Design for the proposed upgrade of Bankstown North Public School, in Bankstown, NSW

Stage 3 (Detailed design) Road Safety Audit

February 2021

Patterson Building Group

Traffic Engineering Centre
Our clients are our partners

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Revision	Details	Date	Amended by
A		27.02.2021.	ZB

Author: Zoran Bakovic

Reviewer: Louis Peau, Snezana Bakovic, Ben Hubbard

Approved by: Zoran Bakovic

Date: 9 February 2021

Distribution: Patterson Building Group, Traffic Engineering Centre (file)

Contents

1. Summary

Audited project:	**Design for the proposed upgrade of Bankstown North Public School, in Bankstown, NSW**
Audit for:	Patterson Building Group
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Auditors:	Zoran Bakovic (Lead Level 3 Road Safety Auditor - ID:471) Louis Peau (Level 3 Road Safety Auditor - ID:1271) Snezana Bakovic (Level 3 Road Safety Auditor - ID:470) Ben Hubbard (Level 3 Road Safety Auditor - ID:322)
Audit type:	Stage 3 (Detailed design) Road Safety Audit
Commencement meeting:	4 February 2021
Site visit:	8 February 2021
Completion meeting:	To be advised by Patterson Building Group
Previous audit:	/

This Stage 3 (Detailed design) Road Safety Audit of the design for the proposed upgrade of Bankstown North Public School, in Bankstown, NSW, checked that the safety features of the design were suitable for the intended purpose and so conducive to a safe road environment for all types of road users.

This report documents the identified audit findings dated 9 February 2021.

The road safety audit identified two (2) safety issues, with risk attached to each issue classified as intolerable, or medium.

2. Introduction

This report presents the findings of Stage 3 (Detailed design) Road Safety Audit of the design for the proposed upgrade of Bankstown North Public School, in Bankstown, NSW (refer to Figure 2.1).

Figure 2.1: Study area
(Source: Patterson Building Group)

2.1 Audit objectives

The main objective of this road safety audit was to identify relevant road safety deficiencies in the design, which, if addressed, would improve safety for all categories of road users.

The other objectives of Stage 3 (Detailed design) Road Safety Audit were to:

- check the compatibility between the design's safety features and the functional classification of the roadways, car park, and assess locations
- identify any design's feature that can, either now or with time, create a safety problem
- identify additional design's features at the site that pose a safety hazard or risk to any of the road users, and determine the extent of deficiencies in the design, considering all road user groups

2.2 Procedures and reference material

The procedures used are those in the Roads and Maritime Services' (2011) *Guidelines for Road Safety Audit Practices* and Austroads' (2019) *Guide to Road Safety – Part 6A: Implementing Road Safety Audits*.

Stage 3 (Detailed design) Road Safety Audit checklist from the Austroads' guide was used by the audit team as a reference.

It should be noted that the positive attributes of the design have not been discussed.

2.3 Supporting information

Tables 2.1 & 2.2 show the drawings that have been provided for the purpose of this road safety audit.

DRAWING SCHEDULE	
DRG No.	DRAWING TITLE
C1.01	COVERSHEET, DRAWING SCHEDULE AND LOCALITY PLAN
C1.11	SPECIFICATION NOTES – SHEET 1
C1.12	SPECIFICATION NOTES – SHEET 2
C1.21	GENERAL ARRANGEMENT PLAN
C1.31	STAGING PLAN
C2.01	CONCEPT SEDIMENT AND EROSION CONTROL PLAN - STAGE 1A
C2.02	CONCEPT SEDIMENT AND EROSION CONTROL PLAN - STAGE 1B
C2.11	SEDIMENT AND EROSION CONTROL DETAILS
C3.01	BULK EARTHWORKS PLAN
C4.01	STAGE 1A SITEWORKS AND STORMWATER MANAGEMENT PLAN – SHEET 1
C4.02	STAGE 1A SITEWORKS AND STORMWATER MANAGEMENT PLAN – SHEET 2
C5.01	STAGE 1B SITEWORKS AND STORMWATER MANAGEMENT PLAN
C6.01	STORMWATER LONGITUDINAL SECTIONS - SHEET 1
C6.02	STORMWATER LONGITUDINAL SECTIONS - SHEET 2
C8.01	ROAD LONGITUDINAL SECTION
C8.11	ROAD CROSS SECTIONS - SHEET 1
C8.12	ROAD CROSS SECTIONS - SHEET 2
C9.01	TYPICAL DETAILS - SHEET 1
C9.02	TYPICAL DETAILS - SHEET 2
C10.01	CATCHMENT PLAN AND DESIGN SUMMARY

