

Attachment F

**Capitol Theatre Condition Assessment
prepared by Mott MacDonald Australia Pty Ltd**



Capitol Theatre Condition Assessment

11 March 2019

Mott MacDonald
383 Kent Street
Sydney NSW 2000
PO Box Q1678, QVB
Sydney, NSW 1230
Australia

T +61 (0)2 9098 6800
F +61 (0)2 9098 6810
mottmac.com

Capitol Theatre Condition Assessment

11 March 2019

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
1	11/03/19	BGS	AN	AN	For CMP

Document reference: 399302 | 1 | A

Information class: Standard

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it.

Contents

1	Introduction	1
1.1	Inspection	1
1.2	Limitations of this Report	1
1.3	Building Structure	1
2	Areas of Attention	3
2.1	Theatre Roof	3
2.2	Original Walls	3
2.3	Dress Circle	4
2.4	Access Structures	4
2.5	Minor Cracking	4
2.6	Perimeter Awnings at Ground Level	5
2.7	Theatre Façade	5
2.8	Recommended guidelines for inclusion in CMP	5
	Appendix A: Photo Schedule	6
	Appendix B: Photo Reference Plan	7
	Appendix C: Photos	8

1 Introduction

Mott MacDonald has been commissioned by Urbis to carry out a condition assessment of the Capitol Theatre in Haymarket, Sydney for inclusion in a new CMP being written for the building.

The purpose of this report is to document the current state of the building, noting any areas which may require further attention and regular maintenance.

1.1 Inspection

Structural engineer Benjamin Sutton inspected the back of house area of the capitol theatre on the 12th of December 2018 and the structures around the auditorium on the 5th of March 2019. The weather was clear at the time of both visits.

The inspections were visual only and focus was placed on the structural components of the of the building that appeared to have been built prior to the major 1995 renovations. The back of house areas and the new structure were inspected on a spot check basis only.

Fixtures and finishes of structures in the publicly accessible spaces including the auditorium and the foyer meant that structure was generally not visible in these areas and was not inspected.

Architectural plans of the building were sent by Lynette Gurr from Urbis, on the 17th of December 2018. No structural plans or records were available at the time of the inspections or documentation.

1.2 Limitations of this Report

Given the limited time and access to inspect and report on the structure, the following report is not an exhaustive record of the condition of the building. It focuses on the building's main structural and heritage components such as the original roof structure, original perimeter walls, and the elevated stalls seating structure. The report also highlights areas and elements of the building that may require closer inspection or that may carry a higher risk of failure or degradation in the future.

1.3 Building Structure

Originally constructed as the Belmore Markets in 1892, the Capitol theatre has undergone many stages of adoptions, alterations and restorations. The Belmore Market included thirty-six arched masonry bays around its façade. In 1913-16 the Markets were changed in to a circus venue, the Hippodrome, and an office and shopping block. According to the Office of Environment and Heritage the original facade was carefully dismantled and re-erected above a new ground storey which was mounted on the old footings. The original Hippodrome water tank is now a sub-stage back-of-house area (Figure 13-Figure 16). In 1928 the building was then remodelled as an atmospheric picture palace, "the Capitol Theatre". The conversion involved remodelling the interior and raising the roof trusses to make room for the atmospheric ceiling and extended slope of the new gallery. In 1932 the Capitol Theatre closed and in 1945 much of the interior decorations were stripped. Finally, in the early 1990s the Capitol theatre underwent a detailed restoration to recover the original 1928 theatre experience. This involved extending the structure towards Hay Street to accommodate a larger stage, fly tower, a new functional foyer and a backstage stage area.

Today, the Capitol theatre is comprised of a mix of original and new structures including original brick masonry perimeter walls and piers, original steel trussed roof with a hanging timber ceiling, a new steel roof which was built above the original roof, various steel supported concrete slabs, and an original steel trussed dress circle with timber joists.

At the time of inspection, the building was overall in very good condition with some minor cracking, minor steel beam corrosion, and truss member buckling. The public areas, including the foyer and auditorium, were well maintained. The majority of defects found during our inspections were located on the original roof and back-of-house. We do note however, that these areas were also the areas where inspection of the structure was not prevented by finishes.

Specific areas of the structure which have been identified as requiring attention are detailed on pages 3 to 5 with relevant photos depicted in *Appendix A: Photo Schedule*, *Appendix B: Photo Reference Plan*, and *Appendix C: Photos*.

2 Areas of Attention

2.1 Theatre Roof

The original Capitol Theatre roof is comprised of a series of steel trusses (Figure 8) sitting on top of brick piers (Figure 18) along the perimeter walls. Timber purlins span between trusses and support corrugated roof sheeting (Figure 1). Using steel wires (Figure 5), the trusses support a hanging timber atmospheric ceiling which is visible from the theatre floor (Figure 12). Evidence of new intervention includes a relatively new steel bracing structure above the southern end of the hanging roof, welded to the southernmost 3 bays of original trusses (Figure 4).

During one of the renovations of the Capitol theatre, a second roof was installed above the original. As shown in Figure 11, the new theatre roof is a steel framed structure supported from posts landing on the original roof trusses. The new roof protects the theatre from weather penetration, particularly preventing water from landing on the original roof structure, as a result, protecting the steel from further corrosion and timber from degradation. The new roof also has the added benefit of eliminating the wind load on the timber purlins of the original roof structure.

Despite the aforementioned benefits, the additional roof has created new load paths along the original trusses. Further load path changes include apparent alterations to the original roof trusses, evidence of cut and re-welded sections, the new steel bracing, and any changes to the access structures and services. With this in mind, it is recommended that:

- A desktop check is performed to ensure records are kept of each structural change and that these have been checked by an engineer. If no records are found, a structural check should be performed to determine the load paths through the ceiling and roof structures.

Both roof structures appeared to be in good condition at the time of the inspection, without any evidence of major defects. Minor defects found throughout the roof structure include:

- Timber purlin damage (Figure 1, Figure 2). These defects are low risk as the timber roofing is only supporting weight of the corrugated sheeting and services above, however, should be monitored periodically for any further deterioration.
- Buckled flat truss chord members (Figure 7 and Figure 9). It is uncertain when this failure occurred and could be caused by the cutting and rewelding of the truss members. These members should be assessed when performing the desktop study and the structural check recommended above.

2.2 Original Walls

The original walls of the Capitol theatre include the perimeter masonry walls and the internal concrete walls which were once part of a Circus water tank (Figure 15, Figure 16).

Although the majority of the tank walls was painted (Figure 13), the top of the tank was visible through an access hatch (Figure 14). No major defects were visible at the time of inspection and the elements are not in a particularly exposed location, however, due to its historic significance the walls should be monitored periodically for signs of cracking or spalling.

Similarly, the original perimeter walls (Figure 17 - Figure 19) also appeared in good condition, however, walls were only visible from the original roof access structures and from back stage. It

is also recommended that these walls should be monitored periodically for signs of fretting, cracking or open joints.

