



Lighting

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Recommended scheme by room capacity / type

Room Type	Floor	Capacity	Lighting
Small classroom	flat	0-30	Config B - 3 switch
Medium Classroom	flat	30-60	Config B - 3 switch
Large Classroom	flat	60+	Config B - 3 switch
Case Room	tiered	0-60	Config C - 4 switch
Lecture Hall	tiered	60-200	Config C - 4 switch
Lecture Theatre	tiered	200+	Config D - 5 switch
Skills / Workshop	flat	0-60	Config E - 3 switch perimeter
Learning Studio	flat	0-60	Config E - 3 switch perimeter



Levels

Target level 50 FC at desk height (stipulated UoT required lighting level)

Minimum 40 FC at desk height

Maximum 75 FC at desk height

As there is always variation across the room, architects/contractors are asked to pay particular attention to:

- 1) performance of specified fixture. Engineer's lighting grid must conform with the specified fixture/reflector
- 2) Seating at walls and last row. typically under-lit
- 3) Variation in throw distance due to tiered seating

Terminology

Zone: AREA of room being lit

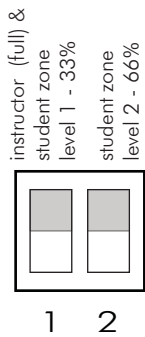
Level: AMOUNT of lighting in given zone
A room with options of 50% and 100% lighting has 2 levels
A room with an on/off switch only has one level (not 2)

Banking: Alternating fixtures or bulbs within a ZONE
in order to produce variable LEVELS



Config A

2 switch - bare minimum, not recommended



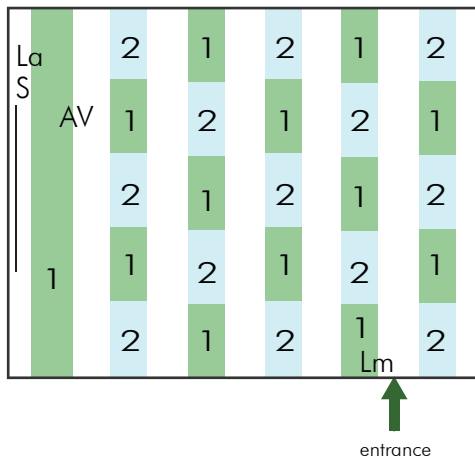
1

blackboard/instructor zone
single bank, parallel to room front

1/2

student zone
fluorescent
2 levels via, in order of preference:

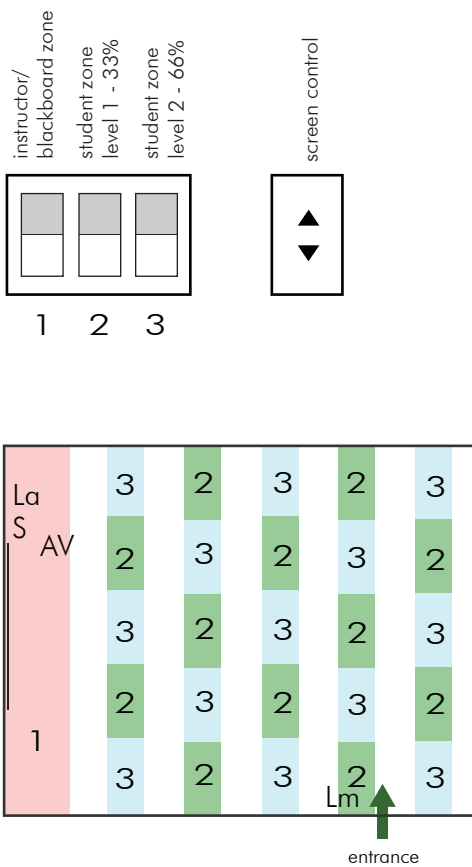
- 1) multiple bulb fixtures on different switches
AAB/AAB/AAB/AAB
AAB/AAB/AAB/AAB (3-lamp fixtures - ideal)
or
AB/AB/AB/AB
AB/AB/AB/AB (2-lamp fixtures)
- 2) alternating fixtures along the row
A/B/A/B/A/B
B/A/B/A/B/A
- 3) alternating bank rows (least favoured option)
AAAAAA
BBBBBB



- La** Light switches - full manual control (at AV control area)
- Lm** Light Switch - on/off master (at entrances)
- AV** teaching station area - lighting control through teaching station optional (data ports on wall if no teaching station; conduit feed through floor if teaching station)
- S** screen control switch (lv) (dummy plate with conduit if manual screen)



