

APPENDIX O

Beale Park Redevelopment

Mechanical Brief

Design Development

Prepared for: City of Cockburn

Attention Ian Hart

Date: 14-11-2024

Prepared by: Andrew Eyres

Ref: 301250819

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Revision

Revision	Date	Comment	Prepared By	Approved By
001	14-11-2024	Design Development Report	AE	AE

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1. Introduction

This Services Design Brief for the Mechanical Services has been prepared at the request of City of Cockburn for the development of the Beale Park Sports & Community Centre

This Engineering Services Design Brief sets out the scope and parameters of Stantec's technical design and documentation for this project.

This document serves as the benchmark which our services must achieve. We request you read this carefully so that you have a clear understanding of the scope of our works and that we have understood your project requirements.

We would welcome any comments or queries you may have on the information provided in this Engineering Services Design Brief so that it may be updated to suit.

Items highlighted in *italics* represents specific issues that we require Client and/or architect confirmation.

This Engineering Services Design Brief has been prepared based on the following information:

- Architectural Drawings provided to date
- Consultant meetings to date
- Design meetings to date



2. Key Issues

The following items need to be resolved in order to progress the Mechanical Design:

- Revised hood selections required to finalise mechanical ventilation layouts to kitchen. ***Kitchen Consultant to advise***



3. Mechanical Services

3.1 Objectives

3.1.1 Overview

Mechanical services include the provision of;

- Ventilation inclusive of:
 - Toilet exhaust
 - Outside air systems
 - Kitchen Exhaust
- Air Conditioning inclusive of:
 - Comfort Cooling

3.2 Design Criteria

Air conditioning systems shall be designed to meet the following design criteria during normal operation with due allowance for solar loads, transmission loads, internal loads, occupancy level and infiltration loads.

All cooling and heating loads may incorporate a design/safety factor of 10%, which is to be added to the calculation of cooling and heating loads.

The design criteria proposed for the mechanical services will be based on the following parameters:

3.2.1 Design Temperatures

Ambient conditions - (Based on AIRAH Comfort conditions)

Perth

Summer (maximum)	36.7°C DB /22.1°C WB
Winter (minimum)	3.8°C

Air Condition Areas Internal Design Conditions

Cooling	:	Nominal 24°C Dry Bulb
	:	40 - 60% relative humidity anticipated by virtue of cooling coil performance
Heating	:	21°C Dry Bulb
Control Tolerance	:	Plus or minus 1.5°C at the point of control for heating and cooling.
Humidity Tolerance		40-60% anticipated by virtue of cooling coil performance No specific humidity control

Ventilation

Wet Areas	10 L/s per m ²
Comms Room	4 kW
Cleaner's Cupboard	5 L/s per m ²

First Aid Room	90 L/s
Kitchens	To suit kitchen consultant engineered hood selections.
Storerooms & Corridors	Passive ventilation
Changeroom areas	Natural Ventilation via façade louvres

Lighting

All areas	6 W per m ²
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Internal Equipment Loads

Club Room	10 W per m ²
Function Room	10 W per m ²
Office	25 W per m ²

Population

Function & Club Room	1 Person per 1sqm
Club Office	1 Person per 10sqm

3.2.2 Glazing and Building Fabric

The following U-values have been advised by the ESD engineer.

- Roof – 0.21 W/ m².K
- External wall – 0.63 W/ m².K
- Internal floor/ceiling – 1.72 W/ m².K
- Glazing – 4.62 W/ m².K (SHGC – 0.5)

3.2.3 Design Standards

Statutory Design Standards

The National Construction Code (NCC) 2015 and in particular the “deemed to satisfy” conditions of:

- NCC 2015 Section J3.5 & J3.7 “Building Sealing - Exhaust Fans & Evaporative Coolers”
- NCC 2015 Section F4.5 “Ventilation of rooms”
- NCC 2015 Section J5 “Air Conditioning and Ventilation Systems”
- NCC 2015 Specification J5.2 “Ductwork Insulation and Sealing”



Australian Standards as follows:

- AS 1530 Methods for fire tests on building materials, components and structures
- AS 1668.1 The use of mechanical Ventilation and Air Conditioning in buildings -Fire and Smoke control in multi-compartment buildings
- AS 1668.2 The use of mechanical Ventilation and Air Conditioning in buildings - Mechanical Ventilation in buildings
- AS 1677 Refrigerating Systems
- AS 1682 Fire Dampers
- AS 1851 Maintenance of Fire Protection Systems
- AS 3000 SAA Wiring Rules
- AS 4254.1 Flexible Ductwork – Fire resistance & Sealing only
- AS 4254.2 Solid Ductwork – Fire resistance & sealing only

Best Practice Design Standards

These standards will be followed where practical, Client to advise any standards which must be followed.

Australian Standards as follows:

- AS 1324 Air Filters for use in air conditioning and general ventilation
- AS 2107 Acoustics
- AS 3013 Electrical installations, wiring systems for specific applications
- AS 4254.1 Flexible Ductwork
- AS 4254.2 Solid Ductwork

3.3 Proposed Mechanical Scope of Works

Based on the details provided, we understand that the scope of works will involve the following:

Client to advise any additional areas requiring air conditioning or ventilation.

Air Conditioning

Air conditioning shall be provided to the following areas:

- Function Room
- Club Room
- Club Office
- Kiosk
- Kitchen
- Comms Room

Ventilation

Mechanical ventilation shall be provided to the following areas:



- Kitchens
- Bathrooms/Toilets
- Umpire Changerooms
- Cleaners Store
- Comms Cupboard
- First Aid Room

Cooling, Heating and Exhaust Ventilation Overview

The table below identifies the proposed strategy for cooling, heating and exhaust ventilation systems based on the proposed room schedule. The table illustrates our understanding of the project requirements. We request the client review this table and our comments and queries below regarding the proposed mechanical services.

Area	Cooling Provision		Heating Provision		Exhaust Provision		Outside Air		System Type
	None	Reverse Cycle DX	None	Reverse Cycle DX	Mechanical	Passive	Mechanical	Natural	
Club Room		•		•			•		DX
Function Space		•		•			•		DX
Bar Areas		•		•			•		DX
Club Office		•		•			•		DX
Kiosk		•		•				•	DX
Kitchen		•		•	•		•		MV, DX
Foyer/Lobby/Corridor	•		•					•	-
First Aid Room	•		•		•				MV
Umpires Room	•		•		•				MV
Toilets	•		•		•				MV
Cleaners	•		•		•				MV
Change Rooms	•		•			•			-
Stores	•		•			•			-
Comm/Elec Cupboards	•		•			•			-
Comms Room		•	•						DX

Table 1: Overview of proposed cooling, heating and exhaust ventilation systems.

System Type:

DX : Ducted Reverse cycle unit

MV : Mechanical Ventilation



3.3.1 Proposed Airconditioning Systems

It is proposed to use a combination of single split and VRV systems.

Variable Refrigerant Volume (VRV) come complete with the capability of heating and cooling spaces simultaneously. This system type consolidates the outdoor plant footprint and provides enhanced energy efficiency over individual split systems. Given that all outdoor units are preferred to be collocated, this system will also utilise significantly less refrigerant pipework and therefore will be cheaper to install. VRV is proposed for function, club areas etc

Indoor units will generally be ducted units so that the systems are concealed (with only diffusion visible in the ceiling) and have integrated outside air requirements to reduce system complexity. Small office and meeting areas are proposed to be cassette due to the small size.

In addition to this, a comms room single split unit is required or the comms room.

3.3.2 Proposed Ventilation System

It is proposed that inline ducted fans serve the areas requiring exhaust as per the heating, cooling and ventilation table above so that equipment can be serviced without accessing the roof and roof penetrations can be avoided if side discharge option is selected. Refer below.

Discharge Methods

The exhaust systems strategy is typically via roof discharge cowls. Exhaust may discharge via wall mounted weatherproof louvres or roof cowl. Factory colour coding in most standard Colourbond colours is available to suit Architect/Client preference.

The proposed design is to utilise roof cowls for ventilation to toilets in order to utilize a passive ventilation strategy from louvres on the change-room facades.



Typical roof discharge cowl

3.3.3 Proposed Outside Air System

Outside Air Provision

The following options are available with regards to the introduction of outside air to air-conditioned areas.

Passive Ventilation

Passive ventilation to Architect's specification in accordance with BCA and AS 1668.2. The number of openings (i.e. operable windows/doors) in the space shall be a minimum of 6.25% of the floor area of the space. If this requirement is met, there is no requirement under the BCA and AS 1668.2 to provide mechanical ventilation. It is anticipated that passive/natural ventilation be used for lower occupancy areas and/or transient spaces such as the main foyer and circulation corridors.

Mechanical Ventilation in Accordance with AS 1668.2



Outside air introduced mechanically in accordance with AS 1668.2. For a typical occupied building, this would equate to 10 L/s per person. Mechanical ventilation is anticipated to be required for higher occupancy areas, such as the bar, function space and club house.

The proposed design includes mechanical ventilation to all occupied rooms so that long period of occupancy with relatively high population can be managed while external doors and windows remain closed as would typically be the case during the warmer and colder periods of the year.

The exception is the main foyer space which will not be airconditioned and can be classified as naturally ventilated due to the number of openable doors to the outside compared to the floor area.

The mechanical design proposes mechanical ventilation to occupied spaces.

3.3.4 Air Conditioning & Ventilation Diffusion

Function and Club Room Supply Air Diffusion Strategy

The Function and Club rooms is to use radial swirl diffusers.



Typical Swirl Diffuser Grille

Typically, the mechanical design utilises half-chevron grilles for exhaust systems, transfer grilles, return air grilles etc.



Typical Half Chevron Grille.



3.3.5 Air Conditioning Controls Strategy

Central Controller with Local Controllers

Local proprietary hard-wired wall mounted controller for each indoor unit will be located within each room served.

This allows occupants of any room will have direct access to the A/C controller for that room. The controllers could be individually configured to lock out certain functionality and add timeclocks to automatically shut off equipment at certain time of the day on particular days of the week.

A central controller will be provided in addition to the above. The central controller groups together all the local controllers. And has more sophisticated scheduling capabilities as well as central reporting of errors/faults across all systems and allows for remote access to IT network. The central controller option can also be upgraded to include the ability to send alarm messages via email to externally located building managers or maintenance contractors to expedite site attendance in the event of a fault.

After hours control:

It is understood that the office room may require to be used after hours independently. It is proposed that these rooms will have a “push button” functionality from the local proprietary controller, with the ability to apply restrictions set from the centralised controller. This can be programmed to meet client requirements.

3.4 Works by Other Trades

3.4.1 Builders Work

- Openings in walls, roofs, ceilings
- Bulkheads for air ducts, outlets, grilles, pipes, etc. and sealing of such
- Co-ordination of trades
- Under flashing of all roof penetrations
- Installation of door grilles
- Provision of ceiling access panels
- Safe permanent access for servicing of mechanical equipment
- Vandal resistant enclosures and screens for condensing units where required

3.4.2 Electrical Trade

- Supply of power supplies to all mechanical plant.

3.4.3 Fire Detection Trade

- Provision of fire mode shutdown signal via electrical DB (source of mechanical service power supplies) where required.

3.4.4 Hydraulic Trade

- Provision of drain points to fan coil units and condensing units

3.5 Exclusions

3.5.1 Design Exclusions

The following systems are not designed or documented as a part of the mechanical services:

- Cool rooms



- Structural supports
- Roof plant platforms

3.6 Safety in Design

Stantec operates a Safety in Design (SID) procedure based on “Code of Practice - Safe Design of Buildings & Structures 2008” published by the Commission for Occupational Safety & Health, Western Australia.

Compliance with this Code of Practice will ensure that all designs will be safe to install, operate, maintain and dismantle by appropriately experienced contractors.

Any hazards that cannot be eliminated by design will be identified and the appropriate work practices, protection and work methods required should be formulated by the contractor



4. Budget Cost Estimate

The budget estimate for the mechanical works is as follows:

A/C Systems:	\$280,000
Ventilation Systems:	\$90,000
Kitchen Commercial Exhaust:	\$45,000
TOTAL:	\$ 415,000

The preliminary budget excludes the following elements.

- Preliminaries
- Demolition Works
- Builder's work
- Goods & Services Tax
- Contingencies
- Escalation



5. Appendix A – DD Drawings





DRAWING LIST	
DRAWING NUMBER	DRAWING NAME
ME-000-01	COVER SHEET
ME-000-02	NOTES AND LEGEND
ME-201-01	GROUND FLOOR PLAN 1 OF 2
ME-201-02	GROUND FLOOR PLAN 2 OF 2
ME-202-01	ROOF PLAN 1 OF 2
ME-202-02	ROOF PLAN 2 OF 2
ME-800-01	MECHANICAL DETAILS 1 OF 2
ME-800-02	MECHANICAL DETAILS 2 OF 2



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BEALE PARK REDEVELOPMENT

9 KENT STREET, SPEARWOOD.

2024.11.14

Stantec Project Number: 301250819

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A	PRE-TENDER ISSUE	JT	AE	2023.04.21

Issued/Revision	By	Appd	YYYY.MM.DD
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GROUND FLOOR PLAN 1 OF 2

Project No. 301250819	Scale 1 : 100
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GROUND FLOOR PLAN 2 OF 2

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ROOF PLAN 1 OF 2

Project No.	Scale
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ROOF PLAN 2 OF 2

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OUTSIDE AIR INLET COWL DETAIL
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ME-800-01