The southern wall (Figure 17), which divides the back-stage area from the theatre seats appears to be a single skin masonry wall that has long spans between supports in both the vertical and horizontal directions. Due to the size and age of this wall, it is suggested that an engineer be engaged to carry out a desktop analysis to check its structural stability.

2.3 Dress Circle

The dress circle structure was viewed through two small access panels towards the top of the seating (Figure 25). The structure is comprised of a steel trussed system supporting deep timber joists which hold the seating above (Figure 20 - Figure 22). The trusses also support the timber heritage foyer ceiling below (Figure 23, Figure 24 and Figure 26).

The trusses, joists and ceiling appeared to be in good condition, however, only a small section was accessible.

The large cantilevered balcony of the dress circle pictured in Figure 27, presents the highest point of stress and was inaccessible at the time of inspection. Maintenance staff at the Capitol theatre were unaware of any access panels or doors to inspect and maintain this large area. It is recommended that access be provided to this large area and that a maintenance and monitoring scheme of the dress circle trusses is instituted.

The dress circle structure dates from around 1928. There is no loading guide available from this time to determine the live load that the structure would have been designed for. Notwithstanding this, the general use of the structure (to support seating for the theatre) has not changed since its construction and there is no indication that the existing structure is not performing under the imposed loads. If any change to seating capacity is proposed in the future a structural assessment of the dress circle structure should be carried out to assess its capacity to carry loads and to assess the deflection of the structure. Similarly, if any excessive deflection or deflection under dynamic load is reported for the structure then it should undergo a structural assessment.

2.4 Access Structures

Access routes, such as the catwalk above the original roof as well as ladders and stairs between levels are another area of high risk. Missing bolts (Figure 28) and wobbly railings (Figure 29) were noticed throughout the inspection. It is recommended that the fixings in the aforementioned areas, as indicated on the plan in Appendix B, be addressed and the rest of the elevated access structures be periodically monitored for defects and repaired/ strengthened accordingly.

2.5 Minor Cracking

Evidence of minor cracking was observed throughout the inspection in the building's masonry walls, concrete floors and pre-cast panels. Such cracks are shown in Figure 30 - Figure 37. These types of cracking are not uncommon in large buildings, the cause of which varies and instances relating to the following were noted during our inspection:

- Cracking due to embedded steel sections in the ground floor slab below the stage (Figure 30)
- Minor crushing of concrete pre-cast panel due to a steel member above (Figure 34)

- Cracking most likely due to minor building movement (Figure 31 - Figure 33, Figure 35 - Figure 37)

For all instances it is recommended that:

- Cracks throughout the building should be documented and monitored to determine if further movement is occurring. Cracks continuing to grow should be assessed and repaired if necessary.

2.6 Perimeter Awnings at Ground Level

Large awnings cover the footpaths around the outer perimeter of the Capitol Theatre (Figure 38 - Figure 39). Awning structures are typically an area of high risk to public safety. This is largely due to the susceptibility to wind forces and vibrations, their public location and that they are often not visible or are difficult to access for maintenance.

Although no defects were noted during the condition assessment, the following is recommended:

- Awning structures on the building should be inspected as part of a regular maintenance schedule with particular focus on the fixings to the building substrate.

2.7 Theatre Façade

The capitol theatre façade is comprised predominately of brick masonry with sandstone sills, cornices and lintels, as well as terracotta capitals, rosettes and tiled panels (Figure 40 - Figure 44). Typically, the visible façade was in very good condition at the time of inspection. No major cracking, weathering or spalling was visible. The state of the bed joints at high level was not visible and should be checked during periodic maintenance.

Due to the historical significance of the façade, it is suggested that a monitoring scheme is employed to document and maintain the state of the façade periodically (5 yearly), if such a scheme is not already in place.

2.8 Recommended guidelines for inclusion in CMP

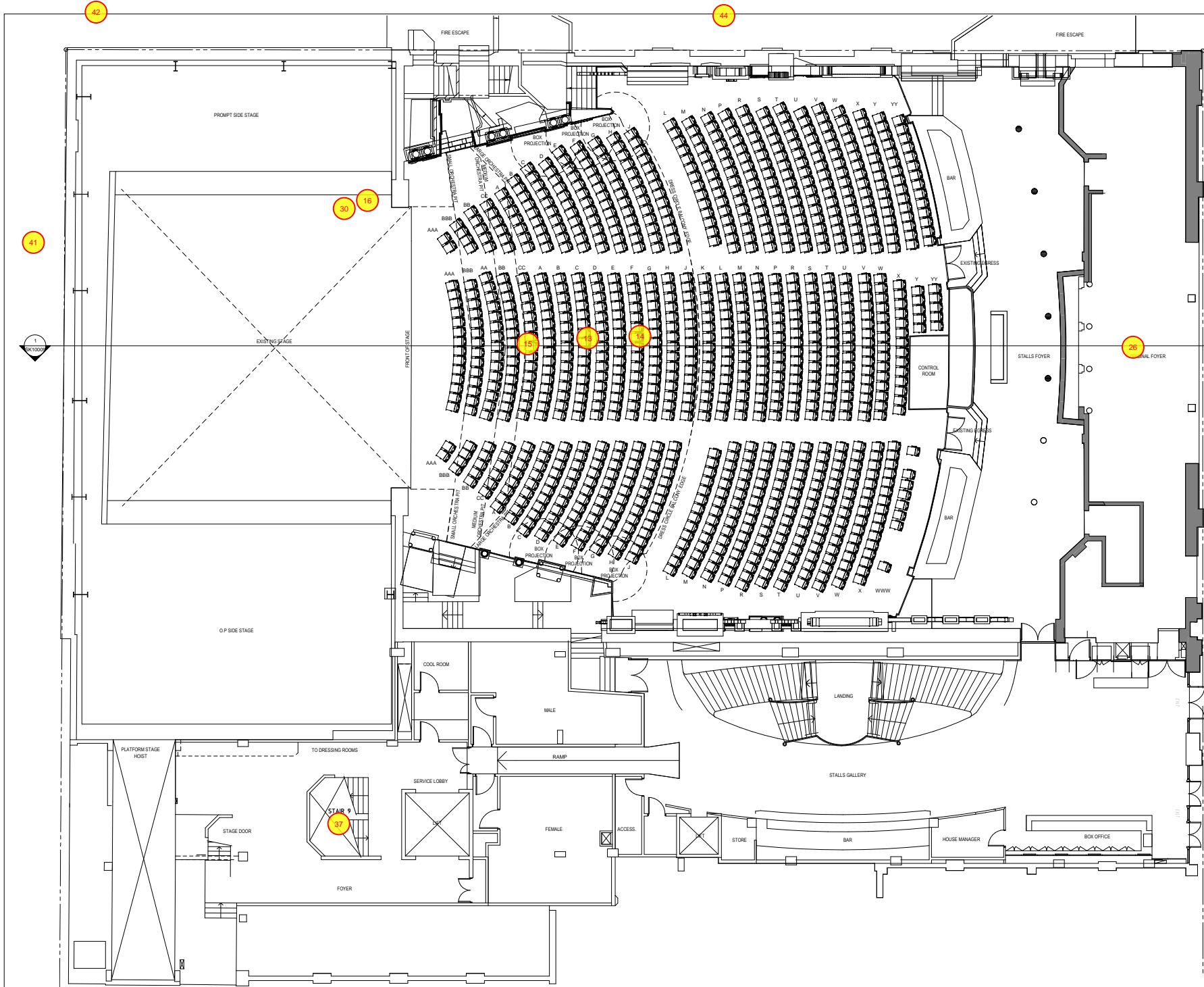
Due to the age, history, and significance of the building any changes to the building structure, including changes to loading or use should be assessed by a structural engineer familiar with buildings of this type.

