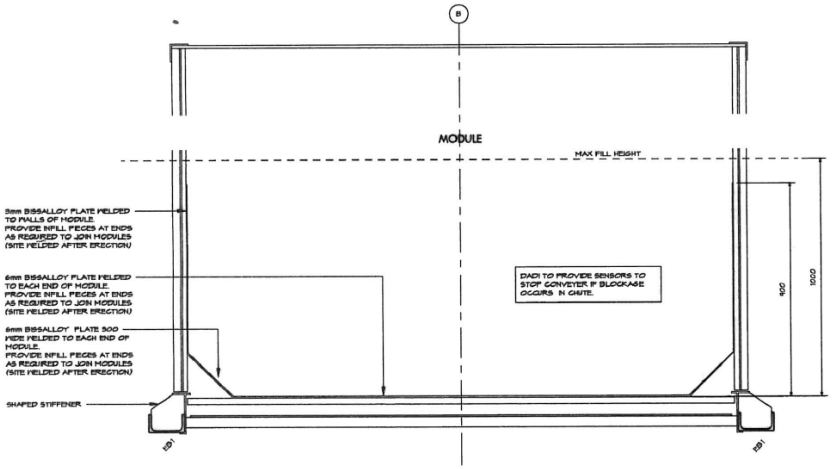
**SECTION** 1 / S13
SCALE 1 : 10



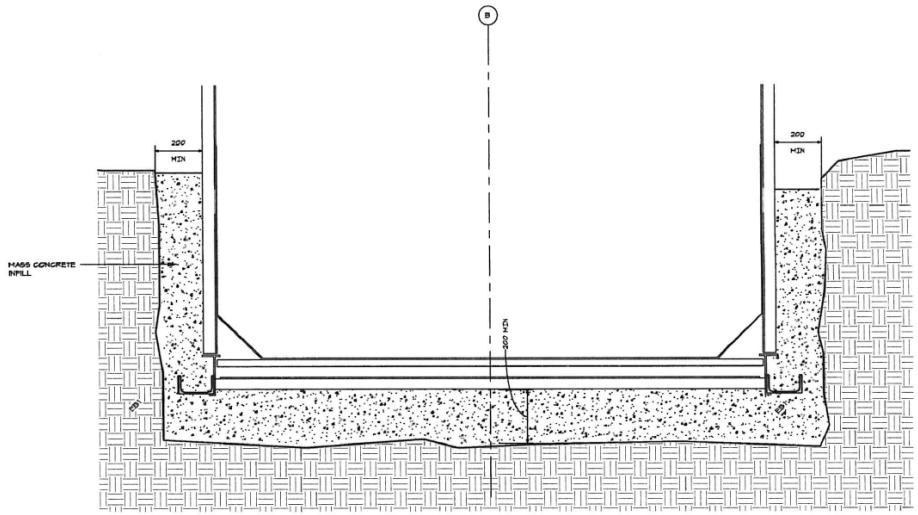

**MODULE END DETAIL**
SCALE 1 : 5




**SECTION** 2 / S13
SCALE 1 : 10




**SECTION** 3 / S13
SCALE 1 : 10




**SECTION** 4 / S13
SCALE 1 : 10

| AMDT | DATE | BY | DESCRIPTION |
|---|---|---|---|
| B | 08.06.11 | DWS | MODULE OPTION ISSUED FOR CONSTRUCTION |
| A | 08.04.11 | DWS | ISSUED FOR CONSTRUCTION |



CIVIL STRUCTURAL BUILDING SERVICES

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Fax. (02) 9521 3099
SUTHERLAND - WOLLONGONG - GOLD COAST - GOULBURN - PICTON

| | |
|---|---|
| DESIGN : | MM |
| DRAWN : | DWS |
| DATE : | 2010 |
| DRG SIZE : | A1 |
| SCALE : | As indicated |
| PROJECT MGR : | MM |

**STEELWORK DETAILS SHEET 2**

**LHBC CHUTE AND CONVEYOR**
OLD WALGROVE ROAD
EASTERN CREEK, NSW
**DIAL A DUMP**

**080233**
**S16 B**