Config B 3 switch



1

blackboard/instructor zone
prefer 'wall washer' recessed fluorescent lighting
or fluorescent on/off
or pot lights (dimming optional)

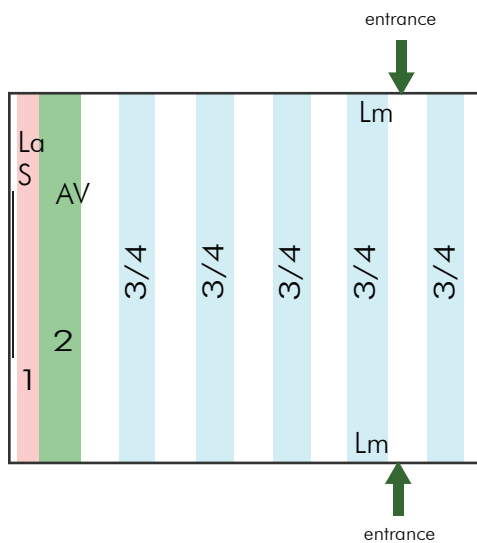
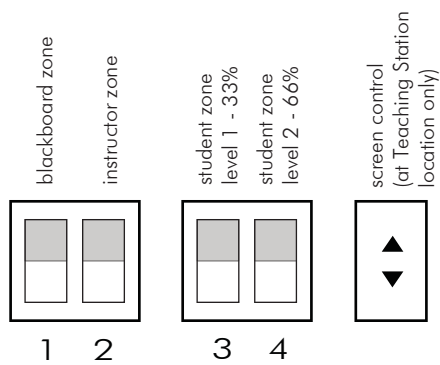
2/3

student zone
fluorescent
2 levels via, in order of preference:
1) multiple bulb fixtures on different switches
AAB/AAB/AAB/AAB
AAB/AAB/AAB/AAB (3-lamp fixtures - ideal)
or
AB/AB/AB/AB
AB/AB/AB/AB (2-lamp fixtures)
2) alternating fixtures along the row
A/B/A/B/A/B
B/A/B/A/B/A
3) alternating bank rows (least favoured option)
AAAAAA
BBBBBB

- La** Light switches - full manual control (at AV control area)
- Lm** Light Switch - on/off master (at entrances)
- AV** teaching station area - lighting control through teaching station optional
(data ports on wall if no teaching station; conduit feed through floor if teaching station)
- S** screen control switch (lv) (dummy plate with conduit if manual screen)



Config C 4 switch



1

blackboard zone
single bank, on/off
prefer 'wall washer' recessed fluorescent lighting

2

instructor zone
single bank, parallel to room front

3/4

student zone
fluorescent
2 levels via, in order of preference:
1) multiple bulb fixtures on different switches
AAB/AAB/AAB/AAB
AAB/AAB/AAB/AAB (3-lamp fixtures - ideal)
or
AB/AB/AB/AB
AB/AB/AB/AB (2-lamp fixtures)
2) alternating fixtures along the row
A/B/A/B/A/B
B/A/B/A/B/A
3) alternating bank rows (least favoured option)
AAAAAA
BBBBBB

La Light switches - full manual control (at AV control area)

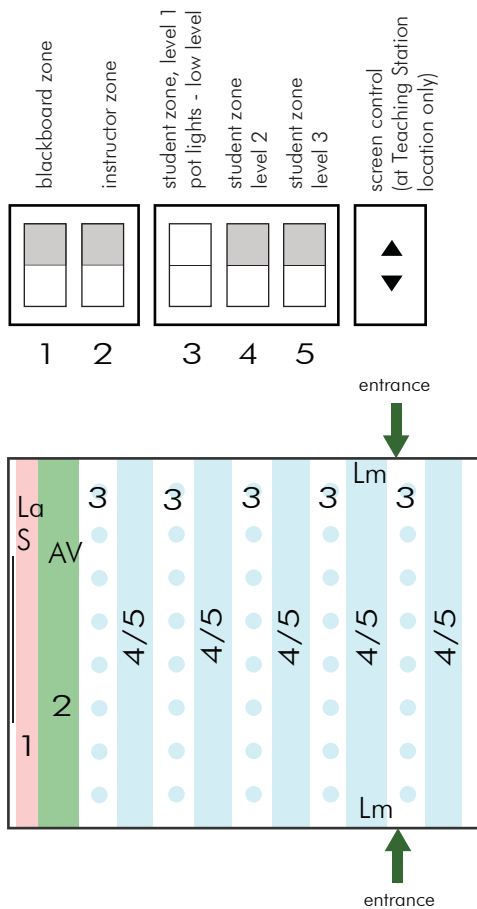
Lm Light Switch - on/off master (at entrances)

