Guide to Construction

Numeric LED Scoreboards

Installing a Scoreboard. The reality

A very common request we get is for Clubs to install their own board. It makes sense, the Clubs have limited funds and have capable volunteer members who will enthusiastically donate their time, expertise and sometimes materials.

At AusSport we have been manufacturing and installing scoreboards all over Australia since 1999. We have literally seen hundreds of sites and an amazing array of installations. Some are great, some are not quite so great and some have ended in tears.☺

We are here to help you. Right from the start we need you to heed our warnings.

Building a scoreboard is a serious, expensive endeavour. You need to be confident you can commit significant time and money to get a successful result.

It is crucial the scoreboard when constructed is a safe, stable structure that cannot do harm to anyone standing near or under it.

If you take on this task you must make absolutely sure you have obtained all necessary approvals and engineering certification.

OK so you still want to DIY?☺

We are here to help you.

Inside this document you will find some very useful and practical information.

When you have actually purchased a scoreboard from us we then give you precise information related to your board. That way you will have all the numbers and info you need to complete the work.

First of all we have a general guide to what we would do if we were installing your scoreboard.

It will be helpful for you to determine the sequence the work should be done in and how much time to allow. Of course when using volunteers your timings could be vastly different to what we show. Also we are using experienced installers and contractors who have done it a few times before so they know the onsite shortcuts.

Next we show the specific information needed for the trade involved at that point. It is not an exhaustive list of things they have to do. We have to assume a certain level of expertise is available to complete each trade task. We are just pointing out the important things related to scoreboard construction.

Finally we provide example drawings to help you design, fabricate and construct your scoreboard. **NB. These drawings are not a certified engineers plan for your site. We cannot provide that for a site that our engineer has not been involved in.**

Our Process for Installation

Installation is undertaken by our experienced sub contractors. We assemble the scoreboard to it's support frame, tested and commissioned in our factory. That way our site installation is limited to the installation of the legs and rear access gantry (if one is required) and then lift the scoreboard and it's support frame onto the legs. This means a significant saving on site time as each individual electronics cabinet does not have to be assembled to the frame on site.

Prior to installation we complete a site inspection to review the proposed installation location to ensure clear access and condition of the install area. We also would require a site geo-technical report.

Our program of works generally consists of the following sequence:

Day 1 – excavation & form work

Day 2 – form work and placing of conduits for power and data. NB engineer approval required prior to pouring footings.

Day 3 – pour footings

Day 4 to 14 – concrete curing & communication works to run during concrete curing time

Day 15/16 – drill and set anchor bolts for support legs, stand support legs, stand scoreboard and secure to legs

Day 17 – electrical and data connection

Day 18 – test & commission

Day 19 – operator training, scoreboard familiarisation & final hand over

Preliminary Design Work

Location

You definitely don't want to change the location of the scoreboard after it is installed! So it is important to take time and choose the location carefully. It needs to be clearly seen by spectators. That sounds obvious but we have seen a number of installations where that was not the result.

The further you are away from spectators the larger your screen will need to be. That ensures spectators can actually see the scores clearly and any other information you are displaying.

The optimum location is directly opposite the grandstand or location where most people gather to watch the sport.

Keep in mind sun orientation at the time when the majority of sport is being played. While our screens are amongst the brightest in the industry it is still better to not face them directly into the west if at all possible.

Vegetation

Make sure trees or structures are not in your sight lines to the spectators. Keep in mind your scoreboard will be a few metres above your eyeline when you stand at the location. Ideally you should have a ladder or other vertical access equipment on site so you can fully confirm the scoreboard will be clearly seen by the spectators.

Be aware that removal of vegetation is a controlled process in most locations and there may be specific steps necessary to gain approvals.

Power

Give consideration to available power where you wish to locate. It is expensive to do long runs of trenching and cable. It may be possible to utilize a power circuit that is used for lighting towers although you should seek expert electrical advice on this. It is very important that the scoreboard is connected to a clean source of power.

NB Running the scoreboard from a generator is not recommended and potentially can void your warranty. If you ever have an emergency requirement please contact us on the correct device to use.

A broad rule of thumb to use for power load is the following:

Digit Size	Max Power Rating (W) Using 18 digits	Max Power Rating (W) Using 18 digits Plus 20 characters (VMS/TN)
200 – 300mm	240	800
400 – 500mm	500	1100

Council Approvals

A building approval will most likely be required by your local Council. It will depend on ownership of the ground, whether the board is replacing an existing one, the size of the scoreboard.

