



LITHGOW LIBRARY

SPECIALIST LIGHTING CONCEPTS

REV B

OCTOBER
2020

01 DESIGN PRINCIPLES

AS/NZS 1158.3.1:2020 - Lighting for roads and public spaces.

The following highlighted subcategories are a recommended parameter by JHA, where assumptions have been made around the crime selection criteria.

Final selection of sub-categories to be client and council approved prior to design development and cross checked against any crime and night time movement statistics available.

TABLE 2.2
LIGHTING SUBCATEGORIES FOR PEDESTRIAN AND CYCLIST PATHS

1	2	3	4	5
Type of pathway		Selection criteria ^{a,b,c}		Applicable lighting subcategory
General description	Basic operating characteristics	Pedestrian/cycle activity	Fear of crime	
Pedestrian or cycle orientated pathway, e.g. footpaths, including those along local roads ^d and arterial roads ^e , walkways, lanes, park paths, cyclist paths	Pedestrian and or cycle traffic only	N/A	High	PP1 ^c
		High	Medium	PP2 ^c
		Medium	Medium	PP3
		Medium	Low	PP4
		Low	Low	PP5

^a The selection criteria of Columns 3 to 4 should be separately evaluated. The highest level of any of the selection criteria that is deemed appropriate for the pathway will determine the applicable lighting subcategory.

^b See Appendix A for guidance on choosing the applicable level of each selection criteria for the environment and purpose of a lighting scheme.

^c Where there are vertical surfaces of high reflectance (e.g. light coloured walls bordering on an alleyway) alongside the pathway, the next lower lighting subcategory may be selected.

^d Where the footpath is along a local road and subcategory PP1 or PP2 is selected, the light technical parameters for that subcategory should only apply to the formed footpath.

^e Footpaths associated with arterial roads are deemed not to require separate lighting provided that—
(a) the road is lit to at least the applicable level of Category V lighting conforming to AS/NZS 1158.1.1; and
(b) the footpath is unshaded, e.g. there are no substantially continuous building awnings, trees (refer to AS/NZS 1158.1.2) and the footpath is contiguous with the roadway.

TABLE 3.4
VALUES OF LIGHT TECHNICAL PARAMETERS FOR PATHWAYS AND CYCLIST PATHS

1	2	3	4	5
Lighting subcategory	Light technical parameters (LTP)			
	Average horizontal illuminance ^{a,b} (\bar{E}_h) lx	Point horizontal illuminance ^{a,b,d} (E_{ph}) lx	Illuminance (horizontal) uniformity ^c Cat. P (U_{E2})	Point vertical illuminance ^{a,b} (E_{pv}) lx
PP1	10	2	5	1
PP2	7	1	5	0.3
PP3	3	0.5	5	0.1
PP4	1.5	0.25	5	0.05 ^e
PP5	0.85	0.14	5	0.02 ^e

^a These values are maintained. See Clause 3.2 pertaining to lumen derating values for non-white light sources.

^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 5 m either side of the pathway—where a verge exists—or up to any structure/fence/property boundary that forms the edge of the pathway, unless deemed otherwise by the relevant authorities (see Clause 3.1.3.5).

^e For luminaires with mounting heights of 1.5 m or less, the E_{pv} values need not be applied.

EXTRACTS FROM AS/NZS 1158.3.1 - 2020 LIGHTING FOR ROADS AND PUBLIC SPACES.

01 DESIGN PRINCIPLES

AS/NZS 4282: Control of the obtrusive effects of outdoor lighting.

We have noted that along Main St where Lithgow library is situated, there are no residential dwellings within our site's immediate surrounds. Therefore, there are no vertical illuminance calculations required. We have assumed that Lithgow town centre to be of A3, medium district brightness and will use the following technical parameters as a loose guideline to reduce unwanted spill light for best practice. For example, uplights to be contained under awnings and architectural elements to reduce light pollution and sky glow.