AV teaching station area - lighting control through teaching station optional
(data ports on wall if no teaching station; conduit feed through floor if teaching station)

S screen control switch (lv) (dummy plate with conduit if manual screen)



Config D 5 switch



La Light switches - full manual control (at AV control area)

Lm Light Switch - on/off master (at entrances)

AV teaching station area - lighting control through teaching station optional
(data ports on wall if no teaching station; conduit feed through floor if teaching station)

S screen control switch (lv) (dummy plate with conduit if manual screen)

1

blackboard zone
single bank, on/off
prefer 'wall washer' recessed fluorescent lighting

2

instructor zone
single bank, parallel to room front

3

student zone
pot lights, CF or other energy efficient
Separate bank for distributed low light (5FC)
Dimming optional

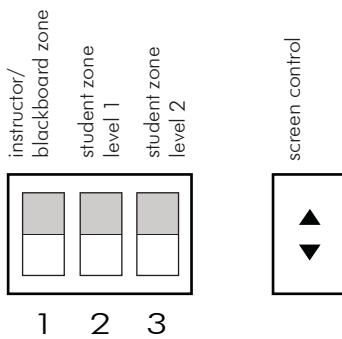
4/5

student zone
fluorescent
2 levels via, in order of preference:
1) multiple bulb fixtures on different switches
AAB/AAB/AAB/AAB
AAB/AAB/AAB/AAB (3-lamp fixtures - ideal)
or
AB/AB/AB/AB
AB/AB/AB/AB (2-lamp fixtures)
2) alternating fixtures along the row
A/B/A/B/A/B
B/A/B/A/B/A
3) alternating bank rows (least favoured option)
AAAAAA
BBBBBB



Config E - Perimeter

3 switch - for rooms with boards on multiple walls or variable room front

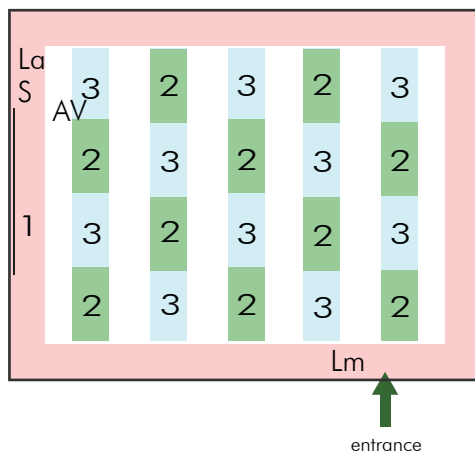


1

blackboard/whiteboard zone
single bank
prefer 'wall washer' recessed fluorescent lighting
or fluorescent or pot lights
dimming optional

2/3

student zone
fluorescent 2 levels via, in order of preference:
1) multiple bulb fixtures on different switches
AAB/AAB/AAB/AAB
AAB/AAB/AAB/AAB (3-lamp fixtures - ideal)
or
AB/AB/AB/AB
AB/AB/AB/AB (2-lamp fixtures)
2) alternating fixtures along the row
A/B/A/B/A/B
B/A/B/A/B/A
3) alternating bank rows (least favoured option)
AAAAAA
BBBBBB



La Light switches - full manual control (at AV control area)

Lm Light Switch - on/off master (at entrances)

AV teaching station area - lighting control through teaching station optional
(data ports on wall if no teaching station; conduit feed through floor if teaching station)

S screen control switch (lv) (dummy plate with conduit if manual screen)

SAMPLE ROOM

small classroom (0-60)

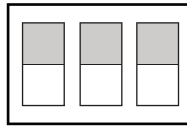
config B - 3 switch

wall switch bank

locations:

- (1) beside all entrances - master on/off
- (2) on teaching side of blackboard (usually side furthest from entrance) - full manual control

instructor zone
student zone,
1 lamp in fixture
student zone,
remaining 2 lamps



screen raise/lower



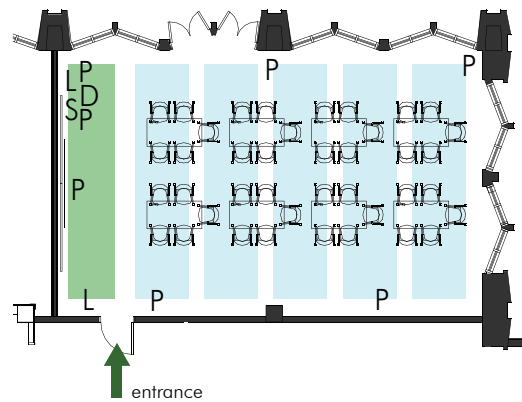
@ AV control location.
If manual screen, install dummy plate with conduit for possible future install of power screen



instructor zone
single bank, parallel to room front



student zone
3 lamp fixtures,
switchable as having one,
two or three lamps illuminated
(0, 33%, 66%, 100% control
from 2 wall switches)