All alterations to the roof/ceiling structure should be assessed by a structural engineer and should include an assessment of the impact of the proposed changes on the existing roof structure.

Appendix A: Photo Schedule

No.	Photo Reference	Location	Description
1	Figure 1 - Figure 12	Original Theatre Roof	Steel trussed roof supporting a hanging timber atmospheric ceiling. A new steel framed roof has since been built atop of the original.
2	Figure 13 - Figure 19	Original Walls	Original masonry walls with piers. Original concrete tank walls.
3	Figure 20 - Figure 27	Dress Circle Structure	Steel trussed structures supporting deep timber joists which hold the seating above.
4	Figure 28 - Figure 29	Roof Access Structures	Walkway, ladder and stair structures providing access around the roof structures.
5	Figure 30 - Figure 37	Minor Cracking	Minor cracking visible to new and existing structure
6	Figure 38 - Figure 39	Perimeter Awnings	Awnings at Ground Level which are tied back to the building using steel rods.
7	Figure 40 - Figure 44	Theatre Façade	Masonry Façade with Sandstone Sills, Lintels and Cornices

Appendix B: Photo Reference Plan



GENERAL VIEW - STALLS PLAN

Scale: 1 : 100

ISSUE	DATE	DESCRIPTION

CLIENT:
FOUNDATION THEATRES

PROJECT:
CAPITOL THEATRE

ARCHITECT:

p 61 2 9364 9000 f 61 2 9571 7930 lower deck jones bay wharf
suite 123/26-32 pirrama road pyrmont nsw 2009 australia

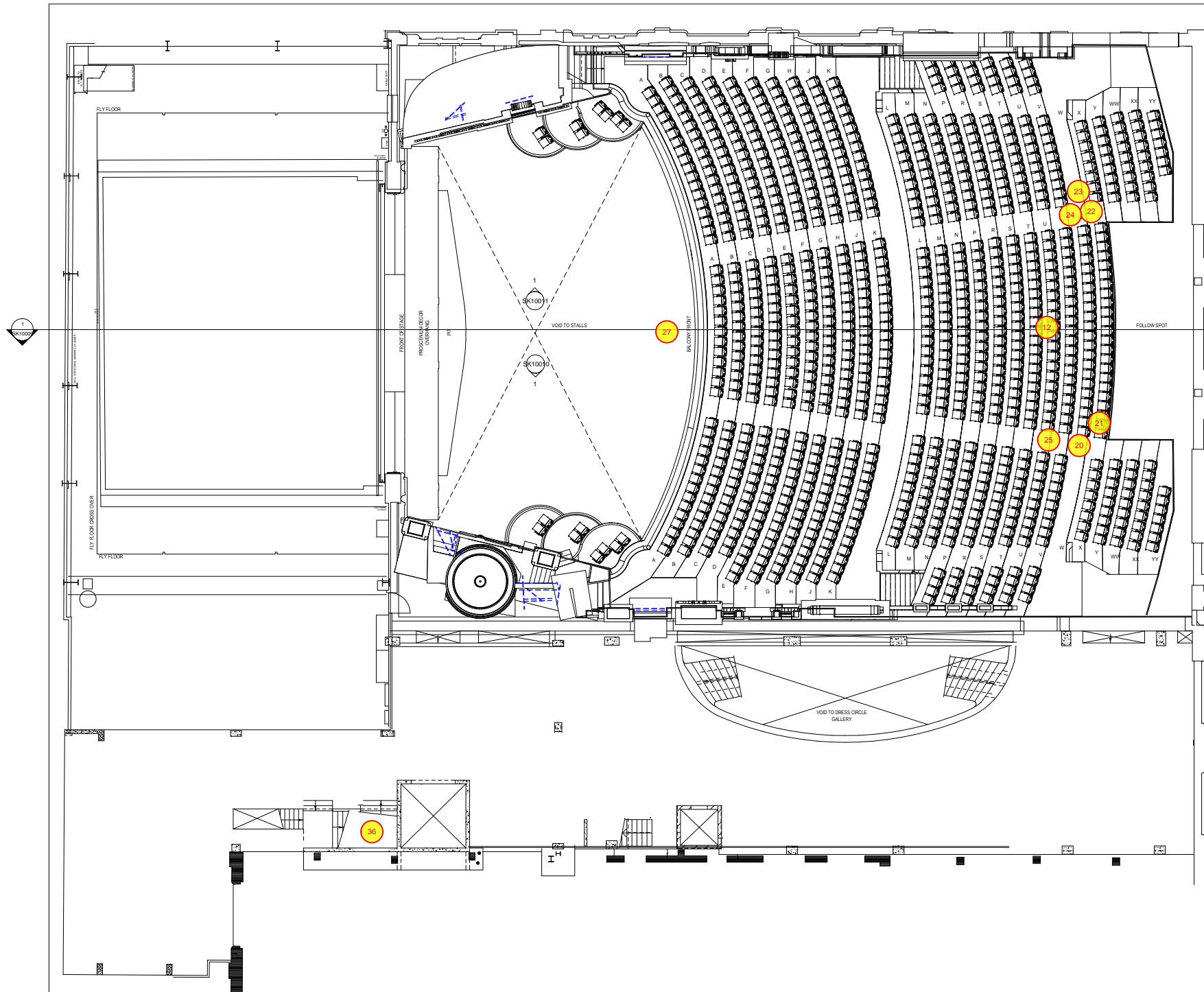
DRAWING TITLE:
STALLS PLAN

NOTES:
Approved architect: Rofa Lohmer 10335.
Copyright remains the property of Altis Architecture Pty Ltd.
Use only figured dimensions.
All discrepancies to be referred to Altis Architecture Pty Ltd
prior to construction.
Ensure compliance with the Building Code of Australia and
all relevant Australian Standards and Authority requirements.

NORTH:


SCALE:
1 : 100 @ A1
DRAWN BY: DA
CHECKED BY: DO
PROJECT NO: 2263.04
DRAWING NO: SK10007

DATE: 13/06/2017
ISSUE: 1



GENERAL VIEW-DRESS CIRCLE PLAN

Scale: 1 : 100

[illegible]

CLIENT:
FOUNDATION THEATRES

PROJECT:
CAPITOL THEATRE

ARCHITECT:



p 61 2 9364 9000 f 61 2 9571 7930 lower deck jones bay wharf
suite 123/26-32 pirrama road pyrmont nsw 2009 australia

DRAWING TITLE:

DRESS CIRCLE PLAN

NOTES:

Nominated architect: Roife Latimer : 5535

Copyright: remains the property of Ailsa Architecture Pty Ltd

Use only figured dimensions.