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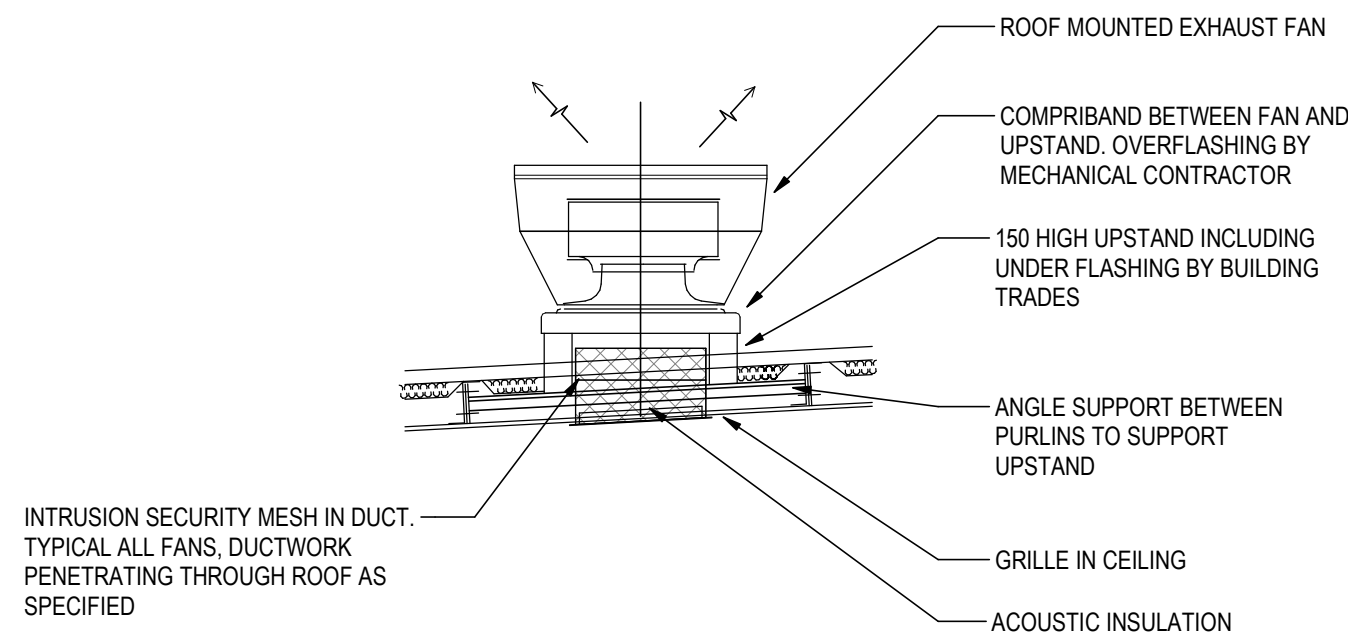
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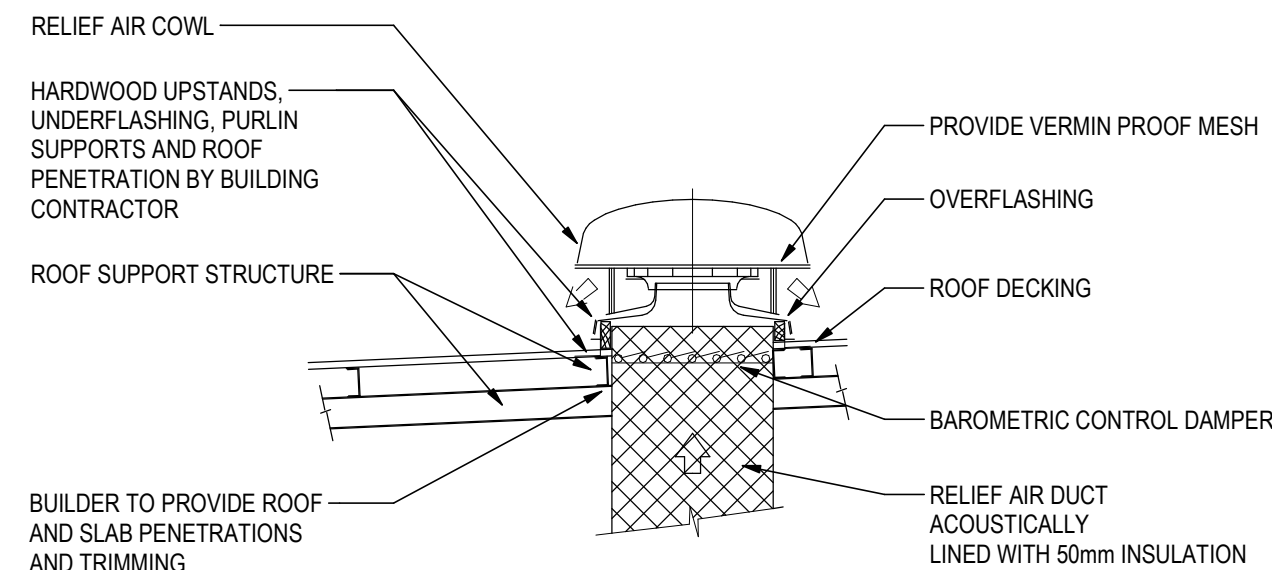
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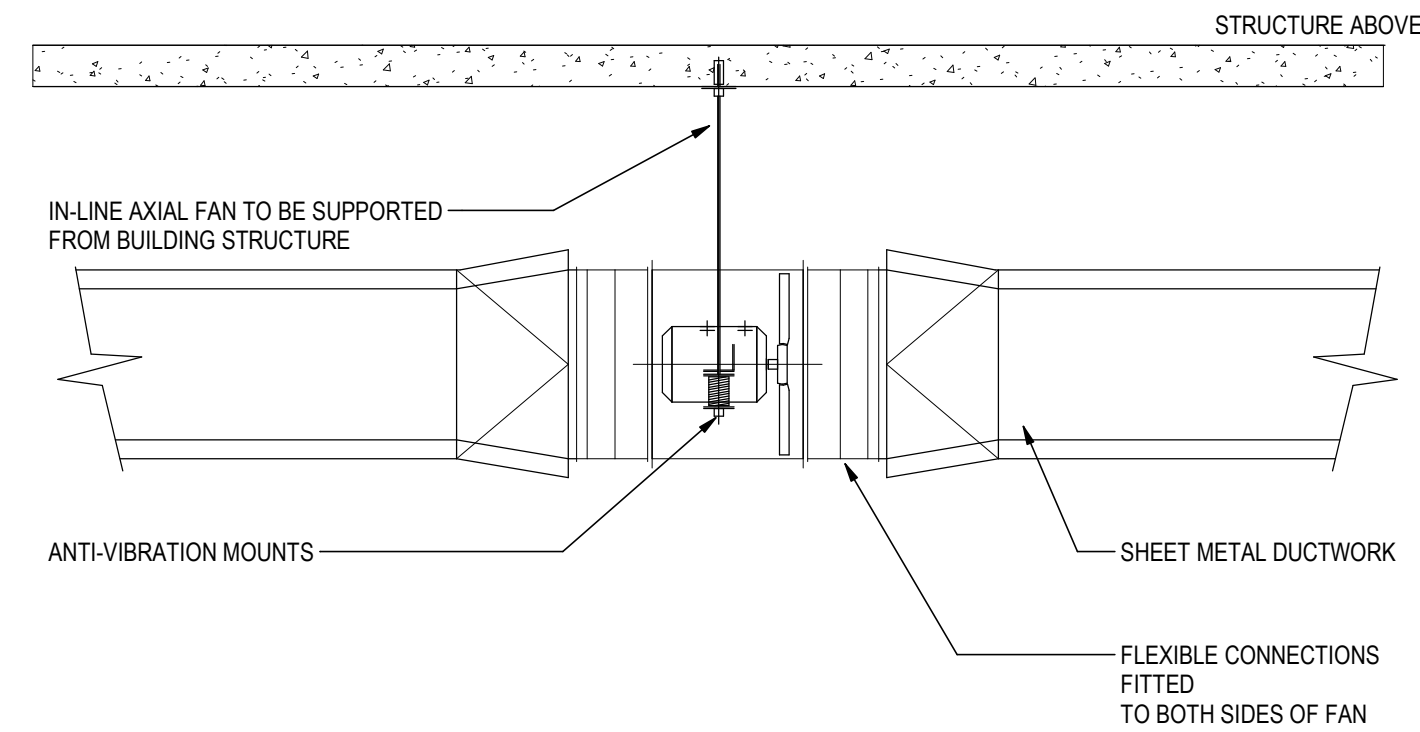
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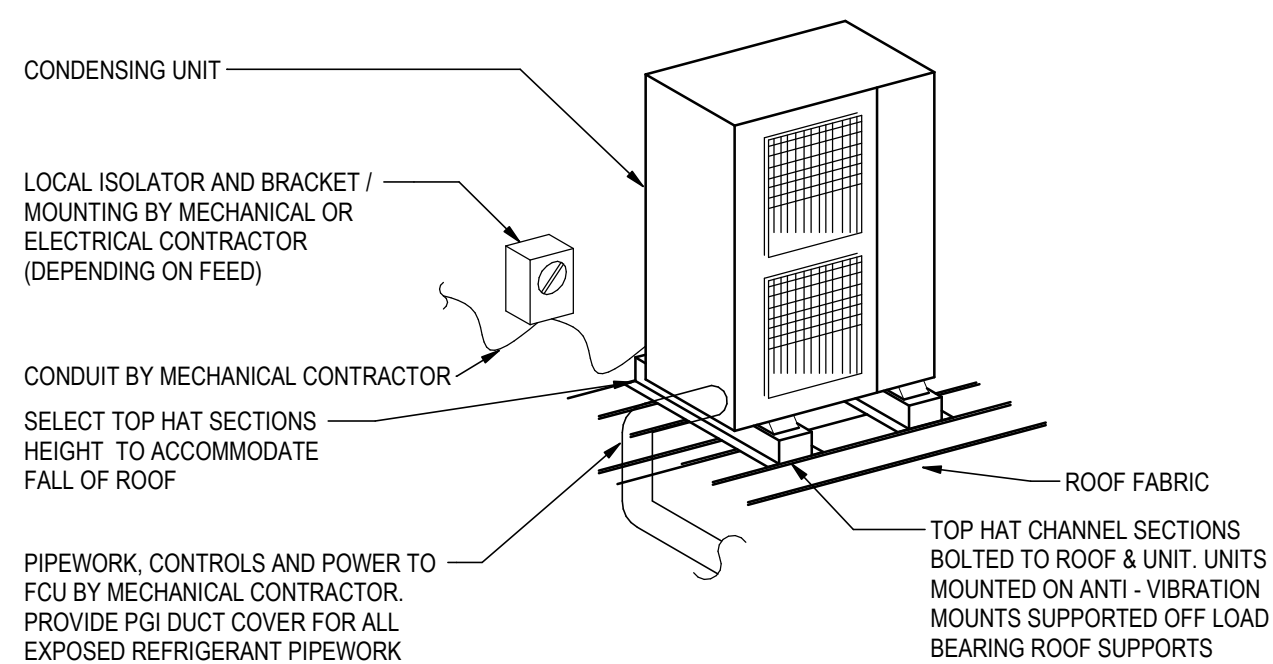
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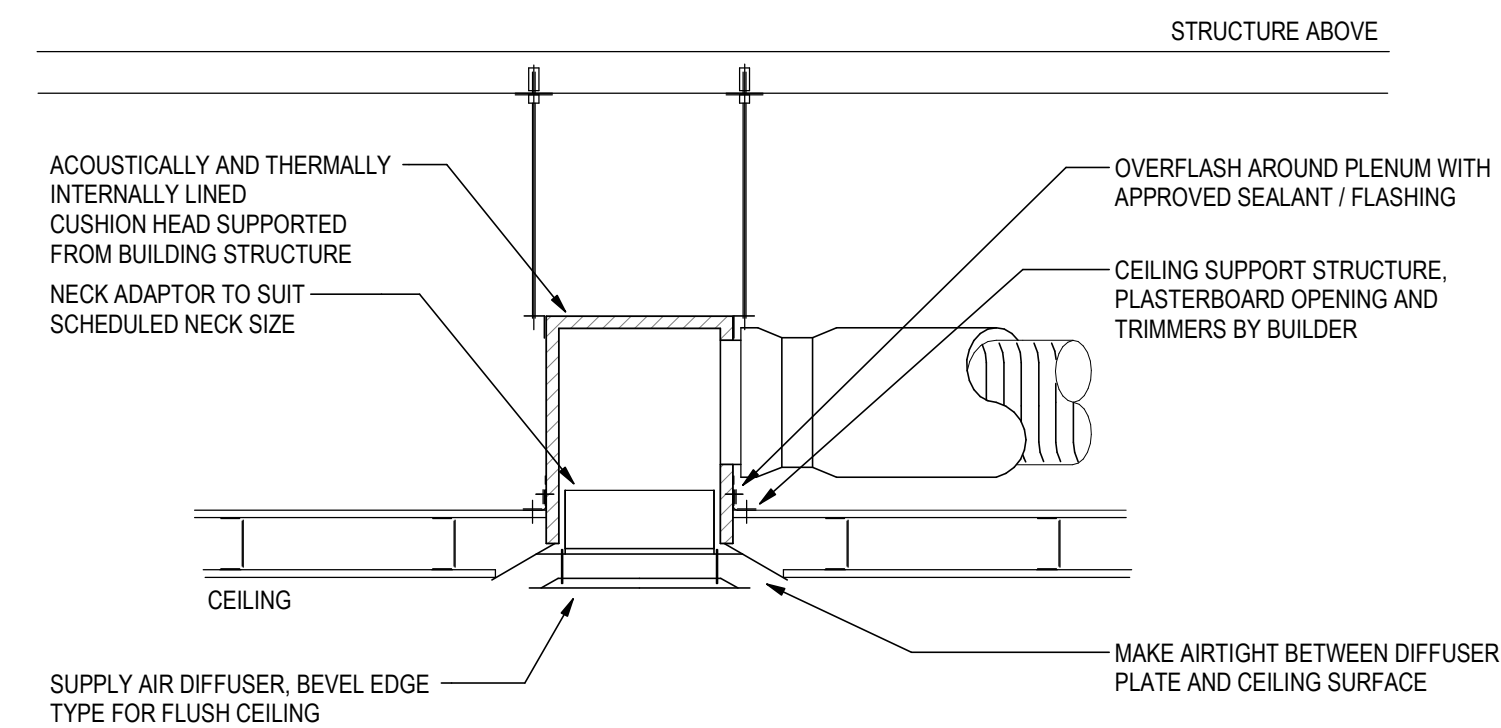
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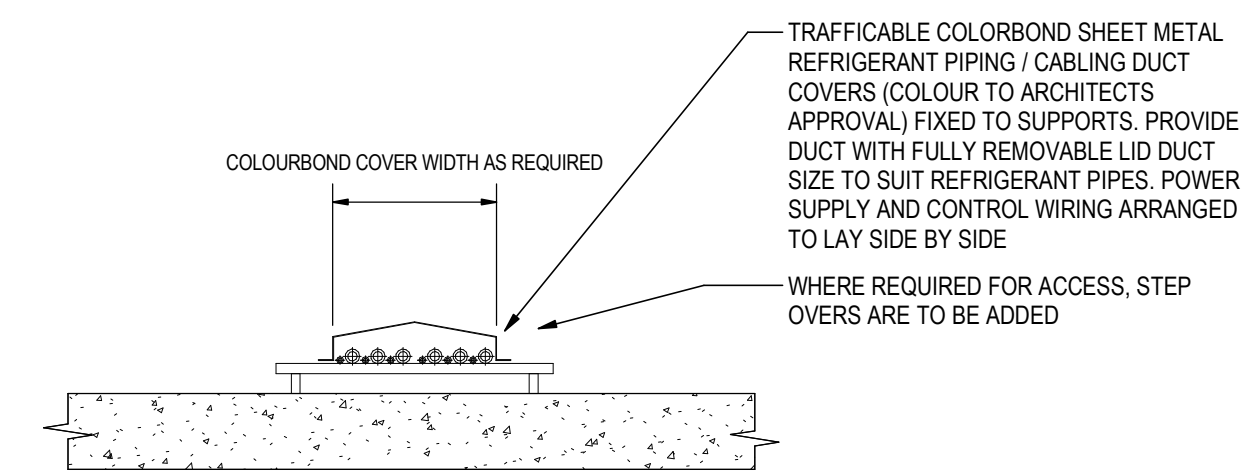
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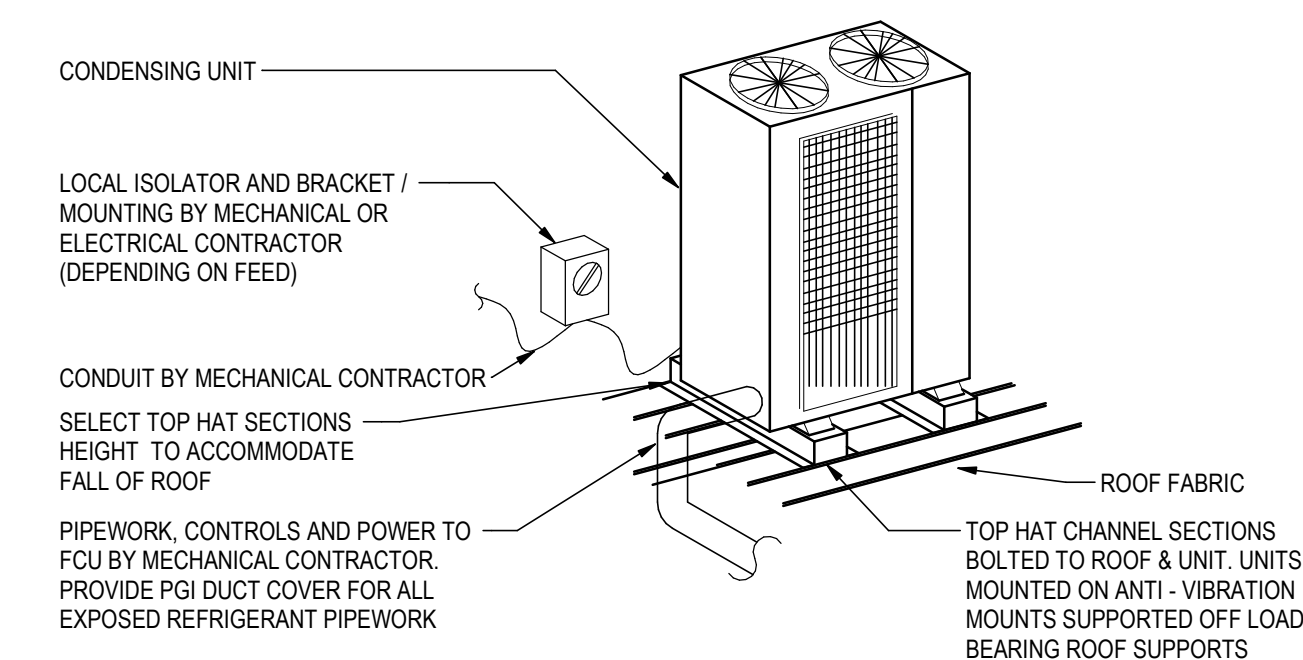
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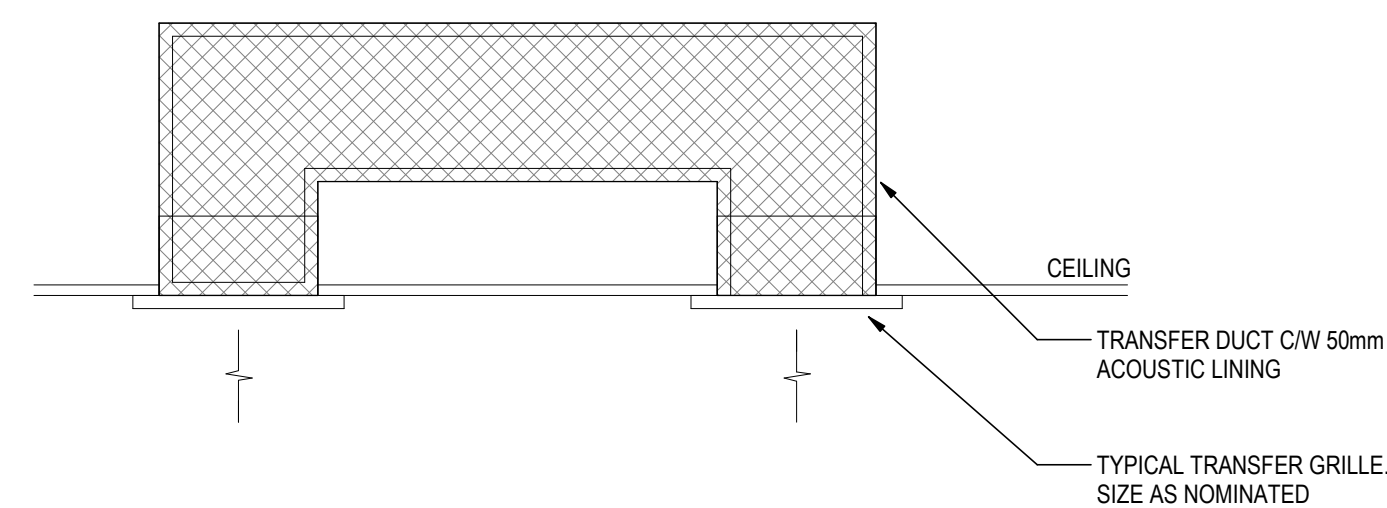
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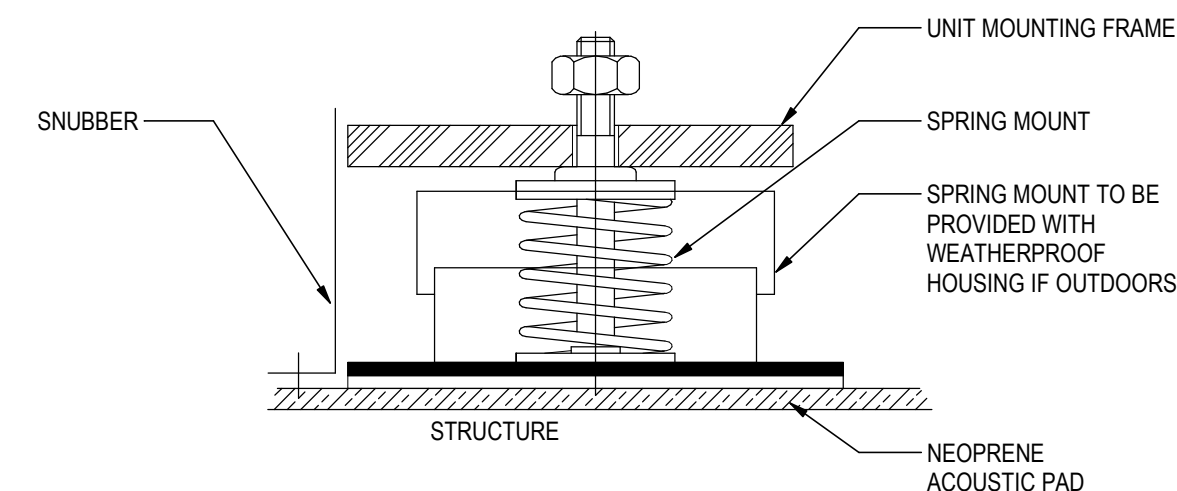
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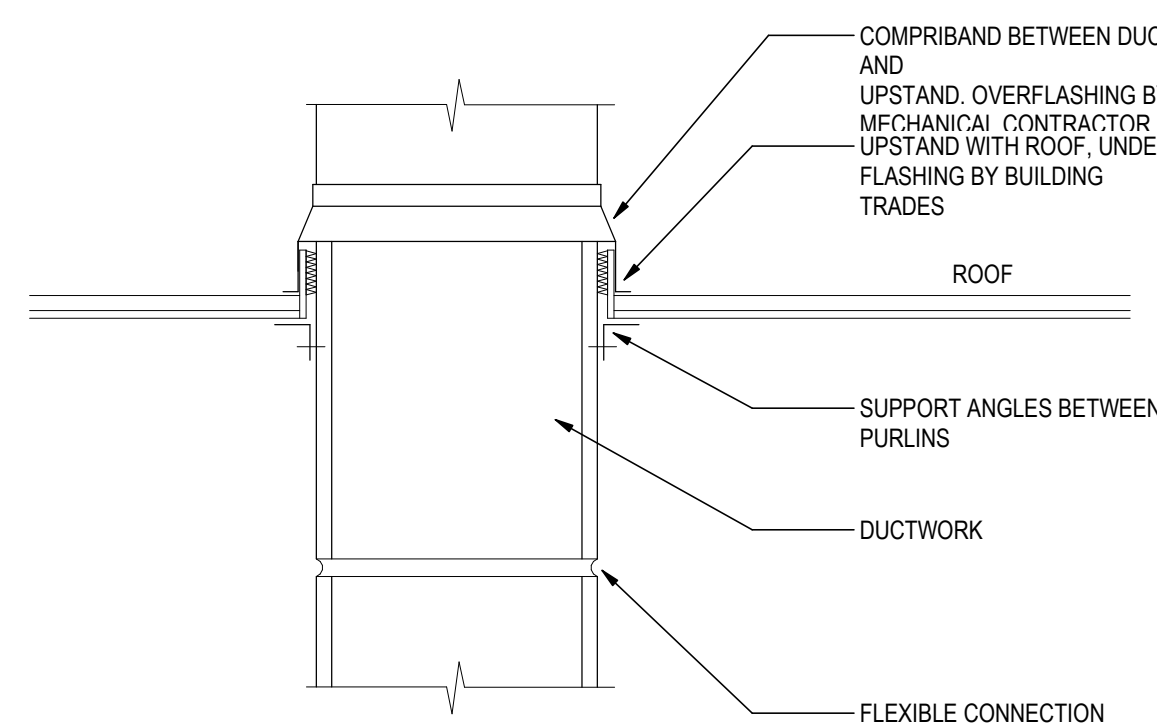
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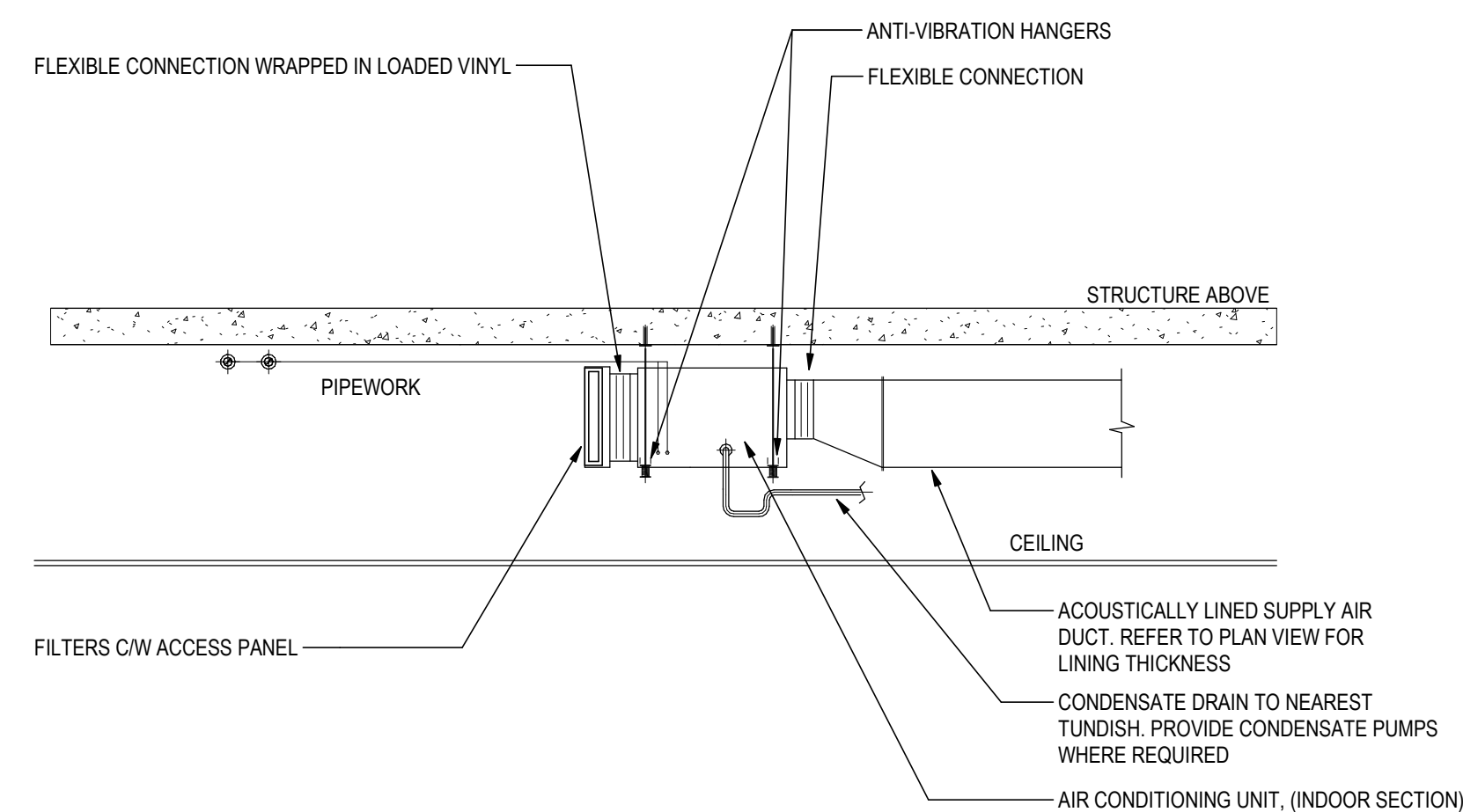
TRANSFER DUCT DETAIL
SUBJECT TO ACOUSTIC CONSULTANT REVIEW
AND REQUIREMENTS FOR SPECIFIC
APPLICATION