- L** bank of light control switches
- D** teaching station area - lighting control through teaching station optional (data ports on wall if no teaching station; conduit feed through floor if teaching station)
- S** screen control switch (lv) (dummy plate with conduit if manual screen)
- P** power - duplex (optional power at each station per project) flush floor duplex at accessible stations for powering height adjustable table

sample room
OISE
5-240

teaching side
light control

3 switches for
light plus 1
dummy for
possible future
installation of
power screen
control



student zone
variable 3 lamp
fixtures

instructor zone
on/off only

door side master
light control

SAMPLE ROOM

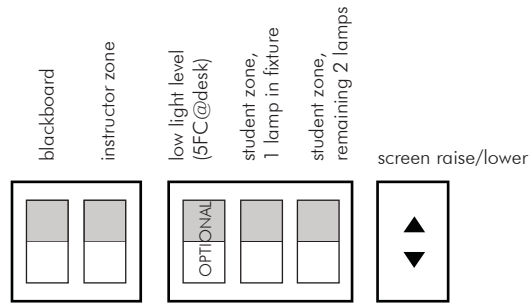
small classroom (0-60)

config C - 4 switch with additional dimming

wall switch bank

locations:

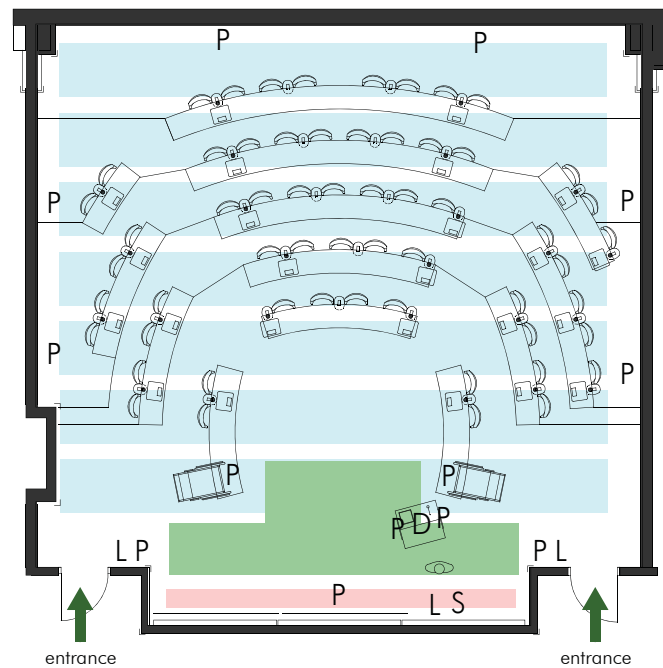
- (1) beside all entrances
- master on/off
- (2) on teaching side of blackboard (usually side furthest from entrance)
- full manual control



student zone
3 lamp fixtures, switchable as having one, two or three lamps illuminated (0, 33%, 66%, 100% control from 2 wall switches) or via alternating fixtures/banks. Variable fixture preferred.

instructor zone
1 bank, parallel to room front

blackboard lights
directed at board to illuminate writing prefer 'wall washer' relected flourescent 1 bank



- L** bank of light control switches
- D** teaching station area - lighting control through teaching station optional (data ports on wall if no teaching station; conduit feed through floor if teaching station)
- S** screen control switch (lv) (dummy plate with conduit if manual screen)
- P** power - duplex (optional power at each station per project) flush floor duplex at accessible stations for powering height adustable table

* in tiered rooms fixtures must have focal lengths adjusted according to distance from fixture to tier below it. Otherwise a 'spot' effect occurs on desks in the upper tiers. (example BA1130)