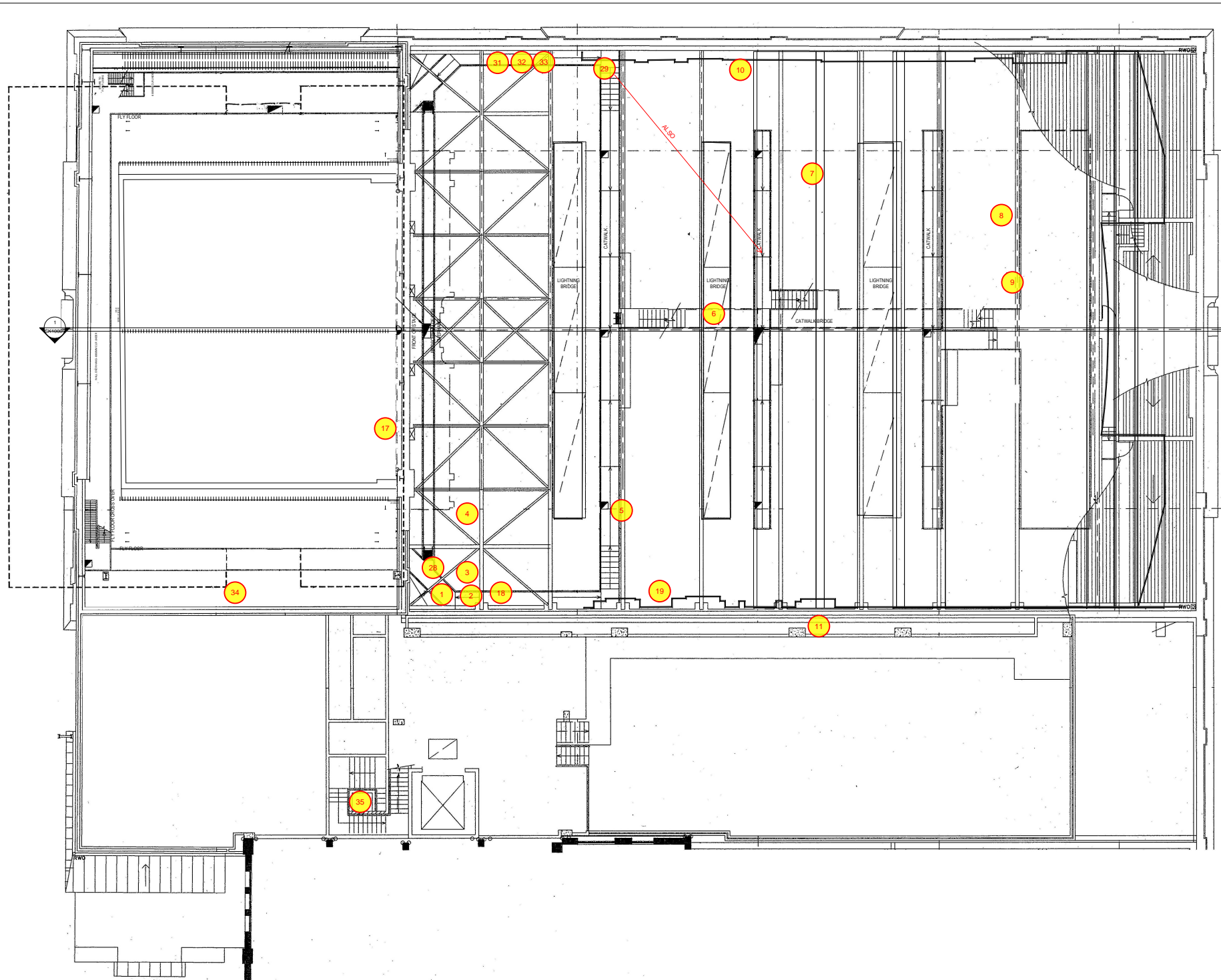
All discrepancies to be referred to Ailsa Architecture Pty Ltd prior to construction.

	NORTH
--	-------

SCALE: 1 : 100 @ A1		
DRAWN BY: DA	CHECKED BY: DO	PROJECT NO: 2263.04
CADD FILE:		

DATE:	13/06/2017
DRAWING NO:	SK10008

[illegible]



ISSUE	DATE	DESCRIPTION

CLIENT:
FOUNDATION THEATRES

PROJECT:
CAPITOL THEATRE

ARCHITECT:



ALTIS
architecture

p 61 2 9364 9000 f 61 2 9571 7930 lower deck jones bay wharf
suite 123/26-32 pirrama road pyrmont nsw 2009 australia

DRAWING TITLE:
DRESS CIRCLE UPPER LEVEL RCP

NOTES: Notwithstanding to architect: Ruffa Lohmer 10/05/16 Copyright remains the property of Altis Architecture Pty Ltd. Use only for the purposes intended. All discrepancies to be referred to Altis Architecture Pty Ltd prior to construction. Ensure compliance with the Building Code of Australia and all relevant Australian Standards and Authority requirements.			NORTH	
SCALE: 1:100	@ A1	DATE: 13/06/2017		
DRAWN BY: DA	CHECKED BY: DO	PROJECT NO: 2263.04	DRAWING NO:	ISSUE:
CADFILE:			SK10014	

Appendix C: Photos

Figure 1: Original Theatre Roof – Existing Timber Purlins, Sheeting and New Steel Bracing