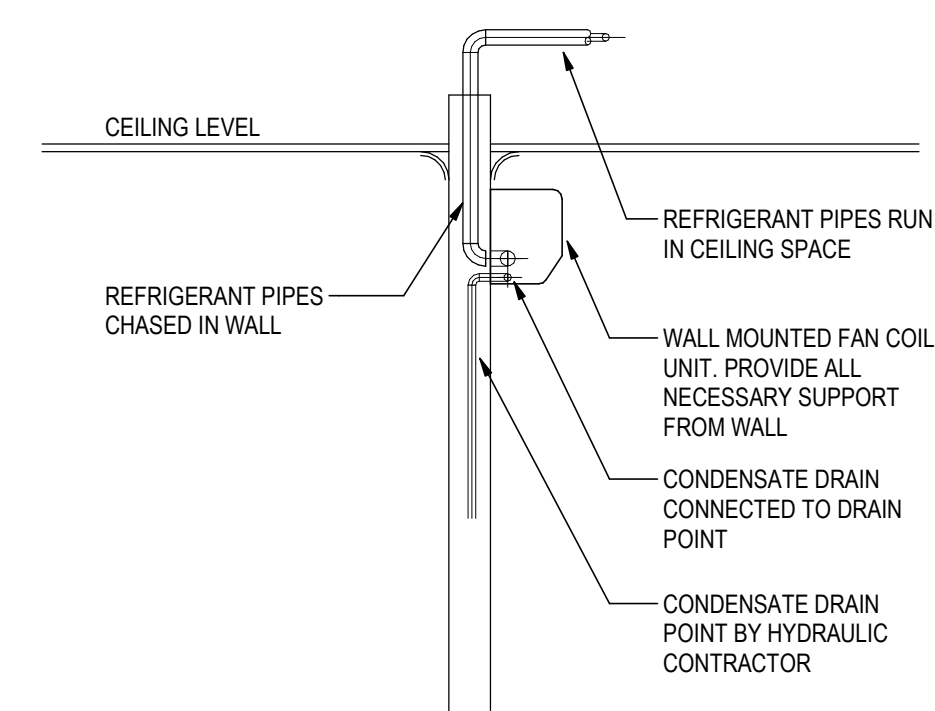
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ROOF PENETRATION - METAL DECK DETAIL
NOT TO SCALE