SAMPLE ROOM

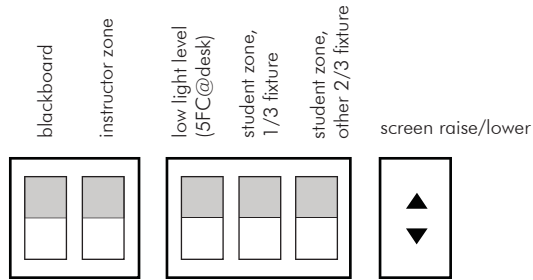
lecture hall (61-200)

config D - 5 switch

wall switch bank

locations:

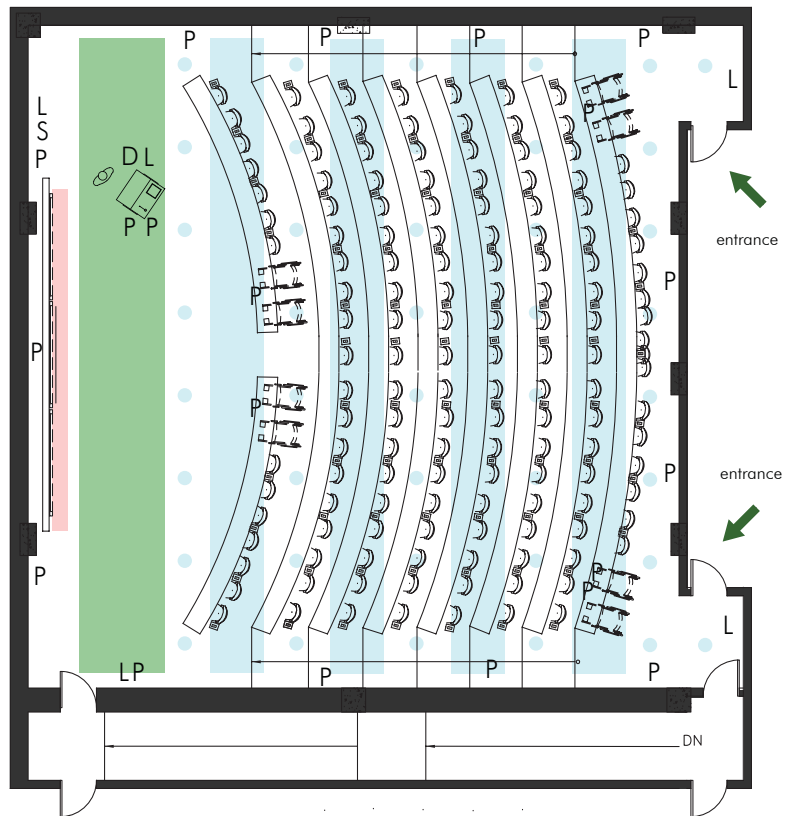
- (1) beside all entrances
- master on/off
- (2) on teaching side of blackboard (usually side furthest from entrance)
- full manual control



student zone
pot lights (low light) and fluorescent:
multiple lamp fixtures, switched to produce 0, low, 33%, 66%, 100% control from 3 wall switches
or
via alternating fixtures/banks.
Variable fixture preferred.

instructor zone
1 bank, parallel to room front

blackboard lights
directed at board to illuminate writing
prefer 'wall washer'
relected fluorescent
1 bank

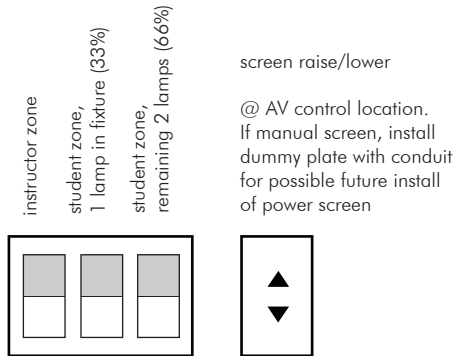


- L** bank of light control switches
- D** teaching station area - lighting control through teaching station optional (data ports on wall if no teaching station; conduit feed through floor if teaching station)
- S** screen control switch (lv) (dummy plate with conduit if manual screen)
- P** power - duplex (optional power at each station per project)
flush floor duplex at accessible stations for powering height adjustable table