Requirements vary from Council to Council, however, generally details including location, frame detail, height & engineering detail for frame construction and footing construction will be required.

We strongly recommend you engage the services of a private certifier to deal with & manage the Council building application process.

Engineering Drawings

These are a very important part of the process. They ensure you get a successful result. If the scoreboard is being installed on Council property it will be a mandatory requirement. We will provide you with our suggested installation drawings. These drawings are based on previous installations we have done and are based on our engineer's advice on those installations. These drawings are provided to help you with your design development. They do not take into account local conditions such as wind and soil composition which crucially affect your design at your site.

We strongly recommend you engage a local engineer to develop a design specifically for your board and installation location.

The drawings we give you are not certified for your specific location.

.

Geo-Technical Report

This involves testing the soil at the site to determine how stable it is. Your engineer most likely will ask for this (and so might the Council) unless there is prior knowledge regarding the site.

Ideally the soil will be undisturbed and not consist of construction fill or refuse overburden. Many sporting fields are built on disused tip sites or on reclaimed ground or on flood prone ground. These are all factors that impact on the building of the scoreboard.

Construction

For the Concreter / Excavator

Make sure all nearby services have been either relocated or clearly identified as not being in the area of the scoreboard.

All excavations should be carefully inspected to ensure they meet the planned size of the slab.

If the ground is found to have soft spots they should be dug out and replaced with compacted crushed rock.

Any compacted fill that is used below the footing should be rolled or vibrated using compactor equipment.

Ensure the electrician has installed any necessary conduits prior to the concrete pour.

Ensure the hold down bolts are accurately positioned and secured prior to the pour.

The concrete should be installed as per the engineering drawings & relevant certification should be produced by the contractor to certify the slab has been constructed in accordance with the engineering detail.

A minimum curing time of 7 days is always specified on our boards to ensure a long life for the slab.

Framing Fabrication

We provide simple construction drawings for you at the end of this document. There are four drawings covering the typical scoreboard sizes. The final drawing shows the slab and footing details as well as the fixing details. This is only a suggestion and does not take into account any particular factors at your site.

We can also provide all of the detailed engineering calculations to determine the size of the supporting posts if your engineer requires it.

As you can see from the drawings your frame should consist of a two post structure which has a horizontal seating angle attached for the scoreboard to rest upon. Fixing should then be done to secure the internal aluminium support structures of the scoreboard to the post structure. Use a 25mm strap as shown in the attached drawings.

NB The example shown is generic and the positioning of the internal aluminium support structure beams may not match to the scoreboard you receive. We can provide you with an accurate frame drawing of your board. Please do not drill anywhere on the scoreboard except into the aluminium support structure. Besides not fully securing the scoreboard you may damage the sensitive electronics.

Dependent upon the size of your scoreboard the structure can become quite large and unmanageable for the DIY person who only occasionally fabricates steel construction jobs.

Certainly any board over 5 metres square should be in the hands of a competent fabricator.

All welds should be performed by an experienced, qualified welder and comply with appropriate standards. **Never weld if the scoreboard is attached to the frame. The electronics WILL BE DAMAGED.**

Our frames are grit blasted to class 2.5 and then painted with protective layers.

We recommend that you have your frame hot dipped galvanised.

High strength bolts (8.8) should be used where required.

Relevant certification should be produced by the contractor to certify that the frame has been manufactured in accordance with the engineering detail.

Installing the Board

Fitting the scoreboard to the frame is most easily done on the ground if you can secure the frame in such a way to allow you to work on the board without risk of the structure falling over or damaging the board. That is the way we do it in our workshop. Of course you can only do this if you have lifting equipment available that can put the scoreboard and frame up all in the one go.

The weight of the scoreboard is 30-35kg/metres squared. Use the following table for a guide to what your scoreboard weighs.

Scoreboard Dimensions	Weight (kg)
2400mm x 1200mm	100
3600mm x 1960mm	246
4800mm x 2260mm	325
6000mm x 2400mm	432

With the heights involved with bigger boards (or smaller boards mounted at height) vertical access equipment such as scissor or boom lifts are necessary.

Make sure everyone understands the weights being lifted and they have appropriate tickets to operate any machinery on site.