Table 2.1

Swept path analysis drawings # ptc001; ptc002; ptc003; and ptc004

2.4 Audit team

This Stage 3 (Detailed design) Road Safety Audit was carried out by the following team:

- **Zoran Bakovic**, Traffic Engineering Centre, Director / Traffic Engineering and Road Safety Expert – Level 3 Road Safety Auditor – Audit team leader (Auditor ID: 471), Master of Engineering (Traffic & Transportation) & Master of Engineering (Traffic & Logistic)
- **Louis Peau**, Associate / Senior Civil Engineer – Level 3 Road Safety Auditor, Audit team member (Auditor ID: 1271), Bachelor of Engineering (Civil)
- **Snezana Bakovic**, Traffic Engineering Centre, Associate / Principal Traffic Engineer – Level 3 Road Safety Auditor – Audit team member (Auditor ID:470), Bachelor of Engineering (Traffic & Transportation)
- **Ben Hubbard**, Traffic Engineering Centre, Associate / Principal Traffic Engineer – Level 3 Road Safety Auditor – Audit team member (Auditor ID:322), Master of Engineering (Civil)

2.5 Responding to the audit report

The responsibility for the design and implementation of this design rests with the client's project management team, not with the auditors. The project manager is under no obligation to accept the audit findings. Also, it is not the role of the auditor to agree or to approve the project manager's responses to the audit. Rather, the audit provides the opportunity to highlight potential road safety problems and have them formally considered by the project manager or design manager in conjunction with all other project considerations.

3. Road safety program

3.1 Commencement meeting

A commencement meeting between Zoran Bakovic, Lead Level 3 Road Safety Auditor (Traffic Engineering Centre), and Dejan Poletan, Contract Administrator (Patterson Building Group), was held over the phone on 4 February 2021, when the road safety auditing procedure and methodology was explained.

3.2 Site inspection

In order to check the feasibility of implementing the proposed design, the daylight site inspection was undertaken on 8 February 2020, in dry weather and road condition.

A number of photos were taken (refer to Photos 3.1 & 3.2).

Photo 3.1
[Photo: Traffic Engineering Centre Pty Ltd]

Photo 3.2
[Photo: Traffic Engineering Centre Pty Ltd]

3.3 Completion meeting

Patterson Building Group is to advise of the need for a Completion meeting.

3.4 Corrective action response

A road safety audit is a formal process. The road safety audit report is by no means the end of the audit process. The audit report documents the audit teams' identified concerns made to improve the safety of the roads. This report must be responded to by the client with a written response to each and every audit finding.

3.5 Disclaimer

The findings and opinions in the report are based on the examination of the design and might not address all concerns existing at the time of the audit. The auditors have endeavoured to identify features of the design that could be modified or removed in order to improve safety, although it must be recognised that safety cannot be guaranteed since no road can be regarded as absolutely safe. The problems identified have been noted in this report and should be considered for improving road safety. Where corrective actions are not taken, this should be reported in writing, providing the reason for the decision. Readers are urged to seek specific advice on particular matters and not to rely solely on this report. While every effort has been made to ensure the accuracy of this report, it is made available strictly on the basis that everyone relying on it does so at their own risk without any liability to the Auditors.

4. Road Safety audit findings

4.1 Risk level

The rationale behind the assessment of risk is shown in Tables 4.1 to 4.3.

The risk level (Table 4.3) would be calculated as a product of frequency (Table 4.1) and severity (Table 4.2).

Table 4.4 suggests a treatment approach for the identified risks.

Table 4.1: Frequency – How often the problem could lead to a crash?

Frequency	Description
Frequent	Once or more per week
Probable	Once or more per year (but less than once a week)
Occasional	Once every five or ten years
Improbable	Less often than once every ten years

Table 4.2: Severity – What is the likely severity of the resulting crash type?