SAMPLE ROOM

skills / workshop room (0-60)

config E - 3 switch perimeter

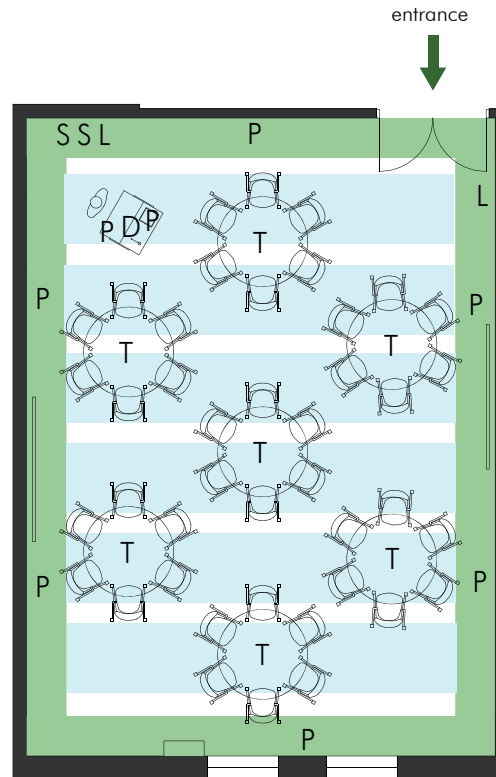


wall switch bank

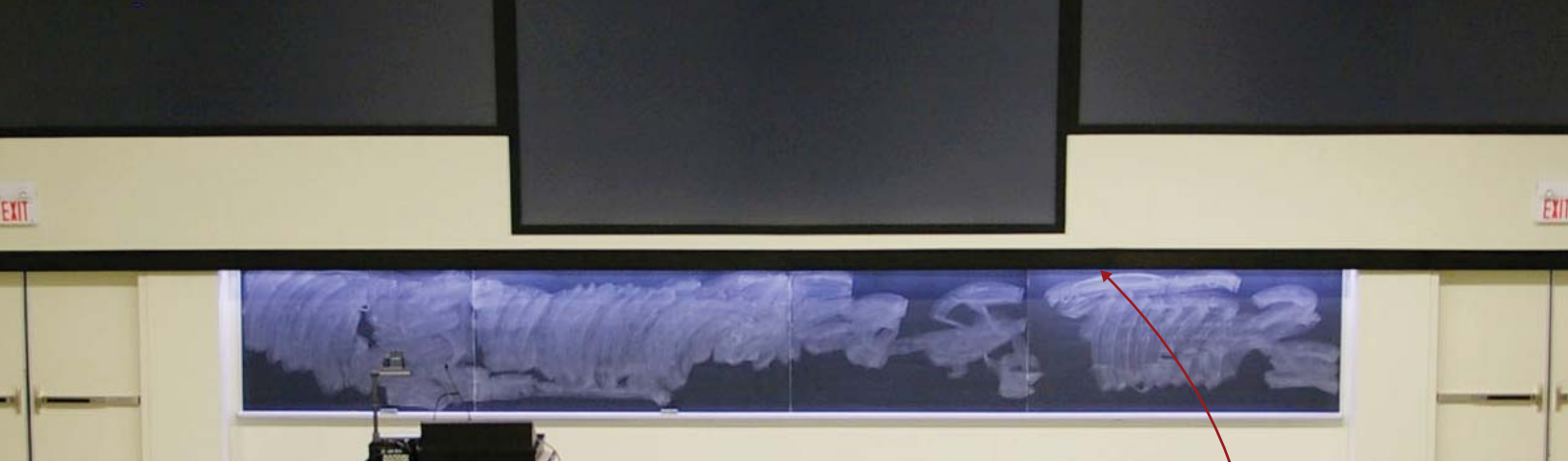
- locations:
 (1) beside all entrances
 - master on/off
 (2) on teaching side of blackboard (usually side furthest from entrance)
 - full manual control

student zone
 3 lamp fixtures,
 switchable as having one,
 two or three lamps illuminated
 (0, 33%, 66%, 100% control from 2 wall switches) or
 via alternating fixtures/banks.
 Variable fixture preferred.

instructor / board zone
 1 bank
 fluorescent or pot (CF or other energy efficient)
 dimming optional



- L bank of light control switches
- D teaching station area - lighting control through teaching station optional
 (data ports on wall if no teaching station; conduit feed through floor if teaching station)
- S screen control switch (lv) (dummy plate with conduit if manual screen)
- P power - duplex (optional power at each station per project)
 flush floor duplex at accessible stations for powering height adjustable table
- T AV / Data per room data sheets
 Power duplex
 In flush floor plate for cabled connection to loose tables



Blackboard Lights

Lighting for boards is typically ceiling mounted, directed on blackboards (separate bank)

If possible, prefer mounted directly above boards as per MS 3154 (LED strip in ridge above blackboards, shown above)

With vertically double-hung boards, attention to be paid to try and avoid 'shadow' of upper board obscuring top edge of lower board (see below; example from pb 250)