Electrical

Most of the time you will be hardwiring the scoreboard to the power supply usually via an isolating switch. You will require a licensed electrician to complete these works.

Sometimes you can save money by having the trench for electricity supply dug at the same time as the holes for the footing of the scoreboard.

Ensure an electrical certificate of compliance is issued in accordance with State regulations.

We always provide a power cable (or cables) for permanent wiring coming from the scoreboard.

Conclusion

We have provided this guide to help you through the complex project that building a scoreboard is.

If after reading through you don't think your Club has the expertise or resources to make it happen then please do not hesitate to make contact with us. There are options:

We can provide you with a complete turnkey approach where we take care of every aspect of designing, fabricating and constructing your scoreboard.

We can provide you with the frame and scoreboard all assembled and your Club members then do the concrete slab and erection.

If you need any further information please let us know. We are happy to help where we can but please note we cannot provide complete engineers details for any site where our engineer has not been engaged to provide a design.

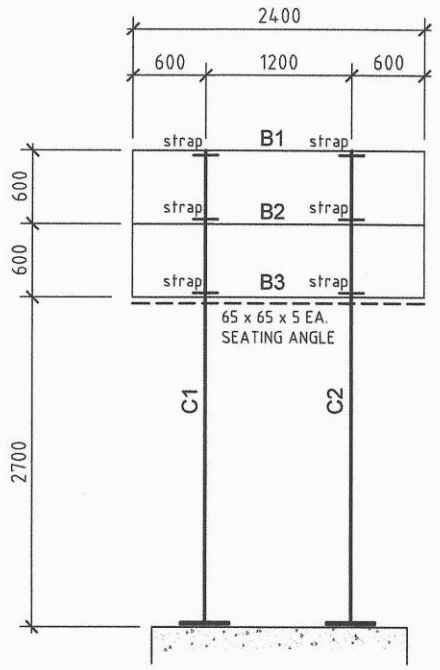
We are looking forward to helping you get a fantastic scoreboard constructed for your Club.

Cheers

The AusSport Team

For Design Development Only.

All Enquiries regarding these drawings to AusSport only.



FRONT ELEVATION

Scale 1:50

STEEL SCHEDULE

B1 - 100 x 25 x 2.5 ALUMINIUM RHS
B2 - 100 x 25 x 2.5 ALUMINIUM RHS
B3 - 100 x 25 x 2.5 ALUMINIUM RHS

INCORPORATED IN SCOREBOARD FRAME

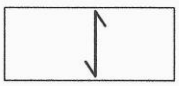
Internal to Scoreboard

C1 & C2 - 150 x 150 x 5.0 STEEL SHS

FOOTINGS

2400 x 1300 x 550mm DEEP SLAB

REINFORCED WITH SL92 FABRIC (TOP) WITH 30mm COVER AND RL1218 FABRIC (BTM) WITH 50mm COVER.
CONCRETE GRADE TO BE N32 (32MPa)



BOTTOM REINFORCEMENT MAIN BAR DIRECTION.

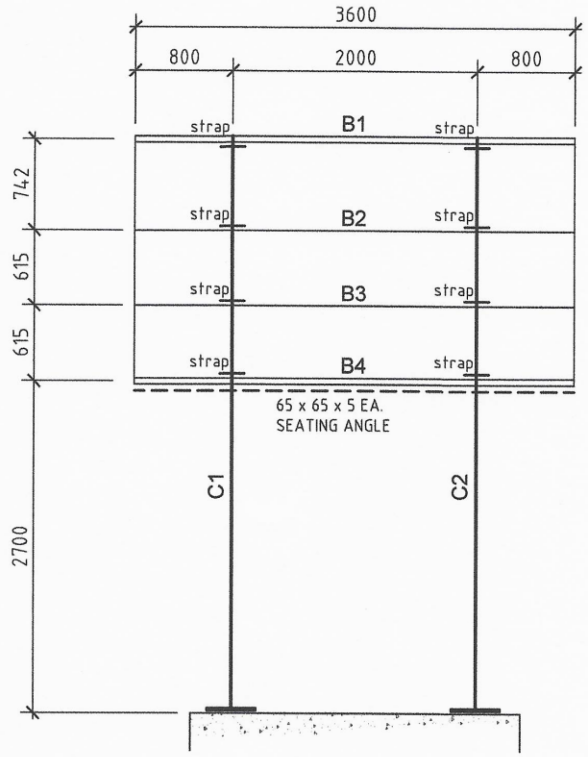
REGION A & B
WIND TERRAIN CATEGORY 2.