Severity	Description	Examples
Catastrophic	Likely multiple deaths	High-speed, multi-vehicle crash on a freeway. Car runs into crowded bus stop. Bus and petrol tanker collide. Collapse of a bridge or tunnel.
Serious	Likely death or serious injury	High or medium-speed vehicle/vehicle collision. High or medium-speed collision with a fixed roadside object. Pedestrian or cyclist struck by a car.
Minor	Likely minor injury	Some low-speed vehicle collisions. Cyclist falls from bicycle at low speed. Left-turn rear-end crash in a slip lane.
Limited	Likely trivial injury or property damage only	Some low-speed vehicle collisions. Pedestrian walks into object (no head injury). Car reverses into post.

Table 4.3: Risk level – the resulting risk level

	Frequent	Probable	Occasional	Improbable
Catastrophic	Intolerable	Intolerable	Intolerable	High
Serious	Intolerable	Intolerable	High	Medium
Minor	Intolerable	High	Medium	Low
Limited	High	Medium	Low	Low

Table 4.4: Treatment approach

Risk	Suggested treatment approach
Intolerable	Must be corrected.
High	Should be corrected or the risk significantly reduced, even if the treatment costs is high.
Medium	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.
Low	Should be corrected or the risk reduced, if the treatment cost is low.

4.2 Road safety audit findings

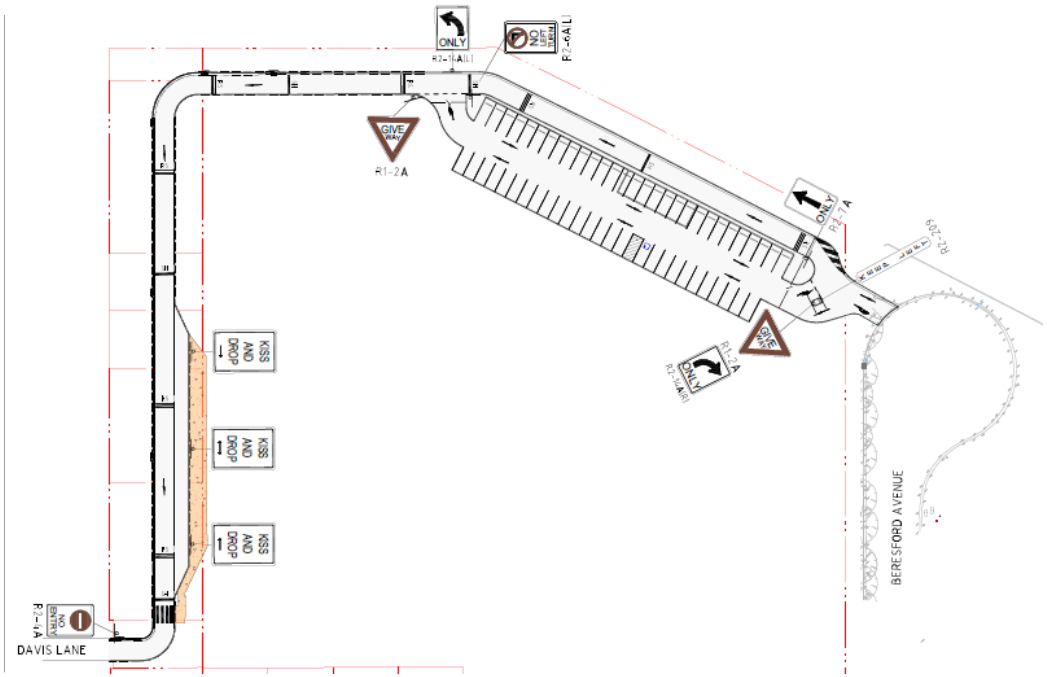
The audit findings have been documented in the deficiency log, which provides (Table 4.5):