Source: Mott MacDonald 2019

Figure 2: Original Theatre Roof – Timber Purlin Damage



Source: Mott MacDonald 2019

Figure 3: Original Theatre Roof – Hanging Timber Ceiling



Source: Mott MacDonald 2019

Figure 4: Original Theatre Roof – Hanging Timber Ceiling



Source: Mott MacDonald 2019

Figure 5: Original Theatre Roof – Steel Hanging Wires off Original Truss



Source: Mott MacDonald 2019

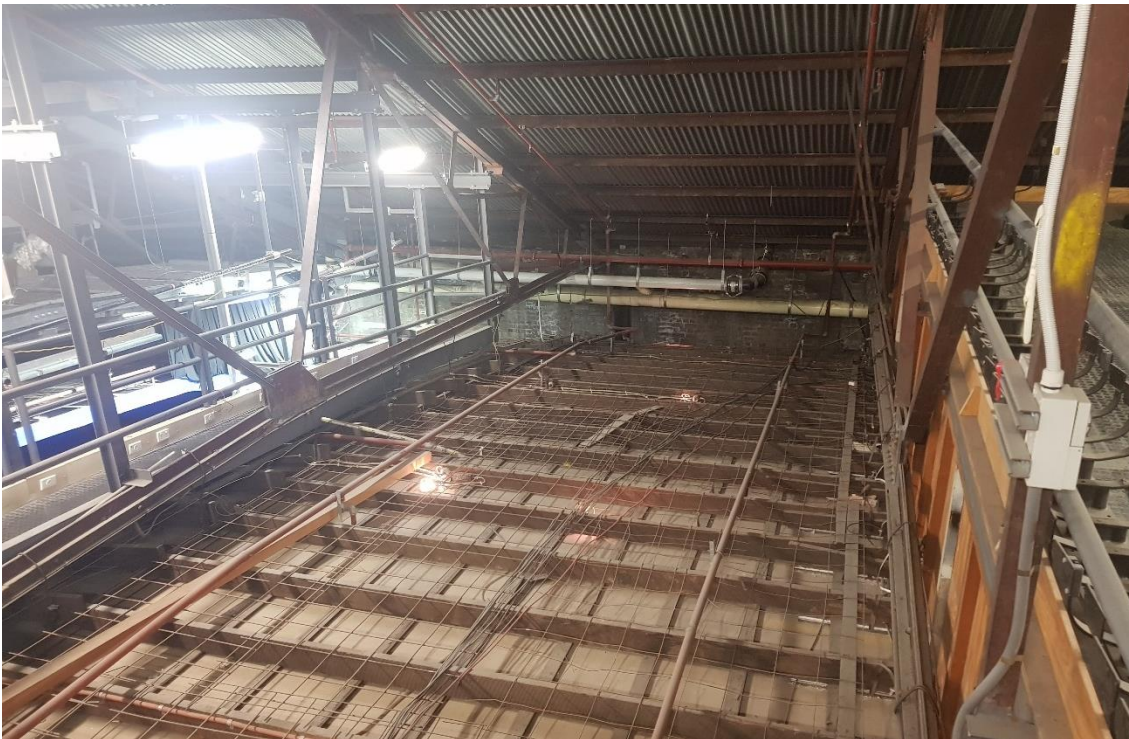
Figure 6: Original Theatre Roof – Steel Truss



Source: Mott MacDonald 2019

Figure 7: Original Theatre Roof – Buckled Truss Chord

Source: Mott MacDonald 2019

Figure 8: Original Theatre Roof – Trusses and Hanging Ceiling

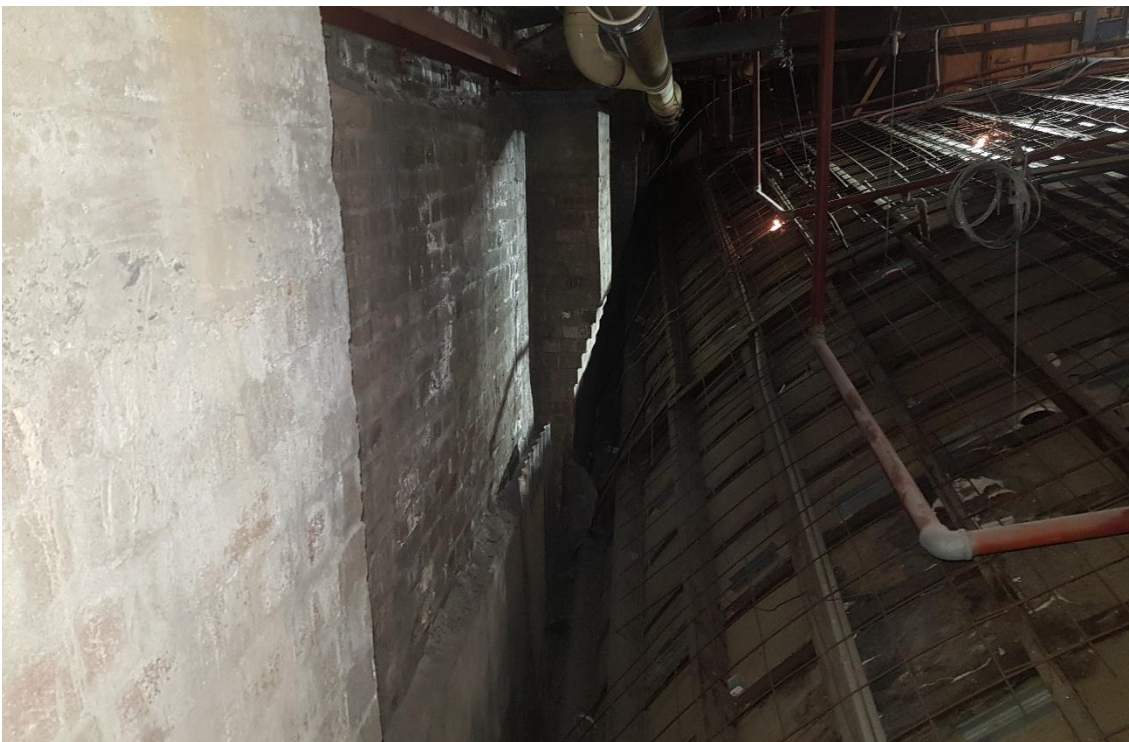
Source: Mott MacDonald 2019

Figure 9: Original Theatre Roof – Bucked Truss Chord



Source: Mott MacDonald 2019

Figure 10: Original Theatre Roof – Arched Timber Ceiling



Source: Mott MacDonald 2019

Figure 11: Original Theatre Roof – New Roof Built Above the Original Roof

Source: Mott MacDonald 2019

Figure 12: Original Theatre Roof – View from below

Source: Mott MacDonald 2019

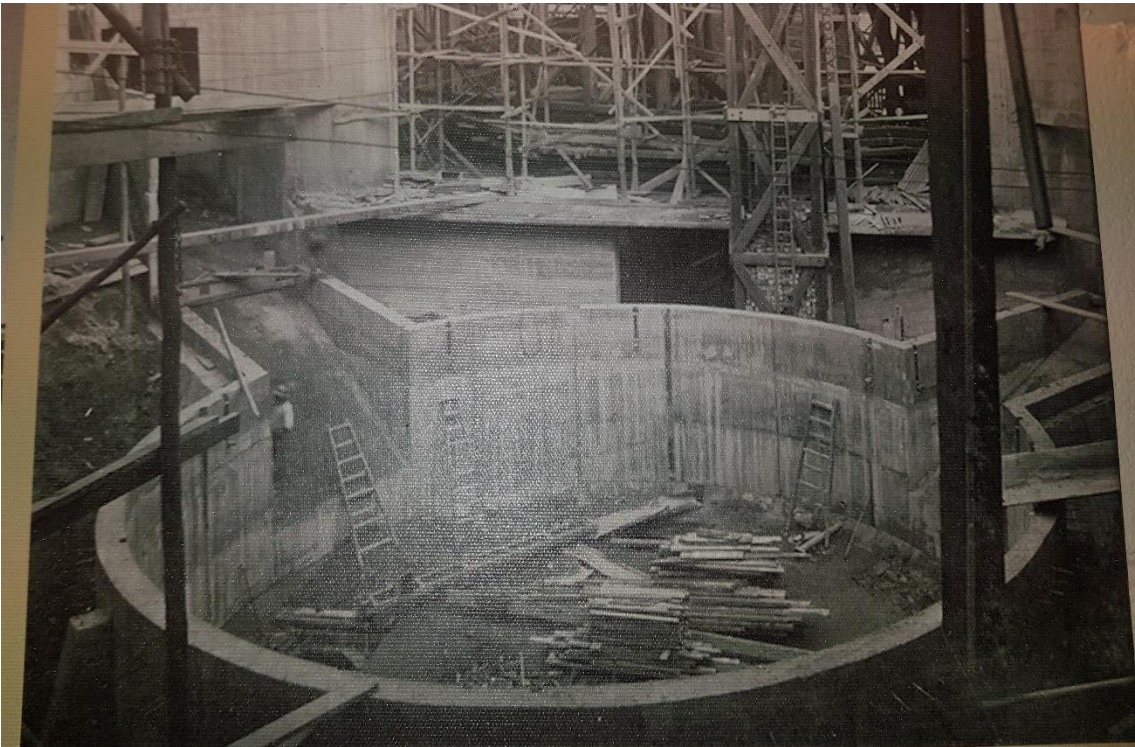
Figure 13: Original Walls – Inner Tank Wall