Rev.	Description	Date
B	Redesign	22/11/18
A	Issued	6/11/18

Scale: 1:50	Project: SCOREBOARD 2400 x 1200	CONSULTING ENGINEERS Pty. Ltd
Date: Nov. 2018		
Drawn: P.S.		
Job Number: N/A	Drawing Number: S1 Revision: B	P.O BOX 2498 PORT MACQUARIE 2444 PH: 65831441 FAX: 65831622

For Design Development Only.

All Enquiries regarding these drawings to AusSport only.



FRONT ELEVATION

Scale 1:50

STEEL SCHEDULE

B1 - 2 / 100 x 25 x 2.5 ALUMINIUM RHS
B2 - 100 x 25 x 2.5 ALUMINIUM RHS
B3 - 100 x 25 x 2.5 ALUMINIUM RHS
B4 - 2 / 100 x 25 x 2.5 ALUMINIUM RHS

INCORPORATED IN SCOREBOARD FRAME

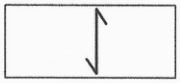
C1 & C2 - 150 x 150 x 5.0 STEEL SHS

Internal to Scoreboard

FOOTINGS

3600 x 1700 x 550mm DEEP SLAB

REINFORCED WITH SL92 FABRIC (TOP) WITH 30mm COVER AND RL1218 FABRIC (BTM) WITH 50mm COVER.
CONCRETE GRADE TO BE N32 (32MPa)



BOTTOM REINFORCEMENT MAIN BAR DIRECTION.

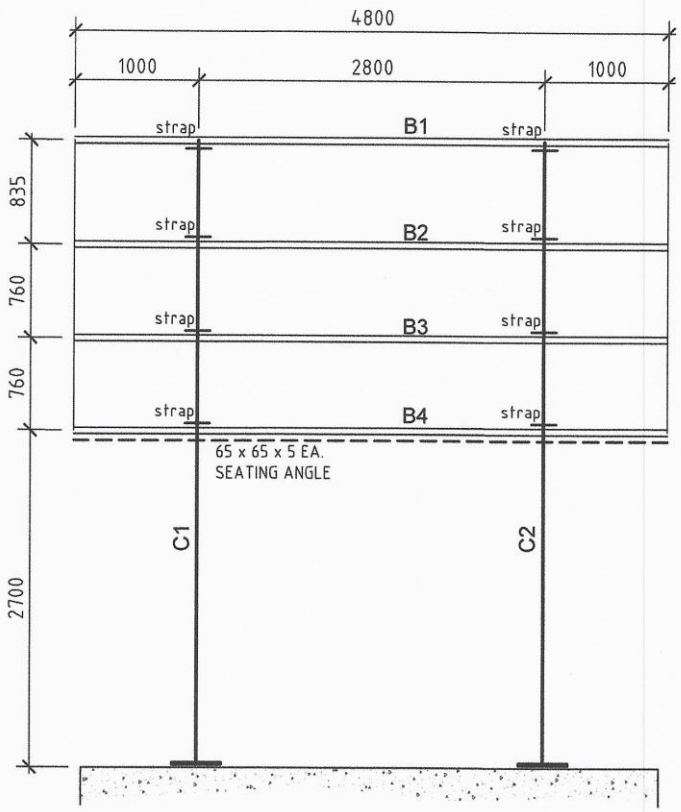
REGION A & B
WIND TERRAIN CATEGORY 2.

Rev.	Description	Date
B	Redesign	22/11/18
A	Issued	6/11/18

Scale: 1:50	Project: SCOREBOARD 3600 x 2400	CONSULTING ENGINEERS Pty. Ltd
Date: Nov. 2018		P.O BOX 2498 PORT MACQUARIE 2444
Drawn: P.S.		PH: 65831441 FAX: 65831622
Job Number: N/A	Drawing Number: S1 Revision: B	

For Design Development Only.

All Enquiries regarding these drawings to AusSport only.