TABLE 3.1
ENVIRONMENTAL ZONES

Zones	Description	Examples
A0	Intrinsically dark	UNESCO Starlight Reserve. IDA Dark Sky Parks. Major optical observatories No road lighting - unless specifically required by the road controlling authority
A1	Dark	Relatively uninhabited rural areas No road lighting - unless specifically required by the road controlling authority
A2	Low district brightness	Sparsely inhabited rural and semi-rural areas
A3	Medium district brightness	Suburban areas in towns and cities
A4	High district brightness	Town and city centres and other commercial areas Residential areas abutting commercial areas
TV	High district brightness	Vicinity of major sports stadium during TV broadcasts
V	Residences near traffic routes	Refer AS/NZS1158.1.1
R1	Residences near local roads with significant setback	Refer AS/NZS 1158.3.1
R2	Residences near local roads	Refer AS/NZS 1158.3.1
R3	Residences near a roundabout or local area traffic management device	Refer AS/NZS 1158.3.1
RX	Residences near a pedestrian crossing	Refer AS/NZS 1158.4

NOTE: Recreational areas are not considered commercial.

EXTRACTS FROM AS/NZS 4282 - 2019 CONTROL OF THE OBTRUSIVE EFFECTS OF OUTDOOR LIGHTING.

TABLE 3.2
MAXIMUM VALUES OF LIGHT TECHNICAL PARAMETERS

Zones	Vertical illuminance levels (E_v) lx		Threshold increment (TI)		Sky glow
	Non-curfew	Curfew	%	Default adaptation level (L_{ad})	Upward light ratio
A0	See Note 1	0	N/A	N/A	0
A1	2	0.1	N/A	N/A	0
A2	5	1	20%	0.2	0.01
A3	10	2	20%	1	0.02
A4	25	5	20%	5	0.03
TV	See Table 3.4	N/A	20%	10	0.08
V	N/A	4	Note 2	Note 2	Note 2
R1	N/A	1	20%	0.1	Note 3
R2	N/A	2	20%	0.1	Note 3
R3	N/A	4	20%	0.1	Note 3
RX	N/A	4	20%	5	Note 4

NOTES:

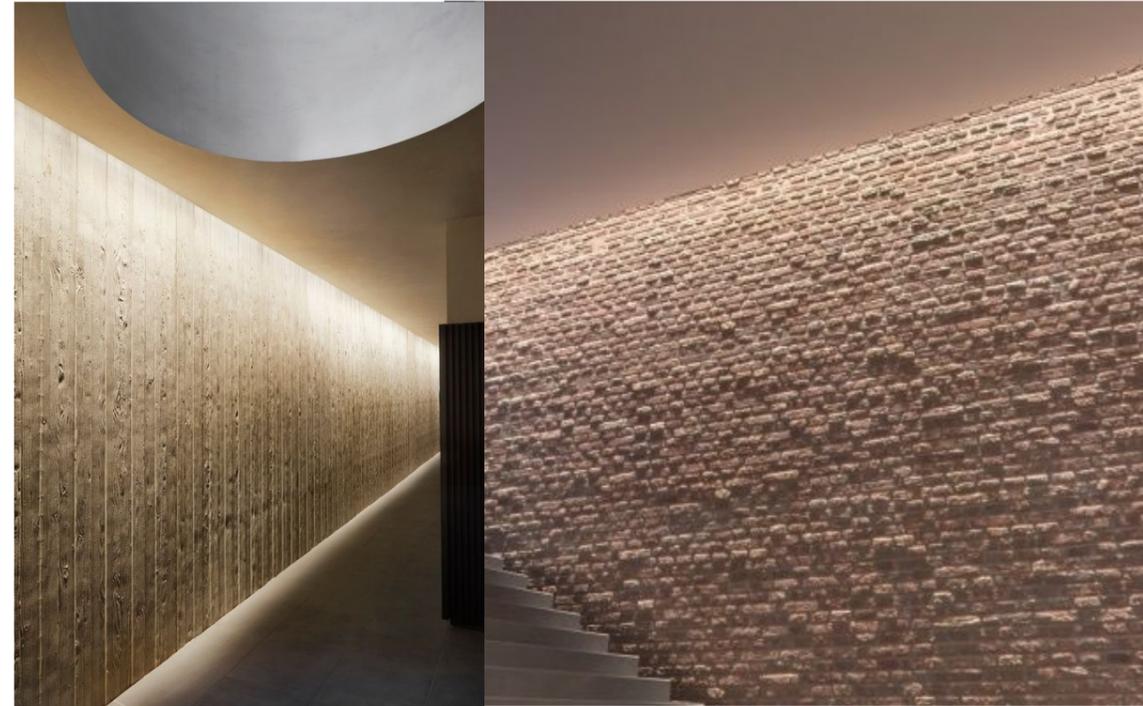
- For A0, E_v shall be as close to zero as practicable without impacting safety considerations.
- Refer to AS/NZS 1158.1.1.
- Refer to AS/NZS 1158.3.1.
- Refer to AS/NZS 1158.4.
- N/A means 'Not Applicable'.
- For an internally illuminated sign in an A2 zone, $L_{ad} \leq 0.25 \text{ cd/m}^2$.