TYPICAL VRV FAN COIL UNIT MOUNTING DETAIL
NOT TO SCALE



WALL MOUNTED FAN COIL UNIT
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BEALE PARK REDEVELOPMENT

9 KENT STREET, SPEARWOOD.

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MECHANICAL DETAILS 2 OF 2

Project No. 301250819	Scale As indicated
Revision C	Drawing No. ME-800-02

Design with
community in mind

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APPENDIX P

DF10	DESIGN STATEMENT		
PROJECT:	BEALE PARK	JOB No.	2873
SECTION:	BUILDING	DATE:	14-11-2024

1 ELECTRICAL

- 1.1 New underground sub-mains cabling in conduit from new site main switchboard
- 1.2 Dedicated Western Power kWh meter for building – meter in site main switchboard
- 1.3 Dedicated distribution board (building DB) in building electrical room

2 LIGHTING

- 2.1 Interior lighting of building to AS 1680 with emergency lighting with Exit signs to AS 2293 and Pierlite Firefly LED emergency luminaires and Pierlite Stingray LED Exit signs.
- 2.2 Exterior lighting to be IP56, IK08
- 2.3 Function room and club multipurpose room luminaire located in the 150mm wide pelmet
- 2.4 Wet areas (i.e. toilets, showers and changerooms) IP44 LED downlights

3 POWER

- 3.1 Socket outlets for general purposes and kitchen equipment (Clipsal Heritage range on timber blocks)
- 3.2 Power for **kitchen equipment**: socket outlets or isolating switches as required (i.e., stove, oven, range hood, dishwasher, fridge/freezers, microwave etc. We require kitchen consultant to provide us with information about power requirements of the specific equipment.
- 3.3 Emergency push buttons for kitchen equipment
- 3.4 Power for **hydraulic equipment**: socket outlets or isolating switches as required (i.e., boiling water unit, chilled water storage, hot water system any pump etc.). hydraulic consultant to provide us with information about power requirements of the specific equipment.
- 3.5 Dedicated circuit with time switch for boiling water and chilled water storage units as per BCA Part J6.6.
- 3.6 Power for **mechanical equipment**: socket outlets or isolating switches as required (i.e. air conditioning units, fans etc.). mechanical consultant to provide us with information about power requirements of the specific equipment.
- 3.7 Power connections for motorised roller shutters and blinds
- 3.8 Weatherproof socket outlets to verandah

4 COMMUNICATION

- 4.1 Incoming Telstra/NBN
- 4.2 Communication rack in comms room
- 4.3 Wifi in comms room for all building coverage
- 4.4 Data outlets in meeting room and club office
- 4.5 Data outlet in Bar 1 and Bar 2 for EFTPOS machines

5 FIRE ALARM SYSTEM

- 5.1 Fire alarm system to comply with AS/NZS 1670
- 5.2 Fire Indicator Panel (FIP) connected to DBA
- 5.3 Smoke detectors, heat detectors

6 ACCESS CONTROL AND SECURITY

- 6.1 PIR detectors
- 6.2 Security fire detector
- 6.3 Security keypad inside door to disarm security system
- 6.4 Security control panel (Gallagher or similar)
- 6.5 Gallagher Access Controller
- 6.6 External doors with electric strike and reed switches (TBC)
- 6.7 CCTV system
- 6.8 Telephone line to City's monitoring contractor

Electrical design will be in compliance with the following standards:

AS/NZS 3000: 2018 Wiring Rules

WA Electrical Requirements: 2019

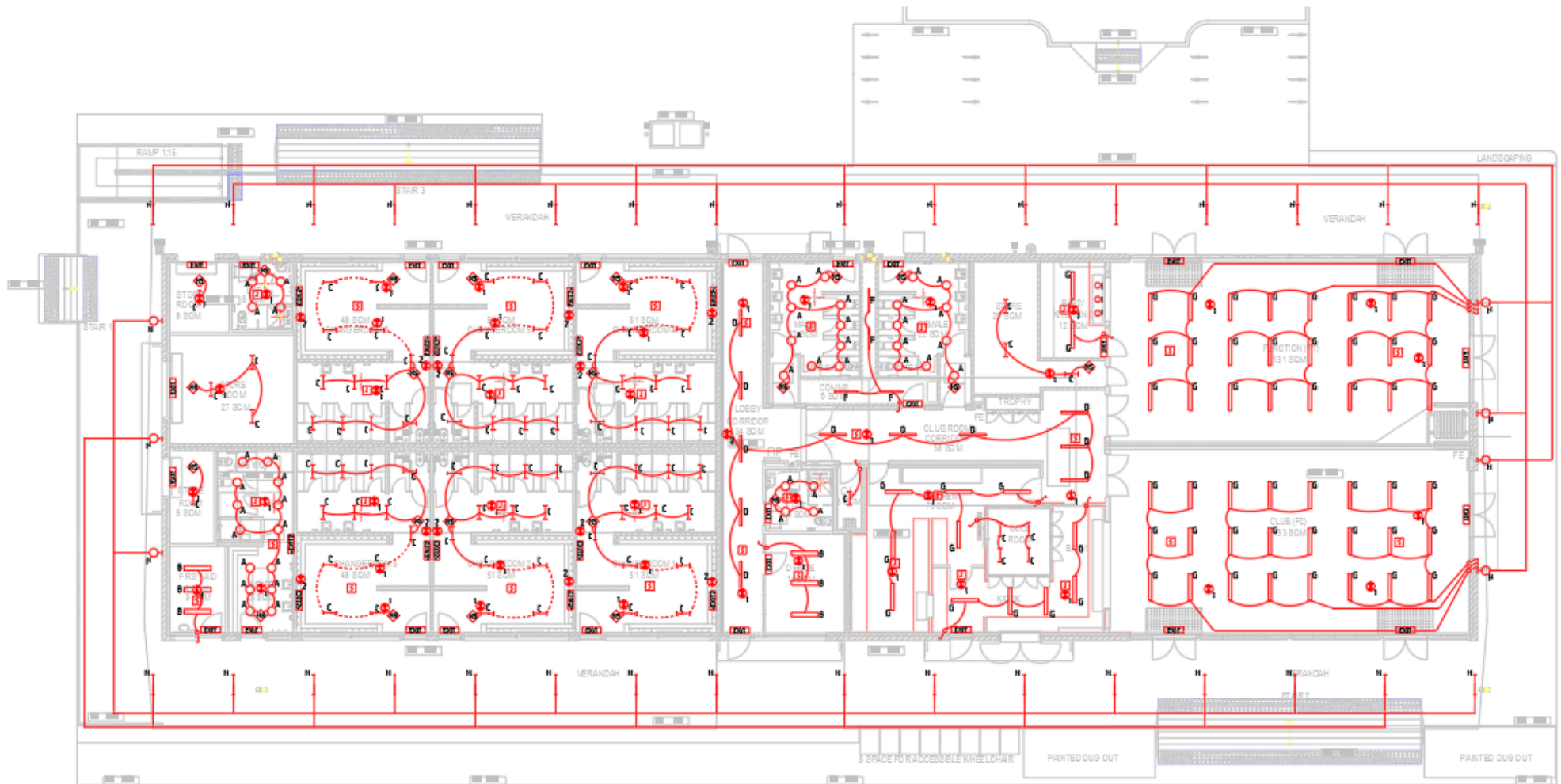
AS/NZS 1670: Fire detection, warning, control and intercom systems

AS/NZS 1680: Interior and workplace lighting

AS/NZS 2293: Emergency escape lighting and exit signs for buildings

NCC BCA Volume 1 Part J6 – Artificial Lighting and Power

AS/NZS 3080: Telecommunications installations – Generic cabling for commercial premises



PROJECT: BEALE PARK	JOB No. 2873
SECTION: OUTDOOR LIGHTING	DATE: 14-11-2024

1. ELECTRICAL SUPPLY

- a. New Site Main Switchboard
- b. New underground sub-mains cable in conduit to Floodlight Distribution Board (AS/NZS 3439 Form 1, AS/NZS 60529 IP56 aluminium construction) with main switch, surge diverters, an anti-condensation heater
- c. Underground cable in conduit from Floodlight Distribution Board to switchgear in poles for sports floodlights and community floods
- d. Underground cabling, minimum 500 BGL, with PVC tape.
- e. Trench with turf cutter minimum 50 mm thick, remove any spoil in 48 hours, backfill and compact in layers, replace turf same day, lightly compact, finish flush and neat, coordinate irrigation.
- f. Tree routes to be avoided and directional drilling to be considered where necessary.
- g. Enclosures in each pole for main switches and floodlight RCD/circuit breakers
- h. Cabling from circuit breakers to floodlight drivers mounted in pole
- i. Multi-core cabling inside poles clamped to suspension wire
- j. Cable to floodlights in flexible steel conduit with PVC sheath (cockatoo proofing)

2. SPORT LIGHTING

AREA 1 & 2 –WESTERN SOCCER FIELDS

- a. Four 25m HDG steel fixed poles on N32 concrete slab footings (14-day cure) located 5m clear of the Principal Playing Area. Footings with non-slip surface, 150 AGL and with pole flange above footing. Grout between flange and footing with drainpipe. Spray pole base interior 1000 mm with fish-oil. Pole flange and base exterior up to 350 mm coat with Shield Coat "Ultrashield" grey.
- b. Each pole with head-frame for two 1.5 kW LED sports floodlights (Philips Optivision 4000K) and one LED "community" floodlight (e.g. Pierlite MML 100W asymmetric 4000K).



- c. Poles and footings to withstand Basic Wind Speed Region A Terrain Category 2
- d. Due to site restrictions, poles 2 & 3 locations do not comply with recommended AS2560.2 luminaire locations and exclusion zones.
- e. Lighting designed to AS 2560.2 Football, "Club competition and match practice" (100 lux, 0.5 min/ave, 0.3 min/max, 50 Glare Rating, 65 CRI, 2 UG).
- f. Obtrusive light limited to AS/NZS 4282 Zone A3 (Medium District Brightness) "Suburban areas in towns and cities", Level 1 – New Installation
- g. Controls: dimming 50 lux/100 lux
- h. Curfew control by astronomical time switch to prevent floodlights operating late at

night and during the day

- i. Astronomical time switch to control community floodlights set as per city's preference. Community floodlights switch OFF when any sports floodlights switch ON.