FRONT ELEVATION

Scale 1:50

STEEL SCHEDULE

B1 - 2 / 100 x 25 x 2.5 ALUMINIUM RHS
B2 - 2 / 100 x 25 x 2.5 ALUMINIUM RHS
B3 - 2 / 100 x 25 x 2.5 ALUMINIUM RHS
B4 - 2 / 100 x 25 x 2.5 ALUMINIUM RHS

INCORPORATED IN SCOREBOARD FRAME

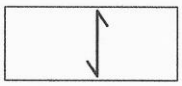
C1 & C2 - 150 x 150 x 5.0 STEEL SHS

Internal to Scoreboard

FOOTINGS

4800 x 2200 x 550mm DEEP SLAB

REINFORCED WITH SL92 FABRIC (TOP) WITH 30mm COVER AND RL1218 FABRIC (BTM) WITH 50mm COVER.
CONCRETE GRADE TO BE N32 (32MPa)

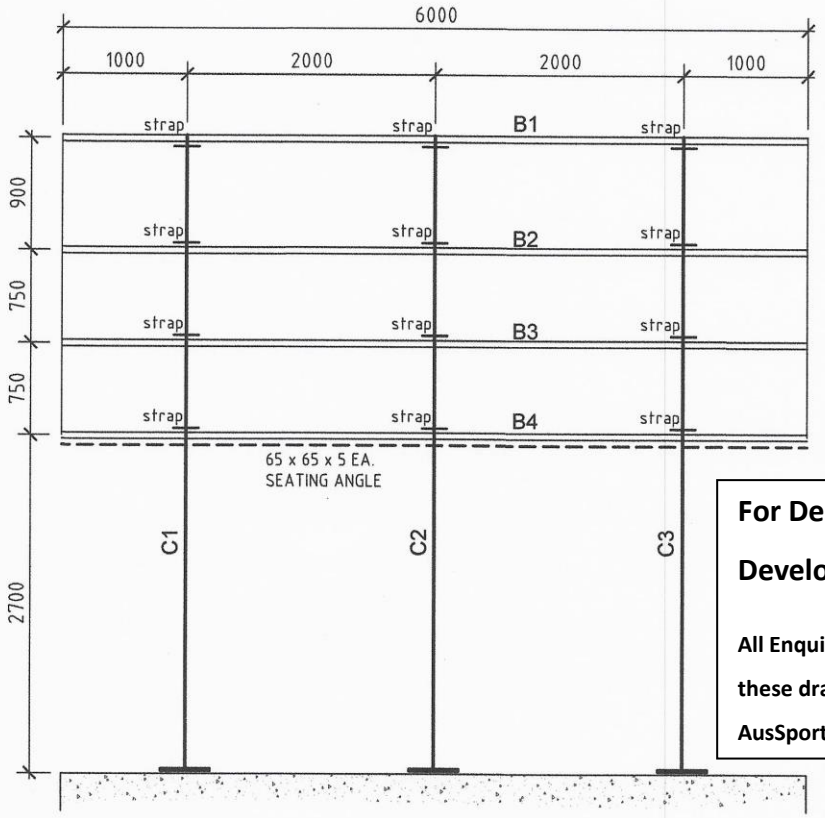


BOTTOM REINFORCEMENT MAIN BAR DIRECTION.

REGION A & B
WIND TERRAIN CATEGORY 2.

Rev.	Description	Date
B	Redesign	22/11/18
A	Issued	6/11/18

Scale: 1:50	Project: SCOREBOARD 4800 x 2400	CONSULTING ENGINEERS Pty. Ltd
Date: Nov. 2018		P.O BOX 2498 PORT MACQUARIE 2444
Drawn: P.S.		PH: 65831441 FAX: 65831622
Job Number: N/A	Drawing Number: S1 Revision: B	



For Design Development Only.

All Enquiries regarding these drawings to AusSport only.

FRONT ELEVATION

Scale 1:50

Internal to Scoreboard

STEEL SCHEDULE

B1 - 2 / 100 x 25 x 2.5 ALUMINIUM RHS
B2 - 2 / 100 x 25 x 2.5 ALUMINIUM RHS
B3 - 2 / 100 x 25 x 2.5 ALUMINIUM RHS
B4 - 2 / 100 x 25 x 2.5 ALUMINIUM RHS

INCORPORATED IN SCOREBOARD FRAME

C1, C2 & C3 - 150 x 150 x 5.0 STEEL SHS

FOOTINGS

6000 x 2400 x 550mm DEEP SLAB

REINFORCED WITH SL92 FABRIC (TOP) WITH 30mm COVER AND RL1218 FABRIC (BTM) WITH 50mm COVER.
CONCRETE GRADE TO BE N32 (32MPa)

BOTTOM REINFORCEMENT MAIN BAR DIRECTION.