Source: Mott MacDonald 2019

Figure 14: Original Walls – Top of Tank Wall

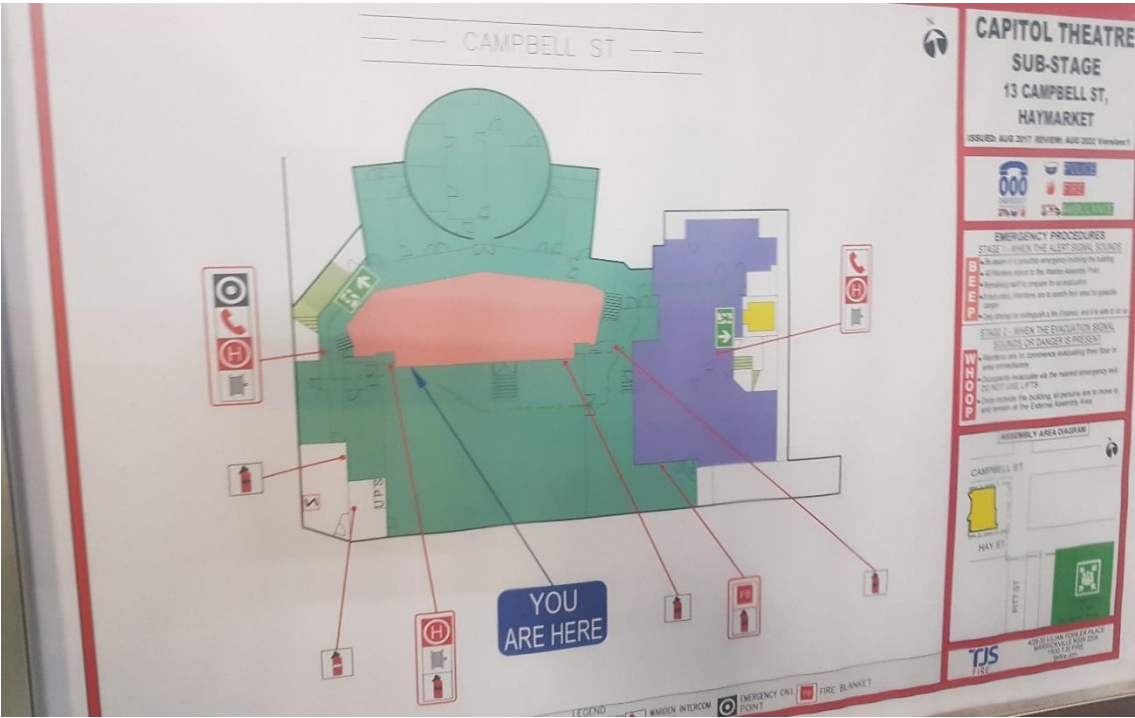
Source: Mott MacDonald 2019

Figure 15: Original Walls – Photo of Original Tank



Source: Mott MacDonald 2019

Figure 16: Original Wall – Plan of Tank Walls



Source: Mott MacDonald 2019

Figure 17: Original Walls – Large Wall Dividing Back Stage and the Theatre

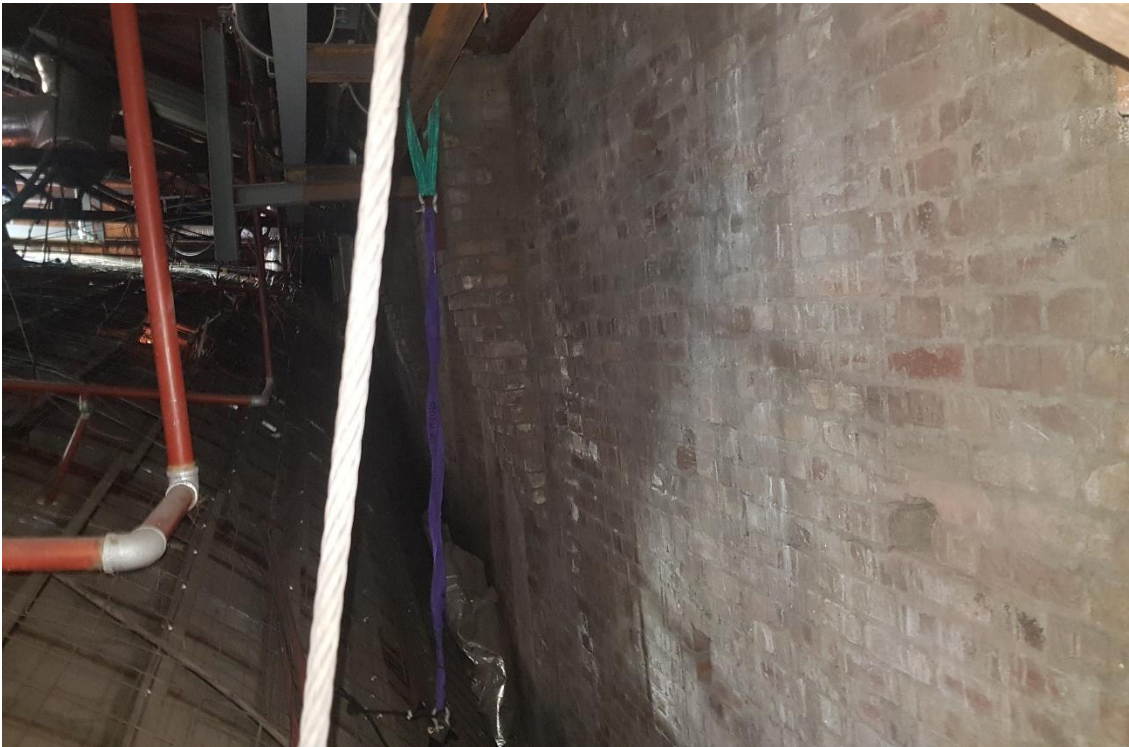


Source: Mott MacDonald 2019

Figure 18: Original Walls – Brick Piers Supporting Roof Trusses



Source: Mott MacDonald 2019

Figure 19: Original Walls – Above Theatre Ceiling

Source: Mott MacDonald 2019

Figure 20: Dress Circle Structure – Steel Trusses and Timber Joists

Source: Mott MacDonald 2019

Figure 21: Dress Circle Structure - Steel Trusses and Timber Joists

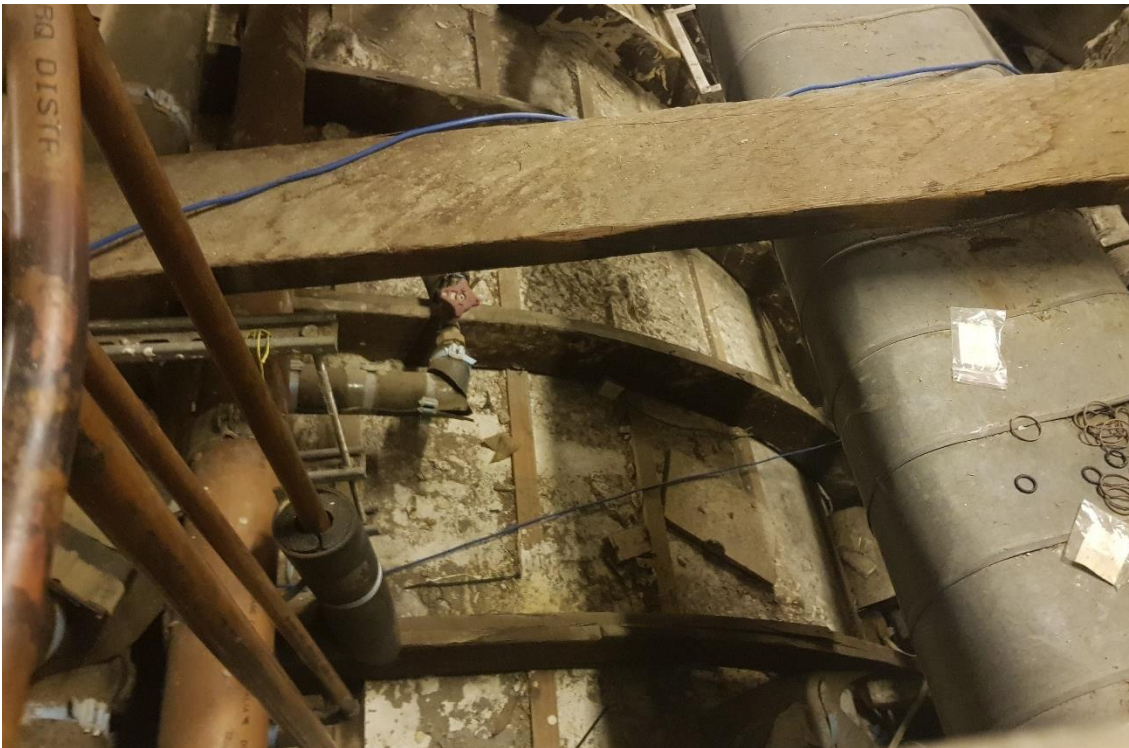
Source: Mott MacDonald 2019

Figure 22: Dress Circle Structure - Steel Trusses and Timber Joists

Source: Mott MacDonald 2019