AREA 3 – EASTERN SOCCER FIELDS

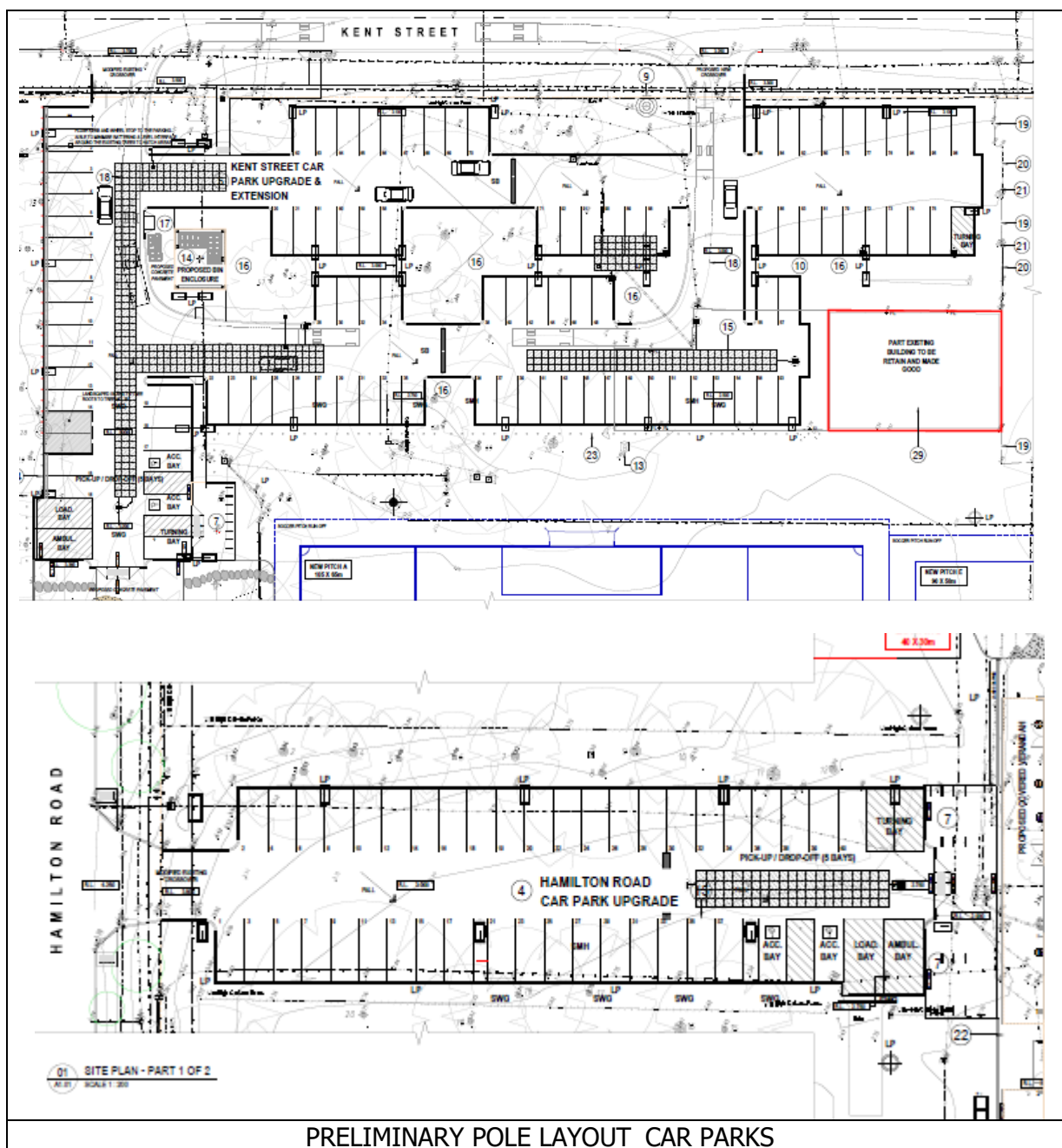
- a. Nine 37m HDG steel fixed poles on N32 concrete slab footings (14-day cure) located 5m clear of the Principal Playing Area. Footings with non-slip surface, 150 AGL and with pole flange above footing. Grout between flange and footing with drainpipe. Spray pole base interior 1000 mm with fish-oil. Pole flange and base exterior up to 350 mm coat with Shield Coat "Ultrashield" grey.
- b. Each pole with head-frame for two 1.5 kW LED sports floodlights (Philips Optivision 4000K) and one LED "community" floodlight (e.g. Pierlite MML 100W asymmetric)
- c. Poles and footings to withstand Basic Wind Speed Region A Terrain Category 2
- d. Due to the complexity of the site and the restrictions, some of the pole locations do not comply with recommended AS2560.2 luminaire locations and exclusion zones. Pole heights for this area are also under the AS2560 recommended pole height in an attempt to try and minimize the affect on surrounding properties, as well to reduce cost for installation and supply.
- e. Lighting designed to AS 2560.2 Football, "Club competition and match practice" (100 lux, 0.5 min/ave, 0.3 min/max, 50 Glare Rating, 65 CRI, 2 UG).
- f. Obtrusive light limited to AS/NZS 4282 Zone A3 (Medium District Brightness) "Suburban areas in towns and cities", Level 1 – New Installation
- g. Controls: dimming 50 lux/100 lux
- h. Curfew control by astronomical time switch to prevent floodlights operating late at night and during the day
- i. Astronomical time switch to control community floodlights set as per city's preference. Community floodlights switch OFF when any sports floodlights switch ON
- j. Remove existing floodlights, cables, conduits and poles. Dispose floodlights off site. Deliver poles to the City depot. Grind off rag bolts, backfill, compact and re-instate turf.

3. CAR PARK LIGHTING

- a. Lighting design still under review
- b. We anticipate the use of 5m steel fixed poles with single or double outreach arms.
- c. Poles equipped with LED Philips Luma Mini luminaires 25W 4000K.



- d. Poles may require installation in protection nibs, where the 1m setback behind kerb is not possible.
- e. Lighting designed to AS/NZS 1158.3.1:2020 Outdoor car parks (PC2 & PCD).



PLAYGROUND AND PATHWAY LIGHTING

- a. Coordination with landscaping design still under review.
- b. We anticipate same poles and luminaires as for the car parks to be proposed, unless requested otherwise.
- c. Playground to be designed as per AS/NZS 1158.3.1 Subcategory PA3.
- d. Pathways to be designed as per AS/NZS 1158.3.1 Subcategory PP3.

BASKETBALL COURT

- a. Coordination with landscaping design still under review.
- b. No lighting requirements for the basketball court. The City confirmed they do not want basketball court to be used at night.

4. STANDARDS

The lighting design requirements are outlined below:

AS/NZS 1158.3.1:2020 Lighting for roads and public spaces – Pathways & cyclist paths:

Lighting Category	PP1	PP2	PP3	PP4	PP5
Average Horizontal Illuminance (E_h) (lux) ^{a,b}	10	7	3	1.5	0.85
Point Horizontal Illuminance (E_{ph}) (lux) ^{a,b,d}	2	1	0.5	0.25	0.14
Horizontal Illuminance Uniformity E_{max}/E_{ave} (U_{E2}) ^c	5	5	5	5	5
Point Vertical Illuminance (E_{pv}) (lux) ^{a,b}	1	0.3	0.1	0.05 ^e	0.02 ^e

- a) These values are maintained.
- b) Conformance is achieved by being greater than or equal to the applicable table value
- c) Conformance is achieved by being less than or equal to the applicable table value
- d) Conformance of 50% of E_{ph} shall also be demonstrated over an area of 5m either side of the pathway -where the verge exists- or up to any structure/fence/property boundary that forms the edge of the pathway, unless deemed otherwise by the relevant authorities.
- e) For luminaires with mounting heights of 1.5m or less, the E_{pv} values need not be applied.

AS/NZS 1158.1.1:2005 Lighting for roads and public spaces – Outdoor car parks:

Lighting Category	PC1	PC2	PC3	PCD ^{d)}	PCX ^{e)}
Average Horizontal Illuminance (E_h) (lux) ^{a,b}	14	7	3.5	-	21
Point Horizontal Illuminance (E_{ph}) (lux) ^{a,b}	3	1.5	0.7	≥ 14 and $\geq (E_h)^d$	5
Horizontal Illuminance Uniformity E_{max}/E_{ave} (U_{E2}) ^c	8	8	8	-	8
Point Vertical Illuminance (E_{pv}) (lux) ^{a,b}	3	1	-	-	-

- a) These values are maintained
- b) Conformance is achieved by being greater than or equal to the applicable table value
- c) Conformance is achieved by being less than or equal to the applicable table value
- d) E_{ph} shall be determined for each PCD area in the car park and, in each case, it shall be greater than the value stated and greater than the average for the overall car park
- e) This level shall be used for any marked areas for pedestrian to cross

AS/NZS 1158.3.1:2020 Lighting for roads and public spaces – Public Activity Areas:

Lighting Category	PA1	PA2	PA3
Average Horizontal Illuminance (E_h) (lux) ^{a,b}	21	14	7
Point Horizontal Illuminance (E_{ph}) (lux) ^{a,b,d}	7	4	2
Horizontal Illuminance Uniformity E_{max}/E_{ave} (U_{E2}) ^c	8	8	8
Point Vertical Illuminance (E_{pv}) (lux) ^{a,b}	7	4	2

- a) These values are maintained.
- b) Conformance is achieved by being greater than or equal to the applicable table value
- c) Conformance is achieved by being less than or equal to the applicable table value
- d) Where the public activity is a lane or roadway (such as may occur in a CBD area) the lighting technical parameter conformance shall be determined in accordance with the rules for wide pathways as provided in AS/NZS 1158.2

AS 2560.2 – LIGHTING FOR FOOTBALL (ALL CODES)

Level of play	Average horizontal maintained illuminance ($\bar{E}_h$)	Minimum horizontal uniformity		Maximum uniformity gradient per 5 m ^e		Max. glare rating (GR)	Minimum colour rendering index (R_a)
		($E_{hmin}/\bar{E}_h$) (U_1)	(E_{hmin}/E_{hmax}) (U_2)	G	UG		
Amateur level							
Touch and tag	50	0.3 ^b	N/A	N/A	N/A	N/A	65
Ball and physical training	50	0.3	N/A	N/A	N/A	N/A	65
Club competition and match practice	100 ^a	0.5	0.3 ^b	50 %	2	50	65
Semi-professional level							
Ball and physical training	50	0.3 ^b	N/A	N/A	N/A	N/A	65
Match practice	100	0.5	0.3	50 %	2	50	65
Semi-professional competition	200	0.6	0.4 ^c	40 %	1.67	50	65
Professional level							
Ball and physical training	100	0.5	0.3	50 %	2	50	65
Match practice	200	0.6	0.4 ^c	40 %	1.67	50	65
Professional competition	500	0.7	0.5 ^d	25 %	1.33	50	65

^a For competition level AFL 150 lx is preferred where practicable to take account of contemporary viewing expectations of spectators.

^b A value of 0.4 is preferred where practicable for new installations.

^c Where two or more fields are adjacent and with luminaires operating simultaneously U_2 may be reduced to a minimum of 0.30 (the adjacent field may be lit to a greater or lesser level).

^d Where two or more fields are adjacent and with luminaires operating simultaneously U_2 may be reduced to a minimum of 0.40 (the adjacent field may be lit to a greater or lesser level).

^e For Australian Rules Football the limit for G may be increased by 5% at points that are within 5 m from the outfield boundary but they should not be in the goal area (within the 50 m arc), i.e. around the perimeter wings only. For Soccer the limit for G may be increased by 5% at one point only (or 2 or 4 points if there is scheme symmetry) but they should not be in the penalty area, or the corner points. For Rugby the limit for G may be increased by 5% at one point only (or 2 or 4 points if there is scheme symmetry) but they should not be either side of the try line.

Professional competition, minimum mounting height $h = 0.47 \times d$

All others, minimum mounting height $h = 0.36 \times d$

AS/NZS 4282: 2019—CONTROL OF THE OBTRUSIVE EFFECTS OF OUTDOOR LIGHTING

Description	Examples	Zones	Vertical illuminance		Threshold increment		Sky glow	Maximum luminous intensity per luminaire		
			Non-curfew	Curfew	%	Default adaptation level		Non-curfew L1	Non-curfew L2	Curfew
Intrinsically dark	UNESCO Starlight Reserve, IDA Dark Sky Parks, major optical observatories, no road lighting unless specifically required by road controlling authority	A0	See note 1	0	N/A	N/A	0	See note 7	See note 7	0
Dark	Relatively uninhabited rural areas No road lighting unless specifically required by road controlling authority	A1	2	0.1	N/A	N/A	0	2 500	5 000	500
Low district brightness	Sparsely inhabited rural and semi-rural areas	A2	5	1	20%	0.2	0.01	7 500	12 500	1 000
medium district brightness	Suburban areas in towns and cities	A3	10	2	20%	1	0.02	12 500	25 000	2 500
high district brightness	Town and city centres and other commercial areas, residential areas abutting commercial	A4	25	5	20%	5	0.03	25 000	50 000	2 500
high district brightness	Vicinity of major sports stadium during TV broadcasts	TV	See table 3.4	N/A	20%	10	0.08	100 000	15 0000	0
Residences near traffic routes	Refer to AS/NZS 1158.1.1	V	N/A	4	Note 2	Note 2	Note 2	N/A	N/A	N/A
Residences near local roads with significant	Refer to AS/NZS 1158.3.1	R1	N/A	1	20%	0.1	Note 3	N/A	N/A	N/A
Residences near local roads	Refer to AS/NZS 1158.3.1	R2	N/A	2	20%	0.1	Note 3	N/A	N/A	N/A
Residences near a roundabout or local area	Refer to AS/NZS 1158.3.1	R3	N/A	4	20%	0.1	Note 3	N/A	N/A	N/A
Residences near a pedestrian crossing	Refer to AS/NZS 1158.4	RX	N/A	4	20%	5	Note 4	N/A	N/A	N/A

NOTES:

- For A0, Ev shall be as close to zero as practicable without impacting safety considerations
- Refer to AS/NZS 1158.1.1
- Refer to AS/NZS 1158.3.1
- Refer to AS/NZS 1158.4
- N/A means "Not Applicable"
- For an internally illuminated sign in an A2 zone, $L_{ad} 0.25 \text{ cd/m}^2$
- For all A0, I shall be as close to zero as practicable without impacting safety considerations

APPENDIX Q

Beale Park Redevelopment

Hydraulic Brief

Design Development

Prepared for: City of Cockburn

Attention: Ian Hart

Date: 14-11-2024

Prepared by: Dennis Teh

Ref: 301250819

Stantec Australia Pty Ltd

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Revision

Revision	Date	Comment	Prepared By	Approved By
001	14/11/2024	Design Development Issue	DT	SC

Contents

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1. Introduction

This Engineering Services Design Brief for the Hydraulic Services has been prepared at the request of the City of Cockburn for the Beale Park Sports & Community Centre.

This Engineering Services Design Brief sets out the parameters of Stantec's technical design and client service for the design and documentation of the above project.

This document serves as the benchmark which our services must achieve. We request you read this carefully so that you have a clear understanding of the scope of our works.

We would welcome any comments or queries you may have on the information provided in this Engineering Services Design Brief so that it may be updated to suit.

Items highlighted in *italics* represents specific issues that we require Client and/or Architectural confirmation.

This Engineering Services Design Brief has been prepared based on the following information:

- Supplementary documentation and drawings received from various sources on 22/03/2022 and including the following:
 - Architectural Plans
 - City's Facility Standards
 - Consultants Meeting to date.



2. Overview

The project comprises the construction the new Beale Park Redevelopment, Western Australia and comprises the following main elements:

- Community and sports centre, designed as a district level facility inclusive of;
 - Viewing areas
 - Sporting club changerooms
 - Multi-purpose clubhouse
 - Commercial Kitchen
 - First Aid Rooms
 - Separate multi-functional community activity spaces
 - Toilets



3. Objectives

- To provide Hydraulic Services of high standard, comparable with other similar district level community and sporting facilities
- To provide Hydraulic Services that minimises initial capital cost (to suit budget constraints) without excessively compromising quality or ongoing maintenance costs
- To provide Hydraulic Services necessary for each area that fulfils designated function
- To provide Hydraulic Services of commercial quality with a minimum engineered design life of 20 - 25 years
- To provide adequately sized Hydraulic Services that allows an acceptable level of flexibility for future development



4. Design Standards and Criteria

Design Standards

- Hydraulic services to comply with the Building Code of Australia 2019 including Amendment 1.
- Hydraulic services to comply with all current statutory requirements and guidelines including City of Cockburn, Water Corporation of Western Australia, Department of Fire and Emergency Services and the Department of Health
- Hydraulic Services to comply with current Australian Standards where applicable and particularly the following:

AS 3500 : National Plumbing and Drainage Code incorporating:

Part 1 : 2018 Water Supply

Part 2 : 2018 Sanitary Plumbing and Drainage

Part 3 : 2018 Stormwater Drainage

Part 4 : 2018 Heated Water Services

National Construction Code - NCC

Volume 1 : Class 2 to 9 buildings

Volume 3 : Plumbing and drainage associated with all classes of buildings

Section J : Specification J6



Maximum Demands

We have endeavoured to make the most accurate assumptions for the project based on all the information provided to date. The below outlines the tone of assumptions moving forward.