REGION A & B
WIND TERRAIN CATEGORY 2.

Rev.	Description	Date
B	Redesign	22/11/18
A	Issued	6/11/18

Scale: 1:50
Date: Nov. 2018
Drawn: P.S.
Job Number: N/A

Project: SCOREBOARD 6000 x 2400

Drawing Number: S1 Revision: B

CONSULTING ENGINEERS Pty. Ltd

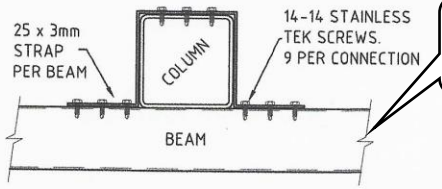
P.O BOX 2498
PORT MACQUARIE 2444

PH: 65831441
FAX: 65831622

For Design Development Only.

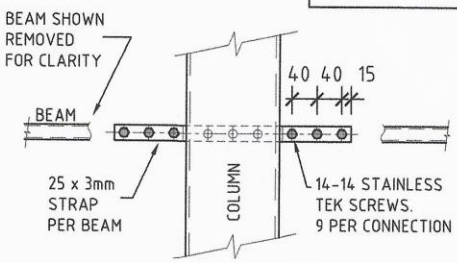
All Enquiries regarding these drawings to AusSport only.

Internal to Scoreboard



PLAN

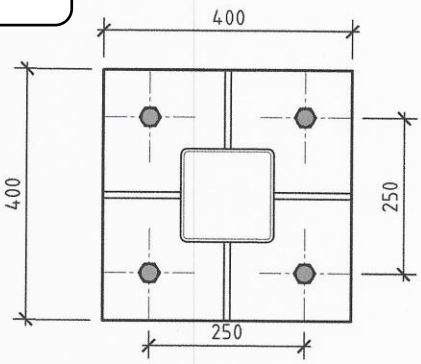
NOTE: DOUBLE BEAMS REQUIRE 2 STRAPS.



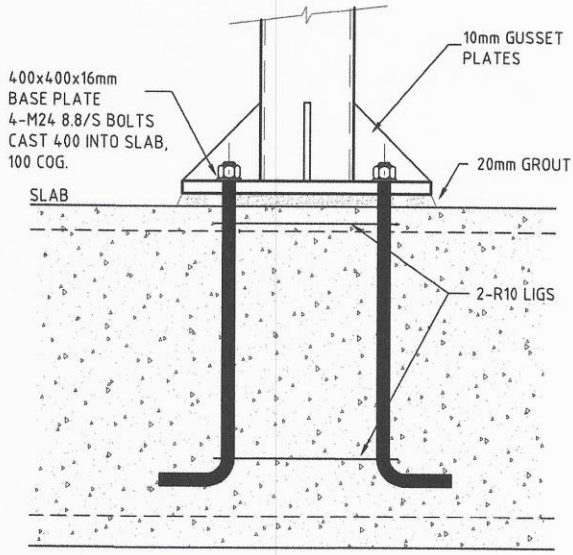
ELEVATION

STRAP CONNECTION DETAIL

Scale 1:10



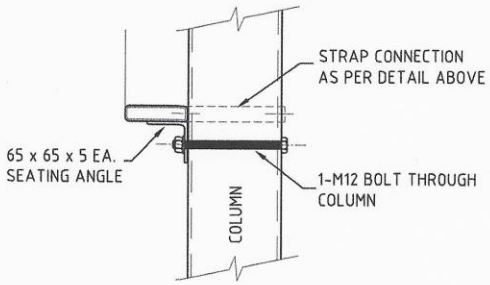
PLAN



ELEVATION

BASE PLATE DETAIL

Scale 1:10



SEATING ANGLE TO COLUMN DETAIL

Scale 1:10

REGION A & B
WIND TERRAIN CATEGORY 2.

Rev.	Description	Date
A	Issued	6/11/18

Scale: 1:10	Project: SCOREBOARD CONNECTION DETAILS	CONSULTING ENGINEERS Pty. Ltd
Date: Nov. 2018		P.O BOX 2498 PORT MACQUARIE 2444
Drawn: P.S.		PH: 65831441 FAX: 65831622
Job Number: N/A	Drawing Number: S2 Revision: A	