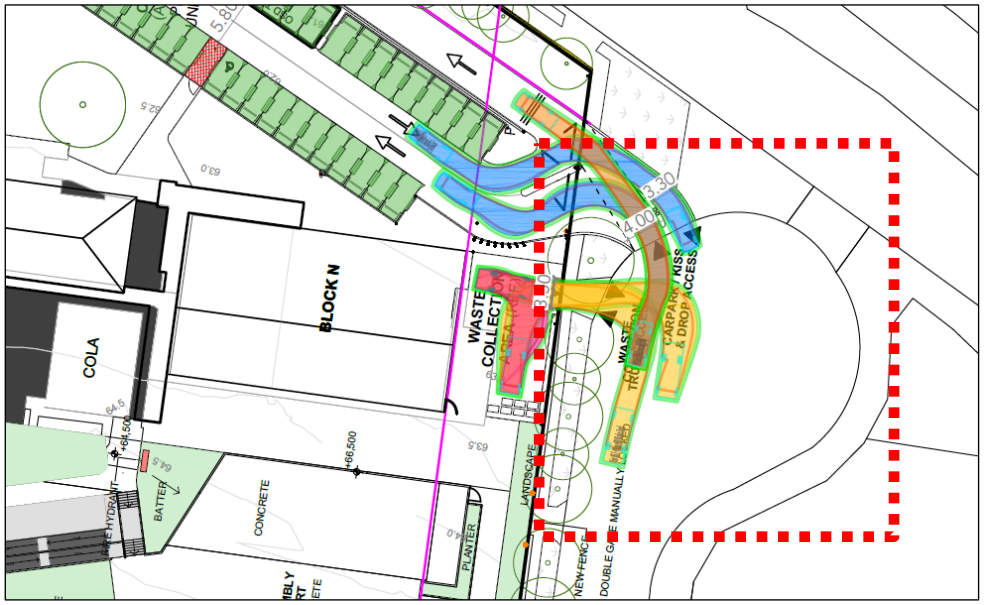
- specific details of each safety deficiency identified during the audit
- priority risk rating for each deficiency item

In accordance with Transport for NSW's preferred practice, the road safety audit does not include recommended actions.

It should be noted that the positive attributes of the detailed design have not been discussed.

Table 4.5: Road safety audit findings

No.	Drawings / Approximate Location	Description of findings	Risk rating (likelihood / severity)
1	C10.01 / Zebra crossing on the circulation roadway	'Pedestrian Crossing' (R3-1) signs are missing at both sides of the proposed Zebra crossing, so to face and alert egress drivers about the presence of Zebra crossing and pedestrians on it, as it is required in accordance with AS 1742.10-2009 (refer to Figure 4.1). Without the signs in place, some drivers could easily overlook the Zebra crossing, thus increasing the chance for a pedestrian to be struck by a vehicle on it.  **Figure 4.1**	**Intolrable** (Probable / Serious)

No.	Drawings / Approximate Location	Description of findings	Risk rating (likelihood / severity)
2	ptc-003 / Cul-de-sac on Beresford Avenue	'No Stopping' zone is <u>not</u> proposed in the cul-de-sac on Beresford Avenue (refer to Figure 4.2). Therefore, there is nothing in place to prevent vehicles from stopping and/or parking within the cul-de-suc, thus obstructing access and/or exit from the car park, and mutual visibility between vehicles which are exiting the car park and vehicles traveling on Beresford Avenue toward the car park. Currently, 'No Stopping' zone is signposted, but limited only to school days and only between 2.30pm and 4.00pm (refer to Photo 4.1), while the car park would be used in the morning, too, as well as during the rest of a weekday, and, perhaps, on [some] weekends.  **Figure 4.2**	**Medium** (Probable / Limited)

No.	Drawings / Approximate Location	Description of findings	Risk rating (likelihood / severity)
2 Cont'd		 **Photo 4.1** [Photo: Traffic Engineering Centre Pty Ltd]	

5. Formal statement

The findings and opinions in the report are based on the examination of the design and might not address all concerns existing at the time of the audit. The Auditors have endeavoured to identify features of the design that could be modified or removed in order to improve safety, although it must be recognised that safety cannot be guaranteed since no road can be regarded as absolutely safe. While every effort has been made to ensure the accuracy of this report, it is made available strictly on the basis that anyone relying on it does so at their own risk without any liability to the Auditors.