We welcome any comments or queries in relation to the assumptions listed in this section so that they may be updated to suit the specific requirements of this project as information is revised or becomes available.

General

- Maximum number of showers operating simultaneously All changeroom showers

Domestic Cold Water Demand

Domestic cold water will be provided to site for the purpose of indoor uses such as washing, showering, toilet flushing and external uses such as irrigation. The maximum water demands have been calculated based on the following criteria:

- **Sporting**
 - 22 showers
 - 4 uses per hour in peak times
 - 30L Per shower use
 - 1 hour peak period
 - Estimated 3 peak periods per day maximum
 - 2,640 L/hour
 - 7,920 L/day

Peak Cold Water Probable Simultaneous Demand

Peak Cold Water Demand for showers and facilities = 1.59 L/s Probable Simultaneous Demand (PSD)

Based on 14 showers operating simultaneously, noting that site calculations in accordance with AS3500.1 demonstrate a PSD of 1.51L/s (or equivalent to 10 showers operating simultaneously).

Note: Irrigation demand does not form part of the site peak cold water demand as it is expected that irrigation from mains scheme water will occur outside of peak times in order to minimise the peak demand on the site. The Landscape Architect is to undertake their own investigations on the availability of flows and pressures for irrigation purposes and nominate any allowances required for garden establishment outside of peak operating hours of the facility or provide alternative means of achieving required pressures, flows and volumes.

Sewer Discharge

Sewer maximum discharges are based on 95% discharge factor of the indoor cold water demand.

Daily Sewer Discharge

Daily sewer demands are as follows:

- Sewer Discharge $10,400 \text{ L/day} \times 95\% = 9,880 \text{ L/day}$

Domestic Hot Water Demand

Hot Water	:	Storage Temperature	Minimum 60°C
	:	Supply Temperature	Maximum 50°C
	:	Supply Temperature UAT	Maximum 45°C



: Supply Temperature (Infant) Maximum 38°C

Stormwater

Box Gutter Systems : Average recurrence interval (ARI) 1:100 years
: Intensity 173 mm/hour
: Duration 5 minutes

Eaves Gutter Systems : Average recurrence interval (ARI) 1:20 years
: Intensity 131 mm/hour
: Duration 5 minutes

Note: Average recurrence intervals and storm intensities have been taken from the Bureau of Meteorology IFD Charts.



5. Scope of Work

Site Services

- Property sewer services incorporating:
 - A 150mm gravity connection to the Authorities main sewer infrastructure located in Kent St
- Domestic Cold Water Supplies incorporating:
 - A 50mm connection to the Authorities water main infrastructure located in Hamilton Road complete with main isolation valve and water master meter
- Stormwater Drainage incorporating:
 - Collection of stormwater run off at base of downpipes and discharging to the sites Civil stormwater drainage system

Sanitary Fixtures and Fittings

- Provision for first grade commercial quality sanitary fixtures, fittings and tapware to the following areas:
 - Sporting club changerooms
 - Multi-purpose clubhouse
 - Commercial kitchen areas
 - Community activity spaces
 - Toilets
 - Cleaner's facilities
- Provision of fixtures and tapware conforming to the WELS (Water Efficiency Labelling Standards) which identifies the following maximum flow rates.
 - Showers @ 9 ltrs/minute
 - Hand Basins@ 6 ltrs/minute
 - Sinks @ 6 ltrs/minute
 - Toilets @ Dual Flush 4.5/3 litres

Nomination of sanitary fixtures and tapware will be determined in consultation with the architect for client sign off.

- Provision for all required vandal resistant features to fixtures and tapware.
 - Client has confirmed that all external hose taps are to be vandal resistant
- Architect to confirm requirements for the following fixtures:
 - *Drinking water fountains*
 - *Hose tap locations*
- Fixtures and fittings to be nominated by the Architect/Commercial Kitchen Consultant
 - *Dishwashers*



- *Commercial Kitchen and Bar Equipment*

Sanitary Waste and Drainage

- Provision for the collection of all domestic waste discharges from fixtures and fittings via PVC fixture and branch wastes and including:
 - Toilets
 - Hand basins
 - Showers
 - Urinals
 - Dishwashers
 - Kitchen sinks
 - Drinking fountains
 - Cleaner's sink

Note: Exposed fixture wastes shall be chrome plated copper

- Provision for all required floor wastes and tundish wastes, maintenance access and inspection openings
- Provision for all required fire stop collars to services passing through structural slabs, fire walls and floors
- Provision for all required sanitary waste and drainage ventilation services terminating to atmosphere at roof level
- Provision for below ground PVC sanitary drainage services collecting waste discharges from waste stacks, fixture wastes, etc, with gravity connection to the sites sanitary drainage services infrastructure and incorporating all required maintenance and inspection openings

Industrial Waste and Drainage

Trade waste is to be designed and installed in accordance with the requirements of the Water Corporation of Western Australia Trade Waste department, including all required pre-approved products, fixtures and equipment, this includes:

- Provision for the collection of all grease waste from kitchen cooking and food preparation areas via fixture wastes from food preparation sinks, hand wash basins, coolroom/freezer washdown and condensate waste drains, bucket traps and industrial floor wastes discharging to a 2000 litre capacity filtered grease arrestor

Note: Fixture wastes from glass washers, dishwashers and pre-rinse sinks will discharge directly to the domestic sanitary drainage system so that excessive and high temperature waste water discharges bypass the grease arrestor

- Provision for integral strainers in all commercial kitchen sinks and floor waste outlets
- Provision for a 15mm hose connection tap located within 6m of the grease arrestor to assist maintenance cleaning and complete with required backflow prevention device
- Provision for independent venting to atmosphere of grease arrestor

Cold Water Services

- Provision for reticulated cold water supplies to all sanitary fixtures, fittings and tapware as required incorporating all required maintenance isolation valves



- Provision for all required internal/external hose connection taps to assist general cleaning, wash down and minor landscape irrigation complete with vacuum breakers and all necessary backflow prevention devices

Hot Water Services

- Provision for hot water heating plant providing hot water to the following areas:
 - Sporting club changerooms
 - Multi-purpose clubhouse
 - Food & beverage areas
 - Community activity spaces
 - Toilets
 - Cleaner's facilities
- Provision for reticulated hot water services with connections to all fixtures and tapware and incorporating all required maintenance isolating valves and temperature control devices
- Provision for insulation to all reticulated hot water services as required
- Temperature control devices are to be utilised to restrict hot water temperatures to the following areas:
 - UAT Facilities - max 45°C
 - Changeroom Amenities - max 50°C
 - Kitchen/Kiosk - min 60°C
- Provision for hot water heating plant comprising the following:
 - **Main Roof Plant**
 - i. A location has been nominated on the roof deck.

Fire Hydrant and Hose Reel Services

- Based on the initial assessment of the building as below 500 square meter fire compartments, no Fire Hydrant or Hose Reel Services will be provided to this building.

Note: Our commission for the project allows for the design of wet fire services nominated in accordance with the "Deemed to Satisfy" requirements of the BCA. Any move away from the "Deemed to Satisfy" provisions will require the input from a certified Fire Engineer under an "Alternate Solution" commission

Mechanical Plant Waste and Water

- Provision for the collection and disposal of all mechanical air conditioning plant condensate waste via all required floor drains, and tundish wastes, with connection to stormwater disposal system **AND/OR** grated waste sump boxes as required
- Provision for all required valved cold water spur connections for mechanical air conditioning plant make up as required
- Stantec will liaise with mechanical consultant to determine and co-ordinate all mechanical waste points and water points



Stormwater Collection

- Provision of all required eaves/box gutters, gutter sumps, overflows, expansion joints and downpipes shall be made by the roofing contractor and covered in the Architectural documents

Stantec will assist the architect with minimum size of all required gutters, number and location of downpipes, overflow requirements and expansion joints
- Provision for the collection of all storm water run off from main roof areas, canopies and balconies via internal/external downpipes terminating at ground level
- Siphonic roof stormwater system to box gutters

ESD Initiatives

The following ESD Initiatives will be incorporated as part of the hydraulic services documentation:

- Reduction of water consumption utilizing approved limited flow tapware and fixtures in accordance with WELS
- Sub metering of mechanical services water supplies, back of house areas, landscape irrigation, etc.
- Insulation of all hot water plant and reticulated hot water pipework

Work Not Included

- Nomination of sanitary ancillaries (by the Architect)
- Landscape irrigation services
- Sub-soil drainage
- Water feature design and documentation



6. Budget Cost Estimate

Hydraulic Services Order of Cost

Project: Beale Park Redevelopment
Project-No: 301250819
Revision: 001
Date: 14/11/2024

Summary Sheet

Authorities	\$153,500.00
Cold Water	\$126,787.5
Hot Water	\$50,000
Option 1 – Heat Pumps	\$110,000
Option 2 – Heat Pump Hybrid	\$78,000
Sewer - Sanitary	\$125,868.75
Fixtures	\$180,125.00
Trade Waste	\$42,937.50
Stormwater	\$66,303.13
Miscellaneous	\$11,000.00

Total excludes HWU Options	\$797,592.25
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Total	\$797,592.25
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Note:

These prices are based on industry knowledge and reflect an objective view of industry prices we note
Stantec are not quantity surveyors

Excludes -

Builders Works
Contingency
GST
Authority fees and charges - (Costs to be confirmed)
Demolition works or latent conditions costs
Landscape Irrigation
Solar Hot Water
Escalation



7. Appendix A - DD Drawings





Architecture
Urban Design
Master Planning
Interior Design

T. 61 8 9321 4402

Bollig Design Group

Level 1, 1260 Hay Street, West Perth 6005

PO Box 1224, West Perth 6872

E. bdg@bollig.com.au W. bollig.com.au

DRAWING LIST		
DRAWING NUMBER	DRAWING NAME	Current Revision
HY-000-00	COVER SHEET	C
HY-000-01	NOTES AND LEGEND	C
HY-000-02	DIAL BEFORE YOU DIG	C
HY-100-00	DEMOLITION PLAN	C
HY-100-01	OVERALL SITE PLAN - SANITARY WASTE AND DRAINAGE	C
HY-100-02	OVERALL SITE PLAN - PRESSURE SERVICES	C
HY-200-01	GROUND FLOOR - SANITARY WASTE AND DRAINAGE - SHEET 1 OF 2	C
HY-200-02	GROUND FLOOR - SANITARY WASTE AND DRAINAGE - SHEET 2 OF 2	C
HY-201-01	ROOF PLAN - SHEET 1 OF 2	C
HY-201-02	ROOF PLAN - SHEET 2 OF 2	C
HY-300-01	GROUND FLOOR - PRESSURE SERVICES - SHEET 1 OF 2	C
HY-300-02	GROUND FLOOR - PRESSURE SERVICES - SHEET 2 OF 2	C

BEALE PARK REDEVELOPMENT

9 KENT STREET, SPEARWOOD.

2024.11.14

Stantec Project Number: 301250819

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SERVICE PIPE COLOURS, ABBREVIATIONS & TYPES

FIXTURE TYPE	ABBREVIATION	CONNECTION DETAILS
WATER CLOSET	WC	Ø15 DCW/RAINWATER BRS WITH STOP TAP
SINK	SK	Ø15 DCW AND DHW
BASIN	HB	Ø15 WARM WATER AND DCW
SHOWER	SHR	Ø15 WARM WATER AND DCW
HOSE COCK / HOSE TAP	HC / HT	Ø15 DCW COMPLETE WITH VACUUM BREAKER
URINAL	UR	Ø15 RAINWATER BRS WITH STOP TAP
CLEANER'S SINK	CS	Ø15 DCW AND DHW