Figure 23: Dress Circle Structure – Hanging Heritage Foyer Ceiling Below

Source: Mott MacDonald 2019

Figure 24: Dress Circle Structure – Hanging Heritage Foyer Ceiling Below

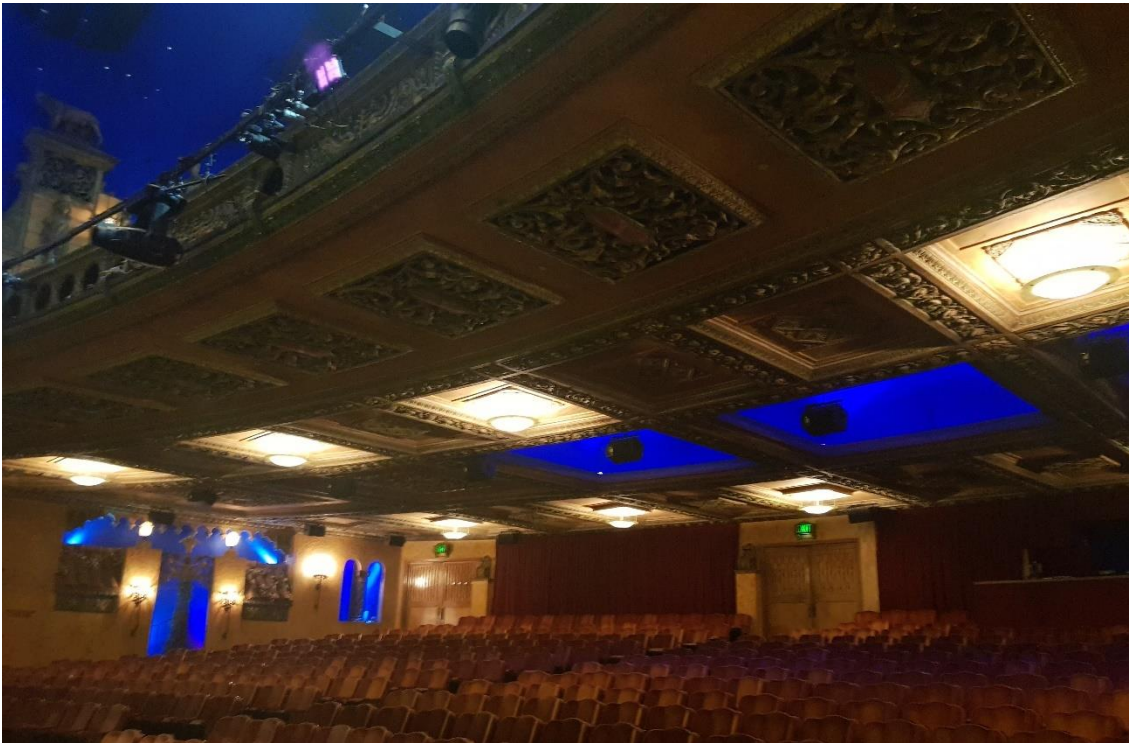
Source: Mott MacDonald 2019

Figure 25: Dress Circle Structure – Above Seating

Source: Mott MacDonald 2019

Figure 26: Dress Circle Structure – Heritage Foyer Ceiling

Source: Mott MacDonald 2019

Figure 27: Dress Circle Structure – Balcony from below

Source: Mott MacDonald 2019

Figure 28: Roof Access Structure – Missing Bolts

Source: Mott MacDonald 2019

Figure 29: Roof Access Structure – Wobbly Balustrade



Source: Mott MacDonald 2019

Figure 30: Minor Cracking – Underside of New Concrete Slab



Source: Mott MacDonald 2019

Figure 31: Minor Cracking – Diagonal Crack in the Cement Rendered Masonry Wall



Source: Mott MacDonald 2019

Figure 32: Minor Cracking – Close up of Cement Rendered Masonry Wall Crack



Source: Mott MacDonald 2019