02 ASPIRATIONAL IMAGERY

MOOD BOARD



ENTRY MARKERS



WALL GRAZE

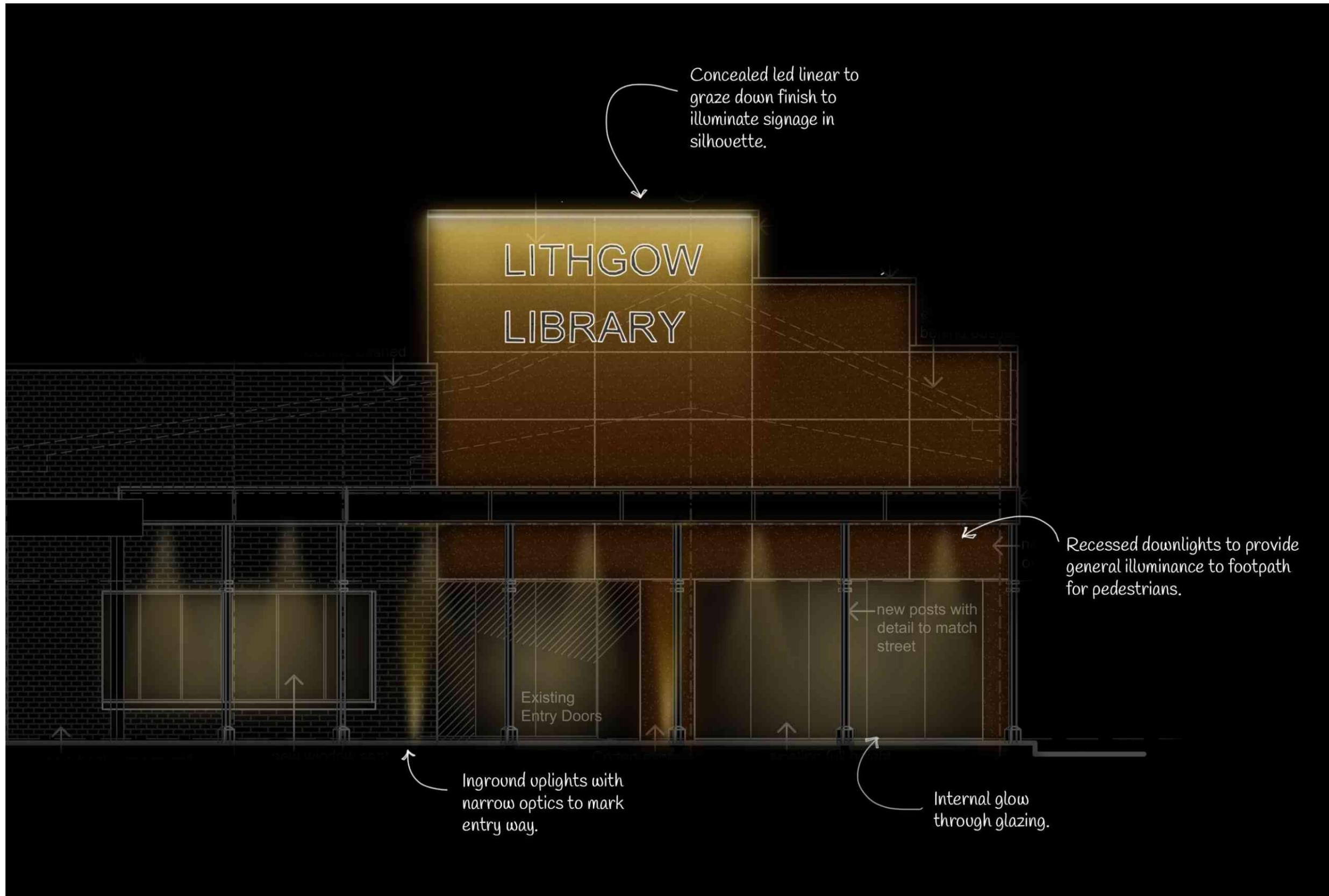


DOWNLIGHTS TO UNDERSIDE OF AWNING

FRONT FACADE

LIGHTING RENDER