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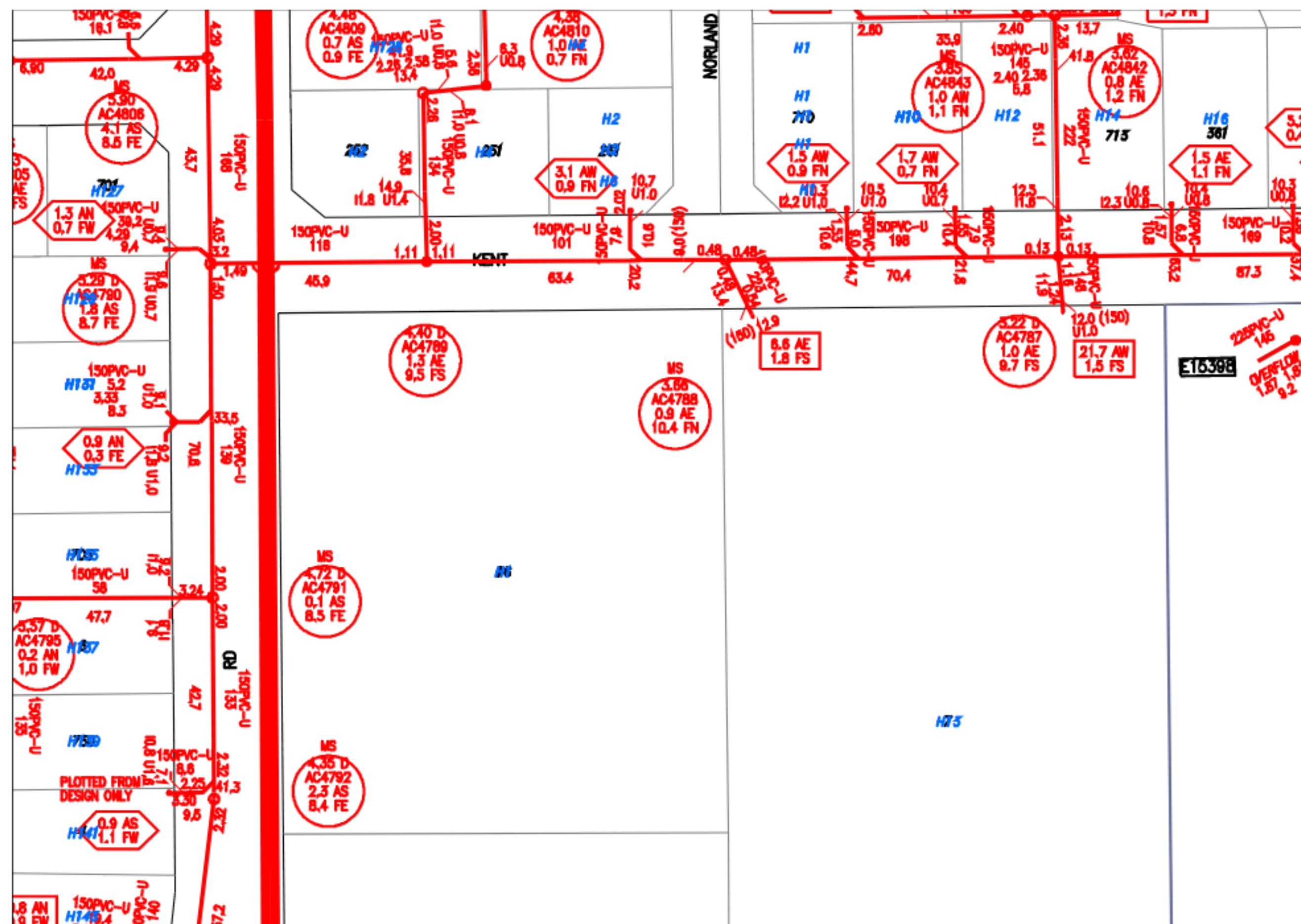
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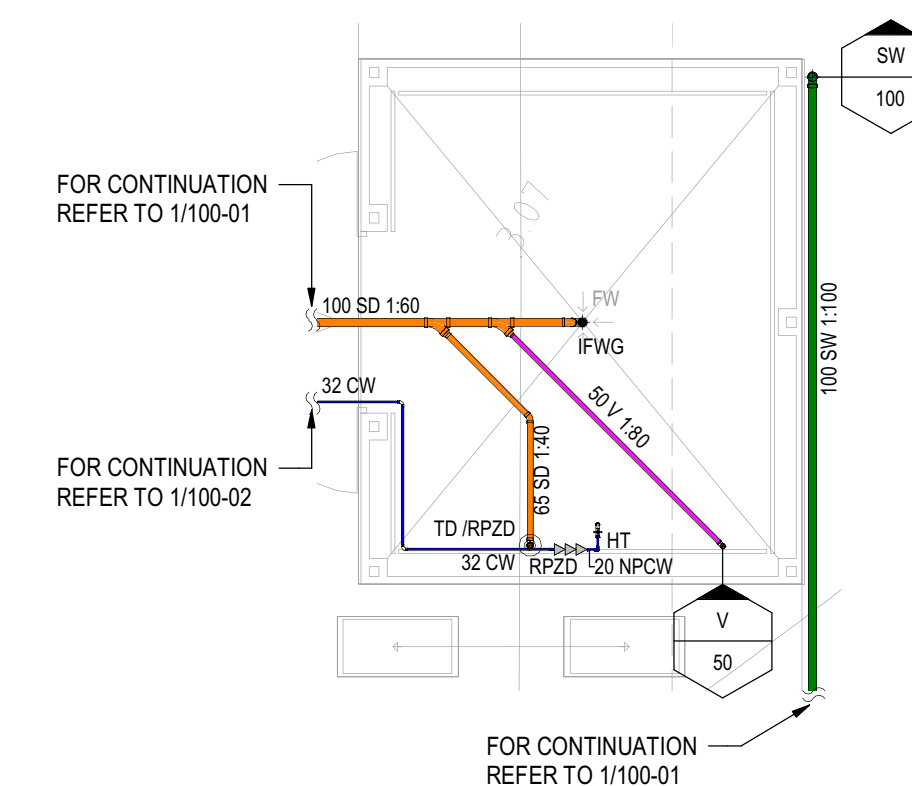
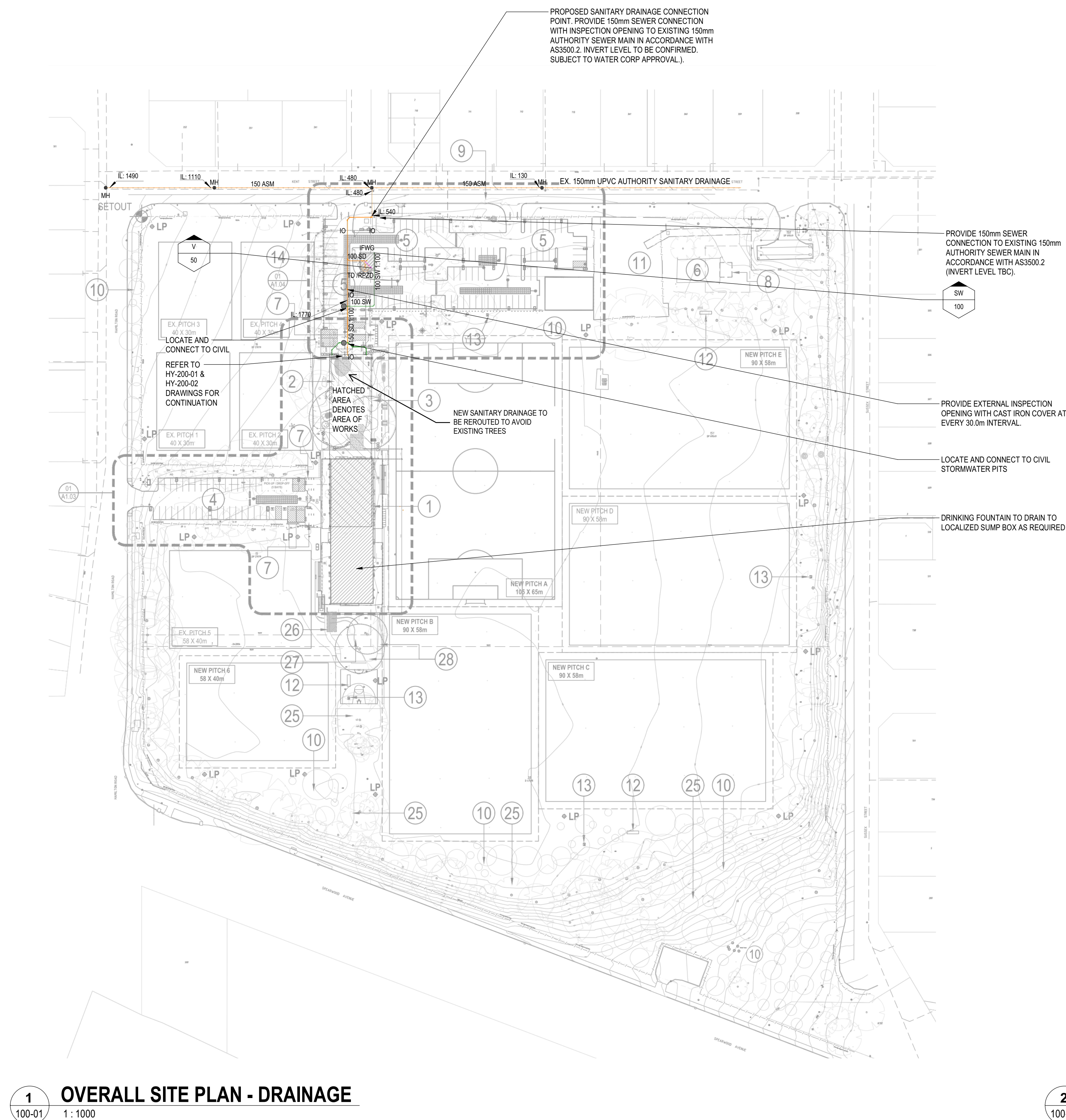
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BEALE PARK REDEVELOPMENT

9 KENT STREET, SPEARWOOD.

Title
OVERALL SITE PLAN - SANITARY WASTE
AND DRAINAGE

Project No. 301250819	Scale As indicated
Revision C	Drawing No. HY-100-01





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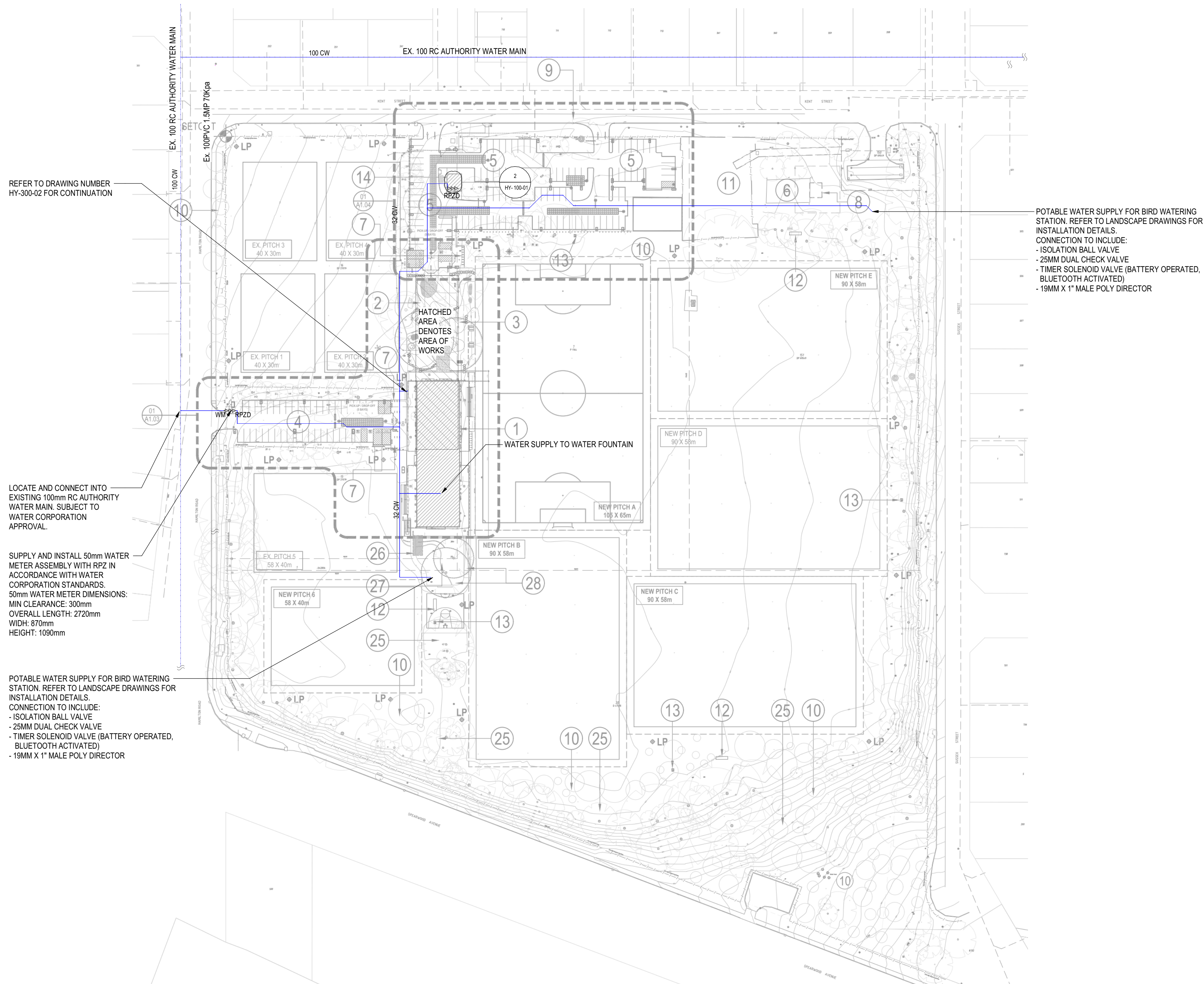
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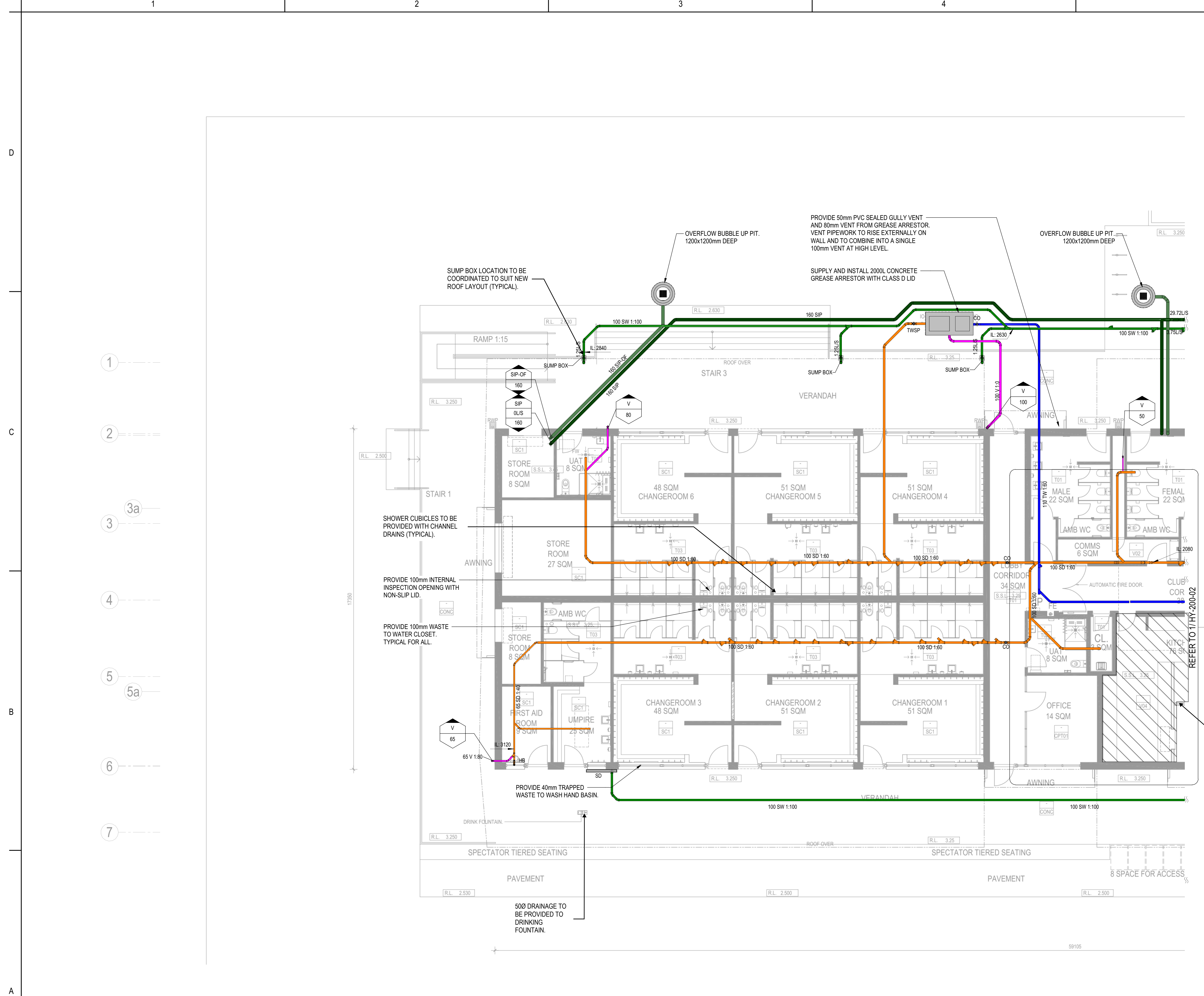
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9 KENT STREET, SPEARWOOD.