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Level 3 Road Safety Auditor
(Auditor ID: 471)

9 February 2021

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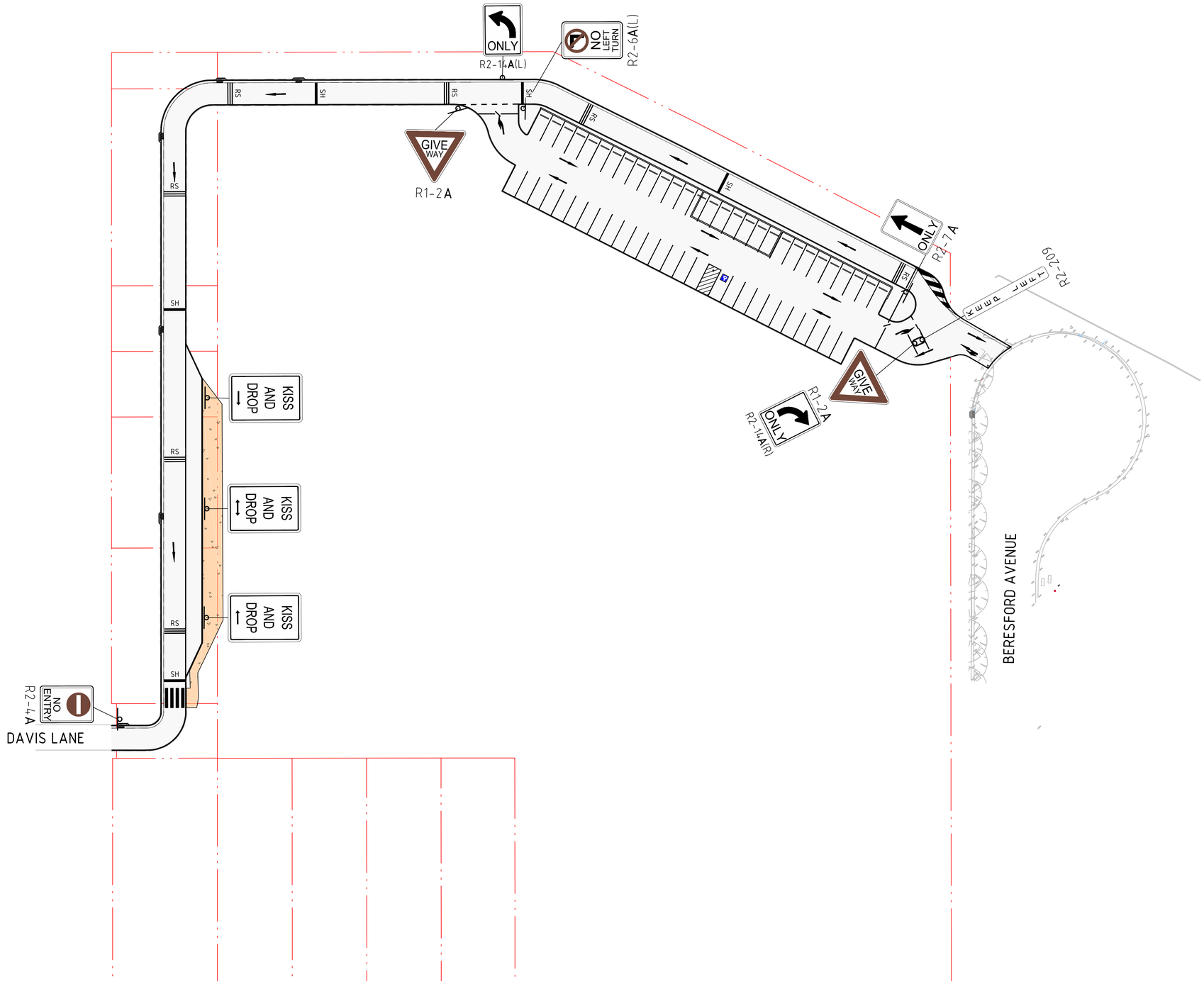

LEGEND

- EXISTING BOUNDARY LINE
- RS — RUMBLE STRIP
- SH — SPEED HUMP
- PEDESTRIAN CROSSING
- SIGN

DRAWN: J.PHILLIPS
DESIGNED: D.TENHAVE
JOB MANAGER: T.HOWE
VERIFIER: -

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR APPROVAL	J.P	-	E.F	26.02.21

CLIENT: PATTERSON Building Group

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PROJECT: **MAIN WORKS**

BANKSTOWN NORTH PUBLIC SCHOOL

DRAWING TITLE: **SIGNAGE AND LINEMARKING PLAN**

JOB NUMBER: **181004**

DRAWING NUMBER: **C10.01**

REVISION: **A**

DRAWING SHEET SIZE = A1

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