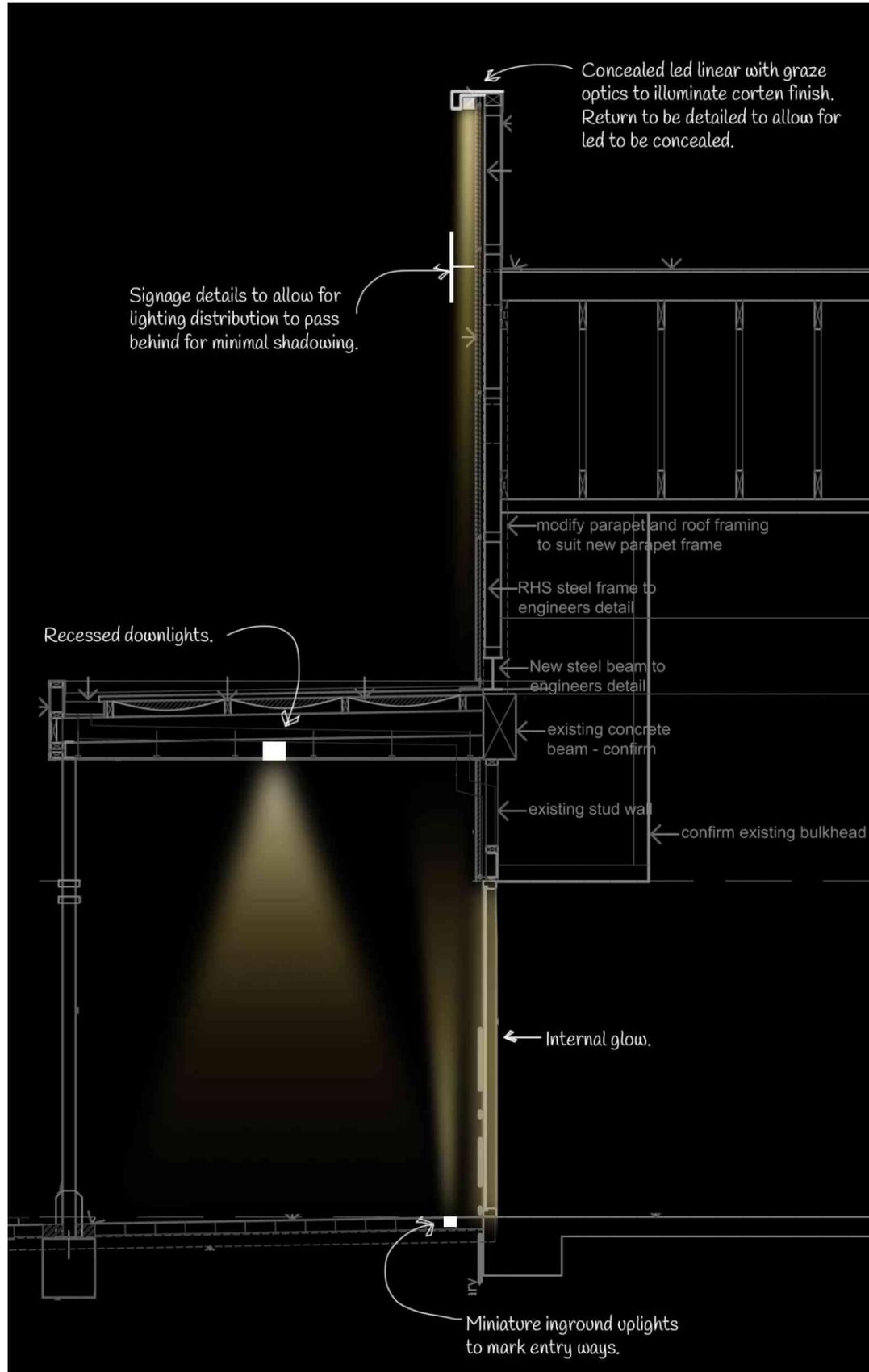
FRONT ELEVATION



SECTIONAL DETAIL

DETAILS

SECTION



INDICATIVE LUMINAIRE SELECTION



SURFACE MOUNTED LINEAR



MINIATURE INGROUND UPLIGHT



RECESSED DOWNLIGHT