Title

OVERALL SITE PLAN - PRESSURE SERVICES

Project No. 301250819	Scale 1 : 1000
Revision C	Drawing No. HY-100-02



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- Notes
- NOTE:
- SUPPLY AND INSTALL SINK GUARDS TO ALL KITCHEN SINKS IN KITCHEN AREA. WASTE TRAPS TO BE FITTED BELOW SINK GUARDS.
 - MECH TUNISH LOCATIONS TO BE COORDINATED.

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BEALE PARK REDEVELOPMENT

9 KENT STREET, SPEARWOOD.

Title

GROUND FLOOR - SANITARY WASTE AND DRAINAGE - SHEET 1 OF 2

Project No.	301250819	Scale	1 : 100
Revision	C	Drawing No.	HY-200-01

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2. MECH TUNDISH LOCATIONS TO BE COORDINATED.



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BEALE PARK REDEVELOPMENT

9 KENT STREET, SPEARWOOD.

Title

GROUND FLOOR - SANITARY WASTE
AND DRAINAGE - SHEET 2 OF 2

Project No. 301250819	Scale 1 : 100
Revision C	Drawing No. HY-200-02

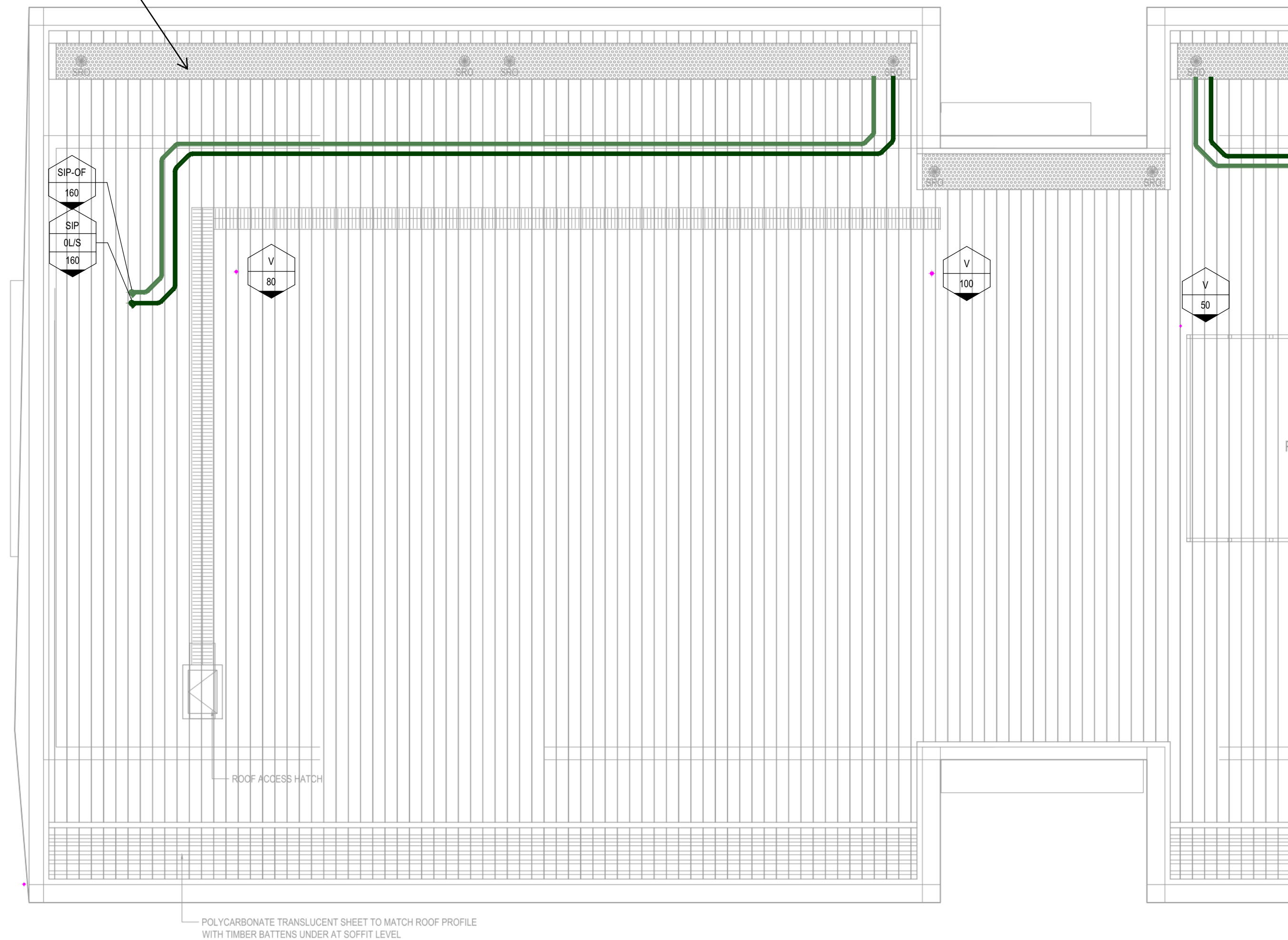
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Notes



REFER TO 1/HY-201-02

— ROOF ACCESS HATCH

- POLYCARBONATE TRANSLUCENT SHEET TO MATCH ROOF PROFILE WITH TIMBER BATTENS UNDER AT SOFFIT LEVEL

ROOF FLOOR PLAN
SCALE 1 : 100

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9 KENT STREET, SPEARWOOD.

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ROOF PLAN - SHEET 1 OF 2

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9 KENT STREET, SPEARWOOD.

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ROOF PLAN - SHEET 2 OF 2

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Rev
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Drawing No.

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Notes

ALL HOSE TAPS TO HAVE VACCUUM BREAKER AND BE CHROME PLATED LOCKABLE TYPE. FINAL LOCATION TO BE CROSS CHECKED WITH ARCHITECTURAL DRAWINGS BEFORE INSTALLATION



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GROUND FLOOR - PRESSURE SERVICES -
SHEET 1 OF 2

Project No.
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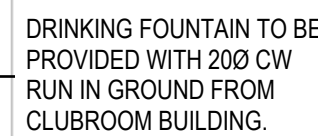
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9 KENT STREET, SPEARWOOD.

Title

GROUND FLOOR - PRESSURE SERVICES -
SHEET 2 OF 2

Project No. 301250819	Scale 1 : 100
Revision C	Drawing No. HY-300-0



APPENDIX R

To	Kelvin Song – Bollig	Pages	7
CC	Via Aconex		
Subject	NCC Advice Beale Park Redevelopment – Detailed Design Assessment		
From	Gary Houghton – Resolve Group		
Date	15 th November 2024		

Purpose

This report may outline design items which do not strictly achieve compliance with the National Construction Code – Building Code of Australia 2019 – Volume 1 (NCC) Amendment 1 and referenced Australian Standards. It is important to note that the information contained follows our assessment of the preliminary documentation provided for this project. Further NCC assessment and advice for this project from our office may identify additional non-compliances.

Limitations

- Life safety has been considered foremost in this assessment with property protection only considered in the context of complying with the NCC. “The goals of the NCC are to enable the achievement and maintenance of acceptable standards of structural sufficiency, safety (including safety from fire), health and amenity for the benefit of the community now and into the future”;
- The report is derived making all reasonable assumptions regarding the Disability Discrimination Act 1992 (DDA) issues. The owner should be aware that in addition to the disabled access and facility requirements of the NCC, the development is required to also comply with the DDA. Further information may be obtained from the Disability Services Commission;
- The Report does not relate to Dangerous Good Storage legislation and/or requirements; Food premises legislation; Occupational Health and Safety Act and Regulations; Work Cover Authority requirements; Water, drainage, gas and electricity supply requirements; Telecommunications requirements;
- Drawings referred to or incorporated in this document may change resulting from design variations.

Drawings assessed

SK1.01 Rev P
 SK1.02 Rev P
 SK1.03 Rev P
 SK1.05 Rev G
 SK1.01 Rev G

NCC Compliance Advice

- Double doors are required to match the FRL of the fire walls, namely -/90/30;
- Confirmation required by tenants re Concession under D3.4 for storerooms, kitchen, bar, etc.
- Building is classified as 9b - Type C construction (971m²) - note building has 2 fire compartments of less than 500m²;
- As the building is class as a Class 9b Building, the Health (Public Buildings) Regulations applies and the stairs have to comply with the following in respect of rises / goings:
 - Minimum goings are to be 280mm and rises are a maximum of 180mm;
- Please confirm that no structural elements pass through the 2 fire walls as this will reduce the integrity of the wall;
- Any structural elements contained within the fire wall will also have to be fire rated to achieve an FRL of 90/90/90 – via a tested system;
- Please provide details / calculations for the new building in order to achieve compliance with Section J;
- Stairs & ramps to achieve a slip rating as per table below – please provide test report/s to confirm this;

Table D2.14 Slip-resistance classification

Application	Dry surface conditions	Wet surface conditions
Ramp steeper than 1:14	P4 or R11	P5 or R12
Ramp steeper than 1:20 but not steeper than 1:14	P3 or R10	P4 or R11
Tread or landing surface	P3 or R10	P4 or R11
Nosing or landing edge strip	P3	P4

- Please provide services drawings, mechanical, electrical, etc. including design certificates;
- Please provide structural & civil design certificates;
- Please provide City of Cockburn DA for the works (when issued);
- In regards to the CEVS building if no additional bracing is required then it's simply partial demolition of the building, however if additional bracing is required then a **Building Permit will be required**;
- Both ambulant WC's and UAT are to be designed as per AS1428.1 2009 – please provide detailed plans in order to assess compliance;
- Based on sanitary facilities shown in the club / function part of the building will provide NCC figures as follows:
 - 150 males
 - 200 females
- Based on sanitary facilities shown in the sports venue part of the building will provide NCC figures as follows:
 - 40 males
 - 70 females

Should you have any queries in regard to this advice, please do not hesitate to contact me on 9364 3395 or via email at gary.houghton@resolvegroup.com.au

Yours sincerely



Gary Houghton
Senior Building Surveyor

Appendix 1

4. Wall and ceiling linings

- (a) A wall or ceiling lining system must comply with the **group number** specified in **Table 3** and for buildings not fitted with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with **Specification E1.5** have—
- (i) a **smoke growth rate index** not more than 100; or
 - (ii) an **average specific extinction area** less than 250 m²/kg.
- (b) A **group number** of a wall or ceiling lining and the **smoke growth rate index** or **average specific extinction area** must be determined in accordance with AS 5637.1.

Table 3 Wall and ceiling lining materials (material groups permitted)

Class of building	Fire-isolated exits and fire control rooms	Public corridors	Specific areas	Other areas
				3
Class 5, 6, 7, 8 or 9b schools , Sprinklered	Walls: 1 Ceilings: 1	Walls: 1, 2, 3 Ceilings: 1, 2, 3	Walls: 1, 2, 3 Ceilings: 1, 2, 3	Walls: 1, 2, 3 Ceilings: 1, 2, 3
Class 9b other than schools , Unsprinklered	Walls: 1 Ceilings: 1	Walls: 1 Ceilings: 1	Walls: 1, 2 Ceilings: 1, 2	Walls: 1, 2, 3 Ceilings: 1, 2, 3
Class 9b other than schools , Sprinklered	Walls: 1 Ceilings: 1	Walls: 1, 2 Ceilings: 1, 2	Walls: 1, 2, 3 Ceilings: 1, 2, 3	Walls: 1, 2, 3 Ceilings: 1, 2, 3
Class 9c, Sprinklered	Walls: 1 Ceilings: 1	Walls: 1, 2 Ceilings: 1, 2	Walls: 1, 2, 3 Ceilings: 1, 2, 3	Walls: 1, 2, 3 Ceilings: 1, 2, 3

3. Floor linings and floor coverings

Class of building	Building not fitted with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5	Building fitted with a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5	Fire-isolated exits and fire control rooms
Accommodation for the aged			
Class 9a Patient care areas	4.5 kW/m ²	2.2 kW/m ²	4.5 kW/m ²
Class 9a Areas other than patient care areas	2.2 kW/m ²	1.2 kW/m ²	4.5 kW/m ²
Class 9b auditorium or audience seating area used mainly for indoor swimming or ice skating	1.2 kW/m ²	1.2 kW/m ²	2.2 kW/m ²
Class 9b auditorium or audience seating area used mainly for— other sports or multi-purpose functions.	2.2 kW/m ²	1.2 kW/m ²	2.2 kW/m ²
Class 9c resident use areas.	N/A	2.2 kW/m ²	4.5 kW/m ²
Class 9c Areas other than resident use areas.	N/A	1.2 kW/m ²	4.5 kW/m ²

Type C FRL's

Table 5 Type C construction: FRL of building elements

Building element	Class of building—FRL: (in minutes)			
	<i>Structural adequacy/Integrity/Insulation</i>			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated within it) or other external building element, where the distance from any <i>fire-source feature</i> to which it is exposed is—				
Less than 1.5 m	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
1.5 to less than 3 m	—/—/—	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
3 m or more	—/—/—	—/—/—	—/—/—	—/—/—
EXTERNAL COLUMN not incorporated in an <i>external wall</i> , where the distance from any <i>fire-source feature</i> to which it is exposed is—				
Less than 1.5 m	90/—/—	90/—/—	90/—/—	90/—/—
1.5 to less than 3 m	—/—/—	60/—/—	60/—/—	60/—/—
3 m or more	—/—/—	—/—/—	—/—/—	—/—/—
COMMON WALLS and FIRE WALLS—	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
INTERNAL WALLS—				
Bounding <i>public corridors</i> , public lobbies and the like—	60/ 60/ 60	—/—/—	—/—/—	—/—/—
Between or bounding <i>sole-occupancy units</i> —	60/ 60/ 60	—/—/—	—/—/—	—/—/—
Bounding a stair if <i>required</i> to be rated—	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
ROOFS	—/—/—	—/—/—	—/—/—	—/—/—



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