Figure 33: Minor Cracking – Cement Rendered Masonry Wall Crack



Source: Mott MacDonald 2019

Figure 34: Minor Cracking – Crushing of Pre-Cast Panel below Steel Member



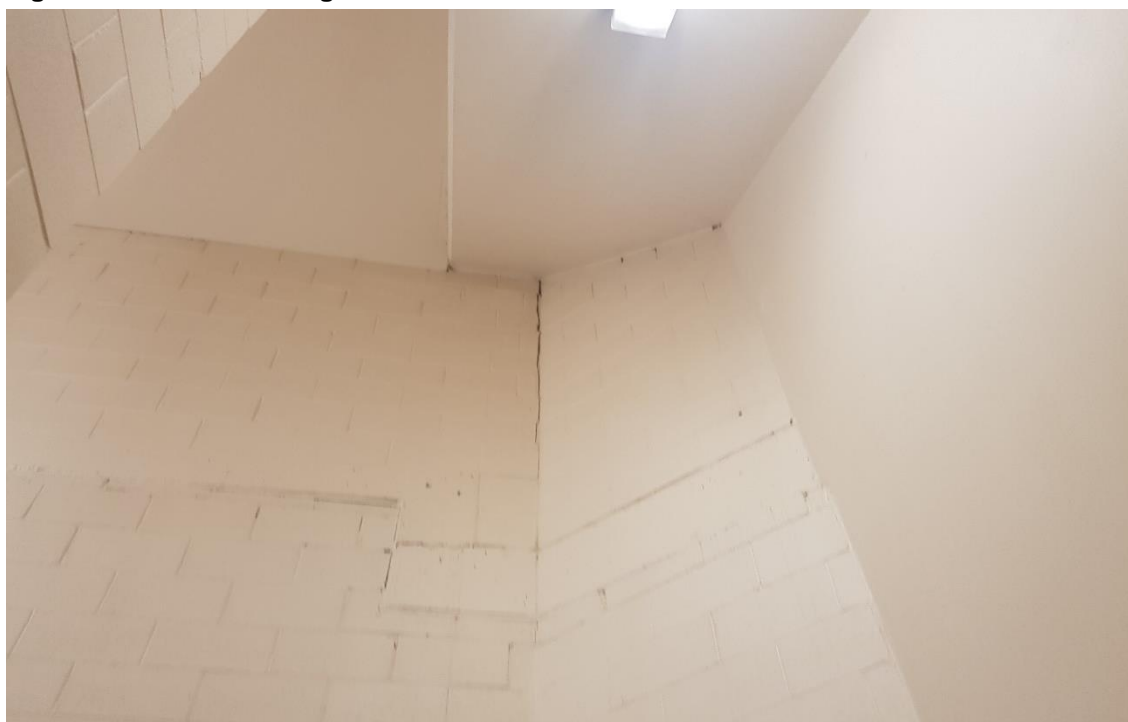
Source: Mott MacDonald 2019

Figure 35: Minor Cracking – Stairwell Roof



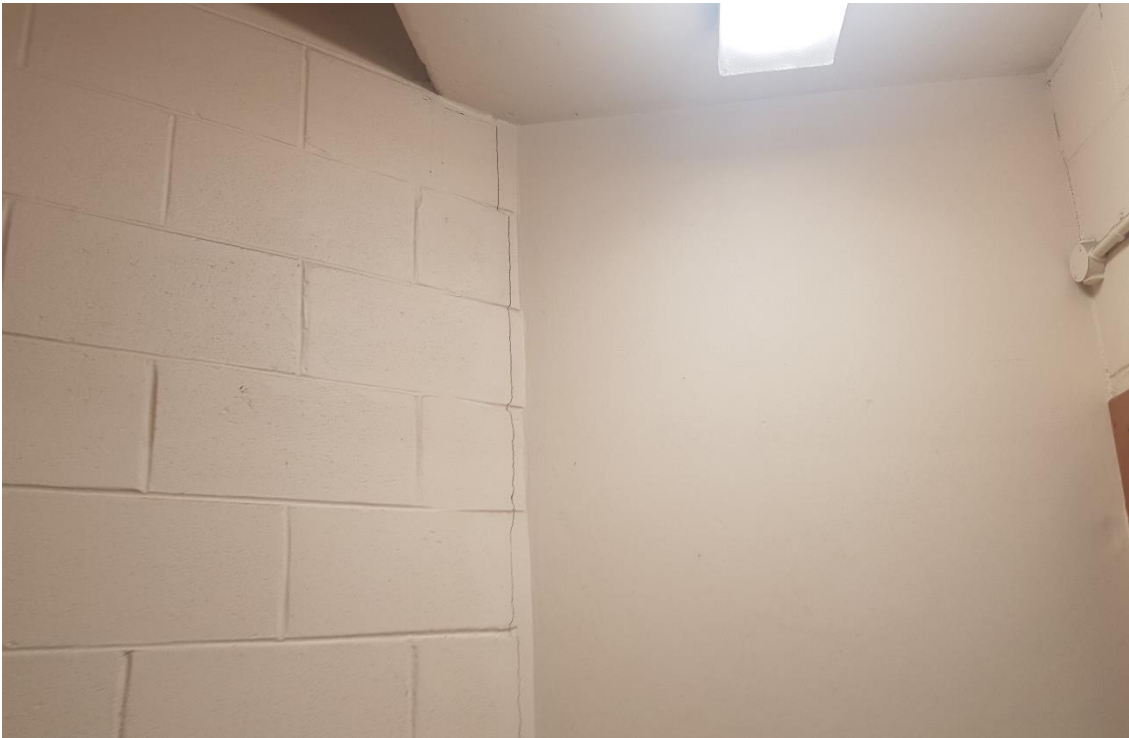
Source: Mott MacDonald 2019

Figure 36: Minor Cracking – Stairwell Wall



Source: Mott MacDonald 2019

Figure 37: Minor Cracking – Stairwell Wall



Source: Mott MacDonald 2019

Figure 38: Perimeter Awning



Source: Mott MacDonald 2019

Figure 39: Perimeter Awning



Source: Mott MacDonald 2019

Figure 40: Theatre Façade – North Façade



Source: Mott MacDonald 2019

Figure 41: Theatre Façade – South Façade



Source: Mott MacDonald 2019

Figure 42: Theatre Façade – West Façade



Source: Mott MacDonald 2019

Figure 43: Theatre Façade – North East Façade

Source: Mott MacDonald 2019

Figure 44: Theatre Façade – West Façade

Source: Mott MacDonald 2019

